LEGG MASON

Equity Research

Industry Analysis
Fall 2001

reshaping RURAL TELEPHONE markets

Financial Perspectives on Integrating Acquired Access Lines

Legg Mason Telecom
- Michael J. Balhoff, CFA • Timm P. Bechter
- Mark L. Hall, CPA • Christopher C. King
- Blair Levin • David P. Kaut

Center to Bridge the Digital Divide
- William R. Gillis, Ph.D., *Chair, Rural Task Force*

Nortel Networks
- Dennis L. Couture, *Director of Rural Markets*

RESHAPING RURAL TELEPHONE MARKETS

Financial Perspectives on Integrating Acquired Access Lines

Michael J. Balhoff, CFA
Managing Director, Legg Mason Telecom Research Group Head

Timm P. Bechter
Mark L. Hall, CPA
Christopher C. King
Associates, Legg Mason Telecom Research

In Consultation With . . .

Blair Levin
Managing Director, Legg Mason Telecom and Media Regulation

David P. Kaut
Associate, Legg Mason Telecom and Media Regulation

With Contributions From . . .

William R. Gillis, Ph.D.
Chair, Rural Task Force
Director, Center to Bridge the Digital Divide

Dennis L. Couture
Director of Rural Markets, Nortel Networks

LEGG MASON RESEARCH
Fall 2001

Legg Mason Wood Walker, Inc. makes a market in the securities of Alaska Communications Systems, CT Communications, Commonwealth Telephone Enterprises, and NTELOS, Inc.

Within the last three years, Legg Mason Wood Walker, Inc. has managed or comanaged an underwriting of CenturyTel, Inc., Citizens Communications and CT Communications.

Commonwealth Telephone Enterprises is a Legg Mason Select List compelling idea.

Verizon Communications is a Legg Mason Select List core holding.

The Firm has been engaged to provide capital markets advisory services to Conestoga Enterprises in connection with its pending acquisition by NTELOS, Inc. The Firm's payment is contingent on the success of the transaction.

.

Additional Information Available Upon Request

TABLE OF CONTENTS

This Page Intentionally Left Blank

ACKNOWLEDGEMENTS

We would like to thank the following people and organizations for their contributions to this report. Without their assistance and their input, it would not have been possible to refine and analyze the data to the extent we have accomplished in this publication. Clearly, Legg Mason bears the responsibility for the opinions and interpretations in this report as well as any errors. The contributions of the following persons and organizations do not represent endorsements or authorships of the judgments offered in this text.

COMPANIES

CenturyTel Management
Citizens Communications Management
Iowa Telecom Management
VALOR Telecom Management

LEGG MASON INVESTMENT BANKING

Francis X. Gallagher, Jr.
Norman C. Frost, Jr.
Richard H. Pierce

LEGG MASON RESEARCH

Rebecca Arbogast
Gretchen Troutman
Christina C. Duymus

NORTEL NETWORKS

Daniel Middleton
Steve Pusey
Sandra B. Wilson
Pia MacLeod
Sandeep Bajpai
Pritchard Strong
Bill Athanas
Arnie Tomaino
Karla Fleury
David Verghese
Brigitte Legault
Jimmy Matthai
Matthew Fumento
Karen Kattman
Ken Reddick
Roch Charbonneau
Jeff Taylor
Susan Moggridge
Jonathan Lundstrom
Carolyn Cameron
Brian Page
Duncan Campbell
Keith Cheshire
Jim Kinney

TABLES AND FIGURES

TABLES

FIGURES

This Page Intentionally Left Blank

EXECUTIVE SUMMARY

This report, *Reshaping Rural Telephone Markets*, is an effort to put together pieces of a puzzle. There are disparate elements to the image that have not yet been combined, as the regional Bell operating companies (RBOCs) evaluate sales of rural properties, consolidators attempt to determine value and strategies, and regulators try to balance countervailing principles. To bring some shape out of the jumble of pieces, we have set out two simple goals for this study — to explore the financial issues for investors in rural telephony on the basis of major consolidations that are under way, and to highlight key forces that are likely to make the industry grow further, coalescing into a viable and financially rewarding marketplace. We believe that one of the major forces is the likely divestiture of large numbers of RBOC rural lines.

Our goals in this report are to examine major consolidations that are under way and to highlight key new forces.

COLLABORATIVE RESEARCH DOCUMENT

Before turning to a summary of the study, we wish to emphasize that *Reshaping Rural Telephone Markets* is a collaborative creation. It was conceived by Legg Mason, but grew out of extensive discussions over the last several years with rural consolidators, venture capitalists, small telephone companies, equipment vendors, legislators, regulators and other officials.

This document is collaborative — drawing on the regulatory insights of Dr. William Gillis and the infrastructure knowledge of Nortel Networks.

The final document is also a collaborative publication. While Legg Mason is clearly the publisher and assumes responsibility for the product, this study combines the insights of several key disciplines — financial and industry insights, regulation and infrastructure. Legg Mason has provided the financial and overall industry perspectives. But our research also benefits from the work of Dr. William R. Gillis, who has served as a state regulator at the Washington Utilities and Transportation Commission and more recently chaired the Rural Task Force (RTF) for the FCC's Federal-State Joint Board. He is currently the director of the Center to Bridge the Digital Divide headquartered at Washington State University. His oversight made possible the development of six groundbreaking white papers on regulation and rural telephony, as well as the eventual submission of cross-industry recommendations that were the backbone of the reform of the universal service support system. Those recommendations were adopted as the foundation of the FCC's Universal Service Reform of May 2001. We are indebted to Bill

Gillis for his balance and subtlety in articulating issues and suggesting directions for a regulatory world that can be confusing.

The other key discipline incorporated into this report is related to infrastructure solutions. We are very honored that Nortel Networks devoted more than 20 of its personnel to working on aspects of this report, under the direction of Dennis Couture. Mr. Couture tirelessly coordinated the extensive efforts of many other highly trained personnel. We note that Nortel has been a key player in rural markets, as the company currently provides an estimated 70% of the infrastructure in the U.S. independent telephone market. The company's commitment to the future also runs deep, as was obvious to us in the dedication of resources to this project.

Nortel Networks committed more than 20 of its personnel to working on parts of this report.

KEY QUESTIONS

Turning to the report itself, there are particular questions that we have attempted to answer for our key constituents — investors, companies, and policymakers. Those questions can be summarized as follows.

Key questions include why the RBOCs will sell lines, what are the key strategies, and what is the likely net present value on these investments.

- Why are rural divestitures occurring and why, in particular, are the regional Bell companies selling rural lines?
- What are key strategies employed by rural consolidators, and what are their strengths and weaknesses?
- What will be the sources of capital to pay for new divestitures, and which investors are positioning themselves to benefit from the opportunities?
- What is the current framework for rural regulatory oversight, and how might regulation evolve as the industry undergoes significant changes?
- What was the condition of the infrastructure at the time of recent rural purchases, what has it cost to rehabilitate the properties, and what are the opportunities for productive upgrades for advanced services?
- And the ultimate question — what is the likely return on investment for operators or consolidators of rural telephone companies?

MAJOR INSIGHTS

While the consolidation process is unfolding and the specific shape of the outcome is not yet clear, we believe that certain valuable conclusions can be drawn.

- We believe that consolidation is accelerating in rural telephone markets.

- Over the next five to 10 years, we believe that the RBOCs will divest many more rural lines — likely 10 million–20 million and possibly as many as 30 million — because it is uneconomical for those companies to maintain the properties, in our estimation.

- A favorable return on investment is possible on acquisitions that include purchase price *plus rehabilitation costs*, which total $3,700–$4,000 per line, but the individual cases have to be studied to determine the potential to achieve suitable earnings; this report highlights the importance of due diligence in the acquisition process.

- Regulation has been and will continue to be an important determinant of whether value can be created and service improved in rural telephone markets. The levels of rural access rates and universal service support monies are critical and must properly reflect the distinctive character of non-urban markets.

- New regulatory systems must evolve to accommodate the RBOC divestitures. The Telecom Act of 1996 reaffirmed the public policy that the rural customer should have affordable service and, accordingly, that high costs should be supported through funds derived from carriers (e.g., long distance) or alternative sources. However, the current system contains inherent inequities in aiding some rural customers while providing no support for other comparably "rural" customers.

- Key problems exist in the current regulatory systems and are revealed in recent acquisitions: (1) the property transfer process takes too long, (2) the universal service system is inequitably applied, (3) access rates are set in ways that often do not reflect the underlying costs, (4) there are no systems to aid in the rehabilitation of distressed lines, and (5) there are no systems to support deployment of advanced services.

- An appetite exists among investors to commit to rural investments, but the traditional sources of capital will be insufficient to meet the likely supply of properties. We believe that the total capital required could rise to $40 billion–$100 billion (assuming the upper end of the range is limited by lower prices arising from more lines on the market). If this occurs, it will be necessary to tap private equity, commercial debt and high-yield markets, as well as engage in careful use of balance sheet assets and joint ventures.

- Rural infrastructure deployments will have to be analyzed carefully to generate new sources of revenue, particularly from advanced services — and new data products eventually may reduce the need for high levels of universal service support.

Major insights include our conviction that RBOCs are likely to divest 10 million–20 million lines and that favorable returns can be generated on purchases plus rehabilitation costs, which total $3,700–$4,000 per line.

OVERVIEW OF PRESENTATION FORMAT

This report begins with two chapters that are relatively specific, then transitions to three chapters that are dedicated to more general studies.

A THEMATIC OVERVIEW

The first section of *Reshaping Rural Telephone Markets* sets the investment themes and concepts for the document, and presents a summary financial model. From the outset, there is a clear rationale for dramatic change in the rural markets, including the likely divestiture of rural RBOC lines, probably over an extended period of time. The first section continues with insights into return on rural investments and the sensitivities of the Legg Mason rural model to changes in revenues, margin, discount rate and maintenance investment.

The first report section sets the themes and presents a financial model.

FOUR CASE STUDIES

The second section provides an in-depth analysis of four recent acquisitions of RBOC rural lines — (1) CenturyTel's purchase of more than 490,000 GTE lines in Arkansas, Missouri and Wisconsin; (2) Citizens' acquisition of nearly 1.6 million lines, 17,000 of which were from U S West (Citizens terminated the agreement for the balance of the U S West/Qwest transaction involving 540,000 lines in July 2001), 440,000 from GTE and 1.1 million from Global Crossing; (3) Iowa Telecom's formation to acquire the entirety of GTE's Iowa assets — 285,000 lines; and (4) VALOR Telecom's consolidation of 550,000 GTE lines in Oklahoma, Texas and New Mexico. The analysis focuses on financial, infrastructure and regulatory issues unique to each acquisition and, in the case of Citizens, provides more careful exposition on three representative states. Both investors and regulators should come away from the studies with a better understanding of each consolidation and, importantly, with a sense of the similarities and diverse elements in those studies.

The "Four Case Studies" section focuses on acquisitions by CenturyTel, Citizens, Iowa Telecom, and VALOR Telecom.

REGULATORY VIEWS

The third section is an ambitious effort to outline the current regulatory framework related to rural acquisitions and to suggest possible issues that regulators will have to face in the future. It is not our purpose to advocate any single regulatory approach, but the financial issues highlight problematic areas for further investigation, including the current inequity in the way rural properties are transitioned under the current law, the public policy conflicts created by the commitment to deploy advanced services for rural areas, the understandable policymakers' fear of unfettered growth in universal service funds, and the need to resolve the problem of readjusting certain rates to reflect underlying costs.

The "Regulatory Views" section outlines the current regulatory framework and suggests directions for the future.

RURAL INFRASTRUCTURE

The fourth section is an exposition of concepts related to key infrastructure issues. With the extraordinary aid of Nortel, issues are outlined that pertain to

The "Rural Infrastructure" section highlights rehabilitation issues and offers two case studies on deploying advanced services.

outside plant, switching, transmission and other assets. There is also a subsection that suggests what might be possible solutions — architecture, costs, and revenues — for deploying advanced services, using two real case studies based on a rural community with 3,000 lines and another community with 30,000 lines.

FINANCING RLEC ACQUISITIONS

The final section considers sources of RLEC capital and points to emerging sources for the future.

The final section focuses on sources of capital that have been used by rural operators and consolidators, as well as sources that may be employed. Capital clearly is flowing more rapidly to this sector, but we believe that the industry will be marked by far more financial discipline in the next several years, with the result that the opportunities will expand for a broader range of debt and equity investors.

With these summary remarks, we turn to the thesis, the four case studies and then the future of regulation, infrastructure and finance for rural telephone operations.

This Page Intentionally Left Blank

THEMATIC OVERVIEW

The RLEC industry will be reshaped through consolidation.

We believe that a fundamental transformation will occur in the rural local exchange industry over the next several years. The Rural Local Exchange Carrier (RLEC) industry will be reshaped through consolidation and the introduction of new financial disciplines that focus rural telephone companies on generating higher revenues and better returns for their investors. The principal driver of change, we believe, may be the decision of the regional Bell operating companies (RBOCs) to sell large numbers of rural lines — in divestitures that could total 10 million–20 million and possibly as many as 30 million lines — to independent rural operators. If such a significant set of transactions occurs, we believe it will set in motion forces that change fundamentally the operations of the traditional RLEC, test long-standing regulatory systems, attract new investment in the sector, alter the shape of strategies at equipment vendors, and provide a higher level of service to the consumer in rural America.

INTRODUCTION

Our fundamental thesis is based on five key points.

This report grows out of a fundamental thesis that can be reduced to several points.

- Current telephone service in rural America is generally premised on a model that is uneconomical for the RBOCs.

- As the RBOCs complete their Section 271 processes (applications that the RBOCs must file to offer long-distance services) and take advantage of new opportunities to serve enterprise and data markets, they will focus even less attention on rural markets. As a result, the RBOCs, and possibly Sprint, could divest large numbers of rural lines, which could triple the number of lines served by independent RLECs (currently about 13 million).

- Regulators and legislators will be forced to contend with new conceptual models to aid in rehabilitating the lines and set access rates, with the result that systems and rates may be assigned using innovative schemes that are better suited to the changed market.

- Many small, traditional RLECs will be pressured to gain scale as regulatory systems change, new models develop, and increased scrutiny is brought to bear on rural telephony.

- Improving operating characteristics and the increasing size of the RLEC market will attract financial investors who will drive public market valuations to prices that are higher and more appropriate than the current levels, which we believe represent deep discounts.

If we are wrong and the wave of sales is not as large as we expect, we still believe that investors already are beginning to ask probing questions about a changing industry, including how to analyze the recent RBOC sales of 1.6 million lines (the figure was 2.1 million before Citizens' termination of the deal for the majority of the U S West lines) to four companies — Citizens Communications (a company that also purchased 1.1 million Global Crossing lines), CenturyTel, VALOR Telecom and Iowa Telecom. In our opinion, the issues that need to be addressed are the same whether the consolidation involves the sales of two million or 20 million lines: (1) the appropriate price to pay per line, (2) the condition of the divested plant, (3) capital expenditures necessary to rehabilitate acquired properties, (4) the regulators' ability or willingness to respond to sales at the state and federal levels (financial determinations of access rates and support payments), (5) stimulation of new revenues and management of costs after the acquisitions, and (6) the ultimate question about the likely return on investment.

This study also has value in focusing investors on key questions related to recent divestitures of rural lines.

PURPOSE AND SCOPE OF REPORT

This report has a twofold purpose — to examine the transactions that already are unfolding in order to understand important financial events for four companies, and to gain insight into what we believe will be a sea of change in the rural industry if large numbers of lines become available.

This report has a twofold purpose: to understand current consolidation and to look forward to major changes.

The first section of this report examines the fundamental thesis, including the RBOCs' motives for sale and the issues that may arise as those sales unfold. The second section provides detailed case studies of what has transpired in the recent RBOC/Global Crossing sales, including issues related to pricing, financing, regulation and infrastructure. The three sections that follow the case studies explore the principles and the longer-term issues concerning regulatory challenges, possible infrastructure solutions for the future, and emerging approaches to financing RLEC transactions.

THE FUNDAMENTAL THESIS

Several financial forces are driving rural telephone consolidation, in our opinion. To be somewhat more poetic, today's investors in rural telephony are confronted

with puzzle pieces — different sizes and shapes — that are confusing and disjointed, but can be combined to illustrate an industry in transition.

The landscape of rural telephony is like a puzzle; the key pieces include new investors, strategic consolidators, and RBOC divestitures.

First, the relatively tiny pieces of the puzzle are the small independent telephone companies that have become more receptive in recent years to selling their businesses, which in most instances have remained under family or cooperative control for as much as a century. The individual transactions appear at first to be distinct responses to escalating private market prices and the new demands imposed on operators as the companies contend with growth and competitive factors. But we believe that the transactions suggest something systematic, as a more complex picture is coalescing of the entrance of financial players — Fox Paine, Welsh Carson, Vestar, Thomas Lee, Carousel Partners, Seaport, etc. — into an industry that generally has been reserved for small independents or larger strategic consolidators. The number of puzzle pieces colored by "smart" financial money is rising, which suggests a new pattern in the industry.

Second, the larger rural operators have provided the puzzle's frame with their knowledge and discipline, as they have committed aggressively to accumulating assets in gaining growth and scale. TDS, CenturyTel, Citizens, Alltel, Iowa Telecom, and VALOR have acquired rural lines in the last several years at generally consistent prices and with similar operating plans, which we believe provides a frame for the opportunity. The frame sets the limits of what should be paid, how capital is raised, the approach to deploying infrastructure, how new operations are to be transitioned, and what are the regulatory pressure points. The case studies should help in understanding this "frame."

The larger expanse of the puzzle will snap into place if the RBOCs divest even larger numbers of lines.

The larger expanse of the puzzle, however, will snap into place if what we believe is true, that the RBOCs are only beginning to analyze their portfolio of assets. We see the RBOC sales of nearly two million rural access lines in the last year as individual pieces that merely suggest the emerging image involving the sales of many more lines, which could possibly rise to 10 million–20 million or even as many as 30 million. As a result, investors — traditional shareholders, small-cap equity funds, venture capitalists, investment banks, commercial banks, and public debtholders — may have only begun to ponder the piece parts of an industry that increasingly will be recognized as attractive because it is characterized by solid cash flows, little competition, underpenetration of services, new products, favorable regulation, significantly larger size and, importantly, deep undervaluations.

SMALL INDEPENDENT RURAL TELEPHONE COMPANIES

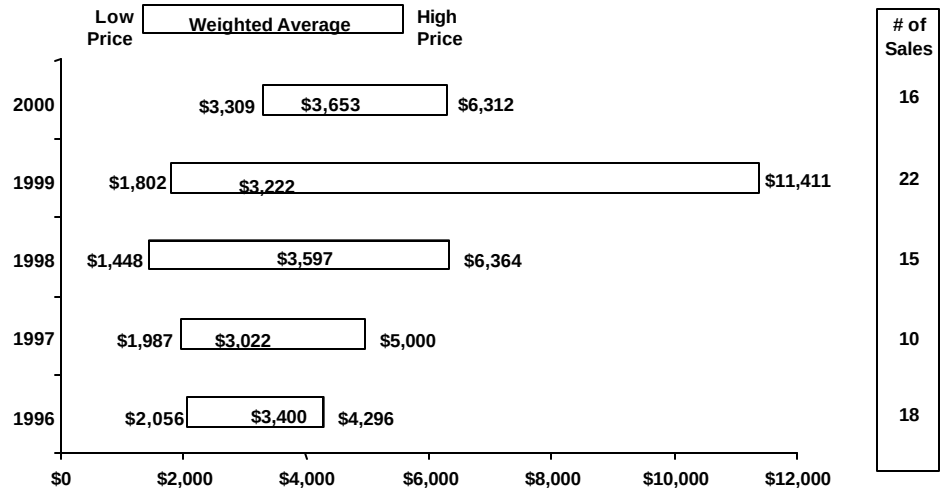
The pace of consolidation among small independents has increased.

Over the last several years, small independent telephone companies have begun to consolidate, generally selling their properties to larger consolidators. In the period from 1997 through 1998, 25 rural transactions occurred in sales to consolidators or other operators compared with 38 transactions in 1999 and 2000.

The prices for line sales also have been increasing.

Figure 1 presents high, low and average weighted prices per line for each year from 1996 through 2000, reflecting that the weighted average price per line has increased from $3,022 in 1997 to $3,653 in 2000. The final section of this report offers more detail on the various transactions.

Figure 1: Non-RBOC RLEC Sales per Line 1996-2000



Source: Legg Mason Wood Walker, Inc., company data

There appear to be several reasons for the higher number of sales in the last few years and the rising prices for rural properties, including new competitive factors, estate-planning purposes, and unsolicited offers to purchase particular properties.

Whatever the near-term reason, we believe that the number of sales in recent years is a reflection of other more fundamental forces at work, including the appetite of the financial investor, the will of the strategic operator, and the emerging technologies that promise new sources of revenue.

RURAL CONSOLIDATORS

Large rural consolidators have grown significantly larger and more active.

It is notable that, among the larger rural consolidators, the pace of acquisitions has accelerated in the last several years. Citizens Communications acquired approximately 1.6 million lines, which more than doubled the size of the telephone company, and represents the largest number of rural lines acquired in so short a time. CenturyTel has added approximately 491,000 lines, increasing the company's size by nearly 40% in one year. Alltel most recently acquired wireline assets in 1999, when the company added Aliant (285,000 lines) and Standard Telephone (71,000 lines), which brought the company's total lines to approximately 2.5 million. Telephone & Data Systems (TDS) recently announced the acquisition of Wisconsin-based Chorus Communications (44,000 lines), which

will be added to TDS's 600,000 lines. TDS has acquired 53,500 rural access lines in various transactions since 1996.

There have been other consolidators in the industry, including FairPoint Communications (formerly MJD Communications), which has acquired about 236,000 RLEC lines over the last eight years; Madison River, which has added 195,000 lines since 1998; Lynch (Gabelli Group), which has accumulated 23,000 new lines since 1996; and Seaport, which has bought 18,000 lines since 1998. Additionally, new major consolidators have emerged in VALOR Telecom (550,000 lines in New Mexico, Texas and Oklahoma), backed by Welsh Carson Anderson & Stowe, and Iowa Telecom (285,000 GTE lines in Iowa), funded by Iowa Network Services and ING Furman Selz.

More recently, Alltel has been proposing a merger with CenturyTel. We interpret the initiative as a clear sign of Alltel's interest in the rural wireline business, since Alltel had effectively rejected a purchase of CenturyTel's wireless assets alone. We also believe that Alltel and CenturyTel are setting their strategies in place for the eventual consolidations of large numbers of RBOC lines, and that the initial offer for merger and rejection are most clearly understood in that light.

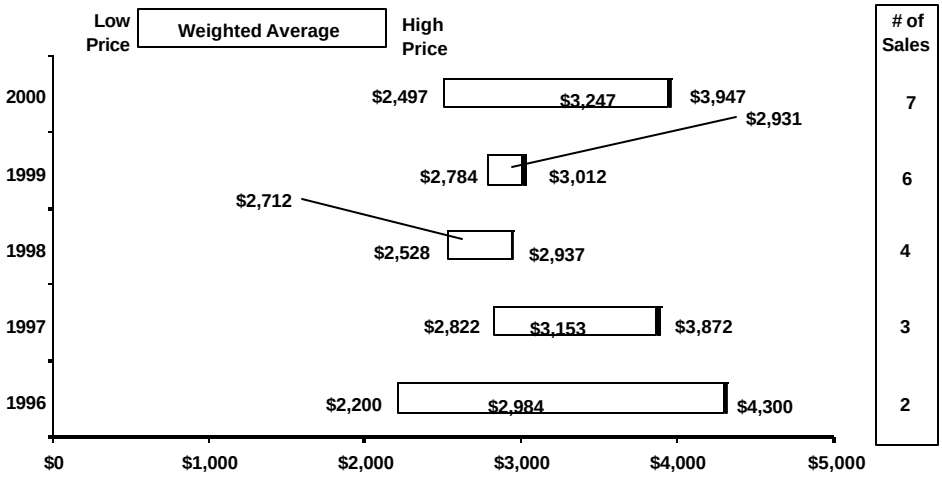
DIVESTITURES BY LARGE URBAN TELEPHONE COMPANIES

In 2000 and 2001, sales of 3.3 million RBOC/Global Crossing lines were announced or closed, and Verizon apparently is considering further divestitures.

There also appears to be a pattern in the RBOC divestitures. In the two-year period from 1995 through 1996, sales of approximately 52,000 RBOC/GTE lines were completed. In 1997–1998, the pace increased as 219,000 RBOC/Sprint lines were divested and closed. In 2000 and 2001, the divestiture of 2.2 million RBOC divested rural lines have been announced (in July 2001, Citizens cancelled the purchase of 539,800 U S West lines in nine states) or closed, not including the 1.1 million Global Crossing lines that were transferred in June 2001 to Citizens. There also has been intermittent speculation about sales contemplated at two RBOCs, which could result in an initial offloading of 10 million–13 million lines in the near term. Most recently, in July 2001, Verizon acknowledged it was contemplating the sale of another 1.2 million lines that had previously been owned by GTE, this time in Kentucky, Alabama and Missouri. We believe that those lines are attracting the interest of Alltel, CenturyTel, Citizens, TDS and VALOR, among others.

Figure 2 illustrates RBOC line divestitures from 1996 through 2000, depicting high, low and weighted-average line prices. Again, the pricing has increased over the last three years, rising from a weighted-average $2,712 per line in 1998 to $3,247 in 2000. We will explain later that the RBOC prices reflect sales that are often without back-office systems and frequently are marked by the distressed condition of the plant, meaning the prices are not "fully loaded."

Figure 2: RBOC Rural Prices per Line 1996-2000



Source: Legg Mason Wood Walker, Inc., company data

POTENTIAL OF SIGNING THE RBOC DIVESTITURES

To provide further perspective on the RBOC opportunity, we estimate that approximately 25% of the telephone lines in the U.S. are in rural regions. And, of the estimated 40 million–45 million rural telephone lines, about 30 million are served by the RBOCs. Some of the lines served by rural operators and some of the lines that could be sold by the RBOCs are not truly "rural," but the vast majority of the lines to be divested are expected to be in low-density regions. If the RBOCs choose to divest more populous geographies, we believe it will likely be a part of a plan to eliminate service entirely in a state or to focus on other "higher-value" clusters.

We summarize our estimates of high, low and expected numbers of lines that might be divested.

Table 1 summarizes our estimates of the lines that could be sold by the RBOCs and Sprint. The last three columns represent our attempt to bracket the high, low and expected numbers of lines that might be sold. The reason for the high figure for Verizon is that the company serves many nonstrategic rural regions that were formerly GTE properties, while the low figures related to SBC and BellSouth reflect the fact that those companies have not publicly disclosed their intentions to sell rural assets. At the same time, we believe that successful line sales by Qwest or Verizon could make SBC and BellSouth more open to the sale process. We also included Sprint in the table to complete the analysis, but Sprint has not indicated any desire to sell lines at this time.

Table 1: Possible Line Divestitures of RBOCs and Sprint

Company	Total Lines (mils.)	Estimated Line Divestitures (mils.) High	Low	Expected
Qwest	18.1	8.4	4.0	6.0
Verizon	64.0	13.7	4.0	10.0
SBC	61.0	3.6	-	3.6
BellSouth	26.0	5.0	-	-
Sprint	8.0	8.0	-	-
Total	177.1	38.7	8.0	19.6

Source: Legg Mason Wood Walker, Inc.; company data.

RATIONALE FOR RBOC RURAL SALES

There are three reasons for the RBOCs to sell their rural lines.

What are the factors that make it likely that the RBOCs will divest some of their remaining rural lines? We believe that there are three. First, the Telecom Act is fundamentally a call to competition that has affected or will affect the way the RBOC managements view their businesses. Second, the RBOCs generally have not been eligible for the financial benefits (universal service support and more elevated access rates) that independent rural companies receive in non-urban markets. And, third, the RBOCs have limited resources in terms of personnel and capital to invest in strategic growth opportunities. Accordingly, we believe that RBOC strategies increasingly will center on expanding data services in denser regions and, more especially, on enterprise business services in the near term.

Reason 1: Telecom Act is fundamental call to competition

The Telecom Act of 1996 is legislation that was fundamentally intended to open local telephone markets to competition. Most observers assumed at the time of the Act that the principal competitive change would involve market-entry by competitive local exchange carrier (CLEC) or cross-industry attacks by cable and/or long-distance carriers throughout RBOC regions, while the RBOCs would respond defensively by having to open their networks, lower prices, alter their marketing strategies and, possibly, find subtle approaches to engage in anti-competitive behavior.

The regional Bells have responded aggressively to competitive challenge.

There is more complexity to the competitive landscape, however, and it has clearly surprised competitors and other observers. In the post-Telecom Act era, the RBOCs have changed in ways that are by no means passive and may be among the most surprisingly active. The Baby Bells have acquired scale in industry-changing mergers, figured out how to build operation support systems that satisfy the requirements to achieve long-distance relief, merged wireless operations to gain national reach, and committed to far-reaching capital programs in reengineering their networks. *The reality is that the regional Bells have taken the*

initiative in ways that legislators and competitors could not have completely anticipated at the time of the Act.

If we are correct that the RBOCs have an unexpected disposition to effect fundamental changes, we believe that that another near-term transformation is possible. *We believe that it is the Telecom Act's call to competition that has motivated the RBOCs to assume a very new frame of mind and that the next stage will involve evaluation of the companies' portfolio of assets to determine what is core and what is not consonant with longer-term plans.* We believe that the RBOCs will see rural regions as sources of capital that can be redeployed in urban regions.

Reason 2: RBOCs are wrong-sized to operate rural properties

The regulatory system imposed on the RBOCs was premised on cross-subsidies.

Public policy of more than 60 years before the Telecom Act of 1996 assumed that the telephone business was a monopoly and that the goals of ubiquitous and affordable service could be accomplished through cross-subsidization schemes whereby long-distance rates supported local service, businesses subsidized residential customers, and urban regions funded rural properties. As a result, the federal system and the state regulations that frequently mirror the federal approaches have required that telephone companies average their costs over their total number of lines and then apply a rate-of-return calculation (changed for the RBOCs over the last 15 years to a new system of price caps, but based on the original rate-of-return regime). The net effect was that the RBOCs, with both urban and rural lines, had urban rates marginally above those they might otherwise have received, while the Bell rural regions had rates that were sometimes well below their actual costs. The averaged calculations were effectively a system of subsidies designed to further support the universal service funds.

RBOC access rates

RLEC access rates better reflect underlying costs than RBOC rural access rates.

Due to the monopoly-based averaging, the RBOCs also charge access rates to long-distance carriers at levels that do not reflect the underlying costs in rural regions. In fact, RLEC access rates are generally 2x–5x the rates of the neighboring RBOCs in rural regions, *as the RLEC rates are based on cost analyses that we believe are closer to reality in high-cost regions. The RBOCs' artificially low rates, again, reflect a legacy scheme that is not cost-based but, rather, is policy-based.* Assuming that an average rural consumer makes approximately 300 minutes of long-distance calls monthly, the net monthly shortfall (excluding the cross-subsidies) for the RBOC in rural regions has been about $10–$20 per line, by our estimates, compared with what is generated by the neighboring RLEC.

For the RBOCs, the rural access rate inequity was exacerbated in May 2000, when the CALLS (Coalition for Affordable Local and Long-Distance Services) Order set RBOC interstate access rates at $0.0055 per minute, effectively halving the charges in both urban and rural regions, partially offset by a new subscriber line charge on the customer's bill. CALLS also set interstate access rates for price-cap

companies, such as Citizens, VALOR and Iowa Telecom, at $0.0095 per minute. Over the next several years, due to the rural volumes of long-distance calls, which are relatively higher than those of urban residential customers, we estimate that the CALLS proposal could hurt the number of the price cap rural carriers by as much as $1–$3 per line per month.

RBOC support systems

RBOCs receive virtually no USF support.

Turning to universal service support, we estimate that in 2001, approximately 20.3 million of the rural lines served by domestic telephone companies (including larger carriers such as Sprint and GTE/Verizon) will receive total high-cost support (loop, long-term and switching) amounting to approximately $1.2 billion, or $6.58 per line per month, on the basis of 3Q01 projections. There are also, by our estimate, 15 million–20 million RBOC rural lines that are not eligible for support significantly because of the historical system that uses averaging calculations of the company's per-line costs across a telephone company's entire state-service-area (generally, a study area). To be eligible for the high-cost loop fund, average loop costs must be at least 15% higher than the national average (approximately $240). As a result, the RBOCs receive less than $1.25 per line per month in the handful of study areas in which they are eligible for relief.

By our estimate, RBOCs have a $7 monthly revenue shortfall per line compared with RLEC operations.

We estimate that the RBOCs have a shortfall in rural revenues of at least $7 in monthly revenue per line compared with the revenues of their rural counterparts, in spite of the fact that RBOCs' costs remain high in rural regions. Further, the revenue disparity appears to be more significant if we believe the anecdotal evidence that the RBOCs often invest relatively little in rural infrastructure and, therefore are not generating ancillary revenues such as those for vertical services or advanced business services.

RBOC service in rural America is uneconomical and based on a non-business model.

Some observers continue to consider the rural regions as public policy commitments for the RBOCs. In our opinion, this is a lofty view, but is inconsistent with the other newer public policy issues related to competition, cost-based services and appropriate allocation of capital. Stated more bluntly, RBOC service in rural America often is uneconomical as it is premised on a policy-based rather than a business-based model. As a result, we expect that the RBOCs will respond in a rational manner as competitive businesses in the post-Telecom Act world. Further, we believe that policymakers are wrong if they attempt to force a solution on one group of companies (RBOCs) when another group (dedicated rural operators) is better suited for the business. In short, we believe it is inevitable that the RBOCs increasingly will commit to activities that are competitive and not monopoly-based, which means that the RBOCs will be motivated to sell low-yielding rural assets.

Reason 3: RBOCs have limited personnel and capital

The RBOCs have a significant set of challenges in transforming themselves into competitors. At the same time, it is our view that they have progressed

meaningfully toward identifying strategic goals, developing the assets necessary to win, managing the changing regulatory environment, and reassessing their core competencies. However, the RBOC stocks have increasingly come under pressure, as investors are anxious about capital commitments and potential earnings weakness. We believe the logical conclusion is that the RBOCs will further rationalize their portfolios, including evaluating whether they should own or lease various real estate and other assets, how much they should outsource particular services and, importantly for our discussion, which properties or assets make the most sense to retain or sell. We believe that this process will intensify as the RBOCs complete their 271 processes (see our July 24, 2001 report, *Section 271 Relief: Bells Race IXCs/Each Other for New Markets/Revenues*) and contemplate new opportunities in serving large enterprise and data markets (see our June 2001 report, *The Coming Communications Consolidations*, with our colleague Blair Levin). We further believe that the analysis inevitably will focus on properties in which the RBOCs are losing money or possibly underearning in light of internal investment hurdles. And when they look at the rural properties (if they have not already done so), we believe that the RBOCs will determine that the assets are not generating sufficient returns, and could actually generate a higher value through the sale process.

RBOC rural assets are not generating sufficient returns.

A RURAL FINANCIAL MODEL

One of the purposes of this report is to offer a frame of reference for what investors might be willing to pay for rural lines sold by RBOCs. As a first step in the analysis, this initial chapter introduces key variables and a summary model to evaluate past and future acquisitions. The valuation perspectives are based on a discounted cash flow model (DCF) that initially is applied in a simplified form to two scenarios: (1) RBOC ownership of rural lines, and (2) RLEC ownership of divested RBOC rural access lines with operating improvements. There is another potential scenario, which involves a telephone company's upgrading its lines to provide advanced high-bandwidth services, but that scenario is not very well defined at the present. This report does include some financial analysis of broadband services in the "Rural Infrastructure" section.

One of the report's purposes is to offer a financial frame of reference in the acquisition of rural lines.

The thoughtful investor will suspect that costs and revenue streams might vary appreciably from one operation to another. That suspicion is well founded, as the "Four Case Studies" section of this report reveals, since revenues and EBITDA margins per line can range from $45–$70 and 30%–70%, respectively. As a result, this section also includes comments on a sensitivity analysis (found in detail in Appendix One) related to the primary variables in the DCF models.

While the valuations in the models allow for a wide range of inputs, the analyses point up important insights related to reasonable expectations for revenues, the appropriate EBITDA margins to use in a valuation, and a refined definition of "acquisition cost," as well as ranges and sensitivities for other key inputs. It is

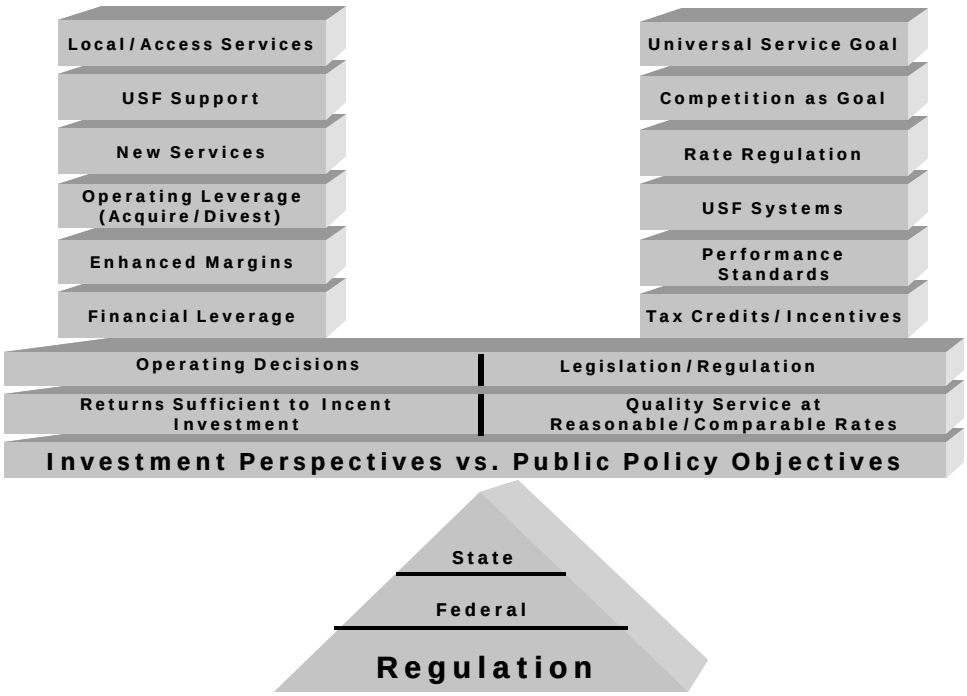
important for the investor to recognize that this report is designed to help gain insight and clarity into the acquisition process, weigh the input variables, and better understand recent purchases made by CenturyTel, Citizens, Iowa Telecom and VALOR Telecom. However, the report cannot evaluate precisely the specifics of any single acquisition, as the data points remain too nebulous, in most cases, for such an analysis. Thus, this report is better used as a frame of reference for studying the acquisition process, rather than as a document to judge whether a specific investment, e.g., Citizens or CenturyTel, is worthwhile now.

This report cannot evaluate precisely the specifics of any acquisition but is used better as a frame of reference for studying the acquisition process.

IMPORTANCE OF REGULATION

We note that a key variable in this report's *frame of reference* is regulation at both the federal and the state level. Regulation is admittedly a balancing act, serving to match the countervailing interests of investors/companies and public policy concerns. Investors and companies desire returns sufficient to justify their investments, while the Telecom Act has dictated that all consumers, urban or rural, should have access to service at rates that are reasonable and comparable. We summarize the countervailing forces in **Figure 3**, which suggests that operations depend on revenues — local and access services, universal service support, and new products, such as data services — as well as expense management and use of financial leverage. The key regulatory issues begin with public policy goals related to universal service and competition, and are spelled out in universal service systems, rates, performance standards, and new tax incentive and credit programs to incent deployment of advanced services. Because of the importance of regulatory policy and decisions, we devote a section of this report to exploring the effects of policy on the investment case.

Figure 3: Rural Telecom Balancing Act



Source: Legg Mason Wood Walker, Inc.

DCF MODEL BASED ON 1999 FCC DATA

In the "Four Case Studies" section, we will apply insights related to business and public policy matters, and analyze them using the same DCF model that we present in this section. The company inputs used in our model are generated from reports sent to the FCC through the Automated Reporting Management Information System (ARMIS) by companies including GTE/Verizon, Frontier/Global Crossing and U S West/Qwest.

The reader should understand the purpose and the limitations of the ARMIS presentation. The purpose for using ARMIS data in this report is to clarify issues and differences in the case studies, that is, to reflect on what the acquirers apparently found and how the data appear similar or different from one case to the next. At the same time, the ARMIS data are unaudited regulatory submissions that pertain to telephone operations in 1999 as reported by the telephone companies. We caution that the data, first, are two years old, and, second, do not include any information on how CenturyTel, Citizens, Iowa Telecom or VALOR Telecom may have improved the properties since they took possession of the assets. The ARMIS report, then, is helpful in gaining some insight into relative revenues, margins and assets at one point in time, but it does not fill out the remainder of the data to allow the investor to definitively commit new capital to a particular investment in the properties acquired by CenturyTel, Citizens, Iowa Telecom and VALOR Telecom. A final issue is that ARMIS data pertain to entire study areas.

ARMIS data permit us to compare the performance of different properties, but there are limitations in the usefulness of the data.

When a partial study is divested, we have no *specific* ARMIS information on the particular lines and exchanges that were sold.

ANALYSIS OF RBOC OWNERSHIP OF RURAL LINES

Why do RBOCs consider sales, and why do consolidators believe they can create more value?

Investors frequently ask why the RBOCs will consider sales to other operators of lines, and how it can be that rural operators generate more value than that created by the RBOC. The answer to the first question is that the RBOCs prepare studies such as the hypothetical study in **Table 2**, which highlights that there is more value created for the RBOC through the sale of a property than the present value of that property's operating cash flows. The answer to the second question is that the potential buyer is likely to be more focused on rural operations and may very well have access to higher revenues through better penetration of vertical services, data products, and long distance as well as rate adjustments and possibly state USF for which the RBOC is ineligible.

THE RBOCS' RURAL OPTION — RETAIN OR SELL RURAL LINES

Table 2 provides the two fundamental options available to the RBOCs as they review their portfolios of rural access lines: (1) to continue operating the properties or (2) to sell. The first option is expanded by allowing the EBITDA margin to be 42% or 57%, with the latter possibility reflecting the removal of the RBOC's allocated overhead, which might or might not disappear in an RBOC sale. The second option allows for three different sale prices — $2,500, $3,000, or $3,500 per line. The present value (PV) for the "retain" option is calculated as an after-tax perpetuity, while the second option is simply the net after-tax proceeds from the sale transaction.

Table 2: Hypothetical RBOC Analysis of Rural Financial Opportunity

Option 1: Retain Lines	EBITDA margin		Option 2: Sell Lines	Alternative Sale Prices		
	42%	57%		Low	Mid	High
Revenues	$ 55.00	$ 55.00	Sale price	$ 2,500	$ 3,000	$ 3,500
EBITDA	$ 23.10	$ 31.35	Cost basis	$ 1,170	$ 1,170	$ 1,170
Interest expense	$ 1.87	$ 1.87	Transaction expense	$ 50	$ 60	$ 70
Taxes	$ 8.49	$ 11.79	Taxes	$ 512	$ 708	$ 904
Net income	$ 12.74	$ 17.69				
Capex	$ 12.00	$ 12.00				
Free cash flow (FCF)	$ 0.74	$ 5.69				
NPV (annual FCF/(k-g))	**$ 126.86**	**$ 975.43**	**Net Present Value**	**$ 1,938**	**$ 2,232**	**$ 2,526**
Assumptions			**Assumptions**			
Book asset value	$ 1,170	$ 1,170	Book asset value	$ 1,170	$ 1,170	$ 1,170
ROA	10.8%	83.3%	ROA	165.6%	190.8%	215.9%
Debt per line	$ 320.00	$ 320.00	Cost basis/line	$ 1,170	$ 1,170	$ 1,170
Interest rate	7.00%	7.00%	Exp. as % of price	2.0%	2.0%	2.0%
Tax rate	40.0%	40.0%	Tax rate	40.0%	40.0%	40.0%
Cost of Equity (k)	9.00%	9.00%	Gross value/line	$ 2,250	$ 2,250	$ 2,250
Growth rate (g)	2.00%	2.00%	Percent depreciated	52.0%	52.0%	52.0%

Source: Legg Mason Wood Walker, Inc.

If the RBOCs continue to operate their properties, according to the table, they could generate cash flows with a present value of approximately $127 at a 42% EBITDA margin or a present value of roughly $975 at a 57% EBITDA margin. The table uses input data for the RBOC lines based on 1999 averages (revenues, margins, capex, cost basis) supplied by the RBOCs to the FCC in the ARMIS database. Option 2 suggests that, by selling RBOC rural access lines, a company could produce net after-tax proceeds per line in the range of $1,938–$2,526, assuming rural sale prices that are $2,500, $3,000 or $3,500 per access line.

RBOCs can generate rural cash flows that are worth approximately $127-$975 per line, or sell for after-tax proceeds of approximately $2,000–$2,500 per line.

The import of the table is straightforward. Unless virtually all capital expenditures are eliminated from the first option and we assume the higher EBITDA margin, the rational RBOC realizes significantly more value (sale value of $1,938–$2,526 versus retention value of $127–$975) from the sale of the properties, and realizes significantly more immediate cash flow. There is another way to state the same point from the table — an RBOC is likely to choose one of two options: (1) continue to generate cash, but do not invest further in rural properties, or (2) divest the properties. We believe that an RBOC's choice between investing and divesting will most often lead to rural divestitures.

An RBOC's choice between divesting and investing will most often lead to rural sales.

UNDERINVESTMENT IN RURAL PLANT

In our opinion, if the RBOCs continue to own and operate rural access lines, they are more likely to destroy financial value and underserve their rural customers due

to policy and financial issues. In recent years, we believe that RBOC managements have directed resources to urban areas, where long-term strategic positioning is key and higher return on investment can be generated. As a result, it appears that rural investments have been minimal and, when the companies are pressed to upgrade non-urban properties, divestitures become a more logical outcome.

RBOCs that continue to operate rural lines are likely to destroy value or underserve their customers.

We believe that, because the RBOCs have been unable to stimulate sufficient revenues in rural regions to prompt reinvestment, there has been a marked deterioration in the overall plant conditions in the low-density areas serviced by the RBOCs. Rural line consolidators have reported regularly that the plant acquired from the RBOCs requires significant repair to meet minimum service standards, which vary from one state to another and depend on the vigilance of the state utility commission. Various state public service commissions (e.g., Minnesota, Arizona, California and Oregon) have echoed the same insight about the poor condition of the RBOCs' rural plant and, in certain instances, have refused to permit sales until certain minimum standards were met by the selling RBOC. In our opinion, then, the physical plant is deteriorating in many cases, which eventually will force RBOC managements to make decisions about whether they have the will, the interest, or the capital to commit to costly rural upgrades.

In our view, because the RBOCs are investing heavily in new services in urban regions, they will make the decision that capital should not be allocated to low-density regions *because it will not generate a meaningful return for RBOC shareholders.* Accordingly, the RBOCs will limit investment in rural exchanges, and will begin to analyze what are the other costs in divesting rural lines, that is, what is the political downside in selling lines or whether there is a foregone opportunity in regions they are planning to divest. The final step of the analysis will be a consideration of how to accomplish the sales in an expeditious and orderly manner, which means how to effect sales over a period of time and in such a way as to maintain stable markets.

RBOCs are likely to limit investment in rural exchanges.

REGULATORY RELIEF FOR RBOCS UNLIKELY

Regulators and investors occasionally ask whether it would be best to give the RBOCs additional financial relief, possibly through universal service support or higher access rates, rather than pushing the companies to the inevitable disruption that occurs in sales. We believe that such a change is unlikely to develop, for several reasons.

Providing regulatory relief to RBOCs in rural regions appears to be problematic.

First, the RBOCs will remain centered on their major opportunities for growth, in our view. Regardless of the amount of capital that the urban telephone companies have available to them, the investment analysis will lead to the same conclusion — a huge demand for investment exists in the urban markets, and rural investment makes sense only if it is relatively small. We also believe the

financial community would severely punish the RBOCs' stocks if material expenditures were required in rural America.

Policymakers want more competition.

Second, the RBOCs are engaged in a competitive world that has been fostered by legislators and regulators. Support payments and more elevated rates would invite more regulatory scrutiny precisely at a time when legislators want more competition and less regulation. Moreover, as the RBOCs are likely to be viewed over the next several years as having "defeated" the CLECs and IXCs, they will not be judged as suitable recipients of increased financial support.

Specialization makes sense in rural versus urban markets.

Third, specialization in telecommunications is a healthy phenomenon, in our opinion, and makes sense when there is no case to be made for vertical/horizontal integration. In this case, the integration of urban and rural operations does not appear to be a compelling business proposition for the RBOCs, and specialization makes more sense. And no amount of government pressure is going to cause significant commitment in rural regions by large companies when there are greater opportunities elsewhere.

Rural carriers offer superior service in rural regions.

Fourth, there are, in fact, operators and investors — Alltel, CenturyTel, Citizens, Iowa Telecom, VALOR Telecom, FairPoint, Madison River, and others — that believe in focusing on rural regions. These carriers generally bring superior service to non-urban customers since they understand the rural marketplace, can generate incremental value, and *are not conflicted with the choice between urban and rural markets.*

In summary, our opinion is that the public policy system of the last century and the new demands in the present competitive marketplace will inevitably lead the RBOCs to consider divesting meaningful numbers of lines. This report does not include in its scope an explanation of the specific rural markets or other assets that the RBOCs will divest, but we believe that there are patterns to the divestiture process, which we are prepared to discuss with investors.

ANALYSIS OF RLEC OWNERSHIP OF DIVESTED RBOC RURAL LINES

Key variables in our rural model.

While we believe that the RBOCs have relatively less interest in rural America, there clearly are other investors that find the industry attractive. The reason is that there is value to be created in RLEC operations, given a certain amount of focus and the willingness to make investments. Our rural model uses a discounted cash flow (DCF) analysis that highlights the business case for consolidators of non-urban telephone assets.

The model turns on key variables that include (1) the acquisition cost (price plus rehabilitation expenses), (2) an "acquired" EBITDA margin, (3) appropriate discount rates, and (4) the opportunity for additional revenue stimulation. At the end of the discussion of the key variables, there is a brief explanation of

miscellaneous other inputs, including maintenance capital expenditures and certain growth factors in the model.

VARIABLE 1: ACQUISITION COST

Our valuation summary suggests an acquisition price per line of $3,300. The figure is used in the illustration on the basis of recent RBOC prices that averaged nearly $3,250 per line, or generally in a range of $2,700–$3,200 per line.

Total acquisition cost = price paid + rehabilitation cost.

A key tenet of our valuation analysis is that the true cost of the acquisition, however, should be viewed as the purchase price *plus whatever rehabilitation cost is necessary to restore the plant to a stable operating level.* This approach reconciles the disparity between the sale prices per line of independent RLECs (generally high-quality plant) and RBOC average rural lines (generally in need of rehabilitation). RBOC lines appear to require approximately $300–$400 each of rehabilitation costs (in 2000, the differences between independent average of $3,653 and RBOC average of $3,247; or in 1999, the difference between independent average of $3,222 and the RBOC average of $2,931). In effect, we believe that an "acquisition cost" of an independent RLEC = acquisition price of the buyer + approximately $0 in rehabilitation cost; but the "acquisition cost" of an RBOC's rural lines = price paid + *assumed rehabilitation cost of $300–$400 per line.* In our model, then, we have included estimated rehabilitation costs of $300 per line, phased in over the first two years of operations. The case studies will bear out the same insight that the condition of the RBOC rural plant is such that the purchasers report a need for a capital upgrade of $100–$400 per line over the first two years.

VARIABLE 2: ACQUIRED EBITDA MARGIN

Acquired EBITDA margins are without overhead and can be 12%–20% higher than reported EBITDA.

Our model uses an EBITDA margin that is labeled as the company's "acquired EBITDA" margin, meaning an incremental margin that might be expected from the acquired properties, assuming that allocated corporate overhead as reported in the FCC data remains with the selling company, and the purchaser already has the necessary corporate overhead and back-office systems. In other words, certain costs may not have to be duplicated once the acquired lines are leveraged with the existing RLEC's operations. Examples of these costs include executive salaries, marketing, back-office operations, and other charges. In certain cases, the RLEC must add overhead because the RLEC is starting its operation and is not able to leverage other operations. As a result of these factors, the acquired EBITDA margin can be significantly higher than the fully allocated telco EBITDA margins that the acquirer has been generating in its other properties. We estimate that acquired margins can be approximately 12%–20% higher than the reported EBITDA margin, based on the studies of various acquisitions. Therefore, for purposes of our model, an acquired EBITDA margin of 67% is used, calculated as a base EBITDA margin of 55% (consistent with the publicly traded RLECs) plus 12% (based on efficiencies and higher-margin services).

Our model conservatively phases in the acquired EBITDA margin over the first three years of operations, to allow for some integration expenses, and leaves the margin unchanged in following years, although we believe that the companies can continue to drive margin expansion. Additional margin improvement may be possible through focus on costs, lower capex expenses and higher-margin revenue products. These margin improvements are not factored into our "acquired margin." In the "Four Case Studies" section, there is a test of the return on investment on the basis of some margin expansion but, importantly, it is based on incremental improvements to the "acquired margin."

VARIABLE 3: DISCOUNT RATE (COST OF CAPITAL)

Our model uses a discount rate set at 11% for equity and 7.5% for debt, with a 60%–40% debt-to-equity mix.

Our model assumes that the after-tax cost of capital for a rural telephone company is in a range of approximately 6.0%–12.5%, or approximately 8.25%–13.00% on a pretax basis. The rate is calculated on the basis of the 19 publicly traded rural telephone companies that we track, with the upper part of the range primarily reflecting higher risk exposures to wireless ventures. The final section of this report offers some additional insights into calculating weighted average cost-of-capital for a rural telephone company. For the purposes of our generic model, we have assigned an after-tax discount rate of roughly 7%, applying assumptions of 60%–40% for debt and equity as a percentage of total capitalization. We note that the "Financing RLEC Acquisitions" section of this report highlights the use of increased leverage in acquiring rural access lines, and the potential for generating significantly higher returns on investment than those presented in our model, clearly with a higher degree of risk.

VARIABLE 4: REVENUE STIMULATION

Revenues vary widely from one rural market to another and typically are $45–$80 per line per month.

Revenues are arguably the major wild card in a rural acquisition, as the buyer believes that, while there is an opportunity to control costs, the most attractive prospects are for revenue stimulation. Analysis of an acquisition will turn on future opportunities, but generally begin with initial revenue streams that vary widely from one property to another.

Our research suggests that monthly revenues in rural telephone properties are typically $45–$80 per line, or $540–$960 per line/year, derived from charges for basic local service, long-distance calling (interstate and intrastate), vertical service products, interstate and intrastate origination/termination charges (access) paid by the long-distance provider, Universal Service support (from states or federal sources) and other miscellaneous products.

Revenue Enhancements

The key input metric for the rural line purchaser is not the revenue per line as reported by the RBOC, but, rather, the assumed revenue per line received by the RLEC after the properties are assimilated. This distinction is fairly obvious, but we point out that our model is driven by the revenues generated by the acquirer.

A new company may be eligible for higher access rates, or may stimulate revenues by aggressively marketing long-distance products (which the RBOCs presently cannot offer in most regions) and vertical services.

Vertical Services

Vertical services can be most profitable and an immediate source of higher revenues.

The most profitable and immediate method for increasing rural line revenues is to drive penetration of vertical services — call waiting, caller ID, voice mail, etc. In fact, rural consolidators have been reporting that the software and capacity to offer vertical services frequently are found on the acquired switches, but the services have not been enabled or marketed in many of the RBOC exchanges.

Table 3 summarizes vertical services penetration and monthly revenues per line at the RBOCs and independent RLECs, including our estimate of performance at a well-focused operator. For modeling purposes, we have conservatively estimated that increased penetration of vertical services could add $2 per line/month in revenues.

Table 3: Vertical Services at RBOCs and RLECs

	Penetration Rates		
	Voice Mail	Call Waiting	Caller ID
RBOC total — urban and rural lines	17.5%	28.0%	39.0%
Estimated RBOC rural lines	1.0%	15.0%	9.0%
Independent average	12.5%	37.0%	25.0%
Avg. Retail Rates	$6.00	$2.50	$6.00

Source: Company data; Legg Mason Wood Walker, Inc.

Investors often ask why the RBOCs do not take advantage of the opportunity. The answer likely relates to the RBOCs' overall lack of focus on rural areas. The companies profiled in the "Four Case Studies" section note that there are different methods for marketing in rural communities that appear to require personnel and community presence that the RBOCs simply do not have.

Additional Line Penetration

Second line penetration rates often are low.

Rural consolidators can drive higher revenues by increasing the penetration of second telephone lines for voice and data use. **Table 4** summarizes approximate second-line penetration rates and monthly revenues at the RBOCs and RLECs. Focused rural operators, such as Commonwealth Telephone, report second-line penetration rates as high as 36%. To be conservative, our model includes an increase of $1 per line/month in revenue based on higher penetration of second lines.

Table 4: Second/Additional Lines at RBOCs and RLECs

	Penetration Rates Second/Additional Lines
RBOC total — urban and rural lines	19.7%
Estimated RBOC rural lines	4.0%
Independent average	10.0%
Avg. Retail Rates	$5-$10

Source: Company data; Legg Mason Wood Walker, Inc.

Long-Distance Services

Long-distance service can add $6.50 per month.

Currently, the most immediate method for increasing revenues is through adding long-distance services. At the present, the regional Bell companies are prohibited from offering in-region interLATA telephone services in most of their states, but they are allowed to offer toll or intraLATA calls. As a result, in the service areas covered by our case studies, the average long-distance revenue per access line has been approximately $1–$3 per month. By contrast, at the larger publicly traded RLECs, long-distance average revenues per line are approximately $6.50 per month, with significant room to grow, in our opinion.

Table 5 offers a perspective on the long-distance opportunity when an independent operator acquires RBOC rural lines. CenturyTel and Citizens report that long distance is the first source of higher revenues. Our model assumes relatively modest incremental long-distance revenue of $4 per line per month.

Table 5: Long-Distance RLEC Revenues and Penetration

	Penetration Rate	Avg. Revenue Per Month Per Line
RBOC Rural Line	0%	NA
CenturyTel Legacy Lines	23.0%	$22.96
CT Communications	67.7%	$13.38
Telephone and Data Systems	14.5%	NR

Source: Company data; Legg Mason Wood Walker, Inc.

Access Charges

Access rates can be raised to 2x–5x the RBOC rate.

Access rates (paid by long-distance carriers for origination or termination of long-distance calls) are set at the interstate level by the FCC and are applied to traffic that crosses state boundaries. It is possible for a rural company that is rate-of-return to have its rates raised from a price-capped level that is as low as $0.0055 per minute to a rate that is several times higher.

Access rates for intrastate traffic are determined by the respective state public service commissions. State rates are confusing, can be defined differently from one state to the next, and can vary widely even among exchanges in a single state. Rates can be raised by mirroring interstate rate-of-return rates that are set at higher levels or by filing rate cases before the state commission.

Table 6 highlights the differences in interstate blended access rates that existed in 1999, including the specific information for divested GTE and U S West properties considered in the "Four Case Studies" section of this report. While the interstate rates were modified in 2000, the intrastate rates continue to reflect the variability that is comparable to the 1999 interstate rates.

Table 6: Selected Interstate Access Rates for 1999

Parent Company		Originating	Terminating
Ameritech		$ 0.0131535	$ 0.0131535
Bell Atlantic		$ 0.0147968	$ 0.0147968
BellSouth		$ 0.0199186	$ 0.0150316
GTE	Contel Calif - Arizona	$ 0.0272806	$ 0.0107396
	Contel Arizona	$ 0.0436829	$ 0.0299906
	Contel Kansas	$ 0.0436829	$ 0.0299906
	GTE Arkansas	$ 0.0436829	$ 0.0299906
	Contel California	$ 0.0305096	$ 0.0139686
	GTE of California	$ 0.0320661	$ 0.0155251
	West Coast Tel of California	$ 0.0320661	$ 0.0155251
	GTE North-Illinois	$ 0.0430032	$ 0.0207562
	Contel Illinois	$ 0.0430032	$ 0.0207562
	GTE South-Illinois	$ 0.0418233	$ 0.0195763
	GTE North-Iowa	$ 0.0473990	$ 0.0341367
	Contel Iowa	$ 0.0473990	$ 0.0341367
	Contel Kansas	$ 0.0473990	$ 0.0341367
	Contel Minnesota	$ 0.0547997	$ 0.0476976
	GTE North-Minnesota	$ 0.0547997	$ 0.0476976
	GTE North-Missouri	$ 0.0343933	$ 0.0165186
	GTE Kansas	$ 0.0343933	$ 0.0165186
	Contel Missouri	$ 0.0343933	$ 0.0165186
	GTE Nebraska	$ 0.0456473	$ 0.0283810
	GTE New Mexico	$ 0.0369034	$ 0.0149615
	Contel New Mexico	$ 0.0369034	$ 0.0149615
	GTE Oklahoma	$ 0.0342136	$ 0.0193886
	GTE Texas	$ 0.0372610	$ 0.0179160
	Contel Texas	$ 0.0372610	$ 0.0179160
	GTE Wisconsin	$ 0.0414807	$ 0.0221023
	Total GTE Average	$ 0.0377842	$ 0.0225947
NYNEX		$ 0.0127987	$ 0.0127987
SBC		$ 0.0171249	$ 0.0156663
Sprint		$ 0.0325783	$ 0.0226109
U S West	U S West, Inc. - Arizona	$ 0.0161698	$ 0.0160918
	U S West, Inc. - Colorado	$ 0.0162037	$ 0.0161257
	U S West, Inc. - Idaho	$ 0.0162974	$ 0.0162194
	U S West, Inc. - Iowa	$ 0.0176584	$ 0.0175804
	U S West, Inc. - Montana	$ 0.0186081	$ 0.0185301
	U S West, Inc. - Nebraska	$ 0.0164335	$ 0.0163555
	U S West, Inc. - North Dakota	$ 0.0166939	$ 0.0166159
	U S West, Inc. - Wyoming	$ 0.0154312	$ 0.0153532
	Total U S West Average	**$ 0.0166026**	**$ 0.0165246**
NECA Average Schedule		**$ 0.0442810**	**$ 0.0475810**
U.S. RBOC, Sprint and GTE AVERAGES		**$ 0.0278443**	**$ 0.0194901**

Source: FCC; Legg Mason Wood Walker, Inc.

Support Payments

There are significant limitations on increases in support payments.

As will be explained more fully in the "Regulatory Views" section, there are strict limitations that prohibit an acquirer of lines from receiving more federal Universal Service support simply because of the transfer of ownership in a rural telephone property. The rules have been upheld in the FCC's most recent Order on Universal Service in 2001. However, there is a potential for very modest support related to "Safety Net" payments, which are for extraordinary levels of investment, or related to "Safety Valve" payments, which are for loop investments after the first year of new ownership.

In our view, the investment case should be made on the merits of the operation at the present rather than assuming new regulatory relief. We do not anticipate a material change in the regulatory regime in the near future.

Other Sources of Revenue Growth

There are a variety of other sources of revenue growth, including Internet service provider (ISP) products, digital subscriber line revenues, data services, DSL, directory assistance and publishing operations. This report will detail some of the data services and DSL opportunities in the "Four Case Studies" and "Rural Infrastructure" sections.

With respect to directory and publishing services, it is noteworthy that the larger rural players have been able to generate 10%–12% publishing sales growth per year, based on new services, including Web-based assistance and advertising, as well as through the traditional yellow pages. While we believe that the RLECs will be able to drive additional revenues through directory products and other services, we have not modeled any revenue increase into our generic model for these incremental opportunities.

MISCELLANEOUS VARIABLES

Several miscellaneous variables in our model merit comment, related to maintenance capital expenditures, line growth and inflation.

Maintenance Capital Expenditures Per Line

Capital expenditures are modeled at $12 per line per month.

Capital expenditures per month are set in our DCF model at $12 per line, *excluding the potentially significant rehabilitation expenditures that are needed immediately or in the first several years to bring the plant up to an acceptable operating level.* Again, the rehabilitation expenses are accounted for in the "acquisition cost." The estimate of the maintenance capital expenditures in our model is consistent with the operating history of the 19 publicly traded RLECs. We note that the historical RBOC capex may be below $12 per line/month in rural regions, as suggested in the "Four Case Studies" section in which there are reports of very high total depreciation (approximately 60%) as a percent of total assets in divested properties. By comparison, the RBOCs report approximately 54% depreciation as a percent of

total — urban and rural — local telephone plant. We estimate that the urban RBOC plant is about 52% depreciated and rural plant is generally close to 60%.

Rural Access Line Growth and Inflation Factors

Our model includes a rural access line growth factor to represent organic growth in rural access lines. We believe that the estimate of 3.0% is conservative, as typical growth rates for rural access lines have been 3%–7%, depending on the economic growth in the service region and the marketing efforts of the incumbent telephone company. Additionally, the model includes a 1% inflation factor, which accounts for modest revenue increases resulting from minor new product introductions during the period being valued (overall rate increases are unlikely).

Terminal Multiple

The model's terminal multiple applied to EBITDA in the final year is set at 8.0x, which is generally below the multiples that strategic and financial investors have been paying for rural properties. Over the last five years, purchasers of rural properties have paid approximately 7x–12x trailing EBITDA, with a line-weighted average of about 9.5x trailing EBITDA. To calculate those EBITDA figures, the data were derived from sales in which (1) acquisition prices were announced, (2) EBITDA was disclosed, and (3) the acquisition included only rural lines; that is, there were no other assets such as wireless operations.

Our model uses a terminal multiple of 8.0x, which is lower than the line-weighted average of recent RLEC sales.

SUMMARY COMMENTS ON MODELED REVENUE PER LINE

Our DCF model assumes a baseline monthly revenue of $55 per line/month in an acquisition of a rural property from a seller — RBOC or independent — and adds modest incremental revenues for vertical services, second-line penetration, long distance, incremental access rates of approximately $0.004 (to $0.0095 from $0.0055) per minute and no change in universal service support payments. The result could be revenue stimulation of an additional $10 per line per month. The model uses a forward expectation of $65 in revenue per line/month, conservatively phased in over a three-year period, consistent with the total ILEC per-line figures reported by Citizens ($64) and CenturyTel ($70).

Potential to stimulate $10 per line monthly in revenues.

Table 7: Reconciliation of Monthly Incremental Revenues per Line

	Estimated Monthly Revenues
RBOC Revenue/Line/Month	$55.00
Add:	
Increased Vertical Services Penetration	$2.00
Additional Line Penetration	$1.00
Long Distance Service	$4.00
Access Revenues	$3.00
Revenue/Line/Month - as Modeled	**$65.00**

Source: Legg Mason Wood Walker, Inc.

Our discounted cash flow model is summarized in **Table 8**, which represents in this generic example that the rural property should be assigned a present value of $3,757 per acquired access line. Subtracting the average acquisition cost of $3,300 per line, the net present value is $457, which is a return on invested capital of 13.8%.

Table 8: Legg Mason Rural Acquisition DCF Model

Financial Model	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
Revenue/line/year	585	690	811	844	877	912	949	987	1,026	1,067	1,110	1,155	1,201
EBITDA	333	439	544	565	588	611	636	661	688	715	744	774	805
Acquired EBITDA Margin	57.0%	63.7%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%
- Depreciation/Amortization	223	248	275	284	296	308	320	332	344	356	368	380	190
EBIT	111	190	269	282	292	304	316	330	344	360	376	394	615
EBIT Margin (Calculated)	18.9%	27.6%	33.1%	33.4%	33.3%	33.3%	33.3%	33.4%	33.5%	33.7%	33.9%	34.1%	51.2%
- Cash Taxes on EBIT	(42)	(72)	(102)	(107)	(111)	(115)	(120)	(125)	(131)	(137)	(143)	(150)	(234)
- Capital Upgrades/line/year	(144)	(145)	(147)	(148)	(150)	(151)	(153)	(154)	(156)	(157)	(159)	(161)	(162)
- Rehab Costs	(150)	(150)	-										
= Free Cash flow/line/month	-$3	$71	$295	$310	$327	$345	$363	$382	$401	$421	$442	$463	$409
Terminal Value													3,270
Total Cash Flows	-$3	$71	$295	$310	$327	$345	$363	$382	$401	$421	$442	$463	$3,679

Acquisition price per line plus rehabilitation costs = $3,600		Model Assumptions			
		Terminal EBITDA Multiple	8.0x	Inflation Adjustment	1.0%
Model Output		Discount Rate	7.2%	Tax Rate	38.0%
Present Value	$3,757	Divisional EBITDA Margin	67.0%	Cost of Equity	11.0%
Less: acquisition price/line	$3,300	Revenue/Line/Month	$65	Cost of Debt	7.5%
Net Present Value	$457	CAPEX/Line/Month	$12	% Debt	60.0%
Return on Investment	13.8%	Growth Rate for Lines	3.0%	WACC	7.2%

Source: Legg Mason Wood Walker, Inc.

Clearly, this report assigns a different valuation to access lines owned and operated by the RBOCs and those owned and operated by rural telephone companies. The RBOC valuation (present value of cash flows in a range of $127–$975) versus the generic model under the RLECs' control (present value of cash flows of $3,757) is driven mainly by the RLECs' ability to increase revenue per line and improve margins.

Valuation Depends on Assumptions about Key Variables

Valuations of $2,200–$4,300 including rehabilitation costs can be expected.

The value per line can vary widely, based on a number of variables. Two of the most important drivers are revenues per line and the margins that the operations can be expected to generate. To better understand the variance in acquisition prices that a purchaser may be willing to pay, **Table 9** includes a matrix that is driven off monthly revenues per line and the level of the expected EBITDA margin. The table highlights that valuations can reasonably be in a range from $2,192 per line to $4,279 per line depending on the assumptions about revenues and the acquired EBITDA margin. For example, assuming $300 in rehabilitation costs, revenue/line/month of $65, an acquired EBITDA margin of 67%, and a 12% desired ROI, an acquirer of lines could potentially pay $3,354 per access line, and the all-in price (sale price plus rehabilitation cost) is approximately $3,654 per line in this illustration.

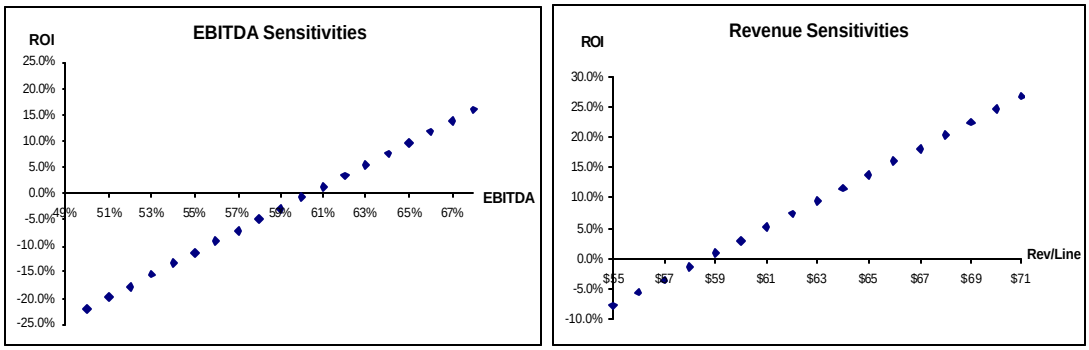
Table 9: Valuation Matrix Based on Revenues and Margins

Acquired EBITDA Margin	Revenue/Line/Month																	
	$55	$56	$57	$58	$59	$60	$61	$62	$63	$64	$65	$66	$67	$68	$69	$70	$71
56%	2,140	2,193	2,246	2,300	2,353	2,406	2,460	2,513	2,567	2,620	2,673	2,727	2,780	2,833	2,887	2,940	2,993
57%	2,192	2,246	2,301	2,355	2,409	2,464	2,518	2,572	2,627	2,681	2,735	2,789	2,844	2,898	2,952	3,007	3,061
58%	2,244	2,300	2,355	2,410	2,466	2,521	2,576	2,631	2,687	2,742	2,797	2,852	2,908	2,963	3,018	3,073	3,129
59%	2,297	2,353	2,409	2,466	2,522	2,578	2,634	2,690	2,747	2,803	2,859	2,915	2,971	3,028	3,084	3,140	3,196
60%	2,349	2,406	2,464	2,521	2,578	2,635	2,692	2,749	2,807	2,864	2,921	2,978	3,035	3,092	3,150	3,207	3,264
61%	2,402	2,460	2,518	2,576	2,634	2,692	2,750	2,809	2,867	2,925	2,983	3,041	3,099	3,157	3,215	3,273	3,332
62%	2,454	2,513	2,572	2,631	2,690	2,749	2,809	2,868	2,927	2,986	3,045	3,104	3,163	3,222	3,281	3,340	3,399
63%	2,507	2,567	2,627	2,687	2,747	2,807	2,867	2,927	2,987	3,047	3,107	3,167	3,227	3,287	3,347	3,407	3,467
64%	2,559	2,620	2,681	2,742	2,803	2,864	2,925	2,986	3,047	3,108	3,169	3,230	3,291	3,352	3,413	3,474	3,535
65%	2,611	2,673	2,735	2,797	2,859	2,921	2,983	3,045	3,107	3,169	3,231	3,293	3,354	3,416	3,478	3,540	3,602
66%	2,664	2,727	2,789	2,852	2,915	2,978	3,041	3,104	3,167	3,230	3,293	3,355	3,418	3,481	3,544	3,607	3,670
67%	2,716	2,780	2,844	2,908	2,971	3,035	3,099	3,163	3,227	3,291	3,354	3,418	3,482	3,546	3,610	3,674	3,737
68%	2,769	2,833	2,898	2,963	3,028	3,092	3,157	3,222	3,287	3,352	3,416	3,481	3,546	3,611	3,676	3,740	3,805
69%	2,821	2,887	2,952	3,018	3,084	3,150	3,215	3,281	3,347	3,413	3,478	3,544	3,610	3,676	3,741	3,807	3,873
70%	2,873	2,940	3,007	3,073	3,140	3,207	3,273	3,340	3,407	3,474	3,540	3,607	3,674	3,740	3,807	3,874	3,940
71%	2,926	2,993	3,061	3,129	3,196	3,264	3,332	3,399	3,467	3,535	3,602	3,670	3,737	3,805	3,873	3,940	4,008
72%	2,978	3,047	3,115	3,184	3,253	3,321	3,390	3,458	3,527	3,596	3,664	3,733	3,801	3,870	3,939	4,007	4,076
73%	3,031	3,100	3,170	3,239	3,309	3,378	3,448	3,517	3,587	3,656	3,726	3,796	3,865	3,935	4,004	4,074	4,143
74%	3,083	3,153	3,224	3,294	3,365	3,435	3,506	3,576	3,647	3,717	3,788	3,858	3,929	3,999	4,070	4,140	4,211
75%	3,135	3,207	3,278	3,350	3,421	3,493	3,564	3,636	3,707	3,778	3,850	3,921	3,993	4,064	4,136	4,207	4,279

Source: Legg Mason Wood Walker, Inc.

Appendix 1 offers sensitivity analyses with a more detailed examination of the effects of changing the various model inputs by relatively small increments. The studies in the appendix reinforce that revenues and margins remain the critically important variables in determining value. A focused view of the sensitivity analysis is represented in **Figure 4**, illustrating the calculated return on investment against revenue changes and EBITDA margin changes. The illustrations underscore that modest additions to the revenue line, or even more so, a 1%–5% change in the acquired EBITDA margin, can increase the investment returns of the rural operations significantly. The "Four Case Studies" section highlights that the consolidators are focused first on margin improvement, and then on higher revenue streams.

Figure 4: Sensitivity Graphs



Source: Legg Mason Wood Walker, Inc.

VALUATION AUGMENTED BY ENHANCED SERVICES

We believe that there will be other meaningful opportunities for rural carriers' revenue enhancements in the near future. Most of those emerging prospects are premised on investment and provision of broadband services for businesses and residential customers. Our model does not include any variables for these opportunities, which are not well defined with respect to costs or revenues.

Broadband services could double revenues and EBITDA per line.

At the same time, it is notable that rural operators are beginning to deploy high-bandwidth services that, in some instances, are generating $50+ per line per month. Penetration rates for DSL services in certain independent telephone companies' properties are rising to 4%, which is well ahead of the statistics reported by the RBOCs. Some of those rural and urban telecommunications companies contend that margins could be comparable with those generated by ILECs in their wireline properties, suggesting that there could be an approximate doubling of revenues and EBITDA for some lines.

We are not assuming any high-bandwidth growth.

In order to gain insight into the opportunity, this report devotes part of the "Rural Infrastructure" section to studies of two small communities — one with 3,000 lines and the other with 30,000 lines. The 3,000-line case appears to be problematic, as infrastructure costs are high in the study, but it remains possible that equipment costs will fall or that some better clustering of opportunities could generate a more appropriate return.

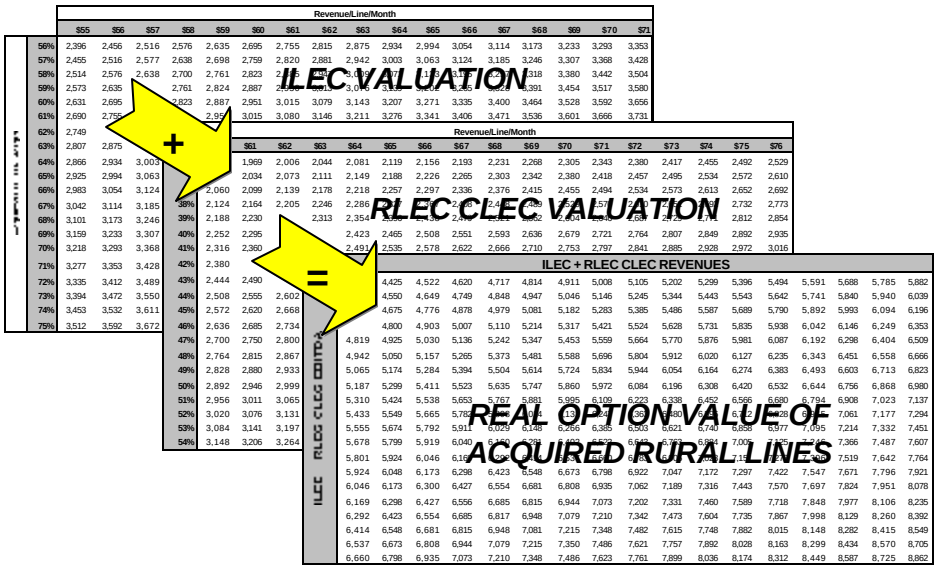
While we are not including the high-bandwidth growth in the modeling, it is notable that legislators, regulators and equipment vendors continue to work aggressively to make the opportunity real. The investor should note, therefore, that other, possibly meaningful, revenue streams could be factored into the analysis.

Additionally, as depicted in **Figure 5**, an argument could be made for significantly higher per-line valuations based on the "real option" potential for acquired rural lines. By purchasing rural access lines from the RBOCs, the rural operator also is acquiring the capacity, or the "option," to provide RLEC CLEC services in edge-out markets that often have more attractive customer demographics (higher penetration of multiline business customers, denser markets, more affluence) than the acquired rural territory. Commonwealth Telephone, a rural service provider headquartered in Dallas, Pennsylvania, is a good example. Commonwealth provides edge-out CLEC service in Verizon's incumbent territories that are geographically adjacent to Commonwealth's ILEC. The company has a strong and rapidly growing ILEC with 320,000 lines, generating a 60%+ EBITDA margin. The company also owns a rural CLEC operation with approximately 105,000 edge-out CLEC lines that are currently providing EBITDA margins in excess of 20%. The company anticipates that its CLEC lines ultimately will provide margins that are comparable to its ILEC operations. Effectively, Commonwealth has augmented its growth dramatically, as its 1996–2000 compound annual growth in lines rose from the ILEC-only rate of 7.1% to a total rate of 14.5% (ILEC + CLEC lines). More pointedly, the ILEC added 75,414 lines in the four-year period, while the CLEC added 97,174 lines at an average capex of $1,700 per line.

By acquiring rural lines, operators are obtaining the "real option" to provide edge-out CLEC service in attractive adjacent markets.

In our view, CLEC operations and data opportunities, including DSL, provide meaningful upside potential to the valuation we outline in this document.

Figure 5: Real Option Value of Acquired Rural Access Lines



Source: Legg Mason Wood Walker, Inc.

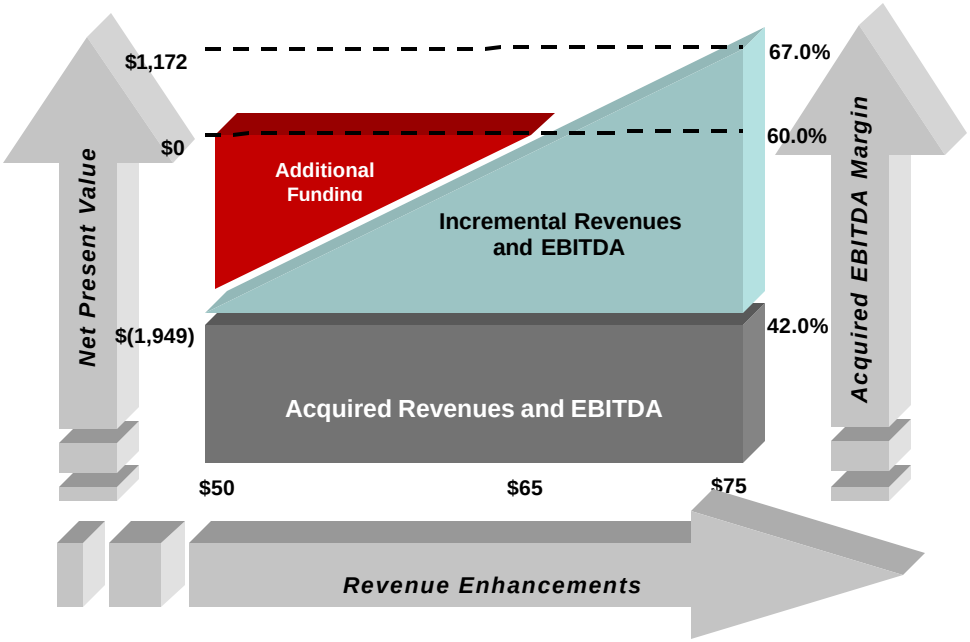
We are convinced that there will be meaningful consolidation in the rural industry over the next 10 years, and that consolidation already has begun. The pace of line sales has increased and prices have been rising as more consolidators have begun to view the rural telephone industry as attractive.

In particular, we believe that there might be as many as 10 million–30 million RBOC lines divested, as those companies further analyze the significant difference in value between retaining rural access lines and divesting them. As a result, we expect investors to focus on acquiring, operating and generating new value in rural telephony.

Significant consolidation is likely, in our view, as rural lines are purchased by rural consolidators that are able to generate high returns.

Figure 6 summarizes the key financial perspectives in this "Thematic Overview" section, illustrating the graduated differences in return on investment beginning with a rural operator — possibly an RBOC — based on average revenues per line of $50 per month and a 42% EBITDA margin (estimated RBOC average). If the acquirer were to complete the acquisition for $3,300 per access line, and operate the lines "as received," the negative NPV generated of $1,949 would be unacceptable. However, by increasing the revenue per line to $65 per month, with a 60% acquired EBITDA margin (that is, leveraged on previously existing operations), the NPV reaches $0, or break-even. Illustrating the opportunity if there are further improvements, assuming that revenues per line rose to $75 and the acquired EBITDA margin expanded to 67%, the NPV could increase to $1,172. The figure also includes a wedge that illustrates a shortfall in achieving acceptable returns; if additional monies were available from regulatory sources (rates or USF), this shortfall might be reduced, but the acquirer should be cautious about assuming too much.

Figure 6: Integration of Acquired Lines



Source: Legg Mason Wood Walker, Inc.

This first section presents the overall framework for viewing the changing industry. The next section, "Four Case Studies," attempts to clarify whether this framework is consistent with major acquisitions presently under way. Then, the report turns to specific issues in the consolidation process, including regulatory challenges, infrastructure options and financing approaches.

This Page Intentionally Left Blank

FOUR CASE STUDIES

Pace and prices of line sales have risen over the last years.

Study of CenturyTel, Citizens, Iowa Telecom, and VALOR.

Four sizable consolidations of rural RBOC lines are currently under way at companies that especially understand the rural telephony business — CenturyTel, Citizens Communications, Iowa Telecom and VALOR Telecom.

The first company, CenturyTel, may be the most accomplished at integrating acquisitions as proved by a 50-year history in which the company has regularly added lines purchased from other independent telephone operators. In 2000, CenturyTel completed the purchase of 491,000 lines from GTE/Verizon in Arkansas, Missouri and Wisconsin.

The second company, Citizens Communications, has reshaped its management team, transformed its operating strategy, and acquired the largest number of customers — approximately 1.6 million rural lines, excluding the 540,000 lines the company decided not to acquire from U S West/Qwest in July 2001. Citizens has increased the size of its ILEC operation from 170,000 lines five years ago, to approximately 2.4 million lines currently.

Iowa Telecom is a newly created company based on Iowa Network Services, which itself is a consortium of 128 independent Iowa local phone companies; Iowa Telecom purchased and now operates approximately 285,000 Iowa lines previously owned by GTE. And, finally, VALOR is the creation of financial investors who are relying on a set of experienced local telecommunications professionals to integrate and manage more than 550,000 lines in Oklahoma, Texas and New Mexico.

FUNDAMENTAL SIMILARITIES AMONG FOUR STUDIES

All four have acquired GTE lines and expect similar revenue opportunities.

While the companies have many differences, the four acquirers have a fundamental similarity — they are representing to their investors (private and public) that the purchases represent new value creation as the acquired properties are upgraded. The companies have other similarities, as they are all purchasing GTE lines, and, in one case, additional lines from other sellers. And the acquirers are all focused on a plan for stimulating new revenues through the same products — vertical services, long-distance applications, ISP services, better business

features, digital subscriber line services and competitive local exchange initiatives in neighboring regions.

KEY DISTINCTIONS EXIST

The four cases also are marked by key distinctions that allow the investor to appreciate the complexity of the purchase and integration processes. The cases highlight the issues arising from differences in the state of the plant, the strategies and strengths of the acquirers, the response of the competitors to the sale process, and the distinct regulatory frameworks.

Key distinctions allow the investor to understand the complexity of the purchase process.

OVERVIEW OF FOUR STUDIES

Table 10 and **Table 11** summarize the acquisitions outlined in this section, highlighting key issues. The two tables summarize fundamental facts about the four acquisitions — the financial terms, pertinent regulatory issues, condition of the plant at the time of acquisition, the subsequent upgrades, and operating data. The case studies expand upon what is distilled in the table.

We also have included data from the U S West/Qwest transaction, which was to have been another 540,000 lines acquired by Citizens. We had analyzed the transaction for inclusion in this report, but the deal was terminated in July 2001. We considered dropping the information but decided to retain the commentary in our report because we believe the aborted acquisitions add unique insight into one RBOC's approach to the sale process and the plans of Citizens in rearchitecting that network, had the transaction been consummated. None of the other acquisitions afford the same insights. The reader will note that we carefully indicate in the tables, figures, and text that the U S West/Qwest transaction did not occur, except in the case of Citizens' acquisition of some of Qwest's North Dakota lines. We have heard that the Qwest lines may still be for sale.

The U S West/Qwest – Citizens transaction, although terminated, is analyzed in our report because of unique insights that can be gained.

After the summary tables, we have included four pages of valuable 1999 data — **Table 12** through **Table 15** — that are gleaned from FCC filings, allowing us to profile the assets and operating statistics for each of the acquisitions. The statistics include kinds of lines (PBX, Centrex, switched, business analog, digital, etc.), interstate and intrastate minutes of use, assets such as switches and cabling data (aerial, underground, buried, interoffice, miles, etc.), and various line items of revenues and expenses. The tables provide a wealth of insight into the specific properties and how they compare with the other acquisitions studied in this report.

Table 10: Summary of Key Issues in Acquisitions

	CenturyTel	Citizens *	Iowa Telecom	VALOR Telecom
Basic description				
Seller	GTE	GTE/U S West/Frontier	GTE	GTE
Acquisition location	AR, MO, WI	GTE: AZ, CA, IL, MN, NE; USW: ND, *AZ, CO, ID, IA, MN, MT, NE, WA, WY;* FRO: AL, GA, IL, IN, IA, MI, MN, MS, NY, PA, WI	IA	NM, OK, TX
Number of lines	491k lines (231k in AR, 127k in MO, 133k in WI)	2,082k lines (GTE: 440k, *USW545* , 1,097k from Frontier); 1.6 million lines at close (excluding 540k Qwest lines.)	285k	550k (100k in NM, 125k in OK, 325k in TX)
Number of exchanges	289 (105/107/77)	GTE:302; USW:167; FRO:NA	296	260 (36/27/197)
Avg # of lines/exchange	1,699	GTE:1,457; USW:3,261; FRO:NA	963	2,077
Number of study areas	6 (3/1/02)	GTE: 6; USW:10; FRO: 31	3	5 (2/1/2)
Avg # of lines/study area	81,833	GTE: 73,330; USW: 54,500; FRO: 34,580	95,000	108,000
Date acquisition announced	AR/MO: 6/29/99; WI: 8/19/99	GTE AZ,CA,MN: 5/27/99; USW: 6/16/99; GTE NE: 9/21/99; GTE IL: 12/16/99; FRO: 6/12/00	7/99	TX/NM: 9/7/99; OK: 10/99
Date acquisition completed	AR/MO: 7/31/00; WI: 9/29/00	GTE MN: 8/31/00; GTE NE: 9/21/99; GTE IL: 11/30/00; GTE AZ/CA: Proj. 3Q01; FRO: 6/30/01; USW: transaction cancelled except ND that closed 10/31/00	6/30/00	OK: 7/1/00; NM/TX: 9/1/00
Financial data				
Total price (millions)	$365 for WI, $290 for MO, $843 for AR, $1,498 total	$1,171 for GTE, *$1,650 for U S West*, ($38 million-ND), $3,368 for Frontier, $6,321 total	Apprx. $950 million (LM estimate)	$942-TX, $317-NM, 420-OK, $1,679 total
Price per line at time of completion	$2,737 for WI, $2,291 for MO, $3,567 for AR, $3,052 total	$3,078 for GTE, *$2,235 for U S West*, $3,071 for Frontier, $3,063 total	$3,200-$3,500 (LM estimate)	$2,898 for TX, $3,170 for NM, $3,360 for OK, $3,053 total
Investors	JV w/ Spectra in MO (CTL 57% fully diluted interest), JV w/ Telephone USA Investments for 61,600 lines in WI (CTL 89% interest), all other wholly owned	All properties wholly owned	Iowa Network Services [INS] (128 independent Iowa telcos), ING Furman Selz	Welsh Carson Anderson & Stowe, Hispanic Investor Coalition, Vestar Capital Partners, Citicorp Venture Capital
Source of funds	$900 million from Senior Notes (500 @ 8.375% Series H, due 2010 and 400 @ 7.75% Remarketable Series I, due 2012), Short term, Cash from operations and asset sales	$6 billion in various forms including mandatory convertible debt, revolving bank lines of credit, straight bonds, newly issued common equity, asset sales (see Financing section)	Equity & debt from both INS and ING Furman Selz	Equity & debt from various investors

* Italics represent Citizens' terminated bid to purchase 540,000 U S West/Qwest lines.
Source: Company data; Legg Mason Wood Walker, Inc.

Table 11: Summary of Key Issues In Acquisitions (continued)

	CenturyTel	Citizens *	Iowa Telecom	VALOR Telecom
Regulation				
State	Rate of return	Price cap	Price cap	Price cap
Public service commission(s)	Arkansas Public Service Commission, Missouri Public Service Commission, Public Service Commission of Wisconsin	Various (19 states)	Iowa Utilities Board	New Mexico Public Utility Commission, Oklahoma Corporation Commission, Texas Public Utility Commission
Interstate	Rate of return	Price cap	Price cap	Price cap
Interstate subsidies at acq. /line/month	AR: $4.54; MO: $0.00; WI: $0.09	GTE: $0.49; USW: $0.02; FRO: $0.89 (blended rates)	None	NM: $3.64; OK: $2.05; TX: less than $0.42
Interstate access rates at acq.	AR: $0.019347	Various (19 states)	N/A	N/A
Concessions to acquire properties	None	Minimal (some infrastructure concessions to support CLECs in MN)	Nonbinding voluntary only to provide dial-up ISP access	DSL in exchs > 5,000 lines & w/ bona fide demand >= 75 lines
Comments	Rate issues in Wisconsin will be important to watch; CTL still looking for opportunities to buy at a reasonable price	CZN obvious company to watch; CEO Tow says CZN aiming at 5 million lines; look for property swaps and JV players to strengthen CZN's operations and capital base	Regulatory change possible for Iowa Telecom, but not likely near term	DSL deployment key; watch for further consolidation in nearby states and TX
Infrastructure				
Condition of plant at acquisition	Good plant in AR; lesser quality in MO and WI	FRO good; GTE mixed; USW poor	Above GTE average	Good in NM, OK/TX average to good
Switches	Acq. 86 GTE GTD5-EAX; 123 NT DMS 10/100/200; 51 Siemens S-C DCO; 15 Vidar ITS4/5	Acq. 41 GTE GTD5-EAX (20 w/o Qwest lines), 255 NT DMS 10/100/200 (171 w/o terminated Qwest lines), *62-Ericsson* (2 in ND), 17 Vidar, 75 Siemens S-C DCO	Acq. 78 GTE GTD5-EAX; 197 NT DMS 10/100/200; 5 Siemens S-C DCO; 14 Vidar ITS5	Acq. 45 GTE GTD5-EAX; 147 Nortel DMS 10/100/200; 70 Siemens S-C DCO
Annual plan for upgrade	$150 per line annually	$200 per line annually	N/A	See text for 5-yr plan
Operating data				
Rev/line/month at acq.	$57.00 (blended avg.)	$51.50 (avg.)	$53.44	$60.20 (avg.)
Bus. % of lines	22.0%	25.0%	22.2%	26.5%
Special access % of lines	<11.0%	<12%	7.3%	<12%

* Italics represent Citizens' terminated bid to purchase 540,000 U S West/Qwest lines.
Source: Company data; Legg Mason Wood Walker, Inc.

Table 12: Case Studies - 1999 Telephone Statistics

	ITS GTE Iowa	CTL GTE MO	CTL GTE WI	CTL GTE AR	VALOR GTE NM	VALOR GTE OK	VALOR GTE TX	CZN GTE IL	*CZN USW AZ*	CZN GTE AZ	*CZN USW MN*	CZN FRO NY	Survey Average
Access Lines by Technology													
Analog (4 kHz or equivalent)													
Main Access Lines	272,051	437,481	484,801	214,790	88,934	117,449	1,738,117	881,897	*2,413,698*	7,995	*1,828,730*	474,807	
PBX & Centrex Trunks	5,751	8,433	17,455	3,964	1,803	1,976	51,351	30,235	*122,001*	181	*144,333*	11,494	
Centrex Extensions	4,600	13,276	13,235	3,670	2,547	2,286	173,432	26,186	*255,395*	318	*272,567*	52,944	
Digital (64 kbps or equivalent)													
Main Access Lines	2,782	7,601	1,002	1,998	1,082	1,408	69,285	8,008	*70,648*	149	*97,135*	4,236	
Other Switched Access Lines	867	4,493	8,585	877	532	4,274	39,469	11,905	*0*	2	*0*	37,082	
Total Switched Access Lines	**286,051**	**471,284**	**525,078**	**225,299**	**94,898**	**127,393**	**2,071,654**	**958,231**	***2,861,742***	**8,645**	***2,342,765***	**580,563**	
Access Lines by Customer Type													
Business analog single	14,346	20,628	25,250	9,691	3,733	4,783	73,638	48,506	*34,512*	294	*36,616*	14,529	
Business analog multiple	46,471	88,034	97,847	35,119	20,461	25,161	511,214	197,320	*622,839*	1,800	*552,767*	158,863	
Digital (64 kbps or equivalent)	2,782	7,601	1,002	1,990	1,082	1,408	69,285	8,008	*165,245*	149	*206,452*	35,516	
Payphone	1,046	4,230	4,424	1,772	816	993	20,566	8,556	*29,848*	209	*15,782*	5,550	
Residential Analog	221,406	350,791	396,555	176,727	68,806	95,048	1,396,951	695,841	*2,000,441*	6,193	*1,517,732*	365,853	
Residential Digital	0	0	0	0	0	0	0	0	*8,857*	0	*13,416*	252	
Total	**286,051**	**471,284**	**525,078**	**225,299**	**94,898**	**127,393**	**2,071,654**	**958,231**	***2,861,742***	**8,645**	***2,342,765***	**580,563**	
Access Lines % of total by Type													
Business analog single	5.0%	4.4%	4.8%	4.3%	3.9%	3.8%	3.6%	5.1%	*1.2%*	3.4%	*1.6%*	2.5%	3.8%
Business analog multiple	16.2%	18.7%	18.6%	15.6%	21.6%	19.8%	24.7%	20.6%	*21.8%*	20.8%	*23.6%*	27.4%	19.4%
Digital (64 kbps or equivalent)	1.0%	1.6%	0.2%	0.9%	1.1%	1.1%	3.3%	0.8%	*5.8%*	1.7%	*8.8%*	6.1%	2.2%
Total business	22.2%	24.7%	23.6%	20.8%	26.6%	24.6%	31.6%	26.5%	*28.7%*	25.9%	*34.0%*	36.0%	25.4%
Payphone	0.4%	0.9%	0.8%	0.8%	0.9%	0.8%	1.0%	0.9%	*1.0%*	2.4%	*0.7%*	1.0%	0.9%
Residential Analog	77.4%	74.4%	75.5%	78.4%	72.5%	74.6%	67.4%	72.6%	*69.9%*	71.6%	*64.8%*	63.0%	73.6%
Special Access Lines													
Analog (4 kHz or equivalent)	2,017	2,544	2,036	1,400	621	693	15,382	6,772	*31,605*	97	*20,550*	8,630	
Digital (64 kbps or equivalent)	20,376	52,860	46,456	13,494	4,464	14,312	427,537	126,074	*1,077,606*	216	*1,154,545*	456,284	
Total access lines, switched & special	**308,444**	**526,688**	**573,570**	**240,193**	**99,983**	**142,398**	**2,514,573**	**1,091,077**	***3,970,953***	**8,958**	***3,517,860***	**1,045,477**	
Telephone Calls (in thousands)													
Local calls	919,043	1,729,174	1,179,408	623,477	266,873	625,569	6,327,133	2,574,516	*9,217,127*	28,414	*6,845,144*	2,403,038	
IntraLATA Toll Calls Completed (orig.)	19,931	58,052	19,753	59,205	4,173	4,794	65,660	81,359	*89,535*	202	*27,188*	13,802	
Interstate	91,993	180,809	157,500	82,243	38,381	50,065	728,708	314,651	*1,195,255*	8,581	*740,674*	242,592	
Intrastate	51,842	78,706	80,329	23,632	4,294	9,526	402,887	254,231	*197,635*	5,217	*216,543*	124,975	
Total InterLATA Long Distance calls	143,835	259,515	237,829	105,774	42,674	59,591	1,131,595	568,882	*1,392,890*	13,798	*957,217*	367,567	
Total calls all types	**1,082,809**	**2,046,741**	**1,436,990**	**788,456**	**313,720**	**689,954**	**7,524,388**	**3,224,757**	***10,699,552***	**42,414**	***7,829,549***	**2,784,407**	
InterLATA Billed Access Minutes													
Interstate	747,314	1,295,676	1,188,355	639,375	298,855	387,995	5,333,513	2,373,960	*10,955,150*	31,922	*7,207,006*	1,528,745	
Intrastate	401,699	558,501	685,414	194,797	34,408	72,688	2,660,169	2,209,911	*1,684,083*	14,688	*2,178,316*	787,529	
Total	**1,149,013**	**1,854,177**	**1,873,769**	**834,172**	**333,263**	**460,683**	**7,993,682**	**4,583,871**	***12,639,233***	**46,610**	***9,385,322***	**2,316,274**	
Minutes ratios													
Interstate switch as % of total switched minutes	65.0%	69.9%	63.4%	76.6%	89.7%	84.2%	66.7%	51.8%	*86.7%*	68.5%	*76.8%*	66.0%	73.4%
Interstate minutes per line per month	218	229	189	236	262	254	215	206	*319*	308	*256*	219	244
Intrastate minutes per line per month	117	99	109	72	30	48	107	192	*49*	142	*77*	113	91
Total minutes per line per month	**335**	**328**	**297**	**309**	**293**	**301**	**322**	**399**	***368***	**449**	***334***	**332**	**335**
# of calls and ratios													
Local calls per year per line	2,980	3,283	2,056	2,596	2,669	4,393	2,516	2,360	*2,321*	3,172	*1,946*	2,299	2,733
IntraLATA calls per year per line	65	110	34	246	42	34	26	75	*23*	23	*8*	13	90
InterLATA calls per year per line	466	493	415	440	427	418	450	521	*351*	1,540	*272*	352	513
total calls per year per line	3,511	3,886	2,505	3,283	3,138	4,845	2,992	2,956	*2,694*	4,735	*2,226*	2,663	3,336
Inter/Intra call ratio	1.8	2.3	2.0	3.5	8.9	5.3	1.8	1.2	*6.0*	1.6	*3.4*	1.9	3.5
Inter/Intra minute ratio	1.9	2.3	1.7	3.3	8.7	5.3	2.0	1.1	*6.5*	2.2	*3.3*	1.9	3.5
Minutes/call & /line ratios													
Minutes/call Interstate	8.1	7.2	7.5	7.8	7.8	7.7	7.3	7.5	*9.2*	3.7	*9.7*	6.3	7.6
Minutes/call Intrastate	7.7	7.1	8.5	8.2	8.0	7.6	6.6	8.7	*8.5*	2.8	*10.1*	6.3	7.7
Minutes/call	8.0	7.1	7.9	7.9	7.8	7.7	7.1	8.1	*9.1*	3.4	*9.8*	6.3	7.7
Minutes/line/year (special access excl.)	4,017	3,934	3,569	3,703	3,512	3,616	3,859	4,784	*4,417*	5,392	*4,006*	3,990	4,016
Minutes/line/year (all lines)	3,725	3,520	3,267	3,473	3,333	3,235	3,179	4,201	*3,183*	5,203	*2,668*	2,216	3,533

Source: FCC; Legg Mason Wood Walker, Inc.

* Italics represent Citizens' terminated bid to purchase 540,000 U S West/Qwest lines.

Table 13*:* Case Studies - 1999 Inside and Outside Plant Assets

	ITS GTE Iowa	CTL GTE MO	CTL GTE WI	CTL GTE AR	VALOR GTE NM	VALOR GTE OK	VALOR GTE TX	CZN GTE IL	*CZN USW AZ*	CZN GTE AZ	*CZN USW MN*	CZN FRO NY	Survey Average
Switches													
Central Office, Excluding Remote	85	73	57	44	17	24	302	131	*87*	2	*75*	12	
Remote Switches	218	323	168	229	52	25	421	469	*70*	5	*118*	46	
Total Central Office Switches	303	396	225	273	69	49	723	600	*157*	7	*193*	58	
Lines/Switch	1,018	1,330	2,549	880	1,449	2,906	3,478	1,818	*25,293*	1,280	*18,227*	18,025	5,714
Switch Plant/Switch	$491,003	$610,179	$1,044,326	$372,195	$804,638	$1,298,510	$1,517,591	$782,413	*$6,098,096*	$668,286	*$4,629,420*	$4,480,310	$1,655,947
Gross Plant/Line	$2,303	$2,697	$2,346	$2,413	$2,542	$2,323	$2,471	$2,103	*$1,780*	$2,573	*$1,796*	$1,707	$2,311
Net Plant/Line	$1,189	$1,544	$907	$1,392	$1,015	$1,200	$1,222	$994	*$894*	$1,049	*$845*	$715	$1,125
Basic Rate ISDN Central Channels	92	881	818	264	288	256	24,384	1,402	*22,242*	0	*36,730*	0	
Primary Rate ISDN Central Channels	306	548	699	49	80	720	5,837	1,098	*807*	0	*586*	0	
Aerial Cable													
KM of Arial Wire	42	266	15,400	1,214	29	1,947	7,253	23	*15,337*	3	*2,815*	2,018	
Sheath Km of Metallic	2,431	14,233	6,481	10,636	3,085	2,982	36,421	14,080	*13,737*	109	*7,618*	9,021	
Sheath Km of Fiber	4	386	375	269	33	95	1,228	498	*468*	0	*21*	782	
Underground Cable													
Sheath Km of Metallic	176	373	693	108	121	284	5,821	1,353	*9,260*	23	*8,895*	2,738	
Sheath Km of Fiber	88	182	219	132	37	224	2,793	520	*4,751*	6	*3,312*	784	
Buried Cable													
Sheath Km of Metallic	45,717	50,286	58,319	20,882	4,797	5,996	101,200	95,876	*49,896*	656	*71,891*	4,682	
Sheath Km of Fiber	3,460	2,274	4,457	1,297	378	315	7,606	7,056	*784*	7	*4,680*	69	
Submarine Cable													
Sheath Km of Metallic	1	5	31	0	0	5	19	4	*0*	0	*74*	0	
Sheath Km of Fiber	0	2	0	0	0	0	5	0	*0*	0	*0*	0	
Interoffice Cable													
Sheath Km of Metallic	0	0	83	9	0	0	0	0	*1896*	0	*764*	471	
Sheath Km of Fiber	0	0	1	0	0	0	0	0	*35*	0	*56*	47	
Total Cable													
Sheath Km of Metallic	48,325	64,897	65,607	31,626	8,003	9,277	143,461	111,313	*74,789*	788	*89,242*	16,912	
Sheath Km of Fiber	3,552	2,844	5,052	1,698	448	634	11,632	8,074	*6,038*	13	*8,069*	1,682	
Sheath Km Metalic/Line	0.157	0.123	0.114	0.132	0.080	0.065	0.057	0.102	*0.019*	0.088	*0.025*	0.016	0.095
Km of Fiber in Cable													
Fiber Km Equipped (Lit)	34,451	32,492	42,671	19,524	9,825	11,948	190,079	67,373	*274,063*	145	*303,489*	29,929	
Total Fiber Km Deplyd (Lit Dark)	61,520	58,022	76,199	34,865	17,544	21,336	339,426	120,308	*322,351*	259	*343,314*	66,509	
Lit/Total Deplyd	56.0%	56.0%	56.0%	56.0%	56.0%	56.0%	56.0%	56.0%	*85.0%*	56.0%	*88.4%*	45.0%	60.7%
Km Metalic Wire in Cable	3,606,175	8,506,911	8,965,445	4,090,161	1,428,642	2,206,144	31,448,207	12,602,461	*47,469,458*	165,608	*40,634,991*	16,912,000	
Equivalent Number of Poles	32,799	63,782	51,555	40,395	19,161	25,017	298,205	213,654	*152,987*	170	*134,527*	113,396	
KM Metalic Wire / Pole	110	133	174	101	75	88	105	59	*310*	974	*302*	149	203
Km Metalic Wire / Line	12	16	16	17	14	15	13	12	*12*	18	*12*	16	15
Kft Metalic Wire/Line	38	53	51	56	47	51	41	38	*39*	61	*38*	53	48
Conduit System													
Trench Km	92	318	507	110	90	314	4,420	913	*4902*	46	*3669*	1303	
Duct Km	380	1,351	2,402	350	260	1,490	17,791	5246	*24183*	105	*21357*	4386	
Total Equipped Local Loop Circuit Km													
Analog (4 kHz or equivalent)	22,502	31,661	123,507	14222	6,866	9,637	288,307	236268	*1537*	203611	*198*	0	
Digital (64 kbps or equivalent)	469,154	16,707	2,310,039	215532	228,126	146,555	3,805,081	592819	*7161964*	46166	*3230144*	2006875	
Total Equipped Local Loop Circuit Km	491,656	48,368	2,433,546	229,754	234,992	156,192	4,093,388	829087	*7163501*	249777	*3230342*	2006875	
D/A ratio	20.85	0.53	18.70	15.15	33.23	15.21	13.20	2.51	*4659.70*	0.23	*16313.86*	Inf.	19.36
Local loop circuit Km/line	1.72	0.10	4.63	1.02	2.48	1.23	1.98	0.87	*2.50*	28.89	*1.38*	3.46	3.77
Total Equipped Interoffice Circuit Km													
Analog (4 kHz or equivalent)	84,563	116,257	0	26,757	184,565	17,966	1,947,030	409,740	*321,369*	0	*367,213*	0	
Digital (64 kbps or equivalent)	1,908,409	329,719	11,839,932	2,089,004	7,372,171	1,968,516	50,728,663	14,205,472	*42,167,460*	3,277,791	*31,410,116*	4,388,578	
Total Equipped Interoffice Circuit Km	1,992,972	445,976	11,839,932	2,115,761	7,556,736	1,986,482	52,675,693	14,615,212	*42,488,829*	3,277,791	*31,777,329*	4,388,578	
D/A ratio	22.57	2.84	Inf.	78.07	39.94	109.57	26.05	34.67	*131.21*	Inf.	*85.54*	Inf.	48.37
Interoffice Circuit Km/line	6.46	0.85	20.64	8.81	75.58	13.95	20.95	15.25	*14.85*	379.15	*13.56*	7.56	45.47

Source: FCC; Legg Mason Wood Walker, Inc.

* Italics represent Citizens' terminated bid to purchase 540,000 U S West/Qwest lines.

Table 14: Case Studies - 1999 Income Statement Data

	ITS GTE Iowa	CTL GTE MO	CTL GTE WI	CTL GTE AR	VALOR GTE NM	VALOR GTE OK	VALOR GTE TX	CZN GTE IL	*CZN USW AZ*	CZN GTE AZ	*CZN USW MN*	CZN FRO NY	Survey Average
Income Statement													
Revenues	$183,435	$367,971	$350,148	$163,781	$74,543	$74,302	$1,537,277	$599,181	*$1,747,477*	$8,955	*$1,411,113*	$346,891	
Local Service Revenue	$73,662	$95,946	$156,388	$55,720	$22,980	$33,765	$665,378	$292,160	*$954,934*	$2,656	*$764,408*	$172,181	
Interstate Access Revenue	$57,617	$87,345	$81,395	$54,071	$25,095	$21,382	$365,042	$143,120	*$469,384*	$2,751	*$382,595*	$65,814	
Intrastate Access Revenue	$39,617	$115,151	$43,629	$19,073	$13,673	$7,894	$223,853	$65,433	*$134,515*	$2,609	*$126,708*	$23,588	
Long Distance Revenue	$11,626	$36,155	$15,483	$19,582	$4,092	$3,532	$42,876	$25,552	*$30,372*	$198	*$30,616*	$6,268	
Miscellaneous Revenue	$2,669	$40,020	$56,738	$22,162	$10,755	$8,671	$265,629	$82,702	*$178,544*	$879	*$114,415*	$81,240	
Gross Revenue	$185,191	$374,617	$353,633	$170,608	$76,595	$75,244	$1,562,778	$608,967	*$1,767,749*	$9,093	*$1,418,742*	$349,091	
Uncollectible Revenue	$1,756	$6,645	$3,485	$6,828	$2,051	$942	$25,501	$9,786	*$20,272*	$138	*$7,629*	$2,200	
Total Revenues	**$183,435**	**$367,972**	**$350,148**	**$163,780**	**$74,544**	**$74,302**	**$1,537,277**	**$599,181**	***$1,747,477***	**$8,955**	***$1,411,113***	**$346,891**	
Plant specific Operations Expense	$23,739	$59,869	$57,368	$29,238	$13,034	$17,903	$387,683	$107,414	*$312,944*	$1,149	*$212,570*	$64,233	
Plant non-specific Operations Expense	$57,432	$25,667	$130,097	$48,618	$12,697	$28,226	$552,353	$31,096	*$152,126*	$310	*$124,033*	$36,677	
Customer Operations Expense	$17,639	$32,862	$41,718	$15,992	$5,351	$3,621	$89,759	$61,102	*$244,845*	$938	*$191,886*	$46,630	
Corporate Operations Expense	$12,034	$24,784	$10,495	$11,999	$2,612	$241	$13,495	$27,464	*$204,386*	$1,339	*$161,240*	$21,690	
Other Operating Income and Expense	$12	$0	-$16	$0	$1,257	$12,682	$176,167	-$114					
Operating Taxes	$33,221	-$724	$47,694	$4,372	$9,362	$5,163	$109,793	$29,041	*$103,960*	-$2,214	*$116,164*	$21,471	
Total Expenses	**$144,077**	**$223,234**	**$287,356**	**$126,666**	**$48,266**	**$67,836**	**$1,371,738**	**$353,541**	***$1,278,011***	**$5,225**	***$982,895***	**$231,942**	
Depreciation & Amortization	**$42,661**	**$80,050**	**$104,462**	**$38,433**	**$13,268**	**$19,128**	**$381,229**	**$126,464**	***$363,710***	**$1,520**	***$293,166***	**$62,712**	
Net Operating Income	**$39,358**	**$144,737**	**$62,792**	**$37,115**	**$26,278**	**$6,466**	**$165,539**	**$245,640**	***$469,466***	**$3,730**	***$428,218***	**$114,949**	
~~% of Revenues~~													
Local Service Revenue	40.2%	26.1%	44.7%	34.0%	30.8%	45.4%	43.3%	48.8%	*54.6%*	29.7%	*54.2%*	49.6%	39.6%
Interstate Access Revenue	31.4%	23.7%	23.2%	33.0%	33.7%	28.8%	23.7%	23.9%	*26.9%*	30.7%	*27.1%*	19.0%	28.2%
Intrastate Access Revenue	21.6%	31.3%	12.5%	11.6%	18.3%	10.6%	14.6%	10.9%	*7.7%*	29.1%	*9.0%*	6.8%	16.7%
Long Distance Revenue	6.3%	9.8%	4.4%	12.0%	5.5%	4.8%	2.8%	4.3%	*1.7%*	2.2%	*2.2%*	1.8%	5.7%
Miscellaneous Revenue	1.5%	10.9%	16.2%	13.5%	14.4%	11.7%	17.3%	13.8%	*10.2%*	9.8%	*8.1%*	23.4%	11.6%
Uncollectible Revenue (% of Gross)	0.9%	1.8%	1.0%	4.0%	2.7%	1.3%	1.6%	1.6%	*1.1%*	1.5%	*0.5%*	0.6%	1.7%
Plant specific Operations Expense	12.9%	16.3%	16.4%	17.9%	17.5%	24.1%	25.2%	17.9%	*17.9%*	12.8%	*15.1%*	18.5%	17.9%
Plant non-specific Operations Expense	31.3%	7.0%	37.2%	29.7%	17.0%	38.0%	35.9%	5.2%	*8.7%*	3.5%	*8.8%*	10.6%	23.1%
Customer Operations Expense	9.6%	8.9%	11.9%	9.8%	7.2%	4.9%	5.8%	10.2%	*14.0%*	10.5%	*13.6%*	13.4%	9.0%
Corporate Operations Expense	6.6%	6.7%	3.0%	7.3%	3.5%	0.3%	0.9%	4.6%	*11.7%*	15.0%	*11.4%*	6.3%	6.3%
Other Operating Income and Expense	0.0%	0.0%	0.0%	0.0%	1.7%	17.1%	11.5%	0.0%	*0.0%*	0.0%	*0.0%*	0.0%	2.9%
Operating Taxes	18.1%	-0.2%	13.6%	2.7%	12.6%	6.9%	7.1%	4.8%	*5.9%*	-24.7%	*8.2%*	6.2%	5.9%
Total Expenses	78.5%	60.7%	82.1%	77.3%	64.7%	91.3%	89.2%	59.0%	*73.1%*	58.3%	*69.7%*	66.9%	74.6%
Net Operating Income	21.5%	39.3%	17.9%	22.7%	35.3%	8.7%	10.8%	41.0%	*26.9%*	41.7%	*30.3%*	33.1%	25.4%
Revenue per line per month													
Local Service Revenue	$21.46	$16.97	$24.82	$20.61	$20.18	$22.09	$26.77	$25.41	*$27.81*	$25.60	*$27.19*	$24.71	$22.02
Interstate Access Revenue	$16.79	$15.44	$12.92	$20.00	$22.04	$13.99	$14.68	$12.45	*$13.67*	$26.52	*$13.61*	$9.45	$16.17
Intrastate Access Revenue	$11.54	$20.36	$6.92	$7.05	$12.01	$5.16	$9.00	$5.69	*$3.92*	$25.15	*$4.51*	$3.39	$9.84
Long Distance Revenue	$3.39	$6.39	$2.46	$7.24	$3.59	$2.31	$1.72	$2.22	*$0.88*	$1.91	*$1.09*	$0.90	$3.23
Miscellaneous Revenue	$0.78	$7.08	$9.00	$8.20	$9.44	$5.67	$10.69	$7.19	*$5.20*	$8.47	*$4.07*	$11.66	$6.66
Gross Revenue	$53.95	$66.24	$56.12	$63.10	$67.26	$49.22	$62.86	$52.96	*$51.48*	$87.65	*$50.47*	$50.11	$57.90
Uncollectible Revenue	$0.51	$1.17	$0.55	$2.53	$1.80	$0.62	$1.03	$0.85	*$0.59*	$1.33	*$0.27*	$0.32	$1.04
Total Revenues	$53.44	$65.07	$55.57	$60.58	$65.46	$48.60	$61.84	$52.11	*$50.89*	$86.32	*$50.19*	$49.79	$56.87
D&A % of Revs	23.3%	21.8%	29.8%	23.5%	17.8%	25.7%	24.8%	21.1%	*20.8%*	17.0%	*20.8%*	18.1%	22.3%
Ave. Rev/Line/Month	**$53.44**	**$65.07**	**$55.57**	**$60.58**	**$65.5**	**$48.6**	**$61.8**	**$52.11**	***$50.89***	**$86.32**	***$50.19***	**$49.79**	$56.87
EBITDA/Line/Month	$23.89	$39.75	$26.54	$27.94	$34.73	$16.74	$21.99	$32.36	*$24.26*	$50.61	*$25.66*	$25.50	$27.63
EBITDA Margin	**44.7%**	**61.1%**	**47.8%**	**46.1%**	**53.1%**	**34.4%**	**35.6%**	**62.1%**	***47.7%***	**58.6%**	***51.1%***	**51.2%**	47.8%

Source: FCC; Legg Mason Wood Walker, Inc.

* Italics represent Citizens' terminated bid to purchase 540,000 U S West/Qwest lines.

Table 15: Case Studies - 1999 Other Telephone Assets

	ITS GTE Iowa	CTL GTE MO	CTL GTE WI	CTL GTE AR	VALOR GTE NM	VALOR GTE OK	VALOR GTE TX	CZN GTE IL	*CZN USW AZ*	CZN GTE AZ	*CZN USW MN*	CZN FRO NY	Survey Average
Total (Gross) Plant in Service	**$658,917**	**$1,271,181**	**$1,231,817**	**$543,622**	**$241,252**	**$295,945**	**$5,120,032**	**$2,015,363**	***$5,094,842***	**$22,241**	***$4,208,275***	**$991,258**	
Accumulated Depreciation	$318,893	$543,460	$755,727	**$230,049**	$144,896	$143,131	$2,588,237	$1,062,800	*$2,537,294*	$13,169	*$2,229,808*	$576,181	
Net Plant in Service	**$340,024**	**$727,721**	**$476,090**	**$313,573**	**$96,356**	**$152,814**	**$2,531,795**	**$952,563**	***$2,557,548***	**$9,072**	***$1,978,467***	**$415,077**	
% Plant Depreciated	**48.4%**	**42.8%**	**61.4%**	**42.3%**	**60.1%**	**48.4%**	**50.6%**	**53%**	***50%***	**59%**	***53%***	**58%**	51.0%
Central Office Assets													
Digital Electronic Switching	$148,774	$241,631	$234,973	$101,609	$55,520	$63,627	$1,097,218	$469,448	*$957,401*	$4,678	*$893,478*	$259,858	
Operator Systems	$151	$2,359	$227	$88	$76	$10	$2,661	$827	*$7,078*	$0	*$941*	$9,690	
Radio Systems	$62	$0	$2,250	$2,139	$4,865	$122	$0	$0	*$0*	$0	*$0*	$0	
Circuit Equipment	$108,972	$161,233	$209,702	$71,751	$30,657	$42,971	$838,911	$295,402	*$1,230,648*	$4,397	*$881,926*	$134,418	
Total Central Office Equipment	**$257,959**	**$405,223**	**$447,153**	**$175,588**	**$91,118**	**$106,730**	**$1,938,790**	**$765,677**	***$2,195,127***	**$9,075**	***$1,776,345***	**$403,966**	
Cable Wire Facilities Assets													
Poles	$2,789	N/A	$12,749	$13,216	$3,664	$5,645	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Aerial Cable	$13,522	N/A	$63,626	$114,117	$21,402	$40,692	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Underground Cable	$4,802	N/A	$25,844	$2,284	$4,425	$21,014	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Buried Cable	$120,200	N/A	$525,466	$202,285	$19,496	$76,241	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Submarine Cable	$0	N/A	$123	$0	$0	$50	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Intrabuilding Network Cable	$0	N/A	$800	$0	$0	$169	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Aerial Wire	$43	N/A	$5,108	$686	$5	$166	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Conduit Systems	$3,060	N/A	$22,865	$3,712	$2,334	$16,879	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Total Cable & Wire Facilities	**$319,936**	**$711,217**	**$656,581**	**$336,300**	**$124,027**	**$160,856**	**$2,421,303**	**$966,197**	***$2,281,765***	**$12,061**	***$1,713,164***	**$480,816**	
General Support Assets													
Land	$1,054	N/A	$2,567	$758	$251	$744	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Motor Vehicles	$3,182	N/A	$13,124	$3,882	$1,018	$2,233	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Aircraft	$0	N/A		$0	$0	$0	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Garage Work Equipment	$0	N/A	$325	$0	$0		N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Other Work Equipment	$3,757	N/A	$14,257	$3,453	$619	$1,582	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Buildings	$21,909	N/A	$54,337	$17,970	$9,043	$17,995	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Furniture	$354	N/A	$477	$446	$173	$246	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Office Equipment	$3,524	N/A	$8,857	$565	$323	$964	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
General Purpose Computers	$5,215	N/A	$8,789	$1,736	$353	$637	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Total General Support Assets	**$70,330**	**$138,442**	**$102,733**	**$28,810**	**$21,980**	**$24,401**	**$625,543**	**$232,591**	***$408,293***	**$910**	***$564,040***	**$88,662**	
Information Origination/Termination Assets													
Station Apparatus	$124	N/A	$466	$208	$39	$79	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Large PBX	$0	N/A	$0	$0	$0	$0	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Public Telephone Terminal Equipment	$82	N/A	$551	$280	$25	$205	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Other Terminal Equipment	$2,742	N/A	$13,938	$3,274	$1,059	$1,618	N/A	N/A	*N/A*	N/A	*N/A*	N/A	
Total Info Orig/Term	**$4,959**	**$8,829**	**$14,954**	**$3,762**	**$2,529**	**$1,902**	**$83,399**	**$34,007**	***$898***	**$135**	***$60,489***	**$13,234**	
Total All Assets	**$653,184**	**$1,263,711**	**$1,221,421**	**$544,460**	**$239,654**	**$293,889**	**$5,069,035**	**$1,998,472**	***$4,886,083***	**$22,181**	***$4,114,038***	**$986,678**	
Intangibles & Leasehold Improvements	$5,307	$7,470	$10,397	$1,274	$1,596	$2,055	$50,996	$0	*$970*	$60	*$94,237*	$4,580	
Total Plant in Service	**$658,491**	**$1,271,181**	**$1,231,817**	**$545,734**	**$241,250**	**$295,944**	**$5,120,031**	**$1,998,472**	***$4,887,053***	**$22,241**	***$4,208,275***	**$991,258**	
% of Gross Plant													
Central Office Equipment	39.1%	31.9%	36.3%	32.3%	37.8%	36.1%	37.9%	38.0%	*43.1%*	40.8%	*42.2%*	40.8%	34.4%
Cable Wire Facilities	48.6%	55.9%	53.3%	61.9%	51.4%	54.4%	47.3%	47.9%	*44.8%*	54.2%	*40.7%*	48.5%	47.9%
General Support	10.7%	10.9%	8.3%	5.3%	9.1%	8.2%	12.2%	11.5%	*8.0%*	4.1%	*13.4%*	8.9%	8.2%
Info Orig/Term	0.8%	0.7%	1.2%	0.7%	1.0%	0.6%	1.6%	1.7%	*0.0%*	0.6%	*1.4%*	1.3%	0.9%
Plant per line													
Central Office Equipment	$901.79	$859.83	$851.59	$779.35	$960.17	$837.80	$935.87	$799.05	*$767.06*	$1,049.74	*$758.23*	$695.82	$857.00
Cable Wire Facilities	$1,118.46	$1,509.10	$1,250.44	$1,492.68	$1,306.95	$1,262.68	$1,168.78	$1,008.31	*$797.33*	$1,395.14	*$731.26*	$828.19	$1,211.82
General Support	$245.87	$293.75	$195.65	$127.88	$231.62	$191.54	$301.95	$242.73	*$142.67*	$105.26	*$240.76*	$152.72	$204.02
Info Orig/Term	$17.34	$18.73	$28.48	$16.70	$26.65	$14.93	$40.26	$35.49	*$0.31*	$15.62	*$25.82*	$22.80	$21.43
Total plant	$2,302.01	$2,697.27	$2,345.97	$2,422.27	$2,542.20	$2,323.08	$2,471.47	$2,085.58	*$1,707.72*	$2,572.70	*$1,796.29*	$1,707.41	$2,351.36
Estimated cost basis (% deprec. x total plant)	$1,114.09	$1,153.15	$1,439.27	$1,025.05	$1,526.85	$1,123.54	$1,249.36	$1,099.83	*$850.47*	$1,523.31	*$951.78*	$992.45	$1,197.90

Source: FCC; Legg Mason Wood Walker, Inc.

* Italics represent Citizens' terminated bid to purchase 540,000 U S West/Qwest lines.

CenturyTel has a long history of successfully acquiring and integrating access lines to expand the company's footprint, generally engaging in a strategy to geographically cluster markets. From 1989 until 1999, the company completed 16 transactions and is regarded among its peers as a superior integrator of local telephone systems. At this time, the company is focused in four regions across the United States, working to achieve operational, marketing and network efficiency. The company's most recent three-state acquisitions from GTE (now Verizon), announced in 1999, were purchases that appear to be consistent with the company's strategy to cluster in specific regions. **Table 16** summarizes the three-state transactions in Arkansas, Missouri and Wisconsin.

From 1989 to 1999, CenturyTel completed 16 acquisitions, proving itself to be a superior integrator.

Table 16: CenturyTel Acquisition Data

State	Lines at annc.	Lines purch.	Total GTE lines	% of total lines	Exchgs.	Avg. exchg. size	Annc. price (mils)	Final Price (mils)	At annc. price/line	Final price/line
AR	213,651	231,000	231,000	100%	105	2,200	$843	$824	$3,947	$3,567
MO	116,149	127,000	471,284	27%	107	1,187	$291	$291	$2,505	$2,291
WI	126,410	133,000	525,110	25%	77	1,727	$364	$364	$2,880	$2,737
Total	456,210	491,000	1,227,394	40%	289	1,699	$1,498	$1,479	$3,284	$3,012

Source: Company data; Legg Mason Wood Walker, Inc.

CenturyTel's acquisitions provide insight into the approach that a rate-of-return company can take in raising access rates. Additionally, we believe that the price paid for the Arkansas properties is a good proxy for what a rural provider can reasonably pay for good quality lines. Finally, CenturyTel encountered new regulatory challenges in integrating RBOC lines in contrast with previous purchases, all of which were non-RBOC lines. We will examine these insights more fully below.

BASIC DESCRIPTION

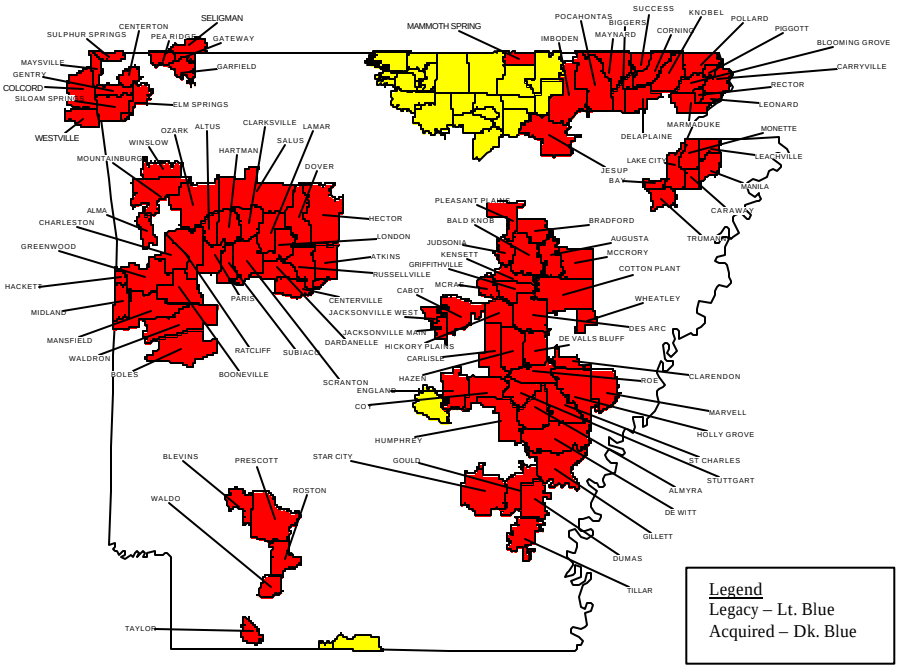
CenturyTel's recent purchases were actually four transactions — one in Arkansas, a joint venture in Missouri, a joint venture in Wisconsin and another purchase in Wisconsin.

CenturyTel purchased two properties outright and entered into two other joint ventures.

ARKANSAS

CenturyTel purchased approximately 231,000 Arkansas access lines in 105 exchanges from GTE, representing all of GTE's interests in the state, as illustrated in **Figure 7**. Including previously owned properties, CenturyTel now serves nearly 275,000 Arkansas lines, and is the state's second-largest telephone company.

Figure 7: CenturyTel Arkansas Acquisition



Source: CenturyTel

MISSOURI

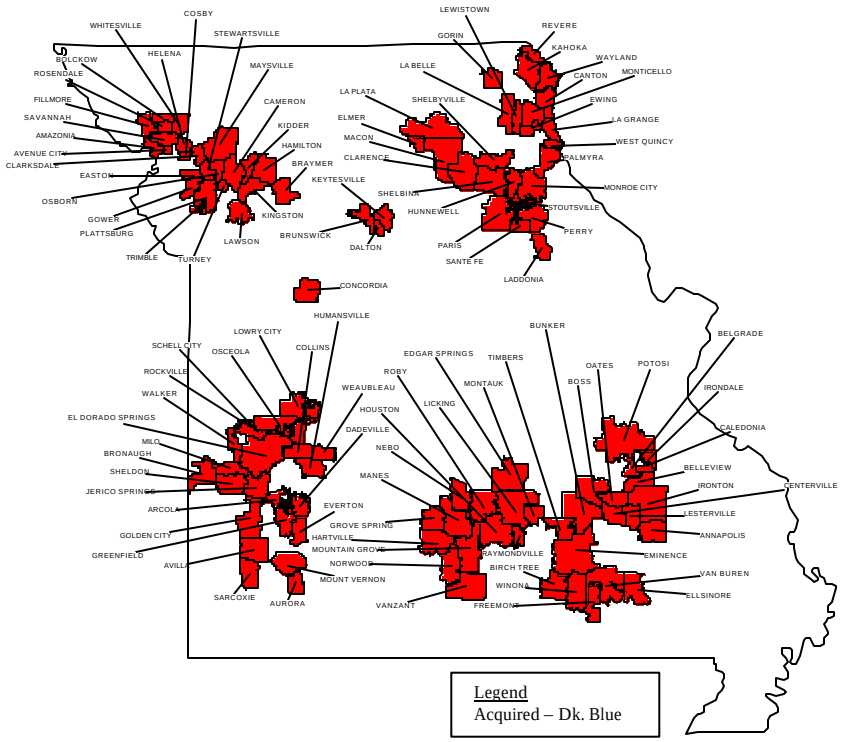
Missouri transaction was a joint venture with Spectronics and a private equity company.

In Missouri, CenturyTel entered into a strategic joint venture with (1) Spectronics Corporation, a Georgia-based African American-owned full-service telecommunications contractor; (2) Local Exchange Carriers (LEC), LLC, a private equity investment company based in Kansas City, Missouri; and (3) other co-investors. For approximately $291 million in cash, the venture purchased approximately 127,000 GTE/Verizon telephone access lines in 107 rural and suburban telephone exchanges in Missouri. Spectronics and its co-investors control the newly formed Spectra Communications Group, LLC.

Figure 8 illustrates the Missouri acquisitions, which represent all of CenturyTel's ownership in the state.

CenturyTel made a preferred equity investment in Spectra and is represented on the board, participates in Spectra's management decisions, and provides operational, financial and managerial support.

Figure 8: CenturyTel Missouri Acquisition



Source: CenturyTel

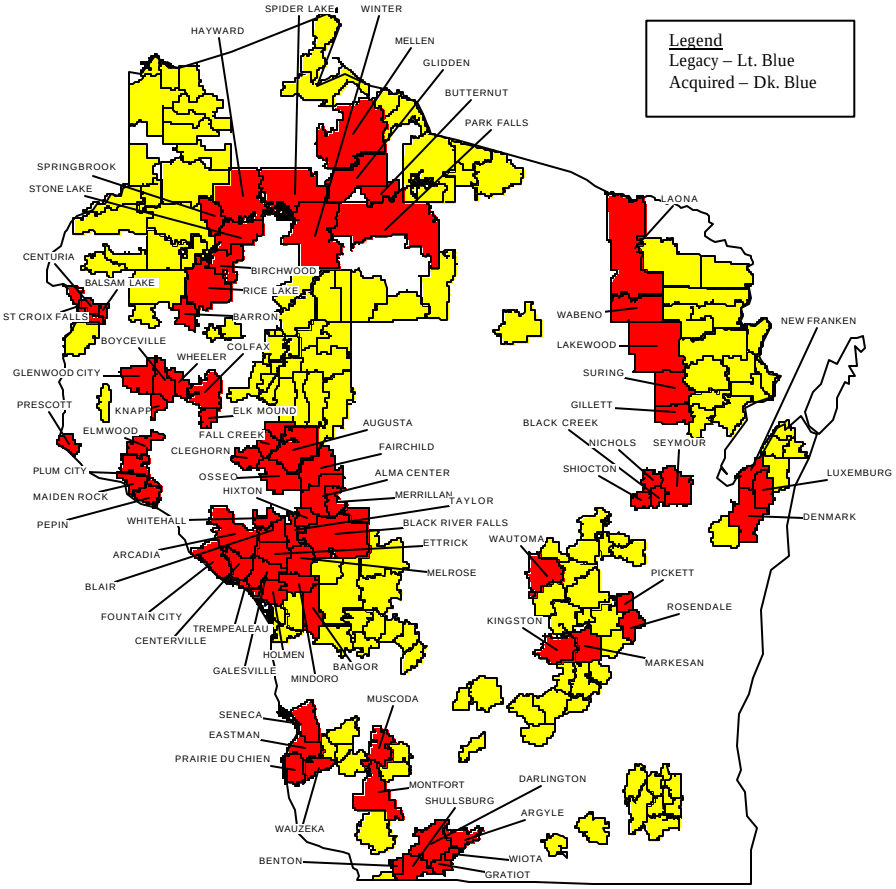
WISCONSIN

CenturyTel also purchased 133,000 telephone lines from GTE/Verizon in Wisconsin for approximately $364 million in cash in two separate transactions. **Figure 9** depicts the Wisconsin acquisitions and situates them with CenturyTel's other properties in the state.

In the first purchase, CenturyTel paid GTE/Verizon about $194 million in cash for 70,500 access lines in 42 Wisconsin exchanges. In a second transaction, CenturyTel, as part of a joint venture with Telephone USA Investments, Inc., purchased an additional 62,900 access lines in 35 Wisconsin exchanges from Verizon at a cost of approximately $170 million. CenturyTel owns 89% of the venture. Of the newly acquired properties, 83% are also served by CenturyTel's cellular operations while the remaining 17% are covered by CenturyTel's PCS licenses.

CenturyTel bought 70,500 Wisconsin lines and entered into a joint venture to purchase an additional 62,900 lines.

Figure 9: CenturyTel Wisconsin Acquisition



Source: CenturyTel

FINANCIAL DATA

ARKANSAS

In June 1999, CenturyTel signed a definitive agreement with GTE to purchase all of the company's Arkansas lines for $843.3 million in cash. The purchase price was $3,952 per line, using the 1998 number of lines, or $3,567 per line at the time of closing. CenturyTel provides other methods for analyzing the financial import of the transaction, pointing out that the IRS Code (Section 338(h)(10)) permits stepping up the basis for certain asset purchases, thereby reducing the negative goodwill effects. If we assume that the Arkansas properties generated $165 million in first-year revenues and $93 million in annual cash flow, the company paid 9.1x expected cash flow or 8.0x, using the tax-adjusted figures.

CenturyTel paid approximately $3,600 for the Arkansas lines.

MISSOURI

In July 1999, CenturyTel announced the acquisition of a 61.5% (56.9% fully diluted) interest in 116,000 lines from GTE Missouri. The price was $291 million for properties in which CenturyTel expected to generate first-year revenues of approximately $88 million and annual cash flow of about $47 million. The price per line was $2,291, adjusting for the equity interest carried on behalf of CenturyTel's partners. The net cost to the company was about 6.6x cash flow. After factoring in the tax benefits, the purchase price to adjusted cash flow was approximately 5.8x. At closing, CenturyTel made a $55 million preferred equity investment in the new venture and loaned the new entity approximately $220 million. We note that the Missouri GTE divestiture and the properties assigned to VALOR fulfilled one of GTE's goals — to put some assets in the hands of minorities. We believe that the low price of the Missouri divestiture may reflect this GTE objective.

The Missouri lines were the least expensive of CenturyTel's recent acquisitions — $2,291 per line.

WISCONSIN

In August 1999, CenturyTel announced it would acquire an 89% interest in a new joint venture that was organized to purchase about 61,600 telephone access lines from GTE Wisconsin. The price was approximately $170 million in cash. At closing in mid-2000, CenturyTel made an equity investment of $37.8 million in the newly organized company and loaned the new venture approximately $130 million.

In October 1999, CenturyTel also agreed to purchase additional GTE Wisconsin telephone access lines. The second transaction included approximately 64,800 lines at a price of $194 million in cash.

In total, CenturyTel agreed to purchase 126,410 Wisconsin lines (closer to 133,000 at closing) for approximately $365 million, or about $2,737 per line at the time of

CenturyTel paid about $2,737 per line for the Wisconsin lines.

closing. The company expected the Wisconsin properties to generate annualized revenues of about $84 million, with annualized cash flow of approximately $44 million in the first year of operation. The purchase price was about 8.3x the company's estimate of cash flow in the first full year of operations. After factoring in the tax benefits, the price was 7.3x estimated cash flow in the first full year. Management disclosed that it expected the transaction to be accretive to cash flow in the first year and dilutive to the company's consolidated earnings by as much as $0.03 per share, and then be neutral to accretive to EPS in the second year. The company estimates that capital expenditures will increase by about $20 million per year or $150 annually per access line in the first few years related to the Wisconsin properties.

In summary, CenturyTel added approximately 491,000 telephone access lines in 2000, generating incremental revenues of $340 million and new cash flow of about $185 million in the first year of operations. The aggregate price of the acquisitions was $1.5 billion. The purchase price at the time of closing for all three states was $3,052 per access line or 8.0x estimated cash flow for the first full year of operations. Applying CenturyTel's view of the tax deductibility of goodwill, the average total purchase price to EBITDA was approximately 7.2x in the first year of operation. The transactions as a whole were expected to be accretive to consolidated cash flow in year one, dilutive to earnings by $0.04 per share in the first year and potentially accretive to EPS in the second year. At the time of announcements, capital expenditures were expected to increase by about $65 million annually or $133 per line as a result of the four purchases. In 2001, CenturyTel now expects to spend $91 million and slightly less in 2002.

CTL's average price for the three acquisitions was about $3,052 per line.

REGULATION

CenturyTel is a rate-of-return company at the interstate level, pooling its revenues under the administration of the National Exchange Carrier Association. At the state level, CenturyTel has been transitioning to alternative regulatory plans, a process that can take three to six, so that the company can retain more profits as the company becomes increasingly efficient. About one-half of CenturyTel's states are governed by alternative regulation.

CenturyTel is a rate-of-return-company at the federal level, and, at the state level, is governed by alternative regulation in about one-half of its states.

In our view, a study of CenturyTel's acquisitions allows the investor to focus on regulatory issues that can affect the purchase of rural properties, both the positive aspects of regulation and the challenges that can occur. The other acquisitions in this case study section have less regulatory complexity. In this study, CenturyTel is the only interstate rate-of-return company.

Notably, CenturyTel has been able to use its status as a rate-of-return company to increase access rates in many of its acquired exchanges to levels that are better tied to underlying costs, in our view, compared with the price-cap companies that must file for rate proceedings. Further, the interstate access rates are generally more favorable for rate-of-return companies. At the same time, CenturyTel has found that regulatory issues are somewhat more complex when the target assets

Rate-of-return companies can have the access rates at acquired companies raised to levels that reflect underlying costs.

are those of RBOCs rather than assets of other independent telephone companies.

RATE-OF-RETURN AT INTERSTATE AND STATE LEVELS

CenturyTel's acquired lines are rate-of-return, allowing for recouping upgrade costs.

CenturyTel's newly acquired GTE/Verizon properties are rate-of-return at both the interstate and the state levels at present. A rate-of-return approach can be more favorable for companies that purchase high-cost plant, since the transitioning of lines back into the National Exchange Carrier Association (NECA) pool allows a company to recoup upgrade expenses, including DSL, on the basis of costs incurred or average costs in the pool administered by NECA.

At the state levels, a rate-of-return company also can petition the state for higher intrastate access rates that provide a specified rate of return, which can mean that rural rates paid by long-distance companies rise to about twice the level found in urban areas (and twice the level found in the rural regions served by larger urban telephone companies, which have rates that are based on averages of all costs divided by total number of lines). Higher non-urban rates are the result of higher expenses in rural regions, and reflect costs shared with a long-distance carrier that pays access charges for originating or terminating long-distance calls.

REGULATORY PROCESS IN ACQUIRING LINES

We will review the acquisition-related regulatory process in the section dedicated to regulation, but it is instructive to focus more particularly on CenturyTel's filings. CenturyTel encountered opposition to its acquisitions (Arkansas) and smooth processes (Missouri), as well as relatively straightforward adjustments to access rates (Arkansas) and more complex filings (Wisconsin).

Arkansas regulatory approval

Arguments raised by other carriers opposing CenturyTel's Arkansas acquisitions.

The Arkansas process for CenturyTel provides insight into the kinds of arguments raised in opposition to the consummation of a rural acquisition. The specific dispute in the Arkansas case was over the potential for higher rates in terminating traffic in CenturyTel's territories. There also may have been other factors, including the desire of competitors to gain advantage in offering CLEC services in CenturyTel's newly acquired region before the property was closed.

Turning to the second subject first, we note that neighboring ILECs sometimes contest the sales of properties simply to delay the process. We believe firmly that the competitors' objections in certain of the U S West properties that were to be sold to Citizens were raised by other telecom companies that wanted to gain more time to offer CLEC services in markets that were in regulatory limbo. Certain people close to the proceedings have suggested to us that the Arkansas approval was delayed by other carriers that had chosen to offer CLEC services in the

former GTE properties, but we are less certain in this instance that delay was the primary motive.

Arkansas intervenors opposed the sale due to the probability of higher access rates.

The specific dispute in the 10-month Arkansas approval process was focused on rate issues. CenturyTel made its application with the Arkansas Public Service Commission on August 13, 1999, requesting approval of its purchase of the GTE lines. Alltel was the first intervenor in opposing the transaction on August 25, and was followed in the weeks afterwards by SBC, AT&T, WorldCom, and Sprint. The PSC conducted a hearing on December 14, 1999, at which point the intervenors argued that they expected higher access rates as a result of the transaction, since CenturyTel's intrastate rates would likely rise from the level charged by GTE. The reason for the higher rates was that the Arkansas lines would likely be shifted to rate-of-return regulation (higher than price cap rates) at the interstate level, and, because Arkansas mirrors interstate rates, the state rates would rise. Alltel contended that it would have to pay an incremental $3 million annually (eventually reestimated by Alltel to be $5 million) for access compared with previous payments to GTE. AT&T's argument was that it was not in the public interest to transfer the properties since higher access rates would ensue, which were to be paid by other carriers.

CenturyTel contended that it had the right to file for a study area and a price cap waiver (and actually did so at the FCC on February 23, 2000), which was a petition that the company no longer be governed by price caps and be allowed to receive rate-of-return payments administered by NECA. CenturyTel noted that it also would continue to receive payments from the Arkansas Intrastate Carrier Common Line Pool (AICCLP) funds, as did GTE.

After further submissions and arguments, an Arkansas administrative law judge approved CenturyTel's application to purchase the properties on March 29, 2000, and the closing occurred on June 30, 2000, more than 10 months after the application was filed.

Arkansas judge ruled that the primary consideration in approving CenturyTel's Arkansas acquisition was in the public interest.

It is helpful to read at least one example of a regulatory approval of a rural acquisition. The final commentary of the judge in the Arkansas case included the insight that a rural carrier would better serve the public interest in rural regions.

> The primary consideration in determining if the acquisition by CenturyTel of the GTE properties is in the public interest must be the customers of GTE who will be directly affected by the change. The customers of GTE will continue to have telephone service at the same rates after the acquisition by CenturyTel. CenturyTel plans improvements to customer service. CenturyTel has committed to expanding the deployment of SS7 functionality, voice mail and Internet services and CenturyTel intends to add the necessary facilities to implement DSL services. For the customers of GTE, the purchase by CenturyTel will provide benefits that are consistent with the public interest. The employees of GTE will continue to be

> employed by CenturyTel after the acquisition which is beneficial to the economy of the state as a whole and to the individual employees. Contrary to the assertions of the intervenors, approval of the acquisition is not approval of a rate increase, it is not an abdication of Commission authority over rates, and it does not deny due process to any of the intervenors. (Arkansas Docket No. 99-220-U, Order 15, March 29, 2000, pp. 20–21.)

Wisconsin regulatory approval

Wisconsin regulatory process proved difficult.

In Wisconsin, the process was also difficult, but for different reasons. There were not any notable delays, but the Public Service Commission of Wisconsin responded to CenturyTel's request for intrastate rate increases by stating that the company had to prove to the state what its telephony costs were before modifications in rates could be implemented, but that the cost data were not available for the particular exchanges that CenturyTel purchased (GTE/Verizon retained major parts of Wisconsin that were previously reported as one consolidated entity to the regulators). The state ruled that it could not definitively raise rates in Wisconsin until October 1, 2001, at the earliest. On November 3, 2000, the Public Service Commission of Wisconsin granted interim rates that were the same as the former GTE rates, subject to refund if the rates were subsequently determined to be too high. CenturyTel did receive interim rate relief of $7.9 million annually in August 2001 and expects to file for permanent rates for the former GTE properties in 4Q01.

Missouri regulatory approval

Missouri Commission required opponents to prove the sale was a detriment to public interest.

Not all of CenturyTel's states proved to be difficult. In Missouri, the company found that the process moved quickly, as the Missouri Public Service Commission received one of the company's applications on February 1, 2000, the PSC staff recommended approval on June 9, and the closing occurred on July 31 — a total of six months. The Commission used a standard that required opponents to prove that the transaction was a "detriment to the public interest." We believe the process also was helped by the fact that CenturyTel had personnel and partners familiar with the PSC's staff and process, and, importantly, the new enterprise was politically attractive since CenturyTel's partner was a minority management team. CenturyTel agreed to provide expanded calling areas, local Internet access and certain billing plans in Missouri as part of the process.

ACCESS RATES AND UNIVERSAL SERVICE FUNDS

Our discussion of CenturyTel's rates and USF focuses on three proceedings — the Arkansas rate increases, the Wisconsin rate problem for the GTE properties, and a similar, but distinct, rate issue for former Ameritech properties in Wisconsin.

Arkansas Rate Increases

CenturyTel purchased GTE lines that generally have not been eligible for access rates or universal service support comparable with those available to similar rural properties. Illustrating this discrepancy, the acquired GTE properties in Arkansas are currently eligible for interstate USF (2Q01) that is approximately $4.74 per line per month, compared with Alltel's Arkansas monthly allotment of $11.14 and CenturyTel's Arkansas average of $32.47 (two of CenturyTel's study areas are tiny and have very high loop costs, resulting in high payments). While the figures appear startling, the support payments highlight more fundamental issues about service in rural America where costs are in fact high. Looking more carefully at the data, CenturyTel is acquiring three GTE Arkansas study areas averaging 71,800 lines per study area, with loop costs of $370.46, $325.16, and $297.35 in the three study areas, compared with CenturyTel's other four legacy Arkansas study areas that average 11,500 lines, with average loop costs of $959.96, $800.30, $523.26 and $549.87, meaning that high loop costs and lower density contribute to higher support. By contrast, Alltel's one Arkansas study area serves 107,000 lines, with average loop costs of $425.16; that study area is also larger than any of the acquired GTE Arkansas study areas and 50% larger than the GTE average, but the USF for the Alltel properties is more than double (135% higher) the GTE subsidies, in part, explained by the higher Alltel loop costs. At the same time, we suggest that GTE's loop costs may be artificially low, reflecting underinvestment rather than inexpensive underlying assets.

GTE access rates and USF were below the levels generated by comparable rural properties.

In the wake of the Arkansas closing, CenturyTel was permitted to raise components of its NECA and therefore its Arkansas composite access prices to $0.019347 per minute for origination or termination of calls compared with the previous GTE rates that were $0.0101806 (a 90.0% increase). For comparison purposes, we note that SBC's rates in the state at that time were $0.015921 (82% of CenturyTel's new rate), Alltel's rates were $0.056092 (290% of CenturyTel's new rate) and all the other state ILECs averaged $0.057606 (298% of CenturyTel's rate). At the state level, we estimate that the increase amounted to an approximate annual increase of $7 million in revenues.

CenturyTel was allowed to raise its Arkansas state and interstate access rates.

We have three insights related to the Arkansas rates and support payments. First, the historical Alltel or CenturyTel access rates and support were calculated on the basis of costs, and they highlight the discrepancy (in some ways, an inequity) when other rural properties that are apparently similar receive less support to the detriment of consumers and investors in those properties. Second, and very important, the rhetoric related to high USF or rates sometimes glosses over the key differences in the properties, including density, quality of plant, loop lengths, and terrain, that are fundamental to public policy issues. The argument that support payments translate to inordinate profits is a superficial commentary, since it overlooks a key element of the RLEC's income statement — support is a relief from *high costs*. The third point is the one made previously — that the GTE loop

An RLEC's high USF and rates are designed to relieve high costs, while keeping customer rates low.

costs reported to NECA are, in our opinion, likely too low, reflecting underinvestment in the past; in fact, the distressed loop conditions may result in an additional burden imposed on the acquirer.

Wisconsin Rates for Former GTE Properties

In Wisconsin, the regulatory process since the time of the acquisition has become slightly more complicated. CenturyTel had expected intrastate access rate increases in the newly purchased 77 Wisconsin exchanges (42 purchased solely by CenturyTel and 35 acquired with its partner in Telephone USA). We list all the acquired exchanges in **Table 17**.

Table 17: CenturyTel Acquired Exchanges

Arkansas (to CenturyTel): Alma, Almyra, Altus, Atkins, Augusta, Bald Knob, Bay, Biggers-Reyno, Blevins, Blooming Grove, Boles, Booneville, Bradford, Cabot, Caraway, Carlisle, Carryville, Centerton, Centerville, Charleston, Clarendon, Clarksville, Colcord (Okla.), Cotton Plant, Coy-Humnoke, Dardanelle, Delaplaine, Des Arc, De Valls Bluff, Dewitt, Dover, Dumas, Elm Springs /Cave Springs, England, Garfield, Gateway, Gentry, Gillett, Gould, Greenwood, Griffithville, Hackett, Hartman/Coal Hill, Hazen, Hector, Hickory Plains, Holly Grove, Humphrey, Imboden, Jacket (Mo.), Jacksonville Main, Jesup, Judsonia, Kensett, Knobel-McDougal, Lake City, Lamar, Leachville, Leonard, London, Mammoth Spring, Manila, Mansfield, Marmaduke, Marvell, Maynard, Maysville, McCrory, McRae-Garner, Midland, Monette, Mountainburg, Ozark, Paris, Pea Ridge, Piggott, Pleasant Plains, Pocahontas, Pollard, Prescott, Ratcliff, Rector, Roe-Ulm, Rosston-Waterloo, Russellville, St. Charles, Salus, Scranton, Seligman (Mo.), Siloam Springs, Star City, Stuttgart, Subiaco, Success, Sulphur Springs, Taylor, Tillar, Trumann, Waldo, Waldron, Watts (Okla.), West Maysville, Wheatley and Winslow.

Missouri (to CenturyTel): Amazonia, Annapolis, Arcola, Aurora, Avenue City, Avilla, Belgrade, Belleview, Birch Tree, Bolckow, Boss, Braymer, Bronaugh, Brunswick-Triplett, Bunker, Caledonia, Cameron, Canton, Centerville, Clarence, Clarksdale, Collins, Concordia, Cosby, Dadeville, Dalton, Easton, Edgar Springs, Eldorado Springs, Ellsinore, Elmer, Eminence, Everton, Ewing, Fillmore, Freemont, Golden City, Gorin, Gower, Greenfield, Grove Spring, Hamilton, Hartville, Helena, Houston, Humansville, Hunnewell, Irondale, Ironton, Jerico Springs, Kahoka, Keytesville, Kidder, Kingston, La Belle, La Plata, Laddonia, Lagrange, Lawson, Lesterville, Lewiston, Licking, Lowry City, Macon, Manes, Maysville, Milo, Monroe City, Montauk, Monticello, Mount Vernon, Mountain Grove, Nebo, Norwood, Oates, Osborn, Osceola, Palmyra, Paris, Perry, Plattsburg, Potosi, Raymondville, Revere, Roby, Rockville, Rosendale, Santa Fe, Sarcoxie, Savannah, Schell City, Shelbina, Shelbyville, Sheldon, Stewartsville, Stoutsville, Timbers, Trimble, Turney, Van Buren, Vanzant, Walker, Wayland, Weaubleau, West Quincy, Whitesville and Winona.

Wisconsin (to CenturyTel (42)): Alma Center, Arcadia, Argyle, Augusta, Bangor, Benton, Black Creek, Black River Falls, Blair, Centerville, Cleghorn, Darlington, Denmark, Ettrick, Fairchild, Fall Creek, Fountain City, Galesville, Gratiot, Hixton, Holmen, Kingston, Luxemburg, Markesan, Melrose, Merrillan, Mindoro, Montfort, Muscoda, New Franken, Nichols, Osseo, Pickett, Rosendale, Seymour, Shiocton, Shullsburg, Taylor, Trempealeau, Wautoma, Whitehall, Wiota.
Wisconsin (to Telephone USA (35)): Balsam Lake, Barron, Birchwood, Boyceville, Butternut, Centuria, Colfax, Eastman, Elk Mound, Elmwood, Gillett, Glenwood City, Glidden, Hayward, Knapp, Lakewood, Laona, Maiden Rock, Mellen, Park Falls, Pepin, Plum City, Prairie Du Chien, Prescott, Rice Lake, Seneca, Spider Lake, Springbrook, St. Croix Falls, Stone Lake, Suring, Wabeno, Wauzeka, Wheeler, Winter.

Source: CenturyTel

As previously noted, the problem in attempting to raise rates in Wisconsin arose because CenturyTel purchased only a portion of the GTE/Verizon assets in the state, while Verizon retained the remainder. In the regulatory proceeding after the

acquisition, CenturyTel argued that higher intrastate access rates were appropriate in the specific exchanges it purchased in Wisconsin, since its newly acquired properties had costs that were higher than those of the average GTE/Verizon assets in the state. CenturyTel added evidence of higher costs based on a previous acquisition with similar physical plant specifications. However, in October 2000, the Public Service Commission (PSC) of Wisconsin declined the request for the increase, stating that there was not yet enough cost information on those specific exchanges and that there was no reason on the record to believe CenturyTel's costs would be higher than those of GTE/Verizon. At the same time, we note that CenturyTel was successful 10 months later in convincing the PSC to consider interim rate relief before the consideration of definitive changes. As a result, in August 2001, the PSC granted $7.9 million in interim rate relief for the properties, with the expectation that CenturyTel would file for permanent rates in 4Q01. It is important to note that the granting of interim rates does not necessarily translate into approval of similar rates on a permanent basis.

Wisconsin PSC declined to finalize increases in intrastate access rates until a fuller record was available.

Rate Changes for Former Ameritech Properties

To provide more color, in a separate acquisition-related issue in Wisconsin, CenturyTel has been hampered by an access rate dispute related to the 19 Kendall exchanges that the company purchased from Ameritech in December 1998. Apparently, CenturyTel and Ameritech had jointly appeared before the state's PSC staffers and had agreed that Ameritech would lower its urban intrastate access rates that were effectively cross-subsidizing rural properties, and CenturyTel would raise its rural rates by a commensurate amount, all of which would simply be paid by the long-distance company and would be transparent to the consumer. The precedent for such an action was drawn from a 1995 FCC Order (CC Docket 94-1 — Price Cap Performance Review for Local Exchange Carriers) that stated that "sales or swaps of exchanges should result in an exogenous adjustment to the price cap carrier's [the selling RBOC's] PCI" (paragraph 328.) The Order went on to clarify the FCC's view.

> Hence, price cap regulation could contain a perverse incentive for price cap LECs to sell whole study areas, without corrective action by this Commission. Accordingly, in the future, conditions regarding exogenous cost adjustments related to sales or swaps of exchanges will attach to any necessary waivers of the price cap merger and acquisition rules as well as to study area waivers. We will grant a waiver of the price cap merger and acquisition rules to a rate-of-return LEC buying all or part of a study area from a price cap LEC *only on the condition that the selling price cap LEC make a downward exogenous cost adjustment to remove the effects of the transferred properties from price-capped rates that were based*, in whole or in part, upon the inclusion of those exchanges within the price-capped study areas, because only then would the waiver be in the public interest. [Emphasis added.] [FCC CC Docket No. 94-1, Price Cap Performance Review for Local Exchange Carriers, paragraph 330.]

FCC's 1994 ruling involves lowering the seller's access rates in certain cases.

Without further complicating this discussion, we note that a subsequent problem arose related to the Kendall rate change due to a procedural error that occurred when the PSC staff accepted the "rate adjustment" without formally presenting the rural rate change to the entire five-person Wisconsin Commission. CenturyTel and the Wisconsin PSC are involved in litigation over the procedural issues, but it appears that the Commission is tentatively in agreement that a rate increase should occur, as the PSC has granted an interim rate that is higher than the previous rates by $8.8 million annually. A final decision on permanent rates is expected in 4Q01.

The Wisconsin Commission did not officially approve the new rates.

Problem with One Arkansas Rate Plan

CenturyTel also discovered a separate regulatory problem relating to ISP traffic and local access rates in the Arkansas properties acquired from GTE/Verizon. The background is that GTE had introduced a flat-rate $20 per month calling plan in the early 1990s that eventually resulted in an abuse in 2001 when customers were dialing up to the Internet for thousands of minutes a month (some for as much as 20,000+ minutes in a single month). More specifically, the Internet Service customer was using an Internet Service Provider (ISP) whose point of presence (POP, the local access dial-up number) was located in a nearby city where the telephone incumbent was not CenturyTel. CenturyTel owed terminating charges that were to be paid to the state's carrier common line pool as a result of a plan agreed to a decade earlier by GTE to pool and exchange minutes with other ILECs whose territory was combined in extended area calling services. To resolve the problems, CenturyTel now plans to transition the ISP customers from the competing ISP and re-home the dial-up access to a company-owned POP, reducing the charges owed. Further, CenturyTel received a favorable ruling from the Arkansas Commission in August 2001, allowing the company to limit the minutes a customer could use under the plan. Effective September 6, 2001, the amended tariff plan will go into place, with the company projecting an improvement in consolidated EPS of $0.02 quarterly, starting in 1Q02, as there is an approximate four-month lag in the settlement process with the Arkansas Common Carrier Line Pool.

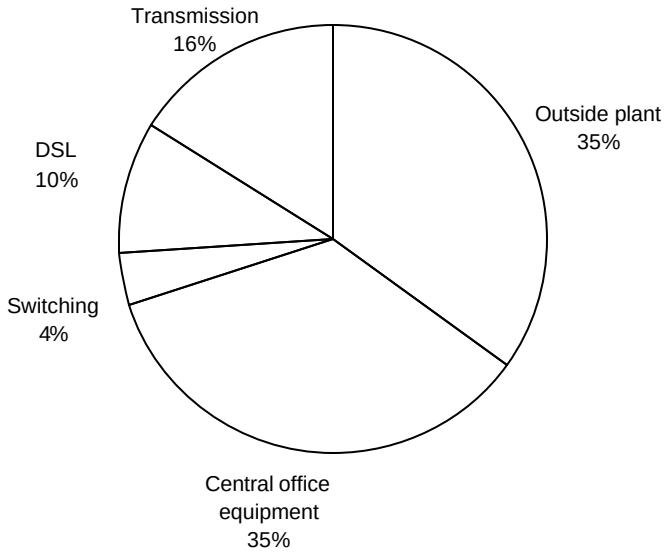
In summary, we note that the regulatory process is complex already and is made even more complicated by the fact that the regulators are contending with acquisition-related issues arising from a changing regulatory and competitive environment.

INFRASTRUCTURE

CenturyTel now plans to spend approximately $91 million on capital expenditures for the newly acquired Verizon lines in 2001 and approximately $85 million in 2002. The company is allocating its expenditures in 2001 roughly in line with the statistics illustrated in **Figure 10**. Importantly, 65% of the plan is dedicated to

equipment inside central offices, including switching, as well as for outside plant, which is primarily loop rehabilitation. The balance is for interoffice and DSL expenditures.

Figure 10: CenturyTel Allocation of 2001 Capex for Verizon Exchanges



Source: Company data; Legg Mason Wood Walker, Inc.

CenturyTel's allocation of capital expenditures is an anecdotal corroboration of the distressed condition of the RBOC/GTE plant in rural America, as there is significant need for improvement in the core parts of the network. When confronted with the need for upgrade, it appears that the urban LEC chooses to divest rather than invest. Further, one would assume that the first properties to be divested would be small, inefficient and outdated in terms of the plant's infrastructure. The data appear to support these assumptions.

WISCONSIN

Data from Wisconsin reveal how underserved GTE's exchanges were.

CenturyTel by itself and together with its joint venture partner, Telephone USA, purchased part of GTE's total property base in Wisconsin. The Wisconsin exchange-level information reveals several interesting statistics that highlight how underserved were the exchanges sold in that state. Of the 23 exchanges equipped with ISDN capability, GTE retained 19, including the 13 central offices that supported the most lines, all of which served at least 7,000 access lines. The lines that were sold were supported by lesser data capabilities.

Table 18 lists the central offices and the access tandem switches of GTE/Verizon in Wisconsin — both those retained and those sold. Notably, GTE retained 75%

of the exchanges in the state in tandem-based clusters around the largest cities and central offices, which averaged more than 3,300 lines per exchange. What occurred at the Green Bay tandem switch (a Class 4 switch that is less functional than a Class 5 host switch) was different from GTE's process of divestitures in the other Wisconsin tandem switches; in the case of Green Bay, GTE kept less than one-half of the lines associated with the tandem and sold exchanges with a relatively higher average number of lines (2,547) compared with average lines in the exchanges it retained (1,985). We believe that in Wisconsin, GTE chose to sell small exchanges or those (in Green Bay) that did not cluster with other "valued" properties. Further, GTE divested properties in which there were various older types of inside plant and retained offices in which the inside plant was manufactured by a single equipment vendor. There were other characteristics that emerged from the sales, but those issues are too complex for this report.

GTE sold small exchanges or those that did not cluster with other "valued" properties.

Table 18: Wisconsin GTE Exchange Partitioning

Wisconsin Properties GTE Retained				
Access Tandem CO	% GTE COs Retained	Lines	Assoc. COs	Lines/CO
Wausau	96.7%	111,630	20	5,582
Madison	100.0%	91,946	24	3,831
Plymouth	100.0%	53,279	22	2,422
Milwaukee	90.8%	50,571	21	2,408
Dodgeville	82.8%	40,122	18	2,229
Rhinelander	92.1%	29,193	7	4,170
Green Bay	43.8%	9,926	5	1,985
Total	**75.1%**	**386,667**	**117**	**3,305**
Wisconsin Properties GTE Sold				
Access Tandem CO	**% GTE COs Sold**	**Lines**	**Assoc. COs**	**Lines/CO**
Rice Lake	100.0%	32,745	15	2,183
Eau Claire	100.0%	27,523	21	1,311
Lacrosse	100.0%	16,343	11	1,486
Green Bay	56.2%	12,735	5	2,547
Appleton	100.0%	10,802	5	2,160
Dodgeville	17.2%	8,358	8	1,045
Boscobel	100.0%	6,859	4	1,715
Milwaukee	9.2%	5,104	4	1,276
Wausau	3.3%	3,865	1	3,865
Rhinelander	7.9%	2,508	2	1,254
New Richmond	100.0%	1,664	1	1,664
Total	**24.9%**	**128,506**	**77**	**1,669**

Source: GTE Wisconsin annual report; company data; Legg Mason Wood Walker, Inc.

GTE has reported that it invested approximately a relatively small figure — $85.4 million — in its Wisconsin plant from 1996 through 1998, and reported that its properties all had digital switching. We understand that CenturyTel still had to replace a number of the Wisconsin switches.

On balance, in Wisconsin, the plant appears to be among the poorest of the GTE/Verizon properties we have surveyed. The loop lengths across the entire Wisconsin portfolio were reported to average 4.6 kilometers per line, which is above our survey average of 3.8 kilometers per line. Further, depreciation as a percentage of total assets was 61% in 1999, which was also among the highest in the statewide regions that we surveyed. Again, assuming that GTE sold the poorest of its properties, which we have verified independently (most of the oldest switches and outdated software releases), the Wisconsin properties appeared to be in great need of rehabilitation.

Wisconsin divestitures appear to have been among the poorest of GTE divestitures.

MISSOURI

In Missouri, CenturyTel purchased approximately 27% of GTE's access lines with the average exchange serving about 1,200 lines. Our data suggest that GTE/Verizon continues to own properties with an average of 1,360 lines per exchange, and the company is apparently evaluating the sale of those lines.

CenturyTel's average exchange size in Missouri is 1,200 lines.

In its last three years of operations, we believe that GTE invested $105.6 million in Missouri plant upgrades to leave the plant 100% digital, supported by 700 route miles of fiber.

The more general data that we have on the statewide GTE properties in Missouri suggest that the plant was in relatively good shape at the time of the CenturyTel purchase. As of 1999, the Missouri properties had 42% depreciated assets as a percentage of total assets, well below the 59% average for rural-only sales in our study, suggesting to us that the plant is newer and in good condition. Again, we cannot say specifically that the assets were better than other properties, since GTE retained 73% of the lines, which we assume were generally in a condition superior to that of the divested rural lines. The data we examined also suggested that the loop lengths across the entire Missouri GTE properties were relatively short, but we have limited information on the specific divested properties.

Missouri statewide properties appear to be good assets, superior to those in most of the other acquisitions in our Case Study.

While GTE retained properties in which business lines were more than 25% of total lines, we estimate that approximately 21%–22% of the lines divested to CenturyTel were business related. In **Table 19**, we provide some insight into the type of service provided in the acquired properties, as of GTE's 1999 FCC filing, and compare the properties to statistics averaged across our case study group.

Table 19: CenturyTel Line Profile

	GTE MO*	GTE WI*	GTE AR	Survey Average
Access Lines by Customer Type				
Business analog single	20,628	25,250	9,691	
Business analog multiple	88,034	97,847	35,119	
Digital (64 kbps or equivalent)	7,601	1,002	1,990	
Payphone	4,230	4,424	1,772	
Residential Analog	350,791	396,555	176,727	
Total	**471,284**	**525,078**	**225,299**	
Access Lines % of total by Type				
Business analog single	4.4%	4.8%	4.3%	3.8%
Business analog multiple	18.7%	18.6%	15.6%	19.4%
Digital (64 kbps or equivalent)	1.6%	0.2%	0.9%	2.2%
Total business	24.7%	23.6%	20.8%	25.4%
Payphone	0.9%	0.8%	0.8%	0.9%
Residential Analog	74.4%	75.5%	78.4%	73.6%
Special Access Lines				
Analog (4 kHz or equivalent)	2,544	2,036	1,400	
Digital (64 kbps or equivalent)	52,860	46,456	13,494	
Total access lines, switched/special	**526,688**	**573,570**	**240,193**	

*GTE MO and WI represent statewide properties, but CenturyTel purchased only 27% and 25%, respectively, of the GTE lines in the two states.

Source: FCC; Legg Mason Wood Walker, Inc.

ARKANSAS

We believe that the condition of the plant in Arkansas was good by contrast with the poor condition of the plant in Wisconsin. GTE had invested $167 million in Arkansas facilities in the three years prior to announcing the sale of the properties to CenturyTel, raising interoffice digital capabilities to 100%. The relatively better condition of the plant is reflected in the GTE report that 42% of its total Arkansas plant had been depreciated by 1999, and local loop circuit kilometers were 1.0 per line. In the case of the Arkansas properties, CenturyTel purchased all of the plant, so the statistics are a better indication of what was purchased (in contrast with partial purchases in Missouri and Wisconsin.)

GTE had invested $167 million in Arkansas during the last three years of GTE ownership.

OPERATING DATA

Operating statistics vary across the three-state properties acquired by CenturyTel. We have summarized key data in **Table 20**, allowing for analysis of the difference among the properties and the differences from our survey averages. We emphasize again that the data for the Arkansas properties appear to be reasonably accurate as CenturyTel purchased all of GTE/Verizon's state assets. At the same

time, the FCC submissions by GTE are less adequate in Missouri and Wisconsin where CenturyTel purchased only about one-quarter of those GTE assets.

Table 20: Financial Profile of CenturyTel Acquired Properties in 1999

	GTE MO*	GTE WI*	GTE AR	Survey Average
Revenue per line per month				
Local Service Revenue	$16.97	$24.82	$20.61	$22.02
Interstate Access Revenue	$15.44	$12.92	$20.00	$16.17
Intrastate Access Revenue	$20.36	$6.92	$7.05	$9.84
Long Distance Revenue	$6.39	$2.46	$7.24	$3.23
Miscellaneous Revenue	$7.08	$9.00	$8.20	$6.66
Gross Revenue	$66.24	$56.12	$63.10	$57.90
Uncollectible Revenue	$1.17	$0.55	$2.53	$1.04
Average Revenue/Line/Month	**$65.07**	**$55.57**	**$60.58**	**$56.87**
Deprec. & Amort. as % of Revenues	21.8%	29.8%	23.5%	22.3%
EBITDA/Line/Month	$39.75	$26.54	$27.94	$27.63
EBITDA Margin	**61.1%**	**47.8%**	**46.1%**	**47.8%**

*GTE MO and WI represent statewide properties, but CenturyTel purchased only 27% and 25%, respectively, of the GTE lines in the two states.

Source: FCC; Legg Mason Wood Walker, Inc.

REVENUES

Access rates account for meaningful revenue difference between acquired properties.

Using 1999 data, monthly revenues per line of the properties reported to the FCC are highest in Missouri at $65.07 and lowest in Wisconsin at $55.57. Local rates appear to be higher in Wisconsin than in the other two states, while access revenues are largely the reason for the difference among the three states in terms of total per line revenues. Intrastate access revenues are nearly three times higher in Missouri compared with the revenues in Wisconsin or Arkansas. We estimate that the blended (mixing various traffic sensitive and nontraffic-sensitive charges) intrastate access revenues per minute are $0.20 in Missouri, $0.06 in Wisconsin and $0.10 in Arkansas, which contributes to the fairly low total revenues in Wisconsin and higher totals in Missouri. In Wisconsin, long-distance revenues appear to be low compared with the line-item in the other two states, suggesting that there is a meaningful revenue opportunity. Comparing the three states, it would appear the company has room for improvement in long-distance penetration in Wisconsin and could possibly argue that local service rates and/or intrastate access rates should be raised in two of the three states.

CenturyTel reports that it has made significant progress in upgrading availability of services in the properties it has acquired. **Table 21** provides perspective on CenturyTel's progress in upgrading plant to offer new services and in penetrating its new markets. Notably, the company reports meaningful progress with vertical services, including Caller ID, as well as long-distance services.

Table 21: CenturyTel Product Availability and Penetration Levels

	Product Availability			Penetration Rates		
	Acquired VZ Exchgs		CenturyTel	Acquired VZ Exchgs		CenturyTel
	At Acq.	2Q01	Legacy	At Acq.	2Q01	Legacy
Custom servs.	67%	96%	99%	22%	34%	-
Caller ID	-	-	-	10%	16%	25%
VoiceMail	67%	96%	99%	< 1%	1%	15%
Long-Distance	-	-	-	NA	14%	26%
Internet	67%	96%	99%	< 1%	1%	10%
DSL	0%	41%	58%	0%	0%	1%

Source: Company data; Legg Mason Wood Walker, Inc.

MARGINS

The GTE EBITDA margin in Missouri was reported to the FCC as a healthy 61.1% in 1999 but the number may be misleading as CenturyTel did not acquire all the lines in the state. Where the company did acquire all the lines — in Arkansas — the fully allocated EBITDA margin was 46.1%. We estimate that the net effect of CenturyTel's increases in intrastate access rates (subsequent to the purchase) takes the revenue per line in Arkansas up $6, by our estimates, and the EBITDA up similarly, resulting in an EBITDA margin of over 50%. In Wisconsin, we believe there has been margin improvement above the 47.8% reported in 1999, but CenturyTel has not yet gained final approval for rate increases.

CAPITAL INVESTMENT

CenturyTel plans to invest approximately $133 annually per line.

CenturyTel disclosed that it plans to invest approximately $133 per line annually in its newly acquired properties to upgrade plant for advanced services and high speed Internet access (DSL). According to company representatives, DSL investments also will be made where the exchange will attract at least 50 subscribers. Exactly how the service will be rolled out in the new markets has not been announced but we believe the program will provide for deployment in the largest exchanges within the next year.

RESULTS OF FINANCIAL MODELING

Matrices highlight CenturyTel's potential returns in the acquired properties.

To further review the CenturyTel acquisitions, the historical data from each transaction are analyzed within the framework of our DCF financial model. The matrices presented in **Table 22** through **Table 24**, highlight the potential net present value of cash flows with various mixes of revenues per line and acquired EBITDA margin. The shaded areas represent the respective revenue/line/month and acquired EBITDA margins that, according to our estimates, generate acceptable returns (positive NPV). As we noted earlier, the "acquired" margin

excludes from the FCC reported margins all overhead which CenturyTel was not required to purchase.

Missouri sale price reflects GTE's goals other than achieving a high price per line.

Our analysis highlights that the Missouri lines have extraordinary returns, but we note that those properties are unusual in that they appear to have been sold for significantly less than their fair value to fulfill one of GTE's goals — to deliver some assets to minority investors. We believe that Missouri, therefore, represents an outlier (motivated by goals other than generating high asset prices) rather than a typical sale of rural lines. The return characteristics do not appear to be quite as attractive in Wisconsin where we assume more capital investment is required. In the matrices presented in the tables, we have highlighted the revenues per line per month as reported by GTE in 1999 to the FCC as well as the fully allocated (with overhead) EBITDA margin. We have assumed that the "acquired" EBITDA margin is 12%–20% higher than the reported EBITDA margin. So, for example, in Arkansas, CenturyTel acquired a margin that is higher than the reported 46%, possibly as high as 58%–66% (12%–20% above the reported figure). In Wisconsin and Missouri, the margins and revenues are statewide figures that are probably higher than those generated in the parts of the states actually acquired by CenturyTel.

Table 22: Financial Analysis of CenturyTel Missouri Acquisition – Net Present Value

Acquired EBITDA Margin	Revenue/Line/Month												
	$63	$65	$67	$69	$71	$73	$75	$77	$79	$81	$83	$85	$87
43%	(414)	(313)	(212)	(111)	(10)	91	192	293	394	495	597	698	799
44%	(340)	(237)	(133)	(30)	73	177	280	384	487	591	694	798	901
45%	(266)	(161)	(55)	51	157	263	368	474	580	686	792	897	1,003
46%	(192)	(84)	24	132	240	348	457	565	673	781	889	997	1,106
47%	(118)	(8)	103	213	324	434	545	655	766	876	987	1,097	1,208
48%	(44)	69	182	294	407	520	633	746	859	972	1,084	1,197	1,310
49%	30	145	260	376	491	606	721	836	952	1,067	1,182	1,297	1,412
50%	104	222	339	457	574	692	809	927	1,044	1,162	1,280	1,397	1,515
51%	178	298	418	538	658	778	897	1,017	1,137	1,257	1,377	1,497	1,617
52%	252	374	497	619	741	863	986	1,108	1,230	1,352	1,475	1,597	1,719
53%	326	451	575	700	825	949	1,074	1,198	1,323	1,448	1,572	1,697	1,821
54%	400	527	654	781	908	1,035	1,162	1,289	1,416	1,543	1,670	1,797	1,924
55%	474	604	733	862	992	1,121	1,250	1,379	1,509	1,638	1,767	1,897	2,026
56%	548	680	812	943	1,075	1,207	1,338	1,470	1,602	1,733	1,865	1,997	2,128
57%	622	756	890	1,024	1,158	1,292	1,426	1,560	1,695	1,829	1,963	2,097	2,231
58%	696	833	969	1,106	1,242	1,378	1,515	1,651	1,787	1,924	2,060	2,196	2,333
59%	771	909	1,048	1,187	1,325	1,464	1,603	1,742	1,880	2,019	2,158	2,296	2,435
60%	845	986	1,127	1,268	1,409	1,550	1,691	1,832	1,973	2,114	2,255	2,396	2,537
61%	919	1,062	1,205	1,349	1,492	1,636	1,779	1,923	2,066	2,209	2,353	2,496	2,640
62%	993	1,138	1,284	1,430	1,576	1,722	1,867	2,013	2,159	2,305	2,450	2,596	2,742

Key Assumptions

Estimated Acquisition Cost	$2,505	CAPEX/Line/Month	$12	Cost of Equity	10.0%
Rehabilitation Costs	$300	Tax Rate	38.0%	Cost of Debt	7.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

Table 23: Financial Analysis – CenturyTel Wisconsin Acquisition – Net Present Value

Acquired EBITDA Margin	Revenue/Line/Month												
	$51	$53	$55	$57	$59	$61	$63	$65	$67	$69	$71	$73	$75
46%	(1,246)	(1,148)	(1,050)	(951)	(853)	(755)	(656)	(558)	(460)	(361)	(263)	(165)	(66)
47%	(1,192)	(1,091)	(991)	(890)	(790)	(689)	(589)	(488)	(388)	(288)	(187)	(87)	14
48%	(1,137)	(1,035)	(932)	(829)	(727)	(624)	(522)	(419)	(316)	(214)	(111)	(9)	94
49%	(1,083)	(978)	(873)	(769)	(664)	(559)	(454)	(350)	(245)	(140)	(35)	69	174
50%	(1,028)	(921)	(815)	(708)	(601)	(494)	(387)	(280)	(173)	(66)	41	147	254
51%	(974)	(865)	(756)	(647)	(538)	(429)	(320)	(211)	(102)	7	116	226	335
52%	(919)	(808)	(697)	(586)	(475)	(363)	(252)	(141)	(30)	81	192	304	415
53%	(865)	(751)	(638)	(525)	(412)	(298)	(185)	(72)	42	155	268	382	495
54%	(810)	(695)	(579)	(464)	(348)	(233)	(118)	(2)	113	229	344	460	575
55%	(756)	(638)	(521)	(403)	(285)	(168)	(50)	67	185	302	420	538	655
56%	(701)	(581)	(462)	(342)	(222)	(103)	17	137	257	376	496	616	735
57%	(647)	(525)	(403)	(281)	(159)	(37)	84	206	328	450	572	694	816
58%	(592)	(468)	(344)	(220)	(96)	28	152	276	400	524	648	772	896
59%	(538)	(412)	(285)	(159)	(33)	93	219	345	471	597	724	850	976
60%	(483)	(355)	(227)	(98)	30	158	286	415	543	671	800	928	1,056
61%	(429)	(298)	(168)	(37)	93	223	354	484	615	745	875	1,006	1,136
62%	(374)	(242)	(109)	24	156	289	421	554	686	819	951	1,084	1,216
63%	(320)	(185)	(50)	84	219	354	488	623	758	893	1,027	1,162	1,297
64%	(265)	(128)	9	145	282	419	556	693	829	966	1,103	1,240	1,377
65%	(211)	(72)	67	206	345	484	623	762	901	1,040	1,179	1,318	1,457

Key Assumptions

Estimated Acquisition Cost	$2,880	CAPEX/Line/Month	$11	Cost of Equity	10.0%
Rehabilitation Costs	$250	Tax Rate	38.0%	Cost of Debt	7.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

Table 24: Financial Analysis - CenturyTel Arkansas Acquisition - Net Present Value

Acquired EBITDA Margin	Revenue/Line/Month												
	$56	$58	$60	$62	$64	$66	$68	$70	$72	$74	$76	$78	$80
44%	(1,596)	(1,502)	(1,407)	(1,313)	(1,219)	(1,125)	(1,031)	(937)	(843)	(749)	(655)	(561)	(467)
45%	(1,536)	(1,440)	(1,343)	(1,247)	(1,151)	(1,055)	(959)	(862)	(766)	(670)	(574)	(478)	(381)
46%	(1,476)	(1,378)	(1,279)	(1,181)	(1,082)	(984)	(886)	(787)	(689)	(591)	(492)	(394)	(296)
47%	(1,416)	(1,316)	(1,215)	(1,115)	(1,014)	(914)	(813)	(713)	(612)	(512)	(411)	(311)	(210)
48%	(1,356)	(1,254)	(1,151)	(1,048)	(946)	(843)	(740)	(638)	(535)	(433)	(330)	(227)	(125)
49%	(1,296)	(1,192)	(1,087)	(982)	(877)	(773)	(668)	(563)	(458)	(354)	(249)	(144)	(39)
50%	(1,236)	(1,130)	(1,023)	(916)	(809)	(702)	(595)	(488)	(381)	(274)	(168)	(61)	46
51%	(1,177)	(1,068)	(959)	(849)	(740)	(631)	(522)	(413)	(304)	(195)	(86)	23	132
52%	(1,117)	(1,006)	(894)	(783)	(672)	(561)	(450)	(339)	(227)	(116)	(5)	106	217
53%	(1,057)	(944)	(830)	(717)	(604)	(490)	(377)	(264)	(150)	(37)	76	189	303
54%	(997)	(882)	(766)	(651)	(535)	(420)	(304)	(189)	(73)	42	157	273	388
55%	(937)	(820)	(702)	(584)	(467)	(349)	(232)	(114)	3	121	239	356	474
56%	(877)	(758)	(638)	(518)	(398)	(279)	(159)	(39)	80	200	320	440	559
57%	(817)	(696)	(574)	(452)	(330)	(208)	(86)	36	157	279	401	523	645
58%	(758)	(634)	(510)	(386)	(262)	(138)	(14)	110	234	358	482	606	730
59%	(698)	(572)	(445)	(319)	(193)	(67)	59	185	311	437	564	690	816
60%	(638)	(510)	(381)	(253)	(125)	3	132	260	388	517	645	773	901
61%	(578)	(448)	(317)	(187)	(56)	74	204	335	465	596	726	856	987
62%	(518)	(386)	(253)	(121)	12	145	277	410	542	675	807	940	1,072
63%	(458)	(324)	(189)	(54)	80	215	350	484	619	754	889	1,023	1,158

Key Assumptions

Estimated Acquisition Cost	$3,947	CAPEX/Line/Month	$7	Cost of Equity	10.0%
Rehabilitation Costs	$100	Tax Rate	38.0%	Cost of Debt	7.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

SUMMARY

CenturyTel's acquisitions provide several helpful insights. First of all, CenturyTel acquired lines in Arkansas for approximately $3,600–$3,900 per line (approximately 9.1x expected first-year cash flow), depending on whether the number of lines is based on those served at the time of the closing or the announcement of the purchase. Adjusting for rehabilitation costs, we estimate that the total price paid was approximately $3,700–$4,000, which we believe is the appropriate way to view the acquisition price. Assuming that the appropriate return on investment for CenturyTel is consistent with the company's allowed rate of return, management appears to be suggesting that it can achieve an appropriate return on properties that are valued as high as $3,900 or $4,000.

We estimate that CenturyTel paid approximately $3,900 for the Arkansas lines including rehabilitation costs, suggesting an appropriate return can be generated at that level.

Second, we believe that CenturyTel has advantages in transitioning distressed properties through a rate-of-return regulatory system. Rate-of-return mechanisms allow for rates to be reset at higher levels that better reflect underlying costs. Then, after the rehabilitation process, it is more likely that a rural operator can make the decision whether to shift to an alternative price-cap regulatory scheme.

Third, CenturyTel's experience in acquiring properties reinforces the importance of due diligence to gain an understanding of the specific assets, refurbishment

costs, likely revenues and expenses, and the unique regulatory factors. Clearly, CenturyTel recognized the significant differences among Arkansas, Missouri and Wisconsin, but probably did not expect the regulatory complexity it encountered in Wisconsin.

CITIZENS COMMUNICATIONS

Analysis of U S West properties is retained in this report to focus on network architecture.

Earlier in the report, it was suggested that Citizens offered special insight into multiple acquisitions from multiple sellers. In addition, the Citizens case provides insight into an important infrastructure issue, in that U S West (prior to the dissolution of the transaction) was selling exchanges that were structurally separated from their host switches, that is, offloading properties with remote switches in small communities cut off from larger communities in which the host resided. Therefore, we have retained in this report all the analysis that we performed on the U S West properties so that we are able to highlight key issues related to RBOC divestitures and the issue of "orphaned remotes."

This report focuses on Arizona, Minnesota and Illinois to study integration issues.

Rather than concentrate on all of Citizens' acquired properties, this report pays special attention to three larger sets of acquisitions in states where at least two of the sellers are, or were to be, involved — Arizona (now a minor transaction by virtue of the failure of the U S West sale), Minnesota, and Illinois. We believe that Arizona, Minnesota and Illinois highlight issues that are different from those that arise at the other three companies in this case study, as Citizens is integrating *multiple* networks rather than taking over a more uniform architecture supplied by a single seller; by contrast, CenturyTel, Iowa Telecom and VALOR are integrating only GTE lines. We also believe that Citizens is acquiring the best integrated network in these case studies (Frontier) and would have been acquiring the most underinvested network (U S West) among the lines disposed in the last several years.

BASIC DESCRIPTION

Citizens purchased properties from three sellers — Verizon, Qwest and Global Crossing.

In 1999 and 2000, Citizens announced its intention to purchase a total of 1.98 million lines from three different sellers — GTE/Verizon, U S West/Qwest and Frontier/Global Crossing. Subsequently, on July 20, 2001, Citizens announced that it was terminating its original agreement to purchase about 540,000 U S West/Qwest lines ($1.6 billion) in nine states, alleging that Qwest had materially misrepresented the level of revenues in the properties being sold. Qwest is seeking arbitration to resolve whether Citizens breached its agreement to purchase the lines. Citizens therefore has completed its already-announced acquisitions in a total of 23 states, up from 14 states prior to the three major transactions. The three states in which Citizens is acquiring the most lines are New York (682,212

lines), Minnesota (297,713 lines), and Illinois (140,947 lines). The three states account for approximately 77% of the total lines acquired by Citizens.

ARIZONA

In Arizona, Citizens acquired approximately 9,000 lines from GTE, and intended to acquire another 160,000 U S West lines that would have expanded the company's three lightly populated legacy clusters (148,000 lines) in the northern part of the state to larger and somewhat denser concentrations. None of the U S West lines were actually acquired when U S West/Qwest and Citizens failed to reach an agreement over a dispute related to U S West/Qwest revenue figures that Citizens alleged were lower than originally represented.

Had Citizens completed the Qwest transaction, it would have added clusters in the southern part of the state where Citizens previously had no presence. Despite the collapse of the Qwest property sale, Citizens is still the second-largest telco in the state with a total line count of more than 157,000 lines, trailing only U S West/Qwest.

Review of Arizona reveals that U S West wanted to sell small and widely dispersed properties.

Even a cursory review of the divestiture process in the state of Arizona reveals the mind of the seller and the intent of the buyer. The seller wanted to divest very small and widely dispersed properties in which the seller had invested little, or the seller wanted to avoid future investment. Citizens added lines (and planned to add more lines) that could be clustered with properties that it already owned or combined with those from other sellers, thereby allowing for new efficiencies in operations.

Throughout these case studies, it is apparent that the larger carriers are generally divesting isolated towns and smaller exchanges to concentrate on higher-profit "core" operations in the larger cities. In Arizona, for example, Qwest maintains presence in the large cities — Phoenix, Tucson, Flagstaff, Prescott, Casa Grande, Nogales and Sierra Vista — as well as the tourist areas near Natural Bridge (Payson/Pine), and intended to divest more sparsely populated regions. The more rural regions were intended to be sold to Citizens, which would have served the eastern and western parts of the state, while the balance of the rural regions belong to other small independent telcos, including Rio Virgin-Midvale (700 lines), South Central Utah (serving Kaibab Indian Reservation in Arizona, but the total 15,000 lines are primarily located in Utah), Gila River (3,360 lines, Gila River Indian Reservation lands), Table Top Telco (5,000 lines, Hopi Indian Reservation lands), Fort Mojave (700 lines, Fort Mojave Indian Reservation lands), Tohono O'odham Utility Authority (4,040 lines, Papago Indian Reservation lands), San Carlos Apache (1,850 lines, San Carlos Indian Reservation lands), Valley Tel Coop (8,000 lines) and multistate midtier operator TDS with approximately 10,000 lines in the state.

To the West, Citizens was successful in extending its modest Kingman cluster of 12,684 lines southward by adding all 9,000 of the state's GTE properties, which are located around Lake Havasu City, Parker, and Blythe (California). The company intended to combine the GTE lines and the legacy Citizens' lines with properties that were planned to be acquired from U S West/Qwest around Wickenburg and Yuma. Taken together, these five communities would have added nearly 127,000 lines to Citizens' total and would have rendered the company the only incumbent provider of local telephone service in western Arizona from the northwest corner of the state near Lake Mead to the southwest corner in Yuma.

In western Arizona, Citizens acquired all 9,000 GTE lines.

Citizens also wanted to add 6,181 U S West lines in an exchange in Page to its other service regions, including the Navajo Indian reservation, Winslow (5,480 lines) and Joseph City (788 lines), and the Apache reservation. Slightly to the west of its Navajo properties, Citizens would have acquired lines and network with remote switches that were to be orphaned (sold without a host switch that resides in larger communities retained by the selling company) from U S West in Williams (4,154 lines), Grand Canyon (2,570 lines) and Ash Fork (759 lines). Citizens would have expanded the company's cluster around the Navajo reservation, using networks that previously had supported only 509 lines per-exchange to a post-acquisition average exchange size of 1,018 lines.

In the southeastern part of Arizona, Citizens was to have acquired several more concentrated U S West/Qwest population centers south of its existing sparsely populated mountain service region within and to the north of the Fort Apache Indian reservation. The Show Low exchange cluster averages about 2,300 lines per wire center, while the exchanges added to the south, including the Whitlow, Globe, Safford, Willcox, Benson, St. David, Bisbee and Douglas would have added approximately 70,400 lines that average 3,200 lines per exchange. Had the Qwest transaction occurred, Citizens would have expanded its presence to cover virtually the entire eastern side of the state.

In summary, Qwest is clearly committed to serving the metro areas with more than 40,000 lines, and originally intended to leave the rural regions to rural operators. Citizens would have operated predominantly in smaller market clusters of under 40,000 lines, while other carriers concentrated on relatively small and isolated opportunities. Even a cursory review of the state's telephone service regions reinforces the thesis that there are urban carriers (usually the RBOC) that concentrate on large communities and there are rural carriers that attempt to create efficiencies in high-cost regions.

Qwest is committed to serving metro areas with more than 40,000 lines.

ILLINOIS

In Illinois, Citizens acquired rural lines with a view to clustering properties. In this case, the company combined more than 110,000 lines acquired from

GTE/Verizon with nearly 20,000 lines acquired from Frontier/Global Crossing. Citizens did not previously have a presence in the state.

The newly acquired Illinois properties cover lightly populated farmland ? countryside that is located in two principal areas of the state. In six small communities in the southern section of Illinois, all within 50 miles of I-70, the company added approximately 50,000 GTE lines. In the northeast section of the state, the company added seven communities from GTE that serve more than 70,000 lines. These clusters capture most of the farmland running along the Illinois side of the Mississippi River from the southeast tip of Iowa to the Quad Cities, where SBC's Ameritech is the incumbent, and then the company has added properties that extend northward to East Dubuque at Illinois' most northwestern point.

Citizens acquired lines that allow for clustering in its service regions.

The average exchange size of the acquired GTE properties in Illinois is approximately 1,230 lines with a median size of less than 800 lines, again reinforcing the theme that the large carriers are divesting the smallest properties and most rural regions. Citizens gained very few large exchanges in the state, with the exception of Jerseyville that serves more than 8,000 lines and two other exchanges that each have over 5,000 lines.

The average Citizens exchange size in Illinois is 1,230 lines, and the median size is less than 800 lines.

In Illinois, GTE/Verizon chose to retain approximately 800,000 lines, all characterized as larger exchanges. The dominant incumbent in Illinois remains SBC's Ameritech with 7.37 million lines. The rural regions are served by Citizens and smaller independent telcos, including Harrisonville Telephone (20,000+ lines), Alhambra-Grant Fork (1,200+ lines), Madison Tel (1,500+ lines), Madison River (86,000+ lines), Cass County Tel (3,200+ lines), Cambridge Tel (2,000+ lines), Henry County (1,600+ lines), Yates City (500+ lines), Leaf River (600+ lines), New Windsor (600+ lines), Viola Home (800+ lines) and Reynolds (600+ lines), as well as various cooperatives.

GTE/Verizon retained about 800,000 Illinois lines and SBC remains the largest local carrier.

MINNESOTA

In Minnesota, Citizens planned to combine properties acquired from three different companies to serve a total of more than 450,000 lines, had the U S West/Qwest properties closed. GTE/Verizon sold to Citizens all of GTE's Minnesota lines in the state — 133,000 lines at the time of closing in exchanges that average 1,370 lines. The Frontier properties added another 127,365 lines (as of YE 1999). U S West/Qwest intended to divest 193,563 lines (as of YE 1999) in exchanges that averaged more than 5,000 lines per exchange, but, again, that transaction was terminated in July 2001.

Without the U S West lines, Citizens' average cluster size in MN is approximately 7,200 lines or 1,340 lines per exchange.

Predictably, Citizens committed to acquire lines in relatively small Minnesota towns. The company's original plan (before the U S West bid was terminated) clustered lines around a network that served, on average, approximately 12,000

lines, but the clusters were as small as 1,400 lines and rose to as large as 46,000 lines. Without the U S West lines, Citizens' average cluster size is approximately 7,200 lines (1,340 lines per exchange), with the lines per exchange ranging from 78 to 9,400. Qwest had planned to retain its largest Minnesota cities, including Minneapolis/St. Paul, St. Cloud, Duluth, Grand Forks and Grand Rapids, while publicly traded rural operators Sprint, CenturyTel, TDS, Hickory Tech, Hector and New Ulm combine to serve approximately 300,000 lines in the state. Seventy smaller independents and cooperatives serve approximately 250,000 lines, mainly in the northern and western portions of the state.

FINANCIAL DATA

In May and June 1999, Citizens announced its intention to purchase 717,000 lines from GTE.

On May 27, 1999, Citizens Communications announced that it would purchase 195,482 GTE lines in Arizona, California and Minnesota. Then, on June 16, 1999, Citizens agreed to acquire approximately 545,000 U S West lines in nine states for $1.65 billion in cash (see **Table 25**). The U S West/Qwest transaction was terminated on July 20, 2001, with the exception of 17,000 North Dakota lines that were acquired by Citizens for approximately $38 million.

Table 25: Citizens Acquisition Data

State	Lines at annc.	Lines at close	Total GTE/USW lines	% of total lines	Exchgs	Avg. exchg size	Annc. price mils	Final Price mils	at Annc. Price/line	Final Price/line
AZ	8,645	8,600	8,600	100%	9	956	29.4	27.7	$3,397	$3,222
CA	53,553	55,100	4,244,729	1%	28	1,968	181.9	177.5	$3,397	$3,222
IL	106,850	112,200	955,275	12%	110	1,020	303.0	303.0	$2,836	$2,701
MN	133,284	142,400	142,400	100%	118	1,207	452.7	458.8	$3,397	$3,222
NE	58,723	62,200	62,200	100%	37	1,681	204.0	204.0	$3,474	$3,280
GTE	**361,055**	**380,500**	**5,413,204**	**7%**	**302**	**1,260**	**1,171.0**	**1,171.0**	**$3,243**	**$3,078**
AZ	*158,736*	*0*	*2,820,207*	*0%*	*33*	*0*	*480.9*	*0.0*	*$3,030*	*NA*
CO	*47,272*	*0*	*2,765,421*	*0%*	*17*	*0*	*143.2*	*0.0*	*$3,030*	*NA*
ID	*43,987*	*0*	*537,539*	*0%*	*9*	*0*	*133.3*	*0.0*	*$3,030*	*NA*
IA	*51,757*	*0*	*1,097,141*	*0%*	*30*	*0*	*156.8*	*0.0*	*$3,030*	*NA*
MN	*193,563*	*0*	*2,259,368*	*0%*	*44*	*0*	*586.4*	*0.0*	*$3,030*	*NA*
MT	*11,764*	*0*	*370,883*	*0%*	*9*	*0*	*35.6*	*0.0*	*$3,030*	*NA*
NE	*14,825*	*0*	*509,059*	*0%*	*7*	*0*	*44.9*	*0.0*	*$3,030*	*NA*
ND	16,764	17,000	256,552	7%	12	1,417	38.0	38.0	$2,267	$2,235
WY	*5,960*	*0*	*249,890*	*0%*	*6*	*0*	*18.1*	*0.0*	*$3,030*	*NA*
USW	**544,628**	**17,000**	**10,866,060**	**0%**	**167**	**102**	**1,650.0**	**38.0**	**$3,030**	**$2,235**
FRO	**1,071,644**	**1,096,700**	**1,096,700**	**100%**	**NA**	**NA**	**3,650.0**	**3,368.0**	**$3,406**	**$3,071**
Total	**1,977,327**	**1,494,200**	**17,375,964**	**9%**	**469+**	**NA**	**6,471.0**	**4,577.0**	**$3,273**	**$3,063**

Italics represent the terminated U S West/Qwest transaction.

Source: Company data; Legg Mason Wood Walker, Inc.

Later in 1999, Citizens disclosed that it would buy more GTE properties — 58,723 lines in Nebraska (September 21) and 106,850 in Illinois (December 16). The GTE purchases totaled $1.171 billion. Finally, on July 12, 2000, Citizens announced its intention to purchase all of the 1.1 million Frontier/Global Crossing ILEC lines for $3.65 billion (later revised to $3.368 billion.)

GTE PRICES PER LINE

Table 25 includes prices per line calculated on the basis of the number of lines in service at the time of the announcement and at the date of the transaction closing. Citizens paid an average of $3,078 per line for the GTE lines. The lowest price paid was $2,701 per line in Illinois, where Citizens acquired more sparsely populated service regions while GTE/Verizon retained the larger communities (a total of 800,000 lines). At the high end, Citizens paid $3,280 per line in Nebraska where the company was able to purchase all of the GTE lines and the integrated network in the state.

Citizens paid an average of $3,078 per line for the GTE properties.

U S WEST/QWEST PRICES PER LINE

The original U S West/Qwest transaction was priced at $3,030 per line, with the relatively lower price reflecting the poor condition of the network and the fact that U S West planned to divest no more than 9% of its lines in any one state and just 5% of its total lines in the nine states. Citizens eventually acquired one property — the 17,000 North Dakota lines for approximately $2,235 per line.

The terminated U S West bid was originally priced at slightly more than $3,000 per line.

FRONTIER PRICES PER LINE

The Frontier/Global Crossing lines cost Citizens about $3,071 per line (based on the number of lines at closing), including the nearly 700,000 lines that were formerly known as Rochester Telephone in New York State. The Rochester purchase increased Citizens' share of the New York market in terms of lines to nearly 9% overall and almost 74% of the non-RBOC New York local telephone market. Notably, the Frontier/Global Crossing properties appear to have been in better condition than the GTE/Verizon or U S West/Qwest lines.

The Frontier/Global Crossing lines cost about $3,071 per line.

In summary, Citizens paid about $3,063 per line to acquire properties that give the company more size and better clustering. The company is also one of the largest non-RBOCs in certain states, including New York where the company's share of the non-RBOC market is 74% and, in the independent-crowded Minnesota market, the company's non-RBOC share has risen to 25%. In addition, Citizens has poised itself to further consolidate in other states where the company now serves a significant number of lines, particularly in New York, Illinois, and Minnesota.

Citizens paid about $3,063 per line as the company gained size and better clustering.

REGULATION

Citizens is regulated as a price cap company at the federal level. Prices for services, including access, are fixed and the company is able to retain whatever incremental profitability may be generated. A price cap carrier relinquishes downside protection (smoothed rate-of-returns generated from a pool administered by NECA) for the opportunity to earn superior returns. Within the context of acquisitions, price caps work well when a company is poised to increase its efficiencies and believes it can improve on profitability, but it does not work well when the rates are set at levels that understate costs. The company is

Citizens is a price cap company at the federal level and has a mixed regulatory structure at state levels.

regulated on a rate-of-return basis on an intrastate level in New York, Illinois, Minnesota, Wisconsin, Arizona, Idaho, Montana, Nevada, New Mexico, Oregon and Utah, as well as individual study areas in California and Tennessee.

LIMITATIONS OF PRICE CAP REGULATION IN ACQUISITIONS

As is apparent throughout this report, a purchaser of rural lines is acquiring assets that may need significant improvement. Rates also may be artificially depressed and in need of adjustment from the monopoly-based low levels that were set by taking all costs and dividing by total lines, which may serve urban and rural communities. The rate-setting approach historically has been effective in cross-subsidizing rural regions with profits from the denser territories. More recently, however, low rates may undercut the company's ability to upgrade precisely those lines most in need of improvement as we will see more clearly in the Iowa Telecom case.

A rural price cap company can find itself inheriting rates that do not reflect costs.

In the changing industry, a rural price cap company can find itself inheriting a seller's rates that do not reflect the underlying costs of the acquired property — or the costs that *should be assigned* the properties. In the case of CenturyTel, for example, the company was able to apply for waivers to transition to rate-of-return status, which automatically raised components of its access rates in certain regions by as much as 90%. A price cap carrier is more limited, however, having to integrate underinvested plant, endure a rate case and possibly to be saddled with little or no adjustment. Additionally, there are rules when a price cap carrier purchases a rate-of-return carrier, possibly involving loss of revenues in the target company. In the Regulatory Section, we will discuss the "all-or-nothing" rule that can deprive a carrier of higher rate-of-return pricing.

INTERSTATE PRICE CAP ACCESS RATES

Citizens' interstate access rate is set at $0.0095 per minute.

As a price cap carrier at the interstate level, Citizens is governed by the May 2000 Price Cap Access Order (CALLS) that set per-minute access rates at $0.0055 for large carriers (RBOCs), $0.0065 for smaller urban carriers, and $0.0095 for price-cap rural carriers. Citizens' benchmark rate is $0.0095 per minute.

In contrast with Citizens' rates, the NECA rate-of-return average traffic-sensitive interstate rates are now about $0.03, and the pending proposal from the Multi-Association Group (MAG) calls for rural rate-of-return carriers to receive $0.016 per minute. If we compare Citizens' per minute interstate rate for rural properties ($0.0095) with the MAG rate of $0.016, the monthly discrepancy is about $3.00, assuming about 500 originating and terminating minutes. However, to offset the reduction in per minute rates, the rural rate-of-return carriers will likely receive an additional universal service support payment, known as the High Cost Fund III (HCF) or Rate Averaging Support (RAS), proposed by the Rural Task Force and the MAG plan, respectively. By our estimation, it is possible that the HCF or

RAS could add $5–$10 monthly per line, but price cap carriers such as Citizens would not be eligible to receive the difference.

UNIVERSAL SERVICE SUPPORT

Citizens receives the same level of USF funding as was paid to the seller of the respective lines.

The other major regulatory issue affecting rural carriers pertains to Universal Service Funds. In its May 2001 Order on Universal Service Funding (USF), the FCC set the regulations for USF disbursements. Effectively, the former system is reaffirmed for at least the next half decade. In addition, the Order restated the acquisition-related rule in the Code of Federal Regulations Title 47, §54.305, which states that the seller's level of USF is to be maintained for the acquirer. Thus, Citizens' USF funds are the same as those disbursed to Frontier/Global Crossing, U S West/Qwest and GTE/Verizon.

Table 26 summarizes the USF monthly high-cost payments per line for Citizens' legacy lines, as well as the GTE and Frontier lines. The primary components are local switching support (LSS) for traffic-sensitive switching costs, long-term support (LTS) for nontraffic-sensitive switching, and high cost loop support (HCL). The table also highlights that Citizens has been receiving $7.34 monthly per line, but the newly acquired properties are expected to generate very little in USF.

Table 26: Citizens USF Support Per Line Per Month as of 2Q01

Acquired Property	Local Switching Support	Long Term Support	High Cost Loop	Total
CZN legacy	$5.55	$0.10	$1.69	$7.34
U S West	$0.00	$0.00	$0.00	$0.00
GTE (AZ, MN, IL)	$0.13	$0.00	$0.77	$0.90
Frontier	$0.22	$0.06	$0.69	$0.97

Source: FCC; Legg Mason Wood Walker, Inc.

The inequity in the USF system causes harm to the customer, in our view.

The differences are striking in the USF payments to independent telephone companies versus the payments to those companies that are acquiring lines affected by the federal rule (§54.305). If we were to assume that Citizens' lines were similar to those of FairPoint Communications — in fact, the line costs of the two companies as reported to the NECA appear to be comparable (Citizens reports $412 loop costs versus FairPoint's $388) — because of the restrictions of §54.305, Citizens is receiving approximately $8 per line per month less than the company might have received if the support payments were cost-based. FairPoint receives total monthly USF per line of $13.49 compared with Citizens' blended $5.76 as reported in 2Q01. *In our view, the inequity in the system causes harm not only to the company, but also more particularly to the telephone customers who are the true beneficiaries of the public policy related to support payments.*

REGULATORY APPROVAL PROCESS

State regulatory approvals are often promised on concessions from both the seller and purchaser.

In the process of seeking regulatory approvals for the purchase of lines, Citizens encountered state regulatory commissions that requested significant concessions from the seller of the lines, as well as from Citizens itself. The requirements varied widely. For example, in Minnesota and Arizona, where both transactions eventually were terminated, the state public service commissions required that U S West/Qwest provide additional upgrades of the network before releasing the lines to Citizens. Minnesota extended the process by about a year, from 2001 to 2002, as Qwest was required to achieve performance standards. In California and other states, Citizens was required to commit to extensive upgrades. In fact, the California/Arizona closing on the GTE/Verizon lines is still pending, as the California commission continues to insist on restrictions that Citizens is reluctant to concede.

A good illustration is the terminated U S West/Qwest bid in Arizona. The Arizona Corporation Commission (ACC) approved the proposed sale in December 2000. The order approving the sale required Qwest to pay $20 million for upgrades to wire centers serving 15,000 customers or less before the transaction was to be allowed. Previously, in August 2000, Qwest and Citizens signed a stipulation with the ACC utilities division staff, requiring Citizens to invest $109 million in network upgrades, deploy digital subscriber line service (DSL) in two exchanges, and "survey customer interest" in DSL in the remaining exchanges once it took over the exchanges. The Commission is now studying issues of upgrades and new requirements in the wake of the terminated sale.

INFRASTRUCTURE

Plant purchased by Citizens appears to have been depreciated by nearly 60%.

Turning to infrastructure issues, we note that Citizens committed to purchase properties for which the depreciation as a percentage of total plant appears to be relatively high. The GTE Arizona operations, all of which were purchased by Citizens, were reported as 59% depreciated at the end of 1999. We assume that virtually no new investment was made in 2000 as GTE prepared for the sale of the exchanges. By contrast, the Arkansas properties sold to CenturyTel were reported as 42% depreciated in 1999. And, while the statistics for GTE in Illinois and the terminated transactions for U S West in Arizona and Minnesota appear better at 53%, 50%, and 53%, respectively, it is notable that the lines in those states were only partial divestitures of larger holdings by GTE and U S West, and we assume that the rural properties suffered from underinvestment by comparison with the commitments to urban properties in those states.

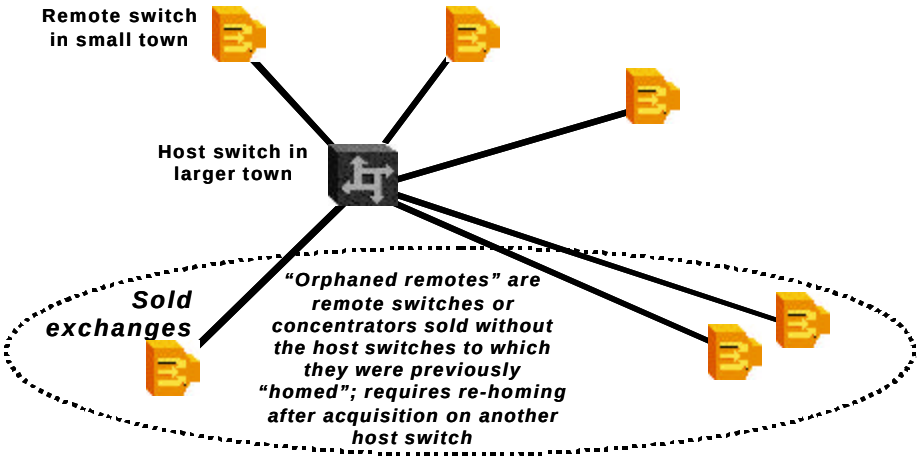
ORPHANED REMOTE SWITCHES

Distinct from the issue of older plant, Citizens encountered another infrastructure challenge. The selective sales in states where U S West intended to retain larger

population centers created problems with remote switches that were "orphaned" from their respective host switches. As illustrated in **Figure 11**, larger communities frequently have host switches that serve less-expensive remote switches in smaller communities. When a small community is sold without the sale of the larger host exchange, the remote is "orphaned," requiring a re-architecting of the network after the acquisition. None of the other case-study companies had the same extensive challenge, since CenturyTel, Iowa Telecom and VALOR all purchased statewide properties, with the exceptions of VALOR that purchased part of GTE's Texas ILEC and CenturyTel that purchased parts of the network in Missouri and Wisconsin.

When the exchanges in a small community are sold without the sale of the larger host exchange, remote switches are often "orphaned."

Figure 11: Orphaned Remote Switches



Source: Legg Mason Wood Walker, Inc.

The challenge of coping with orphaned remotes almost certainly arose because the seller wanted to retain denser communities that happened to have larger and functionally more robust switching equipment. The net effect, however, was that many remotes were cut off from hosts. As a result, Citizens planned to re-architect the network by installing new host switches or re-homing the remotes on other host switches in certain regions, a commitment that cost approximately $70–$110 per line, by our estimation. Citizens benefited in some ways from the terminated transaction in the Qwest regions, since the process was rendered simpler than it otherwise would have been.

The seller wants to retain denser communities that have the host switches.

Table 27: US West/Qwest's Orphaned Remotes in Planned Sale to Citizens

	Orphaned				Not Orphaned					
State	Lines	Avg. lines/ exch.	Median lines/ exch.	Exchs.	Lines	Avg. lines/ exch.	Median lines/ exch.	Exchs.	% lines orphnd	% exchs. orphnd
AZ/CA	*59,722*	*2,488*	*1,340*	*24*	*111,778*	*11,861*	*5,349*	*9*	*34.8%*	*71.8%*
CO	*10,310*	*1,473*	*1,265*	*7*	*41,090*	*4,109*	*4,397*	*10*	*20.1%*	*41.2%*
ID/WA	*418*	*418*	*418*	*1*	*43,482*	*6,212*	*1,629*	*7*	*1.0%*	*12.5%*
IA	*34,010*	*1,479*	*1,104*	*23*	*19,190*	*2,741*	*606*	*7*	*63.9%*	*76.7%*
MN	*26,979*	*1,927*	*2,266*	*14*	*160,121*	*5,337*	*3,402*	*30*	*14.4%*	*31.8%*
MT	*6,418*	*1,604*	*1,396*	*4*	*5,482*	*1,096*	*506*	*5*	*53.9%*	*44.4%*
ND	4,332	1,083	656	4	12,668	4,223	1,578	3	25.5%	57.1%
NE	*10,544*	*1,054*	*508*	*10*	*4,356*	*2,178*	*2,178*	*2*	*70.8%*	*83.3%*
WY	*3,039*	*1,013*	*1,556*	*3*	*2,861*	*954*	*984*	*3*	*51.5%*	*50.0%*
Totals	**155,771**	**936**	**1,175**	**90**	**401,029**	**4,456**	**2,621**	**76**	**28.0%**	**54.1%**

Italics represent terminated U S West/Qwest transactions.

Source: Company data; Individual state filings; Legg Mason Wood Walker, Inc.

We estimate that 54% of the exchanges that U S West planned to sell were "orphaned remotes."

Table 27 summarizes key data on the U S West/Qwest properties that Citizens intended to acquire (the company actually acquired only the North Dakota lines), listing the statistics state by state, including the number of lines, exchanges and orphaned remotes. Overall, we estimate that 54% of the exchanges that Citizens intended to purchase from U S West were to be orphaned. In Iowa and Arizona, which accounted for 57% of the total U S West lines that Citizens agreed to acquire, the reality was starker, as 72% of the Arizona exchanges and 77% of Iowa exchanges were to be orphaned. The situation was not uniformly bad. In Minnesota, U S West/Qwest planned to orphan 14 remotes or 32% of the 44 exchanges in the transaction with Citizens, a relatively low figure, possibly indicating that the U S West networks were fairly concentrated already and that the exchanges it planned to divest as complete clusters were considered not strategic compared with the properties that were to be retained.

OPERATING DATA

We highlight 1999 operating data for Arizona, Minnesota and Illinois in **Table 28**. Notably, the GTE Arizona property information in the table reflects actual operations purchased by Citizens. In the other states, GTE/Verizon and U S West/Qwest retained the majority of the states' lines, and primarily those concentrated in larger communities, rendering the data as less precise.

Table 28: Financial Profile of CZN Acquired Properties in 1999

	GTE IL	*USW AZ*	GTE AZ	*USW MN*	FRO NY	Survey Average
Revenue per line per month						
Local Service Revenue	$25.41	*$27.81*	$25.60	*$27.19*	$24.71	$22.02
Interstate Access Revenue	$12.45	*$13.67*	$26.52	*$13.61*	$9.45	$16.17
Intrastate Access Revenue	$5.69	*$3.92*	$25.15	*$4.51*	$3.39	$9.84
Long Distance Revenue	$2.22	*$0.88*	$1.91	*$1.09*	$0.90	$3.23
Miscellaneous Revenue	$7.19	*$5.20*	$8.47	*$4.07*	$11.66	$6.66
Gross Revenue	$52.96	*$51.48*	$87.65	*$50.47*	$50.11	$57.90
Uncollectible Revenue	$0.85	*$0.59*	$1.33	*$0.27*	$0.32	$1.04
Avg. Rev/Line/Month	$52.11	*$50.89*	$86.32	*$50.19*	$49.79	$56.87
D&A % of Revs	21.1%	*20.8%*	17.0%	*20.8%*	18.1%	22.3%
EBITDA/Line/Month	$32.36	*$24.26*	$50.61	*$25.66*	$25.50	$27.63
EBITDA Margin	62.1%	*47.7%*	58.6%	*51.1%*	51.2%	47.8%

Itailics represent terminated U S West/Qwest transactions.

Source: FCC

REVENUES

U S West/Qwest revenues per line are approximately $51 monthly; GTE is similar except in Arizona where state access rates are higher.

In 1999, U S West reported to the FCC that monthly revenue per line in Minnesota and Arizona averaged only around $51, contrasting sharply with the small number of GTE/Verizon lines purchased in the western portion of Arizona (all of the state's GTE lines) where revenues per line were much higher at $86 monthly. There appear to be several reasons for the differences. First, the GTE properties receive more than $8/month/line in federal USF monies because of the high cost associated with those rural properties. Second, GTE is able to offer long-distance services, which helped to raise its monthly revenues by another $21 compared with those in the U S West properties. Third, GTE benefited from interstate access revenues per line that appear to be high compared with those of the U S West lines, as access revenues were $26.52 (including USF) versus $13.67. The difference between the two sets of lines is also apparently due to the abnormally high number of long-distance minutes of use generated by the GTE lines — more than 5,000 minutes (416 monthly) — relative to the USW lines at a near survey average of 3,200 (266 monthly).

Citizens' revenue enhancements have not been significant in early stages.

In the period since Citizens took possession of the GTE/Verizon lines, we have seen some revenue improvements, but it is difficult to differentiate between Citizens' legacy lines and the company's acquired properties. Notably, there has been a decline in consolidated average revenues as lower-yielding properties have been integrated. We believe that the revenue enhancements have not been dramatic up to this point, but we note that it takes time to commit to upgrades and rationalize costs, and the marketing and sales expansion lag the other improvements.

MARGINS

The EBITDA margins of the U S West properties appear to be 45%–48%. In the GTE exchanges in both Arizona and Illinois, margins were considerably better — in the 58%–62% range. We believe that the Frontier/Global Crossing margins are near 50%.

EBITDA margins at acquired properties can be improved significantly.

Investors in Citizens have focused sharply on margin improvement as a signal of the underlying progress of Citizens. In our view, the EBITDA margins of the acquired properties can be improved significantly, suggesting to us that Citizens will continue to demonstrate solid margin expansion.

CAPITAL INVESTMENT

Citizens Communications has stated that annual capital expenditures will be $150–$200 per line in the acquired properties, deployed over a three-year period. Plant improvements are expected in the outside plant — cabling, line conditioning, loop concentrators — as well as in central office switching assets. The company has not yet disclosed its plans to roll out DSL within the acquired exchanges, but believe the company will install capacity in the largest exchanges and then move to relatively midsize exchanges.

Citizens plans to spend $150–$200 per line in upgrading properties.

KEY OPERATING OPPORTUNITIES

As is the case with CenturyTel, Iowa Telecom and VALOR, Citizens' revenue opportunities are identified as long distance products for which the company expects a companywide average of $7–$10 in monthly revenues per line, vertical services for which the target penetration is 30%–50% or $3–$6 monthly revenues per line, and high-speed data and Internet access. The company will most rapidly target vertical services and the long-distance opportunities in states where the company has the largest share of the market — New York, Minnesota, Arizona and Illinois.

Revenue stimulation begins with long-distance services and will eventually include data services.

RESULTS OF FINANCIAL MODELING

To complete the review of the Citizens' acquisitions, the historical data from each of the three profiled states is analyzed within the framework of our DCF model. The matrices presented in **Table 29** through **Table 33** highlight the potential net present value generated for Citizens with various mixes of revenues per line and acquired EBITDA margin. The shaded areas represent the respective revenue/line/month and acquired EBITDA margins that generate acceptable returns. We have included a darkened box that reflects the "reported" EBITDA margin (acquired EBITDA plus overhead) and approximate revenue per line reported in the 1999 FCC filings.

We focus on NPV at each of the Citizens' acquired properties, providing matrices to analyze the acquisitions.

We also have included the modeling for Citizens' terminated purchases of U S West/Qwest properties — Arizona and Minnesota. The reason for including the

U S West models is simply to complete the analysis presented throughout this section. Additionally, we have included models for the successful GTE acquisitions in Arizona and Illinois, as well as the Frontier/Global Crossing properties. In the model for the Frontier/Global Crossing assets, we are assuming rehabilitation costs ($200 per line) and maintenance costs ($7 per month) that are lower than some other acquisitions that we have modeled, since Frontier represented an integrated and fully functioning network. It is difficult to say precisely what Citizens will be required to invest in the Frontier properties, as the depreciation is high — near 60% as a percentage of total plant in service — but we believe there is no immediate need to upgrade the properties. In the cases of the GTE/Verizon properties, we are assuming that relatively more rehabilitation expenses are needed, and have modeled $300 per line plus monthly maintenance capital expenditures of $12 per line. The models highlight that the GTE/Verizon properties are apparently more likely to provide a positive net present value than would the U S West properties, had that transaction actually occurred.

Table 29: Financial Analysis of Citizens' Illinois (GTE) Acquisitions – Net Present Value

Acquired EBITDA Margin	Revenue/Line/Month												
	$50	$52	$54	$56	$58	$60	$62	$64	$66	$68	$70	$72	$74
56%	(1,006)	(891)	(777)	(663)	(549)	(434)	(320)	(206)	(92)	23	137	251	366
57%	(955)	(838)	(722)	(606)	(489)	(373)	(257)	(140)	(24)	92	208	325	441
58%	(904)	(785)	(667)	(549)	(430)	(312)	(194)	(75)	43	162	280	398	517
59%	(853)	(732)	(612)	(491)	(371)	(251)	(130)	(10)	111	231	351	472	592
60%	(802)	(679)	(557)	(434)	(312)	(189)	(67)	55	178	300	423	545	668
61%	(751)	(626)	(502)	(377)	(253)	(128)	(4)	121	245	370	494	619	743
62%	(700)	(573)	(447)	(320)	(194)	(67)	59	186	313	439	566	692	819
63%	(649)	(520)	(392)	(263)	(134)	(6)	123	251	380	508	637	766	894
64%	(598)	(467)	(336)	(206)	(75)	55	186	317	447	578	708	839	970
65%	(547)	(414)	(281)	(149)	(16)	117	249	382	515	647	780	913	1,045
66%	(496)	(361)	(226)	(92)	43	178	313	447	582	717	851	986	1,121
67%	(445)	(308)	(171)	(34)	102	239	376	513	649	786	923	1,059	1,196
68%	(394)	(255)	(116)	23	162	300	439	578	717	855	994	1,133	1,272
69%	(343)	(202)	(61)	80	221	362	502	643	784	925	1,066	1,206	1,347
70%	(292)	(149)	(6)	137	280	423	566	708	851	994	1,137	1,280	1,423
71%	(240)	(96)	49	194	339	484	629	774	919	1,064	1,208	1,353	1,498
72%	(189)	(43)	104	251	398	545	692	839	986	1,133	1,280	1,427	1,574
73%	(138)	11	159	308	457	606	755	904	1,053	1,202	1,351	1,500	1,649
74%	(87)	64	215	366	517	668	819	970	1,121	1,272	1,423	1,574	1,725
75%	(36)	117	270	423	576	729	882	1,035	1,188	1,341	1,494	1,647	1,800

Key Assumptions

Estimated Acquisition Cost	$2,836	CAPEX/Line/Month	$12	Cost of Equity	13.0%
Rehabilitation Costs	$300	Tax Rate	38.0%	Cost of Debt	7.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

Table 30: Financial Analysis of Citizens' Arizona (U S West) Acquisitions — Net Present Value

Acquired EBITDA Margin	Revenue/Line/Month												
	$48	$50	$52	$54	$56	$58	$60	$62	$64	$66	$68	$70	$72
47%	(1,513)	(1,418)	(1,323)	(1,227)	(1,132)	(1,037)	(941)	(846)	(751)	(655)	(560)	(465)	(369)
48%	(1,465)	(1,367)	(1,270)	(1,173)	(1,075)	(978)	(880)	(783)	(686)	(588)	(491)	(394)	(296)
49%	(1,416)	(1,317)	(1,217)	(1,118)	(1,018)	(919)	(820)	(720)	(621)	(522)	(422)	(323)	(223)
50%	(1,367)	(1,266)	(1,164)	(1,063)	(962)	(860)	(759)	(657)	(556)	(455)	(353)	(252)	(150)
51%	(1,319)	(1,215)	(1,112)	(1,008)	(905)	(801)	(698)	(595)	(491)	(388)	(284)	(181)	(77)
52%	(1,270)	(1,164)	(1,059)	(953)	(848)	(743)	(637)	(532)	(426)	(321)	(215)	(110)	(4)
53%	(1,221)	(1,114)	(1,006)	(899)	(791)	(684)	(576)	(469)	(361)	(254)	(146)	(39)	69
54%	(1,173)	(1,063)	(953)	(844)	(734)	(625)	(515)	(406)	(296)	(187)	(77)	32	142
55%	(1,124)	(1,012)	(901)	(789)	(678)	(566)	(455)	(343)	(231)	(120)	(8)	103	215
56%	(1,075)	(962)	(848)	(734)	(621)	(507)	(394)	(280)	(167)	(53)	61	174	288
57%	(1,027)	(911)	(795)	(680)	(564)	(448)	(333)	(217)	(102)	14	130	245	361
58%	(978)	(860)	(743)	(625)	(507)	(390)	(272)	(154)	(37)	81	198	316	434
59%	(929)	(810)	(690)	(570)	(451)	(331)	(211)	(92)	28	148	267	387	507
60%	(880)	(759)	(637)	(515)	(394)	(272)	(150)	(29)	93	215	336	458	580
61%	(832)	(708)	(584)	(461)	(337)	(213)	(90)	34	158	282	405	529	653
62%	(783)	(657)	(532)	(406)	(280)	(154)	(29)	97	223	349	474	600	726
63%	(734)	(607)	(479)	(351)	(223)	(96)	32	160	288	415	543	671	799
64%	(686)	(556)	(426)	(296)	(167)	(37)	93	223	353	482	612	742	872
65%	(637)	(505)	(373)	(242)	(110)	22	154	286	418	549	681	813	945
66%	(588)	(455)	(321)	(187)	(53)	81	215	349	482	616	750	884	1,018

Key Assumptions

Estimated Acquisition Cost	$3,030	CAPEX/Line/Month	$10	Cost of Equity	13.0%
Rehabilitation Costs	$200	Tax Rate	38.0%	Cost of Debt	7.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

Table 31: Financial Analysis of Citizens' Frontier Acquisitions – Net Present Value

Acquired EBITDA Margin	Revenue/Line/Month $48	$50	$52	$54	$56	$58	$60	$62	$64	$66	$68	$70	$72
50%	(1,352)	(1,251)	(1,149)	(1,048)	(946)	(845)	(744)	(642)	(541)	(439)	(338)	(236)	(135)
51%	(1,303)	**(1,200)**	(1,096)	(993)	(890)	(786)	(683)	(579)	(476)	(372)	(269)	(165)	(62)
52%	(1,255)	(1,149)	(1,044)	(938)	(833)	(727)	(622)	(516)	(411)	(305)	(200)	(95)	11
53%	(1,206)	(1,098)	(991)	(883)	(776)	(668)	(561)	(453)	(346)	(239)	(131)	(24)	84
54%	(1,157)	(1,048)	(938)	(829)	(719)	(610)	(500)	(391)	(281)	(172)	(62)	47	157
55%	(1,109)	(997)	(885)	(774)	(662)	(551)	(439)	(328)	(216)	(105)	7	118	230
56%	(1,060)	(946)	(833)	(719)	(606)	(492)	(378)	(265)	(151)	(38)	76	189	303
57%	(1,011)	(896)	(780)	(664)	(549)	(433)	(318)	(202)	(86)	29	145	260	376
58%	(963)	(845)	(727)	(610)	(492)	(374)	(257)	(139)	(22)	96	214	331	449
59%	(914)	(794)	(675)	(555)	(435)	(316)	(196)	(76)	43	163	283	402	522
60%	(865)	(744)	(622)	(500)	(378)	(257)	(135)	(13)	108	230	352	473	595
61%	(817)	(693)	(569)	(445)	(322)	(198)	(74)	49	173	297	421	544	668
62%	(768)	(642)	(516)	(391)	(265)	(139)	(13)	112	238	364	490	615	741
63%	(719)	(591)	(464)	(336)	(208)	(80)	47	175	303	431	559	686	814
64%	(670)	(541)	(411)	(281)	(151)	(22)	108	238	368	498	627	757	887
65%	(622)	(490)	(358)	(226)	(95)	37	169	301	433	565	696	828	960
66%	(573)	(439)	(305)	(172)	(38)	96	230	364	498	632	765	899	1,033
67%	(524)	(389)	(253)	(117)	19	155	291	427	563	698	834	970	1,106
68%	(476)	(338)	(200)	(62)	76	214	352	490	627	765	903	1,041	1,179
69%	(427)	(287)	(147)	(7)	133	273	413	552	692	832	972	1,112	1,252

Key Assumptions

Estimated Acquisition Cost	$3,406	CAPEX/Line/Month	$7	Cost of Equity	13.0%
Rehabilitation Costs	$200	Tax Rate	38.0%	Cost of Debt	7.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

Table 32: Financial Analysis of Citizens' Minnesota (U S West) Acquisitions – Net Present Value

Acquired EBITDA Margin	Revenue/Line/Month $47	$49	$51	$53	$55	$57	$59	$61	$63	$65	$67	$69	$71
50%	(1,666)	(1,564)	**(1,463)**	(1,361)	(1,259)	(1,158)	(1,056)	(954)	(853)	(751)	(649)	(548)	(446)
51%	(1,618)	(1,514)	(1,411)	(1,307)	(1,203)	(1,100)	(996)	(892)	(788)	(685)	(581)	(477)	(374)
52%	(1,570)	(1,465)	(1,359)	(1,253)	(1,147)	(1,042)	(936)	(830)	(724)	(619)	(513)	(407)	(302)
53%	(1,522)	(1,415)	(1,307)	(1,199)	(1,091)	(984)	(876)	(768)	(660)	(553)	(445)	(337)	(229)
54%	(1,475)	(1,365)	(1,255)	(1,145)	(1,036)	(926)	(816)	(706)	(596)	(487)	(377)	(267)	(157)
55%	(1,427)	(1,315)	(1,203)	(1,091)	(980)	(868)	(756)	(644)	(532)	(420)	(309)	(197)	(85)
56%	(1,379)	(1,265)	(1,151)	(1,038)	(924)	(810)	(696)	(582)	(468)	(354)	(241)	(127)	(13)
57%	(1,331)	(1,215)	(1,100)	(984)	(868)	(752)	(636)	(520)	(404)	(288)	(172)	(56)	59
58%	(1,284)	(1,166)	(1,048)	(930)	(812)	(694)	(576)	(458)	(340)	(222)	(104)	14	132
59%	(1,236)	(1,116)	(996)	(876)	(756)	(636)	(516)	(396)	(276)	(156)	(36)	84	204
60%	(1,188)	(1,066)	(944)	(822)	(700)	(578)	(456)	(334)	(212)	(90)	32	154	276
61%	(1,140)	(1,016)	(892)	(768)	(644)	(520)	(396)	(272)	(148)	(24)	100	224	348
62%	(1,092)	(966)	(840)	(714)	(588)	(462)	(336)	(210)	(84)	42	168	294	420
63%	(1,045)	(917)	(788)	(660)	(532)	(404)	(276)	(148)	(20)	108	236	364	492
64%	(997)	(867)	(737)	(607)	(476)	(346)	(216)	(86)	44	174	304	435	565
65%	(949)	(817)	(685)	(553)	(420)	(288)	(156)	(24)	108	240	373	505	637
66%	(901)	(767)	(633)	(499)	(365)	(230)	(96)	38	172	306	441	575	709
67%	(854)	(717)	(581)	(445)	(309)	(172)	(36)	100	236	373	509	645	781
68%	(806)	(668)	(529)	(391)	(253)	(114)	24	162	300	439	577	715	853
69%	(758)	(618)	(477)	(337)	(197)	(56)	84	224	364	505	645	785	926

Key Assumptions

Est. Acq. Cost	$3,330	CAPEX/Line/Month	$10	Cost of Equity	13.0%
Rehabilitation Costs	$200	Tax Rate	38.0%	Cost of Debt	7.0%

The dark box represents the combination of revenue per line and EBITDA margin as reported in the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

Table 33: Financial Analysis of Citizens' Arizona (GTE) Acquisitions – Net Present Value

Acquired EBITDA Margin	Revenue/Line/Month												
	$84	$86	$88	$90	$92	$94	$96	$98	$100	$102	$104	$106	$108
46%	(378)	(284)	(191)	(97)	(4)	90	184	277	371	464	558	651	745
47%	(292)	(197)	(101)	(6)	90	186	281	377	472	568	663	759	855
48%	(207)	(109)	(12)	86	184	281	379	476	574	672	769	867	964
49%	(121)	(22)	78	177	277	377	476	576	676	775	875	974	1,074
50%	(36)	66	167	269	371	472	574	676	777	879	981	1,082	1,184
51%	49	153	257	360	464	568	672	775	879	983	1,086	1,190	1,294
52%	135	240	346	452	558	663	769	875	981	1,086	1,192	1,298	1,404
53%	220	328	436	543	651	759	867	974	1,082	1,190	1,298	1,406	1,513
54%	306	415	525	635	745	855	964	1,074	1,184	1,294	1,404	1,513	1,623
55%	391	503	615	726	838	950	1,062	1,174	1,286	1,397	1,509	1,621	1,733
56%	476	590	704	818	932	1,046	1,160	1,273	1,387	1,501	1,615	1,729	1,843
57%	562	678	794	909	1,025	1,141	1,257	1,373	1,489	1,605	1,721	1,837	1,952
58%	647	**765**	883	1,001	1,119	1,237	1,355	1,473	1,591	1,708	1,826	1,944	2,062
59%	733	852	972	1,092	1,212	1,332	1,452	1,572	1,692	1,812	1,932	2,052	2,172
60%	818	940	1,062	1,184	1,306	1,428	1,550	1,672	1,794	1,916	2,038	2,160	2,282
61%	903	1,027	1,151	1,275	1,399	1,523	1,647	1,772	1,896	2,020	2,144	2,268	2,392
62%	989	1,115	1,241	1,367	1,493	1,619	1,745	1,871	1,997	2,123	2,249	2,375	2,501
63%	1,074	1,202	1,330	1,458	1,586	1,715	1,843	1,971	2,099	2,227	2,355	2,483	2,611
64%	1,160	1,290	1,420	1,550	1,680	1,810	1,940	2,070	2,201	2,331	2,461	2,591	2,721
65%	1,245	1,377	1,509	1,641	1,774	1,906	2,038	2,170	2,302	2,434	2,567	2,699	2,831

Key Assumptions

Estimated Acquisition Cost	$3,397	CAPEX/Line/Month	$12	Cost of Equity	13.0%
Rehabilitation Costs	$300	Tax Rate	38.0%	Cost of Debt	7.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

SUMMARY

Our study of Citizens Communications' acquisitions as well as the U S West/Qwest properties that were not acquired revealed several key insights. First and most important, an RBOC that is selling lines in its service territory is inclined to sell the smallest and the most rural of its exchanges, while retaining the denser metropolitan markets. Second, the exchanges that are sold tend to average about 1,000 lines per exchange and are more likely to have remote switches rather than host switches within the local central offices. Third, the condition of the plant is generally very distressed, at least in this case study, reflected in depreciation levels that are quite high. Finally, major rearchitecting of the network is generally required in re-homing switches and upgrading outside plant.

RBOC inclined to sell the smallest and most rural of its exchanges.

Our view is that Citizens appears to have closed on the better properties — GTE/Verizon and Frontier/Global Crossing — relative to the U S West/Qwest lines for which the largest portion of the purchase was terminated. Additionally, Citizens is now able to redirect its energies in the near term to upgrading services and focusing on operating issues rather than engaging in a more dramatic engineering effort that the U S West integration would have required. Finally, we believe that the opportunity for relatively more attractive properties may be emerging from other RBOCs, possibly in the Verizon lines in Kentucky, Alabama and Missouri.

Citizens appears to have closed on the better properties compared with U S West/Qwest terminated bid.

IOWA TELECOMMUNICATIONS SERVICES

Iowa Telecom was created in 1999 by investors, Iowa Network Services and ING Furman Selz.

Iowa Telecommunications Services (Iowa Telecom) was a new company created in 1999 to bid for the GTE rural telephone properties in Iowa. The company was set up as a standalone corporation, with a majority investor Iowa Network Services (INS), a consortium of 128 small Iowa telcos, and a large minority investor, ING Furman Selz. The precise amount and percentage of the investments have not been disclosed.

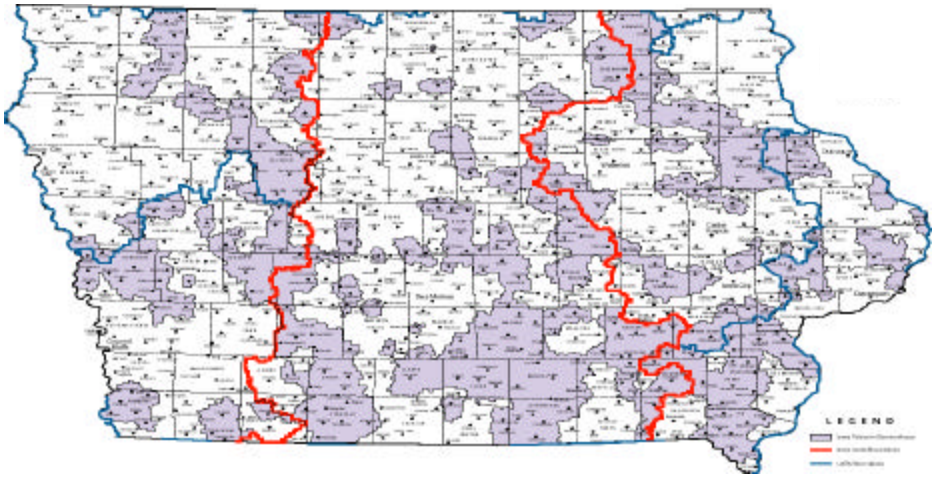
Since 1989, majority investor INS has supplied necessary competitive telephone services for its members and other small independent telephone companies that serve nearly 450,000 rural Iowans. INS has a statewide fiber optic network that has grown to 4,500 miles of primarily buried fiber cable. Using the company's two switches, INS provides interstate and intrastate long-distance telephone services, equal access switching and high capacity networking. The INS companies constitute the majority of the 153 local telephone companies licensed in Iowa, and about one-half the consortium members are cooperatives.

In July 1999, Iowa Telecom announced that it was successful in its negotiation to acquire 285,000 GTE lines, which was GTE's entire Iowa operation. On July 1, 2000, Iowa Telecom took possession of the plant, the customers and all associated assets from GTE. **Figure 12** illustrates Iowa Telecom's service region.

While data are sketchy, we believe that Iowa Telecom has contended with a set of challenges.

Although the data are sketchy because Iowa Telecom remains a private company, we believe that Iowa Telecom has been forced to contend with a number of challenges, possibly more so than the other companies in our study. The challenges include the need to create customer care and billing systems, rehabilitation of distressed plant with lines that were the least dense of those included in our report, the most competitive set of markets of our case-study companies, and a regulatory system that was not designed to resolve Iowa Telecom's unique characteristics as a large rural telephone company that acquired underinvested plant.

Figure 12: Iowa Telecom Operating Territory



Source: Iowa Telecom

BASIC DESCRIPTION

Iowa Telecom acquired 296 exchanges, averaging 963 lines per exchange.

Iowa Telecom acquired 296 exchanges in Iowa. The company's statewide service region is divided into three study areas for an average study area size of 95,000 lines. While the number of lines in the study areas is relatively large, closer examination reveals that the average lines per switch is a mere 963 lines, which is the lowest of any of the four consolidators in this report. In fact, more than one-half of Iowa Telecom's exchanges have less than 500 lines and only eight exchanges have more than 5,000 lines, while 75% of the exchanges have less than 1,000 lines. The five largest exchanges have approximately 12,000, 10,000, 7,000, 7,000 and 6,000 lines. The company serves 426 towns, 300 of which are less than 1,000 in population, the largest of which is about 15,000 in population.

Table 34 provides a perspective on key comparison statistics that contrast Iowa Telecom's operating environment with those of other rural and non-rural carriers, with the comparisons based on a study by the FCC's Rural Task Force in *White Paper 2* (2000). The message is clear that Iowa Telecom is a very rural carrier and, as is suggested in the table by the net plant per line figure, the company's network at the time of acquisition appears to be significantly underinvested.

Table 34: Comparison of Iowa Telecom with Rural and Non-rural Carriers

	Non-rural	Average RLEC	Iowa Telecom
Access lines per square mile	105	19	14
% multiline business to total lines	21%	13%	8%
% residential to total lines	73.0%	81.3%	77.8%
Average lines per switch	7,188	1,254	963
Net plant per line	$856	$1,881	$1,189

Source: RTF White Paper 2; Iowa Telecom; Legg Mason Wood Walker, Inc.

Iowa Telecom is Iowa's second-largest LEC.

In acquiring 285,000 lines, the newly created company became the second-largest telephone company in Iowa behind U S West/Qwest (1.1 million lines) and larger than Citizens, which after adding Frontier/Global Crossing, reports approximately 60,400 lines. At the same time, Iowa Telecom is, in reality, the accumulation of properties that appear to be more "rural" than the average RLEC.

FINANCIAL DATA

We estimate that Iowa Telecom paid approximately $3,250 per line.

Iowa Telecom Services has not disclosed the price paid for the GTE Iowa exchanges, but GTE/Verizon has stated that the price was in line with other recent transactions of similar size. We believe the price was approximately $3,250 per line (the weighted average of the prices paid in 2000) or in the neighborhood of $950 million.

REGULATION

Iowa Telecom's towns are rural, but the company's regulation is like that of an urban carrier.

Iowa Telecom Services provides the starkest regulatory picture of the four companies we are profiling. As we previously noted, the company's communities are rural, the costs are high, the plant is underinvested, *but the regulatory treatment of the company is similar to that of a large local exchange carrier*. In our view, Iowa Telecom Services poses a challenge to regulators to revisit a system that fails to address the underlying problems and complexities in rural divestitures. As explained further in this section and in the Regulatory chapter of this report, we believe that more creative resolutions are needed to allow for the rehabilitation of rural properties in the wake of RBOC divestitures.

NO UNIVERSAL SERVICE SUPPORT

While GTE once received some USF (high cost loop) support for Iowa, that funding dried up approximately five years ago. And, because GTE Iowa was not eligible in 2000 for federal universal service funding, the Code of Federal Regulations Title 47, §54.305 mandates that Iowa Telecom is to receive the same treatment. Further, Iowa has no intrastate USF program, which means that no federal or state high cost support is currently available to Iowa Telecom on behalf of its customers.

While the federal rules are understandable, we note that Iowa Telecom is caught in a system that the FCC's Rural Task Force called "The Parent Trap," referring to §54.305 (Code of Federal Regulations, Title 47). The fact that GTE was able to cross-subsidize rural properties with urban rates meant that it was ineligible for federal support, in this case. In the transfer of ownership, however, Iowa Telecom has no such cross-subsidies, and its customers, while probably better served by the company, are likely to suffer from the financial constraints that limit reasonable investment. The inequity is particularly stunning upon review of the support payments made to comparable companies in Iowa. We detail the data in **Table 35**, which suggest that, in part, §54.305 prohibits Iowa Telecom from receiving monthly federal USF that could rise to $10–$15 per line in light of the similarity with a sampling of other Iowa rural telephone companies. The truth is actually more complex, however, since the Universal Service high-cost loop fund is calculated on invested costs, which, under GTE's management, were below the national average. Because of GTE's underinvestment, Iowa Telecom needs to invest more, but is not eligible for high cost funds because of (1) the rule of section 54.305 and (2) plant that has investment "cost" that is low.

Iowa Telecom does not benefit from the cross-subsidies that were available to GTE.

Table 35: Monthly Per Line Federal USF Paid to Selected Iowa ILECs (2Q01)

Study Area Name	Loops	Number exchs.	Avg. exch. size	HCL	LTS	LSS	Total
Bernard Tel Co Inc	579	1	579	$21.68	$6.38	$4.22	$32.28
Lynnville Tel. Co.	352	1	352	$4.78	$4.26	$20.25	$29.29
Hills Tel Co, Inc-IA	2,124	6	354	$5.07	$3.36	$9.27	$17.71
Farmers Mutual Coop	2,024	7	289	$5.17	$2.79	$8.99	$16.94
Ace Tel Assn-IA	4,446	8	556	$4.91	$2.70	$9.11	$16.72
Webster-Calhoun Coop	5,268	16	329	$4.91	$4.48	$4.05	$13.44
Alpine Comm.	7,085	6	1,181	$5.18	$2.37	$3.75	$11.30
Amana Colonies Tel	13,756	12	1,146	$0.00	$1.84	$5.15	$6.99
South Slope Coop Tel	11,331	12	944	$0.00	$1.83	$2.31	$4.14
Citizens (Frontier)	59,749	42	1,423	$0.00	$0.00	$0.00	$0.00
Iowa Telecom	**289,589**	**296**	**978**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
Qwest (U S West)	1,092,001	347	3,147	$0.00	$0.00	$0.00	$0.00
Avg. of sample IA RLECs receiving USF				$5.74	$3.33	$7.46	$16.53
Avg. of all IA RLECs receiving USF				$3.42	$3.15	$6.08	$12.66

(HCL=High Cost Loop; LTS=Long Term Support; LSS=Local Switching Support.)

Source: FCC; NANPA

PRICE CAP CARRIER AT STATE AND INTERSTATE LEVELS

Iowa Telecom is a price cap company for both its interstate and intrastate rates. The other two price cap companies in the state are U S West/Qwest and Citizens, while about 150 companies are rate of return for interstate services, they are price deregulated (no regulatory oversight of prices) for intrastate services.

Before it began its independent operations, Iowa Telecom agreed to maintain the same pricing as had been set for GTE. At the interstate level, Iowa Telecom elected price cap regulation in a decision that was made because the company

would have been judged to have "overearned" on the basis of rate-of-return rules. Again, the return calculation is based on figures, in Iowa Telecom's case, that would have reflected drastic underinvestment by GTE. At the same time, we believe that Iowa Telecom needs higher rates to financially justify the rehabilitation of its plant, and, then after the rehabilitation, we believe that the plant would likely be high-cost, which means that access rates and local service rates should be maintained at relatively higher levels. However, the conundrum is that Iowa Telecom has to make significant investment to qualify as high-cost plant, but cannot currently generate the revenues (rates are too low) to justify such a financial commitment. As will be considered more carefully in the Regulatory section of this report, the present regulatory systems do not accommodate the current issues and problems of companies whose "forward-looking" costs are high but whose current plant reflects low costs.

Theoretically speaking, Iowa Telecom needs higher access rates as its forward-looking costs are high.

Iowa Telecom also had to contend with the fact that shortly after choosing to be price cap at the interstate level, the FCC issued its May 2000 Access Charge Reform based on the recommendation of large carriers in the so-called CALLS (Coalition for Affordable Local and Long-Distance Services) plan. We estimate that the company's revenue loss due to the implementation of CALLS was $1 monthly per line ($3.4 million annually).

By way of comparison, the current MAG plan for other rural carriers proposes that interstate rates are to be set at an average of 1.6 cents per minute (about $2.50 monthly per line higher than Iowa Telecom's current rate) and recommends that a new universal service fund element be set up to "make whole" any losses from access reductions (figures difficult to estimate, but could be $2.00 per line). Ironically, Iowa Telecom took possession of its network properties on July 1, 2000, the day that the CALLS Order became effective.

Current MAG proposal could set rural rates of other carriers at a level well above those of Iowa Telecom.

RATES

As a price cap company (governed by the CALLS Order), Iowa Telecom has an interstate benchmark access rate of $0.0095, with a common carrier line (CCL) charge of approximately $0.008, a residential subscriber line charge (SLC) of $5.00 monthly and an annual support payment of about $7 million from the new CALLS universal service element (interstate access). By contrast, Iowa Telecom's neighbors (who are also competitors overbuilding Iowa Telecom's region) — Heart of Iowa, Lost Nation/Elwood and South Slope Telephone Cooperative — have interstate rates that are $0.052, $0.042 and $0.041, respectively, with a $3.50 residential SLC. The inequitable treatment will continue if access rates are set this fall in line with what has been proposed in the MAG plan since Iowa Telecom's neighbors will continue to receive comparable revenue streams (MAG revises the sources, leaving $0.016 to be collected from the long-distance carriers, a new portion to be collected in subscriber line charges that are to be adjusted upward annually over the next four years, and the remainder recaptured from a new universal service fund element.)

At the present, Iowa Telecom's intrastate access rate is approximately $0.05 per minute, at least $0.04 per minute less than other small companies' intrastate rates, which are approximately $0.09–$0.10 per minute. The small companies' intrastate access rates are not regulated by the Iowa Utilities Board.

COMPETITION

Significant numbers of lines can be lost to competitors before the acquisition is completed.

Iowa Telecom provides an illustration of a phenomenon that is occurring in the process of selling RBOC rural lines. Most of the illustrations involve a large ILEC that is providing poor service in a rural region; the ILEC then decides to sell its properties rather than upgrade. Neighboring rural operators recognize that the seller has no motivation to protect the properties, that the regulatory process will take a year, and that the purchaser cannot respond to a competitive threat before consummation of the acquisition. The net effect is that competition escalates, possibly through overbuilding, and a significant number of lines are lost to the competitor in the period of the ILEC's "operating limbo." To cope with the problem, one of the other case-study companies — Citizens Communications — reported to us that there were terms in its U S West/Qwest agreement that formulated a "revenue-requirement." If revenues at the time of the actual purchase did not match certain levels, the contract was void or the purchase price was to be reset. We believe that Iowa Telecom knew about the competitive activity in its region and also included some terms of protection in its purchase agreement.

No national CLECs serve Iowa Telecom's region, but there are about 20 neighboring ILECS that are offering CLEC services.

At the time that Iowa Telecom completed its acquisition of the GTE properties, there were no national CLECs in its territory, but approximately 20 neighboring ILECs had chosen to engage in CLEC activity in the GTE exchanges. We estimate that the company had lost a small number of its lines to CLECs across the company's entire region, but the percentage was much higher in specific exchanges, rising as high as 94% in the Oxford Junction exchange (a local exchange with approximately 380 lines). In the time since Iowa Telecom began operations, we understand that few additional CLECs have entered the region, but the losses are meaningful in more than 10 exchanges.

The Iowa Telecom study suggests three reflections, two more general and the one more specific to the circumstances in this case.

First, it is notable that Iowa Telecom, like the other operators in this study, purchased properties in which competition was a factor. Because the seller was a larger operator, there is no benefit from the Telecom Act's rural exemption, and the purchaser is therefore obligated to provide interconnection to competitors (Telecom Act, sections 251/252). Competition is part of the package.

Second, because the properties are often underserved and have poor plant, the potential for competition is greater when an RBOC operates the property, and then the competitive risk increases during the period when the RBOC has committed to divest, but before the new operator has taken possession. In its service region, Iowa Telecom found that there had been and continues to be significant voice and data CLEC (DLEC) activity in its region. Iowa Telecom also suffered more losses than might have been expected from competition, significantly, we believe, because GTE so underserved its rural properties and because there were relatively more small incumbent telephone operators focused on serving the state.

Third, the specific form of competition in Iowa Telecom's markets is, in some cases, the result of communities that have asked neighboring RLECs (indirect owners of Iowa Telecom) to fill the GTE service void. In addition to the edge-out CLEC by other rural operators, there were two municipalities that have started their own cable TV operations and then considered adding telephone service in Iowa Telecom communities. In two other cases, one of which is in the company's "top-20" towns, Iowa Telecom has avoided a competitive entry by the municipality.

Municipalities are seeking to attract strong service providers.

INFRASTRUCTURE

Although the GTE service was apparently poor in Iowa, the plant obtained from the company appears to have been good in some ways, particularly in the central offices. Depreciation as a percentage of total telecommunications plant was 48% in 1999, compared with approximately 60% in other RBOC divestitures, and the kilometers per loop appear to be about 1.7, which is among the lower statistics we have found for any of the acquired properties in this case study.

The GTE plant in Iowa appears to have been in good shape.

The reason for the relatively sound plant may be that GTE's Iowa properties were acquired from several small telcos over the years — Contel and, to a lesser extent, United. The result of the consolidation of smaller companies is relatively better plant, on the one hand, and a hodgepodge of switching technologies and outside plant in various stages of modernization, on the other. A second and more important reason for the higher-quality plant was that the Iowa Utilities Board had ordered that GTE engage in a mid-1990s *mandatory* switch upgrade as part of a five-year plan. A final positive network issue was that Iowa Telecom acquired GTE's statewide operations, which included a fully functioning network, with hosts and remote switches in place.

Central office equipment (COE) appears to be fairly good, as the company inherited only 14 obsolete Vidar switches. In the 296 exchanges the company acquired, the company took possession of 110 Nortel DMS10 switches, 87 Nortel DMS100 switches, 78 GTE GTD5 switches and 5 Siemens Stromberg Carlson DCO switches. The company's remote-to-host ratio is 4.23-to-1, which is slightly above our survey average. While the average loop lengths appear to be

comparatively short, the outside plant is, in many instances, reported to be in need of upgrade. Lead cable, a significant number of digital loop carriers (DLCs which preclude DSL service being offered out of the central office) and some long loops with bridge taps and load coils are apparently the company's focus at the present.

INTERNET ACCESS AND BROADBAND (DSL)

Iowa Telecom voluntarily agreed to provide local dial-up Internet access to all its customers.

While the Iowa Utilities Board (IUB) imposed no formal conditions, Iowa Telecom Services voluntarily agreed to provide local dial-up Internet access to customers within its entire service territory. Again reinforcing the impression of poor GTE service, 55 of the 57 Iowa towns that had no local dial-up access were GTE properties, according to our sources. Iowa Telecom pledged to bring local dial-up service to all its exchanges and then reported that it had actually accomplished the goal by December 2000.

Iowa Telecom made no pledges to provide DSL services in any of its exchanges, but the company has rolled out DSL to about 20 exchanges and will evaluate the results prior to planning any further expansion. After that point, unless the demand justifies the investment, Iowa Telecom plans to provide further DSL investment on a case-by-case basis. Management's current view is that 75–100 customers could provide a base for adequate revenues to justify DSL investment in an exchange. At this time, it appears that the opportunity to provide broadband services could be significant, particularly because there is little or no cable competition in the company's region.

OPERATING DATA

As outlined earlier in this report, the FCC 1999 data included in **Table 36** are limited in value as applied to a current analysis. However, the data provide an illustrative frame of reference for evaluating an acquisition. In the case of Iowa Telecom, the data are even more tenuous in that we have no public information against which to test the unaudited results, and there is no information about operations since 1999.

Table 36: GTE's 1999 Iowa Regulated Revenues and Margin

	GTE Iowa	Survey Average
Revenue per line per month		
Local Service Revenue	$21.46	$22.02
Interstate Access Revenue	$16.79	$16.17
Intrastate Access Revenue	$11.54	$9.84
Long-Distance Revenue	$3.39	$3.23
Miscellaneous Revenue	$0.78	$6.66
Gross Revenue	$53.95	$57.90
Uncollectible Revenue	$0.51	$1.04
Average Revenue/Line/Month	$53.44	$56.87
Depreciation & Amortization as % of Revenues	23.3%	22.3%
EBITDA/Line/Month	$23.89	$27.63
EBITDA Margin	44.7%	47.8%

Source: FCC and Legg Mason Wood Walker, Inc.

REVENUES

The GTE Iowa 1999 regulated revenues per line were reported to the FCC as a relatively light $53.44. Modest access rates, even prior to CALLS implementation, and virtually nonexistent miscellaneous revenues appear to be the primary reasons. We believe that Iowa Telecom can improve its revenues significantly, particularly if the company is able to upgrade plant and possibly gain additional rate relief. We also estimate that the company currently benefits from about $5 monthly in nonregulated revenues. Iowa Telecom apparently also has been successful in augmenting long-distance and Internet-related revenues.

No public information is available to test Iowa Telecom's improvements to GTE's operations.

MARGINS

The regulated EBITDA margin inherited from GTE in Iowa appeared to be below average at 44.7%, as GTE apparently focused very little on high-margin products, such as vertical services. We note that the loss of some access revenues (CALLS reductions) is likely to continue to put near-term pressure on overall margins, but we believe that Iowa Telecom has been successful in generating margins above 50% since taking possession of the operations.

We believe that Iowa Telecom has been successful in generating 50%+ EBITDA margins.

CAPITAL INVESTMENT

We believe that Iowa Telecom could invest $100–$150 per line in 2001 to upgrade plant for advanced services, universally available dial-up access, as well as high-speed access (DSL) in a few of its largest exchanges. The company has indicated that its major investments are to be made in outside plant (loop), which was poorly maintained under the previous owner and could prove to be a bottleneck for higher bandwidth services.

KEY OPERATING OPPORTUNITIES

Long distance, vertical services, dial-up and high-speed Internet access present the most compelling opportunities for Iowa Telecom. Similar to the other case-study companies, the company believes it can raise vertical services penetration, in the lower teens currently, to levels closer to the national averages, nearer to 30%. In the near term, long-distance and vertical services, both fairly high-margin revenues, represent the most attractive revenue opportunities, in our view.

Key opportunities include long-distance services and high-speed Internet services.

RESULTS OF FINANCIAL MODELING

Iowa Telecom acquired all of GTE's lines in Iowa, permitting us to better analyze the operating opportunity on the basis of information supplied to the FCC. **Table 37** summarizes our analysis, presenting the net present value at varying levels of revenue per line and acquired EBITDA margin. The shaded regions of the table present the combinations of revenue per line and EBITDA margin that, by our estimates, generate acceptable returns on investment (NPV>0). Again, we have highlighted in the dark box the reported and fully allocated EBITDA margin and the approximate revenue per line from the 1999 FCC filing. We believe that Iowa Telecom's current financial statements look significantly different from the financials reported in 1999, but we note that the properties appear to generate less revenue than some of the other assets we have studied in this report. There is clearly more room for improvement, while Iowa Telecom has less regulatory freedom and relatively fewer lines over which to spread its overhead compared with the other companies in our study.

Iowa Telecom appears to have an opportunity to improve ROI through revenue stimulation.

We have several comments on the analysis summarized in **Table 37**. We should note that, different from the other analyses in this Case Study section, we are *not assuming significant rehabilitation costs* in the model. This point is very important. We believe that Iowa Telecom does not generate sufficient revenues to justify additional investment in plant, so that the company is likely to engage in a prudent *financial* course (telecommunications today is a business, not a charity), which means that the company will limit the capital upgrade of the network to achieve cash flows and returns required by its investors. We believe that there is an important lesson here for policymakers. Businesses such as Iowa Telecom are compelled by their investors to generate appropriate returns so that, *when the revenues are not available, those businesses have no choice but to underinvest*. Iowa Telecom is committed to providing its rural customers with better service than did GTE, which was relatively unfocused on the Iowa subscriber base. At the same time, a rural operator — Iowa Telecom or others — will be compelled to engage in behavior like the RBOCs in rural regions, that is, underinvest unless rates are set at appropriate levels. Our thesis, however, is that policymakers cannot easily allow the RBOCs rate relief in rural regions and that the RBOCs have other strategic commitments. In the case of rural operators, we believe that the strategic commitment is rural service, which is precisely in line with the policymakers' goals . . . provided that rates and support are set at appropriate levels.

Iowa Telecom does not generate sufficient revenues to justify much additional investment in plant.

When the revenues are not available, businesses have no choice but to underinvest.

Table 37: Financial Analysis of GTE 1999/Iowa Telecom Acquisition – Net Present Value

Acquired EBITDA Margin	Revenue/Line/Month $51	$53	$55	$57	$59	$61	$63	$65	$67	$69	$71	$73	$75
40%	(1,115)	(1,010)	(904)	(798)	(693)	(587)	(481)	(376)	(270)	(164)	(59)	47	153
41%	(1,048)	(940)	(831)	(723)	(615)	(506)	(398)	(290)	(181)	(73)	35	144	252
42%	(981)	(870)	(759)	(648)	(537)	(426)	(315)	(204)	(93)	18	129	240	351
43%	(913)	(800)	(686)	(573)	(459)	(345)	(232)	(118)	(4)	109	223	336	450
44%	(846)	(730)	(613)	(497)	(381)	(265)	(148)	(32)	84	200	317	433	549
45%	(779)	(660)	(541)	(422)	(303)	(184)	(65)	54	173	291	410	529	648
46%	(711)	(590)	(468)	(347)	(225)	(104)	18	140	261	383	504	626	747
47%	(644)	(520)	(395)	(271)	(147)	(23)	101	225	350	474	598	722	846
48%	(576)	(450)	(323)	(196)	(69)	58	184	311	438	565	692	819	945
49%	(509)	(380)	(250)	(121)	9	138	268	397	527	656	786	915	1,044
50%	(442)	(310)	(178)	(45)	87	219	351	483	615	747	879	1,011	1,144
51%	(374)	(240)	(105)	30	165	299	434	569	704	838	973	1,108	1,243
52%	(307)	(170)	(32)	105	243	380	517	655	792	930	1,067	1,204	1,342
53%	(240)	(100)	40	181	321	461	601	741	881	1,021	1,161	1,301	1,441
54%	(172)	(30)	113	256	398	541	684	827	969	1,112	1,255	1,397	1,540
55%	(105)	40	186	331	476	622	767	912	1,058	1,203	1,348	1,494	1,639
56%	(37)	110	258	406	554	702	850	998	1,146	1,294	1,442	1,590	1,738
57%	30	181	331	482	632	783	934	1,084	1,235	1,385	1,536	1,687	1,837
58%	97	251	404	557	710	864	1,017	1,170	1,323	1,476	1,630	1,783	1,936
59%	165	321	476	632	788	944	1,100	1,256	1,412	1,568	1,724	1,879	2,035

Key Assumptions

Estimated Acquisition Cost	$3,250	CAPEX/Line/Month	$7	Cost of Equity	15.0%
Rehabilitation Costs	$0	Tax Rate	25.0%	Cost of Debt	7.5%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

SUMMARY

Iowa Telecom appears to be a study in the challenges of a start-up that is acquiring an RBOC's lines. Iowa Telecom has quite specific issues — competition, rates that are arguably too low, underinvested loop plant, and regulators that are resolving clear conflicts by taking the conservative route in leaving frameworks unchanged and overlooking the funding inequities (USF and rates). The disparity in the treatment of virtually equivalent rural properties and hence the potential harm to customers due to the apparently inadequate regulatory systems are striking, particularly when the new companies desire to improve traditional service and deploy new broadband services.

The disparity in the regulatory treatment of other rural carriers is striking.

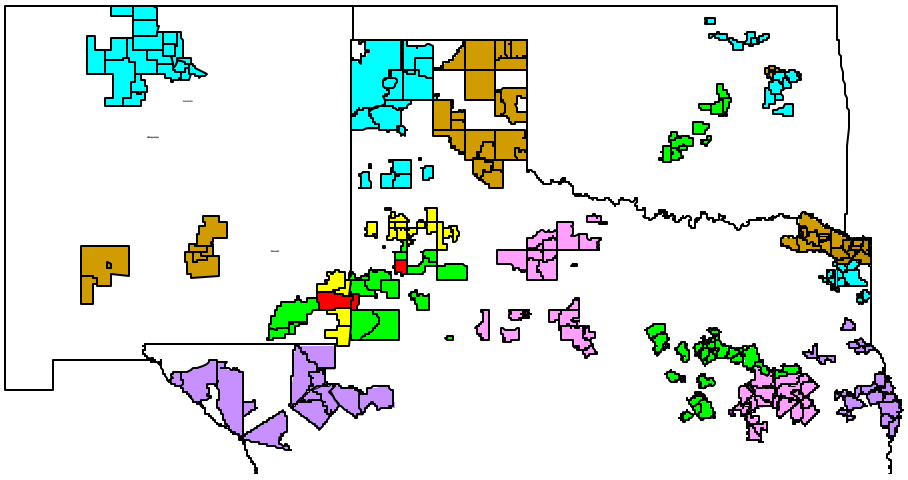
There is little question that the federal and state regulators have a task fraught with significant conflict. At the same time, our view is that the current regulatory situation has not resolved key rural issues related to the Telecom Act of 1996, particularly the systemic inequities that are becoming apparent as the RBOCs divest unprofitable properties, and deed them over to rural operators that are committed to serve rural regions. Our view is that the system penalizes motivated companies, their rural customers, and potential economic development in rural America.

Our view is that the system penalizes motivated companies, their customers and potential economic development.

Based in Irving, Texas, VALOR Telecom is a privately held company formed in 1999 to purchase lines from GTE. The company agreed to acquire the lines in two transactions — the Texas and New Mexico lines were announced in September 1999, and the Oklahoma properties a month later in October. VALOR closed on the Oklahoma assets on July 1, 2000, followed by the New Mexico and Texas properties on September 1, 2000. The company now operates the three distinct subsidiaries, and serves a total of more than 550,000 local rural access lines as illustrated in **Figure 13**.

VALOR was formed to purchase 550,000 GTE lines in three states.

Figure 13: VALOR Service Territory



Source: VALOR Communications

BASIC DESCRIPTION

VALOR Telecom began doing business with the purchase of 260 telephone exchanges — 36 in New Mexico, 27 in Oklahoma, and 197 in Texas (see **Table 38**). Line counts in the respective states at the time of closing were 100,000, 125,000 and 325,000 for an average exchange size of approximately 2,115 lines per exchange. The exchanges in New Mexico and Oklahoma represented all of GTE/Verizon's holdings in those two states and have higher average per-line exchange sizes (2,778 lines per exchange in New Mexico and 4,630 in Oklahoma), while the lines purchased in Texas represent approximately 16% of GTE/Verizon's total in the state, and were, not surprisingly, mostly smaller exchanges (1,650 lines per exchange). Notably, and part of a clear pattern across the acquisitions we have surveyed, the price paid per line was highest where the acquirer — VALOR in this case — purchased the entire network in the state, including the largest exchanges. In Texas, where VALOR acquired 16% of

VALOR purchased 260 telephone exchanges.

GTE's lines in the state, VALOR paid approximately $2,898 per line, based on lines at closing, while in the other two states, where GTE/Verizon sold all of its assets, the price was approximately $3,275 per weighted average line.

Table 38: Purchase Price for VALOR Lines

State	Lines at annc.	Lines purch.	Total GTE lines	% of total lines	Exchs	Avg. exch size	Annc. price mils	Final price mils	Annc. price/ line	Final price/ line
NM	91,904	100,000	100,000	100%	36	2,778	$317	$317	$3,449	$3,170
OK	120,092	125,000	125,000	100%	27	4,630	$420	$420	$3,497	$3,360
TX	313,800	325,000	2,033,863	16%	197	1,650	$942	$942	$3,002	$2,898
Total	**525,796**	**550,000**	**2,258,863**	**24%**	**260**	**2,115**	**$1,700**	**$1,679**	**$3,233**	**$3,053**

Source: Company data; Legg Mason Wood Walker, Inc.

We provide a summary listing of all of VALOR's exchanges in **Table 39**, but we note that four New Mexico exchanges were sold by VALOR to Mescalero Apache Telecom at the end of 2000.

Table 39: VALOR's Acquired Exchanges

Texas: Abernathy, Adrian, Amherst, Andrews, Annona, Anton, Aspermont, Austonio, Avalon, Avery, Avinger, Bagwell, Baird, Balmorhea, Beckville, Bedias, Benjamin, Blackwell, Blooming Grove, Bogata, Bon Wier, Booker, Bovina, Boys Ranch, Broaddus, Bronson, Brownfield, Buffalo, Burkeville, Burlington, Bynum, Cactus, Centerville, Channing, Chilton, Clarendon, Clarksville, Claude, Clyde, Colmesneil, Coyanosa, Crawford, Crockett, Crosbyton, Cross Plains, Cushing, Daingerfield, Dalhart, Darrouzett, Dawson, DeKalb, Denver City, Deport, Detroit, Dimmitt, Dodson, Douglassville, Dumas, Elkhart, Estelline, Fabens, Fairfield, Fairmount, Follett, Forsan, Fort Hancock, Frankel City, Franklin, Friona, Fritch, Frost, Gary, Glen Rose, Grapeland, Groom, Groveton, Happy, Hart, Harley, Haskell, Hedley, Hemphill, Higgins, Hilltop Lakes, Holliday, Hooks, Hubbard, Hughes Springs, Huntington, Hurlwood, Idalou, Imperial, Iola, Irene, Joaquin, Kamay, Karnack, Kennard, Knox City, Lakeview, Lamesa, Leona, Levelland, Linden, Littlefield, Lone Star, Loraine, Lorenzo, Lott, Lovelady, Malone, Marietta, Marquez, Maud, May, Meadow, Megargel, Memphis, Mentone, Merkel, Miami, Milam, Milford, Mobettie, Moran, Morgan, Morton, Mount Clam, Munday, Naples, Nazareth, Negley, New Boston, Newton, Normangee, North Zulch, Oakwood, Orla, Panhandle, Pecos, Pennington, Perryton, Petersburg, Pineland, Post, Purdon, Putnam, Ralls, Redwater, Reklaw, Richland, Riesel, Rising Star, Rochester, Rogers, Ropesville, Rosebud, Rule, Sanford, Seagraves, Seymour, Shallowater, Sierra Blanca, Simms, Slocum, Smyer, Spade, Spearman, Stratford, Streetman, Sundown, Sunray, Tahoka, Tenaha, Texarkana, Throckmorton, Toyah, Trent, Trinty, Tulia, Uncertain, Valentine, Van Horn, Vega, Walnut Springs, Weinert, Wellington, Wheeler, White Deer, Whiteface, Whitharral, Whitney, Wildorado, Wilson, Wolfforth, Zavalla.

Oklahoma: Asher, Avant, Barnsdall, Boynton, Broken Arrow, Checotah, Coweta, Fairfax, Haskell, Hominy, Kaw City, Lindsay, Maysville, Meeker, Morris, Paden, Porter, Prague, Purcell, Ramona, Snug Harbor, St. Louis, Stroud, Tecumseh, Wagoner, Washington and Wayne.

New Mexico: Abiquiu, Alto, Caballo Reservoir*, Canjilon, Capitan, Carlsbad, Carlsbad Caverns, Chama, Chimayo, Cuba, Dixon, Dulce, El Rito, Elephant Butte*, Espanola, Eunice, Gallina, Hillsboro, Hobbs, Jal, Jemez Springs, Lindrith, Loving, Lovington, Lybrook, Mescalero*, Ojo Caliente, Ruidoso, Ruidoso Downs, Ruidoso White Mountain*, San Ysidro, Tierra Amarilla, Truchas, Truth or Consequences, Vallecitos and Velarde.

***Later sold to Mescalero Apache Telecom.**

Source: Company Data

FINANCIAL DATA

The purchase price for all 550,000 VALOR lines in New Mexico, Oklahoma and Texas was approximately $1.68 billion, or $3,053 per line. Filings with the state of Texas allow for the separation of the amount paid for Texas properties — $942 million. We have been able to fill in the other prices and line data through our discussions with the company. The public announcements indicated 540,000 lines at closing, but management assured us that the figure was 550,000 lines.

VALOR paid GTE/Verizon approximately $3,053 per line.

CAPITAL FUNDING FOR ACQUISITIONS

The VALOR acquisitions were different from those of our other case study companies in that they represent the largest RLEC acquisitions by the professional investment community. Notably, the strategic plan was crafted and personnel chosen with the active input of those key investors — three private equity firms and a group of Hispanic investors. The company's major investors include Welsh, Carson, Anderson & Stowe, Vestar Capital, Citicorp Venture Capital and a group of 12 Hispanic investors with longstanding ties to the Southwest. Anne Bingaman, formerly of the Department of Justice and LCI, is the CEO and conceived the original plan, and the other operating personnel were attracted from CenturyTel, Commonwealth Telephone, Citizens, and various other RLECs.

Private equity investors drove the VALOR acquisitions in combination with Anne Bingaman.

The precise mix of debt and equity from the investors has not been disclosed, but, as part of the Texas filing, VALOR revealed that its principal institutional investors committed to invest equity and subordinated debt in excess of $650 million. Further, VALOR secured senior debt financing of $1.341 billion, underwritten by Bank of America, N.A., The Chase Manhattan Bank, Canadian Imperial Bank of Commerce, and Lehman Commercial Paper, Inc. The total senior credit facility included a term loan for slightly more than $1 billion and a revolving credit facility of $300 million. We believe that the company is financed with 70%–80% debt, with the balance in private equity.

We believe that VALOR is financed with 70%+ debt and less than 30% private equity.

REGULATION

VALOR is primarily a price cap company, but has intrastate rate-of-return regulation in Oklahoma.

INCENTIVE REGULATION

In Texas, VALOR committed to a price cap regulatory system. Under this election, except as otherwise permitted under the Public Utility Regulatory Act (PURA) Chapter 59, VALOR may not increase existing rates for a six-year period.

In New Mexico, where the state eliminated rate-of-return regulation effective April 1, 2001, all telephone companies were required to file an AFOR (Alternative

Form of Regulation) plan. Accordingly, VALOR submitted a plan for price cap regulation accompanied by commitments to invest in the local network. The proposed investments included two call centers to create jobs, $83 million in infrastructure improvements over the life of the five-year plan, a commitment to install CLASS (custom local area signaling services) in every exchange and DSL in six exchanges in New Mexico and 10 exchanges in Texas.

VALOR submitted plans for price cap regulation, including certain commitments.

At the interstate level, VALOR is a price cap company, with switched access rates set at a benchmark of $0.0095 per minute, consistent with the CALLS Order of May 2000.

RATES

In New Mexico, state access rates were fixed for five years, but the state is in the early stages of evaluating a state universal service fund, which may change access rates. At the present, the New Mexico intrastate access rate is a relatively high $0.09 per minute.

High access rates in New Mexico, but no state USF.

Texas and Oklahoma have intrastate access rates that are approximately $0.02–$0.04 per minute, relatively low compared with other carriers in SBC and Qwest states, but Texas has an "active and robust" USF program.

Relatively low access rates in TX and OK, but better USF programs.

FEDERAL AND STATE USF FUNDING SUPPORT

VALOR is eligible to receive the same USF per-line support that GTE/Verizon received in Texas prior to the transfer of the study areas. Federal and state USF (High Cost Loop and switching support) is paid in New Mexico at just over three dollars per line monthly, including $0.70 per line in federal USF in one of the company's two study areas. In Oklahoma, where the company has one study area, GTE did not receive federal USF and, as a result, VALOR is ineligible for federal support. In Texas, VALOR's two study areas include one study area acquired from GTE with over 230,000 lines that received monthly support of $0.32 per line; the remaining lines were carved out of a much larger study area that received no support. **Table 40** provides data on the federal USF payments to VALOR. We note that the number of lines do not match those reported to us by VALOR since the FCC database lags the real line figures by about a year.

VALOR receives relatively small federal USF support.

Table 40: Federal USF Program Payments to VALOR

	4Q00			3Q01		
	$/quarter	Lines	$/line/quarter	$/quarter	Lines	$/line/quarter
GTE Southwest-NM	$119,428	46,388	$2.57	-	-	-
Contel West dba GTE NM	$0	44,778	$0.00	-	-	-
GTE Southwest Inc-OK	$0	120,712	$0.00	-	-	-
Contel TX dba GTE Texas	$74,963	234,478	$0.32	-	-	-
GTE Southwest Inc-Texas	$0	1,765,319	$0.00	-	-	-
VALOR Telecom - NM	-	-	-	$0	46,592	$0.00
VALOR Telecom - NM	-	-	-	$33,063	46,917	$0.70
VALOR Telecom - OK	-	-	-	$0	125,000	$0.00
VALOR Telecom - Texas	-	-	-	No specific listing for TX USF		

Source: FCC

INFRASTRUCTURE

Investment in the divested Texas properties was not on a par with capex in the properties retained.

The 1999 FCC data submitted by GTE indicate that accumulated depreciation on VALOR's total plant totaled $862.8 million at the time of the acquisition. Of the total accumulated depreciation, $574.8 million was for the Texas properties, an amount equal to 22.2% of GTE's total accumulated depreciation in the state on just 16% of the total GTE/Verizon lines in Texas. However, in a post-acquisition review of GAAP accounting (GAAP depreciable lives are shorter than those used for regulatory filings), VALOR management has reported to us that the three-state level of GAAP depreciation as a percentage of total plant was 70%, with the New Mexico property depreciated by slightly over 72% (see **Table 41** for our estimates of GAAP accumulated depreciation in VALOR's properties). The statistics are very high, further reinforcing our findings about the underinvestment in rural telephone plant before divestitures, and driving home the difference in the plant retained by GTE and the plant that is sold — by our estimate, GTE retained plant in Texas that was approximately 48% depreciated and sold properties that were 62% depreciated (for regulatory accounting purposes) and 70% depreciated using GAAP standards.

Table 41: GAAP Gross/Net Plant for VALOR Acquired Properties

$s in millions **State**	**Gross Plant**	**Accum. Depr.**	**Net Plant**	**% Accum. Depr.**
Texas	$970	$680	$290	70%
New Mexico	$250	$180	$70	72%
Oklahoma	$300	$210	$100	70%
Total	**$1,520**	**$1,070**	**$460**	**70%**

Source: Legg Mason Wood Walker, Inc. estimates

We believe that the overall condition of the plant acquired from GTE was similar to that found in other GTE divestitures. As was the case in the other GTE divested properties, the company acquired a mix of GTE GTD5-EAX, Nortel

DMS10/100/200 and Siemens Stromberg Carlson DCO switches. In New Mexico and Oklahoma, VALOR took possession of the entire network and, as a result, did not have to contend with orphaned remotes, but, in Texas, the company reported some orphaned remotes because GTE/Verizon sold only part of its network in the state and the exchanges were each, on balance, small.

VALOR plans to implement capital improvements, including an upgrade of existing central office facilities to support the deployment of Custom Local Area Signaling Services (CLASS), such as Caller ID, to all exchanges by February 2002. In Texas, the company also intends to provide DSL service to at least 10 exchanges by February 2002, and, in New Mexico, the company pledged to provision DSL in all exchanges that have more than 5,000 lines (six exchanges — Espanola, Hobbs, Carlsbad, Ruidoso, Lovington, and Truth or Consequences). Additionally, VALOR committed to deploy DSL to any Texas exchange in which the company receives 75 bona fide service requests (described more later in this section) by December 2001.

VALOR plans to upgrade its switches to offer CLASS products in all its exchanges and DSL in select exchanges.

Oklahoma was unique, from the company's perspective, with plant in fairly good shape and apparently the best of the three states, due to a GTE improvement project. GTE had recently upgraded switches and eliminated multiparty service. On the other hand, as VALOR reported for other GTE regions, long and unreliable loops remain in certain parts of the state network. While the company is committed to significant upgrades in the state, Oklahoma did not obligate the company to make infrastructure improvements, and the company will remain under a rate-of-return regulation.

The Oklahoma plant was in relatively good shape with the exception of the loops.

DIGITAL SUBSCRIBER LINE SERVICES

In contrast with the process at the other three case-study companies where there were no detailed broadband obligations (only dial-up Internet at Iowa Telecom and general dial-up and DSL commitments for CenturyTel), VALOR made formal commitments to provision DSL in the largest exchanges of two of the three states — Texas and New Mexico — in which it is providing service. VALOR's plans call for a three-state deployment of DSL, first in "suburban" exchanges, then in smaller properties.

VALOR committed to offer DSL in the largest exchanges of Texas and New Mexico.

In Texas, because GTE offered DSL services only in Texarkana, and T-1 and ISDN were only available on a selected exchange basis, VALOR plans to file a deployment schedule for 25 exchanges along with a tariff for the service. The company formally committed to put DSL or broadband equivalents in the 10 largest exchanges by September 1, 2001, and agreed to deploy service in other exchanges where there were 75 bona fide requests for DSL service.

A "bona fide request" is defined as a written application for DSL service, showing the name, address and telephone number of the person requesting the service, plus a commitment to subscribe for 12 months or pay a termination fee. The

75 bona fide requests for DSL services will prompt VALOR to initiate service in a region.

requirement for service is based on the number of requests being no less than 75 lines in an exchange, meeting the technical requirements for installing DSL service. To date, we are not aware of any qualifying requests, but VALOR plans to periodically sample demand by sending out fliers soliciting interest in getting DSL service.

VALOR believes that 75 customers is a justifiable threshold based on review of the initial equipment pricing from DSL vendors. Capital costs would include the expense of the Digital Subscriber Line Access Multiplexer (DSLAM), routers, ATM switches and aggregators (if the DSL technology is ATM-based), and the Network Management System. Recurring expenses associated with DSL deployment include network monitoring, traffic management, maintenance and the cost of transport from the central office to the closest Internet backbone point of presence (POP).

VALOR agreed to install DSL in 10 Texas exchanges a year earlier than GTE had planned.

The 10 Texas exchanges in which VALOR agreed to install DSL are Andrews, Brownfield, Crockett, Dumas, Glen Rose, Lamesa, Levelland, Pecos, Texarkana and Perryton. The schedule ensures that customers in the 10 exchanges (32% of the lines acquired by VALOR in Texas) will receive DSL service 12 months earlier than what was required of GTE/Verizon, had that company retained the exchanges. In Texas, DSL rates will be the same as those tariffed by GTE/Verizon. VALOR selected the specific 10 exchanges principally on the basis of the number of access lines within these exchanges and the strong interest expressed for DSL services in community meetings with local civic officials. For example, the choice of Glen Rose, the thirteenth largest of the VALOR exchanges, was based on the high level of new business activity, the close proximity to the Dallas metro area, and repeated requests from Glen Rose city officials. All of the selected exchanges are also county seats of government.

VALOR committed to provide local dial-up Internet and extend local calling at current rates.

VALOR committed that the company or an affiliate would provide local dial-up Internet access service by February 2002 to every acquired exchange that did not have a local dial-up Internet Service Provider. VALOR also pledged to continue existing extended local calling services (ELCS) services at current rates through August 2002 and to maintain rates at preacquisition levels for broadband services to schools, hospitals, and libraries in its service area.

OPERATING DATA

VALOR Telecom assumed possession of GTE operations that appear to have been unfocused in rural regions and uneven in performance from one state to the next.

REVENUES

Table 42 details the 1999 GTE/Verizon revenues in New Mexico, Oklahoma and Texas. Because VALOR acquired all the GTE/Verizon lines in New Mexico and

Oklahoma, the table's figures for those states are most representative of the operating performance that VALOR purchased. However, we should note that VALOR reported to us that its audited results of Oklahoma suggest EBITDA margins that are above 50%, compared with the 34.4% margin reported in the FCC data from 1999. We also note that the figures from Texas represent the average revenues over all 2.1 million lines formerly held by GTE/Verizon, of which only 325,000 (16%) were sold to VALOR. Our assumption is that the Texas financials of the properties actually purchased are more distressed than those reported in the table. With respect to the differences in operating performance between the properties, the revenues in Oklahoma and Texas reflect access rates that are lower than those tariffed in New Mexico. Further, long-distance revenues are well below what we believe are possible in all three markets.

VALOR reported that its EBITDA margins have risen above 50% in Oklahoma.

Table 42: 1999 GTE Financials in VALOR States

	Valor GTE NM	Valor GTE OK	Valor GTE TX	Survey Average
Revenue per line per month				
Local Service Revenue	$20.18	$22.09	$26.77	$22.02
Interstate Access Revenue	$22.04	$13.99	$14.68	$16.17
Intrastate Access Revenue	$12.01	$5.16	$9.00	$9.84
Long-Distance Revenue	$3.59	$2.31	$1.72	$3.23
Miscellaneous Revenue	$9.44	$5.67	$10.69	$6.66
Gross Revenue	$67.26	$49.22	$62.86	$57.90
Uncollectible Revenue	$1.80	$0.62	$1.03	$1.04
Total Revenues	$65.46	$48.60	$61.84	$56.87
D&A % of Revs	17.8%	25.7%	24.8%	22.3%
Ave. Rev/Line/Month	$65.5	$48.6	$61.8	$56.87
EBITDA/Line/Month	$34.73	$16.74	$21.99	$27.63
EBITDA Margin	53.1%	34.4%	35.6%	47.8%

Source: FCC, and Legg Mason Wood Walker, Inc.

MARGINS

GTE/Verizon EBITDA margins in 1999 ranged from lows of 34%? 35% in Texas to a high of 53.1% in New Mexico where access rates are considerably higher and expenses are dramatically lower as a percentage of revenues. VALOR projects that its operating margin will improve over the next five years, significantly as a result of revenue stimulation, but also because of efficiencies gained through capital improvements. The company's projected operating margin and capitalization ratios, as filed with the state of Texas, suggest margin expansion of nearly 300 basis points over five years and strong cash flows to reduce debt from 72% of capitalization to 63% in the same period (see **Table 43**).

VALOR projects solid improvements in margins and cash flows.

Table 43: VALOR Projected Margin and Capitalization Ratios

Financial Ratio	Year 1	Year 2	Year 3	Year 4	Year 5
Times Interest Earned	1.07x	1.19x	1.35x	1.53x	1.79x
Operating Margin	26.14%	27.02%	28%	28.58%	28.90%
Equity/Capital Ratio	27.63%	28.15%	29.96%	32.21%	36.99%

Source: VALOR Texas State Filing (1999)

CAPITAL INVESTMENT

VALOR's Oklahoma plant appears to be in better shape compared with New Mexico and Texas.

On the basis of the 1999 GTE filings, depreciation as a percentage of gross plant in service suggests that the Oklahoma assets are in better shape as only 48% of the plant was depreciated, but VALOR reports to us that the GAAP depreciation was about 68%. The FCC 1999 data report 60% depreciation in New Mexico and 51% across all of Texas, while VALOR reports that the depreciation was 72% and 70%, respectively. In our view, VALOR further verifies high levels of depreciation as a percentage of total plant, again reinforcing the theme of dramatic underinvestment in rural America by larger LECs.

VALOR has disclosed that total planned capital commitments in Texas over the first five years of operations will total nearly $288 million, or about $175–$180 annually per line. In Oklahoma, the figure is likely to be modestly less, while in New Mexico, we expect a relatively high level of rehabilitation expense.

VALOR agreed to specific service improvements in Texas within 12–18 months of the acquisition.

In Texas, VALOR committed most explicitly to continue all infrastructure requirements imposed on GTE at the time GTE gained incentive regulation. The company agreed to maintain rates while expanding access to advanced services, caller identification and custom calling features. In addition, the company committed to provide, within 18 months of the close of the transaction (by February 2002), to upgrade all central office switches that were not capable of offering CLASS services – Caller ID, Caller name ID, call waiting, three-way calling, call forwarding, call return, call blocker and auto redial. Switches serving at least 50% of the lines without CLASS features are to be upgraded in 12 months (by September 2001). The remaining switches should be upgraded in the following six months. In New Mexico, the commitment was similar, except that the deadline for completion extended an additional six months. No formal commitments were made in Oklahoma.

KEY OPERATING OPPORTUNITIES

Long distance, vertical services and high-speed (as well as dial-up) Internet access present the most compelling opportunities for VALOR, in our opinion. VALOR will be interesting to monitor as the company is committed to DSL services by virtue of the Texas agreements to a degree that is higher than that in any of the

other case study companies. Vertical services clearly present an immediate and meaningful opportunity for the company. Because the company's plans call for full availability of the services within an 18-month period, VALOR has the potential to realize revenue stimulation fairly rapidly.

RESULTS OF FINANCIAL MODELING

VALOR Telecom acquired all of GTE's lines in New Mexico and Oklahoma, which means that the data in **Table 44** and **Table 45** are better indications of operations in 1999 in the acquired properties. The Texas operations in **Table 46**, however, reflect all of GTE's holdings, about 84% of which are maintained by GTE. Because Texas was the headquarters of GTE telephone operations, we believe that there are some good properties in the state, which were likely retained, and that the condition of the divested plant was distressed (reported to be 70% depreciated).

In order to achieve an appropriate return on the Oklahoma properties, we believe that VALOR will be required to generate revenues that are significantly higher than we have modeled. In fact, Oklahoma appears to be the most challenged property, while VALOR's New Mexico operations are closer to generating a positive return.

Table 44: Financial Analysis of VALOR's New Mexico Acquisition – Net Present Value

Acquired EBITDA Margin	Revenue/Line/Month												
	$55	$57	$59	$61	$63	$65	$67	$69	$71	$73	$75	$77	$79
48%	(1,623)	(1,528)	(1,433)	(1,338)	(1,243)	(1,148)	(1,053)	(958)	(863)	(768)	(674)	(579)	(484)
49%	(1,568)	(1,471)	(1,374)	(1,278)	(1,181)	(1,084)	(987)	(890)	(793)	(696)	(599)	(503)	(406)
50%	(1,514)	(1,415)	(1,316)	(1,217)	(1,118)	(1,020)	(921)	(822)	(723)	(624)	(525)	(426)	(328)
51%	(1,459)	(1,359)	(1,258)	(1,157)	(1,056)	(955)	(854)	(754)	(653)	(552)	(451)	(350)	(250)
52%	(1,405)	(1,302)	(1,199)	(1,097)	(994)	(891)	(788)	(685)	(583)	(480)	(377)	(274)	(171)
53%	(1,351)	(1,246)	(1,141)	(1,036)	(932)	(827)	(722)	(617)	(512)	(408)	(303)	(198)	(93)
54%	(1,296)	(1,190)	(1,083)	(976)	(869)	(763)	(656)	(549)	(442)	(336)	(229)	(122)	(15)
55%	(1,242)	(1,133)	(1,025)	(916)	(807)	(698)	(590)	(481)	(372)	(263)	(155)	(46)	63
56%	(1,188)	(1,077)	(966)	(855)	(745)	(634)	(523)	(413)	(302)	(191)	(80)	30	141
57%	(1,133)	(1,021)	(908)	(795)	(682)	(570)	(457)	(344)	(232)	(119)	(6)	106	219
58%	(1,079)	(964)	(850)	(735)	(620)	(506)	(391)	(276)	(162)	(47)	68	182	297
59%	(1,025)	(908)	(791)	(675)	(558)	(441)	(325)	(208)	(91)	25	142	259	375
60%	(970)	(852)	(733)	(614)	(496)	(377)	(258)	(140)	(21)	97	216	335	453
61%	(916)	(795)	(675)	(554)	(433)	(313)	(192)	(72)	49	170	290	411	531
62%	(861)	(739)	(616)	(494)	(371)	(249)	(126)	(3)	119	242	364	487	610
63%	(807)	(682)	(558)	(433)	(309)	(184)	(60)	65	189	314	439	563	688
64%	(753)	(626)	(500)	(373)	(247)	(120)	7	133	260	386	513	639	766
65%	(698)	(570)	(441)	(313)	(184)	(56)	73	201	330	458	587	715	844
66%	(644)	(513)	(383)	(252)	(122)	9	139	269	400	530	661	791	922
67%	(590)	(457)	(325)	(192)	(60)	73	205	338	470	603	735	868	1,000

Key Assumptions

Estimated Acquisition Cost	$3,576	CAPEX/Line/Month	$10	Cost of Equity	12.0%
Rehabilitation Costs	$300	Tax Rate	38.0%	Cost of Debt	11.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

Table 45: Financial Analysis of VALOR's Oklahoma Acquisition - Net Present Value

Acquired EBITDA Margin	Revenue/Line/Month $46	$48	$50	$52	$54	$56	$58	$60	$62	$64	$66	$68	$70
45%	(1,867)	**(1,778)**	(1,689)	(1,600)	(1,511)	(1,423)	(1,334)	(1,245)	(1,156)	(1,067)	(978)	(889)	(800)
46%	(1,822)	(1,731)	(1,640)	(1,549)	(1,458)	(1,367)	(1,276)	(1,185)	(1,094)	(1,003)	(912)	(821)	(731)
47%	(1,776)	(1,683)	(1,591)	(1,498)	(1,405)	(1,312)	(1,219)	(1,126)	(1,033)	(940)	(847)	(754)	(661)
48%	(1,731)	(1,636)	(1,541)	(1,446)	(1,351)	(1,256)	(1,162)	(1,067)	(972)	(877)	(782)	(687)	(592)
49%	(1,685)	(1,589)	(1,492)	(1,395)	(1,298)	(1,201)	(1,104)	(1,007)	(910)	(814)	(717)	(620)	(523)
50%	(1,640)	(1,541)	(1,442)	(1,343)	(1,245)	(1,146)	(1,047)	(948)	(849)	(750)	(651)	(553)	(454)
51%	(1,595)	(1,494)	(1,393)	(1,292)	(1,191)	(1,090)	(990)	(889)	(788)	(687)	(586)	(485)	(385)
52%	(1,549)	(1,446)	(1,343)	(1,241)	(1,138)	(1,035)	(932)	(829)	(727)	(624)	(521)	(418)	(315)
53%	(1,504)	(1,399)	(1,294)	(1,189)	(1,084)	(980)	(875)	(770)	(665)	(561)	(456)	(351)	(246)
54%	(1,458)	(1,351)	(1,245)	(1,138)	(1,031)	(924)	(818)	(711)	(604)	(497)	(390)	(284)	(177)
55%	(1,413)	(1,304)	(1,195)	(1,086)	(978)	(869)	(760)	(651)	(543)	(434)	(325)	(217)	(108)
56%	(1,367)	(1,256)	(1,146)	(1,035)	(924)	(814)	(703)	(592)	(481)	(371)	(260)	(149)	(39)
57%	(1,322)	(1,209)	(1,096)	(984)	(871)	(758)	(646)	(533)	(420)	(307)	(195)	(82)	31
58%	(1,276)	(1,162)	(1,047)	(932)	(818)	(703)	(588)	(474)	(359)	(244)	(130)	(15)	100
59%	(1,231)	(1,114)	(997)	(881)	(764)	(648)	(531)	(414)	(298)	(181)	(64)	52	169
60%	(1,185)	(1,067)	(948)	(829)	(711)	(592)	(474)	(355)	(236)	(118)	1	120	238
61%	(1,140)	(1,019)	(899)	(778)	(657)	(537)	(416)	(296)	(175)	(54)	66	187	307
62%	(1,094)	(972)	(849)	(727)	(604)	(481)	(359)	(236)	(114)	9	131	254	377
63%	(1,049)	(924)	(800)	(675)	(551)	(426)	(302)	(177)	(52)	72	197	321	446
64%	(1,003)	(877)	(750)	(624)	(497)	(371)	(244)	(118)	9	135	262	388	515

Key Assumptions

Estimated Acquisition Cost	$3,576	CAPEX/Line/Month	$7	Cost of Equity	12.0%
Rehabilitation Costs	$200	Tax Rate	38.0%	Cost of Debt	11.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

Table 46: Financial Analysis of VALOR's Texas Acquisition - Net Present Value

Acquired EBITDA Margin	Revenue/Line/Month $56	$58	$60	$62	$64	$66	$68	$70	$72	$74	$76	$78	$80
40%	(1,541)	(1,462)	(1,383)	**(1,304)**	(1,225)	(1,146)	(1,067)	(987)	(908)	(829)	(750)	(671)	(592)
41%	(1,486)	(1,405)	(1,324)	(1,243)	(1,161)	(1,080)	(999)	(918)	(837)	(756)	(675)	(594)	(513)
42%	(1,430)	(1,347)	(1,264)	(1,181)	(1,098)	(1,015)	(932)	(849)	(766)	(683)	(600)	(517)	(434)
43%	(1,375)	(1,290)	(1,205)	(1,120)	(1,035)	(950)	(865)	(780)	(695)	(610)	(525)	(440)	(355)
44%	(1,320)	(1,233)	(1,146)	(1,059)	(972)	(885)	(798)	(711)	(624)	(537)	(450)	(363)	(276)
45%	(1,264)	(1,175)	(1,086)	(997)	(908)	(819)	(730)	(642)	(553)	(464)	(375)	(286)	(197)
46%	(1,209)	(1,118)	(1,027)	(936)	(845)	(754)	(663)	(572)	(481)	(390)	(299)	(209)	(118)
47%	(1,154)	(1,061)	(968)	(875)	(782)	(689)	(596)	(503)	(410)	(317)	(224)	(131)	(39)
48%	(1,098)	(1,003)	(908)	(814)	(719)	(624)	(529)	(434)	(339)	(244)	(149)	(54)	41
49%	(1,043)	(946)	(849)	(752)	(655)	(558)	(462)	(365)	(268)	(171)	(74)	23	120
50%	(987)	(889)	(790)	(691)	(592)	(493)	(394)	(296)	(197)	(98)	1	100	199
51%	(932)	(831)	(730)	(630)	(529)	(428)	(327)	(226)	(126)	(25)	76	177	278
52%	(877)	(774)	(671)	(568)	(466)	(363)	(260)	(157)	(54)	48	151	254	357
53%	(821)	(717)	(612)	(507)	(402)	(298)	(193)	(88)	17	122	226	331	436
54%	(766)	(659)	(553)	(446)	(339)	(232)	(126)	(19)	88	195	302	408	515
55%	(711)	(602)	(493)	(384)	(276)	(167)	(58)	50	159	268	377	485	594
56%	(655)	(545)	(434)	(323)	(212)	(102)	9	120	230	341	452	563	673
57%	(600)	(487)	(375)	(262)	(149)	(37)	76	189	302	414	527	640	752
58%	(545)	(430)	(315)	(201)	(86)	29	143	258	373	487	602	717	831
59%	(489)	(373)	(256)	(139)	(23)	94	211	327	444	561	677	794	910

Key Assumptions

Estimated Acquisition Cost	$3,002	CAPEX/Line/Month	$10	Cost of Equity	12.0%
Rehabilitation Costs	$300	Tax Rate	38.0%	Cost of Debt	11.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

SUMMARY

VALOR's strategic focus, like the other three companies we have profiled, is on providing high-quality telephone service in rural areas, as a full-service telecommunications provider. VALOR's capital resources and the attention of its management is centered on small and medium-size communities, allowing the company to be more responsive to rural community needs and values compared with the rural services of larger companies that serve major urban areas. We believe that VALOR is particularly interesting as a rehabilitation story, as a company that is aggressively focusing on DSL, and as the company most directed by professional financial investors.

CASE STUDY SUMMARY

We believe that the four case studies provide several important lessons about the rural acquisition process. The primary lessons concern pricing, regulation, condition of plant, and entry of private equity money in the rural marketplace.

Appropriate returns can be generated on acquisition prices plus rehabilitation costs of approximately $4,000 per line.

With respect to pricing, CenturyTel appears to have set the price-per-line near $3,700–$4,000 in Arkansas, where the plant seemed to be superior, as GTE had invested $167 million in the final three years before the sale of the lines. Citizens, Iowa Telecom and VALOR paid between $3,000 and $3,100 per line, on average, for their respective acquisitions, the vast majority of which will require significant rehabilitation expenditures. A few of the transactions appear to have been outliers, as CenturyTel acquired Missouri properties for about $2,300 per line, possibly because GTE wanted to place lines under the control of minorities. Another outlier appears to have been the sale of North Dakota properties to Citizens for approximately $2,200, but that sale represented a partial state property in which back-office systems were not sold and 57% of the exchanges were "orphaned remotes." In short, our model suggests that appropriate returns can be generated with acquisition *plus rehabilitation costs* near $4,000 per line, depending on assumptions about key inputs. CenturyTel seems to be affirming the same pricing threshold in Arkansas; and the other acquired properties profiled here suggest that the buyers believe value can be created at $3,000–$3,300 *plus some figure for rehabilitation, possibly $200–$400 per line.*

Regulatory process is complex and should better reflect unique factors in acquisitions.

Turning to regulation, the approval process appears to have been protracted in several cases, most notably for CenturyTel in Arkansas, Citizens in California and Minnesota, as well as VALOR in Texas. More importantly, rates are often not easily changed even when there appear to be good reasons for increases, as regulators are very cautious and are inclined to err on the side of inactivity. Universal service payments are maintained at the level that the seller received and are not increased by virtue of transfer of ownership, in spite of evidence that the

properties might be eligible if it were not for the Parent Trap rule in §54.305, that is, many of the transferred lines are high-cost properties. In the case of Iowa Telecom, we believe that management is investing less than it might if there were further regulatory relief; the reason is that revenues are relatively low, arising from rates set on the basis of regulation that is, in our view, outdated. Our observation is that the companies and the regulators are in the early stages of understanding the unique regulatory factors related to transfer of RBOC lines to independent operators.

Data are stunning about underinvested RBOC rural plant that is 60%–75% depreciated.

Third, on the subject of infrastructure, the data are stunning about the distressed nature of the RBOC rural plant. Depreciation is 60%–75% of total telecommunications plant in service for the most part, many of the exchanges have remote switches, and the divested properties are often "orphaned remotes," which means that the buyer must then rearchitect the plant or install new host switches. It appears to us that the investment in rural America is minimal on the part of the RBOCs, if there is any investment at all. On average, the buyers of RBOC lines report plans to invest up to $400 per line to rehabilitate loops and central offices where the equipment is seriously outdated.

Private equity investors are increasingly committing resources to rural telephony.

Finally, more professional financial investors are committing resources to rural telephony. VALOR is the clearest example in this study, backed by respected private equity investors, but we believe that Citizens has been working toward a joint venture with other private equity sponsors, while CenturyTel entered into two ventures (one in Wisconsin and the other in Missouri) and Iowa Telecom is backed by minority-investor, ING Furman Selz. The interest of the financial investors is clearly higher, and those investors are supporting initial acquisition prices of $3,000–$3,700.

In the sections that follow — Regulatory Views, Infrastructure, and Financing RLEC Acquisitions — we will further amplify these themes.

This Page Intentionally Left Blank

REGULATORY VIEWS

Regulatory issues in the RLEC industry are very different from those that apply to the RBOCs and larger ILECs in more urban regions. Rural regulation is more specifically about revenue dollars — access pricing and universal service support monies — in contrast with urban regulation that sets rules for companies that are already price-capped and receive virtually no support payments.

Regulation in rural regions is very different from that in urban communities.

Regulation also is generally more benign in rural regions of small independent telephone companies where there is little competition and the companies work more collaboratively with regulators in achieving public policy goals. In denser urban regions, the regulators oversee a terrain where fiercely competitive companies contend for the customer. In the urban theater, regulators are in the unenviable position of having to decide on how to effect new and complex policy goals with approaches that completely satisfy no telecom operator.

While there has been reform, rural regulatory systems that have been operative for the last decades remain comparatively unchanged relative to the new regulations put in place by the 1996 Telecom Act for the RBOCs, including interconnection rules, line-sharing, 271 long-distance relief and others. This continuity provides stability for the legacy rural operators, but does not fit entirely well with a changing industry, particularly the properties divested by the RBOCS, as will be discussed in the second part of this section.

Rural regulatory systems remain comparatively unchanged.

Our regulatory review is divided into two major parts. The first addresses the current regulatory environment, including legacy regulatory systems and recent or proposed changes. The second part considers the recent divestitures and the more problematic parts of regulation. As we will explain further, our purpose in that second subsection is to define the problems rather than advocate solutions.

INTRODUCTION

We believe that there will be important changes over the next years as consolidation occurs, advanced services grow to be significant factors fostering

economic development and the rural industry grows in size. The changes, in our view, will be played out at both the state and the federal levels. We turn now to examine the role of the state and federal regulators, with emphasis on the consolidation question, followed by a brief summary of the principles underpinning the current reforms.

THE STATE ROLE

The state public service commissions bear the primary responsibility for approving transfers of ownership of local telcos.

State public service commissions bear the primary responsibility for reviewing the intrastate operations of local telephone companies as well as the regulatory approval of the sale and purchase of local telephone exchanges. In the case of a sale, state laws generally require that the public service commission make a determination as to whether the sale of regulated public utility assets is in the public interest, or, at a minimum, that the transaction does not *harm* the public interest.

Examples of issues typically emphasized in state proceedings include the potential impact on rates, service quality and plant improvements. The acquiring company's financial viability and its management's track record are also generally major considerations. Key administrative issues that may be negotiated as part of state proceedings include business information reporting requirements, formal mandates for infrastructure upgrades and the availability of universal support funds or incentive regulation mechanisms. If the sellers of local exchange properties have made certain commitments, e.g., upgrading of switches or outside plant, the acquiring carriers are usually required to honor those same commitments. In other instances, the acquirer is required to make additional commitments in terms of service, new products and rates.

Regulatory decisions about access rates and other retail rates are key.

State regulatory decisions regarding the allowed recovery of revenues through access charges or retail rates are of critical importance to companies acquiring new rural properties. State approval typically requires at least 90 to 180 days to complete. However, variances exist, depending on state statues and the complexity of the transaction. Public hearings and the extent to which other industry or consumer interests are actively engaged in evaluating issues will affect the length of state proceedings.

THE FEDERAL ROLE

FCC approves petitions to change study area boundaries.

In the sale of local exchange properties, the federal regulatory role is more limited, but significant. Frequently, the purchase of local exchange properties by a telephone company with existing local incumbent operations requires a redrawing of study area boundaries. Study areas are "reporting divisions" that are, for the most part, the service territory of the carrier in an individual state. To realign an existing study area, the acquiring company must file a petition for waiver with the Federal Communications Commission. In the previous section, we noted that sales of properties that included all the assets in a state generally required no such

waiver, but sales of partial holdings often mean that the acquirer must submit a request for a new study area definition.

As will be detailed more fully later in this section, federal regulations require that properties previously owned by a price-cap company remain regulated under price-cap after being sold to another carrier. Rate-of-return companies that purchase properties held by price-cap companies are required to obtain a waiver from federal rules as a part of the transaction. Waivers of technical rules also are required to allow rate-of-return companies to recover above-average access costs from the NECA pool. Price-cap carriers that purchase rate-of-return carriers are required to convert the target company to price-cap.

Process can take several months.

While waivers in the acquisition process are routinely granted, the procedure can take up to several months to complete and may require negotiation to satisfy federal regulators that the broader consumer and competitive interests are not harmed by a realignment of the study area. Delays in obtaining necessary waivers can be costly and add to the complexity of completing transactions.

POLICY PRINCIPLES — COMPETITION AND UNIVERSAL SERVICE

Congress's intent in the Telecom Act is to achieve competition and universal service.

The Telecommunications Act of 1996 establishes competition and the preservation and advancement of universal service as *equal* goals. The plain language of the Act makes clear that Congress did not intend for public policy to *balance* or trade off the two goals, but the intent is to *achieve both goals*.

For areas served by rural carriers, federal law gives states the authority and responsibility to make a public interest determination, including about universal service issues, before removing barriers to competitive entry. The intent of these provisions is not to deny rural consumers the benefits of competition, but to ensure that competitive entry into specific rural markets does not have unintended or harmful consequences in regions in which economic factors are possibly more sensitive than those in urban markets.

Rural exemption from interconnection obligations does not apply to RBOC rural regions.

Because of the legislators' concerns about the unique issues in rural regions, for the most part, independent telephone operators are exempt from the Act's obligations to interconnect other carriers, as outlined in sections 251 and 252. In the case of the larger carriers, such as the RBOCs, the exemption from interconnection does not apply, even in rural regions, so the RBOCs contend with competition in all their markets. Accordingly, in an acquisition of a large carrier's lines, an independent operator or consolidator will frequently be exposed to competition to a degree higher than in other regions served by that independent.

A long-established national public policy goal is to ensure that the benefits of quality and affordable telephone service are widely available. The public policy is explicit and careful — to provide comparable services and rates to urban and rural customers.

Public policy to provide comparable services and rates to urban and rural customers.

It is important that the investor understand a fundamental distinction with respect to rural regulation. The historical public policy has been to support rural customers, and is only indirectly concerned about the rural telephone company. The policy arises from the recognition that rural service is in fact more costly — because switching and other assets serve fewer customers, resulting in relatively lower operating leverage compared with urban areas, and because rural loops are often longer, adding dramatically to costs.

There are several reasons for emphasizing the principle. First, the regulatory policy is directed toward ensuring that there is a satisfactory business case only secondarily, as the business case is seen within the context of the fundamental policy, which is to provide *affordable and comparable rates and services to the rural customer* (Telecom Act, Sec. 254(b)(3)). Second, while the support system does appear to work, there are exceptions when abuses occur in requiring the attention of regulators, but most regulators see those abuses as part of the normal friction in setting and implementing national policy. Third, we contend that the policy is clear — historically and in the Telecom Act of 1996 — but the systems or regulations that serve the doctrine will prove adequate only to the extent that they implement the policy in the ever-changing events that test the rules. We believe that regulators will be increasingly compelled to review the policy and systems (recognizing that there are other conflicting interests) to determine whether they are aligned in serving the consumer — in acquisitions or rate-setting or introduction of competition. The same point will be made more forcefully in the second part of this section.

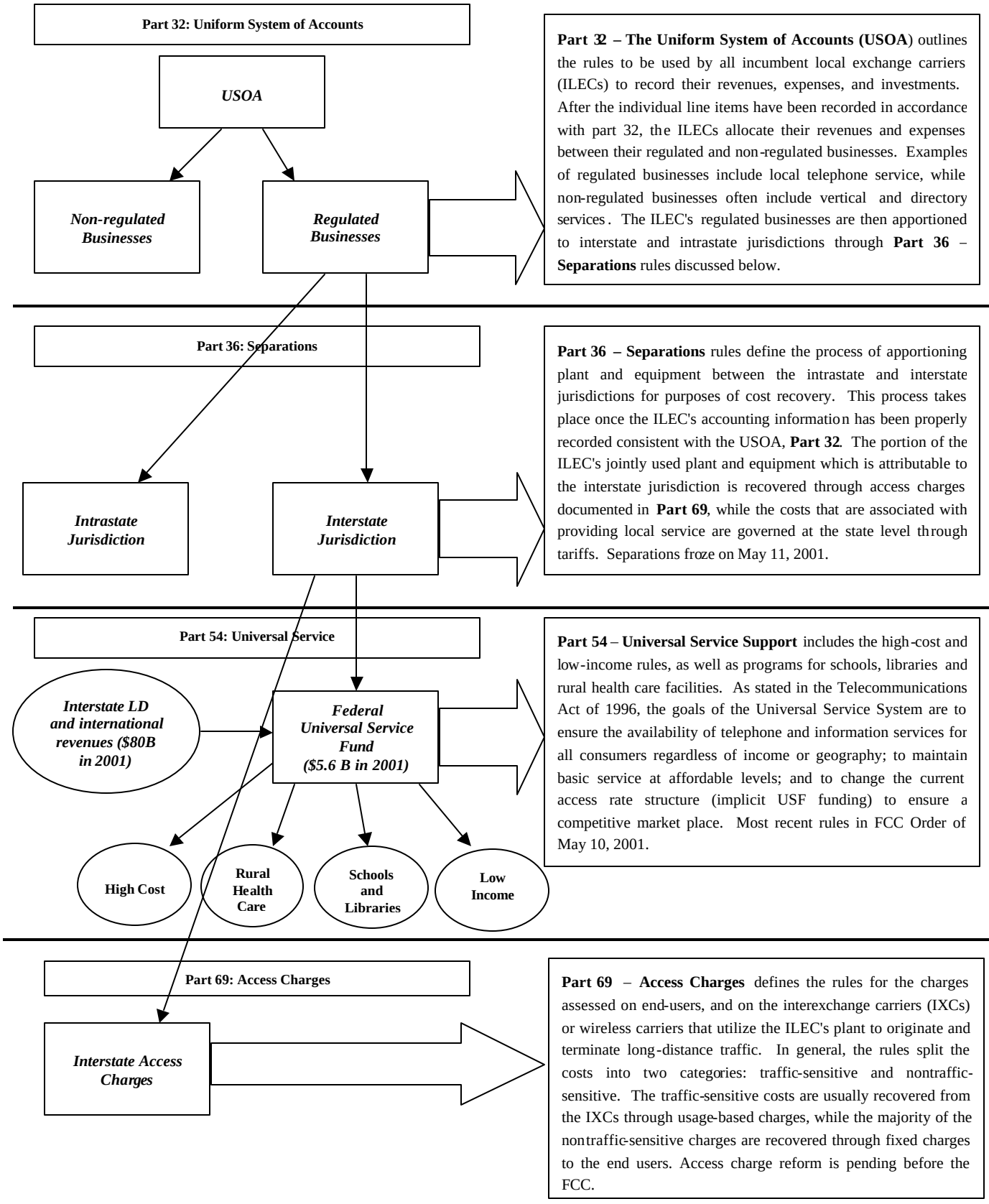
We believe that regulators will be increasingly compelled to review rural policy and systems to determine if the customer is served.

SYSTEM OF RURAL REGULATION

The current system for effecting distribution of Universal Service funds and setting access rates is somewhat complex. More detailed explanation of the systems and recent reforms are included in Appendix Two of this report. In addition, **Figure 14** provides an illustration that explains the fundamental process for separating costs into regulated and nonregulated businesses as well as into interstate and intrastate jurisdictions. The figure also illustrates the process for determining universal service support and access rates.

USF system and determination of access rates are outlined in our graphic.

Figure 14: Federal Universal Service and Access Charge Road Map



Source: NECA Guide; Legg Mason Wood Walker, Inc.

UNIVERSAL SERVICE SUPPORT

The Universal Service support system was originally designed to ensure affordable and ubiquitous voice telephony services. The Telecom Act of 1996, however, clarified in §151 that "[u]niversal service is an evolving level of telecommunications services that the Commission shall establish periodically . . . , taking into account advances in telecommunications and information technologies and services."

DEFINITION OF SERVICES TO BE MADE UNIVERSALLY AVAILABLE

Federal-State Joint Board periodically reviews definition of universal service.

The Telecom Act required that the Federal-State Joint Board — composed of federal and state commissioners — periodically review the definition of the services that are to be made universally available and for which support is provided. The process is designed to ensure that rural regions have services comparable to those in urban regions. Currently, the core universal services are defined as single-party service; voice grade access to the public switched telephone network; Dual Tone Multifrequency signaling or its functional equivalent; access to emergency services; access to operator services; access to interexchange service; access to assistance; and toll limitation services for qualifying low-income consumers.

On August 21, 2001, the Federal-State Joint Board released a public notice, seeking comment on whether the definition of universal services should be expanded. The notice highlighted the principles that allow for expanding the definition — (1) quality services should be available at just, reasonable, and affordable rates; (2) access to advanced telecommunications and information services should be provided in all regions of the nation; and (3) consumers in all regions of the nation should have access to telecommunications and information services that are reasonably comparable to those services provided in urban areas and that are available at rates that are reasonably comparable to rates charged for similar services in urban areas.

There are four definitional criteria for universal services.

The notice pointed to four definitional criteria that the Joint Board and the Commission are required to consider under the 1996 Act. Those criteria are based on the extent to which the services in question (1) "are essential to education, public health, or public safety;" (2) "have, through the operation of market choices by customers, been subscribed to by a substantial majority of residential customers;" (3) "are being deployed in public telecommunications networks by telecommunications carriers;" and (4) "are consistent with the public interest, convenience, and necessity." (CC Docket No. 96-45)

HIGH COST SUPPORT

Currently, the goal of extending affordable basic telephone service to all areas of the nation, including sparsely populated rural regions, has been achieved largely as

a result of the establishment of a complex system of cross-subsidies provided to local exchange carriers. There are three forms of explicit high-cost support that flow to rural carriers.

Three forms of high-cost support: (1) High Cost Loop fund, (2) Long-Term Support, and (3) Local Switching Support.

- The High Cost Loop (HCL) fund helps offset the cost of loop facilities used to provide local service. The loop cost is calculated according to a carefully defined 26-step formula. When a study area's average loop cost exceeds 115% of the national average loop cost (now set at $240), the study area receives a portion of its costs above the 115% level ($276 = 115% x $240) from the fund. The amount of support increases in specified increments as the percentage of cost exceeding the national average rises (see Appendix Two).

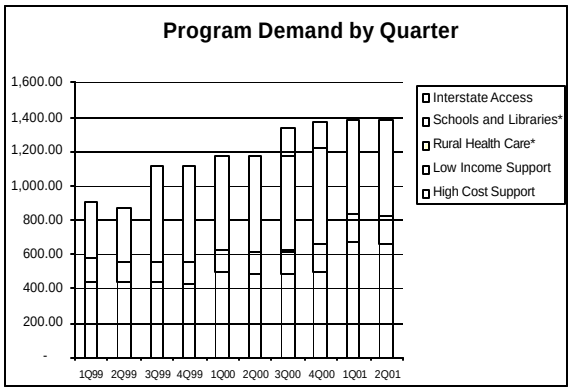
- Long-Term Support (LTS) offsets some of the fixed costs of interstate access for rural carriers remaining in the National Exchange Carrier Pool.

- Local Switching Support (LSS) provides traffic-sensitive support for the high per-line local switching equipment costs incurred by carriers with less than 50,000 loops.

Three high-cost funds provided $2 billion in 2000 out of a total $5.1 billion in USF monies.

These three funds provided approximately $2.0 billion in annual support in 2000 out of a total $5.1 billion in USF monies paid to the over 1,300 rural carrier study areas in the United States and its territories. The amount of HCL support available for rural carriers was capped in 1994 and continues to be capped currently, but the fund size was readjusted upward by about $125 million in the FCC's May 10, 2001, Order on Universal Service Reform. The cap on the fund will now grow at the same rate as the national growth in the number of access lines, and adjusted further to allow for an annual inflation factor. **Table 47** provides a summary overview of the USF program for 1999 and 2000, which, for rural carriers, is based on an historical embedded cost approach.

Table 47: Estimated USF Quarterly Program



Program Demand -1999	1Q99	2Q99	3Q99	4Q99	1999
High Cost Support	439.10	433.30	432.80	432.20	1,737.40
Low Income Support	144.00	124.80	122.70	122.30	513.80
Rural Health Care*	-	-	-	3.30	3.30
Schools and Libraries*	319.90	318.20	555.70	562.50	1,756.30
Total	903.00	876.30	1,111.20	1,120.30	4,010.80

Program Demand -2000	1Q00	2Q00	3Q00	4Q00	2000
High Cost Support	498.13	487.69	648.36	657.26	2,291.43
Low Income Support	128.71	125.71	133.06	164.04	551.51
Rural Health Care*	2.23	3.34	4.63	2.53	12.73
Schools and Libraries*	552.71	555.23	554.85	552.49	2,215.29
Total	1,181.77	1,171.97	1,340.91	1,376.31	5,070.96

Program Demand -2001	1Q01	2Q01	3Q01	4Q01	2001
High Cost Support	667.22	653.17	-	-	-
Low Income Support	168.61	176.43	-	-	-
Rural Health Care*	2.43	1.89	-	-	-
Schools and Libraries*	553.23	554.88	-	-	-
Total	1,391.48	1,386.36	-	-	-

Source: USAC and Legg Mason Wood Walker, Inc.

DIFFERING SYSTEM OF SUPPORT FOR NON-RURAL CARRIERS

While the nation's 1,000+ rural carriers serve 38% of the nation's land area and 93% of the study areas, they serve only 8% of total access lines (about one-quarter of the domestic rural lines.) The RBOCs and Sprint provide service to nearly three-quarters of the nation's rural access lines.

Federal system for RBOCs uses a forward-looking model to calculate underlying costs.

The federal subsidy system providing support for high-cost rural lines held by non-rural carriers differs from that available to rural carriers. By contrast with the embedded cost method used for rural carriers, for the RBOCs and Sprint, the FCC uses computer modeling to approximate the "forward-looking" cost of providing service in those companies' specific high-cost rural areas and compares the figure with a national average cost benchmark. To receive support, a non-rural carrier must meet a two-part test. First, the carrier must be in a state where the modeled statewide average cost is greater than 135% of the nationwide average cost. Second, the company receives support only for wire centers with modeled costs that are greater than the national benchmark.

The RBOCs, excluding GTE, will receive 3Q01 support in only five study areas.

The FCC's approach for non-rural carriers resulted in 17 states receiving federal support. More specifically, the RBOCs (excluding GTE) will receive 3Q01 support only in five study areas — SBC in Arkansas, BellSouth in Mississippi and South Carolina, and U S West/Qwest in Colorado and Wyoming. The total federal support for non-rural carriers is approximately $250 million annually, of which a mere $125 million is for the RBOCs (the former GTE properties account for $114 million and the original RBOCs receive only $11 million). For the RBOCs and GTE, the payments are all for high-cost loop, with no allocation for local switching or long-term support.

Overall, the federal system of high-cost universal service support available to non-rural carriers places the primary responsibility for subsidies on states (we elaborate

more later in this section). As a result, there are very modest explicit support payments made to those non-rural carriers located in states that do not receive any federal subsidy, but non-rural carriers have traditionally derived support through cross-subsidized access rates.

General policy goal divides funding responsibility: 75% at the state level, 25% at the federal.

Many states are moving toward establishing an explicit universal service fund. The state and federal division of financial responsibility for providing the support necessary to keep rates and services in high-cost rural locations comparable to those in low-cost urban locations has been widely debated and codified over time. No simple formula can describe the negotiated division, but a general policy goal of 25% of the cost responsibility being attributed to interstate telecommunications consumers and 75% attributed to state jurisdiction consumers is a rough guideline that has been incorporated into coordinated federal/state regulatory rules.

STATE UNIVERSAL SERVICE MECHANISMS

State support will be a necessary underpinning for positive business cases in high-cost regions.

The continued federal emphasis on replacing implicit access subsidies with new explicit universal service subsidies creates greater pressure on states to move in the same direction with intrastate access pricing. A number of states have moved even more quickly than federal regulators to remove explicit subsidies from access and put that support into state USF funds. State support, in our opinion, will become an increasingly necessary underpinning for a positive business case, for both incumbents and competitors, in high-cost rural service areas.

Tenth Circuit Court requires FCC action to ensure adequate state funding of USF.

On July 31, 2001, the Tenth Circuit Court of Appeals ruled in an important decision that the FCC had not previously demonstrated that USF funding was sufficient in serving high-cost regions. The court contended that the FCC's Ninth Order would result in reasonably comparable rates *only if the states implement their own universal service policies*. The court stated that the FCC "must also undertake the responsibility to ensure that the states act. On remand, the FCC is required to induce state action." (II, B, 3) As a result, we believe that the court's ruling will force the FCC to revisit its federal universal service mechanism, especially to create systems ensuring that the states keep fund universal service.

The investor should note that the majority of the states have universal service funds or are contemplating establishing funds but they dedicate their resources primarily to programs such as lifeline, 911, schools, libraries, and rural health care. By our calculation, approximately 13 states (54% of total states sponsoring state USF plans) provide for high-cost telephone operations. **Table 48** offers an overview of state USF programs or the process that is leading to establishing USF programs.

Table 48: Overview of State USF Programs

	Legislation/ Docket	Programs Funded	No. of Contributors	No. of Recipients	Fund Creation
AL	Docket 25980	High Cost under Review			
AK	53.300	HCL, Spec. Equip., DEM, Lifeline	Carriers using PSTN		Nov-98
AZ	AAC R-14-2-1201	High Cost	300		May-97
AR	Tel. Ref. Act of 1997	Revenue Recovery	400	25	Sep-97
CA	R.95-01-020	Lifeline, Relay Services, High Cost, Teleconnect	All end users	22	1983
CO	4 CCR 723	High Cost	41	10	Feb-98
CT	Bill HB5503	Lifeline			May-95
DE	Docket 48	Under Review			
FL	Docket 95-0696	Under Review			
GA	Docket 58-25-U	Revenue Recovery	All wireline carriers		Apr-96
HI	Rule 6-81-1	High Cost and TRS	77		
ID	Code 62-210	Revenue Recovery		7	1998
IL	Docket 97-0515/0516	High Cost and Lifeline	Toll Providers	ILECS<35,000 lines	1993
IN	Cause #40785	Revenue Recovery for HCL Areas		14	1989
IA	Docket NOI 99-1				
KS	66 KSA	Rate Rebalancing and Lifeline	525	40 USF; 15 Lifeline	Mar-97
KE	Adm. Case #355 and #360	Lifeline	Carriers using PSTN	Eligible ETCs	Jan-99
LA	Docket U-20883-A	LOS Preservation Fund	40 IXCs	20 LECs	Feb-99
ME	Docket 97-429	Schls, Libs.; Lifeline under Review			
MD	Case #8745				
MA	Pending	Schls and Libraries under Review			
MI	Case #U-11899				
MN	MN Stat. 237.16	Lifeline and 911; Hearing Impaired			
MS	Docket #95-UA-358				
MO	SB 507				
MT	Rules 69-3-656 MCA	Assist. for Adv. Telecom. Servs.			
NE	Application C-1628	HCL	400		Mar-99
NV	Docket 97-5018	HCL, Schls, Libs, Rural Health Care	500	1	1995
NH		Tel.Roundtable reviewing Issues			
NJ	AR 124.220	Under Review			
NM	RM 97-246-TC SB680	Revenue Recovery	approx. 250		
NY	Docket 94-C-74825	Lifeline, Hearing Impaired and 911			Oct-98
NC	Docket #P-100	Under Review			
ND	HB 1067				
OH	Docket #97-632TP-COI	Possible HCL			
OK	OAC 165:59	Lifeline, 911 and Techn. Training	450	Approx. 50	Feb-98
OR	HB 2077	HCL, TRS, Lifeline	Carriers using PSTN		Jun-95
PA	Docket L-950105	HCL	300	34	Jan-00
RI	Docket 2577	Under Review			
SC	SC Code 58-90280(e)	Under Review	All ILECs		
SD					
TN	TN Code 65-5-207	Under Review			
TX	PUCT 26.401	HCL, Lifeline, Link-Up	4000 (hotels/motels)	75-100	Jan-99
UT	HB 71	Basic Local Telephone Service	200	8	1989
VE	SB 311	911, VTRS, Lifeline	420	11	Oct-94
WA	SB 6622	HCL (above 115% of statewide avg.)	Carriers using PSTN		
WV	Docket 97-0103-T-GI				
WI	Docket I-AC-155AB 606	Rate Shock Mitigation, Lifeline, Link-Up, VoiceMail for Homeless, HCL, Badger Net project, Telecomm. Customer Assistance, Educational Telecomm. Access, Newsline for National Federation for the Blind			May-96
WY	W.S. 37-15-103	HCL (above 130% of statewide avg)	250	6	Jul-97

Source: NECA; Legg Mason Wood Walker, Inc.; state public service commission data.

ACCESS CHARGES

Cross-subsidies have been used effectively to support investment and affordable rates.

USF was not the only support mechanism in the traditional framework. When monopoly franchises were the only providers of local telephone service, regulatory ratemaking provided a relatively efficient means of providing cross-subsidies through access fees or charges. The cross-subsidies were used to accomplish the public purposes of supporting investment and setting affordable rates in high-cost rural areas.

Access fees — charged by local exchange carriers to terminate or originate long-distance network calls — have been a traditional focus of ratemaking subsidies. In high-cost rural areas of independent telephone companies, regulators allowed access rates to be set higher than the actual cost of terminating or originating long-distance calls. In the case of the RBOCs, access rates were lower than those of independent operations, but drew on urban areas that cross-subsidized rural regions. These cross-subsidies allowed the telephone company to charge low local retail service rates that were priced below the actual cost of service.

The formal use of access charges began at the AT&T divestiture in 1984 to provide for costs of service and implicit subsidies.

Access charges were created at the time of the AT&T divestiture in 1984. Before then, monopoly telephone companies pooled long-distance revenues and calculated payments disbursed to one another from those pools based on minutes of use and transmission mileage. The payments between companies allowed (and still do) for compensation for the use of one another's networks. Upon divestiture, the Bell companies, and other companies electing price cap regulation were removed from the intercompany pool arrangement, and switched access charges replaced the revenue-sharing mechanisms of the monopoly telephone companies. Smaller rate-of-return carriers, especially those serving high-cost exchanges, still rely partially on a modified version of the pooled arrangement, with settlements between companies administered by the National Exchange Carrier Association.

Access charges were typically $0.09 per minute in 1984, but began to be reduced in 1987.

When first established, access charges were typically over $0.09 per minute ($0.0524 for common carrier line charge, $0.0079 for line termination, $0.0098 for local switching and $0.0135 for local transport) and were used as the primary source of subsidy to keep local rates affordable in high-cost areas. In certain cases, however, blended charges were as high as $0.20 per minute. In 1987, the FCC began reducing the per-minute access charges and added flat-rate line charges to the bills paid by long-distance carriers. Most regulatory rate-setting has bifurcated on traffic-sensitive and nontraffic-sensitive costs, generating revenues that are consistent with the way in which costs are incurred.

The FCC sets the federal switched access rates that apply to calls made state-to-state. State commissions set switched access rates for intrastate calls. Policies established by state public service commissions to set intrastate access rates have often mirrored federal policies, with reduced reliance on per-minute charges and higher reliance on fixed-customer charges.

INCUMBENTS CAN NO LONGER RELY ON ACCESS-BASED SUBSIDIES

Fifth Circuit rules that USF support may not be included in access charges.

In a decision on May 3, 2001, the United States Fifth Circuit Court reversed the implicit subsidy system that has existed for decades in access charges, ruling that the "FCC cannot maintain any implicit subsidies [within access charges] whether on a permissive or mandatory basis." The rationale was that the recapture of universal service monies or other subsidies through access charges is contrary to the plain language of §254(e) of the Telecom Act of 1996.

While the current discipline of implicit subsidies is not yet changed, the FCC must move expeditiously in the rate-of-return access reform process that is already under way. Further, the FCC may not choose *inaction* or to *maintain the status quo*. Support systems are to be explicit according to the Act, at least as interpreted by the Fifth Circuit.

It appears likely that access reform will follow the MAG proposal — dropping access charges to 1.6 cents per minute (or possibly 0.95 cents), creating a new SLC, and establishing a new revenue shortfall fund.

The Fifth Circuit ruling is the backdrop for the FCC's commentary on May 10, 2001 in the USF Order. In that Order, the Commission stated that it would move promptly to resolve the access charge reform as proposed by the Multi-Association Group (MAG) and, to a lesser extent, the RTF.

We expect interstate access reform to track the MAG proposal in most respects, with origination and termination charges possibly dropping from approximately 4 cents a minute to an average of about 1.6 cents. There is an alternative proposal from AT&T, Western Wireless and GCI to lower rate-of-return prices per minute to $0.0095, and to keep the rural companies revenue-neutral by creating a new USF fund element, known as High Cost Fund III (the fund element proposed by the Rural Task Force). In addition, the FCC is likely to raise the subscriber line charge (SLC) to a level that is the same as the SLC increase for non-rural carriers (currently $5 monthly for residential customers), and create a new fund (called either High Cost Fund III or Rate Averaging Support) that makes up any potential revenue shortfall for rural carriers. The other proposals in the MAG plan (related to incentive regulation and optional participation in some form of incentive regulation) have drawn more criticism than the access portions of the plan. We expect an FCC decision in late 2001 or early 2002, with full implementation possibly on January 1, 2002, or July 1, 2002.

We believe access rate reform could be positive for rural companies by making the companies less vulnerable to losses in support payments.

In our view, the changes in access rates, if they are what we expect, could be positive for rural companies relative to the status quo. Evolving technologies, including mobile/fixed wireless and cable-based telephone networks, have increasingly allowed customers new methods for making long-distance calls, which means that the incumbent local telephone company is often bypassed. High access rates that previously included embedded subsidies left the rural carrier vulnerable to losing access *and* the implicit subsidies if the calls were lost, for example, to AT&T Wireless or Sprint PCS or Nextel. The new proposals, therefore, appear to us as positive since they create a new fund for support while

reducing the rural carriers' exposure to the loss of access minutes and revenues that have been growing more slowly over the last year.

Under the proposed regime, if a wireless carrier (one that is not an eligible telecommunications carrier [ETC]) were to take minutes, the incumbent would still be entitled to the support payments, whether called High Cost Fund III or Rate Averaging Support (RAS). If the customer were lost to a competitor that is designated as an ETC, however, both access charges and the USF monies per line are lost, according to the FCC's new USF Order.

Access rates at the state level frequently mirror the interstate rates.

At the intrastate level, access rates frequently have mirrored the interstate access rate structures established by the FCC, as state commissions chose to simplify their rate-setting processes. Other states have begun to adjust intrastate access rates closer to the actual cost of terminating or originating calls, even before the FCC rules on interstate access reform for rate-of-return companies. However, we expect the balance of the states to wait until the FCC sets its interstate framework before undertaking significant changes.

MOVEMENT AWAY FROM RATE-OF-RETURN REGULATION

General migration from rate-of-return to incentive-based regulation.

In general, both the rural companies and regulators have sought to migrate from traditional rate-of-return regulation toward more flexible price cap or other incentive-based regulation. Such a shift is intended to provide incumbent firms with better incentives and greater competitive (pricing) flexibility. Virtually all the large carriers already have converted to price-cap regulation at both the state and the interstate levels.

For smaller carriers, rate-of-return regulation remains the rule at the federal level and in the majority of states. Small carriers that lack diversified property holdings and encounter lower levels of competition rely on the key positive features in rate-of-return regulation — predictable revenues, reduced risk, and preserving investment incentives. With those "protections" in place, small carriers generally are subject to less regulatory oversight than that imposed on larger carriers.

MAG proposal has proved controversial in its sections related to incentive regulation.

Many small carriers advocate further reductions of regulatory oversight, often citing the economic cost of reporting requirements and the expense in participating in regulatory proceedings. Responding to pressures to allow small carriers to shift from rate-of-return regulation, the MAG plan proposed to the FCC a transitional system allowing rural carriers to make choices regarding their preferred choice of regulatory structure. Stressing the importance of maintaining flexible regulation for the nation's rural carriers, the MAG proponents submitted a plan that became somewhat controversial, as it allowed carriers a choice of transitioning to an incentive-based price-capped plan (Path A) or remaining under rate-of-return regulation (Path B). If approved by the FCC, carriers would be given a five-year transition period to make an election to participate in the Path A

incentive-based plan but, once choosing incentive regulation, carriers cannot migrate back to rate of return.

While the broad goal of MAG to move smaller companies away from rate-of-return toward incentive regulation is widely supported by the rural local carriers, a number of parties have expressed opposition. The chief concern is that the small companies gain the benefits of flexible regulation without the financial risk incurred in a competitive environment. The FCC is likely to rule on the access reform issues and the incentive regulatory part of MAG proposal by early 2002, with implementation possible in January 2002 or, alternatively, July 2002. At this time, the incentive plan appears to us to be at risk more than the access rate recommendations found in the MAG proposal.

INTRODUCTION OF NEW SAFETY NET ADDITIVE

Rural Task Force proposed a Safety Net Additive to help companies making high levels of investment.

In the fall of 2000, The Rural Task Force (RTF) proposed to the FCC that a new mechanism — a Safety Net Additive — be adopted for a rural operator that incurred significant increases in investment. The proposal was that a carrier that added at least 14% to its telecommunications plant in service (TPIS) in a given year within a study area should be eligible for incremental recovery on the change in its loop investment. The RTF's proposed mechanism was adopted by the FCC in its May 2001 USF Order.

The RTF and the FCC intended that the mechanism offer incentives to local telephone companies to upgrade plant, including the addition of infrastructure for broadband services. However, the formula became very complicated, as it was designed to ensure that companies would not abuse the new mechanism. The result, in our estimation, is a new formula that, unfortunately, will not generate meaningful financial relief or incentives.

In summary, if the carrier makes an investment *in a study area*, and that investment increases TPIS by 14% compared with the total telecommunications plant in service *in that study area* in the prior year, the carrier is eligible for recovery on the incremental change in the loop cost, but not the change in the total TPIS. Qualifying carriers are then permitted to recover on their loop investment in that study area for five consecutive years.

To highlight how minimal is the relief, we have included an illustrative calculation in **Table 49**. The table focuses on the computation of a USF annual payment to a hypothetical local company, assuming average TPIS in the year 2002 is $1,932 per line (an average drawn from the 1,300 ILECs in the U.S.) If there are enough monies in the USF fund to make payments to all the companies that qualify above 115% of the national average loop cost of $240, there is no cap imposed on the payments (it is uncapped). If, however, the $1.02 billion is all spent because there are more loops that qualify, the threshold rises to 115% of some figure above $240 (which is calculated as the point at which the payments run out). In the

hypothetical 2002 example, the funds run out in paying carriers down to $278, which is then calculated as 115% of $242. The average loop cost, according to our illustration, has effectively increased to $242 on the basis of the "capped fund."

Table 49: Illustration of Safety Net Calculation

2002			2003		
	Uncapped	Capped		Uncapped	Capped
Avg. TPIS/loop	$ 1,932	$ 1,932	Avg. TPIS/loop	$ 1,932	$ 1,932
			x14%	$ 270	$ 270
			New TPIS/loop	$ 2,202	$ 2,202
			Change in loop cost	$ 70	$ 70
USF loop cost	$ 300	$ 300	2003 USF loop cost	$ 370	$ 370
HCL threshold	$ 240	$ 242	HCL threshold	$ 240	$ 245
HCL thres. x 115%	$ 276	$ 278	HCL thres. x 115%	$ 276	$ 282
HCL	$ 15.60	$ 14.11	HCL	$ 59.60	$ 56.99
			Safety net	$ -	$ 1.12
Total HCL	**$ 15.60**	**$ 14.11**	**Total HCL**	**$ 59.60**	**$ 58.11**

Source: Legg Mason Wood Walker, Inc. estimates.

In 2003, we assumed that TPIS would rise by $270 (14% higher than total TPIS of $1,932 in 2002) in 2003 to $2,202, but we posit that only $70 of the change is related to loop. Thus, the carrier's loop cost is now $370 and the High Cost Loop payment is $59.60 in 2003 if the fund's cap is not exceeded. The carrier would receive all the USF payments and no Safety Net monies, since the rule is that the most the carrier can receive is the uncapped USF payment. However, if the cap is exceeded, the carrier is eligible for the Additive, and the USF funds will exceed the cap on the High Cost Fund. In this case, we assumed that the HCL monies were exhausted in paying for loops that had costs of $282 and above, and the effective national average rose to $245 (since $282=115% x $245). In this illustration, in the capped 2003 case, the carrier receives $1.12 in additional funds above the capped fund, but still, according to the rule, short of the $59.60 that represents the uncapped USF payment.

We summarize our analysis of the USF system.

We summarize our analysis of the formal system, which works as follows. The Universal Service Administrative Company (USAC) begins calculating the support due to those carriers whose loop costs are the highest (e.g., $6,183 per line for one study area in Arizona in 1999) and proceeds down the list of qualifying carriers to the point where the funds simply run out — in this illustration, at 15% above the $242 loop cost in 2002 and at 15% above the $245 cost in 2003. If USAC has enough funds to support all the carriers that qualify above the $276 threshold (115% x $240), the agency will simply stop the payments at the statutory average of $240 per line, and the residual funds will be available as an adjustment to collections in the following period. Our illustration assumes that many telephone

companies could be making investments in 2003, driving up the average loop costs, making the fund run out of monies before it is able to get to loops with costs similar to those in the first year of the illustration. Thus, the capped fund runs out of monies at 15% above the loop cost of $245 in 2003.

Safety Net funds do not appear to be meaningful in size for carriers.

There are several points in the illustration that lead to the simple realization that the Safety Net does not appear to be large enough to matter. First, the Safety Net funds are likely to be small — for this carrier, $1.12 per loop annually in our illustration for 2003. Second, the carrier receiving the Safety Net funds, by virtue of the rules, is prohibited from receiving more than the uncapped amount (in this case, the uncapped amount in 2003 is $59.60 per line), so Safety Net funds plus capped fund payments may not exceed uncapped payments. Third, we calculated (across all the cost-companies that are part of the NECA pool) that the average increase in TPIS in 1999–2000 was 6.33%, while the average increase in actual reported loop costs was 1.11%, suggesting that it will be difficult in future periods to qualify for any Safety Net funds. Fifth, we calculated that the 1999–2000 correlation between the change in loop costs and the change in TPIS (investment) was 0.3669; this low statistic leads us to suggest that, while companies are being encouraged under the Safety Net to invest in total plant, they are being rewarded more narrowly for increases in loop costs, which may or may not be associated with TPIS increases of 14%. In our opinion, system will create negligible financial benefits in the real world. Finally, if there is any benefit to carriers, we believe the mechanism is more likely to benefit companies with multiple study areas, that is, those telephone companies that have the ability and willingness to concentrate higher levels of investment within specific study areas in a given year.

SAFETY VALVE TO SUPPORT ACQUIRED PROPERTIES

RTF proposed Safety Net Valve to help carriers that upgraded acquired lines.

The FCC accepted in its May 2001 Order another new mechanism, called the Safety Valve (entirely different from the Safety Net Additive). The Safety Valve was designed and proposed by the Rural Task Force to provide some regulatory relief to companies that invested in lines that had been acquired from other carriers, such as the RBOCs. At the same time, the RTF did not want to provide an automatic increase in support payments because the RTF was concerned that subsequent relief might have the perverse effect of raising the price the acquirer was willing to pay to the seller of the lines, thereby effectively redirecting the support payments (higher projected revenues) to the seller, which not deserve the higher acquisition price while, in the end, depriving the acquirer of the monies.

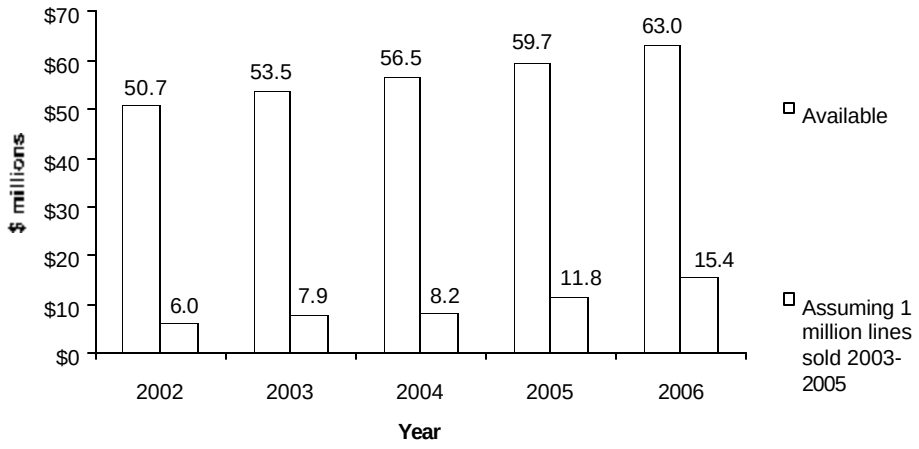
We estimate that the Safety Valve will result in very little aid to consolidators — less than $2 per line annually.

The new Safety Valve allowed the acquirer to be eligible for recovery on 50% of new investment, but only on the basis of cost per line in the second year of ownership compared with calculated line costs indexed in the first year after the properties were acquired. To ensure that the fund did not become unacceptably large, the FCC set the upper limit of the Safety Valve in 2001–2002 at $50.7 million and in 2006 (the final year of the FCC's plan) at $63 million. To simplify what is admittedly a complex explanation, the RTF and the FCC wanted to help

investors that purchased distressed lines. Unfortunately, the amounts allocated and the system appear to us to result in very little aid to consolidators — likely less than $2 per line annually, at best. Further, the mechanism appears to create an incentive to invest little in loops in the first year after acquiring telephone properties.

We have calculated the amounts available to carriers (CenturyTel, Citizens, Iowa Telecom and VALOR) that might be eligible for the current payments because of the lines they acquired over the last year. With generous assumptions, we have estimated that no more than $6 million would be paid out in 2001, as reflected in **Figure 15**. The figure also aggressively assumes that one million new lines will be sold annually from 2003 to 2005. Because we assume that the regulatory review process for those hypothetical acquisitions could take nearly a year and the carrier is required to wait another year after the acquisition to set an index period, no monies would be received until 2005, and the levels would be relatively low.

Figure 15: Projected Safety Valve Funds Available/Used



Source: Legg Mason Wood Walker, Inc.

In short, we believe that the concerns of the RTF and the FCC that focused on avoiding a reward for the seller of the lines has resulted in a mechanism that is well-intentioned, but inconsequential to the companies. It is our view that the Safety Valve makes no appreciable difference to the investment case, and that the FCC's upper limit of $63 million will not be tested.

NEW REGULATORY CHALLENGES

This next section of the report analyzes specific challenges or apparent inadequacies in the current regulatory system, particularly as they relate to rural

acquisitions. The purpose of the presentation is a clarification of problems that have arisen more recently and an exposition of why the system appears to be inadequate.

We attempt to clarify problems in current rural regulatory systems related to acquisitions.

As we noted earlier, it is beyond the scope of this report to comprehensively present or advocate regulatory solutions. Rather, we seek to provide some general perspectives about the regulatory system and problems that appear to arise in the acquisition process, and then we identify what we believe are the principal problematic regulatory issues.

As has been suggested before, what is unfolding in rural markets is similar to a puzzle, and regulation is in some ways like that most tiresome part of a puzzle where the lines and colors merge into an indiscernible miasma that is the background. In that part of the puzzle, trial-and-error is often the best approach, as rationality and recognition seem to fail. In fact, the current regulatory system is actually the result of ad-hoc trial-and-error solutions spawned 20 years ago when AT&T and regulators attempted to negotiate with small rural carriers whose switches had too few lines or whose loops were clearly costly. The result was interlocking systems that eventually became known as "jurisdictional separations," "dial equipment minutes," "represcription," myriad rate elements, and various other arcane concepts.

At times, the bleary-eyed worker of the jigsaw design cannot help but wonder whether the frustrating pieces actually belong to a different puzzle. In the case of regulation and rural telephony currently, we suggest that this is precisely the case. The pieces are in reality from a former design, one that cannot easily be fitted into the current puzzle, precisely because they do not belong and were not cut for the new image.

The pieces of the current rural regulatory puzzle were cut for a different image.

The individual elements of the former regulatory systems for U.S. telephone companies are part of an original scheme that made sense as the backdrop to a specific image — high-quality, ubiquitous and *monopoly-based* voice telephony service. The present puzzle, however, reveals a different picture — at least for the RBOCs — of competition in which cross-subsidy pieces do not fit, of financial pressures in which underperforming assets have no place, and of customer-centric systems that invite specialization in service, not investment to achieve pervasive public policy goals.

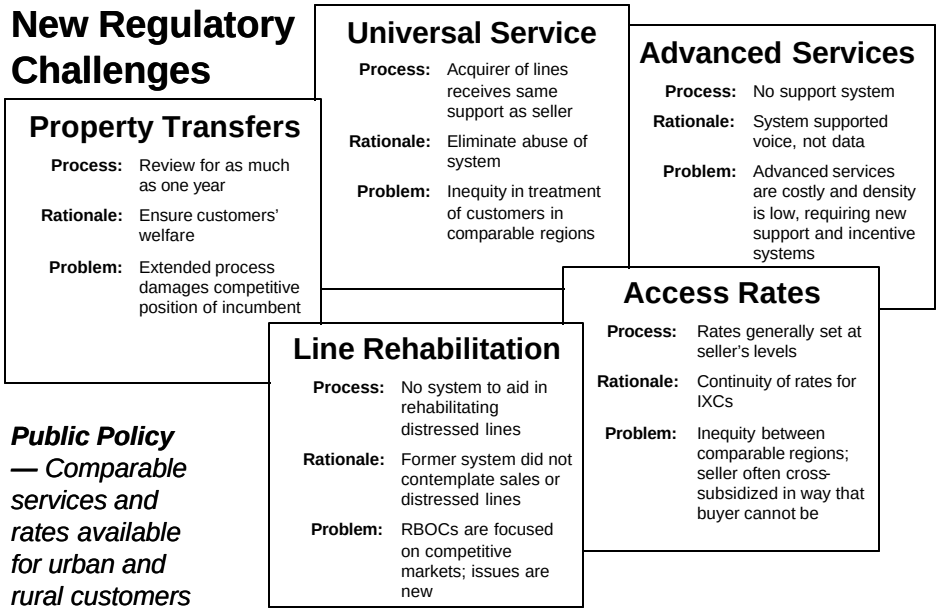
We believe that the current regulatory system is hard-pressed to resolve certain key challenges.

We believe that the current regulatory system — reformed or not — is hard-pressed to resolve specific emerging challenges that have manifested themselves, particularly in the RBOC divestitures. The case studies highlighted some of the new problems, but the next pages focus more sharply on the pieces that fit poorly with the current post-Telecom Act world, as new forces appear to be creating unnecessary distress for the customer, the companies and the regulators themselves.

In our view, there are five problematic issues that are striking, as illustrated in **Figure 16**. First, the property transfer system is cumbersome and potentially destructive of value. Second, the universal service system creates inequities that can fail the companies and the consumers for whom the system was designed. Third, access rates often remain at uneconomic levels simply because they were based on cross-subsidized levels in a precompetitive era. Fourth, many of the divested lines reflect serious underinvestment by the seller, but the current system of rate-of-return, or price caps, penalizes the acquirer for the previous owner's underinvestment. And, fifth, there are, as yet, no systems to aid in deploying costly high-bandwidth services in sparsely populated rural regions.

Five problematic issues: (1) cumbersome property transfer process, (2) inequitable USF system, (3) uneconomic access rates, (4) problems in aiding rehabilitation of lines, and (5) no system to aid in deployment of advanced services.

Figure 16: View of Regulatory Challenges



Source: Legg Mason Wood Walker, Inc.

PROPERTY TRANSFERS

The property transfer process — when one local telephone company sells to another — requires review by state and federal regulators to ensure that the divestiture of telephone assets is in the public interest. As noted earlier, the rationale for the review process currently makes sense, as telecommunications is critical for social, economic and safety reasons. Problems can arise, however, largely because of the long state review processes, which can take in excess of a year. At least two problems arise in a protracted state review.

Problems can arise because of long review processes, including raising the costs for the acquirer and exposing the property to competition when the incumbent cannot respond.

First, the acquirer has the obligation to smoothly transition the properties so that service is not disrupted. In several of the cases studied in the previous section, delays have occurred that cost many millions of dollars, while personnel and

systems were held in reserve. One company reported that it spent in excess of $10 million on personnel and systems alone for a single set of properties when the state review process was extended for two quarters longer than forecast. The review can be extended because of intervenors or because the public service commissions are attempting to gain concessions from the buyers, that is, new commitments that had not been required of the previous owners.

The second and, arguably more serious problem, relates to the competitive situation in a property about to be acquired. The scene has been played out in each of the case-study companies in this report. First, the seller announced that it planned to divest particular territories, effectively communicating that it will invest nothing more in the plant, do little marketing and provide minimal support for services. Second, nearby local telephone companies or CLECs begin offering selective service to high-value customers in the region, knowing that the review process can take an extended period, possibly a year or longer. Third, the acquirer is without recourse in a system that was designed in a monopoly period and assumed no dissipation in value if the process were extended. In fact, in several instances, the companies that were offering CLEC services contested the transfer in regulatory processes that appeared to be designed, not to aid the review, but to deny the new incumbent the right to respond to competitive forces. Fourth, when the acquirer took possession as the provider of last resort, the incumbent company was left with relatively lower-value customers *and the obligation to provide service to those customers who are uneconomic.* Importantly, the problem is not that there is competition in the region, but that there is an inequitable competitive situation in which the incoming incumbent is harmed by the process, and prevented from serving customers that may be core to the financial business case. The problem is that there is potential damage caused by the delay to the incumbent whose financial viability is fundamental to a system premised on universal availability of telecommunications services.

The problem is not that there is competition, but that there is an inequitable competitive situation that harms the universal service provider.

In **Table 50**, we summarize the property transfer process for recent transactions, including the time elapsed until regulatory approvals were granted.

Table 50: Property Transfers for Recent Rural Transactions

	State filing			Federal filing		
	Filed	Approved	Days Elapsed	Filed	Approved	Days Elapsed
CenturyTel						
Arkansas	9/2/99	5/30/00	273	NA	NA	NA
Missouri	NA	NA	NA	NA	NA	NA
Wisconsin	NA	NA	NA	NA	NA	NA
Citizens						
GTE-AZ	8/24/99	6/13/00	294	N/A	N/A	N/A
GTE -CA	9/2/99	6/7/01	644	Not Filed	N/A	N/A
GTE-IL	2/25/00	8/9/00	166	9/8/00	11/29/00	82
GTE-NE	10/27/99	4/11/00	167	N/A	N/A	N/A
GTE - MN	8/27/99	7/24/00	332	N/A	N/A	N/A
Frontier - AL	8/28/00	NA	Notification only	N/A	N/A	N/A
Frontier - FL	8/22/00	12/18/00	86	N/A	N/A	N/A
Frontier - GA	8/21/00	1/31/01	100	N/A	N/A	N/A
Frontier - IA	8/16/00	1/16/01	153	N/A	N/A	N/A
Frontier - IL	8/16/00	12/12/00	118	N/A	N/A	N/A
Frontier - IN	8/29/001	NA	Notification only	N/A	N/A	N/A
Frontier - MI	828/00	NA	Notification only	N/A	N/A	N/A
Frontier - MN	8/17/00	5/25/01	281	N/A	N/A	N/A
Frontier - MS	8/18/00	10/16/00	27	N/A	N/A	N/A
Frontier - NY	8/22/00	5/11/01	262	N/A	N/A	N/A
Frontier - PA	8/15/00	12/8/01	115	N/A	N/A	N/A
Frontier - WI	7/9/01	NA	Notification only	N/A	N/A	N/A
Qwest - ND	9/14/99	1/26/00	134	2/16/00	7/12/00	147
Iowa Telecom						
Iowa	10/20/99	4/13/00	172	6/15/01	7/1/01	15
VALOR Telecom						
New Mexico	12/1/99	6/1/00	180	various	8/1/00	various
Oklahoma	12/1/99	3/1/00	90	various	6/1/00	various
Texas	12/1/99	7/1/00	210	various	8/1/00	various

Source: Company data; Legg Mason Wood Walker, Inc.

The majority of the business customers were lost in 17 exchanges by the time one acquisition was completed.

In one company's case, the majority of the business customers were lost in 17 of its acquired exchanges in a single state during the review period. In the case of Citizens' cancelled acquisition of U S West properties, we had reports of dramatic business customer losses reaching as much as 40% of the market share, particularly in the Minnesota exchanges, which may have contributed to the eventual failure of that transaction. In another instance, Iowa Telecom filed an application with the FCC on June 18, 2001, requesting, on the basis of §251(h)(2) of the 1996 Telecom Act, that Lost Nation–Elwood Telephone Company should be determined to be the incumbent carrier in Oxford Junction, Iowa, since Lost Nation had captured virtually all the customers (94% share) in that exchange, and Iowa Telecom would otherwise be obligated to offer universal service *without the vast majority of customers* (CC Docket No. 01-139). Lost Nation began offering service in Oxford Junction in November 1997, less than one year before GTE publicly disclosed its intention to sell the Iowa properties.

In summary, extended reviews can lead to value destruction and gaming the regulatory system in a way that can jeopardize service to high-cost customers and regions.

The regulations are clear concerning an acquirer's right to universal service funds, a rule that was reiterated in the FCC's May 2001 USF Order. The Code of Federal Regulations presents the operative regulation in Title 47, §54.305 that carriers acquiring lines receive no additional universal service support beyond the support received by the seller of the lines.

> A carrier that acquires telephone exchanges from an unaffiliated carrier shall receive universal service support for the acquired exchanges at the same per-line support levels for which those exchanges were eligible prior to the transfer of the exchanges. A carrier that has entered into a binding commitment to buy exchanges prior to May 7, 1997, will receive support for the newly acquired lines based upon the average cost of all of its lines, both those newly acquired and those it had prior to execution of the sales agreement. [47 CFR §54.305]

Rule has been applied firmly to limit USF payments to a level no higher than the payment to the seller.

The rule has been maintained firmly to ensure that higher support payments are not a driver of the sale process; the regulators do not want to artificially inflate prices or inordinately expand the Universal Service Fund. To the best of our knowledge, only one waiver to the rule has been allowed, and that was when the FCC granted a waiver on January 18, 2001, to Mescalero Apache Telecom, which acquired 950 lines on the Mescalero Apache Reservation in New Mexico from VALOR Telecommunications (CC Docket No. 96-45, *Order*, FCC 01-13).

Majority of rural lines receive little support.

The purpose and logic of the rule are clear. At the same time, we believe that the result is an inequitable system that the Rural Task Force rightly dubbed "The Parent Trap." As background to the Parent Trap problem, non-rural carriers provide service to approximately three-quarters of the nation's rural population. The FCC's universal service rule provides no support to the majority of high-cost rural exchanges served by non-rural carriers and reduces the financial motivation for the larger companies to invest in less densely populated exchanges. The insufficient federal high-cost subsidy support, in our opinion, is one of the contributing factors for non-rural carriers to underinvest and eventually to sell the most rural of their exchanges.

High-cost regions require relief or higher rates — or the rural regions will be abandoned.

The key problem caused by the Trap is that an acquiring company is disadvantaged in providing high-quality services to its customers, especially by comparison with neighboring rural exchanges in which USF payments are many times higher, often by $6–$12 per line per month. As a result, in exchanges with virtually no USF support, we expect financially savvy operators to remain disciplined and not invest more than is financially appropriate, although it is our assumption that a dedicated rural operator will see more opportunities than a carrier that is focused on other markets. The bottom line, however, is that inequitable cost-recovery systems necessarily affect the flow of capital and services. Rational companies, whether RBOCs or RLECs, will sooner or later behave according to the rules dictated by financial reality. Baldly stated, high-cost

regions require high-cost support and/or higher rates; and, if no financial relief is available, the result is likely to be subpar service or abandonment of rural regions.

Rule results in policy failure that hurts the customers in certain regions.

We believe that the Parent Trap is fundamentally a failure in terms of policy. It is not the companies — sellers or acquirers — that are most affected. It is the consumer, who in one region may be able to benefit from a better economic proposition that makes it financially possible to have higher-quality telecommunications services, but in other regions, because of the legacy history of the monopoly system and the identity of the seller, receives little or no support. The precise problem is that USF is designed to ensure that the customer receives comparable services at comparable rates, and the effect of the pragmatic solution in §54.305 is to ensure that customers in some regions receive significantly less aid than others. The result is a policy failure, because the systems are tied to a monopoly-based puzzle — which is not the reality currently. It is a case of the pieces for the wrong puzzle.

In **Table 51**, we highlight representative USF funding for rural properties from the Case Study section.

Table 51: Monthly Federal USF Funding Per Line for Recent Transactions

	High cost loop	Long-term support	Local switching	Total
CenturyTel				
Arkansas	$5.12	$0.00	$0.14	$5.26
Missouri	$7.62	$0.00	$0.00	$7.62
Wisconsin	$0.00	$0.10	$0.00	$0.10
Citizens				
GTE-AZ	$0.00	$0.00	$8.32	$8.32
GTE-IL	$0.00	$0.00	$0.00	$0.00
USW-ND	$0.00	$0.00	$0.00	$0.00
Frontier	$0.18	$0.06	$0.67	$0.91
Iowa Telecom				
Iowa	$0.00	$0.00	$0.00	$0.00
VALOR Telecom				
New Mexico	$0.35	$0.00	$0.00	$0.35
Oklahoma	$0.00	$0.00	$0.00	$0.00
Texas	??	??	??	??
NECA Average	$3.38	$1.59	$1.61	$6.58

Source: Company data; Legg Mason Wood Walker, Inc.

The RTF wanted to address the inequities in rural America, but the Safety Net and Safety Valve appear to offer little relief.

We believe that the FCC's USF Order, based on the Rural Task Force's plan, was designed to address directly certain regulatory concerns about acquisitions. However, the recommended Safety Valve mechanism or the Safety Net Additive (an acquirer cannot use both the Safety Valve and the Safety Net Additive) appears to offer little relief. In the view of several members of the Rural Task Force, if policymakers do not adequately address the needs of rural consumers, including the current customers of non-rural carriers in particular, there exists a real and substantial risk of creating a caste of second-class rural communities left

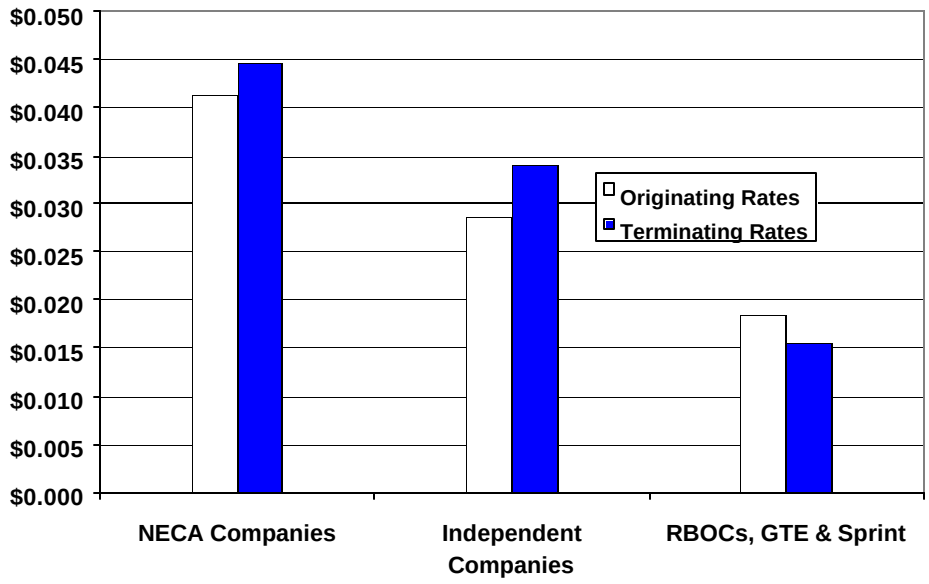
behind from the benefits of basic telecommunications and certainly from the promise of information age technologies.

ACCESS RATES

Long-distance carriers pay access charges to local exchange telephone companies for origination or termination of interexchange calls. The rates vary widely across the United States as reflected in **Figure 17**, which presents an historical view, and **Figure 18**, which offers a forward-looking perspective on the reformed rates derived from the CALLS Order. The second figure also includes the proposed reformed rate from the Multi-Association Group plan for rate-of-return (primarily rural) carriers. In both figures, it is apparent that regulators assign different rates to high-cost regions, but, what is less obvious is that divested rural properties are frequently treated as if they continue to be operated by low-cost carriers. The magnitude of the rate differences is clear, which suggests the inequity when a divested RBOC rural property is regulated as if no change in ownership has occurred.

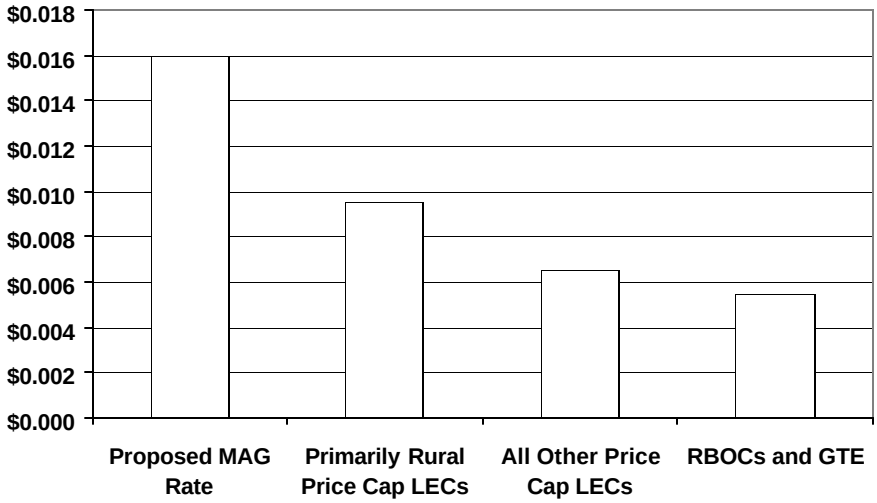
Access rates vary widely across the United States.

Figure 17: 1999 Interstate Terminating Access Rates Per Minute



Source: FCC filings; Legg Mason Wood Walker, Inc.

Figure 18: CALLS and Proposed MAG Access Rates Per Minute



Source: FCC; Multi-Association Group Plan; Legg Mason Wood Walker, Inc.

We believe that four problems arise in the resetting of access rates on the occasion of an acquisition.

Four problems arise in resetting access rates after an acquisition: (1) rates often do not reflect the costs of the acquirer, (2) the "all-or-nothing" rule can impose price caps on high-cost properties, (3) the acquisition of partial study areas results in insufficient cost data to change rates, and (4) distressed loop assets lead to low rates.

CROSS-SUBSIDIZED RATES

First, the original access rates (federal and state) were tied to the regulation and the costs of the previous owner, which often do not reflect the costs of the acquirer's properties. Notably, the former regulatory system assumed cross-subsidization as rural rates were set low relative to costs and the rates in the more urban regions were set relatively high. Even before the Telecom Act, the FCC articulated the problem in a 1994 ruling that stated, upon the sale of a telephone company, the large price cap carriers were to adjust their access rates lower upon divesting high-cost properties to reflect that the reduced need for a cross-subsidy. At the same time, the regulator focused on the large carrier and did not clarify the logical corollary, which was that the acquirer of the high-cost lines should be granted the offsetting increase in rates. In our view, the logic of the reduction is precisely the same logic for the increase and is clearly recognized, but not articulated, in the ruling. Again, the regulators are in a position to shift rather than eliminate revenues that reflect real underlying access costs.

> Hence, price cap regulation could contain a perverse incentive for price cap LECs to sell whole study areas, without corrective action by this Commission. Accordingly, in the future, conditions regarding exogenous cost adjustments related to sales or swaps of exchanges will attach to any necessary waivers of the price cap merger and acquisition rules as well as to study area waivers. We will grant a waiver of the price cap merger and acquisition rules to a rate-of-return LEC buying all or part of a study area from a price

> cap LEC only on the condition that the selling price cap LEC make a downward exogenous cost adjustment to remove the effects of the transferred properties from price-capped rates that were based, in whole or in part, upon the inclusion of those exchanges within the price-capped study areas, because only then would the waiver be in the public interest. [FCC CC Docket No. 94-1, Price Cap Performance Review for Local Exchange Carriers, paragraph 330.]

ALL-OR-NOTHING RULE

Second, there is the so-called "all-or-nothing" rule, the elimination of which was suggested by the MAG writers in October 2000 (MAG, II, C, 12, Mergers and Acquisitions). The "all-or-nothing" rule, spelled out in Title 47, Code of Federal Regulations §61.41, limits price cap carriers from using rate-of-return regulation in certain acquired properties.

The MAG plan proposed eliminating the "all-or-nothing" rule.

> The following rules apply to telephone companies subject to price cap regulation, as that term is defined in §61.3(ee), which are involved in mergers, acquisitions or similar transactions.
>
> (1) Any telephone company subject to price cap regulation that is a party to a merger, acquisition, or similar transaction shall continue to be subject to price cap regulation notwithstanding such transaction.
>
> (2) Where a telephone company subject to price cap regulation acquires, is acquired by, merges with, or otherwise becomes affiliated with a telephone company that is not subject to price cap regulation, the latter telephone company shall become subject to price cap regulation no later than one year following the effective date of such merger, acquisition, or similar transaction and shall accordingly file price cap tariffs to be effective no later than that date in accordance with the applicable provisions of this part 61.
>
> (3) Notwithstanding the provisions of §61.4(c)(2) above, when a telephone company subject to price cap regulation acquires, is acquired by, merges with, or otherwise becomes affiliated with a telephone company that qualifies as an "average schedule" company, the latter company may retain its "average schedule" status or become subject to price cap regulation in accordance with §69.3(i)(3) of this chapter and the requirements referenced in that section. [47 CFR §61.41(c)]

The difficulty with the "all-or-nothing" rule is that it automatically forces price cap systems on exchanges and carriers whose rates may be far too low to reflect the underlying (forward-looking) costs and the need for rehabilitation. The FCC has not yet ruled on the MAG proposal, which includes the recommendation to eliminate the rule, but we believe it is possible that there will be an FCC Order by early 2002.

"All-or-Nothing" rule forces price cap systems on certain properties.

DIVESTITURE OF PARTIAL STUDY AREAS

Insufficient cost-data to set rates when partial study areas are divested.

The third problem with respect to access rates arises when a partial study area is divested. The difficulty is that there is cost-related information for the entire study area, but usually there are no cost-data related to specific exchanges (the divested portion) within the larger study area. Before resetting access rates at higher levels, commissions sometimes want specific information about the divested exchanges and do not want to rely on comparable exchange rates, with the effect that there are delays in setting rates, a process that sometimes can take more than a year.

RATE-OF-RETURN CALCULATIONS ON UNDERINVESTED LINES

Insidious effect is that rates are set far too low for the lines that require significant reinvestment.

The fourth difficulty is that rates are determined on the basis of costs, which are often very low if the previous owner has underinvested. The insidious effect is that rates are set far too low for the lines that require the most investment. In our view, this is a serious issue, as companies are compelled to avoid rate-of-return regimes because the base "costs" are too low, and are then required to make investments and incur all the risk concerning whether the rates will be set at new and higher levels subsequently. The price cap system was designed for stable operators that were willing to assume downside risk when rates were already set at reasonable levels. Price cap carriers therefore were willing to accept the change in the risk profile to benefit from upside earnings potential. In the case of certain acquisitions we studied — Citizens, Iowa Telecom and VALOR Telecom — there were some or many properties in which (1) operations were not stable, (2) rates appeared to be far too low, and (3) risk was imposed on the company without commensurate opportunity. Again, the regulatory system does not seem to apply well to divested properties that have inherited rates that do not reflect underlying costs.

LINE REHABILITATION

Our analysis suggests that divested RBOC rural plant is in significant disrepair.

The investor cannot help but be struck by the infrastructure issues in recent divestitures. The pattern is that the large price cap carrier has an uneconomic proposition in which the rational approach is to underinvest in low-density regions, and upon being forced eventually — by plant failures or regulators — to upgrade or sell, the carrier chooses to sell. In virtually every divestiture that we have reviewed involving the sale of RBOC rural lines, the loop plant and often the inside plant were in significant disrepair. When confronted with the choice to invest or divest, the result is frequently to divest. As a result, the various consolidators have horror stories about plant and systems, including pervasive presence of old lead loop cable that fails across wide regions in rainstorms or cold weather. The initial challenge for the consolidator, then, is to determine how to provide plain-old-telephone service, let alone advanced services, let alone advanced services.

In our view, the former regulatory system did not envision the problem of underinvestment by the carriers nor did it foresee large-scale divestitures. Accordingly, there are no systems to accommodate line rehabilitations, which are real and pressing challenges in the emerging rural industry. Our opinion is that regulators will increasingly be challenged to determine how they might make available "rehabilitation funds or incentives" to aid in an interim period until some rural regions move out of critical care into the real world. We do not know if this means that states and federal agencies assign "telecommunications social workers" to reset rates or create incentives on an ad-hoc basis and monitor for abuses of interim relief, but it appears to us that the legacy approach fails customers and companies.

The former regulatory system did not envision the problem of underinvestment and large-scale divestitures.

Table 52 provides average loop costs (supplied to the FCC) for the properties in the Case Study section. Notably, the average U.S. loop cost is $240, so loop costs will theoretically have to be at least 115% above $240 ($276) to qualify for Universal Service Funds, and will generally have to be near the average to be granted an appropriate rate for access, if the company is governed by rate of return.

Table 52: Average Line Cost Reported for Recent Rural Transactions

	Average Line Cost	
	Pre-acquisition	1 year later
CenturyTel		
Arkansas	$335.63	$335.63*
Missouri	$336.05	$336.05*
Wisconsin	$218.03	$218.03*
Citizens		
GTE-AZ	$218.05	$218.05*
GTE-IL	$211.05	$211.05*
USW-ND	$216.01	$216.01*
Frontier-NY	$176.31	$176.31*
Iowa Telecom		
Iowa	$238.20	$210.61
VALOR Telecom		
New Mexico	$291.34	$279.75
Oklahoma	$260.33	$260.33*
Texas	$268.06	$268.06*
NECA Co. Avg.	$240.20	$248.00

*No new data are available for one year later.

Source: FCC; company data; Legg Mason Wood Walker, Inc.

At the very least, it seems that regulators should review the current regulatory systems that establish rates and USF funding on the basis of "historical" or "embedded" costs, possibly considering whether to set rates on a forward-looking basis. We are convinced that cost-based systems undercut rates in some properties

Possibility of setting rates for distressed lines on a forward-looking basis.

that would otherwise qualify for higher payment mechanisms, and, on an interim basis, may need even higher relief.

ADVANCED SERVICES

The final topic relates to whether and how rural carriers will have incentives or support in provisioning advanced services. Clearly, the former regulatory system was designed simply to support plain-old-telephone services and did not contemplate the newer telecommunications services that require loop and switching upgrades.

Essential services now can include advanced services.

The new system's issues are different, first, in defining "essential services" to include some form of advanced services. Second, it is clear that new equipment and upgrades are costly and that the regions served by rural carriers are characterized by low density and long loop lengths, which can drive the costs even higher. NECA estimates that the majority rural regions can be upgraded at a cost of $10.9 billion (see *NECA Rural Broadband Cost Study, 2001*).

Businesses will only commit to programs that are economically viable.

There have been discussions among regulators about how to require carriers to upgrade systems, but the reality is that businesses will only commit to programs that are economically viable. Policy-based solutions alone will not be adequate in a Post-Telecom Act world in which competitive business practices are the rule. The carriers that discussed these issues with us stated, off the record, that they would not be forced into providing service unless there were an economic justification in an exchange, and they could not see how ubiquitous high bandwidth services could be provided to some of their most remote customers unless extraordinary support was available.

Policymakers have focused on tax credits and incentives, grants and loans.

Other discussions among policymakers have focused on targeted tax credits, tax incentives, grants and loans to encourage development of the high-bandwidth network elements necessary for the deployment of advanced services in areas in which they might otherwise not be economically feasible. **Table 53** summarizes the legislative progress for pending broadband bills or other laws related to rural carriers. These plans, if passed, have the appeal of spreading the costs across the entire nation, and therefore will not attract the opposition of AT&T, WorldCom, Sprint and other companies that have provided the bulk of USF funding. We also note, however, that tax credits and incentives may prove attractive for companies that are earning a profit, but will not benefit companies that expect to post losses for extended periods. In the latter cases, tax incentives are no incentive at all.

Table 53: Pending Federal Legislation Related to Advanced Services

Bill Sponsor	Bill	Introduction	Details of Bill	Status of Bill
Rep. Portman (R-OH)	H.R. 236	6-Jan-01	Calls for the elimination of the 3% telephone excise tax, which dates back to the Spanish-American war.	Referred to Committee on Commerce, Science and Transportation
Rep. Cubin (R-WY)	H.R. 496	7-Feb-01	Lifts regulatory burdens from small telephone companies. Allows carriers that control less than 2% of U.S. phone lines to launch new interstate services and change end-user rates with only one-day's notice to the FCC.	Passed House, Referred to Senate Committee on Commerce, Science and Transportation
Sen. Clinton (D-NY)	S. 430	1-Mar-01	Allows communities to use bonds to launch broadband services; issues grants to encourage companies to extend their networks into rural areas; encourages the National Science Foundation to develop technologies specifically targeting rural areas.	Referred to Committee on Commerce, Science and Transportation
Sen. Rockefeller (D-WV)	S. 426	1-Mar-01	Expands tax credits of 10%-20% to broadband providers that offer service in rural areas.	Referred to Committee on Finance
Sen. Burns (R-MT)	S. 500	8-Mar-01	Provides tax incentives and regulatory relief, as well as the elimination of the Universal Service Fund cap to ILECs.	Referred to Committee on Ways and Means
Rep. Wolf (R-VA)	H.R. 1012	13-Mar-01	Allows telecommuters to receive a $500 annual tax credit on any telecommunting-related expense.	Referred to Committee on Ways and Means
Rep. Weller (R-IL)	H.R. 1411	4-Apr-01	Changes Federal tax code to allow a reduction in the depreciation schedule on telecommunications and computer equipment from five years to as little as two.	Referred to Committee on Ways and Means
Rep. Tauzin (R-LA) and Rep. Dingell (D-MI)	H.R. 1542	24-Apr-01	Permits Bell operating companites (SBC, Verizon, BellSouth and Qwest) to send Internet data traffic across long distances (interLATA regions). The Bells argue that passage of this bill would incent them to rapidly roll out DSL coverage to rural areas.	Expected to be placed on House Calendar for vote
Sen. Dorgan (R-ND)	S. 966	25-May-01	Authorizes loans and other extensions of credit to provide funds for the costs of the construction, improvement, and acquisition of facilities and equipment for the provision of broadband service in eligible rural communities.	Referred to Committee on Commerce, Science and Transportation
Rep. Boswell (D-IA) and Rep. Osborne (R-NE)	H.R. 2847	6-Sep-01	Provides funds for deployment of broadband telecommunications in rural America, for rural telework and other purposes; authorizes $3 billion in loans/credits, annual grants of $100 million for Internet, telecom, computer projects.	Referred to Committees on Agriculture; Ways and Means; Energy and Commerce; Education/Workforce

Source: Legg Mason Wood Walker, Inc.

Federal agencies, including the Department of Commerce, Department of Agriculture, Department of Education and Department of Housing and Urban Development, also administer grant or loan programs to support targeted deployment of advanced infrastructure in areas in which such investment may not otherwise happen. To effectively leverage intended benefits from these grant and loan programs, a sufficient and sustainable system supporting the basic network would appear to be necessary. Several states also have ongoing grant or loan programs supporting advanced service deployment, but we believe that they remain in early stages.

Various federal agencies administer grant or loan programs.

SUMMARY

This section has identified five specific regulatory problems that discourage investment in rural telephone networks. While we are hesitant to predict specific government actions to address public policy concerns, we are more comfortable in suggesting the direction for governmental policy solutions.

First, we note that there is a bipartisan consensus to increase investment in the deployment of broadband services for the residential market, and in particular for the rural market. As previously noted, there are numerous legislative efforts designed to increase investment in rural telephone systems. As further evidence of the political potency of the cause, proponents of the Tauzin-Dingell Bill, which affects nearly every market, are emphasizing how the Bill will facilitate the provision of advanced services to rural America. By way of contrast, while the CLECs struggle and the economic impact of their troubles fills the business pages, there is little, if any, legislative effort to stimulate investment in CLECs. The point is that the breadth and depth of the bipartisan consensus is notable, as political operatives are clear that the government needs to act to assure sufficient investment in rural telephone networks.

Bipartisan consensus to increase broadband investment for residential customers and rural markets.

Second, we believe that the problem of underinvestment in rural areas is about to become worse, not better. As this report has demonstrated, there are a number of incentives built into the current regulatory structure that lead the RBOCs to underinvest in rural markets relative to urban markets. This gulf is likely to grow larger as the RBOCs move through the long-distance entry process, opening up new, faster-growing and more lucrative markets into which to invest capital and management focus.

Problem of underinvestment in rural areas is about to become worse, not better.

Third, we note that there are a number of rural telephone companies whose business model is premised solely on serving rural customers. These companies, in our view, are far more likely than the RBOCs to make the kind of investments necessary to supply rural telephone systems with the capital necessary to upgrade networks to provide advanced services.

Rural telephone companies are more likely to serve rural customers in a way superior to that of the RBOCs.

As a result, we believe that policymakers are likely to recognize that in order to achieve their goal of assuring appropriate investment in rural networks, they should support the sale of the RBOC rural lines to RLECs. While policymakers have been hesitant to embrace the concept, we believe there will be increasing recognition that the goal of encouraging investment in rural America's phone network is best accomplished by collaborative efforts with companies that have a strategic focus on rural service. If more collaboration does not occur, we believe that legislators and regulators will risk diminishing critical private investment in rural regions. On the other hand, if the government tries to encourage RBOC investment in rural lines, it is likely to run into resistance from RBOC competitors while failing to provide an incentive large enough to direct the RBOCs' attention toward the rural marketplace.

We believe policymakers will increasingly support sales of rural RBOC lines to rural operators.

Again, we make no specific predictions of how the government will act, but we believe the general trends are noteworthy and lead us to the conclusion that the regulations affecting the transfer of lines from the RBOCs to the RLECs ultimately will become more supportive of the inevitable migration to pure rural operators.

RURAL INFRASTRUCTURE

The equipment at rural telephone companies defies simple explanations.

Telephone plant in rural regions cannot be characterized simply, except to say the obvious — that there are usually fewer subscribers in rural regions compared with those in the denser regions, and the equipment per subscriber is more expensive. Beyond that, it is not possible to simplify loop lengths, loop quality, underlying costs, and architecture. The earlier section on "Four Case Studies" has clarified that there are also significant differences in the condition of one or the other RBOC's rural plant, all of which means that a buyer of rural lines should engage in careful due diligence. Our studies of the specific properties discussed in this document and the other properties in our databases highlight the wide range of infrastructure costs and quality in rural America.

In this section, we offer perspective on three topics:

- a primer related to rural architecture and issues that arise in those regions;
- more specific commentary on rehabilitation of RBOC plant, including first steps in continuing services, the approaches to re-homing switches that are orphaned from hosts, introduction of additional services, and some quantification of costs for equipment; and
- insights into the provision of advanced services over rural plant and the potential for positive return on investment, including two case studies — one of a community with 3,000 lines and the other a larger town with 30,000 lines.

A PRIMER ON RURAL ARCHITECTURE

Rural telephone plant can be categorized as outside plant, inside plant, and transmission equipment.

Rural architecture includes various kinds of equipment and products that are generally categorized under three headings — outside plant, inside plant and transmission equipment. There is another category for miscellaneous devices supporting non-switched services, such as channel banks, dedicated data and

alarm circuits. This section will offer a summary view of these kinds of equipment/products and how they affect the rural investment.

In its simplest form, the telephone network allows a subscriber's voice to be carried over copper wires (usually) to a switching system that routes the call to the desired destination. The call might originate and terminate on the same switch or it might be routed over interoffice circuits, called trunks, to the switch that serves the called party. Our discussion will start at the edge of the network with a review of how customers are connected to the switching systems and will then proceed into the local switch and the interoffice network.

OUTSIDE PLANT

Outside plant includes cabling and electronics that aid in transmitting the calls to and from the end user and the central office.

The term "Outside Plant" (OSP) refers to the totality of the telephone company's facilities located outside of the Central Office (CO) environment and includes the cables used to connect subscribers to the network as well as a variety of electronic equipment that is located in the field. An understanding of the characteristics of the outside plant can give the reader insight into many subtleties of the design and operation of the telephone network. The type and condition of OSP in a given serving area can support or undermine a carrier's ability to deliver advanced services and can even impact the quality of voice service. It also represents a significant percentage of total capital commitment, often more than 50%.

CABLE — CONNECTING CUSTOMERS TO THE NETWORK

Subjective measures of what "sounded right" resulted in a maximum transmission frequency of 4 kilohertz.

In the early days of telephony, it was necessary to determine exactly how much bandwidth was required to deliver an "acceptable" voice reproduction. The parameters were set on the basis of subjective measures of what "sounded right," which translated to a maximum transmission frequency of 4 kilohertz (KHz). As a practical matter, the actual transmitted bandwidth was often restricted to approximately 3.5 KHz, carried in an analog format over copper wires to the switching system where the signal was converted to a digital format for transport throughout the network. The exception was a call carried over ISDN-BRI (Integrated Services Digital Network–Basic Rate Interface) for which the voice is converted to a digital format at the customer's premise.

The cables that form the first and last mile of virtually all telephone conversations consist of pairs of copper wires that are twisted together. The twist in a "twisted pair" minimizes interference between pairs and also reduces susceptibility to interference from sources external to the cable. Power line interference, heard as a low-pitched hum, and radio station interference are examples of external disruptors.

Two major parameters affect voice quality: Loss and Frequency Response.

When a call is placed, the two wires in the pair are connected together through a switch in the telephone set, allowing current to flow in a looping path. In discussing subscriber connections in OSP, the terms "loop" and "twisted pair" are generally used interchangeably. For rural as well as urban applications the loop

affects voice quality and has an impact on network design. Two major parameters affect voice quality: Loss and Frequency Response.

Loss

Loss is generally measured at a frequency of 1004 hertz (Hz). The impact of loss is the same as turning down the volume control on a stereo system. Excessive loss in a loop reduces the volume of the conversation making it harder to hear. If the loop is noisy, the user will be able to tolerate less loss than is acceptable on a loop with low noise.

Excessive "loss" affects the volume of the conversation.

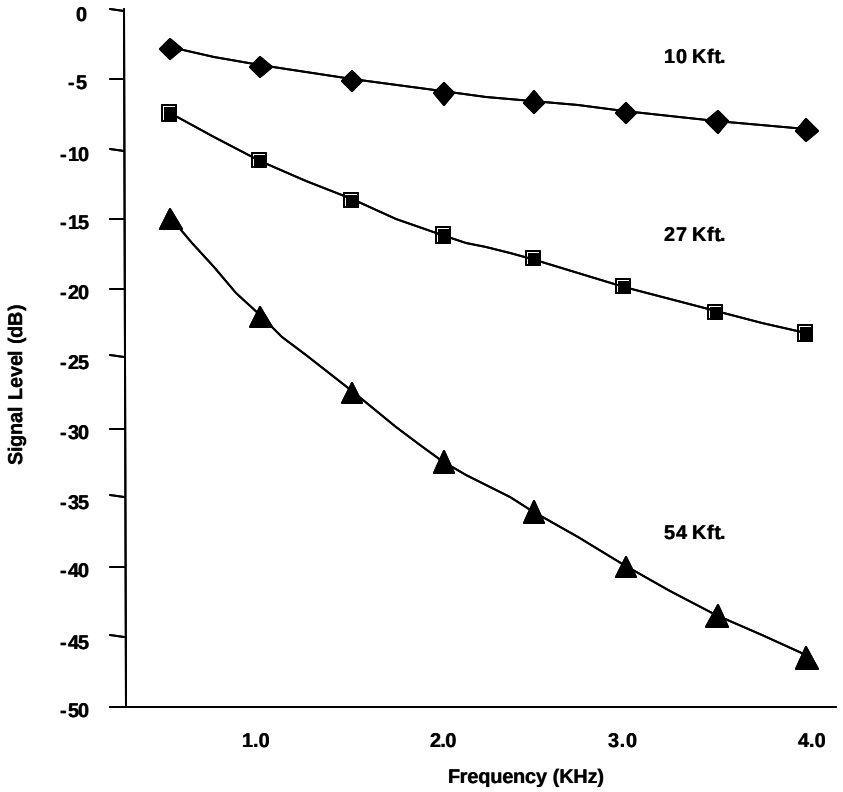
Frequency Response

Frequency response is the measure of loss across a range of frequencies. A long loop will disproportionately attenuate higher frequencies in comparison to the lower frequencies that carry the voice signal. The effect is analogous to turning up the bass control while turning down the treble control on a stereo system. In telephony, if the effect is too pronounced, it will be difficult to understand speakers who have relatively high-pitched voices. In some cases, it may be possible to understand what a speaker is saying while not being able to distinguish the speaker's identity. This phenomenon arises because the basic content of human speech lies in the lower frequencies, while nuance and speaker identity are carried in the higher frequencies.

Frequency Response measures loss across a range of frequencies, as can occur on long loops, and is the reason for the 18 kilofeet limit.

Through empirical observation, it was determined that a simple loop should be limited to a maximum length of 18 kilofeet or the distortions would become severe. **Figure 19** depicts the distortion that occurs on simple copper loops over various loop lengths, highlighting that longer loops underperform shorter loops. Notably, the loss is measured in decibels, which is a nonlinear logarithmic scale. Therefore, every 10dB of loss equates to 90% of the signal having been lost, or only 10% of the original signal remaining. A 20 dB loss equals a 1% residual signal, while a 30dB loss equals 0.1%.

Figure 19: Loss vs. Frequency for Various Loop Lengths



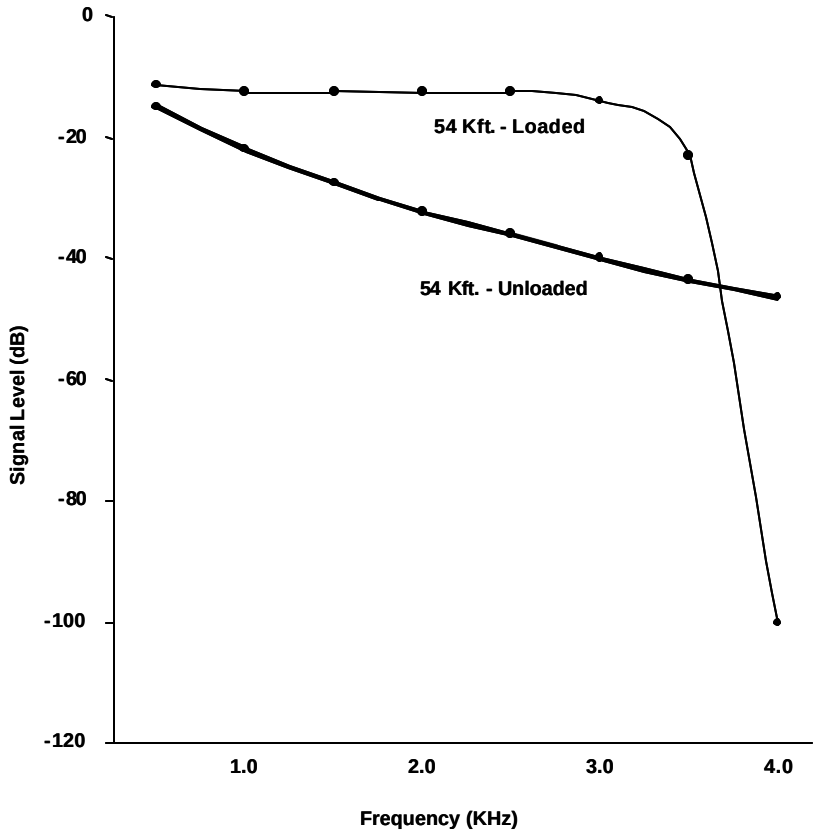
Source: Nortel Networks

Long Loops

In rural regions and in some urban areas, many people live farther from the central office than the 18 Kft limit. To resolve the distortion that occurs in long loops of 45–50 Kft, small coils of wire (load coils) are installed along the loop at precise intervals. Load coils compensate for the shunt capacitance between the two conductors, altering the characteristics of the loop to control both loss and frequency response and enable much longer loops to function acceptably. The tradeoff is that the "loaded" loop passes virtually no energy at frequencies above 4 KHz. **Figure 20** compares the transmission characteristics of a long loop with and without loading. The improvement in performance across the voice band of interest is obvious. The cutoff frequency is approximately 3.5 KHz and will be determined by the specific loading scheme in use.

Load coils are added to compensate for loss and frequency response on loops longer than 18 kilofeet; but coils eliminate signals above 4 kilohertz, where data could otherwise be transmitted.

Figure 20: Loss vs. Frequency Comparison with Loading



Source: Nortel Networks

The bandwidth limitation associated with load coils was perfectly acceptable when the only use of the loop was voice transmission, but as network planners designed facilities to transmit data over loops, it became necessary to limit loop lengths to maintain good voice quality and gain the ability to use higher frequencies. The initial applications were for the higher bandwidth demands of ISDN-BRI, but current DSL technologies have similar requirements. Elimination of load coils by shortening loop lengths not only enables data services but also offers the benefit of significant operational cost reductions. The key enabler in restricting loop length was the invention of the Digital Loop Carrier, which is described below.

Very Long Loops

Loops longer than 50 kilofeet are rare because they require special electronics to boost the electrical current.

A tiny minority of loops may still exceed the 45–50 Kft limit. This higher limit is significant because the loop not only carries the voice path for the call but also is used to power the telephone itself. Beyond the 50 Kft limit, the resistance of the loop increases to the point that the central office is not able to deliver sufficient current to the phone. In such cases, and despite being loaded, a very long loop would require additional electronics to boost the loop current and possibly amplify the voice signal. Loops of this length are relatively rare.

OTHER ANALOG LOOP EQUIPMENT

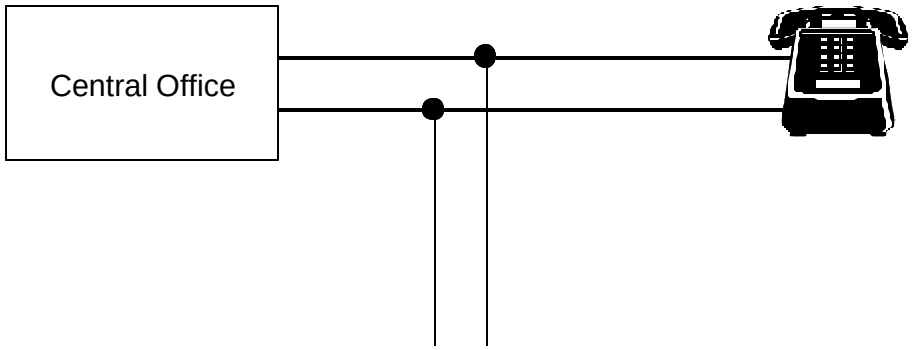
Because of the cost of plowing new cable into rural areas, many types of loop electronics have been used to extend capacity over existing copper pairs. AML (Alternate Main Line) equipment provides a pair gain of 2:1. Several vendors also built 6:1 pair gain systems. If lines are still served by any of these, they are useless for high-speed data.

OSP CONFIGURATIONS

An open stub from old "party lines" is a bridged tap, which has no effect on voice transmission, but seriously damages high-speed data communications.

In rural areas, carriers often fight the legacy of old party line service. When two parties share a line, the simple method of connecting them is to put a "Y" at some point in the loop, as shown in **Figure 21**. In such a case, a phone is connected at each end point. The specific scenario in the illustration occurs when one party leaves the service or if the service to the indicated phone is delivered by tapping into a loop that is passing by. The open stub is called a bridged tap and has virtually no effect on voice, but it seriously damages higher-speed data communications. The existence of a bridged tap is often unknown until one tries to install a high-speed data service on the loop. Remedying the problem is time-consuming and expensive because the connection point of the bridged tap to the serving loop is usually unknown. In theory, plant records should indicate the existence of a bridged tap, but they are seldom accurate. The effect is to brutalize the economics of ISDN, DSL, and other data communications by dramatically increasing installation and commissioning costs.

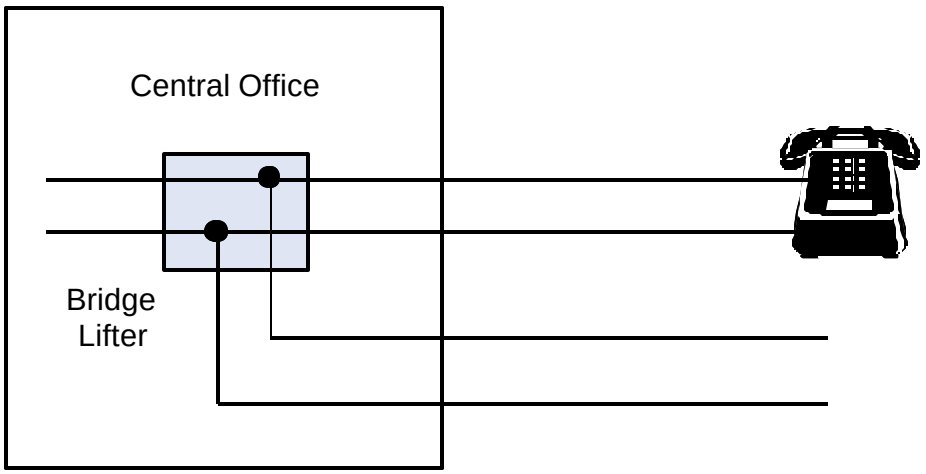
Figure 21: Open Bridged Tap on a Working Loop



Source: Nortel Networks

The preferred method of configuring a loop is to use a special magnetic coil, called a bridge lifter, which is located at the central office. Both pairs are terminated in the central office rather than in the field. If bridge lifters have been used, conversions are much easier to achieve.

Figure 22: Open Bridged Tap from a Bridge Lifter



Source: Nortel Networks

CABLE TYPES

Telephone cables are high-quality products designed for a very long service life. Historically, cables were depreciated over periods of 20–40 years, meaning that much of the cable in use has been installed for a long time. As a result, maintenance and replacement of cable can represent significant cost categories for telephone companies. The type, age and overall condition of the cable are key factors.

The type, age and overall condition of cabling are key factors.

Cable plant may be aerial or buried. Aerial cable comes in many forms, but the most worrisome is generally lead cable. The lead sheath is an environmental hazard, which incurs extra disposal expenses when decommissioned. In addition, lead cable is usually associated with dry paper (pulp) insulation on the individual conductors. If the lead sheath has defects, water can easily enter the cable and will cause virtually immediate failures because of the leakage resistance paths created when all of the conductors are soaked in wet pulp. Because of these factors, lead cable is expensive to maintain and to replace. The impact on new services, such as DSL, ranges from poor performance to frequent failures. Lead cable should probably be upgraded early in the rehabilitation process.

Lead cabling should be replaced early in the process as it fails easily, is expensive to maintain, and can result in very poor data performance.

Air core cable also can be aerial or buried. It consists of a conductive, grounded shielding sheath surrounding a bundle of conductors, which are individually insulated with plastic. When water gets into an air core cable, it runs along to a low point and begins to pool. Eventually, pinhole flaws in the insulation allow water to corrode the conductors and failures occur. The failure, however, can occur at some distance from the actual sheath defect. In underground applications, it is not uncommon to see water pour out of this kind of cable. For this reason, buried air core cable is usually pressurized to keep water out of the line. Wet cable is particularly damaging for advanced services as a resistive leakage occurs soon after water enters the sheath. Water gradually creates a noisy

Air core cable can be a problem when water invades it, as the failure can occur at some distance from the actual cable defect.

line for voice, but quickly attenuates the high frequency signal that DSL relies upon. Any form of DSL will not work to its maximum distance specifications and it will autorate down to a noticeably slower speed at any given distance. Eventually the loop is unusable and the section of cable must be replaced. Air core cable is probably second on the upgrade list for a rural carrier.

The best copper cables are "gel" filled. The gel prevents water entry and the problems described with air core. The disadvantage of gel is that it is messy to work with during splicing operations.

The best copper cables are "gel" filled, but they can be messy.

DESIGN IMPLICATIONS FOR CABLE PLANT IN RURAL REGIONS

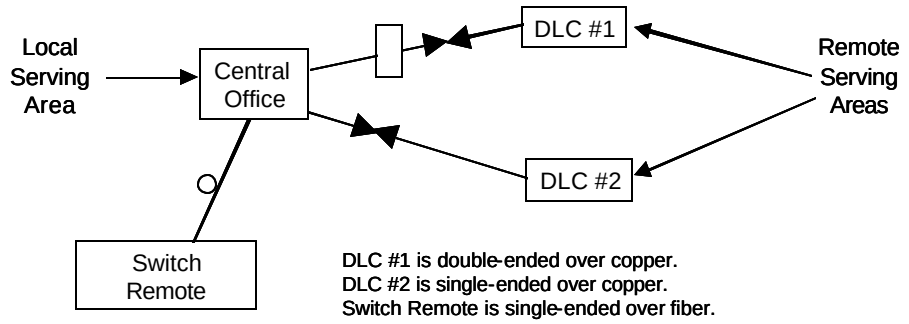
Due to the issues discussed previously, telephone cable plant has been designed to limit individual loops to 12–18 Kft. In general, urban and metro installations will have shorter design objectives than will rural plant because the cost and sizing of the urban loop electronics, coupled with the higher population densities, are more favorable.

Loop length management is accomplished by first defining the primary area to be served by cables terminating directly on the local switching system. Then, outlying service areas are defined by taking into account loop lengths and natural boundaries such as rivers, mountains, and rocky terrain. Each outlying service area will then have cable plant that terminates on serving electronics located roughly in the center of the served area. The connections from the remote electronics back to the telephone central office and switching system are carried on high-speed circuits designed specifically for this purpose.

Loop management involves defining the cables that directly connect to the local switch, and the other cables that are connected to remote electronics.

Originally, circuits carried 24 conversations on two copper pairs at a bit rate of 1.544 megabits per second (Mbps). This configuration is commonly referred to as T-Carrier. There are two types of remote electronics in common use currently — Digital Loop Carrier (DLC) and Switch Remotes, as reflected in **Figure 23**.

Figure 23: Local and Remote Serving Areas



Source: Nortel Networks

DIGITIZING VOICE

Voice has been carried in a digital format through the telephone network for over 30 years. Digitally transmitted voice is far less susceptible to degradation than is analog (continuous) voice and is therefore virtually ubiquitous. Since all voice starts as analog sound waves, it must first be digitized and then formatted for transmission. Two concepts dominate the discussion of digital telephony. They are Pulse Code Modulation (PCM) and Time Division Multiplexing (TDM).

Digital formats for voice generally consist of 64 kilobit channels, using Pulse Code Modulation (PCM) and Time Division Multiplexing (TDM).

PCM is the fundamental method of converting the analog voice into a digital stream. Without getting into the engineering mathematics, we will simply state that a voice signal is digitized into a 64,000 bit per second stream (64 Kbps) that is commonly referred to as a DS-0 signal. It consists of 8,000 8-bit words per second. The 8,000 words-per-second is significant because it establishes the maximum analog frequency that can be transmitted. That limit is one-half of the sampling rate or 4,000 Hz. The word size of 8 bits is a compromise value, set by the economic demands (fewer bits means a less costly network) and the quality requirements.

Channels of 64 Kbps (DS0s) are combined into 24-channel carriers "DS-1s or T-1s."

TDM is the technique by which multiple 64 Kbps voice streams (DS0) can be carried over a single communications channel. In North America, the standard for digital transmission is the 24-channel carrier system (DS-1). Copper facilities that carry a DS-1 signal (over 2 twisted pairs) are known as T-Carrier systems or T-1 systems. In addition to carrying conventional voice traffic, T-Carrier is often used to transport non-switched traffic including data. This data stream can then operate at a full 64 Kbps rate in both directions simultaneously. One of the characteristics of older installations is that they may be limited to passing data at a maximum rate of 56 Kbps. Such systems must be upgraded with new electronics to gain the missing 8 Kbps.

Fiber optic systems operate at much higher bit rates. The lowest bit rate fiber system in common use is called an OC-3 and operates at about 150 Mbps and carries 84 DS-1 signals or 2,016 individual conversations. An OC-192 system can

carry 129,024 simultaneous conversations on a single fiber. *Note, however, that the DS-0 with its 64 Kbps signal is the core of the format.* This means that any single channel within the public switched telephone network (PSTN) is limited to a maximum of 64 Kbps.

The PCM/TDM method of digitizing and transporting voice has several very desirable characteristics. The mathematics of the digitizing process are very well understood and the quality of the signal can be maintained along the length of the path. However, there is now great interest in bypassing the PCM/TDM network by transporting voice over Internet Protocol (IP) networks. The benefits of this approach include improved bandwidth efficiency, the ability to manage one network for both voice and data, as well as the promise of new services linked to the ability to manage multimedia data streams simultaneously. For now, however, IP-based packet networks are unable to guarantee voice quality, particularly in high-traffic scenarios or during the management of network element failures. For the present, IP-based voice will be relegated to specific niche applications until the quality issues are resolved.

PCM and TDM networks may be replaced by IP networks, but IP-based systems currently are unable to guarantee voice quality in high-traffic scenarios.

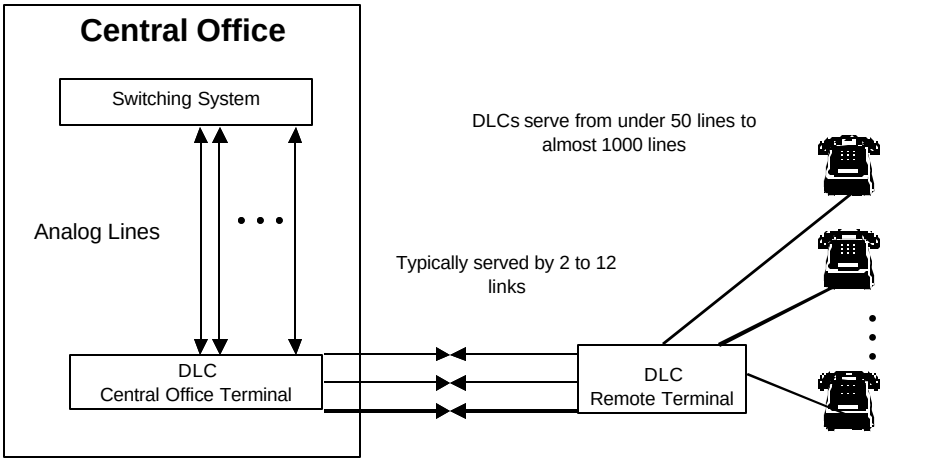
Digital Loop Carriers

Approximately 25 years ago, the technology of digital telephone transmission was applied to the problem of improving Outside Plant operations. The cost involved in expanding telephone serving areas was increasing as copper prices rose and as the operational costs of installing many large cables soared. The result was the development of a class of equipment known generically as the Digital Loop Carrier (DLC).

Digital Loop Carriers (DLCs) concentrate many loops on a small cable carrying the access links to and from the Central Office.

The original DLCs were developed as an alternative to adding extra cable pairs to increase loop capacity into a service area. Digital multiplexing techniques were used in conjunction with electronics at both ends, effectively converting a relatively small physical cable into a large virtual cable. In this operational mode the DLC is capable of connecting the subscriber to virtually any type of central office switching equipment. **Figure 24** presents the block diagram of a DLC.

Figure 24: DLC Block Diagram - Double-ended Configuration



Source: Nortel Networks

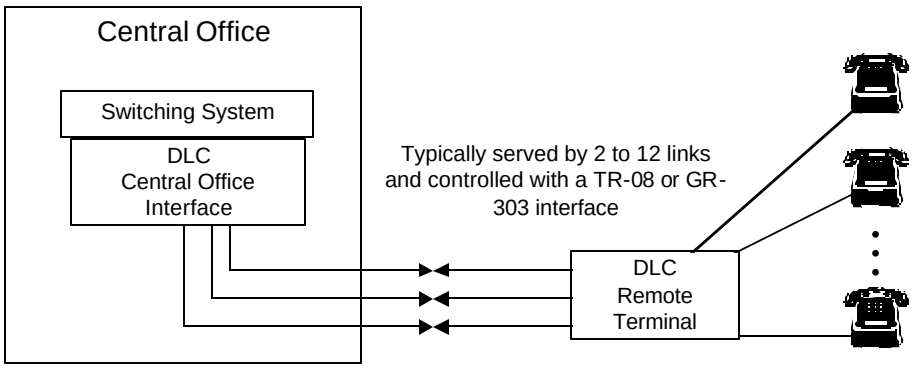
At the remote terminal, each subscriber loop is connected to an electronic circuit known as a line card. At the central office terminal, the line circuitry in the central office switching system is connected to a channel unit in the DLC. In both directions of transmission, the voice signals are converted from an analog format at each end to a digital format for transport over the carrier system.

The RBOCs often deployed double-ended DLCs that required an extra digital-analog conversion causing modems to operate at a lower data rate.

One can anticipate encountering several varieties and configurations of DLCs in the OSP. The Bell System often deployed DLCs in a "double-ended" configuration that was inefficient from an equipment standpoint. Whenever a double-ended DLC is in use, even a 56K modem will run very slowly, usually below 28 Kbps. This is due to the extra analog-to-digital conversion that occurs.

DLCs also may be connected to modern digital central office switching systems in a single-ended configuration, as depicted in **Figure 25**. In the single-ended configuration, the remote terminal is connected directly to the switching system via an interface circuit. This eliminates the Central Office Terminal of the DLC system and the line circuitry of the central office switching system. As a result, the single-ended configuration is more economical and is the preferred method of operation currently. Conversion of double-ended systems to a single-ended configuration via the appropriate central office interface will immediately improve modem connect speeds. Two standardized interfaces, TR-08 and GR-303, are used in single-ended DLC configurations. These standards enable multi-vendor interoperability between DLCs and central offices.

Figure 25: DLC Block Diagram - Single-ended Configuration



Source: Nortel Networks

INSIDE PLANT

Inside plant consists of all of the equipment contained within the central office. In this subsection of our report, we also will include a discussion of Switch Remotes, which are elements of a switching system that are located at a distance from the host switch and provide service to customers in a manner similar to a DLC.

DIGITAL SWITCHING EQUIPMENT

A digital switching system serves as the entry point for a subscriber call to the telephone network. Each line is attached to the switch through a line circuit that performs the analog-to-digital and digital-to-analog conversion of the voice signals. The switch's principal function is to process the dialed number from the originating line and complete the call to another line on the switch, or route it to a trunk circuit that connects the switch to other switches in the network so that it may be completed elsewhere. The central office switching system is the single-most important and expensive class of equipment in the telephone network. Digital central offices are among the most reliable computerized systems of any type in the world.

Digital switches are the entry points to the telephone network, and have traditionally been the most expensive single class of equipment.

The RBOCs have deployed digital switching equipment from a number of vendors. A carrier purchasing RBOC lines or some other independent's lines will have to decide if certain equipment should be kept in service or replaced. Technological considerations are only one factor in this decision. All telephone switching equipment is kept on the books with a very long depreciation life. The capital value of all telephone equipment forms the investment rate base that drives the rate-setting process. State regulators are usually reluctant to allow early write-

offs of functional switching equipment and this can limit the new owner's ability to replace equipment.

Nortel and Lucent equipment is generally well supported, while Stromberg-Carlson development has stopped; Ericsson equipment is less frequently found in U.S. wireline properties.

The type of equipment also will be a major factor in any decision to keep or replace it. In general, DMS-10 and DMS-100 switches from Nortel Networks will be new enough and are well supported to warrant remaining in service. The same is true for the 5ESS family of switches from Lucent Technologies.

The DCO family of switches (designed by Stromberg-Carlson and acquired by Siemens) are somewhat less desirable because development on the DCO software has stopped and Siemens has been pushing a conversion to its EWSD platform. The EWSD was not widely accepted in North America, although it has made some gains recently.

Ericsson sold a comparatively small number of AXE switches into the RBOCs. Because of its small North American presence, these switches also could be considered as candidates for replacement.

Equipment Condition and Status

The current software level of a switch is an important factor in determining its future use. Usually, the RBOCs will keep the generic level of both rural and suburban switches fairly current. This is due to their need to maintain the switches at centralized maintenance centers. Too many generics deployed in the field increase employee-training expenses and make operation of computerized surveillance systems more difficult.

Features are frequently not enabled on RBOC rural switches, a process that is usually simple to improve.

One can expect, however, that rural switches will lag their metropolitan cousins in terms of feature penetration. For example, some switches perfectly capable of delivering Calling Line ID simply don't have the feature turned on because the RBOC didn't want to spend a relatively small amount of money to buy the feature for a rural exchange. This was a simple investment decision that the money could be spent more effectively elsewhere, but it does not mean that installing the feature isn't a profitable course of action. Upgrading the feature content of rural switches can increase the per line revenue in a property substantially. It has the additional benefit of demonstrating to the local community and to the regulatory commission that the new operator is serious about improving service in the area. This sort of upgrade usually can be achieved quickly and with little incremental costs.

REMOTE SWITCHING EQUIPMENT

One configuration used to geographically extend switching equipment is particularly important. It is possible to install the line circuitry of a digital switch at a location that is remote from the host office and connect to it over a standard digital transmission facility in a manner similar to the use of a single-ended DLC.

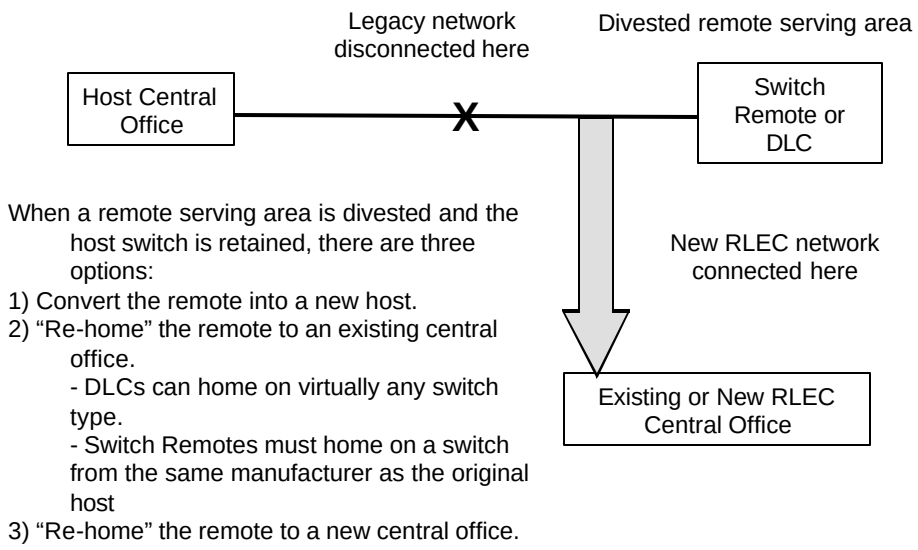
While sharing similarities with DLCs, a switch remote has other characteristics that enhance and differentiate it from a DLC. Although some switch remotes are quite small, many are also substantially larger than DLCs. Functionally, a switch remote will usually be equipped with the ability to operate in Emergency Stand Alone (ESA) mode. If the communications links back to the host office are cut, the remote will be able to deliver dial tone and complete calls within the remote. This is especially important when a remote is used to deliver service to an identifiable community that has essential services such as police and fire protection. In the event of a link cut, these services can still be reached. In many situations, carriers seeking to incur debt available from the Department of Agriculture's Rural Utilities Services must utilize ESA-capable remotes in serving customers.

Remotes can support the individual community that they serve even if they are cut off from the host switch, but must be paired with the host to gain access to the outside public network.

Other advantages of switch remotes include (1) spare equipment common with that in the central office, (2) the ability to deliver certain proprietary features that exist on the host switch, such as Centrex's features for business users, and (3) the ability to serve trunks in addition to lines.

The major disadvantage of the switch remote, as opposed to a DLC, in an acquisition scenario is that it can only be controlled by that manufacturer's host switch. This can be especially important if the remote is sold without its host switch, creating an "orphaned" remote. In this situation, the remote must be re-homed on another host switch from the same manufacturer as that which originally hosted it. For both orphaned DLCs and switch remotes, the host-remote links must be replaced by newly constructed links that connect to the new host, which is virtually always going to be located in a completely different town. Remotes typically are priced between $160 and $300 per line.

Figure 26: Re-homing Orphaned Remotes



Source: Nortel Networks

In addition to the physical restructuring, the "orphaning" may lead to other issues related to licensing. The new owner may own a central office to which the remote can be re-homed, but may have to license incremental features to maintain the existing feature set.

ANALOG SWITCHING EQUIPMENT

Analog switching equipment is an automatic candidate for replacement.

While the overwhelming majority of switching centers have been converted to digital services, some electromechanical and analog electronic systems remain in service. Any analog system is an automatic candidate for replacement. Most offices with analog equipment probably will be quite small and will likely end up as some sort of DLC or switch remote homed on another digital switch. The only issue that discourages such upgrades is the promise of new IP-based "soft switches" that could replace the TDM technology. As noted previously, however, there are many issues to be resolved in the IP world before most carriers will feel comfortable in replacing traditional digital switching technology.

TRANSMISSION EQUIPMENT

There are many types of transmission equipment in RBOC central offices; but there is at least one situation that should pop up repeatedly. Many RBOCs have standardized on specific vendors' fiber electronics. They even forced the RLECs that interconnected with them to buy the same type of equipment because the RBOC did not want to interconnect with dissimilar equipment. However, many of the RLECs use other manufacturers' equipment for their internal networks. As networks are reconfigured, the issue of vendor selection will arise.

Digital cross-connects probably will be installed in these acquired offices as well. These are devices that are used to interconnect and configure digital facilities. For example, interoffice facilities that consist of groups of circuits are actually carried on a higher-capacity carrier. In such a situation, it is necessary to "bundle" the circuits together in the appropriate groupings. The use of a cross-connect system allows the bundling to be accomplished easily and makes later reconfigurations simple. All connections are controlled by a software interface. It is probable that the new owners will simply leave these systems in place, but it may be feasible to move some of the services to an Asynchronous Transfer Mode (ATM) switch as part of a larger modernization effort in the network.

Digital cross-connects allow the bundling of circuits for transmission.

MISCELLANEOUS EQUIPMENT FOR NON-SWITCHED SERVICES

A large variety of channel banks and other devices that deliver non-switched services (e.g., dedicated data, program channels, alarm circuits, tie lines) will exist in acquired properties. Depending on the age of the equipment and the new owner's standardization practices, the equipment may need to be replaced.

A variety of channel banks and other devices will require review by acquirers of properties.

The new owners will also review the central office's power system that converts commercial AC power to DC and uses it to charge a bank of –48V batteries that operate the central office in the event of a power failure. There are also telephone central office systems that monitor and issue alarms when failures occur. There is the test gear used to diagnose problems on the loop plant; RBOCs typically use a system called the Loop Maintenance Operations System/Mechanized Line Tester (LMOS/MLT), which is never used by an RLEC.

RBOC REHABILITATIONS

A variety of infrastructure problems arise in the divestiture of RBOC lines. They can be grouped under the same headings as were used in the previous section — outside plant, inside plant and transmission equipment. In this section, we attempt to bracket costs that can vary widely from one rehabilitation to the next.

OUTSIDE PLANT

We have limited data on outside plant improvements in recent acquisitions. As far as we can tell, most of the recent sales of independent operators' plant involved relatively little rehabilitation of the OSP. This is usually because the properties are well maintained by those carriers that benefit from the rate-of-return system.

While the outside plant of independent operators is generally good, RBOC OSP apparently requires about $70–$150 per line for rehabilitation.

In the case of the RBOC divestitures, most of the information is anecdotal, but virtually every acquirer of RBOC lines has reported difficulties with cabling and serving electronics. VALOR reported that it was required to completely reinstall its outside plant in one region, where there was extensive use of lead cable.

CenturyTel reports that more than one-third of its expenditures are for outside plant refurbishment. On the basis of our discussions, we believe that purchasers of RBOC lines are spending approximately $70–$150 per line on outside plant.

DSL upgrades to outside plant and central office equipment at each of the carriers appear to be relatively small. We believe that none of the case-study companies is spending more than an average $30 per line to prepare for DSL in newly acquired regions. CenturyTel benefits in its cost recovery for DSL as a result of being a rate-of-return carrier, as will be discussed, while the other three carriers that we studied are price cap and are spending far less than $30 per line, on average.

INSIDE PLANT

TANDEM RE-HOMING

Tandem switches interconnecting switching centers may not be included in the sale of rural lines, requiring investment in a new tandem.

Tandem switches interconnect central office switches. Most of the trunks from the acquired rural central offices are homed on the nearest RBOC tandem switching center, except in the case in which the acquirer is purchasing a statewide operation. In the near term, there is no technical reason to remove that traffic, and the acquirer can enter a commercial agreement with the RBOC to allow the traffic to be routed as it was prior to the sale. However, the RLEC may realize significant financial gains by re-homing the trunk to its own tandem switch, if that option exists. If the acquirer does not own a tandem, in certain instances, it may be desirable to install a new tandem to improve the financial settlements available on intercompany toll and to turn a significant percentage of the traffic from intercompany to intracompany.

ORPHANED REMOTES

Orphaned remotes can require re-homing at a cost of approximately $75–$120 per line.

As previously noted, small switches that are remote from central office facilities may be orphaned from a host switch that resides in a community that is not divested. We estimate that the cost associated with the re-homing of the remote to the host of the acquirer can be $75–$120 per line, involving the purchase of new equipment and the engineering changes. In the case of the U S West/Qwest properties, which were eventually not divested, approximately 54% of the exchanges were orphaned remotes.

SS7 RECONFIGURATION

Signaling is the generic term for the process by which call routing and control is accomplished. For many years, this was accomplished by sending tones similar to touch tones over the trunk network. Some of the older forms of signaling still exist, but most of them have been replaced by a data communications network that allows switch computers to communicate with each other using a system known as Signaling System 7 (SS7). The SS7 links will be connected to the

nearest RBOC Signal Transfer Point (STP), is a dedicated, high reliability data switch used to route signaling messages. When the acquired network is integrated into a new network, these links will probably be re-homed into the new owner's SS7 network if one exists. If the new owner does not have a pair of STPs, it may be that the acquisition will increase the size of the network such that the purchase of an STP pair is economically attractive. STPs can cost approximately $250,000.

911 RECONFIGURATION

The RBOC switches can treat 911 calls in one of two ways. They can route the call directly to a local Public Safety Answering Point (PSAP) or they can forward the call to a special switch called an "E911 Tandem." This switch will correlate the calling party's telephone number with its address (which is stored in a database) and then will route the call to the appropriate PSAP. If this system is in use, then the RLEC will have to determine how to handle calls after the acquisition, since the E911 Tandem may well not be sold to the RLEC.

Other reconfiguration issues include routing 911 calls and operator services.

OPERATOR SERVICES (OS) RECONFIGURATION

Virtually all operator traffic (dial "0") in an RBOC is routed to the nearest tandem switch, which then communicates with a distant switch, such as a Nortel DMS-TOPS (Traffic Operator Position System), for call control intervention. Initially, the RLEC will almost certainly contract with the RBOC to continue to provide OS for the acquired territory. It is possible, however, that the acquirer will subsequently want to reconfigure the network.

MISCELLANEOUS ISSUES

BILLING COMPATIBILITY

Switching systems may store billing information locally for all toll calls that originate in the office. More commonly, however, the billing records are created and stored at the tandem switching center. The new owner will have to determine how to store these records. This is a critical function as the records serve as the primary data used to generate the intracompany toll bills and are also used to audit and validate the payment of access charges by the long-distance companies.

Billing records are stored by RBOCs in formats that are compatible with RLEC billing systems, but GTE uses a different format that may require subsystem upgrades.

RBOCs generally gather and store billing records in BELLCORE AMA format, which will usually be compatible with RLEC billing systems. GTE properties use a different formatting scheme that may require billing subsystem upgrades. Our understanding is that billing records can sometimes be problematic and have, in some instances, not been delivered until the day of the transfer of ownership.

NETWORK RECORDS

All telcos live and die with a huge assortment of records that will have to be transferred to the new owner. Most of these records are mechanized and will

have to be converted from one format to another, since no new owner uses the RBOC operations support systems (OSSs), which have been designed over time and in-house. The information to be moved includes, but is not limited to the following.

Most records will have to be converted from one format to another, since no RLEC uses the RBOC operations support systems.

- Line Records document the equipment used to physically deliver service to each subscriber. The records provide documentation on line circuit identification, cable and pair information for the complete subscriber connection (and much more) and is typically stored in LMOS.

- Trunk Records define every trunk group and individual trunk in the network and are typically stored in the Trunk Inventory Record Keeping System (TIRKS).

- OSP records include maps detailing the location of cable runs, manholes, etc. These may be stored in a CAD (Computer Aided Design) system or may still be in hardcopy format for the rural areas.

NETWORK OPERATIONS CENTER

The switches in an RBOC network are connected via data links to a centralized Network Operations Center (NOC, but the specific name and acronym for this center can vary). The NOC allows a centralized staff to monitor the status of the office, perform remote diagnostics, perform remote software upgrades, etc. The maintenance of these switches will be transferred to the new owner who must reconfigure all of the data links or possibly build a new operations center.

An acquirer will have to reconfigure the data links or possibly build a new network operations support center.

EMPLOYEE TRANSITION

As in any acquisition, employees to be transferred must be identified and the usual issues of benefits changes, pay scale differences and related issues must be addressed. This is complicated somewhat by the existence of strong unions in all of the RBOC companies and the effects that RBOC employee issues will have on the RLEC's employee base.

MICROWAVE RADIO LICENSES

The RBOC owns the license for the radio spectrum utilized by its microwave equipment. If the equipment is sold, the license must be transferred to the new owner. For this type of equipment, the transfer is probably a formality but there may be expenses involved.

COMMISSION COMMITMENTS

The new owners must inquire as to any commitments the RBOC has made to the local regulatory commission to upgrade service in any way. The RLEC will probably have to honor those commitments, and possibly agree to other obligations. Examples include plant upgrades, elimination of party lines, implementation of dial-up Internet access or DSL.

The acquirer will be required to honor the previous owner's regulatory commitments.

DEPLOYMENT OF ADVANCED SERVICES

We noted in the Thematic Overview that the purchase of rural lines also included an "option" to offer advanced services, such as high-speed DSL products. The financial markets have not yet assigned a value to this "option" since many economic factors are not clear at this time. We do not understand precisely what are the capital costs, market size, profitability and other variables. In this final part of our analysis of rural infrastructure, we try to provide some definition of the market opportunity for advanced services, but we do so with the caveat that two foundational inputs remain uncertain, that is, costs — infrastructure and operating — and governmental programs — legislation and regulation. We assume there is significant demand, but pricing, products and likely levels of penetration also remain important unknowns.

The financial markets have not yet assigned a value to the "option" to offer advanced services since the economic factors are not clear at this time.

There are three subsections to this part of our analysis:

- a definition of the opportunity,
- a description of the network and likely services and
- a financial analysis of the returns that might be generated in two communities — one is a tier-5 (defined by the U.S. Census Bureau as 0–50,000 inhabitants) town of approximately 30,000 lines and the second is a tier-5 village of approximately 3,000 lines.

DEFINITION OF THE ADVANCED SERVICES OPPORTUNITY

For the purposes of this report, advanced services are defined as high-speed data connectivity and a variety of information services delivered over broadband plant. Our definition does not include the implementation of various voice services, such as 56 kbps modems, that are generally available now even if they are not currently offered in the RBOC rural territories. In our view, dial-up Internet access is part of the voice plant and is a relatively minor upgrade by comparison with what is required in the deployment of truly high-speed services.

Advanced services are defined in this report as high-speed data connectivity and services provided over broadband plant.

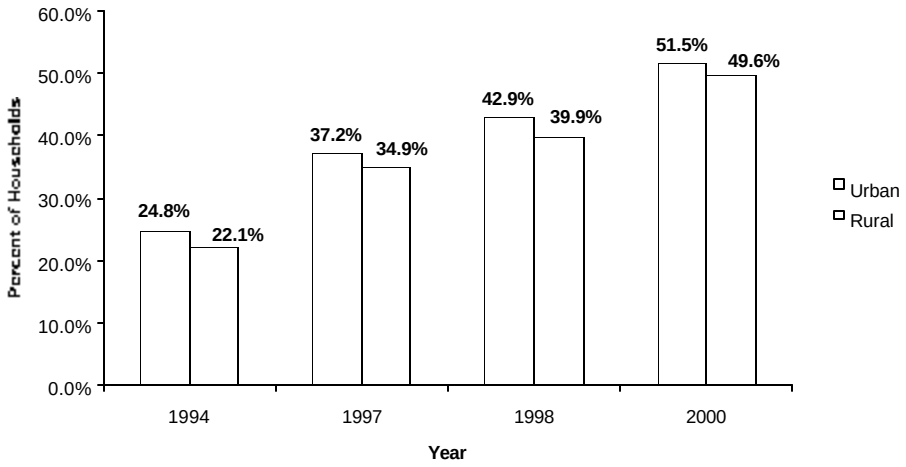
Nortel's projections suggest that the rural residential demand is similar to that found in urban regions.

Investors occasionally raise the foundational question about whether rural regions have the technological interest to purchase advanced services. Nortel's internal projections, based on industry data, suggest that rural communities have an appetite for high-tech solutions to support residential applications, and that the demand is similar to that found in urban regions. As we will note shortly, the demand is also high among rural businesses, but the profile of the non-urban business is different from that of the average urban business.

Residential Demand Appears Similar to Demand in Urban Regions

The slight residential-based technological differences that existed between rural and urban regions in 1994 appear to have narrowed, as illustrated in **Figure 27**, which depicts the penetration rate of households with a computer in urban and rural regions. In 2000, the estimated difference in penetration had closed to less than 200 basis points from 270 basis points in 1994.

Figure 27: Percentage of Urban and Rural Households with Computer

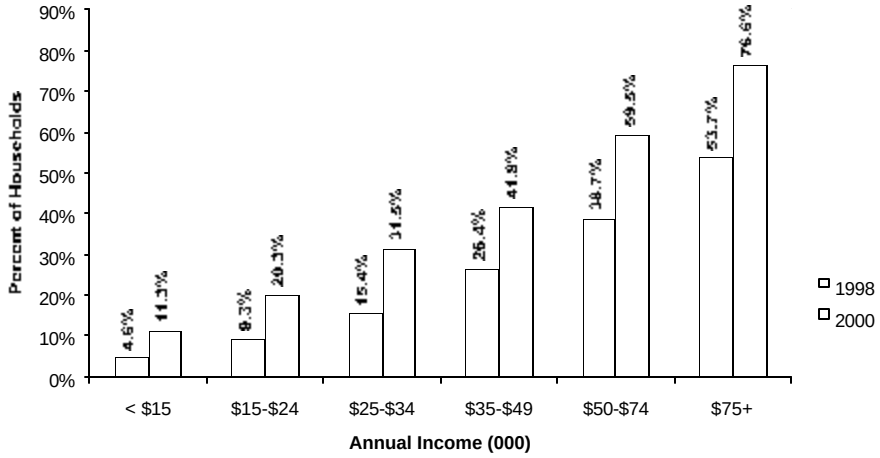


Source: FCC

Demand for broadband is influenced by income levels.

The differences in demand between regions are probably related to income levels, which the Rural Task Force pointed out are approximately 20% lower in rural regions compared with those found in urban territories. **Figure 28** illustrates that customers who have higher income levels are far more likely to have Internet access in rural regions, and that all income brackets are more inclined to have Internet access today compared with the demand two years ago.

Figure 28: Rural Internet Access by Income



Source: FCC

At the same time, we believe that there is another important issue that explains the surveyed differences between regions. The RBOC territories that we studied in the CenturyTel, Citizens, Iowa Telecom and VALOR analyses, all reported that local dial-up Internet access was not even available across many of the properties that were divested. As a result, we suggest that the small reported differences between urban regions and rural regions *for dial-up services* appear to be inconsequential, and they probably misrepresent the demand in those rural regions where infrastructure is not available to the extent found in urban regions.

Some RBOC territories have no local dial-up access, which probably depresses some of the statistics about rural penetration rates.

The early surveys of demand for rural high-speed solutions are also encouraging. Rural operators with excellent outside plant — loops that are short and have few conditioning problems — are reporting exceptional results. Examples include SureWest, Commonwealth Telephone, Conestoga Enterprises and Madison River that report 90%+ of their loops are shorter than 18 kilofeet. As reflected in **Table 54**, those companies report high DSL take-rates with penetration well ahead of that reported by the RBOCs. In the case of RBOC rural lines, we believe the investor will find that the demand is similar to what has been reported by the RLECs, but that the costs for service may be higher since the loops are in far worse condition, with respect to both length and the electronics/condition of the copper, making the upgrade to high-speed access more problematic. While VALOR, Iowa Telecom and CenturyTel report that they are committing to DSL deployments in former-RBOC regions, we should point out that the rollouts are selective and not widespread at this time.

Some independent rural telephone operators report 90%+ of their loops are under 18 kilofeet, and that penetration rates are well ahead of RBOC rates.

Table 54: DSL Penetration Rates at Selected RLECs

	1Q00	2Q00	3Q00	4Q00
Alaska Communications	NR	NR	NR	1.5%
Conestoga	0.0%	0.0%	0.4%	0.7%
CT Communications	0.4%	0.6%	0.9%	1.3%
Commonwealth	0.3%	0.4%	0.5%	0.8%
CenturyTel	0.3%	0.5%	0.8%	1.1%
D&E	NR	NR	NR	1.1%
HickoryTech	0.6%	0.9%	1.4%	2.2%
Madison River	1.6%	1.9%	2.3%	3.2%
NTELOS	0.0%	0.5%	0.8%	1.2%
SureWest	2.7%	3.6%	4.3%	4.8%
TDS	0.1%	0.2%	0.3%	0.4%
WVT Communications	0.8%	0.9%	1.0%	1.3%
RBOC Averages	0.2%	0.4%	0.6%	1.0%

Source: Legg Mason Wood Walker, Inc.; Company data

Rural vs. Urban Business Characteristics

Rural businesses tend to be less telecom-intensive, and the business-residential mix is lower than that present in urban markets.

The demographics of the rural business community are different from those found in urban regions. In rural communities, about 20% of all the lines serve commercial enterprises compared with about 35% of the lines in urban regions. Further, rural businesses also tend to be less telecom-intensive than businesses in larger cities. Approximately 80% of the rural enterprises have 10 or fewer employees and 90% have 20 or fewer. **Figure 29** illustrates the two communities in our advanced services study, highlighting that they have a large proportion of small businesses and very few commercial enterprises with large numbers of lines.

Figure 29: Business Lines Distribution in Two Small Rural Communities

Source: Nortel Networks

We believe that there is good news and bad news that flows from these insights. The bad news is that the data opportunity is less than that found in urban regions, as revenues, density and breadth of applications are likely to be more modest in rural areas. The good news is that most rural businesses have not used many data services, simply because they could not afford them and had little need for high-speed connectivity. With the growth in the Internet and the advent of DSL services, the opportunity to sell lower-cost T-1-like services to small and medium-size businesses appears significant, in our opinion, with rates that are often one-half of T-1 pricing.

Significant opportunity to sell DSL services to small and medium-size rural businesses, but the size of the market per line is smaller than in urban markets.

DEFINING THE COMMUNITIES IN OUR STUDIES — TOWN AND VILLAGE

Nortel Networks aided Legg Mason in this report by undertaking two advanced services case studies (in real communities whose names are withheld) to assess the feasibility of delivering high-speed applications in rural regions. Further, Nortel used its internal models to assess the potential returns on capital and operating performance.

Nortel provided analyses for two communities — one a village with 3,000 lines and the second a town with 30,000 lines — to assess the broadband market potential.

Characteristics of the Two Communities

The first case involved a western community with a population of approximately 40,000. The tier-5 "town" is profiled in **Table 55**, which highlights that the community has about 23,000 households and 2,400 businesses. The largest industry segments in the town are Retail (29%), Health Care (14%) and Accommodations and Food Services (13%). The geographic distribution of businesses allows 82% of the commercial enterprises to be served by DSL services from the local central office.

The second study, which we designate as a tier-5 "village," is also profiled in the table, reflecting a much smaller western community with a population of approximately 4,700, including 2,100 households and 700 businesses. The largest employers in the village are the Retail (30%), Services (35%) and Government (18%) segments. As with the town in our case study, the clustering of businesses within the village allows the vast majority of lines (90%) to be within range of DSL services.

Table 55: Profiles of Two Small Communities Studied for Advanced Services

Tier-5 Town	Year 1	Year 2	Year 3	Year 4	Year 5
Total Population	39,392	39,983	40,582	41,191	41,809
Households	22,493	22,831	23,173	23,521	23,873
Residential Lines	22,691	22,632	22,971	23,316	23,665
% of Households Reachable	56%	60%	70%	80%	85%
Businesses	2,430	2,478	2,528	2,579	2,631
DSL Reachable Businesses	1,993	2,032	2,073	2,115	2,157
Business Lines	9,130	9,310	9,498	9,690	9,885
Total Lines	31,821	31,942	32,469	33,006	33,550
Tier-5 Village	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Total Population	4,678	4,748	4,819	4,891	4,965
Households	2,074	2,105	2,137	2,169	2,201
Residential Lines	2,488	2,525	2,564	2,602	2,640
% of Households Reachable	56%	60%	70%	80%	85%
Businesses	673	686	700	714	728
DSL Reachable Businesses	606	618	630	643	656
Business Lines	747	761	777	793	808
Total Lines	3,235	3,287	3,341	3,394	3,448

Source: Nortel Networks estimates

Services Included in the Study

Nortel focused on high-speed services, including Internet access, Web hosting, e-commerce, firewall protection, and remote virtual private networks.

The Nortel study focused, among other services, on the introduction of high-speed Internet access along with conventional modem access. It evaluated the services and related revenue streams to see if the returns on investment were sufficient. The basic services offered via the broadband network included Internet access and applications such as email, Web hosting and e-commerce. Value-added services for residential markets included residential firewall, unified messaging and personal content management. Value-added services for business markets included business firewall, remote access virtual private networks (VPN), site-to-site VPN, content management and quality of service. Future services such as streaming audio or video, messaging and network-based virus protection might also be attractive to broadband subscribers, but were not factored into the study.

As previously noted, the demand for Internet access in rural areas essentially mirrors that in urban areas. Again, we believe that it is a mistake to assume that the rural markets are less sophisticated or less desirous of high-speed services. In

fact, it can be argued that rural markets benefit more than urban markets from Internet technology. Rural customers may actually find more essential value in the ability to retrieve a wide variety of information electronically because they have fewer sources for such information. Further, applications that are attractive to customers in remote regions, such as distance learning and Telemedicine, appear particularly appropriate for rural areas.

We believe that the principal factors limiting high-speed access growth are availability and price. The study estimates that, within five years, residential dial-up access could reach 40%, while high-speed access could reach an additional 20%. For businesses, the study sets the figures at 50% and 35%, respectively. The ability to achieve better penetration levels will be premised on execution by the telco, with the opportunity offset by some levels of competition from the local cable company.

Within five years, high-speed access could reach 20% penetration levels for residences and 35% penetration for rural businesses.

DESCRIPTION OF NETWORK AND SERVICES

The hurdles to be overcome in the introduction of high-speed access services include defining the services that are likely to be attractive for the customer as well as the costs of turning up the service, including network and operating expenditures.

ADVANCED SERVICES PROVIDED TO CUSTOMERS

The analysis of the advanced services opportunity is premised on certain assumptions about the pricing for services and penetration rates that are expected to grow relatively gradually over a five-year period. **Table 56** summarizes Nortel's assumptions, including monthly pricing for particular services.

Table 56: Assumptions of Pricing and Penetration for Advanced Services

Residential Services	Price	Year 1	Year 2	Year 3	Year 4	Year 5
Dial Access	$15	25.0%	30.0%	33.0%	36.0%	40.0%
High-Speed Access	$40	5.5%	9.5%	13.4%	17.0%	20.6%
Residential Firewall	$3	7.0%	10.0%	14.0%	21.0%	28.0%
Business Services						
Dial Access	$20	54.0%	52.3%	51.6%	50.9%	50.2%
High-Speed Access	$80	5.6%	11.7%	18.2%	26.5%	34.8%
Shared Web Hosting	$40	15.4%	16.3%	15.8%	15.2%	15.0%
E-Commerce	$150	2.1%	3.2%	4.4%	5.7%	6.7%
Business Firewalls	$50	2.8%	5.9%	9.1%	13.3%	17.4%
Business Remote Access VPN	$200	2.7%	4.5%	8.2%	11.0%	15.7%

Source: Nortel Networks estimates

The network problems generated by deteriorating cable plant or reconditioning loops through the removal of bridged taps or load coils can make turning up high-speed services prohibitively expensive. For most of the independent telephone companies this problem is not as severe since their rural lines are often in good shape, but for the divested RBOC lines the problem could be more serious.

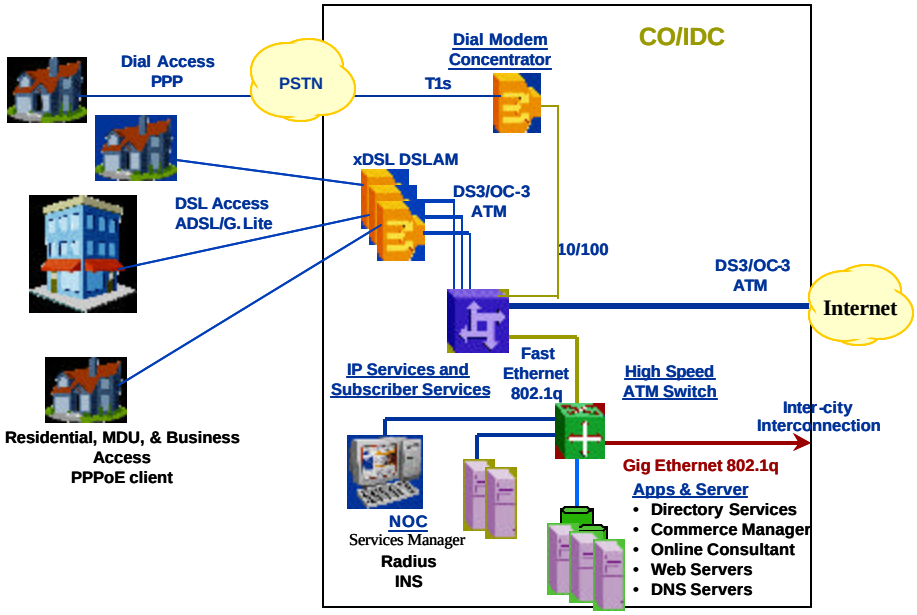
The network design costs can be high if the loop is in poor shape, as may be the case for divested RBOC lines.

Loop costs can vary widely because of length or the nature of the terrain. Therefore, Nortel's study used the findings of the NECA Rural Broadband Cost Study to estimate the line upgrade costs. NECA analyzed data from independent operators to estimate that costs could be expected to fall in a broad range — from $164 to $707 per line within 18 kilofeet of the central office, and set a generic figure of $493 per line. In any scenario beyond 18 kilofeet from the central office, but still within 18 kilofeet of a digital loop carrier, however, the cost jumps into the thousands of dollars. It is noteworthy that the NECA study is significantly based on independent rural telephone companies, and probably understates the cost of retrofitting RBOC rural lines.

NECA estimates that broadband costs may be $164 to $707 per line for independent operators; we believe that RBOC rural lines may be more costly.

We have included a rural broadband network design in **Figure 30** that includes dial access modem equipment, high-speed access DSLAMs, IP services servers, ATM data switching equipment and a variety of applications and the servers. The design implies a significant start-up cost, but it also includes as many scalable elements as possible, allowing many expenses to be matched to the revenues. Much of the design and the associated services are therefore discretionary and individual companies may implement the design in a variety of forms. Nortel estimates that such a design might cost $100–$150 per line, excluding line conditioning, and assuming five-year penetration rates consistent with those outlined in **Table 56**.

Figure 30: A Network Design for a Rural Community



Source: Nortel Networks

OPERATING COSTS

Study conservatively estimates that operating costs are 60%–70% of revenues.

Operating costs can also be high in provisioning high-speed services. The Nortel study conservatively estimated that operating expenses in a rural deployment after the first year could approach 70% of revenues, declining to 60% after five years. In the first year, the operational spending can even exceed revenues.

FINANCIAL ANALYSIS OF ADVANCED BUSINESS SERVICES TODAY

We turn now to analyzing potential financial returns for products based on high-speed services in rural communities. After evaluating market factors, we will see that the returns on investment, without governmental aid, appear to be relatively low.

SIZE OF THE DATA REVENUE MARKET REMAINS UNCLEAR

It is not yet clear the extent to which subscribers will accept and pay for high-speed services.

The financial viability of advanced services in both metro and rural markets is somewhat problematic. The communications industry has a long history of billing for voice services, whether they are local services, long-distance calling or special purpose communications. Subscribers understand and accept the basic premise of voice services billing. The situation is not as clear-cut, nor is it as profitable, where data services and, in particular, Internet access are concerned.

As the Internet boom began and competing ISPs rushed to claim market share, the price for unlimited Internet access plummeted. A monthly charge of $19.95

became the de facto standard in spite of the fact that most ISPs could not turn a profit at that rate alone. Supplemental income from services such as Web page design and Web hosting were essential. Other revenue in the form of banner ads, valued on the basis of "eyeballs delivered" supplemented the bottom line. One of the favorable byproducts of the low flat-rate pricing was the rapid increase in users of the Internet, contributing to the overall Internet boom as new Web sites were developed and important products and valuable data access became available.

Data growth is 20%–30%, while voice traffic growth is 2%–4%.

It is generally agreed that today's telecommunications network carries more data traffic (Internet use, email, file transfer, etc.) than voice traffic. Since the annual growth rate of data traffic is on the order of 20%–30% (probably slightly slower in rural regions that appear to be lagging at the present), while voice traffic annual growth is around 2%–4% (slightly faster in rural regions where new services and second lines are driving growth), in a few years we believe that the network will transport 80% data traffic and 20% voice traffic.

The revenue ratio for voice to data traffic could remain as high as 70%, reversing the volume ratio.

In spite of the surge in volumes, the revenue ratio could be close to the reverse, that is, the majority or possibly as much as 70% of the revenue could still be attributable to voice services over the next five years. Thus, finding a way to create more revenue from the increasing stream of data traffic remains a critical priority for the entire industry. We suggest that understanding and exploiting the price elasticity factors at work in the marketplace will be essential in assuring long-term profitability for carriers.

True value of the Internet will reside in content and applications, not in "access" and must appeal to a broad audience.

It is also fundamental to note that the true value of the Internet will reside not in "access" — the revenues generated from simple connectivity to homes and businesses — but in "content," as is the case for cable television, where no one cares about the cable network, but rather the programming it delivers. In the case of high-speed data applications, however, there is currently no single "killer application" that can adequately drive the profitability curve. As a result, most industry experts believe it will be necessary to build a cost-effective, secure infrastructure and use it to deliver a wide variety of services, each at minimal incremental cost, to appeal to a broad audience.

SPECIAL CONSIDERATIONS

The investment case for rural broadband is affected by other special considerations, including the potential for tax credits or incentives as well as cost recovery mechanisms such as those available to rate-of-return companies.

Tax Credits or Incentives

The Nortel study evaluated the impact of proposed legislation that would offer a tax credit to telcos that purchase equipment to enable broadband services. The impact of a tax credit, assuming a 10% credit, was beneficial but not of great

impact, as we will note later. The two major bills pending before Congress are S.150, introduced by Senator Kerry (D-MA), which calls for a 10% tax credit for rural broadband development efforts, and S.426, introduced by Senator Rockefeller (D-WV), which proposes a 10%–20% tax credit for broadband development efforts, depending upon the speed of the service provided.

DSL Recovery Mechanisms Under Rate-of-Return Rules

Financial returns for DSL will depend, in part, on whether the telephone company is governed by rate of return or price caps.

The investor should note that there are differences related to the financial returns of companies deploying DSL, depending on whether the companies are governed by rate-of-return rules or by price caps. A rate-of-return company that participates in NECA pooling must charge for DSL services at rates consistent with the tariffs filed by NECA, but enjoys the benefit of being able to recover its loop costs from the NECA pool. No such recovery mechanism exists for price-capped companies, but those companies may charge according to the market rates to price competitively. In our view, the rate-of-return rules effectively mitigate significant risk in deploying DSLAMs and upgrading lines, while the price cap companies bear significantly more risk in installing new broadband solutions.

The allocation to the interstate jurisdiction is the result of an FCC ruling on October 30, 1998 (GTE DSL Order CC Docket 98-79) that DSL traffic bound for the Internet is jurisdictionally interstate, classified as special access and must be offered by the telephone company under a tariff on file with the FCC, which is recorded in account #5083 under the Uniform System of Accounts.

For each DSL Access Service under rate of return, there is a monthly recurring DSL line charge and a nonrecurring installation charge that applies for each local exchange service facility equipped with DSL Access Service. These charges are designed to recover the telephone company's DSL costs (i.e., the DSLAM equipment and interoffice transport, if any) associated with transporting the end user's DSL traffic from its premises up to the telephone company's designated DSL connection point.

FINANCIAL RETURNS GENERATED IN OUR STUDY

Nortel's study suggests financial returns on broadband deployment in rural America are minimal without governmental support.

Nortel's study suggests that the financial returns that can be generated from high-speed services in rural America, assuming new broadband investment and no governmental aid, are minimal. The reason is that there is not sufficient density to spread costs over many subscribers and per-unit loop costs are relatively high.

For the tier-5 "town" in the study, Nortel calculated that the return on investment was only 4.5%. Even assuming a 10% tax credit, the return was a mere 5.4%. The payback period was 2.4 years and 2.2 years for the base case and the tax-credit scenario, respectively.

For the tier-5 "village," the results were predictably bleaker. The return on investment was approximately 3.8%–3.9%, even with the tax credit. The tax credit was too small to affect the payback period, which was 3.8 years. The principal reason for the more depressed returns in the village was that the start-up costs were spread over a very limited revenue base.

As a result of Nortel's study, we conclude that, if broadband services are to reach smaller towns in rural America, some aid or alternative design is necessary. Where RLECs serve several small communities, it should be possible to centralize much of the equipment and support a more extensive region. This would allow the economics of the very small villages to approach those of larger communities.

Some aid or alternative design appears to be necessary to aid broadband deployment in very small communities.

If some form of regulatory action or congressional action such as a proposed tax credit were undertaken, it should be possible to further improve the business case such that carriers are adequately incented to implement broadband access and services in rural properties.

SUMMARY

Infrastructure issues remain key variables in a study of the rural opportunity. Costs are already high for independent rural operators, which is the reason for the entire universal service support system and for the special treatment of rural carriers in the Telecom Act. In our view, most independent operators have maintained high-quality plant, which provides a solid base for improvements in services.

Infrastructure costs remain high for independent operators.

In the case of the rural lines divested by the RBOCs, more rehabilitation is necessary, as reflected throughout the "Four Case Studies" section of this report. Thus, in addition to coping with geographical problems and sparse population, rehabilitation is necessary and, in many instances, the rearchitecture of the plant is required as remote switches are re-homed on new hosts.

Rearchitecture costs appear to be high in rehabilitating RBOC rural lines.

Broadband services are a major new opportunity, but the precise financial returns are not yet clear as equipment pricing and technologies are changing rapidly and as policymakers are focusing on what may be the appropriate mechanisms to spur investment. Our study suggests that it is not possible to invest in rural broadband to any significant extent without better definition of the support mechanisms, unless the carrier is a rate-of-return company.

Broadband returns are not yet clear, as equipment pricing is in flux and as policymakers focus on support mechanisms.

This Page Intentionally Left Blank

FINANCING RLEC ACQUISITIONS

In this final section of the report, we discuss the financial issues that present risk and opportunity for rural telephone companies and their investors. We begin with a summary of the acquisitions that appear to be reshaping the rural industry in recent years, including valuation perspectives on RBOC divestitures and RLEC-to-RLEC sales. The second subsection highlights the various financing options that have been used and are likely to be employed in the foreseeable future. Finally, we turn back to the RBOCs to examine how divestitures might play out if those large companies choose to divest large portions of their rural operations.

ACQUISITION PRICING TODAY

Rural carriers are experiencing a dramatic change in the industry's financial landscape.

The financial landscape for rural carriers appears to be changing as rural companies and investors evaluate how to obtain the capital funds for technology upgrades to central-office equipment and loops, as well as how to take advantage of new opportunities to purchase plant from other carriers, including those of the regional Bell operating companies. The process has become more important, as the amount of capital consumed by the sector has expanded in response to the growing number of divestitures and the opportunity to deploy a broader range of new technologies. We begin with an overview of the recent prices paid for RBOC and independent telco lines, and then turn to an overview of rural lines financings.

PRICES FOR RURAL LINES

The acquisition-pricing pattern over recent years has bifurcated. RBOC lines generally have been divested at prices averaging near $3,000 per line, unless the condition of the properties in question was superior to that of most of the other rural RBOC lines. On the other hand, independent telephone properties have sold for prices that generally have been rising and, when adjusted for non-telco assets, have more recently have been approximately $3,500–$4,000 per line.

PRICES FOR RBOC LINES

RBOC rural sales prices have averaged around $3,000 per line over the last eight years, but have been rising modestly.

Prices paid for RBOC rural divestitures averaged approximately $3,250 per line in 2000, up from about $3,000 over the last eight years. Additionally, the RBOCs appear to have grown increasingly interested in rural divestitures, possibly as a result of their evaluation of alternative uses for RBOC capital in the wake of the Telecom Act. We note that higher prices were paid for the GTE/Verizon lines sold in Arkansas and Nebraska. The reason appears to be twofold in the case of Arkansas, where CenturyTel acquired an entire state, which did not require re-architecting as would have been the case in some of the U S West/Qwest divestitures; second, the network had been upgraded recently by GTE with investments of more than $167 million in the final three years of GTE ownership. In the case of Nebraska, an entire state was acquired with an integrated network, resulting in savings in subsequent capital expenditures and operating efficiencies. **Table 57** details selected RBOC and GTE transactions over the last seven years.

Table 57: Selected RBOC and GTE Line Acquisitions

Seller	Acquiror Name	Date Announced	Effective Date	Value of Transaction ($ mil)	Gross Value Per Line
GTE - 8 States	Citizens Utilities Co.	05/19/93	06/30/94	1,100.0	$2,200
US West - WA	Pacific Telecom, Inc (PTI)	05/05/94	09/30/95	86.0	$4,300
US West - IA	Hickory Tech Corporation	06/15/95	04/10/97	35.3	$2,822
US West - MN	Pacific Telecom, Inc (PTI)	12/15/95	09/30/97	103.0	$3,872
GTE North - MI	Pacific Telecom, Inc (PTI)	03/31/96	10/31/97	34.0	$2,833
US West - ND	Inter-Community Tel (Lynch)	06/03/96	06/03/96	4.7	$3,357
Ameritech - WI	CenturyTel	03/12/98	12/01/98	225.0	$2,528
Sprint Corp - IL	Madison River Telephone	04/22/98	10/30/98	232.0	$2,937
GTE - AK	Alaska Telephone Exchange	05/27/99	07/31/00	NA	
GTE - AZ/CA/MN	Citizens Utilities Co.	05/27/99	--	664.0	$3,554
GTE - AR	CenturyTel	06/29/99	07/31/00	843.4	$3,947
GTE Corp - MO	Spectra (CenturyTel JV)	06/29/99	07/31/00	290.0	$2,497
GTE - IA	Iowa Network Services, Inc	07/01/99	--	NA	
GTE Corp - WI	CenturyTel	08/19/99	--	195.0	$3,009
GTE Corp - WI	Teleph. USA (CenturyTel JV)	08/19/99	09/29/00	170.0	$2,760
GTE - NM,TX	VALOR Telecom	09/07/99	09/01/00	NA	
GTE - NE	Citizens Utilities Co.	09/21/99	06/30/00	204.0	$3,474
US West - UT	5 Independent Utah Telcos	10/25/99	--	90.0	$2,571
GTE - OK	VALOR Telecom	10/26/99	07/04/00	NA	
GTE - IL	Citizens Utilities Co.	12/16/99	--	303.0	$2,836

Source: Legg Mason Wood Walker, Inc.; company data

HIGHER PRICES FOR INDEPENDENT TELCO LINES

The contrast is revealing when comparing non-RBOC rural line sales to RBOC rural divestitures. The average prices for the RLEC-to-RLEC transactions over the past year have been approximately $3,650 per line, as opposed to the approximate $3,280 per line for the RBOC divestitures. We believe this is due to several factors, the most important of which is the generally better condition of the independent (RLEC) operator's plant compared with what typically is found in the RBOC sales of rural lines. We contend that, because of operational focus and rate-of-return regulation, the rural carriers have greater incentives to maintain

plant in far better condition than their larger Bell counterparts do. A second factor contributing to the higher independent prices is that the RLECs have the necessary back-office systems that allow a smoother cutover of service to an acquirer. By contrast, in many of the sales of GTE properties or Bell assets, the divested properties frequently are "orphaned" from host switches and from back-office systems. It also is worth noting that there are often other assets (wireless operations, fiber transport, cable assets, etc.) included in the independent operators' transactions, which can raise significantly the gross value on a per-access-line basis. Accordingly, lines held by rural carriers command higher valuation levels than rural lines divested by the RBOCs. **Table 58** details an August 1998 to April 2001 history of selected RLEC-to-RLEC transactions, which demonstrates the higher valuations when a non-RBOC sells its LEC operations.

Table 58: Selected RLEC Mergers and Acquisitions—August 1998 to April 30, 2001

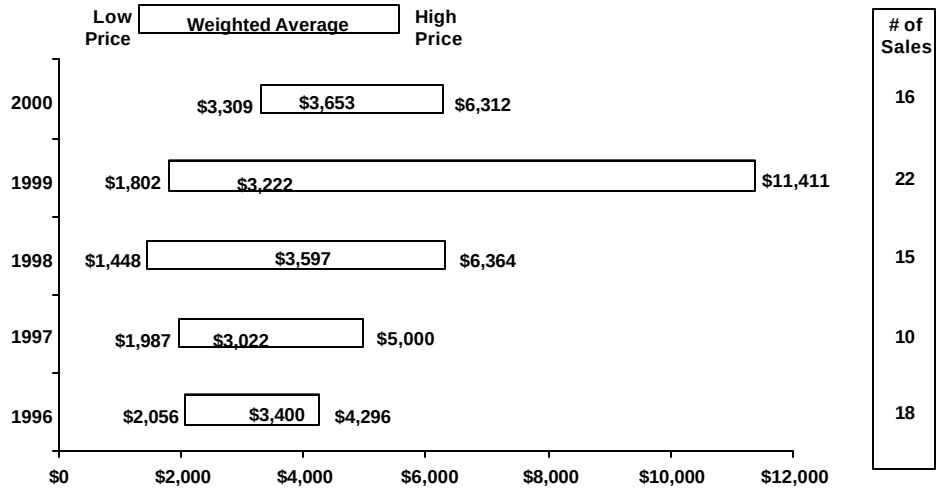
Target/Seller Name	Acquirer Name	Announcement Date	Effective Date	Est. Value ($MIL)	Description
Conestoga Enterprises	NTELOS Inc.	07/25/01	-	$408.00	98,000 access lines (including CLEC) and 38,000 long distance customers, and 18,000 PCS subs
Illnois Consolidated	Fairpoint Communications	06/14/01	-	$7.20	2,690 Illinois access lines
Saco River Telephone and Telegraph	Country Road Communications	05/21/01	-	35.0	10,500 line acquisition also Included 2,200 ISP customers
Marianna and Scenery Hill Telephone	Fairpoint Communications	05/07/01	-	11.4	2,914 access lines in southeastern Pennsylvania
Chippewa Communications, Inc.	Hiawatha Communications, Inc.	03/13/01	-	NA	Hiawatha Communications Purchases 1,700 rural access lines on Indian reservation
Madison River Telephone Company	Madison Telephone Company	01/22/01	-	NA	Madison Telephone Acquires 4,200 lines
Chorus Communications	Telephone & Data Systems, Inc	11/27/00	--	229.3	TDS acquires Chorus assets including 45,000 access lines and 30,000 ISP subs.
Camden Telephone	Telephone & Data Systems, Inc	11/06/00	11/06/00	107.8	TDS acquires the remaining 48.7% of Camden.
CT Communications	BellSouth	09/12/00	--	39	CT sells its 1.96% interest in Carolinas PCS partnership to BellSouth.
Berkshire Telephone Company	Citizens Communications	09/06/00	--	NA	Citizens acquires 6,000 access lines in five communities in New York
CSW Net, Inc.	CenturyTel	08/03/00	08/03/00	NA	CSW Net was a privately held ISP with approximately 13,500 subs in Arkansas.
Alternate Solutions	D&E Communications	08/03/00	08/03/00	NA	D&E acquires Alternate Solutions, a provider of technology support services.
SBC Communications	Alltel	07/31/00	--	400	Alltel acquires SBC's Baton Rouge and New Orleans properties (approximately 160,000 subscribers)
Hickory Tech	South Slope Cooperative	07/21/00	07/21/00	NA	Hickory sells approximately 1,500 access lines in northeastern Iowa.
Global Crossing Ltd.	Citizens Communications	07/12/00	06/30/01	3,500	CZN to purchase approximately 1.1 million access lines in NY and the midwest.
AT&T Wireless	CFW Communications	06/26/00	--	NA	CFW acquires BTAs in Harrisburg, York, Lancaster, Reading, Williamsport, State College and Johnstown.
Internet Alaska	Alaska Communications Systems	06/14/00	06/14/00	NA	ALSK purchases the remaining interest in Internet Alaska, the second largest ISP in AK with 25,000 subs.
Matanuska Telephone Association	Alaska Communications Systems	05/23/00	09/19/00	187.5	MTA members vote against proposed acquisition.
PrimeCo (Bell Atlantic)	CFW Communications	05/18/00	07/26/00	407.0	CFW purchases the Richmond and Norfolk, VA, BTAs (86,000 customers) from PrimeCo.
R&B Communications	CFW Communications	05/18/00	--	131.4	R&B contributes 12,000 ILEC and 4,000 CLEC with additional interests in VA & WV PCS Alliances.
Hager Telecom, Inc.	Hector Communications	05/16/00	06/09/00	9.1	Hager TeleCom provides telephone service to approximately 2,000 residential customers.
Fremont Telecom Co.	FairPoint Communications, Inc. (fka MJD)	04/25/00	04/03/00	35.9	Approximately 6,300 lines.
Citizens Communications	Cap Rock Energy & Kauai Island Electric	02/15/00	--	535.0	Citizens will sell its AZ and VT electric divisions to Cap Rock and its HI electric division to KIE.
Alltel/Verizon	Alltel/Verizon	02/01/00	06/30/00	NA	Alltel competes property swaps with Verizon, netting an additional 690,000 customers.
Orwell Telephone Company	FairPoint Communications, Inc. (fka MJD)	01/03/00	01/03/00	NA	Orwell serves approximately 6,800 access lines in nine rural local exchanges.
TPG Communications, Inc.	FairPoint Communications, Inc. (fka MJD)	01/03/00	04/03/00	210.0	TPG serves approximately 51,000 access lines in Florida through GT Com.
Peoples Mutual Telephone Company	FairPoint Communications, Inc. (fka MJD)	01/03/00	04/03/00	35.0	Located in Gretna, Virginia, Peoples serves approximately 7,800 lines.
Southeast Telephone Company of WI, Inc.	Telephone & Data Systems, Inc	12/23/99	--	NA	Southeast provides local exchange service to approximately 10,000 access lines SW of Milwaukee.
GTE - IL	Citizens Communications	12/16/99	11/30/00	303.0	GTE has agreed to sell 106,850 customer lines in IL.
GTE - OK	Valor Communications	11/26/99	--	NA	Approximately 120,000 access lines.
Coastal Communications	Madison River Telephone Co	11/23/99	03/31/00	130.0	Coastal is an RLEC centered in Hinesville, GA, serving approximately 38,000 access lines.
U S West	6 Independent Phone Companies	10/25/99	--	90.0	U S West sells its Utah exchanges to Central Utah Tel., Manti Tel., UBTA, Emery Tel., All West, and Skyline.
GTE - NE	Citizens Communications	09/21/99	06/30/00	204.0	Serves approximately 61,000 lines in Nebraska.
GTE - NM,TX	Valor Communications	09/07/99	09/01/00	NA	GTE serves close to 400,000 lines in the two states.
Yates Telephone Company	FairPoint Communications, Inc. (fka MJD)	09/01/99	09/01/99	NA	Approximately 1,100 lines.
GTE Corp - WI	CenturyTel Enterprises	08/19/99	--	195.0	Approximately 65,000 lines.
GTE Corp - WI	Telephone USA of Wisconsin (Century JV)	08/19/99	--	170.0	Approximately 62,000 lines.
GTE - IA	Iowa Network Services, Inc	07/01/99	06/30/00	NA	GTE sells approximately 280,000 lines in IA.
GTE - AR	CenturyTel Enterprises	06/29/99	07/31/00	843.4	Century acquires close to 214,000 lines.
GTE Corp - MO	Spectra Communications (Century JV)	06/29/99	07/31/00	290.0	GTE sells approximately 116,000 lines.
U S West - AZ,CO,ID,IA,MN,MT,NE,ND,WY	Citizens Communications	06/16/99	--	1,650.0	Citizens to purchase close to 530,000 lines--Transaction cancelled by Citizens on July 20, 2001.
U S West	Qwest	06/14/99	--	51,300.0	Qwest will issue 1.738 shares of Q for each USW share.
Central Scott Telephone	Lynch	06/01/99	07/01/99	NA	Lynch adds 6,000 access lines.
GTE Corp. - AZ,CA,MN	Citizens Communications	05/27/99	--	664.0	Citizens to purchase 186,000 lines.
CenturyTel	Alaska Communications Systems	05/14/99	05/14/99	342.0	CenturyTel sells Alaskan operations including 134,000 lines; 75,000 cellular pops and 550,000 PCS pops
Gulf Coast Services, Inc	Madison River Telephone Co	05/11/99	09/29/99	313.0	Approximately 50,000 lines.
Union Telephone	FairPoint Communications, Inc. (fka MJD)	04/30/99	04/30/99	16.5	Approximately 3,300 lines.
Columbus Grove Telephone	FairPoint Communications, Inc. (fka MJD)	02/16/99	02/16/99	5.0	Approximately 1,800 lines.
Ravenswood Communications, Inc.	FairPoint Communications, Inc. (fka MJD)	02/01/99	02/01/99	9.5	Approximately 2,000 lines.
CenturyTel	Western Wireless Corp.	01/27/99	06/01/99	96.0	CenturyTel sells its wireless operations in Brownsville and McAllen, Texas.
Durango Cellular Telephone Co.	Alltel	01/20/99	03/31/99	NA	Alltel purchases service area adjacent to its New Mexico operations.
BellSouth	Alltel	01/20/99	04/01/99	NA	Alltel acquires BellSouth's cellular operations in Dothan, Alabama.
Aliant Communications, Inc.	Alltel	12/18/98	07/01/99	1,500.0	Aliant contributes 285,000 access lines, and 290,000 wireless customers.
Anchorage Telephone Utility	Alaska Communications Systems	10/20/98	05/17/99	NA	Alaska Communications provides service to 75% of the Alaskan population.
Standard Telephone	Alltel	08/10/98	01/06/99	NA	Standard serves 71,000 access lines in Georgia, adjacent to Alltel's existing wireline exchanges.

Source: Legg Mason Wood Walker, Inc.; company data

Beyond the question of additional assets involved in a sale, there is another reason for the independent telcos' higher prices. RLEC properties usually generate higher revenue streams, including vertical services, higher access rates per minute and more appropriate USF support. By our estimation, these additional revenues account for approximately $100–$200 of the valuation. If the private markets are rational, the remaining difference between prices paid for independent operators and RBOC properties could be assumed to be the cost to rehabilitate distressed RBOC plant — approximately $200–$300 per line. **Figure 31** details the ranges and averages for non-RBOC rural property sales over the past five years, and **Figure 32** illustrates the averages for RBOC rural divestitures over the same period, highlighting the differences between RBOC and independent prices.

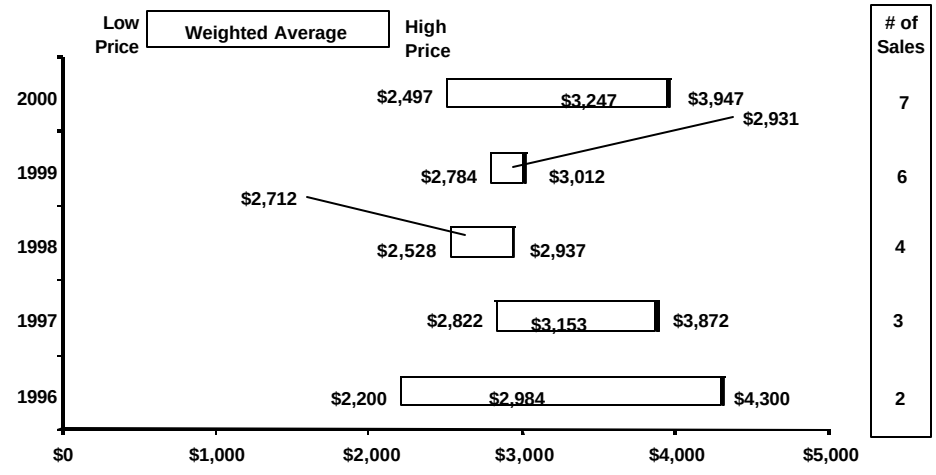
Several reasons for higher sale prices for independent telcos are: (1) higher-quality plant, (2) higher revenue streams, and (3) more favorable regulatory environment.

Figure 31*:* Non-RBOC Acquisition Pricing History per Line



Source: Legg Mason Wood Walker, Inc.; company data

Figure 32: RBOC and GTE Acquisition Pricing History per Line



Source: Legg Mason Wood Walker, Inc.; company data

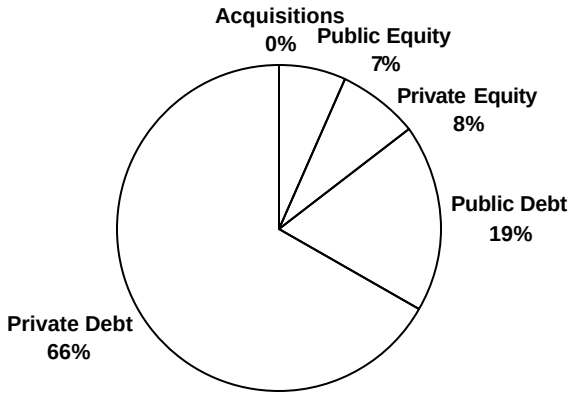
There are a variety of financing options employed by companies that have acquired lines or financed expansion. In this section, we summarize the principal sources of financing that rural companies have used, how the sources have changed and what other changes might be expected. We note from the outset that it is our belief that rural companies gradually will use a wider set of sources and will become more sophisticated in employing their balance sheets to maximize returns over the next 5 to 10 years. This creativity, in our view, will become particularly important if 10 million–30 million RBOC lines are sold over the next several years, resulting in a need for financing the purchase and upgrades that could reach $40 billion–$100 billion, again assuming that the prices will moderate if a larger number of lines are on the market.

Creativity in financing will become increasingly important as more rural lines are sold.

OVERVIEW OF RURAL LINE FINANCINGS

Figure 33 illustrates the sources of rural telco financings over the past two years, highlighting that the primary source of capital has been debt, often from institutions offering low-interest loans, such as the Rural Utilities Service or cooperative banks. Private and public debt has constituted well over 75% of the total funding for major line acquisitions over the past two years, which is consistent with financings in prior periods.

Figure 33: RLEC Financing Sources



Source: Legg Mason Wood Walker, Inc.

A slightly different view of the funding dynamic is gained when segregating the sources of *acquisition* funding, focusing on major purchases of lines. However, the exercise is less precise since acquirers may use one source as a short-term bridge and then put other, longer-term capital to work. **Table 59** represents our best attempt to determine the sources of long-term capital used by companies in paying for rural acquisitions in the last four years.

Table 59: Recent Financing Activities by Selected RLECs

Company	Date	Financing Market	Amount (in MM)	Comments/Use of Proceeds
Alaska Comm.	12/1/99	Public Equity	$140.0	The proceeds were used to repay debt, capital expenditures, strategic investments, acquisitions, and general corporate purposes.
Alltel	6/16/99	Public Equity	$600.0	Liberty Cellular was a privately held communications company offering wireless, paging, long-distance and Internet services in Kansas. Alltel will issue a total of 7,000,000 shares of common stock.
	7/31/00	Public Debt	$400.0	Alltel purchased wireless properties in New Orleans and Baton Rouge from SBC Communications Inc. in a move that added 160,000 wireless customers and 300,000 paging customers. About 2 million POPs wre included in the markets.
CenturyTel	6/29/99	Private Debt	$843.4	CenturyTel purchased GTE's local exchange assets in Arkansas. These properties complement CenturyTel's existing local telephone and wireless operations in the state, and position CTL to offer additional communications services to customers.
	8/19/99	Private Debt	$365.0	CenturyTel, Inc. acquired a total of 126,400 access lines in Wisconsin from GTE.
	8/3/00	Private Debt	Not Known	CSW Net, Inc. provided Internet services to more than 13,500 subscribers in Arkansas. CSW Net, Inc. provided dialup and dedicated Internet access, Web site and domain hosting in 28 Arkansas cities.
	10/19/00	NA	$900.0	Issued $500 million in senior notes, due 2010 and $400 million in remarketable senior notes, due 2012 to repay debt in credit facilities.
Citizens Comm.	11/1/99	NA	$3,000.0	Credit facility increased from $400 Million to $3.4 Billion and it will be used to fund acquisitions and other corporate needs. Refinanced in May 2001 using $250 million in secondary common stock, $400 million in convertible preferred securities and $1.75 billion in long-term debt.
	5/18/01	Public Debt	$1,750.0	Citizens issued two tranches of debt. $700 million of five-year notes and $1.05 billion of ten-year notes which were issued to repay debt in credit facilities and fund additional acquisitions.
	6/13/01	Public Debt/Equity	$650.0	Citizens issued $250 million in a follow-on common stock offering and an additional $400 million in a three-year mandatorily convertible preferred equity unit with a 6.75% dividend and a 20% premium. It is planned that these financings, along with $2.1 billion in non-strategic asset divestitures will fund the company's announced access line acquisitions.
	8/14/01	Private Debt	$1,750.0	Citizens issued 144A private placement debt in three, eight and thirty-year tranches. The debt will be used to refinance existing shorter-term debt.
Commonwealth	6/25/99	Private Debt	$240.0	The facility was used to refinance certain existing indebtedness, including all outstanding borrowings under CTE's previous $125 million facility, and to fund future capital expenditures, working capital and other general corporate purposes.
Country Road	1/1/00	Private Equity	Not Known	Country Road was formed in January 2000 and the lead equity investors were Prudential Capital Group and Shamrock Holdings.
Fairpoint	1/3/00	Private Equity	$445.0	The Company intends to use its portion of the proceeds of the investments to (i) fund the acceleration of its competitive local exchange carrier business; and (ii) fund pending rural local exchange carrier acquisitions. Thomas H. Lee Partners and Kelso & Company committed to invest up to $375 million and $70 million, respectively. THL's investment was in the form of nonvoting preferred equity of the Company and Kelso's investment would be in the form of nonvoting common equity of the Company.
	7/14/00	Public Debt	$200.0	Completed a private offering of $200,000,000 aggregate principal amount of 12 1/2% senior subordinated notes due 2010.
Hickory Tech	10/5/00	Private Debt	$225.0	The facility matures in nine years and the proceeds will be used to fund the company's growth.
Iowa Telecom	7/1/99	Private Equity	$150.0	69.3% of stock is owned by Iowa Network Services and 30.7% is owned by ING Barings.
Madison River	2/21/00	Public Debt	$200.0	This private placement offering consisted of 13 1/4% debt due 3/1/2010.
	2/21/00	Private Equity	$24.0	The funding was from its current equity investors, Madison Dearborn Partners, Inc., Goldman, Sachs & Company, Providence Equity Partners, and members of management.
NTELOS Inc.	5/18/00	Private Equity	$225.0	Welsh, Carson, Anderson & Stowe (WCAS) invested a total of $200 million and affiliates of Morgan Stanley Dean Witter (MSDW) invested $25 million in preferred equity in the combined company. Upon receipt of regulatory approval, WCAS initially invested $100 million and MSDW invested $12.5 million in the form of convertible preferred stock with a conversion price of $41 per share and an accretion rate of 8.5%. WCAS and MSDW also received 500,000 warrants exercisable at a price of $50 per share. Proceeds from the investment were used to fund the continued buildout of CFW's communications network. Upon closing of the acquisition of the PrimeCo PCS operations, WCAS and MSDW invested an additional $100 million and $12.5 million respectively in the form of convertible preferred stock which, upon receipt of shareholder approval, had a conversion price of $45 per share and an accretion rate of 5.5%. Proceeds were used to partially fund the acquisition.
	5/18/00	Private Debt	$700.0	MSDW provided $605 million in the form of $325 million in senior bank debt and $280 million in senior bridge notes. WCAS provided $95 million in the form of subordinated debt. Proceeds were used to complete funding of the acquisition of the PrimeCo PCS operations, refinance certain debt of both CFW and the Virginia and West Virginia PCS Alliances, and fund the continued buildout of the combined company's communications network.
	7/11/00	Private Debt	$375.0	Proceeds from the offering were used to partially fund CFW's acquisition of the digital wireless licenses and assets of PrimeCo PCS, L.P. in the Richmond and Norfolk, Virginia markets and to fund an escrow account to cover the first four interest payments on the Notes.
	late-2001	Private Equity	$200.0	WCAS will provide $200 million in cash in exchange for a convertible preferred equity issue with an 8.5% coupon and a $21.25 conversion price, in addition to one million warrants with a $21.25 per share strike price. The additional investment will also entitle WCAS to reduce the conversion price of the previous two preferred shares to a price not to exceed $34 from $41 and $45. Proceeds will be used to finance the cash portion of the acquisition of Conestoga Enterprises, Inc.

Source: Legg Mason Wood Walker, Inc. and company data

In summary, the RLEC industry generally has consumed debt that has been available at relatively low rates for expansion of plant operations or acquisitions. Acquisitions have required larger amounts of debt, however, a trend that is

precipitating a shift toward alternative sources of capital, primarily private equity investment. In our opinion, the number and size of private equity investments are likely to rise as more properties become available and as the venture capital community better recognizes how attractive the characteristics of the industry are — strong and predictable cash flows, little competition, favorable regulation and opportunities for solid operating growth as vertical services, data and long-distance applications expand.

TRADITIONAL SOURCES OF RLEC FINANCING

Turning to a more detailed explanation of the RLECs' traditional sources of financing, we note that the rural telcos have relied on several specific sources of low-cost debt, including funds available from the offspring of the Rural Electrification Administration — the federal Rural Utilities Service (RUS) or the quasi-federal Rural Telephone Bank (RTB). Additionally, there are cooperative banks that specialize in providing debt for rural telephone companies.

RURAL ELECTRIFICATION ADMINISTRATION

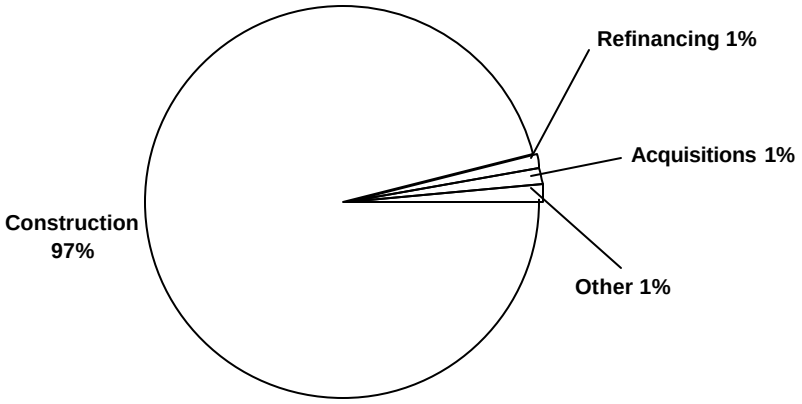
REA loans to rural utilities are subsidized by the federal government to rural utilities.

Historically, government-sponsored debt for rural utilities, including telephone companies, has been available from several sources. Ten years ago, the Rural Electrification Administration (REA), an agency in the United States Department of Agriculture (USDA), supplied approximately $10 billion to fund rural utility companies that needed to maintain existing plant or expand further. The REA was established in the 1940s to provide loans and technical assistance to rural utilities, both electric and telephone. The REA, which now is part of the USDA, historically has provided loans for telecommunications providers at below-market rates, subsidized, in part, by the federal government. Loans through REA have been provided at the government's cost of funds or lower, while the maximum interest rate the agency could charge by law was 7%. Many of the nation's rural utility companies simply do not have the financial strength to deal with commercial lenders, making REA debt one of the few viable options for access to funds. In fact, REA data indicate that the agency's borrowers typically have an average ratio of net worth to total assets of approximately 30%, while most commercial lenders require a minimum of 50%–60%.

RURAL UTILITIES SERVICE AND RURAL TELEPHONE BANK

The REA has passed on its charge to the Rural Utilities Service and the Rural Telephone Bank, which now have $43 billion in capital on loan to rural operators. **Figure 34** summarizes the cumulative uses of capital provided by the government through this agency of the Department of Agriculture.

Figure 34: RUS Funding by Purpose



Source: Legg Mason Wood Walker, Inc.; company data

RUS funding primarily is used to upgrade physical plant.

As of December 31, 1998, there were 989 borrowers that currently owed on almost $13 billion in RUS funds. Of the $12.968 billion outstanding, $12.45 billion was designated for construction while a mere $168 million was used for refinancing purposes and another $168 million was categorized as being used for acquisitions. The remainder of approximately $180 million has been assigned for "other" corporate purposes.

As was the case with the predecessor REA, the government subsidizes only the interest rate discount, which is normally a relatively small portion of the entire loan and repayment sum, and has never suffered a default. As of July 2000, the most recent date for which data were available, the average RUS loan was priced 182 basis points below a similar loan in the private sector, representing an attractive choice of funding for qualified rural telcos.

Numerous restrictions are associated with the use of government-sponsored lending.

We note that, while the rates are low for government loans, both agencies have numerous restrictions associated with their lending practices. There are strict limitations on subscriber densities, modernization standards, population limits, and the appropriate use of the government subsidization. The RUS also uses "equity-based" financing and its loans are usually "self-liquidating" from revenue and cash flow derived from telephone rates. The proposed investments of the borrowers (whether for infrastructure development or acquisition) must meet general technical guidelines for acceptable and approved equipment purchases, all as part of a system designed to minimize speculation and abuse of government loans. In summary, RUS and RTB loans provide favorable rates for the independent telcos, but also can be relatively limiting, and take longer to close than pure, public debt. The RUS and RTB lending practices are fairly sound,

however, for financing advanced rural telecommunication infrastructure, as they provide incentives to borrowers to make additional investments.

RURAL TELEPHONE FINANCE CO-OP AND COBANK

Two cooperative banks have been key sources of debt for rural companies — the Rural Telephone Finance Cooperative (RTFC) and CoBank.

Rural Telephone Finance Cooperative

The RTFC is a private, member-owned cooperative that provides alternate and/or supplementary financing to RUS and RTB financing. Funding through the RTFC is available only to members that also are eligible for RUS and RTB financing, but RTFC funds also can be used for purposes that fall outside of the relatively narrow guidelines for which the government agencies mandate their loan proceeds. For example, connecting rural switches to competitive long-distance carriers technically falls outside of the REA-mandated guidelines, but rural carriers can use RTFC funds for that purpose. The RTFC is a controlled affiliate of the NRUCFC (National Rural Utilities Cooperative Finance Corporation) and, as of January 1, 2000, provided over $3.8 billion in loans to over 540 telco members.

RTFC financing is offered through capital certificates and bonds.

The RTFC offers two primary sources of financing. One is through capital certificates, which RLECs must purchase in the amount of at least 5% of any borrowed funds; the second is bonds sold in capital markets, normally at rates lower than those that could be obtained by a single utility. Because a group of rural carriers is viewed as more solvent and a safer credit risk than a single utility, lower rates are available to the pool of companies. Additionally, the RTFC is a secondary lender to entities that currently are receiving REA-related funds, and low interest rates typically are available for its customer base.

RTFC has been slowing the growth in its telecom lending exposure, at least temporarily.

The RTFC has slowed its telecommunications lending recently, as a result of recent market weakness in the broader telecommunications industry. The overall financial impact on the sector as a result of the short-term reduction in funding from an important lender remains to be seen.

REA/RUS/RTB/RTFC lenders impose some limitations on their borrowers. Notably, the debt can be used only for geographies in which the average number of proposed subscribers per mile of line is 15 or less — and have a TIER ratio (times interest earned ratio, or the ratio of net income plus interest expense divided by interest expense) that is at least 1.0x, but less than 5.0x. Also, the RUS Administrator must have approved, and the potential borrower must participate in, a state-level modernization program to upgrade plant in rural areas. The principal purpose of all approved loans is to furnish and improve rural service. The use of funds for non-rural subscribers, if any, must be incidental to the principal purpose. Because the funds are partially subsidized by the federal government, the government must try to verify that the loans are viable and the

borrower has, or will have, the financial wherewithal to repay the entire loan amount. Additionally, the RUS (or related borrower) must approve the general acquisition and the subsequent operational plan before approving the loan. Then, the RUS must inspect each central office, all buildings and other structures, and must receive copies of all leases, bills of sales, deeds, mortgages, etc., which might be problematic for large RBOC acquisitions serving several different states and hundreds of thousands of access lines. Still, given the attractive rates, the loans remain appealing to rural operators.

Rural carriers are contending with dynamic change in the industry's financial landscape.

In mid-June 2001, the House of Representatives' Appropriations Committee approved an RUS/RTB funding package for rural telcos. In the Appropriations Bill, the RUS/RTB is authorized to loan approximately $175 million in traditional low-interest RTB loans — $75 million in hardship loans at 5%, $300 million in cost of funds loans, $120 million in loan guarantees, and approximately $400 million in grants for distance learning and telemedicine projects. Of the distance-learning funds, $100 million are to be used to underwrite a new rural broadband loan program. Additional legislation has been introduced before the Committee to fund the program at current levels through 2004, making monies available for a rural broadband program at an interest rate of approximately 2%–3% for 30 years. While the bills, which have been introduced in both the House and the Senate, are expected to pass, we note that RUS/RTB funds are not sufficiently large and cannot be counted on to fund major acquisitions of lines.

CoBank

CoBank, the National Bank for Cooperatives, is the leading private lender that specializes in serving rural utilities. CoBank, established in 1989, is part of the Farm Credit System established by the USDA, but is technically a private institution. CoBank raises funds through sales of Farm Credit securities to investors. The funds then are channeled back through CoBank and other Farm Credit System institutions to make them available to rural operators. CoBank, with over 12 years of experience in the rural utility and telecommunications market, also can bring valuable knowledge and expertise that normally would not be provided by the various governmental lending agencies. CoBank, as of year-end 2000, had over $2 billion in commitments to over 180 telecommunications firms across the country.

CoBank is the leading private lender for rural utilities.

CoBank historically has lent up to six times operating cash flow (earnings before interest, taxes, depreciation and amortization) or up to 60%–80% of the purchase price of a LEC acquisition, applying terms and conditions that appear to us to be reasonable, although these levels have been changing — current terms have become tighter, as recent loans have been based on 4.5–5x operating cash flow.

CoBank currently is lending approximately 4.5x–5x operating cash flow.

COMMERCIAL DEBT

Rural telephone companies have used some commercial debt, accepting the slightly higher coupon to avoid some of the restrictions related to government loans or the equity contributions at the cooperative banks. The largest commercial loan used for acquisitions was Citizens Communications' short-term loan of $6.5 billion, but other examples include CenturyTel's use of $1.2 billion in commercial debt for the GTE/Verizon transactions prior to issuing public debt securities.

INCREASING USE OF PUBLIC DEBT AND PRIVATE EQUITY

Use of private debt and equity, as well as more creative financing techniques, will become increasingly important.

Rural operators historically have not used the public debt or private equity markets, and have not sought financial sponsors or partners to help leverage their balance sheets. To be fair, rural telcos have generated such significant cash flows that there has been little need for anything but low-cost and relatively simple debt instruments. However, with large-scale line divestitures, consolidation, and need for plant and equipment upgrades, smaller telcos are likely to seek increased financial flexibility and complexity, as traditional sources prove to be insufficient. We expect the trend toward more sophisticated sources of funds to continue, led by the larger consolidators of rural lines.

If the RBOCs actually divest extensive holdings, we expect those carriers to require that the buyers have strong balance sheets, well-defined funding sources, and a certainty of closure before beginning serious negotiations with prospective acquirers. We also expect that RLECs will require new funding sources for what are likely to be significant plant upgrades to drive increased revenue streams.

INVESTMENT GRADE DEBT

Investment grade debt rates at historically attractive levels.

For those companies that were able to secure investment grade debt, the second half of 2000 and the beginning of 2001 was a period characterized by a reduction in rates, creating a better market for companies to issue corporate paper. Demand was steady for investment grade paper. As the equity markets corrected downward in 2000/2001, a general flight to quality has driven fixed-income prices up and has lowered rates as investors sought a safe haven. While rates declined and made debt more attractive, flexible terms and conditions also were critical for operators in committing to debt. CenturyTel issued $900 million in public debt at a blended rate of approximately 8.75% in October 2000.

Syndications of sizable loans also have grown more commonplace. A loan syndication essentially creates an alliance between a lead bank or investment firm (for public debt offerings) and other banks (or investment firms) to fund the entire amount of a large loan. The telco and the telco's investors are served by using a lender that is knowledgeable about the company and the industry. Recent syndications include the $5.7 billion private revolving line of credit for Citizens Communications at floating rates that were based on LIBOR (London InterBank

Offering Rate). These rates fluctuated between 7.5% and 9.5% over the life of the line of credit.

HIGH YIELD DEBT

Telecom use of high yield debt has increased substantially in recent years.

The use of high yield debt for telecommunications has increased in recent years, particularly in the CLEC industry, and has been used by several rural telcos as well. High yield has become an increasingly expensive financing alternative, however, as telecommunications debt is perceived as more at risk than previously. In 1998, investors were demanding approximately 10.3% for high yield corporate telecommunications debt but, by the end of 2000, the average rate had increased to slightly over 13.4%. NTELOS, Inc., a Waynesboro, VA, RLEC, currently has a $325 million senior credit facility with rates averaging 3% above the current federal funds rates and unsecured senior notes with fixed interest rates of 13%–13.5%, as the proceeds were used to acquire and fund the buildout of wireless assets. Investors' appetite for high-yield telecommunications debt has abated in the last year, however, due to the financial troubles of various telecommunications companies, including the CLECs.

CONVERTIBLE SECURITIES

Convertible securities are an increasingly popular financing mechanism in the rural telecom sector.

Telecommunications companies have begun to use convertible securities to broaden the kinds of financial instruments and markets, and to seek attractive pricing. Convertible bonds and convertible preferred stock are among the "equity-linked" products that have become popular, as companies have found the securities to be a relatively inexpensive means of obtaining financing. While each individual security has distinct characteristics, convertible securities have several common features. The securities are convertible into the underlying security (normally common stock), either at any time or after a predetermined period of time. The conversion right resides with the investor, who may be compelled to convert at a specified maturity (a mandatory convertible) or at a specified price. Convertible securities also are claims senior to the underlying security and sell at some premium to those of the underlying security.

Verizon, Nextel and Citizens all have issued new convertible securities in the last several months.

In recent months, Verizon Communications, Nextel, and Citizens Communications have brought convertible offerings to the market; there is speculation that several other telecommunications providers are considering similar offerings. On May 9, Verizon priced $3 billion in zero-coupon convertible notes with a 20-year maturity, priced to yield 3% on a yield-to-maturity basis, and the conversion premium was 25%. The issue had several onerous provisions for investors, which made it attractive for Verizon. While the notes are noncallable for five years, the notes can be "put" only in years 3, 5, 10 and 15. In essence, this was an inexpensive method for Verizon to raise capital. As Verizon has a very strong, A+, credit rating, the company was able to take advantage of the current interest rate environment and the growing investor demand for credit quality.

In partial payment for rural acquisitions, Citizens Communications also introduced an equity unit of $400 million in conjunction with a $250 million common equity offering, which priced on June 13. The equity unit issue has a three-year maturity with a coupon of 6.75% and a 20% premium. The security has two distinct components. The debt portion (a senior note) is pledged as collateral to secure the obligation of the holder to purchase the common stock. The purchase contract portion obligates the holder to purchase shares of the common stock at $25. As each convertible security was priced at $25, the holder is obligated to a specified number of common shares, dependent upon the price of the common stock at the time of conversion. If the stock is trading at $12.10 or less, each convertible share will force the holder to purchase $25 worth of Citizen's common shares at $12.10 per share. If the stock were trading between $12.10 and $14.52 (the 20% premium level), the holder will be compelled to purchase $25 worth of stock based on the price of CZN (Citizens) stock. If the stock is trading over $14.52, the convertible holder would be forced to buy $25 worth of the common stock at $14.52 per share. Prior to maturity, the $25 is held as collateral for the purchase and is entitled to an annual dividend payment of 6.75%. The mandatory convert provision of the security is designed to improve Citizens' debt-to-equity ratios so that the credit ratings agencies allow the company to maintain its investment-grade debt rating of BBB.

PRIVATE EQUITY INVESTMENTS

Private equity, although costly, is an increasingly popular financing tool for telecom ventures.

Venture capital (VC) investments, or private equity transactions, are another financing avenue that is growing more available to rural carriers. Smaller rural telephone companies are increasingly attractive to venture capitalists due to the companies' strong, predictable cash flows, high profit margins, barriers to entry, and the ability of the telcos to better retain customers through the bundling of various services. Some venture capitalists have sought the opportunity to own both wireline and wireless assets in a particular market, thereby "controlling" the telecommunications customer in that particular region.

The VC community also is attracted to various growth opportunities in rural telecommunications. Most rural enterprises can be focused more sharply on further penetration of vertical services, long distance, ISP and data services, eventually driving significant EBITDA growth, and there is the opportunity to benefit from a consolidating industry in which improved liquidity should cause valuation expansion. Most private equity firms focus on investments in which they have confidence in management, have multiple exit strategies, and can generate solid returns on investment, rural telecommunications are attractive. We note that private equity firms look for 30%+ annual returns, but we suggest that those investors appear to be more willing to accept slightly more modest returns in rural telephony in light of the reduced risk in the investments.

At the same time, private equity remains higher-cost capital than public equity because, from the investor's point of view, there is a lack of liquidity, less detail in

the financial reporting of the companies, and a somewhat higher-risk set of capital commitments. With the recent turmoil in the equity markets, we believe that venture capital firms have developed a lower tolerance for cash-deprived opportunities and have developed a telecommunications expertise that allows them to be successful investors in the rural space.

PUBLIC EQUITY OFFERINGS

Public equity, despite current market conditions, remains an attractive financing vehicle.

Volatility in the public equity markets and declines in equity prices have resulted in the postponement or cancellation of several planned equity offerings, such as those at FairPoint, Madison River and CenturyTel, but public offerings were clearly goals for the financial investors in several of the consolidator RLEC companies.

Prior to the NASDAQ correction in March 2000, investors were committing to companies' business plans solely on the companies' ability to roll out services and deploy high-tech equipment. Now, the market appears to be focusing on companies that can deliver quality earnings successfully and consistently. On June 13, 2001, Citizens Communications successfully issued over $250 million in a secondary offering. The shares were priced at $12.10 in the first major RLEC offering since CT Communications sponsored a one million share offering in June 1999. We believe that there could be as many as five more equity offerings over the next two years.

OFF-BALANCE SHEET FINANCING

Off-balance sheet financing is an alternative source of capital for rural telephone companies. The opportunities include asset securitization, joint ventures, and interest-rate hedging. Asset securitization consists of separating specific assets from the company's balance sheet and using them as collateral for the issuance of either debt or equity securities. This enables the security to be rated, marketed and sold based upon the economic quality of the assets. This type of financing has the dual advantages of being a method of raising capital that is cheaper than traditional term loans, while improving the company's balance sheet.

Joint ventures (JVs) are likely to be used more widely in the future, allowing companies to capitalize properties in a manner much like that effected by the wireless and cable industry over the last several years. CenturyTel has committed to two joint ventures, while Citizens has been considering a joint venture involving as many as one million lines. While there are complicating issues in a joint venture (JV), the capitalization requirements of today's financial markets make JVs more attractive for various companies that want to employ larger amounts of capital while maintaining a higher credit rating for the parent company.

In the case of Citizens, we believe the company was considering an agreement to relieve financial pressure from the company's acquisition of 1.6 million rural

access lines. If the company were to have financed all of the 2.0 million lines (the originally proposed acquisitions) using the company's balance sheet alone, the company would likely have lost its BBB debt rating, forcing all subsequent debt to be rated as "junk," which would have raised the company's interest rates and caused additional pressure on the company's stock price. With the joint venture in place, we believe that the company planned to invest approximately $500 million in equity, while a venture partner would invest a similar amount, and the JV itself would seek to add as much as 70% of the capitalization in private and/or bank debt. As this debt would belong solely to the joint venture and not to Citizens, the parent company, the company could maintain financial and liquidity ratios healthy enough to maintain investment grade debt ratings. The joint venture's debt, if publicly traded, would likely be classified as "junk," but the JV itself likely would not need to raise new capital continually.

The use of joint ventures is likely to increase as companies try to maximize off-balance sheet financing.

CREATIVE FINANCING ACTIVITIES

There are other examples of partnering in the RLEC industry. PalmettoNet in South Carolina capitalized on the complementary nature of geographically contiguous exchanges in order to bring services on an advanced network into its service areas. Iowa Network Services (sponsoring Iowa Telecom) represents 128 rural telephone companies in providing the equal access capabilities and other enhanced services.

VALOR Telecom was formed by venture capital firm Welsh, Carson, Anderson and Stowe, (WCAS), along with Vestar Capital Partners, Citicorp Venture Capital, and 12 investors, for the sole purpose of acquiring approximately 540,000 access lines from GTE. The consortium enabled VALOR to fund a large access line acquisition, which, overnight, created the 13th-largest incumbent carrier in the country.

Different types of creative off-balance-sheet financing also are becoming increasingly popular in many communications and utility firms. Whether in the form of asset securitization or vendor financing, off-balance-sheet financing has been used by cable TV companies, cellular phone and equipment vendors, and even some gas and electric utilities. However, as access line acquisitions become more prevalent and the access to capital becomes scarcer, creative financing will play an increasingly important role in the overall process of acquiring rural lines.

ASSET DIVESTITURES

Several consolidators of access lines have raised capital to pay for acquisitions by divesting other non-strategic assets. Citizens, for example, is in the process of divesting approximately $1.8 to $2 billion in non-telecom assets, including water/wastewater, gas and electric properties across the country, particularly in the western United States, to help fund the company's recent purchase of access lines. NTELOS Inc. (formerly CFW Communications) swapped ownership

Non-strategic asset divestitures are occurring with increasing frequency.

interests and assets in two cellular properties as part of the acquisition of R&B Communications in May 2000 and also sold 151 wireless towers in March 2000 for approximately $47.5 million to American Tower. NTELOS also divested the company's directory assistance operations for approximately $35.5 million in cash and stock. More recently, NTELOS agreed to purchase Conestoga Enterprises and has received a commitment from Welsh Carson for up to $200 million in cash; the company also decided to divest the wireless assets that were owned by Conestoga in Pennsylvania. On August 15, CenturyTel announced that it was exploring the divestiture of its wireless operations. We believe that proceeds from CenturyTel's sale, if successful, could be used to help fund additional wireline acquisitions, including a possible bid for Verizon's 1.2 million lines currently for sale in Alabama, Missouri and Kentucky.

FINANCIAL FLEXIBILITY

Companies clearly are concerned about maintaining financial flexibility — to reduce risk, to have access to affordable capital and to take better advantage of acquisition opportunities.

DETERMINING CAPITAL STRUCTURE

Rural companies traditionally have used relatively little debt, since they are risk-averse. Typical capital structure among the small operators has been 20%–30% debt as a percentage of total assets, and, when including the more highly leveraged financial operators, 44% debt to total assets. **Table 60** provides perspective on the relatively conservative capitalization of rural telephone operators, and highlights that the companies backed by professional financial investors have significantly different profiles.

Table 60: Capital Structure of Publicly Traded RLECs as of 6/30/01

	Current Ratio	Quick Ratio	Debt/Assets	Debt/Equity	Times Covered
ALSK	1.73	1.52	0.67	3.02	0.51
NTLO	0.93	0.65	0.52	1.58	-0.64
CCGL	0.91	0.54	0.52	1.07	1.09
CENI	1.18	0.92	0.40	0.97	1.82
CTCI	1.34	1.10	0.15	0.26	3.38
DECC	1.43	0.90	0.19	0.74	3.22
FAIRPOINT	0.55	0.48	0.79	11.52	-1.05
HCT	1.75	1.62	0.60	2.45	1.87
HTCO	1.52	1.10	0.62	2.15	2.31
LIC	1.13	0.96	0.71	7.14	0.97
MAD. RIVER	1.15	0.92	0.71	5.42	0.00
NULM	1.56	0.83	0.29	0.52	10.42
NPSI	2.57	1.76	0.32	0.78	4.12
SURW	1.57	1.31	0.10	0.21	5.64
SHET	0.81	0.61	0.42	1.02	6.15
WWVY	0.85	0.54	0.22	0.25	15.08
SMALL-CAP AVG.	**1.28**	**0.94**	**0.44**	**2.42**	**3.31**
AT	1.18	0.90	0.38	1.06	5.42
CTL	0.50	0.28	0.55	1.66	2.90
CZN	2.28	0.29	0.49	2.02	0.68
TDS	0.55	0.44	0.21	0.39	4.20
MIDCAP AVG.	**1.12**	**0.46**	**0.41**	**1.29**	**3.30**

Source: Company data; Legg Mason Wood Walker, Inc.

Capital structures vary widely across the RLEC universe.

A significant shift occurs in capital structure when a company chooses to be a strategic consolidator. Notably, CenturyTel and Citizens have debt-to-total assets ratios of 55% and 49%, respectively. The non-strategic consolidators — the companies backed by private equity — have debt-to-total capital ratios that are higher still. So, for example, Alaska Communications Systems has debt assets of 68%, FairPoint is 80%, Madison River is 68%, and NTELOS is 52%. Clearly, the reason for the difference in capital structure is that the strategic consolidators want flexibility, while achieving a more optimal use of debt, while the private equity sponsors are interested in maximizing return on investment.

WEIGHTED AVERAGE COST OF CAPITAL

The weighted average cost of capital (WACC) of a company is determined by the mix of funding sources. Most rural companies have access to inexpensive debt, but do not make extensive use of debt. We discussed weighted average cost of capital in the first section of this report, particularly as it is applied as a discount rate for our model. We believe that rural companies will evaluate their costs of capital increasingly as they consider whether new opportunities, such as acquisitions, are worthwhile investments for their shareholders.

The two public companies discussed in the "Four Case Studies" section have relatively low average cost of capital. We estimate that Citizens currently has an after-tax WACC of approximately 7.4%, while we calculate CenturyTel's after-tax WACC as approximately 6.5%, in both cases using an equity risk premium of 4%. In the current interest rate environment, both companies should have access to

relatively inexpensive capital (by historical standards) with which to fund access line acquisitions. We believe that, because of predictable operating cash flows, access line consolidators and smaller, rural LECs should have the opportunity to fund acquisitions at a cost that is attractive, provided the company has a reasonably healthy balance sheet.

RBOC DIVESTITURES

We turn finally to a reconsideration of RBOC divestitures, including the approach the RBOCs have taken in divesting lines and the various scenarios that may play out over the next 10 years as the RBOCs consider selling some or many lines.

RBOCS WANT EASE AND CERTAINTY OF EXECUTION

RBOCs look for simplicity and certainty of closure when divesting rural access lines.

The pattern in recent transactions has been relatively clear. The RBOCs have looked for ease and certainty of execution in divesting lines. Even as long ago as May 1993, GTE divested 500,000 rural lines to a single well-financed acquirer, Citizens Utilities Co. (now Citizens Communications) for approximately $1.1 billion, or approximately $2,200 per access line. Since then, the number and value of rural line divestitures have increased dramatically, with the vast majority of sales to large and/or well-financed consolidators of lines. By our estimates, the RBOCs, GTE and Sprint have sold almost three million access lines in the last eight years in 22 different acquisitions. These lines have been sold throughout the country, but have been centered geographically in the western United States. GTE (now Verizon) has been the dominant seller of access lines in rural America, primarily in the Midwest, Southwest, and West Coast areas of the country. The access lines divestitures have ranged in size from 530,000 lines to as little as 1,400 lines and have ranged in transaction value per access line from approximately $2,200 to $4,300. The pace of divestitures has quickened in recent years, growing from two divestitures in 1996 to six separate divestitures in 1999.

POSSIBLE SCENARIOS FOR RBOC DIVESTITURES

We believe there are several scenarios that might unfold if the RBOCs choose to divest lines. First, there is the possibility for opportunistic sales of relatively small numbers of rural properties, a scenario that is consistent with what has occurred in the past. Second, we believe that the RBOCs could commit to an organized sale of larger numbers of rural lines over a period of time, such as 5 to 10 years. Third, the RBOCs could choose to spin off some or many of their rural lines to create additional value for shareholders.

OPPORTUNISTIC SALES OF LINES

From a financial perspective, the three scenarios would have quite different implications for the capital markets and for the structures used by consolidators

or purchasers of access lines. If relatively small numbers (up to one million at a time) of rural access lines are divested over 2 to 3 years, we assume that the capital markets could easily accommodate the divestitures and the capital structure of the companies acquiring the lines would remain simple. In our view, the consolidators would use as much debt as possible, likely 50%–70% of total capitalization, since debt is generally inexpensive in light of the strong and predictable cash flows of rural telephone operations. The sources of debt likely would be commercial banks as well as the RUS, RTB, the Rural Telephone Finance Coop, and CoBank. We believe that the limitations imposed on government-subsidized debt would not be a problem in the case of divestitures that involve relatively few lines. We also assume that the consolidators would have relatively easy access to equity sources, including private equity, in which the interest in rural telephone operations clearly has increased.

The RBOCs could look to divest lines selectively and slowly.

ORGANIZED SALE OF LARGE NUMBER OF LINES

If the RBOCs choose to divest a larger number of lines (e.g., five million) over three to five years in a more organized approach, the financial issues will be more complex, but manageable, in our view. We estimate that investors would have to raise $12 billion–$18 billion for five million lines or possibly $22 billion–$30 billion for 10 million lines, assuming the price softens if more lines are available. Long-term debt certainly would be used to fund a significant portion of the acquisition cost, and could rise to as much as 70% of total capital. Because the equity component would be approximately five billion dollars for five million lines or nine billion dollars for 10 million lines, we assume that joint ventures would be necessary to gain access to more capital and mitigate risk.

Or the RBOCs could choose to divest a larger number of rural lines over several years.

We are assuming that the RBOCs would be rational in divesting lines over time to allow consolidators time to digest previous acquisitions and to ensure that prices remain at relatively reasonable levels. We believe that this is the likely course as RBOCs offload 10 million–20 million lines over as many as 10 years.

SPIN-OFFS OF RBOC RURAL LINES

If the RBOCs choose to divest large numbers of rural lines suddenly or the number of lines rises to 20 million–30 million over 10 years — a scenario we view as somewhat less likely — to create additional value for their shareholders, raise capital for other strategic projects, and avoid regulatory conflicts over upgrading rural lines, we assume that prices per line would fall closer to $2,000–$2,500. In such a case, we believe that the investment community would absorb the majority of the lines, but that some portion might be spun off into separate companies. In this way, the RBOCs are freed of obligations to invest in rural regions, and the value of the lines would be determined by stocks that would trade separately from the other assets of the RBOCs and more in line with valuations of the other rural telephone operators. Because the industry would be better defined, larger and, we assume, better supported by the investment community, additional value likely would be created for the RBOCs and the entire industry.

Or the RBOCs could divest most of their rural lines, taxing the financial capabilities of possible consolidators.

SUMMARY

We believe that the rural local exchange carrier marketplace currently is undergoing a significant transformation that will include the divestiture of 10 million–30 million RBOC lines and ongoing consolidation among rural carriers. These divestitures and consolidations represent an historic opportunity for independent communications providers to expand their operations, gain scale, grow more efficient, achieve more financial discipline and improve valuations. To be successful, companies increasingly will be required to identify sources of capital and partners to manage what could prove to be a large and complex integration process. Financing the acquisitions and consolidations will be a challenge and ultimately will change the landscape of rural telephony, as professional investors require a new level of discipline among the operators and impose more pressure on policymakers for clear and consistent regulation. In our opinion, this new discipline will result in a financial partnership that ultimately improves the focus on service for the rural customer and financial returns for the investor.

This Page Intentionally Left Blank

APPENDIX ONE

LEGG MASON RURAL MODEL SENSITIVITY ANALYSES

In the "Thematic Overview" section, we outlined the Legg Mason rural valuation model and provided some analysis of sensitivities in the model on the basis of varying levels of revenues and EBITDA margins. In this appendix, there is additional detail on the various inputs. We examine other critical data points in tables and graphs, in order to determine how sensitive the per-line valuation is when the input item is increased or decreased.

As discussed in the report, the key data inputs appear to be the revenue generated per line/month, and the acquired EBITDA margin. **Table 61** summarizes our assumptions for the basic or generic model.

Table 61: Key Model Inputs

Model Assumptions			
Terminal EBITDA Multiple	8.0x	Inflation adjustment	1.0%
Discount Rate	7.2%	Tax Rate	38.0%
Divisional EBITDA Margin	67.0%	Cost of Equity	11.0%
Revenue/line/month	$65	Cost of Debt	7.5%
CAPEX/Line/Month	$12	% Debt	60.0%
Growth rate for lines	3.0%	WACC	7.2%

Source: Legg Mason Wood Walker, Inc.

Table 62 outlines the present value of future cash flows generated with various combinations of revenue per line/month and EBITDA margin per acquired access line with the remaining variables outlined in **Table 61** kept constant. We note once again that the EBITDA margin outlined in the table represents the acquired EBITDA margin (excluding certain overhead that is not duplicated upon acquisition). The results of the modeling based on our assumptions demonstrate that acquired RBOC rural access lines could reasonably be valued at $2,400–$4,800 depending on various assumptions and expectations of the costs required to rehabilitate under-invested lines. In our generic case, an acquirer of rural RBOC access lines, with expectations to generate revenues per line/month of $65, and an acquired EBITDA margin of 67%, could possibly generate future cash flows with a present value of $3,757.

Table 62: Present Value of Future Cash Flows at Assumed Rev/line and EBITDA Margins

		Revenue/Line/Month																
		$55	$56	$57	$58	$59	$60	$61	$62	$63	$64	$65	$66	$67	$68	$69	$70	$71
Acquired EBITDA Margin	56%	2,396	2,456	2,516	2,576	2,635	2,695	2,755	2,815	2,875	2,934	2,994	3,054	3,114	3,173	3,233	3,293	3,353
	57%	2,455	2,516	2,577	2,638	2,698	2,759	2,820	2,881	2,942	3,003	3,063	3,124	3,185	3,246	3,307	3,368	3,428
	58%	2,514	2,576	2,638	2,700	2,761	2,823	2,885	2,947	3,009	3,071	3,133	3,195	3,257	3,318	3,380	3,442	3,504
	59%	2,573	2,635	2,698	2,761	2,824	2,887	2,950	3,013	3,076	3,139	3,202	3,265	3,328	3,391	3,454	3,517	3,580
	60%	2,631	2,695	2,759	2,823	2,887	2,951	3,015	3,079	3,143	3,207	3,271	3,335	3,400	3,464	3,528	3,592	3,656
	61%	2,690	2,755	2,820	2,885	2,950	3,015	3,080	3,146	3,211	3,276	3,341	3,406	3,471	3,536	3,601	3,666	3,731
	62%	2,749	2,815	2,881	2,947	3,013	3,079	3,146	3,212	3,278	3,344	3,410	3,476	3,543	3,609	3,675	3,741	3,807
	63%	2,807	2,875	2,942	3,009	3,076	3,143	3,211	3,278	3,345	3,412	3,480	3,547	3,614	3,681	3,748	3,816	3,883
	64%	2,866	2,934	3,003	3,071	3,139	3,207	3,276	3,344	3,412	3,481	3,549	3,617	3,686	3,754	3,822	3,890	3,959
	65%	2,925	2,994	3,063	3,133	3,202	3,271	3,341	3,410	3,480	3,549	3,618	3,688	3,757	3,826	3,896	3,965	4,034
	66%	2,983	3,054	3,124	3,195	3,265	3,335	3,406	3,476	3,547	3,617	3,688	3,758	3,828	3,899	3,969	4,040	4,110
	67%	3,042	3,114	3,185	3,257	3,328	3,400	3,471	3,543	3,614	3,686	3,757	3,828	3,900	3,971	4,043	4,114	4,186
	68%	3,101	3,173	3,246	3,318	3,391	3,464	3,536	3,609	3,681	3,754	3,826	3,899	3,971	4,044	4,117	4,189	4,262
	69%	3,159	3,233	3,307	3,380	3,454	3,528	3,601	3,675	3,748	3,822	3,896	3,969	4,043	4,117	4,190	4,264	4,338
	70%	3,218	3,293	3,368	3,442	3,517	3,592	3,666	3,741	3,816	3,890	3,965	4,040	4,114	4,189	4,264	4,339	4,413
	71%	3,277	3,353	3,428	3,504	3,580	3,656	3,731	3,807	3,883	3,959	4,034	4,110	4,186	4,262	4,338	4,413	4,489
	72%	3,335	3,412	3,489	3,566	3,643	3,720	3,796	3,873	3,950	4,027	4,104	4,181	4,257	4,334	4,411	4,488	4,565
	73%	3,394	3,472	3,550	3,628	3,706	3,784	3,862	3,939	4,017	4,095	4,173	4,251	4,329	4,407	4,485	4,563	4,641
	74%	3,453	3,532	3,611	3,690	3,769	3,848	3,927	4,006	4,085	4,164	4,243	4,321	4,400	4,479	4,558	4,637	4,716
	75%	3,512	3,592	3,672	3,752	3,832	3,912	3,992	4,072	4,152	4,232	4,312	4,392	4,472	4,552	4,632	4,712	4,792

Key Assumptions					
Est. Acq. Cost	$3,300	CAPEX/Line/Month	$12	Cost of Equity	11.0%
Rehabilitation Costs	$300	Tax Rate	38.0%	Cost of Debt	7.5%

Source: Legg Mason Wood Walker, Inc.

As outlined in **Table 63**, the net present value of the future cash flows generated by the acquired access lines in our generic model can be calculated by subtracting the estimated acquisition cost per line of $3,300. In this example, the net present value of future cash flows is $457, indicating that the acquirer could purchase the access lines at a price of $3,300, invest $300 (over the first two years) to rehabilitate the lines, and have a positive return on investment. The shaded cells in **Table 63** represent those combinations of assumed revenue per line/month and acquired EBITDA margin that yield a net present value that is positive, which means an acceptable return for the investor based on our assumptions for the cost of capital.

Table 63: Net Present Value of Future Cash Flows at Assumed Rev/line and EBITDA Margins

Acquired EBITDA Margin	Revenue/Line/Month $55	$56	$57	$58	$59	$60	$61	$62	$63	$64	$65	$66	$67	$68	$69	$70	$71
56%	(904)	(844)	(784)	(724)	(665)	(605)	(545)	(485)	(425)	(366)	(306)	(246)	(186)	(127)	(67)	(7)	53
57%	(845)	(784)	(723)	(662)	(602)	(541)	(480)	(419)	(358)	(297)	(237)	(176)	(115)	(54)	7	68	128
58%	(786)	(724)	(662)	(600)	(539)	(477)	(415)	(353)	(291)	(229)	(167)	(105)	(43)	18	80	142	204
59%	(727)	(665)	(602)	(539)	(476)	(413)	(350)	(287)	(224)	(161)	(98)	(35)	28	91	154	217	280
60%	(669)	(605)	(541)	(477)	(413)	(349)	(285)	(221)	(157)	(93)	(29)	35	100	164	228	292	356
61%	(610)	(545)	(480)	(415)	(350)	(285)	(220)	(154)	(89)	(24)	41	106	171	236	301	366	431
62%	(551)	(485)	(419)	(353)	(287)	(221)	(154)	(88)	(22)	44	110	176	243	309	375	441	507
63%	(493)	(425)	(358)	(291)	(224)	(157)	(89)	(22)	45	112	180	247	314	381	448	516	583
64%	(434)	(366)	(297)	(229)	(161)	(93)	(24)	44	112	181	249	317	386	454	522	590	659
65%	(375)	(306)	(237)	(167)	(98)	(29)	41	110	180	249	318	388	457	526	596	665	734
66%	(317)	(246)	(176)	(105)	(35)	35	106	176	247	317	388	458	528	599	669	740	810
67%	(258)	(186)	(115)	(43)	28	100	171	243	314	386	**457**	528	600	671	743	814	886
68%	(199)	(127)	(54)	18	91	164	236	309	381	454	526	599	671	744	817	889	962
69%	(141)	(67)	7	80	154	228	301	375	448	522	596	669	743	817	890	964	1,038
70%	(82)	(7)	68	142	217	292	366	441	516	590	665	740	814	889	964	1,039	1,113
71%	(23)	53	128	204	280	356	431	507	583	659	734	810	886	962	1,038	1,113	1,189
72%	35	112	189	266	343	420	496	573	650	727	804	881	957	1,034	1,111	1,188	1,265
73%	94	172	250	328	406	484	562	639	717	795	873	951	1,029	1,107	1,185	1,263	1,341
74%	153	232	311	390	469	548	627	706	785	864	943	1,021	1,100	1,179	1,258	1,337	1,416
75%	212	292	372	452	532	612	692	772	852	932	1,012	1,092	1,172	1,252	1,332	1,412	1,492

Key Assumptions

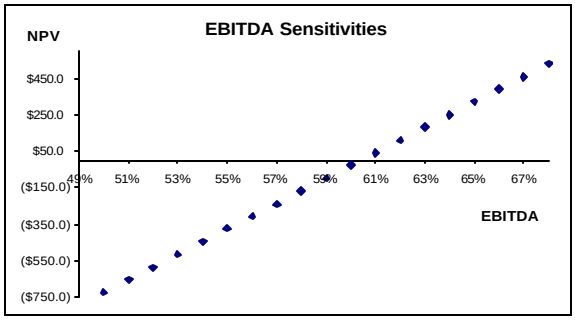
Est. Acq. Cost	$3,300	CAPEX/Line/Month	$12	Cost of Equity	11.0%
Rehabilitation Costs	$300	Tax Rate	38.0%	Cost of Debt	7.5%

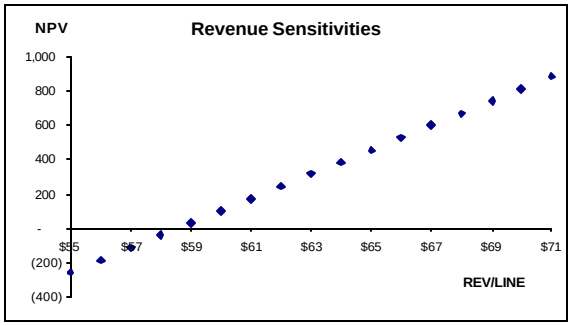
Note: the dark box represents the combination of revenue per line and EBITDA margin as modeled

Source: Legg Mason Wood Walker, Inc.

To further aid in the analysis of our model, **Figure 35–Figure 38** are provided to illustrate the change in net present value generated by a one-unit increase in various individual inputs — EBITDA margin, revenue per line/month, terminal multiple, discount rate, capital expenditures, acquisition cost, tax rate and line growth, while the other variables are kept constant.

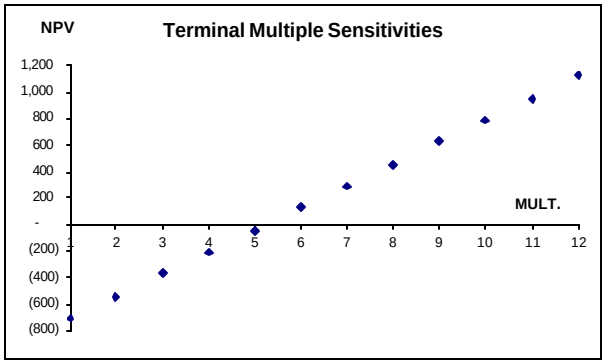
Figure 35: EBITDA and Revenue Sensitivities

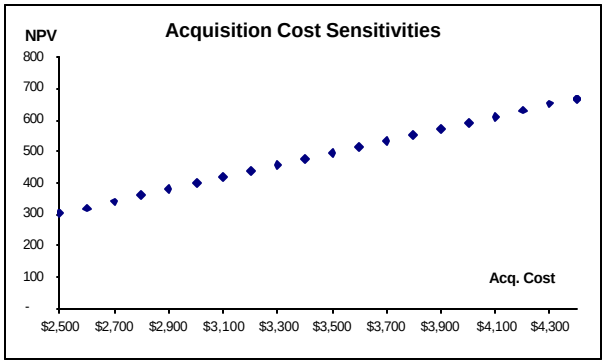




Source: Legg Mason Wood Walker, Inc.

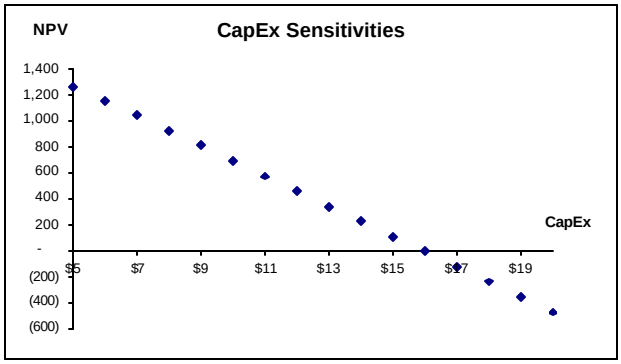
Figure 36: Legg Mason Rural DCF Model Sensitivity Graphs

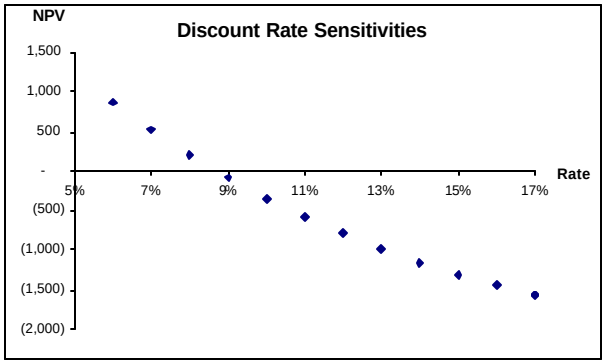




Source: Legg Mason Wood Walker, Inc.

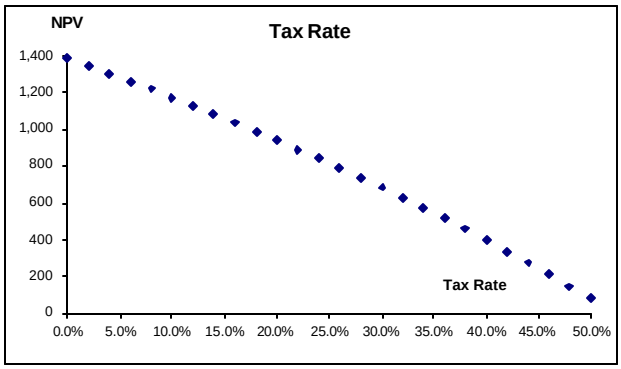
Figure 37: Capital Expenditures and Discount Rate Sensitivities

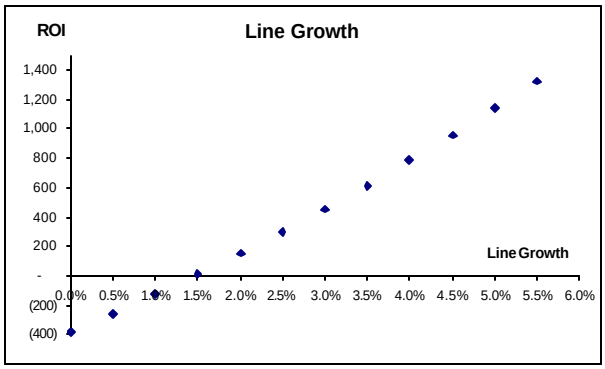




Source: Legg Mason Wood Walker, Inc.

Figure 38: Tax Rate and Line Growth Sensitivities





Source: Legg Mason Wood Walker, Inc.

The following pages present our sensitivity analyses related to present value of the cash flows for each of the four companies explored in the "Four Case Studies" section. Another way of viewing each of the tables is to see the matrix as estimating what a rational investor might be willing to pay per line in acquiring the properties — assuming particular levels of revenue per line and acquired EBITDA margin and other variables that are summarized at the bottom of each table.

Table 64: Iowa Telecom Iowa (GTE) Acquisition – Present Value of Future Cash Flows

Acquired EBITDA Margin	Revenue/Line/Month												
	$51	$53	$55	$57	$59	$61	$63	$65	$67	$69	$71	$73	$75
40%	(1,115)	(1,010)	(904)	(798)	(693)	(587)	(481)	(376)	(270)	(164)	(59)	47	153
41%	(1,048)	(940)	(831)	(723)	(615)	(506)	(398)	(290)	(181)	(73)	35	144	252
42%	(981)	(870)	(759)	(648)	(537)	(426)	(315)	(204)	(93)	18	129	240	351
43%	(913)	(800)	(686)	(573)	(459)	(345)	(232)	(118)	(4)	109	223	336	450
44%	(846)	(730)	(613)	(497)	(381)	(265)	(148)	(32)	84	200	317	433	549
45%	(779)	(660)	(541)	(422)	(303)	(184)	(65)	54	173	291	410	529	648
46%	(711)	(590)	(468)	(347)	(225)	(104)	18	140	261	383	504	626	747
47%	(644)	(520)	(395)	(271)	(147)	(23)	101	225	350	474	598	722	846
48%	(576)	(450)	(323)	(196)	(69)	58	184	311	438	565	692	819	945
49%	(509)	(380)	(250)	(121)	9	138	268	397	527	656	786	915	1,044
50%	(442)	(310)	(178)	(45)	87	219	351	483	615	747	879	1,011	1,144
51%	(374)	(240)	(105)	30	165	299	434	569	704	838	973	1,108	1,243
52%	(307)	(170)	(32)	105	243	380	517	655	792	930	1,067	1,204	1,342
53%	(240)	(100)	40	181	321	461	601	741	881	1,021	1,161	1,301	1,441
54%	(172)	(30)	113	256	398	541	684	827	969	1,112	1,255	1,397	1,540
55%	(105)	40	186	331	476	622	767	912	1,058	1,203	1,348	1,494	1,639
56%	(37)	110	258	406	554	702	850	998	1,146	1,294	1,442	1,590	1,738
57%	30	181	331	482	632	783	934	1,084	1,235	1,385	1,536	1,687	1,837
58%	97	251	404	557	710	864	1,017	1,170	1,323	1,476	1,630	1,783	1,936
59%	165	321	476	632	788	944	1,100	1,256	1,412	1,568	1,724	1,879	2,035

Key Assumptions

Estimated Acquisition Cost	$3,250	CAPEX/Line/Month	$7	Cost of Equity	15.0%
Rehabilitation Costs	$0	Tax Rate	25.0%	Cost of Debt	7.5%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

Table 65: CenturyTel Wisconsin (GTE) Acquisition – Present Value of Future Cash Flows

Acquired EBITDA Margin	Revenue/Line/Month $51	$53	$55	$57	$59	$61	$63	$65	$67	$69	$71	$73	$75
46%	(1,246)	(1,148)	(1,050)	(951)	(853)	(755)	(656)	(558)	(460)	(361)	(263)	(165)	(66)
47%	(1,192)	(1,091)	(991)	(890)	(790)	(689)	(589)	(488)	(388)	(288)	(187)	(87)	14
48%	(1,137)	(1,035)	**(932)**	(829)	(727)	(624)	(522)	(419)	(316)	(214)	(111)	(9)	94
49%	(1,083)	(978)	(873)	(769)	(664)	(559)	(454)	(350)	(245)	(140)	(35)	69	174
50%	(1,028)	(921)	(815)	(708)	(601)	(494)	(387)	(280)	(173)	(66)	41	147	254
51%	(974)	(865)	(756)	(647)	(538)	(429)	(320)	(211)	(102)	7	116	226	335
52%	(919)	(808)	(697)	(586)	(475)	(363)	(252)	(141)	(30)	81	192	304	415
53%	(865)	(751)	(638)	(525)	(412)	(298)	(185)	(72)	42	155	268	382	495
54%	(810)	(695)	(579)	(464)	(348)	(233)	(118)	(2)	113	229	344	460	575
55%	(756)	(638)	(521)	(403)	(285)	(168)	(50)	67	185	302	420	538	655
56%	(701)	(581)	(462)	(342)	(222)	(103)	17	137	257	376	496	616	735
57%	(647)	(525)	(403)	(281)	(159)	(37)	84	206	328	450	572	694	816
58%	(592)	(468)	(344)	(220)	(96)	28	152	276	400	524	648	772	896
59%	(538)	(412)	(285)	(159)	(33)	93	219	345	471	597	724	850	976
60%	(483)	(355)	(227)	(98)	30	158	286	415	543	671	800	928	1,056
61%	(429)	(298)	(168)	(37)	93	223	354	484	615	745	875	1,006	1,136
62%	(374)	(242)	(109)	24	156	289	421	554	686	819	951	1,084	1,216
63%	(320)	(185)	(50)	84	219	354	488	623	758	893	1,027	1,162	1,297
64%	(265)	(128)	9	145	282	419	556	693	829	966	1,103	1,240	1,377
65%	(211)	(72)	67	206	345	484	623	762	901	1,040	1,179	1,318	1,457

Key Assumptions

Estimated Acquisition Cost	$2,880	CAPEX/Line/Month	$11	Cost of Equity	10.0%
Rehabilitation Costs	$250	Tax Rate	38.0%	Cost of Debt	7.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

Table 66: CenturyTel Arkansas (GTE) Acquisition – Present Value of Future Cash Flows

Acquired EBITDA Margin	Revenue/Line/Month $56	$58	$60	$62	$64	$66	$68	$70	$72	$74	$76	$78	$80
44%	(1,596)	(1,502)	(1,407)	(1,313)	(1,219)	(1,125)	(1,031)	(937)	(843)	(749)	(655)	(561)	(467)
45%	(1,536)	(1,440)	(1,343)	(1,247)	(1,151)	(1,055)	(959)	(862)	(766)	(670)	(574)	(478)	(381)
46%	(1,476)	(1,378)	**(1,279)**	(1,181)	(1,082)	(984)	(886)	(787)	(689)	(591)	(492)	(394)	(296)
47%	(1,416)	(1,316)	(1,215)	(1,115)	(1,014)	(914)	(813)	(713)	(612)	(512)	(411)	(311)	(210)
48%	(1,356)	(1,254)	(1,151)	(1,048)	(946)	(843)	(740)	(638)	(535)	(433)	(330)	(227)	(125)
49%	(1,296)	(1,192)	(1,087)	(982)	(877)	(773)	(668)	(563)	(458)	(354)	(249)	(144)	(39)
50%	(1,236)	(1,130)	(1,023)	(916)	(809)	(702)	(595)	(488)	(381)	(274)	(168)	(61)	46
51%	(1,177)	(1,068)	(959)	(849)	(740)	(631)	(522)	(413)	(304)	(195)	(86)	23	132
52%	(1,117)	(1,006)	(894)	(783)	(672)	(561)	(450)	(339)	(227)	(116)	(5)	106	217
53%	(1,057)	(944)	(830)	(717)	(604)	(490)	(377)	(264)	(150)	(37)	76	189	303
54%	(997)	(882)	(766)	(651)	(535)	(420)	(304)	(189)	(73)	42	157	273	388
55%	(937)	(820)	(702)	(584)	(467)	(349)	(232)	(114)	3	121	239	356	474
56%	(877)	(758)	(638)	(518)	(398)	(279)	(159)	(39)	80	200	320	440	559
57%	(817)	(696)	(574)	(452)	(330)	(208)	(86)	36	157	279	401	523	645
58%	(758)	(634)	(510)	(386)	(262)	(138)	(14)	110	234	358	482	606	730
59%	(698)	(572)	(445)	(319)	(193)	(67)	59	185	311	437	564	690	816
60%	(638)	(510)	(381)	(253)	(125)	3	132	260	388	517	645	773	901
61%	(578)	(448)	(317)	(187)	(56)	74	204	335	465	596	726	856	987
62%	(518)	(386)	(253)	(121)	12	145	277	410	542	675	807	940	1,072
63%	(458)	(324)	(189)	(54)	80	215	350	484	619	754	889	1,023	1,158

Key Assumptions

Estimated Acquisition Cost	$3,947	CAPEX/Line/Month	$7	Cost of Equity	10.0%
Rehabilitation Costs	$100	Tax Rate	38.0%	Cost of Debt	7.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

Table 67: VALOR New Mexico (GTE) Acquisition – Present Value of Future Cash Flows

Acquired EBITDA Margin	Revenue/Line/Month $55	$57	$59	$61	$63	$65	$67	$69	$71	$73	$75	$77	$79
48%	(1,623)	(1,528)	(1,433)	(1,338)	(1,243)	(1,148)	(1,053)	(958)	(863)	(768)	(674)	(579)	(484)
49%	(1,568)	(1,471)	(1,374)	(1,278)	(1,181)	(1,084)	(987)	(890)	(793)	(696)	(599)	(503)	(406)
50%	(1,514)	(1,415)	(1,316)	(1,217)	(1,118)	(1,020)	(921)	(822)	(723)	(624)	(525)	(426)	(328)
51%	(1,459)	(1,359)	(1,258)	(1,157)	(1,056)	(955)	(854)	(754)	(653)	(552)	(451)	(350)	(250)
52%	(1,405)	(1,302)	(1,199)	(1,097)	(994)	(891)	(788)	(685)	(583)	(480)	(377)	(274)	(171)
53%	(1,351)	(1,246)	(1,141)	(1,036)	(932)	**(827)**	(722)	(617)	(512)	(408)	(303)	(198)	(93)
54%	(1,296)	(1,190)	(1,083)	(976)	(869)	(763)	(656)	(549)	(442)	(336)	(229)	(122)	(15)
55%	(1,242)	(1,133)	(1,025)	(916)	(807)	(698)	(590)	(481)	(372)	(263)	(155)	(46)	63
56%	(1,188)	(1,077)	(966)	(855)	(745)	(634)	(523)	(413)	(302)	(191)	(80)	30	141
57%	(1,133)	(1,021)	(908)	(795)	(682)	(570)	(457)	(344)	(232)	(119)	(6)	106	219
58%	(1,079)	(964)	(850)	(735)	(620)	(506)	(391)	(276)	(162)	(47)	68	182	297
59%	(1,025)	(908)	(791)	(675)	(558)	(441)	(325)	(208)	(91)	25	142	259	375
60%	(970)	(852)	(733)	(614)	(496)	(377)	(258)	(140)	(21)	97	216	335	453
61%	(916)	(795)	(675)	(554)	(433)	(313)	(192)	(72)	49	170	290	411	531
62%	(861)	(739)	(616)	(494)	(371)	(249)	(126)	(3)	119	242	364	487	610
63%	(807)	(682)	(558)	(433)	(309)	(184)	(60)	65	189	314	439	563	688
64%	(753)	(626)	(500)	(373)	(247)	(120)	7	133	260	386	513	639	766
65%	(698)	(570)	(441)	(313)	(184)	(56)	73	201	330	458	587	715	844
66%	(644)	(513)	(383)	(252)	(122)	9	139	269	400	530	661	791	922
67%	(590)	(457)	(325)	(192)	(60)	73	205	338	470	603	735	868	1,000

Key Assumptions

Estimated Acquisition Cost	$3,576	CAPEX/Line/Month	$10	Cost of Equity	12.0%
Rehabilitation Costs	$300	Tax Rate	38.0%	Cost of Debt	11.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

Table 68: VALOR Oklahoma (GTE) Acquisition – Present Value of Future Cash Flows

Acquired EBITDA Margin	Revenue/Line/Month $46	$48	$50	$52	$54	$56	$58	$60	$62	$64	$66	$68	$70
45%	(1,867)	**(1,778)**	(1,689)	(1,600)	(1,511)	(1,423)	(1,334)	(1,245)	(1,156)	(1,067)	(978)	(889)	(800)
46%	(1,822)	(1,731)	(1,640)	(1,549)	(1,458)	(1,367)	(1,276)	(1,185)	(1,094)	(1,003)	(912)	(821)	(731)
47%	(1,776)	(1,683)	(1,591)	(1,498)	(1,405)	(1,312)	(1,219)	(1,126)	(1,033)	(940)	(847)	(754)	(661)
48%	(1,731)	(1,636)	(1,541)	(1,446)	(1,351)	(1,256)	(1,162)	(1,067)	(972)	(877)	(782)	(687)	(592)
49%	(1,685)	(1,589)	(1,492)	(1,395)	(1,298)	(1,201)	(1,104)	(1,007)	(910)	(814)	(717)	(620)	(523)
50%	(1,640)	(1,541)	(1,442)	(1,343)	(1,245)	(1,146)	(1,047)	(948)	(849)	(750)	(651)	(553)	(454)
51%	(1,595)	(1,494)	(1,393)	(1,292)	(1,191)	(1,090)	(990)	(889)	(788)	(687)	(586)	(485)	(385)
52%	(1,549)	(1,446)	(1,343)	(1,241)	(1,138)	(1,035)	(932)	(829)	(727)	(624)	(521)	(418)	(315)
53%	(1,504)	(1,399)	(1,294)	(1,189)	(1,084)	(980)	(875)	(770)	(665)	(561)	(456)	(351)	(246)
54%	(1,458)	(1,351)	(1,245)	(1,138)	(1,031)	(924)	(818)	(711)	(604)	(497)	(390)	(284)	(177)
55%	(1,413)	(1,304)	(1,195)	(1,086)	(978)	(869)	(760)	(651)	(543)	(434)	(325)	(217)	(108)
56%	(1,367)	(1,256)	(1,146)	(1,035)	(924)	(814)	(703)	(592)	(481)	(371)	(260)	(149)	(39)
57%	(1,322)	(1,209)	(1,096)	(984)	(871)	(758)	(646)	(533)	(420)	(307)	(195)	(82)	31
58%	(1,276)	(1,162)	(1,047)	(932)	(818)	(703)	(588)	(474)	(359)	(244)	(130)	(15)	100
59%	(1,231)	(1,114)	(997)	(881)	(764)	(648)	(531)	(414)	(298)	(181)	(64)	52	169
60%	(1,185)	(1,067)	(948)	(829)	(711)	(592)	(474)	(355)	(236)	(118)	1	120	238
61%	(1,140)	(1,019)	(899)	(778)	(657)	(537)	(416)	(296)	(175)	(54)	66	187	307
62%	(1,094)	(972)	(849)	(727)	(604)	(481)	(359)	(236)	(114)	9	131	254	377
63%	(1,049)	(924)	(800)	(675)	(551)	(426)	(302)	(177)	(52)	72	197	321	446
64%	(1,003)	(877)	(750)	(624)	(497)	(371)	(244)	(118)	9	135	262	388	515

Key Assumptions

Estimated Acquisition Cost	$3,576	CAPEX/Line/Month	$7	Cost of Equity	12.0%
Rehabilitation Costs	$200	Tax Rate	38.0%	Cost of Debt	11.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

Table 69: VALOR Texas (GTE) Acquisition – Present Value of Future Cash Flows

Acquired EBITDA Margin	Revenue/Line/Month $56	$58	$60	$62	$64	$66	$68	$70	$72	$74	$76	$78	$80
40%	(1,541)	(1,462)	(1,383)	**(1,304)**	(1,225)	(1,146)	(1,067)	(987)	(908)	(829)	(750)	(671)	(592)
41%	(1,486)	(1,405)	(1,324)	(1,243)	(1,161)	(1,080)	(999)	(918)	(837)	(756)	(675)	(594)	(513)
42%	(1,430)	(1,347)	(1,264)	(1,181)	(1,098)	(1,015)	(932)	(849)	(766)	(683)	(600)	(517)	(434)
43%	(1,375)	(1,290)	(1,205)	(1,120)	(1,035)	(950)	(865)	(780)	(695)	(610)	(525)	(440)	(355)
44%	(1,320)	(1,233)	(1,146)	(1,059)	(972)	(885)	(798)	(711)	(624)	(537)	(450)	(363)	(276)
45%	(1,264)	(1,175)	(1,086)	(997)	(908)	(819)	(730)	(642)	(553)	(464)	(375)	(286)	(197)
46%	(1,209)	(1,118)	(1,027)	(936)	(845)	(754)	(663)	(572)	(481)	(390)	(299)	(209)	(118)
47%	(1,154)	(1,061)	(968)	(875)	(782)	(689)	(596)	(503)	(410)	(317)	(224)	(131)	(39)
48%	(1,098)	(1,003)	(908)	(814)	(719)	(624)	(529)	(434)	(339)	(244)	(149)	(54)	41
49%	(1,043)	(946)	(849)	(752)	(655)	(558)	(462)	(365)	(268)	(171)	(74)	23	120
50%	(987)	(889)	(790)	(691)	(592)	(493)	(394)	(296)	(197)	(98)	1	100	199
51%	(932)	(831)	(730)	(630)	(529)	(428)	(327)	(226)	(126)	(25)	76	177	278
52%	(877)	(774)	(671)	(568)	(466)	(363)	(260)	(157)	(54)	48	151	254	357
53%	(821)	(717)	(612)	(507)	(402)	(298)	(193)	(88)	17	122	226	331	436
54%	(766)	(659)	(553)	(446)	(339)	(232)	(126)	(19)	88	195	302	408	515
55%	(711)	(602)	(493)	(384)	(276)	(167)	(58)	50	159	268	377	485	594
56%	(655)	(545)	(434)	(323)	(212)	(102)	9	120	230	341	452	563	673
57%	(600)	(487)	(375)	(262)	(149)	(37)	76	189	302	414	527	640	752
58%	(545)	(430)	(315)	(201)	(86)	29	143	258	373	487	602	717	831
59%	(489)	(373)	(256)	(139)	(23)	94	211	327	444	561	677	794	910

Key Assumptions

Estimated Acquisition Cost	$3,002	CAPEX/Line/Month	$10	Cost of Equity	12.0%
Rehabilitation Costs	$300	Tax Rate	38.0%	Cost of Debt	11.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

Table 70: Citizens Illinois (GTE) Acquisition – Present Value of Future Cash Flows

Acquired EBITDA Margin	Revenue/Line/Month $50	$52	$54	$56	$58	$60	$62	$64	$66	$68	$70	$72	$74
56%	(1,006)	(891)	(777)	(663)	(549)	(434)	(320)	(206)	(92)	23	137	251	366
57%	(955)	(838)	(722)	(606)	(489)	(373)	(257)	(140)	(24)	92	208	325	441
58%	(904)	(785)	(667)	(549)	(430)	(312)	(194)	(75)	43	162	280	398	517
59%	(853)	(732)	(612)	(491)	(371)	(251)	(130)	(10)	111	231	351	472	592
60%	(802)	(679)	(557)	(434)	(312)	(189)	(67)	55	178	300	423	545	668
61%	(751)	(626)	(502)	(377)	(253)	(128)	(4)	121	245	370	494	619	743
62%	**(700)**	(573)	(447)	(320)	(194)	(67)	59	186	313	439	566	692	819
63%	(649)	(520)	(392)	(263)	(134)	(6)	123	251	380	508	637	766	894
64%	(598)	(467)	(336)	(206)	(75)	55	186	317	447	578	708	839	970
65%	(547)	(414)	(281)	(149)	(16)	117	249	382	515	647	780	913	1,045
66%	(496)	(361)	(226)	(92)	43	178	313	447	582	717	851	986	1,121
67%	(445)	(308)	(171)	(34)	102	239	376	513	649	786	923	1,059	1,196
68%	(394)	(255)	(116)	23	162	300	439	578	717	855	994	1,133	1,272
69%	(343)	(202)	(61)	80	221	362	502	643	784	925	1,066	1,206	1,347
70%	(292)	(149)	(6)	137	280	423	566	708	851	994	1,137	1,280	1,423
71%	(240)	(96)	49	194	339	484	629	774	919	1,064	1,208	1,353	1,498
72%	(189)	(43)	104	251	398	545	692	839	986	1,133	1,280	1,427	1,574
73%	(138)	11	159	308	457	606	755	904	1,053	1,202	1,351	1,500	1,649
74%	(87)	64	215	366	517	668	819	970	1,121	1,272	1,423	1,574	1,725
75%	(36)	117	270	423	576	729	882	1,035	1,188	1,341	1,494	1,647	1,800

Key Assumptions

Estimated Acquisition Cost	$2,836	CAPEX/Line/Month	$12	Cost of Equity	13.0%
Rehabilitation Costs	$300	Tax Rate	38.0%	Cost of Debt	7.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

Table 71: Citizens Arizona (U S West) Acquisition – Present Value of Future Cash Flows

Acquired EBITDA Margin	Revenue/Line/Month												
	$48	$50	$52	$54	$56	$58	$60	$62	$64	$66	$68	$70	$72
47%	(1,513)	(1,418)	**(1,323)**	(1,227)	(1,132)	(1,037)	(941)	(846)	(751)	(655)	(560)	(465)	(369)
48%	(1,465)	(1,367)	(1,270)	(1,173)	(1,075)	(978)	(880)	(783)	(686)	(588)	(491)	(394)	(296)
49%	(1,416)	(1,317)	(1,217)	(1,118)	(1,018)	(919)	(820)	(720)	(621)	(522)	(422)	(323)	(223)
50%	(1,367)	(1,266)	(1,164)	(1,063)	(962)	(860)	(759)	(657)	(556)	(455)	(353)	(252)	(150)
51%	(1,319)	(1,215)	(1,112)	(1,008)	(905)	(801)	(698)	(595)	(491)	(388)	(284)	(181)	(77)
52%	(1,270)	(1,164)	(1,059)	(953)	(848)	(743)	(637)	(532)	(426)	(321)	(215)	(110)	(4)
53%	(1,221)	(1,114)	(1,006)	(899)	(791)	(684)	(576)	(469)	(361)	(254)	(146)	(39)	69
54%	(1,173)	(1,063)	(953)	(844)	(734)	(625)	(515)	(406)	(296)	(187)	(77)	32	142
55%	(1,124)	(1,012)	(901)	(789)	(678)	(566)	(455)	(343)	(231)	(120)	(8)	103	215
56%	(1,075)	(962)	(848)	(734)	(621)	(507)	(394)	(280)	(167)	(53)	61	174	288
57%	(1,027)	(911)	(795)	(680)	(564)	(448)	(333)	(217)	(102)	14	130	245	361
58%	(978)	(860)	(743)	(625)	(507)	(390)	(272)	(154)	(37)	81	198	316	434
59%	(929)	(810)	(690)	(570)	(451)	(331)	(211)	(92)	28	148	267	387	507
60%	(880)	(759)	(637)	(515)	(394)	(272)	(150)	(29)	93	215	336	458	580
61%	(832)	(708)	(584)	(461)	(337)	(213)	(90)	34	158	282	405	529	653
62%	(783)	(657)	(532)	(406)	(280)	(154)	(29)	97	223	349	474	600	726
63%	(734)	(607)	(479)	(351)	(223)	(96)	32	160	288	415	543	671	799
64%	(686)	(556)	(426)	(296)	(167)	(37)	93	223	353	482	612	742	872
65%	(637)	(505)	(373)	(242)	(110)	22	154	286	418	549	681	813	945
66%	(588)	(455)	(321)	(187)	(53)	81	215	349	482	616	750	884	1,018

Key Assumptions

Estimated Acquisition Cost	$3,030	CAPEX/Line/Month	$10	Cost of Equity	13.0%
Rehabilitation Costs	$200	Tax Rate	38.0%	Cost of Debt	7.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

Table 72: Citizens New York (Frontier) Acquisition – Present Value of Future Cash Flows

Acquired EBITDA Margin	Revenue/Line/Month												
	$48	$50	$52	$54	$56	$58	$60	$62	$64	$66	$68	$70	$72
50%	(1,352)	(1,251)	(1,149)	(1,048)	(946)	(845)	(744)	(642)	(541)	(439)	(338)	(236)	(135)
51%	(1,303)	**(1,200)**	(1,096)	(993)	(890)	(786)	(683)	(579)	(476)	(372)	(269)	(165)	(62)
52%	(1,255)	(1,149)	(1,044)	(938)	(833)	(727)	(622)	(516)	(411)	(305)	(200)	(95)	11
53%	(1,206)	(1,098)	(991)	(883)	(776)	(668)	(561)	(453)	(346)	(239)	(131)	(24)	84
54%	(1,157)	(1,048)	(938)	(829)	(719)	(610)	(500)	(391)	(281)	(172)	(62)	47	157
55%	(1,109)	(997)	(885)	(774)	(662)	(551)	(439)	(328)	(216)	(105)	7	118	230
56%	(1,060)	(946)	(833)	(719)	(606)	(492)	(378)	(265)	(151)	(38)	76	189	303
57%	(1,011)	(896)	(780)	(664)	(549)	(433)	(318)	(202)	(86)	29	145	260	376
58%	(963)	(845)	(727)	(610)	(492)	(374)	(257)	(139)	(22)	96	214	331	449
59%	(914)	(794)	(675)	(555)	(435)	(316)	(196)	(76)	43	163	283	402	522
60%	(865)	(744)	(622)	(500)	(378)	(257)	(135)	(13)	108	230	352	473	595
61%	(817)	(693)	(569)	(445)	(322)	(198)	(74)	49	173	297	421	544	668
62%	(768)	(642)	(516)	(391)	(265)	(139)	(13)	112	238	364	490	615	741
63%	(719)	(591)	(464)	(336)	(208)	(80)	47	175	303	431	559	686	814
64%	(670)	(541)	(411)	(281)	(151)	(22)	108	238	368	498	627	757	887
65%	(622)	(490)	(358)	(226)	(95)	37	169	301	433	565	696	828	960
66%	(573)	(439)	(305)	(172)	(38)	96	230	364	498	632	765	899	1,033
67%	(524)	(389)	(253)	(117)	19	155	291	427	563	698	834	970	1,106
68%	(476)	(338)	(200)	(62)	76	214	352	490	627	765	903	1,041	1,179
69%	(427)	(287)	(147)	(7)	133	273	413	552	692	832	972	1,112	1,252

Key Assumptions

Estimated Acquisition Cost	$3,406	CAPEX/Line/Month	$7	Cost of Equity	13.0%
Rehabilitation Costs	$200	Tax Rate	38.0%	Cost of Debt	7.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

Table 73: Citizens Minnesota (GTE) Acquisition – Present Value of Future Cash Flows

Acquired EBITDA Margin	Revenue/Line/Month $47	$49	$51	$53	$55	$57	$59	$61	$63	$65	$67	$69	$71
50%	(1,666)	(1,564)	(1,463)	(1,361)	(1,259)	(1,158)	(1,056)	(954)	(853)	(751)	(649)	(548)	(446)
51%	(1,618)	(1,514)	(1,411)	(1,307)	(1,203)	(1,100)	(996)	(892)	(788)	(685)	(581)	(477)	(374)
52%	(1,570)	(1,465)	(1,359)	(1,253)	(1,147)	(1,042)	(936)	(830)	(724)	(619)	(513)	(407)	(302)
53%	(1,522)	(1,415)	(1,307)	(1,199)	(1,091)	(984)	(876)	(768)	(660)	(553)	(445)	(337)	(229)
54%	(1,475)	(1,365)	(1,255)	(1,145)	(1,036)	(926)	(816)	(706)	(596)	(487)	(377)	(267)	(157)
55%	(1,427)	(1,315)	(1,203)	(1,091)	(980)	(868)	(756)	(644)	(532)	(420)	(309)	(197)	(85)
56%	(1,379)	(1,265)	(1,151)	(1,038)	(924)	(810)	(696)	(582)	(468)	(354)	(241)	(127)	(13)
57%	(1,331)	(1,215)	(1,100)	(984)	(868)	(752)	(636)	(520)	(404)	(288)	(172)	(56)	59
58%	(1,284)	(1,166)	(1,048)	(930)	(812)	(694)	(576)	(458)	(340)	(222)	(104)	14	132
59%	(1,236)	(1,116)	(996)	(876)	(756)	(636)	(516)	(396)	(276)	(156)	(36)	84	204
60%	(1,188)	(1,066)	(944)	(822)	(700)	(578)	(456)	(334)	(212)	(90)	32	154	276
61%	(1,140)	(1,016)	(892)	(768)	(644)	(520)	(396)	(272)	(148)	(24)	100	224	348
62%	(1,092)	(966)	(840)	(714)	(588)	(462)	(336)	(210)	(84)	42	168	294	420
63%	(1,045)	(917)	(788)	(660)	(532)	(404)	(276)	(148)	(20)	108	236	364	492
64%	(997)	(867)	(737)	(607)	(476)	(346)	(216)	(86)	44	174	304	435	565
65%	(949)	(817)	(685)	(553)	(420)	(288)	(156)	(24)	108	240	373	505	637
66%	(901)	(767)	(633)	(499)	(365)	(230)	(96)	38	172	306	441	575	709
67%	(854)	(717)	(581)	(445)	(309)	(172)	(36)	100	236	373	509	645	781
68%	(806)	(668)	(529)	(391)	(253)	(114)	24	162	300	439	577	715	853
69%	(758)	(618)	(477)	(337)	(197)	(56)	84	224	364	505	645	785	926

Key Assumptions

Estimated Acquisition Cost	$3,330	CAPEX/Line/Month	$10	Cost of Equity	13.0%
Rehabilitation Costs	$200	Tax Rate	38.0%	Cost of Debt	7.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

Table 74: Citizens Arizona (GTE) Acquisition – Present Value of Future Cash Flows

Acquired EBITDA Margin	Revenue/Line/Month $84	$86	$88	$90	$92	$94	$96	$98	$100	$102	$104	$106	$108
46%	(378)	(284)	(191)	(97)	(4)	90	184	277	371	464	558	651	745
47%	(292)	(197)	(101)	(6)	90	186	281	377	472	568	663	759	855
48%	(207)	(109)	(12)	86	184	281	379	476	574	672	769	867	964
49%	(121)	(22)	78	177	277	377	476	576	676	775	875	974	1,074
50%	(36)	66	167	269	371	472	574	676	777	879	981	1,082	1,184
51%	49	153	257	360	464	568	672	775	879	983	1,086	1,190	1,294
52%	135	240	346	452	558	663	769	875	981	1,086	1,192	1,298	1,404
53%	220	328	436	543	651	759	867	974	1,082	1,190	1,298	1,406	1,513
54%	306	415	525	635	745	855	964	1,074	1,184	1,294	1,404	1,513	1,623
55%	391	503	615	726	838	950	1,062	1,174	1,286	1,397	1,509	1,621	1,733
56%	476	590	704	818	932	1,046	1,160	1,273	1,387	1,501	1,615	1,729	1,843
57%	562	678	794	909	1,025	1,141	1,257	1,373	1,489	1,605	1,721	1,837	1,952
58%	647	765	883	1,001	1,119	1,237	1,355	1,473	1,591	1,708	1,826	1,944	2,062
59%	733	852	972	1,092	1,212	1,332	1,452	1,572	1,692	1,812	1,932	2,052	2,172
60%	818	940	1,062	1,184	1,306	1,428	1,550	1,672	1,794	1,916	2,038	2,160	2,282
61%	903	1,027	1,151	1,275	1,399	1,523	1,647	1,772	1,896	2,020	2,144	2,268	2,392
62%	989	1,115	1,241	1,367	1,493	1,619	1,745	1,871	1,997	2,123	2,249	2,375	2,501
63%	1,074	1,202	1,330	1,458	1,586	1,715	1,843	1,971	2,099	2,227	2,355	2,483	2,611
64%	1,160	1,290	1,420	1,550	1,680	1,810	1,940	2,070	2,201	2,331	2,461	2,591	2,721
65%	1,245	1,377	1,509	1,641	1,774	1,906	2,038	2,170	2,302	2,434	2,567	2,699	2,831

Key Assumptions

Estimated Acquisition Cost	$3,397	CAPEX/Line/Month	$12	Cost of Equity	13.0%
Rehabilitation Costs	$300	Tax Rate	38.0%	Cost of Debt	7.0%

The dark box represents the combination of revenue/line and EBITDA margin (including overhead) from the 1999 FCC filing.

Source: Legg Mason Wood Walker, Inc.

APPENDIX TWO

RURAL REGULATORY PRIMER

In Legg Mason's RLEC Monitor, we publish quarterly statistics and perspectives on rural telephone companies. In the Spring 2001 Monitor, we introduced an extensive overview of regulation, with a special focus on universal service issues. Because of the importance of these issues to the acquisition process, this appendix presents an abridged form of the presentation found in that Monitor.

UNIVERSAL SERVICE UPDATE

Focus on USF intensifies as investors seek understanding of financial impacts of reform.

During the time we have been covering local exchange carriers, there have been relatively few questions about the Universal Service Fund (USF) except that periodically an investor or two would ask general and summary questions about whether USF was likely to change in the near term or was at risk in the longer term. Over the last several months, investors have been much more specific, wanting to understand how USF has worked, the precise ways it is changing with the new FCC Order and what is the financial import for the individual companies. We provide a graphical depiction of the interstate access charges and universal service in **Figure 39**. Key issues addressed in this section are the following.

- The FCC approved the universal service reform on May 10, 2001 (Order issued on May 23), essentially affirming, for the next five years, a payment system consistent with the former system; there appears to be no truly negative development.

- The reform makes available additional payments for high-cost loops and for incremental investment in properties acquired from other carriers, which is an improvement over the current system.

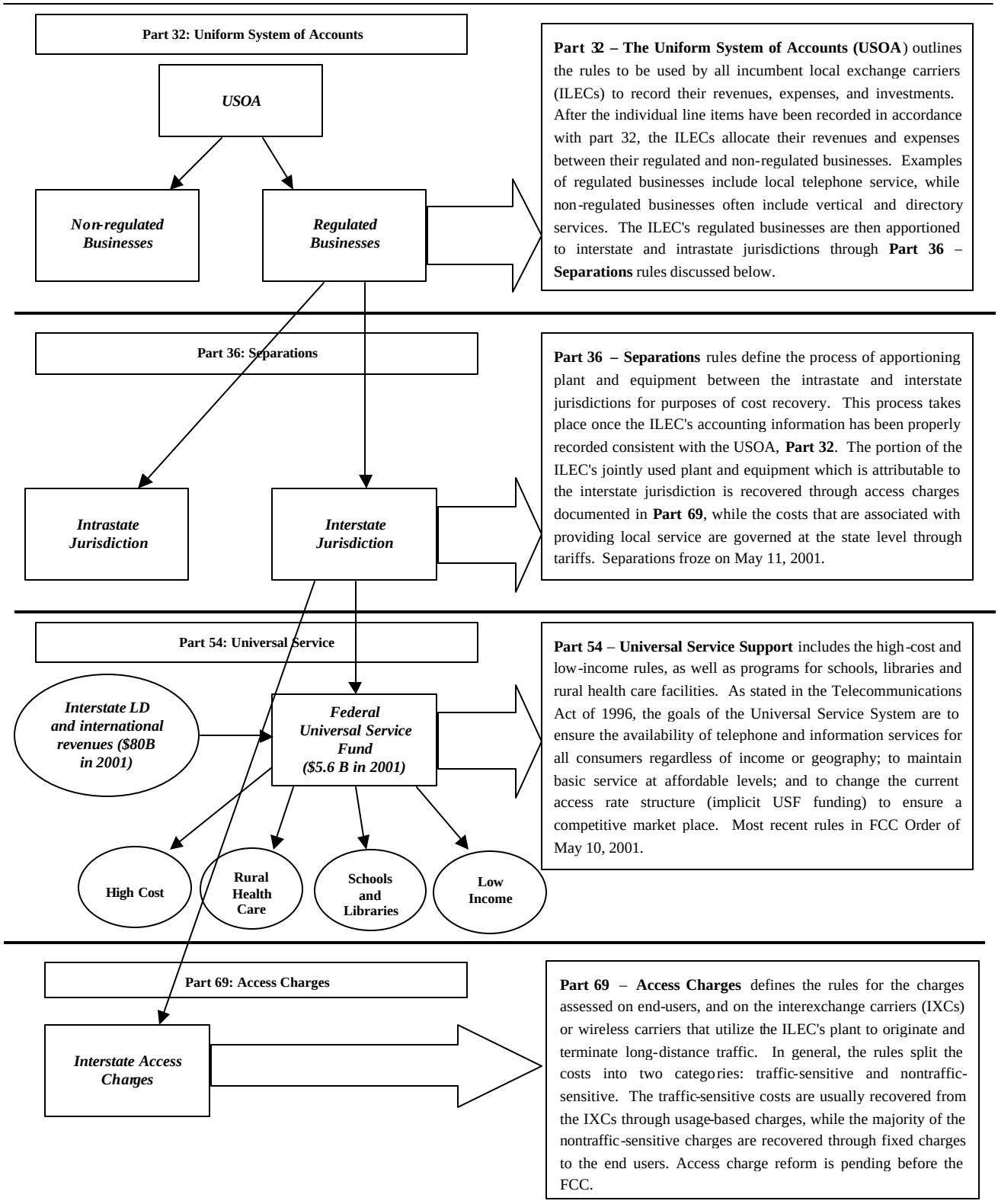
- The Fifth Circuit Court also ruled on May 3, 2001, that the Telecom Act of 1996 required the FCC to make explicit the support systems that are embedded in access charges, and that it was not acceptable for the FCC to leave the support systems as implicit elements in access; accordingly, the FCC stated on May 10 that it would be resolving promptly the access charge reform for rural carriers.

- As the burden of USF has grown and long-distance revenues have fallen, the FCC has decided to propose another reform of how it collects USF monies from long-distance and other carriers in order to make the process more equitable; on May 8, 2001, the Commission issued a Notice of Proposed Rulemaking related to the potential change (reply comments were due at end of June).

- In this section, we summarize the mechanics of USF collections, highlighting that program costs have risen to about $5.6 billion annually, while the contribution factor assessed on the revenues of the interstate and international carriers rose to 6.9% in 2Q01 from 5.7% in 2Q00.

- We present the principal support programs of USF with specific data that highlight the size of the funds over the last three years and the company-by-company data related to the specific support programs.

Figure 39: Federal Universal Service and Access Charge Road Map



Source: NECA; Legg Mason Wood Walker, Inc.

FCC APPROVES RTF UNIVERSAL SERVICE REFORM PLAN

On May 10, 2001, the FCC approved, effective July 1, 2001, the substance of the Rural Task Force's universal service fund reform. Continuing public policy that dates back to the early part of the 1900s, and the evolution of the funds in the post-AT&T-divestiture period (1984–1986), today's USF supports customers in rural areas as well as low-income residents by absorbing the costs that are often much higher than those in urban regions, in order to maintain rates that are comparable to those in urban communities. The Telecom Act of 1996 reaffirmed that commitment and added a new USF mandate (U.S.C. § 254 (b)) to support essential services other than voice, including Internet access for schools and libraries. In the wake of the Act, the specific reform was assigned to the Federal-State Joint Board on March 8, 1996, and then, in July 1998, to the Joint Board's Rural Task Force (RTF), chaired by Washington state commissioner, Dr. William Gillis. Finally, the RTF submitted its proposed plan for Universal Service reform in September 2000, the FCC approved the substance of that plan on May 10, 2001, and the order was published May 23, 2001.

We believe that the USF reform is a positive for rural carriers and investors as it allows for certainty and stability.

SUMMARY OVERVIEW OF FCC ORDER

In summary, we view the FCC's Order to be positive for rural carriers, as the FCC's action reaffirms a stable USF system, allowing more certainty for investors and for the companies, but we also believe that incentives provided to promote investment in both legacy and acquired telephone plant seem to be minimal. The plan also adopts provisions that raise the funds available to rural telephone companies and their customers, including allowing for incentives as carriers make investments after they have acquired lines.

The key terms are generally consistent with the RTF's proposals, including the following:

(1) a reaffirmation of the USF system for five years, to provide affordable service in rural regions at rates that are comparable to those in urban regions;

(2) the use of a modified embedded-cost approach in calculating USF rather than a forward-looking (lower-cost) method;

(3) resetting the high-cost loop support fund higher by an estimated $125 million and allowing for annual inflation and line growth adjustments to the fund;

(4) providing for competitive neutrality if a competitor is approved to serve a particular region, the FCC ruled that the competitor is eligible for USF funds per line;

(5) the disaggregation of USF support within the telephone company's central offices to better match USF with high-cost

lines and to remove some elements of arbitrage if and when competitors enter a region;

(6) the adoption of a "safety valve" that will provide support for additional investment made in exchanges acquired from RBOCs; the safety valve could positively aid Citizens and CenturyTel and others that have demonstrated a desire to accumulate rural access lines; and

(7) a very positive modification of the RTF's proposal that apparently occurred at the eleventh hour when the FCC rejected the RTF's suggestion that, when a competitor enters an ILEC's region, the USF loop payments per line would be fixed at a specific level; the FCC stated (rightly, in our view) that the fixing of the payments per line would disincent future investment, so the loop support is not to be frozen when a competitor enters a market.

FCC postpones decision on access reform, most likely due to the complexity of issues, in our opinion.

The FCC chose to postpone the access charge reform proposed by the ILEC Multi-Association Group (MAG) as well as related suggestions of the Rural Task Force. The RTF had proposed a High Cost Fund III (HCF), which would be a new USF support element. The RTF intended that the HCF make up any revenue shortfall that might occur initially if rural access rates fall and the proposed new fixed charges on the customer's bill fail to offset the decline. In our view, the FCC's decision to postpone is due to the complexity of the access charge reform, the number and diversity of companies involved, and the concern that the proposals should be acceptable to a broad coalition of stakeholders. At the same time, we would be surprised if the FCC were to take an access charge position that hurt the rural carriers, given the broad support in the Senate for rural interests. The Commission indicated that there would be prompt action on the access charge proposals; we believe that implementation is possible on January 1, 2002 or July 1, 2002.

FCC provides incentives, albeit nominal in size, for rural carriers to invest in both legacy and acquired telecommunications plant.

The Commission also created additional "above-the-cap" incentives for investment in telecommunications plant for both legacy properties and acquired properties, but we estimate that the incremental funds are very modest. The FCC introduced a "safety valve" that allows nominal cost recovery for additional investment in recently acquired access lines, as well as a "safety net" that promotes investment by small rural companies that experience extraordinary investment above a previous year's investment. While we view both mechanisms as positive for rural carriers, as no such incentives existed before, our initial conclusion is that the overall financial impact for most carriers will be minimal (little or nothing). We also believe that the investment case for additional investment in telecom plant will likely be made without serious consideration of these new support mechanisms.

For rural carriers, the only negative that we found in the decision is not new news. The FCC adopted the RTF's proposal to make USF payments portable so that a

competitor would get the per-line USF payment if the competitive carrier (1) were approved as an eligible telecommunications carrier (ETC) in the specific market and (2) were to win customers. The RTF and the FCC saw the principle of portability as important in light of the Telecom Act's goal of fostering competition, but added the option of disaggregation, whereby an RLEC can apportion its USF funds with a higher percentage assigned to high-cost zones and lower USF percentage to low-cost zones.

In summary, the FCC decision appears to be encouraging for smaller ILECs that are currently under interstate rate-of-return regulation, as they will continue to receive explicit support based on embedded costs and will have the opportunity to collect up to $1.2 billion in additional loop funding over the next five years (possibly more than a 25% increase).

SEPARATIONS FREEZE ORDERED BY FCC

FCC freezes "separations" structure for five years, and allows a one-time option for rate-of-return carriers to freeze category relationships.

On May 11, 2001, the FCC ordered an interim freeze on the separations process that is outlined in Telecommunications Part 36 of the Code of Federal Regulations. The separations rules permit the carrier to allocate regulated costs between the intrastate and interstate jurisdictions for revenue recovery. Once the interstate regulated costs are allocated, the cost basis for the company's interstate access tariffs can be determined, and the intrastate costs are applied to formulate the carriers' intrastate rate base, expenses and taxes. In the May 2001 Separations Order, the FCC froze the category relationships and jurisdictional allocation factors for price cap carriers and froze the allocation factors for rate-of-return carriers as of July 1, 2001, effective through June 30, 2006, or until the Commission has completed comprehensive reforms of the Part 36 separations rules. Importantly, the Commission also granted rate-of-return carriers a one-time option to freeze their category relationships by July 1, 2001, based on their calendar year 2000 percentage ratios. The option allows carriers the flexibility to decide, based on the company's individual circumstances and investment plans, whether or not a freeze of its category relationships will be beneficial. The freeze also apparently allows all companies some relief from the current Automated Reporting Management Information System (ARMIS) reporting structure, which is intended to ease much of the compilation and reporting burden imposed on smaller telcos.

FIFTH CIRCUIT DECISION ON IMPLICIT SUBSIDIES

Fifth Circuit rules that USF support may not be included in access charges.

In a decision on May 3, 2001, the Fifth Circuit Court rendered an important decision regarding a dispute over Universal Service and access charges. The Court ruled that the "FCC cannot maintain any implicit subsidies whether on a permissive or mandatory basis" since recouping universal services costs through access charges is contrary to the plain language of § 254(e) of the Telecom Act of 1996.

The import of the decision, unless overturned by the Supreme Court, is that the FCC must establish rules for collection of universal service without reliance on implicit subsidies. While the current discipline of implicit subsidies is not changed, the FCC must move expeditiously in the reform process that is already under way. Further, the FCC may not choose *inaction* or *maintain the status quo*. Support systems are to be explicit, according to the Act.

The Fifth Circuit ruling is the backdrop for the FCC's commentary on May 10 that it would move promptly to resolve the access charge reform as proposed by the Multi-Association Group and, to a lesser extent, the RTF. We expect the reform to follow the MAG proposal with respect to the access charge reductions, with origination or termination charges possibly dropping from approximately 4 cents a minute to 1.6 cents (there is another proposal that they drop to $0.0095), a new subscriber line charge (SLC) that precisely tracks the SLC increase for non-rural carriers, and a new fund that makes up any potential revenue shortfall for rural carriers. The other aspects of the MAG plan (related to incentive regulation and optional participation) have drawn more criticism than the access portions of the plan. We expect an FCC decision within two or three months, with full implementation on January 1, 2002 or possibly July 1, 2002.

We anticipate access reform to follow the MAG proposal — dropping access charges to 1.6 cents per minute or slightly lower, creating a new SLC, and establishing a new revenue shortfall fund.

NOTICE OF PROPOSED RULEMAKING

In a separate but related action, the Commission released a Notice of Proposed Rulemaking (NPRM) on May 8, 2001, seeking comments on how to streamline and reform the system by which interstate and international carriers are assessed contributions to the USF. Presently, IXCs (interexchange carriers) and cellular carriers are required to contribute a portion of their interstate long-distance and international call revenue to maintain funding for the USF (more about the mechanics follows). Most carriers then bill the end user through a line item on the customer's phone bill, to recover the companies' costs. Citing an increase in the number of long-distance and mobile-phone companies, as well as the complexity created through the bundling of many telecommunications services, the FCC has concluded that changes need to be made in the way each company's contribution is calculated.

NPRM seeks to streamline and reform system for assessing contributions to USF.

SPECIFIC CONCERNS OF THE FCC

Through the NPRM, the FCC is seeking comment on several proposals to make the contribution "fair and understandable for consumers, as well as simple for carriers to implement." The FCC is concerned that some IXCs are overcharging customers for the contributions, and in some instances, carriers have chosen to recover the contributions from certain classes of customers only. The Commission has proposed limiting the approach used by carriers to recover their costs from their customers, such as a uniform line description, and requiring that the line item amounts be no larger than the contribution assessment. The Commission also is considering whether or not to require carriers to contribute based on revenue collected rather than billed. Several carriers have argued that

FCC believes that some IXCs may be overcharging customers for USF contributions, or perhaps targeting only certain customers.

the existing methodology, which is based on historical revenues, may give competitive advantages to new entrants, while harming carriers with declining revenues. Accordingly, the Commission is evaluating whether to calculate the contribution factor based either on projected or historical carrier end-user revenues, with the result that carriers would be required to contribute, on a monthly basis, an amount equal to this factor multiplied by collected interstate and international end-user revenue. Also, the current interval between the reporting of revenues and the assessment of carrier contributions is approximately six months. The Commission is interested in reducing the interval. The final major issue is whether to implement a flat "per-unit" charge, such as a fixed per-line or per-account assessment. The FCC is considering the calculation of a flat assessment on a quarterly basis using projected or historical line counts or number of accounts. The amount of the charge would be the same, regardless of the level of revenue or traffic associated with a given line or account. This would enable the FCC to avoid the confusion arising from bundled telecommunications products, which can distort the reported interstate and international revenues.

COMMENTS AND REPLIES WERE DUE IN JUNE

The FCC required that comments were to be submitted by mid-June. The FCC is expected to revisit these proposals in the second half of the year.

UNDERSTANDING FEDERAL USF CONTRIBUTIONS

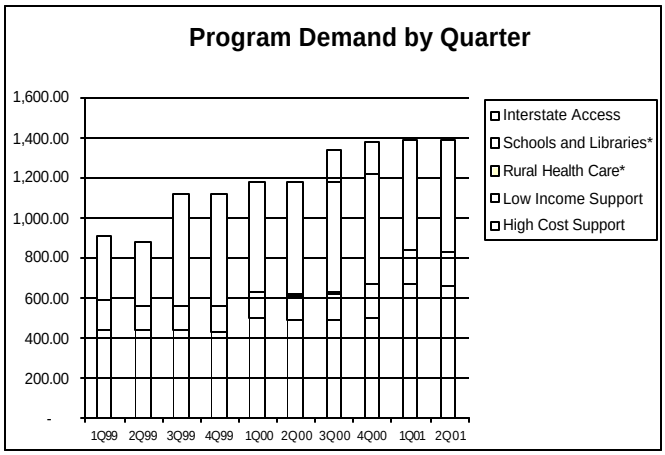
In order to better appreciate the FCC's decisions and the proposed rule changes previously discussed, it is helpful to have an understanding of the size of the projected federal USF funds and costs, the revenue base from which the contributions are drawn, and the computation of the contribution factors.

PROGRAM COSTS AND FUNDS

USAC is responsible for submitting quarterly projections of expenses and payments for the USF to the FCC.

The Universal Service Administrative Company (USAC), a subsidiary of NECA, is responsible for submitting to the FCC the quarterly projections of the expenses and payments for the universal service fund, including both demand (program costs) and administration. The total of the cost and fund elements is then reduced by interest income received on the fund balances and any period true-ups (adjustments for previous periods in which the payments were too high or low). The net result is the total program collection figure that must be funded for the upcoming quarter. **Figure 40** illustrates the estimated quarterly USF program demand of the various USF programs from 1999–2000. Notably, a new element appeared in 3Q00, which was the support made explicit in the Access Reform for price-cap companies implemented July 1, 2000. The annual $650 million in funds stay at the price-cap carriers to support lower access rates.

Figure 40: Estimated USF Quarterly Program Costs (in millions)



Program Demand - 1999	1Q99	2Q99	3Q99	4Q99	1999
High Cost Support	439.10	433.30	432.80	432.20	1,737.40
Low Income Support	144.00	124.80	122.70	122.30	513.80
Rural Health Care*	-	-	-	3.30	3.30
Schools and Libraries*	319.90	318.20	555.70	562.50	1,756.30
Total	903.00	876.30	1,111.20	1,120.30	4,010.80

Program Demand - 2000	1Q00	2Q00	3Q00	4Q00	2000
High Cost Support	498.13	487.69	648.36	657.26	2,291.43
Low Income Support	128.71	125.71	133.06	164.04	551.51
Rural Health Care*	2.23	3.34	4.63	2.53	12.73
Schools and Libraries*	552.71	555.23	554.85	552.49	2,215.29
Total	1,181.77	1,171.97	1,340.91	1,376.31	5,070.96

Program Demand - 2001	1Q01	2Q01	3Q01	4Q01	2001
High Cost Support	667.22	653.17	-	-	-
Low Income Support	168.61	176.43	-	-	-
Rural Health Care*	2.43	1.89	-	-	-
Schools and Libraries*	553.23	554.88			
Total	1,391.48	1,386.36	-	-	-

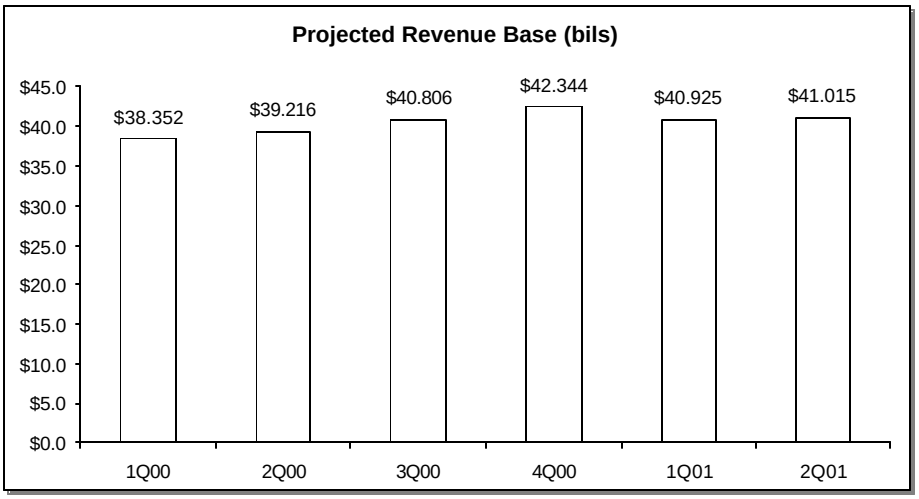
Source: USAC and Legg Mason Wood Walker, Inc.

REVENUE BASE

To fund the program costs and USF payments, USAC estimates the total end-user telecommunications revenues generated through interstate and international services over a six-month period and applies a contribution factor to the estimated revenue base. **Figure 41** presents the recent quarterly estimates related to the semiannual revenue base used in the calculation of the contributions to the fund. There are three notable points: (1) USAC engages in a quarterly estimation process, (2) the present system of calculation uses data that are as much as a year old, and (3) the revenue base from long-distance and international settlements currently is expected to contract as the rate per minute for long-distance service continues to decline.

All interstate long-distance and international telecommunications revenues are included in the estimated revenue base for USF contribution calculations.

Figure 41: USF Projected Revenue Base by Quarter



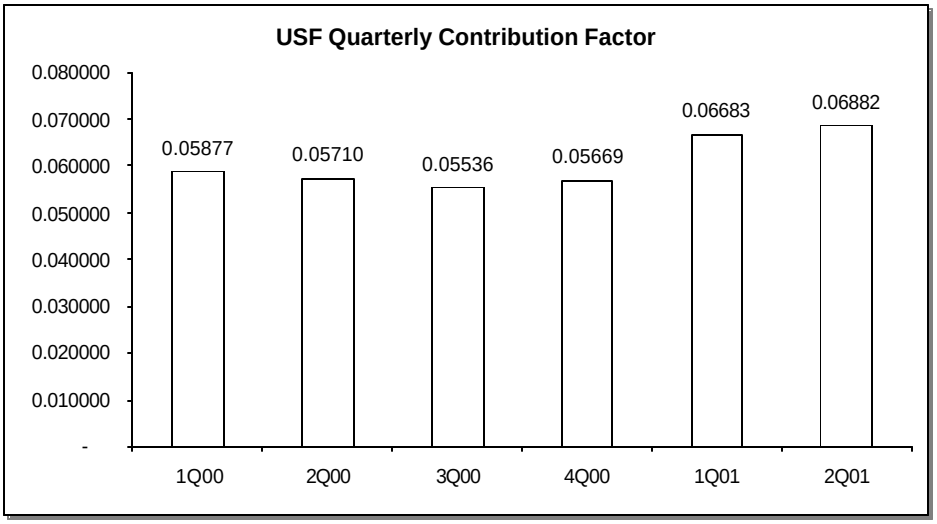
Source: FCC and Legg Mason Wood Walker, Inc.

CONTRIBUTION FACTOR

The quarterly contribution factor is calculated as the ratio of estimated program expenses to the projected revenue base.

Once the funding requirement (program cost) has been defined and the revenue base determined, the Common Carrier Bureau of the FCC simply calculates and publishes a quarterly contribution factor, which is defined as the ratio of the total program costs to the total end-user revenues generated from interstate and international telecommunications. After the factor has been determined, a per-line charge is assessed monthly on long-distance carriers that have at least 0.05% of the total common lines presubscribed in an individual "study area." Assessments are based on the contributor's proportionate end-user interstate and international telecommunications revenues and the projected fund size. **Figure 42** illustrates the quarterly contribution factors since 1Q00. The upward trend in the contribution factor is partially the result of increasing program costs, but is likely to be affected by the declining revenue base.

Figure 42: Quarterly USF Contribution Factors



Source: FCC and Legg Mason Wood Walker, Inc.

The increase in the contribution factor is due to a declining revenue base and increasing program costs.

To better illustrate the process, we have included **Figure 43**, which presents the actual calculation for the 2Q01 quarterly contribution factor. It includes all of the components of USF, including aid for low-income customers as well as the support payments for schools, libraries and health care that were mandated by the Telecom Act of 1996. The high-cost line item includes the rural telephone companies' receipts of high cost loop support, local switching support and long-term support. Thus, the 2Q01 program requires a quarterly funding of $1.397 billion, which is to be assessed from international and interstate revenues that are estimated to be $41.0147 billion for the next six months. The revenue base is divided by two to arrive at the quarterly revenue estimate, then adjusted for bad debt, and the remainder is divided into the targeted USF figure to arrive at the contribution factor.

Figure 43: 2Q01 USF Contribution Factor Calculation

USAC Projections of Program Costs (2Q01) ($ in mils)

Program	Projected Program	Admin. Exp.	Interest	True-ups	Total Program
Schools and libraries	554.88	7.62	(19.92)	3.16	545.74
Rural health care	1.89	0.77	(0.05)	0.01	2.63
High-cost	653.17	1.68	(1.40)	25.26	678.71
Low income	176.43	0.43	(0.80)	(5.86)	170.20
Total	1,386.36	10.50	(22.17)	22.58	1,397.27

We present a sample quarterly contribution calculation to aid in understanding the process.

USAC Estimate of End-User Revenues (January 1, 2000 – June 30, 2000)

From Form 499–A: $41.0147 billion

Contribution Base

(Six-month Interstate and International Revenues / 2) – 1% (uncollectibles)

($41.0147 billion / 2) – 1%

Contribution base = $20.30 billion

Contribution Factor

Total program costs / Contribution base

$1.397 billion / $20.30 billion

Contribution Factor = 0.068823

Source: Federal Communications Commission and Legg Mason Wood Walker, Inc.

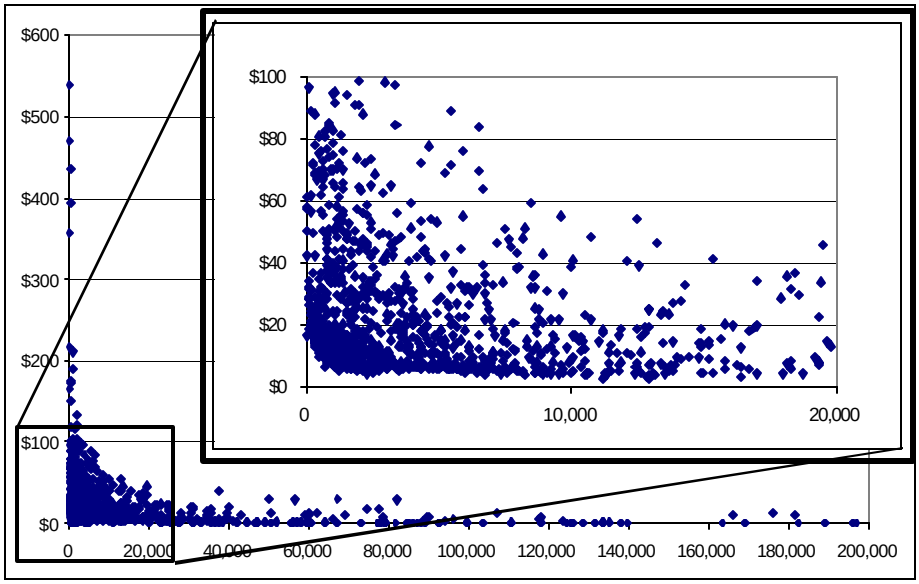
USF DATA — WHO GETS WHAT?

One of the key tenets of the Telecom Act of 1996 is the principle that quality access to advanced telecommunications and information services should be made available to all regions of the nation at rates that are just, reasonable and affordable. Specifically, consumers in all regions, including rural and high-cost areas, should have access at rates that are reasonably comparable to fees charged for the same services in urban areas. Since the passage of the Act, the FCC has reformed Universal Service Support mechanisms to include the special funds for schools, libraries and health care, adding them to the fund for low-income customers, and three high-cost operating funds — local switching support, high-cost loop support, and long-term support.

The rationale for the USF is clearly that access lines in less densely populated areas are generally higher cost, and the public policy committed to low rates means that support is necessary for those consumers. To provide perspective on the payments made for the operating funds — high-cost loop, local switching support and long-term support — we have prepared a scatter plot in **Figure 44** that represents the majority of USF-eligible study areas of the 1,300 local telephone companies and the total *monthly* USF that the companies receive on a per-line basis. We have truncated the x-axis at 20,000 lines per study area and the y-axis at $100 per line to better show the range of per line values within the "lower-left corner" of the graph. The graphic illustrates the point that the range of total USF subsidies per line is widely dispersed, depending on the mix of high-cost loop, local switching and long-term support received, and that there is a hyperbolic curve that follows the two axes, including a near-vertical section beginning at about $30 per line for companies with very few lines, rapidly dropping as the study area approaches 1,000 access lines, at which point the line becomes nearly horizontal along the x-axis at $3–$4 per line. The companies that establish the upper range of values in the scatter plot serve the most rural geographies, predominantly in western, less-densely populated states. The study areas that are represented in the points above and to the right in the graphic are generally characterized by very high loop costs, where there are factors such as long loops, rugged terrain or water problems.

Scatter plot highlights shape of USF funding curve that is nearly vertical when carriers have fewer than 1,000 lines, and then becomes horizontal above 1,000 lines at about $3–$4 per line monthly.

Figure 44: Monthly USF per line versus Lines per Study Area



Source: USAC and Legg Mason Wood Walker, Inc.

We now turn to more detailed operating-related USF received by the individual RLECs. We wish to point out that we maintain much more detailed quarterly data for each of the companies by study area, which is an interesting analysis in

itself because of the wide variance in payments even within a company's service area, but for this report, we have simply totaled the data in order to offer summaries at the operating company level.

LOCAL SWITCHING SUPPORT

Local switching support is designed to aid carriers that serve study areas with less than 50,000 access lines.

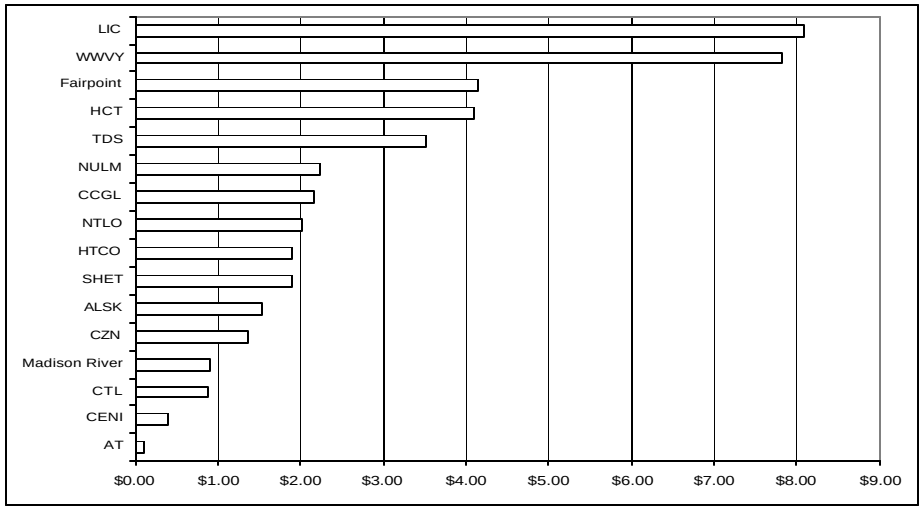
The Code of Federal Regulations (CFR) part 54 (see **Figure 39: Federal Universal Service and Access Charge Road Map** on page 175) outlines the rules and regulations related to Universal Service. The rules (§54.301) related to local switching support (LSS) were set in 1997, replacing the traffic-sensitive switching support derived from Dial Equipment Minutes (DEM) with a new LSS fund paid to an ILEC or an Eligible Telecommunications Carrier (ETC) designated by the state public utility commission. The funds are available to carriers that have study areas serving no more than 50,000 access lines. LSS offsets a carrier's high fixed costs in traffic-sensitive switching when there are relatively few telephone lines over which to spread those high costs. **Table 75** details the amount of monthly per line LSS, and then totals the quarterly LSS received by each of the public companies. In **Figure 45**, we provide the current monthly data, sorted by payments per line that the individual RLECs receive. Thus, Lynch and WVT Communications receive the highest payments per line, while Alltel, Conestoga and CenturyTel receive relatively low payments. At the same time, because of the number of lines that are served, the largest aggregate amounts are received by TDS and Citizens.

Table 75: Monthly Per Line Local Switching Support (LSS) (with Quarterly Totals)

Local Switching Support	1Q99	2Q99	3Q99	4Q99	1Q00	2Q00	3Q00	4Q00	1Q01	1Q01 Total $
ALSK	$1.38	$1.38	$1.63	$1.14	$1.68	$1.68	$1.72	$1.72	$1.53	$1,513,131
AT	$0.21	$0.21	$0.19	$0.20	$0.18	$0.18	$0.18	$0.18	$0.12	$835,509
CCGL	$0.55	$2.64	$2.64	$2.64	$2.58	$2.58	$2.58	$2.58	$2.17	$283,770
CENI	$0.59	$0.59	$0.55	$0.55	$0.56	$0.56	$0.56	$0.56	$0.41	$97,425
CTCI	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0
CTCO	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0
CTL	$1.57	$1.60	$1.54	$1.41	$1.36	$1.36	$0.95	$0.88	$0.88	$4,672,626
CZN	$1.81	$1.81	$1.81	$1.81	$1.63	$1.63	$1.63	$1.63	$1.28	$5,134,725
DECC	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0
Fairpoint	$5.10	$5.27	$5.27	$5.15	$5.14	$3.91	$3.72	$3.98	$4.14	$2,863,017
HCT	$3.50	$4.55	$4.55	$4.78	$4.19	$4.19	$4.33	$4.33	$4.10	$441,540
HTCO	$2.20	$2.20	$2.45	$2.45	$3.30	$3.30	$3.30	$3.30	$2.57	$497,757
LIC	$7.04	$8.19	$8.19	$8.22	$8.03	$8.03	$8.17	$8.17	$8.08	$1,017,633
Madison River	$4.44	$2.51	$4.66	$4.20	$1.00	$1.00	$1.00	$1.00	$0.91	$515,124
NPSI	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0
NTLO	$1.94	$1.94	$1.82	$1.97	$1.80	$1.80	$1.86	$1.86	$2.02	$294,936
NULM	$3.01	$3.01	$3.01	$0.42	$2.26	$2.26	$2.21	$2.21	$2.23	$86,211
RVCL	$0.00	$0.00	$0.00	$0.10	$0.00	$0.00	$0.00	$0.00	$0.00	$0
SHET	$0.17	$2.07	$2.07	$2.07	$2.01	$2.01	$2.01	$2.01	$1.88	$133,803
TDS	$3.13	$3.46	$3.43	$3.57	$3.60	$3.60	$3.49	$3.49	$3.51	$5,887,353
WWVY	$8.93	$8.93	$8.93	$8.93	$7.48	$7.48	$7.48	$7.48	$7.82	$671,499
Median	$1.57	$1.94	$1.82	$1.81	$1.68	$1.68	$1.72	$1.72	$1.53	$441,540
Average	$2.17	$2.40	$2.51	$2.36	$2.23	$2.17	$2.15	$2.16	$2.08	$1,187,908

Source: USAC and Legg Mason Wood Walker, Inc.

Figure 45: Monthly LSS per line (1Q01)



Source: USAC and Legg Mason Wood Walker, Inc.

LONG-TERM SUPPORT

Long-Term Support (LTS) funds (CFR §54.303) are payable to an eligible telecommunications carrier (ETC) that participates in the National Exchange Carrier Association common line pool, offsetting relatively high costs of interstate access and moderating the consumer's long-distance rates per minute. The fund is designed to reduce high nontraffic-sensitive costs as a complement to the LSS traffic-sensitive fund. Alltel receives the largest total funds of the carriers in our report, as detailed in **Figure 45**, while Lynch and TDS received the highest amounts on a per-line basis, as illustrated in **Figure 46**.

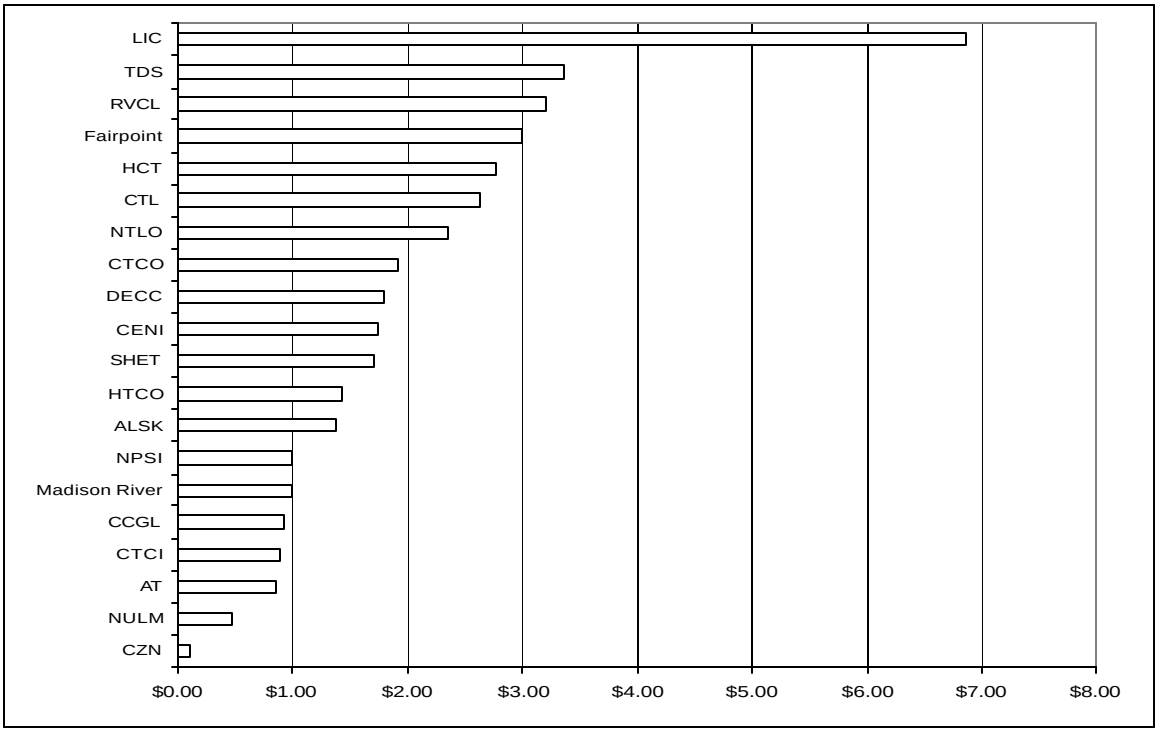
Long-term support is designed to aid in offsetting the high costs of interstate access, maintaining lower long-distance rates per minute.

Table 76: Monthly Per Line Long-Term Support (LTS) with Quarterly Totals

Long Term Support	1Q99	2Q99	3Q99	4Q99	1Q00	2Q00	3Q00	4Q00	1Q01	1Q01 Total $
ALSK	$1.50	$1.45	$1.55	$1.37	$1.56	$1.56	$1.56	$1.56	$1.38	$1,365,321
AT	$1.29	$1.17	$1.01	$0.89	$0.97	$0.97	$0.97	$0.97	$0.91	$6,183,780
CCGL	$0.99	$0.94	$0.94	$0.94	$0.95	$0.95	$0.95	$0.95	$0.93	$120,834
CENI	$1.96	$1.89	$1.89	$1.89	$1.81	$1.81	$1.81	$1.81	$1.74	$418,314
CTCI	$0.64	$0.99	$0.99	$0.99	$0.94	$0.94	$0.94	$0.94	$0.89	$315,282
CTCO	$2.22	$2.16	$2.16	$2.16	$2.02	$2.02	$2.02	$2.02	$1.91	$1,705,077
CTL	$4.13	$4.19	$4.26	$4.26	$3.84	$3.84	$2.84	$2.62	$2.63	$455,709
CZN	$0.05	$0.05	$0.05	$0.05	$0.05	$0.00	$0.00	$0.00	$0.07	$455,709
DECC	$1.98	$1.92	$1.92	$1.92	$1.84	$1.84	$1.84	$1.84	$1.80	$320,352
Fairpoint	$2.37	$3.02	$3.02	$3.02	$2.91	$2.84	$2.61	$2.99	$3.01	$2,079,624
HCT	$3.05	$3.09	$3.09	$3.09	$2.80	$2.80	$2.79	$2.79	$2.77	$297,807
HTCO	$1.64	$1.58	$1.58	$1.58	$1.54	$1.54	$1.54	$1.54	$1.51	$291,402
LIC	$6.39	$7.23	$7.23	$7.23	$7.05	$7.05	$7.05	$7.05	$6.87	$865,212
Madison River	$1.75	$1.08	$2.01	$2.01	$1.06	$1.06	$1.06	$1.06	$1.00	$562,269
NPSI	$1.20	$1.14	$1.14	$1.14	$1.07	$1.07	$1.07	$1.07	$1.00	$237,600
NTLO	$2.19	$2.45	$2.45	$2.45	$2.34	$2.34	$2.38	$2.38	$2.35	$343,590
NULM	$0.50	$0.49	$0.49	$0.17	$0.46	$0.46	$0.46	$0.46	$0.46	$17,676
RVCL	$3.85	$3.48	$3.48	$0.41	$3.31	$3.31	$3.18	$3.18	$3.20	$1,188,576
SHET	$1.86	$1.80	$1.80	$1.80	$1.75	$1.75	$1.75	$1.75	$1.71	$121,293
TDS	$3.70	$3.78	$3.74	$3.78	$3.64	$3.64	$3.65	$3.65	$3.37	$5,643,129
WWVY	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0
Median	$1.86	$1.80	$1.89	$1.80	$1.75	$1.75	$1.75	$1.75	$1.71	$418,314
Average	$2.06	$2.09	$2.13	$1.96	$2.00	$1.99	$1.93	$1.93	$1.88	$1,094,693

Source: USAC and Legg Mason Wood Walker, Inc.

Figure 46: Monthly LTS per line by Company (1Q01)



Source: USAC and Legg Mason Wood Walker, Inc.

HIGH-COST LOOP FUND (§36.631)

High-cost funds provide assistance for rural study areas with average loop cost exceeding the national average by 15%.

The High-Cost Loop (HCL) fund is the largest of the operating support mechanisms, since loop costs are generally more than one-half of the investment in a telephone company's investment. The rules for HCL are found in the CFR section on "Separations," where it is detailed that HCL generally is paid to an ILEC with no more than 200,000 lines in a study area and is designed to offset telephone loop costs that exceed the national average by 15%. The funds are paid using a sliding scale to reimburse 65% of the costs that are 15%–50% higher than the national average and 75% of the costs that are more than 50% above the average. If the study area has more than 200,000 loops with loop costs above 15% of the national average (approximately $240), the company can receive funds for loops according to the following schedule: 10% recovery for costs 15%–60% above the national average, 30% for costs 61%–100% above the national average, 60% for 101%–150% of the average, and 75% for more than 150% of the average.

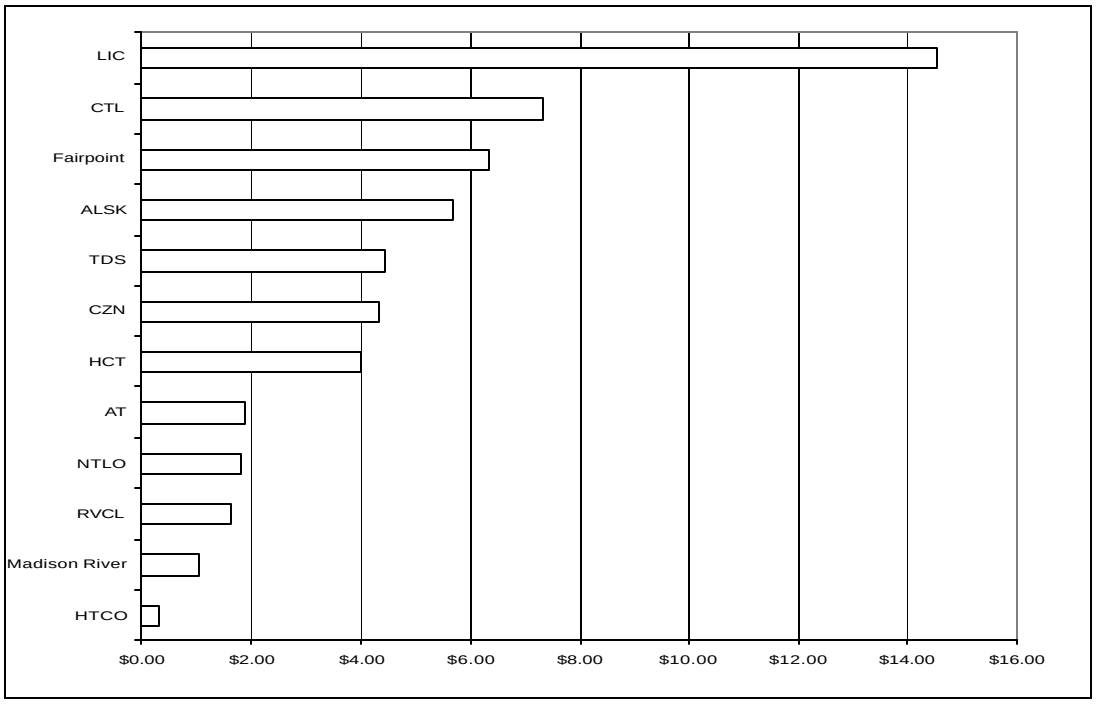
Table 77 highlights that CenturyTel and Citizens receive the largest amounts of HCL in aggregate, reflecting the large number of lines served by the companies compared with the number of lines in service at the other carriers. **Figure 47** illustrates that Lynch, CenturyTel, FairPoint and Alaska Communications realize the most HCL support per line, reflecting two factors: that their regions are relatively more rural and the unique costs in their regions (e.g., 2% of Alltel's USF comes from Pennsylvania, which accounts for 11% of the company's total lines).

Table 77: Monthly per Line High-Cost Loop (HCL) Support, with Quarterly Totals

High Cost Loop	1Q99	2Q99	3Q99	4Q99	1Q00	2Q00	3Q00	4Q00	1Q01	1Q01 Total $
ALSK	$4.10	$4.60	$4.50	$3.84	$4.37	$4.37	$4.47	$4.22	$5.71	$5,649,726
AT	$2.19	$2.58	$2.30	$2.06	$2.35	$2.35	$2.32	$2.32	$2.03	$13,729,095
CCGL	$0.01	$0.00	$0.00	$0.00	$0.01	$0.00	$0.01	$0.01	$0.00	$0
CENI	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0
CTCI	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0
CTCO	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0
CTL	$9.05	$9.36	$9.87	$9.86	$9.45	$9.66	$8.16	$7.68	$7.32	$38,865,297
CZN	$4.78	$5.21	$5.17	$5.17	$5.11	$5.06	$5.04	$5.02	$4.40	$17,602,269
DECC	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0
Fairpoint	$4.09	$4.16	$4.34	$4.33	$5.74	$4.22	$3.52	$4.71	$6.34	$4,384,953
HCT	$3.79	$3.64	$3.60	$3.59	$3.78	$3.66	$4.16	$4.16	$4.01	$431,748
HTCO	$0.10	$0.19	$0.17	$0.17	$0.23	$0.22	$0.24	$0.25	$0.23	$44,655
LIC	$15.09	$14.96	$14.94	$14.94	$14.58	$14.47	$14.48	$14.38	$14.53	$1,830,660
Madison River	$1.24	$7.81	$1.17	$1.17	$0.53	$1.03	$1.80	$2.01	$1.06	$598,908
NPSI	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0
NTLO	$1.91	$1.38	$1.37	$1.37	$1.12	$1.11	$1.24	$1.24	$1.80	$262,728
NULM	$0.00	$0.00	$0.00	$0.69	$0.00	$0.00	$0.00	$0.00	$0.00	$0
RVCL	$0.80	$0.70	$0.82	$0.85	$1.19	$0.76	$1.19	$1.17	$1.65	$612,243
SHET	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0
TDS	$4.55	$5.09	$5.11	$5.31	$5.21	$5.26	$5.28	$5.15	$4.47	$7,486,215
WWVY	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0
Median	$0.80	$0.70	$0.82	$0.85	$0.53	$0.76	$1.19	$1.17	$1.06	$262,728
Average	$2.46	$2.84	$2.54	$2.54	$2.56	$2.48	$2.47	$2.49	$2.55	$4,357,071

Source: USAC and Legg Mason Wood Walker, Inc.

Figure 47: High-Cost Loop by Company (1Q01)



Source: USAC and Legg Mason Wood Walker, Inc.

TOTAL USF PER COMPANY

Total USF payments represent a significant portion of total revenues for many rural carriers.

Table 78 summarizes total monthly USF per line for each of the public or near-public rural telephone companies. CenturyTel, Citizens, Alltel and TDS receive the highest aggregate support payments among the rural carriers, because they provide for the largest number of lines in rural America**. Figure 48** illustrates that on a per-line basis, Lynch receives $29.47 monthly, followed by FairPoint, TDS and CenturyTel, all at the high end due to the fact that the properties served by these companies are relatively more rural — with associated higher costs — than the other RLECs in the tables and figures. It is notable that average per-line payments are declining over time. However, it is possible to make an even stronger point. We believe that the declining operating USF is primarily a function of greater efficiencies and/or newly acquired RBOC lines (no USF) at three large rural operators — CenturyTel (monthly line payments lower by $3.97 from 1Q99 to 2Q00, or 27%), Alltel (lower by $1.15 or 29%) and Citizens (lower by $0.84 or 13%). It is difficult to be precise about properties that can differ dramatically from one study area to another, but it appears to us that *costs are declining as the large rural consolidators gain scale, in part because of the RBOC lines they acquire, resulting in average lower per line USF payments.*

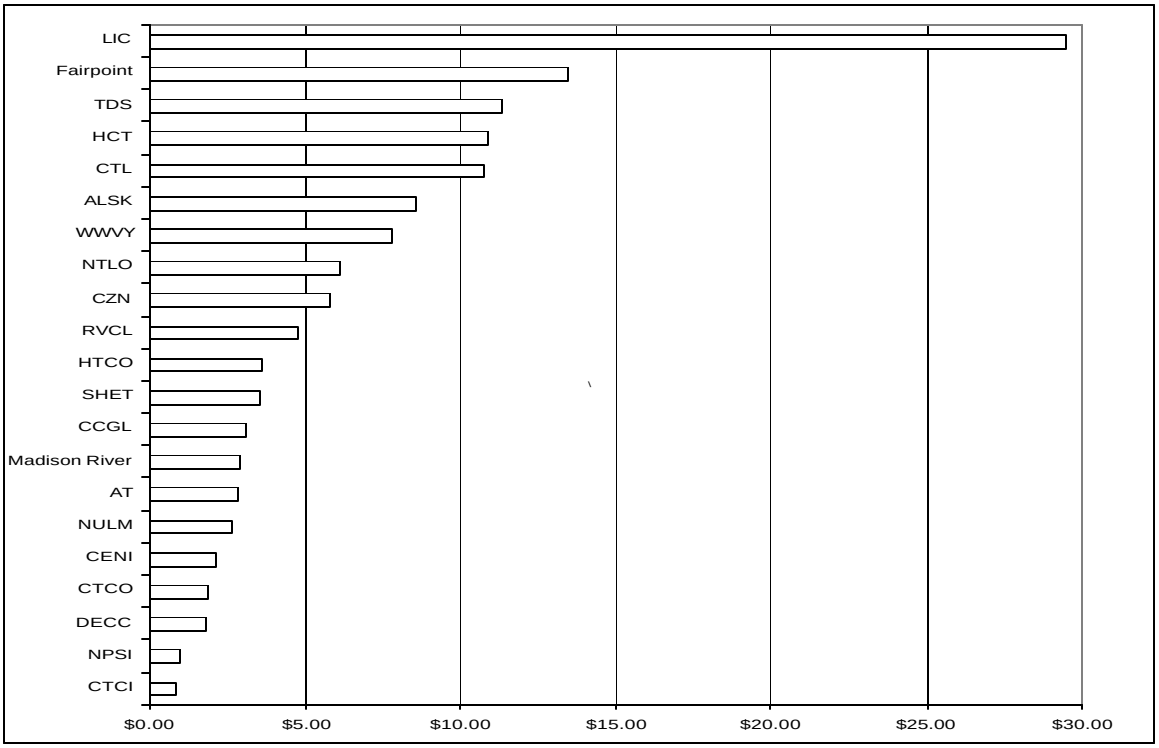
Average per-line payments are declining, in part, because of efficiencies at CenturyTel, Alltel, and Citizens.

Table 78:Total Funding per Company

Total High Cost Fund	1Q99	2Q99	3Q99	4Q99	1Q00	2Q00	3Q00	4Q00	1Q01	1Q01 Total $
ALSK	$6.98	$7.44	$7.67	$6.35	$7.61	$7.61	$7.75	$7.49	$8.62	$8,528,178
AT	$4.01	$3.96	$3.50	$3.15	$3.51	$3.51	$3.48	$3.47	$3.07	$20,748,384
CCGL	$1.56	$3.58	$3.57	$3.57	$3.53	$3.53	$3.53	$3.53	$3.10	$404,604
CENI	$2.55	$2.49	$2.44	$2.44	$2.37	$2.37	$2.37	$2.37	$2.14	$515,739
CTCI	$0.64	$0.99	$0.99	$0.99	$0.94	$0.94	$0.94	$0.94	$0.89	$315,282
CTCO	$2.22	$2.16	$2.16	$2.16	$2.02	$2.02	$2.02	$2.02	$1.91	$1,705,077
CTL	$14.75	$15.15	$15.67	$15.53	$14.64	$14.86	$11.95	$11.19	$10.79	$57,252,849
CZN	$6.64	$7.07	$7.03	$7.03	$6.79	$6.69	$6.67	$6.65	$5.76	$23,035,941
DECC	$1.98	$1.92	$1.92	$1.92	$1.84	$1.84	$1.84	$1.84	$1.80	$320,352
Fairpoint	$11.55	$12.46	$12.63	$12.51	$13.79	$10.96	$10.99	$11.68	$13.49	$9,327,594
HCT	$10.34	$11.28	$11.24	$11.46	$10.77	$10.66	$11.28	$11.28	$10.88	$1,171,095
HTCO	$3.96	$3.96	$4.20	$4.20	$5.08	$5.06	$5.08	$5.09	$4.31	$833,814
LIC	$28.52	$30.38	$30.36	$30.39	$29.65	$29.54	$29.70	$29.60	$29.47	$3,713,505
Madison River	$7.44	$11.40	$7.84	$7.38	$2.60	$3.09	$3.86	$4.07	$2.97	$1,676,301
NPSI	$1.20	$1.14	$1.14	$1.14	$1.07	$1.07	$1.07	$1.07	$1.00	$237,600
NTLO	$6.04	$5.76	$5.64	$5.78	$5.27	$5.25	$5.48	$5.47	$6.17	$901,254
NULM	$3.52	$3.50	$3.50	$1.27	$2.72	$2.72	$2.67	$2.67	$2.69	$103,887
RVCL	$4.65	$4.18	$4.30	$1.36	$4.51	$4.07	$4.37	$4.36	$4.84	$1,800,819
SHET	$2.04	$3.87	$3.87	$3.87	$3.77	$3.77	$3.77	$3.77	$3.59	$255,096
TDS	$11.38	$12.33	$12.28	$12.66	$12.45	$12.50	$12.42	$12.29	$11.34	$19,016,697
WWVY	$8.93	$8.93	$8.93	$8.93	$7.48	$7.48	$7.48	$7.48	$7.82	$671,499
Median	$4.65	$4.18	$4.30	$4.20	$4.51	$4.07	$4.37	$4.36	$4.31	1,171,095
Average	$6.71	$7.33	$7.19	$6.86	$6.78	$6.65	$6.61	$6.59	$6.51	7,263,598

Source: FCC and Legg Mason Wood Walker, Inc.

Figure 48: Total Support per Access Line (1Q01)



Source: FCC and Legg Mason Wood Walker

USF AS PERCENTAGE OF TOTAL ILEC REVENUE

We estimate that USF operating funds account for 1%–22% of total ILEC revenues for the publicly traded RLECs.

Based on our analysis of the universal service data, we estimate that USF operating funds account for 1%–22% of total ILEC revenues (excluding wireless and other services) for the publicly traded RLECs. **Table 79** provides the detail related to our estimates of the annual aggregate USF as a percentage of the individual companies' total ILEC revenues. The companies receiving the highest percentages are Lynch, FairPoint, and CenturyTel. Citizens receives relatively less as a percentage of the total, in part because it has acquired the majority of its properties from larger telephone companies that were not eligible for much support. CFR §54.305 states "A carrier that acquires telephone exchanges from an unaffiliated carrier shall receive universal service support for the acquired exchanges at the same per-line support levels for which those exchanges were eligible prior to the transfer of the exchanges." The new FCC USF Order (May 10, 2001) modifies §54.305 to allow for revenue recovery on subsequent loop investments.

Table 79: USF as a Percentage of ILEC Revenues

	FY2000 ILEC Revs	1Q01 USF $	1Q01 USF $ Annualized	USF as % of Total Revs
ALSK	$251,424,000	$8,528,178	$34,112,712	13.6%
AT	$1,757,500,000	$20,748,384	$82,993,536	4.7%
CCGL	$44,747,000	$404,604	$1,618,416	3.6%
CENI	$63,570,000	$515,739	$2,062,956	3.2%
CTCI	$82,353,000	$315,282	$1,261,128	1.5%
CTCO	$182,223,000	$1,705,077	$6,820,308	3.7%
CTL	$1,253,969,000	$57,252,849	$229,011,396	18.3%
CZN	$963,743,000	$23,035,941	$92,143,764	9.6%
DECC	$62,263,000	$320,352	$1,281,408	2.1%
FAIRPOINT	$191,779,000	$9,327,594	$37,310,376	19.5%
HCT	$27,462,000	$1,171,095	$4,684,380	17.1%
HTCO	$54,365,000	$833,814	$3,335,256	6.1%
LIC	$66,983,000	$3,713,505	$14,854,020	22.2%
MADRIVER	$125,564,000	$1,676,301	$6,705,204	5.3%
NPSI	$69,247,000	$237,600	$950,400	1.4%
NTLO	$50,518,000	$901,254	$3,605,016	7.1%
NULM	$8,983,646	$103,887	$415,548	4.6%
RVCL	$107,065,000	$1,800,819	$7,203,276	6.7%
SHET	$19,109,000	$255,096	$1,020,384	5.3%
TDS	$610,216,000	$19,016,697	$76,066,788	12.5%
WWVY	$20,681,817	$671,499	$2,685,996	13.0%

Source: USAC and Legg Mason Wood Walker, Inc.

AVERAGE LOOP COST

We have included a table with average loop costs used in calculating USF payments.

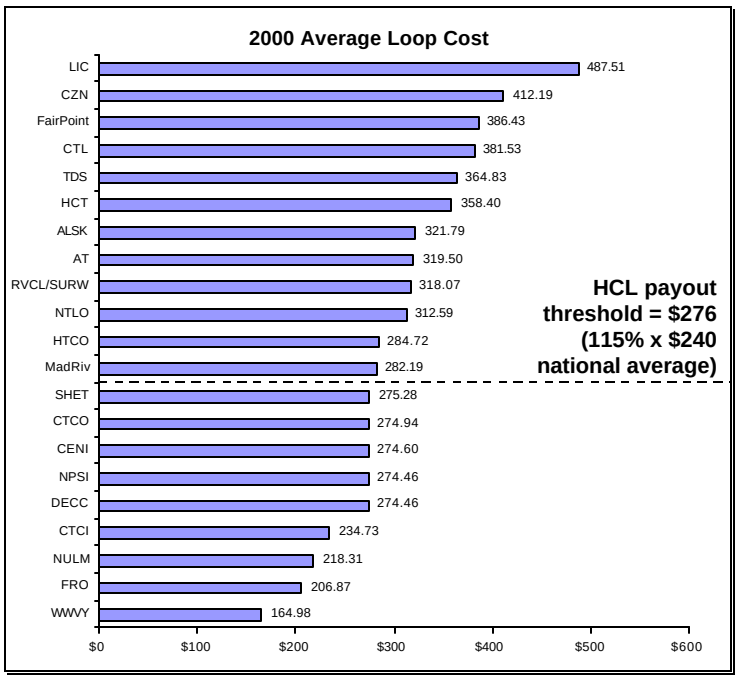
In order to gain additional insight into the differences among the RLECs, we have included **Figure 49**, which details average loop costs as reported for USF cost recovery by each of the public companies. While this corroborating information does not represent the exact economic or accounting cost of the access lines, we believe the table is useful for a number of reasons: (1) it demonstrates the wide variance in costs associated with providing service in rural areas because of loop lengths or the specific geography (permafrost, water table, mountainous regions, etc.); (2) it provides perspective on which of the public companies receive loop support (those more than 15% above the national average of approximately $240); and (3) it supplies some insight into the fact that companies with high USF also have high commitments, which means that support does not translate simply into high profits, as some observers cynically suggest. In fact, some of the more rural companies contend that they commit to maintaining plant that is higher quality than that found in some urban regions and that their costs bear out this contention.

Figure 49: Average Loop Cost by Year

	Loop Cost per Line				
	1996	1997	1998	1999	2000
ALSK	$317.45	$311.12	$313.95	$309.50	$321.79
AT	$314.07	$312.04	$319.34	$318.49	$319.50
CENI#	$262.01	$241.02	$244.90	$246.76	$274.60
CTCI	$225.11	$217.33	$223.71	$243.29	$234.73
CTCO#	$262.01	$252.24	$255.45	$256.44	$274.94
CTL*	$376.26	$386.76	$376.60	$378.95	$381.53
CZN	$379.68	$395.93	$386.32	$389.27	$412.19
DECC#	$262.01	$236.45	$240.68	$242.78	$274.46
FairPoint*	$350.18	$335.21	$348.37	$355.53	$386.43
FRO*	$228.67	$233.10	$214.58	$220.65	$206.87
HCT*	$312.11	$353.62	$352.97	$355.92	$358.40
HTCO#	$262.01	$246.34	$250.25	$252.63	$284.72
LIC*	$480.63	$501.04	$504.80	$492.11	$487.51
MadRiv*	$294.98	$299.61	$294.81	$276.97	$282.19
NPSI#	$262.01	$237.20	$241.22	$243.09	$274.46
NTLO*	$291.85	$266.44	$276.29	$276.92	$312.59
NULM	$216.49	$212.66	$211.78	$208.24	$218.31
RVCL	$325.75	$313.42	$302.01	$310.97	$318.07
SHET#	$262.01	$259.60	$263.25	$264.85	$275.28
TDS*	$338.95	$343.54	$359.39	$365.12	$364.83
WWVY	$145.38	$159.48	$158.57	$165.92	$164.98

#Denotes companies with only average schedule study areas.

**Denotes companies with both cost and average schedule study areas.*



Source: NECA; Legg Mason Wood Walker, Inc.

There are several other factors in determining High-Cost Loop support. There is a sliding scale depending on the number of lines in the service region. A carrier that has fewer than 200,000 lines in a study area gets recovery on 65% of the costs that are 15%–50% above the national average (set at $240 in the May 2001 USF Order), and recovery of 75% of the costs that are more than 50% above the national average. For carriers that have more than 200,000 lines in a study area, the recovery is 10% of the costs that are 15%–30% above the average, 30% for costs 30%–100% above the norm, 60% for costs 100%–150% higher, and 75% for costs above 150% of the national average. As an illustration of how these factors affect HCL, Citizens Communications has high-cost loops ($368 per loop) in New York, but the study area includes approximately 270,000 lines, a total that is above the 200,000 threshold, with the result that Citizens receives relatively less HCL support per line compared with other carriers whose study areas have less than 200,000 lines.

Other factors contribute to higher or lower recovery of High-Cost Loop Support.

We also note that the data in the figure include information on companies that are "average schedule" and "cost" operators. This means that some of the companies choose not to supply data, and simply to receive payments from NECA on the basis of costs that are consistent with the national "average" (e.g., Commonwealth, North Pittsburgh, and Shenandoah), while other companies actually study their costs (in the study area) and send the detail to NECA (e.g., Citizens, Alltel, and Alaska Communications Systems). Finally, certain companies (e.g., CenturyTel, Lynch and TDS) have some study areas that are "cost" and some that are "average schedule."

Finally, we note that we have included data for the Frontier (FRO) properties. This inclusion was for those investors that have interest in those lines that were acquired by Citizens Communications.

INVESTMENT IMPORT

What do we conclude? Are rural companies that rely heavily on USF bad investments? Our opinion is quite the contrary. We continue to believe that the core of our RLEC thesis remains intact — stable operating environment, improving opportunities for revenue growth, limited competitive risk, favorable regulatory treatment, access to low cost capital, high-quality plant, and other intangible advantages. Our purpose in presenting this information is to shed some light on the importance of the USF to rural service providers, and to demonstrate the impact that potential changes to the level, structure, or timing of the payments could have on these companies. The RTF has stated clearly, and the FCC has affirmed, that USF needs to continue at least at the current levels, and in fact, be allowed to expand, so that the proper level of investment in rural telephony can occur. If anything, we see the companies in the high USF (more rural) regions as more defensible from a competitive point of view, and more predictable in terms of their cash flows.

In our opinion, the rural investment case remains solid and the recent USF reform provides certainty and stability for at least the next five years.

This Page Intentionally Left Blank

GLOSSARY OF TERMS

Access	Connectivity to the Public Switched Telephone Network (PSTN).
Access Charges	Fees that the local phone companies recover for the costs associated with using the local phone network for originating or terminating long-distance calls.
Access Line	A telephone line from the telephone company central office to the user's premises.
Access Node	A type of concentrator (see below) used to aggregate lines in a local area.
Access Tandem	Provides a concentration and distribution function for originating or terminating calls between end offices within a LATA.
ADSL	Asymmetric Digital Subscriber Line, usually a high-speed copper line with faster speeds to the end user and slower speeds to the telephone company's switches.
ARMIS (Database)	The Automated Reporting Management Information System.
ATM	Asynchronous Transfer Mode, a fast, cell-switched technology based on a fixed-length 53-byte cell, allowing uniform handling of various services.
Bell Companies	Regional Bell Operating Companies (RBOCs), one of or a combination of the original Bell operating companies created in the 1983 AT&T divestiture.
Bundled Elements	A package of wires, switches, and other services needed to deliver a phone call.
CALLS	Coalition for Affordable Local and Long Distance Services. Recommended the access rate levels for price-cap LECs as ordered by the FCC in May 2000.
Carrier	(1) A continuous electric signal that vibrates at a single frequency, and can be modulated by other signals to carry information, such as computer data, sound, or video. Carrier signals are used in telephony, radio, TV, and satellite communications. (2) A company providing telecommunications services by carrying electric signals from one point to another.
Central Office (CO)	The telephone company facility where lines are joined to switching equipment for connecting users to each other.
CFR	Code of Federal Regulations.
CLASS	Custom local area signaling services (vertical services such as Caller ID).

CLEC Competitive Local Exchange Carrier, typically provides a facilities-based alternative for local phone services, primarily targeting business and government organizations.

Cluster A grouping of exchanges within a definable geographical area, often tied together using a host/remote switching architecture.

Clustering Gaining scale advantages by aggregating lines in a geographical area.

Concentrator A device used to attach a number of circuits (normally slow speed) to a smaller number of lines for transmission.

Data Packet A format in which data are transmitted over a network. A packet contains the data as well as addresses, error checking, and other information necessary to ensure the packet arrives intact at its intended destination.

Deaveraging Charging different rates in different geographic regions to reflect the relative costs of providing service in each area.

DS0 In the hierarchy of digital signal speeds used to classify capacities of lines and trunks, the fundamental speed is DS0 (64 kilobits per second). DS0 is the worldwide standard for a digitized voice conversation, that is, it is a normal single-line telephone connection.

DS1 Digital Service level 1. 1.544 Mbps in the U.S, 2.048 Mbps elsewhere.

DS3 Digital Service level 3. Speeds above 1.544 Mbps in the U.S.

DSL Digital Subscriber Line service is a technology used to achieve high rates of speed over copper cable.

DSLAM A Digital Subscriber Line Access Multiplexer, a concentration of DSL lines.

Donut-Holing (1) The practice of an RBOC's selling off its rural lines outside of densely populated (donut hole) cities, leaving the RBOC with only the larger cities within the state. (2) The practice of setting up two zones for deaveraging an incumbent territory into a central region (the hole) and a less dense surrounding region (the donut).

EBITDA Earnings before Interest, Taxes, Depreciation and Amortization. Surrogate for cash flow from operations.

Element A component of a telephone network, e.g., switch, transmission lines, loop.

End Office Central Office that delivers local dial tone service to a subscriber.

Enterprise Value The value of a company defined as market equity plus debt less cash.

ESA Emergency Stand Alone.

ETC Eligible Telecommunications Carrier, a designation that permits the telephone services providers to collect subsidies (on par with the incumbent).

Exchange (1) A switching center, as in a physical room or building; also a geographic area established for administration and pricing of telecommunications services in a specific area. (2) Any group of 10,000 numbers assigned by NANPA.

Explicit Subsidies	Specific, unambiguous, transparently calculated subsidies such as those that are collected by and paid out of NECA's operating subsidiary USAC.
FCC	The Federal Communications Commission.
Financial Investors	Investors who do not intend to manage the company, but rather, believe that the value of the investment will increase so that at some point they can sell at a profit.
Flat Rate Service	Calling plan in which the monthly line charge includes unlimited local calling.
Host Switch	A central office switch that provides full switching and feature functionality to an end user or to other telecom equipment.
HCL	High Cost Loop Fund. Available to companies with no more than 200,000 lines in their study area. One of three Universal Service Fund elements designed to compensate carriers that serve end users with high cost access lines, defined as exceeding the national average by 15% or more, generally due to difficult terrain (rocky terrain, high water table, etc.) and/or long distances between central offices and the users.
Hz	Hertz, the unit of measurement for frequency, representing cycles/second.
ILEC	Incumbent Local Exchange Carrier, a local telephone company.
Implicit Subsidies	Nonspecific, ambiguous subsidies such as those that exist within RBOCs, whereby urban areas subsidize rural areas through average pricing structures
Inside Plant	Everything inside a central office including switches, routers, DSLAMs, private branch exchange (PBX), ATM and power supply equipment.
Interconnection	The process of connecting one local telephone network to another so that customers of each can call one another.
Interconnection Agreement	An agreement between an ILEC and another phone company (CLEC) to provide access to the incumbent's network in order to provide service.
Interexchange Carrier (IXC)	A provider for which principal line of business is interLATA long-distance.
InterLATA	Telecommunications services that originate in one of the 161 U.S. local access and transport areas and terminate in another.
IntraLATA	Telecommunications services that originate and end in the same local access and transport area.
IP	Internet protocol.
ISDN	Integrated Services Digital Network, a series of standards for delivering digital communications to a subscriber's location.
ISDN-BRI	ISDN Basic Rate Interface, a 144,000 bit/second digital standard for transmission of voice and/or data over a conventional two wire unloaded loop to a customer premise.
ISDN-PRI	ISDN Primary Rate Interface, a standard for carrying 24 simultaneous voice channels.
ISP	Internet Service Provider.

LATA Local Access and Transport Area, one of 161 LATAs created to define long-distance services.

LEC Local Exchange Carrier.

LMOS/MLT Loop Maintenance Operations System/Mechanized Line Tester.

Local loop The physical wires that run from the subscriber's telephone set to the telephone company's central office.

LSS Local Switching Support. Available to carriers with no more than 50,000 lines in a study area. One of three Universal Service Fund categories designed to compensate carriers with high costs arising from traffic-sensitive switching when there are few lines over which to spread the high costs.

LTS Long-Term Support. One of three Universal Service High-Cost Fund categories designed to compensate carriers with high relative costs of interstate access (to moderate the consumer's long-distance rates) and high nontraffic-sensitive costs. Complementary to the LSS traffic-sensitive fund.

MAG Multi-Association Group — members include the United States Telecom Association (USTA), National Rural Telecom Association (NRTA), OPASTCO and National Telephone Cooperative Association (NTCA) — whose purpose was to propose a plan to reform rate-of-return access within a holistic plan (submitted in fall 2000).

Mid-Tier ILEC Multistate independent ILECs made up of Sprint, Citizens, Alltel, CenturyTel, Broadwing, TDS and VALOR.

MOU Minutes-of-Use.

Multiplexer A device that allows multiple devices to share one transmission line.

NANPA North American Numbering Plan Administration, responsible for the numbering plan for the Public Switched Telephone Network (PSTN) in the United States and its territories, as well as in Canada, Bermuda, and many Caribbean nations.

NECA National Exchange Carrier Association, formed in 1983 by the FCC as a not-for-profit corporation. NECA administers various services, including pooling, filing of tariffs and Universal Service functions to help ensure that telephone service remains available and affordable in all parts of the country.

Net Plant The value of telecommunications infrastructure in place after depreciation.

Network Elements The equipment that comprises the local phone network.

NOC Network Operations Center.

NPA Number Plan Area, the area code for a geographic region.

NPRM Notice of Proposed Rule Making. A term used in regulatory agencies (such as the FCC). The agency issues a notice and documentation about an idea, and then typically holds hearings to determine the opinions of people and companies.

NRUCFC National Rural Utilities Cooperative Finance Corporation.

OCn Optical Carrier, with the "n" standing for the capacity level. Each level carries the level number times 672 channels. Example: OC-3 = 3 x 672 = 2,016 channels.

OPASTCO The Organization for the Promotion and Advancement of Small Telephone Companies.

Orphaned Remote / Host A remote switch is orphaned from a host when the exchange housing the remote switch is sold and separated from the host exchange. Functionality residing at the host is thereby lost, forcing a realignment of the network — known as "re-homing" the remote. Host switches similarly can be orphaned from their tandem switches.

OS Operator services.

OSP Outside plant.

OSS Operational Support Systems, methods and procedures that directly support the daily operation of the telecommunications infrastructure.

Outside Plant The part of the telephone network that is located physically outside of buildings, and includes cables, conduits, poles and the local loops to end users.

Overbuilder A CLEC that puts its own infrastructure into place where incumbent infrastructure already exists.

PICC Primary Interexchange Carrier Charge, a fee that the ILECs assess to IXCs for each line or trunk that is presubscribed.

Plant A general term for all equipment used by a telephone company to provide telecommunications services. Usually divided into inside (ISP) and outside plant (OSP).

Price Cap The maximum price a local phone company can charge for its services. This form of regulation encourages operational efficiency.

Provisioning The act of supplying telecommunications service to a user.

POP (1) Point of Presence; (1) a facility that serves as a gateway between the IXC's interLATA network and the LEC's intraLATA network; (2) an ISP's local presence that allows customers to access the Internet through a local phone number.

POPs (2) Population; term used as shorthand for the population covered by a wireless license.

PSAP Public Safety Answering Point.

PSTN Public Switched Telephone Network.

PUC or PSC Public Utility Commission or Public Service Commission. The primary state regulatory bodies that must formally approve intrastate access rates, acquisitions, end-user rates, etc. within a particular state.

Rate of Return A regulatory system in which a company is authorized a certain percentage of net profit on allowed investment.

RBOC Regional Bell Operating Company.

REA Rural Electrification Administration.

Remote Switch A switch that is less functional than a host switch and is located at a distance from its host or central office.

Remote Terminal A piece of network equipment terminating the multiple end-user telephone lines into a single line leading to the control office. The remote terminal generally resides in a neighborhood or business park.

RLEC Rural Local Exchange Carriers serving rural areas not served by larger RBOCs.

ROI Return on Investment, operating profits of a company divided by the capital invested. A financial metric used to determine the economic viability of a particular investment.

RTB Rural Telephone Bank.

RTFC Rural Telephone Finance Cooperative.

RUS Rural Utilities Service.

Section 251/252 The sections of the Telecommunications Act of 1996 that define the specific obligations of LECs to provide resale, number portability, unbundled access to networks and collocation to competitive telecommunications providers.

Section 271 The section of the Telecommunications Act of 1996 that defines for the Bell Operating Companies the opportunity to offer interLATA services, provided they meet a 14-point competitive interconnection checklist and receive approval from state regulatory commissions as well as the FCC.

SLC Subscriber Line Charge, a charge on local phone bills paid by the customer; used to recover some of the costs of connecting lines to homes and business.

SONET Synchronous optical network, a standard for optical transport.

STP Signal Transfer Point, a dedicated, high-reliability data switch used to route signaling messages.

Study Area A geographic area defining all, or part of, a company's lines in a particular state. Universal Service monies as well as interstate (and often, intrastate) access rates are defined within each individual study area. A study area waiver must be granted to change the composition of a study area.

T-1 A digital transmission link with a capacity of 1.544 Mbps (1,544,000 bits/second).

T-3 Equivalent to 28 T-1 lines or 44.736 Mbps. T-3 runs on fiber optic.

Tandem Switch An intermediate switch between an originating telephone call central office and the final central office of the call. Tandems are connected to each other through long-haul networks.

TELRIC Total Element Long Run Incremental Cost is a forward-looking cost-based pricing methodology for network elements.

TIRKS Trunk Inventory Record Keeping System.

TPIS	Telecommunications Plant in Service is a regulatory calculation of telephone plant assets, approximating net assets for telecom operations.
Transport	Generic term for any medium — wired or wireless — used to get a signal from one point to another.
Trunk	A high-capacity line used for combining large volumes of telephony traffic and transporting the traffic between switching centers.
TSR	Total Service Resale, the provision of all network services to a CLEC for a wholesale discount of approximately 20%.
UNE	Unbundled Network Element, an individual component of the local phone network, most often the local loop.
UNE-P	Unbundled Network Elements Platform, the leasing of all the equipment and software necessary to provide local telephone service combined into a single platform or system, generally priced on the basis of forward-looking cost.
Universal Service	A national public policy that ensures ubiquitous access to local phone service with rates and services that are comparable to those in urban regions.
USAC	Universal Service Administrative Company.
USF	Universal Service Fund, the fund set up to accomplish universal service. The federal fund is run by NECA, through its subsidiary USAC, as a means of support for needy and/or rural subscribers.
USOA	Uniform System of Accounts.
Vertical Services	Service options not included in basic phone service, such as call waiting, voice mail, etc.
VPN	Virtual private network.
xDSL	The "X" stands for a generic naming of various types of digital subscriber line services. DSL is a method for sending digital data over copper telephone lines.
X-Factor	Price-cap regulation allows prices to increase by a measure of inflation minus a specified percentage, known as the "X-Factor."

This Page Intentionally Left Blank

Michael J. Balhoff, CFA
Managing Director and Telecommunications Group Head
Telecommunications

Michael J. Balhoff, CFA, heads the Telecommunications Equity Research Group at Legg Mason and covers equities in the incumbent local exchange carrier industry. Prior to joining Legg Mason in 1989, Mr. Balhoff was vice president of a consulting organization and held posts as a graduate and undergraduate professor. Mr. Balhoff has a doctorate in Canon Law and four master's degrees, including an M.B.A. from the University of Maryland. He is a CFA charterholder and is a member of the Baltimore Security Analysts Society. Mr. Balhoff has been named on three occasions as a *Wall Street Journal* All-Star Analyst for his recommendations in the Telecommunications industry. He is also a board member of the University of Maryland's Technology Advancement Program.

Timm P. Bechter
Associate Analyst
Telecommunications

Timm P. Bechter joined the Legg Mason Equity Research team in the summer of 1999 after graduating from The Darden Graduate School of Business Administration at the University of Virginia. Mr. Bechter graduated from the U.S. Naval Academy in Annapolis, Maryland, in 1985 with a bachelor's degree in Ocean Engineering. After further engineering training, he served as a division officer on board USS Vandegrift (FFG-48) out of Long Beach, California, from 1987–1990, including a tour in the Persian Gulf during the Iran-Iraq war. Upon leaving the service, he took a position as an Environmental Affairs Coordinator with Solite Corporation (a Richmond, Virginia-based lightweight aggregate producer) and was promoted to Plant Manager in 1993, a position he held until restarting his studies in 1997.

Mark L. Hall, CPA
Associate Analyst
Telecommunications

Mark L. Hall joined the Legg Mason Equity Research team in the spring of 2000. Mr. Hall is a graduate of the University of Iowa, from which he received a bachelor's degree in business administration, with a concentration in accounting. Immediately upon graduating, and passing the CPA exam, he worked for Arthur Andersen, LLP, for three years auditing cellular and local telephone companies. For the five years prior to joining Legg Mason, Mr. Hall held roles in finance for the Quaker Oats Company, most recently serving as the manager of financial analysis. Mr. Hall received an M.B.A. with a concentration in finance from the University of Maryland in August 2001.

Christopher C. King
Associate Analyst
Telecommunications

Christopher C. King joined the Legg Mason Equity Research team in January 2001. Mr. King is a graduate of Wake Forest University, from which he received a bachelor's degree in politics and economics. Mr. King was an equities trader with Wachovia Bank and Allfirst Bank, and for four years was a financial analyst with Allfirst in the company's Brokerage and Capital Markets Groups. Mr. King received an M.B.A. with a concentration in finance from the University of Maryland in May 2001.

Blair Levin
Managing Director
Telecom and Media Regulation

Blair Levin served as Chief of Staff to Chairman Reed Hundt at the Federal Communications Commission from December 1993 through October 1997. Mr. Levin oversaw, among other matters, the implementation of the historic 1996 Telecommunications Reform Act, the holding of the first spectrum auctions, the development of digital television, the Commission's Internet initiative, and the push to generate competition in the international marketplace through the World Trade Organization agreement on telecommunications. Prior to the FCC, Mr. Levin was a partner in the North Carolina law firm of Parker Poe, Poe, Adams and Bernstein. A native of Los Angeles, he is a summa cum laude graduate of Yale College and Yale Law School.

David Kaut
Associate Analyst
Telecom and Media Regulation

David Kaut has been an associate analyst at Legg Mason since February 2001 and contributes to its telecom regulatory reports, including the weekly *Washington Telecom & Media Insider*. From 1996 until joining Legg Mason, Mr. Kaut had been the telecom reporter for *BNA Daily Report for Executives*, writing 2,000 stories on industry matters before the FCC, Congress, the courts, and elsewhere. From 1991 to 1996, he served as a reporter and editor at States News Service, and provided Washington coverage for a variety of newspapers and other publications, including *Multichannel News*, a cable-TV trade weekly. Mr. Kaut graduated from the College of William and Mary in 1982 with a degree in government.

William Gillis, Ph.D.
Director, Center to Bridge the Digital Divide
Washington State University

Dr. William Gillis is an Associate Professor of Rural Sociology at Washington State University. Prior to joining the WSU faculty in January 2001, Dr. Gillis served as one of three Washington State Public Utility commissioners responsible for regulatory oversight of the state's private telecommunications, energy, and other public service companies. During his tenure, he served as chair of an FCC-appointed Rural Task Force charged with reforms of the nation's universal service

system. He also initiated and served as the first chair of the National Association of Regulatory Utility Commissioner's Committee on Consumer Affairs. Dr. Gillis has a B.A. and an M.S. from Washington State University and a Ph.D. from the University of Wisconsin.

Dennis Couture
Director of Rural Markets, Nortel Networks

Mr. Couture is currently the Director of Rural Markets for Nortel Networks. Mr. Couture has bachelor's and master's degrees in Electrical Engineering at the University of New Hampshire. He has worked for Nortel Networks for 28 years, with two years as an engineer in manufacturing, seven years in design engineering, three years in marketing and sixteen years in sales. His experience covers a range of Network Testing products, the DMS-10 and DMS-100 Switches, Access and Transport products and Data Communications. In his current capacity, Mr. Couture is building product and commercial programs that address the needs of rural telcos.

LEGG MASON
TELECOMMUNICATIONS
EQUITY RESEARCH REPORTS

Telephone Wars — The ILECs Prepare Their Lines for the Offensive (Fall 1998)

Harvesting New Values — Rural Local Exchange Industry (Spring 1999)

Rural Local Exchanges Carriers — New CLEC Initiatives (Fall 1999)

The Tower Industry — Getting It Straight (Fall 1999)

What's Next for Wireless — A Roadmap for Wireless Investors (January 2001)

The Coming Communications Consolidations (June 2001)

Section 271 Relief: Bells Race IXCs/Each Other for New Markets/Revenues (July 2001)

The RLEC Monitor (Quarterly, Beginning Summer 2000)

The Wireless Industry Scorecard (Quarterly, Beginning 3Q 2000)