EXHIBIT MDG-1T

BEFORE THE
WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION

IN THE MATTER OF LEVEL 3 COMMUNICATIONS, LLC'S PETITION FOR ARBITRATION PURSUANT TO SECTION 252(B) OF THE COMMUNICATIONS ACT OF 1934, AS AMENDED BY THE TELECOMMUNICATIONS ACT OF 1996, AND THE APPLICABLE STATE LAWS FOR RATES, TERMS, AND CONDITIONS OF INTERCONNECTION WITH QWEST CORPORATION, LEVEL 3 COMMUNICATIONS, LLC, Petitioner.	Docket No. UT-063006

DIRECT TESTIMONY OF

MACK D. GREENE

ON BEHALF OF

LEVEL 3 COMMUNICATIONS, LLC

May 30, 2006

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, POSITION, EMPLOYER, AND BUSINESS ADDRESS.

A. My name is Mack D. Greene. I am a Director with Level 3 Communications, LLC. My business address is 1025 Eldorado Blvd, Colorado, 8021. I am filing this testimony on behalf of Level 3 Communications, LLC of Broomfield, CO.

Q. PLEASE REVIEW YOUR EDUCATION AND RELEVANT WORK EXPERIENCE.

A. I have been employed by Level 3 Communications, LLC ("Level 3") since 2003. Presently, I serve Level 3 as the Director of Interconnection Services. In this position, I am responsible for negotiation, implementation and enforcement of interconnection agreements with over one hundred and fifty incumbent LECs (including RBOCs and rural LECs), competitive LECs, CMRS providers, cable MSOs and other communications providers nationwide. Prior to my appointment as Director of Interconnection Services, I served as Director Customer Access Solutions for Level 3. As such, I directed all product management activities for Access Solutions to the Level 3 Network. I managed pricing and design support for direct and indirect sales teams and I managed leased network expense supporting SBU product profit and loss.

Before joining Level 3, I worked for Qwest Communications. At Qwest, I held a variety of product positions, most recently serving as Vice President-Strategy and Implementation, and Vice President-Voice and Data Product Management. I attended Howard University in Washington D.C. participating in the Bachelor of Science, mechanical engineering program.

II. STATEMENT OF SCOPE AND SUMMARY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I am testifying on behalf of Level 3 Communications, LLC ("Level 3"), regarding interconnection agreement terms and conditions between Level 3 and Qwest that we have been unable to resolve during negotiations. I will address the key factual issues that are critical to understanding the issues in this dispute. The policy implications should be self-evident once the facts are understood. Accordingly, I will leave policy and legal argumentation to the lawyers.

Q. PLEASE INTRODUCE YOUR TESTIMONY, INCLUDING YOUR APPROACH AND ORGANIZATION OF INFORMATION.

A. In this case Level 3 asks two questions: (1) whether Level 3 should pay extra money to its rival - Qwest Corporation - because Level 3 deploys network gear for serving ISP-dialup and VoIP customers on a regional basis instead of within every local calling area and (2) whether Level 3 should be allowed to realize at least a 15% gain in network efficiency so that it can compete with the nation's largest ILEC-backed IXCs (Qwest, Verizon and AT&T) for low cost, long distance termination.

In order to clearly understand both questions, their relationship to the contract provisions Level 3 sponsors, and how Level 3's proposals benefit Washington, my testimony explains Level 3's network configuration and operations. It then examines Level 3's service offerings and how Level 3 competes with Qwest (or Qwest's affiliates) for wholesale ISP dialup, wholesale VoIP, and long distance termination. In addition I explain what other valuable services Level 3 provides to Washington.

Against this real world background, my testimony explains why Level 3's proposals for each class of contract issue reflects a realistic appreciation and application of technical principles while achieving a reasonable balance between national networks vying for the same sets of customers and market share that is also fair to the State of

Washington. To reduce the number of pages of testimony, however, I incorporate by reference the factual, technical, and business aspects of Level 3's statements in support of its positions contained in the disputed points list Level 3 provided with its arbitration petition.

III. LEVEL 3'S NETWORK AND SERVICES

Q. PLEASE INTRODUCE LEVEL 3 COMMUNICATIONS, LLC.

A. Level 3 is one of the largest providers of wholesale dial-up service to ISPs in North America and is the primary provider of Internet connectivity for millions of broadband subscribers through its cable and DSL partners.

The world's largest telecom carriers all continue to use Level 3 services, as do the 10 largest U.S. Internet Service Providers, and the 10 largest European telecom carriers.

The company offers a wide range of communications services over its approximately 33,300 mile broadband fiber optic network connecting 16 countries. These services include Internet Protocol (IP) services, broadband transport, colocation services, and patented Softswitch-based managed modem and voice services. Services offered under the "Level 3 Communications" brand include:

- Internet access services
- Managed modem dial-up services
- Broadband transport
- IP-centric voice services
- Private packet-switched services
- DSL Aggregation
- Colocation
- Metropolitan and intercity dark fiber

Based on the amount of Internet traffic on Level 3's IP backbone, Level 3 is among the largest Internet carriers in the world. Through Level 3's dial-up ISP customers, the company's dial-up infrastructure is accessible to approximately 90% of the U.S. population. When a typical Internet user at home dials the Internet using a modem in the

U.S., there is better than a one-in-three chance that their call is being completed within a Level 3 data center.

Level 3 began building this network beginning in 1997. Upon its completion in 2001 the Smithsonian Institution declared it "the biggest change in communications technology in 100 years." This is a literal truth. No other network of this scale had ever been designed and built entirely around the very technology that enables the Internet: TCP/IP. All others had been built just as they were beginning in 1870 – end-to-end circuit switches. As former FCC Chairman Michael Powell stated in the July 2004 issue of Fortune, "VoIP represents the most significant paradigm shift in the entire history of modern communications, since the invention of the telephone."

To make all of this possible Level 3 connects to the Internet via hundreds of Internet peering arrangements at Level 3 Gateways, located in 29 metropolitan areas.[1] These gateway facilities range in size from 50,000 to 550,000 square feet of advanced secure communications space. This is where both local and intercity fiber networks terminate, where high-speed transmission equipment is situated, and where routers and softswitch equipment is located.

Q. IS LEVEL 3 RECOGNIZED AS A TECHNOLOGY INNOVATOR?

A. Yes. Level 3 is widely recognized for its culture of technology innovation and leadership. The company has played a key role in helping to lead the global communications industry through a true revolution – the shift away from the legacy circuit-based technologies in place for the past century to new Internet Protocol (IP) technologies.

[1] Peering arrangements, as used here, refer to locations at which Level 3 exchanges traffic with other providers of Internet connectivity. Suppose an end user connected to an ISP that uses Level 3 for its Internet connectivity seeks to download information from a web site that is hosted by an ISP that uses some other entity (say, UUNet) for its Internet connectivity. For the information to get from the UUNet network to the Level 3 network, there must be connections between them.

The company built the first international, continuously upgradeable network optimized for IP technology. Level 3 now operates one of the largest Internet backbones in the world, as well as one of the world's largest softswitch platforms carrying billions of minutes of IP-based voice and data calls every week.

Level 3 engineers and scientists include some of the industry's most notable network architects and developers. They are responsible for innovations in many of the most important areas of IP-based communications, including softswitch networking, Multi-Protocol Label Switching, bandwidth provisioning, and network optimization.

Beyond advanced voice, video, and data services, Level 3 envisions IP technology becoming the foundation for a wide variety of communications companies that specialize in audio, video, and collaborative services for both businesses and consumers.

Today, Level 3 stands as an acknowledged leader in the communications industry, and continues to aggressively develop new technologies, pushing the boundaries as one of the key players in the technology revolution.

Q. HAVE OTHERS RECOGNIZED LEVEL 3'S ROLE IN THE DEVELOPMENT AND INNOVATION OF COMMUNICATIONS TECHNOLOGY?

A. Yes. The Smithsonian Institution has recognized the Level 3 network as an important component of the ongoing revolution in communications and information technology. In April 2000, the Smithsonian cited Level 3 as a Computerworld Laureate for its historic achievement in "helping to stimulate the biggest change in communications technology in 100 years."

Q. WHERE DOES LEVEL 3 OFFER SERIVICE?

A. The Level 3 Network serves 99 on-net markets – 77 in the U.S. and 22 in Europe. In addition, the network delivers wholesale dial access coverage to more than 93 percent of the U.S. population. The network offers voice services in more than 300 markets across North America.

Q. PLEASE DESCRIBE LEVEL 3'S NETWORK IN THE STATE OF WASHINGTON.

A. Level 3 owns and operates collocation space in Seattle as well as a fiber optic backbone throughout Washington. Level 3 also provides direct interconnection to Tier 1 Internet backbone facilities at the following Seattle locations:

- 14808 SE 16th St
- 18715 120th Ave NE
- 20307 North Creek Pkwy
- 1121 SE Everett Mall Way - Suite 220
- 14676 NE 95th St
- 1000 2nd Ave
- 1000 Denny Way
- 1122 3rd Ave
- 120 Lenora St
- 1200 3rd Ave
- 1501 4th Ave
- 1511 6th Ave
- 1914 3rd Ave
- 2001 6th Ave
- 3433 S 120th Pl
- 955 Broadway

But this is not the whole story. As I will explain in greater detail below, Level 3 has invested significantly in a vast interconnection architecture to ensure the seamless exchange of all of this Internet traffic with Qwest customers in Washington who want to access the Internet.

Q. PLEASE DESCRIBE HOW LEVEL 3 AND QWEST COMPETE FOR THE PROVISION OF WHOLESALE ISP SERVICES.

A. Level 3 serves enhanced service providers ("ESPs") and information service providers ("ISPs"), a subset of ESPs. ISPs require local connectivity to traditional circuit switched networks[2] and transport and termination services from Level 3, including modem functionality and collocation space, among other things. ESPs and ISPs use the Level 3 network to pass all types of data, including email, web download services, computer-to-computer data transfer, VoIP and other streaming media. As I mentioned above, Level 3's role in this market is significant – we carry one out of every three email or webpage visits, among the many other services we provide. Level 3 also serves RBOCs, ILECs, CLECs, cable companies, DSL providers, governmental entities, and some large enterprise companies and other carriers with transport and termination of voice and data traffic. Qwest does the same. As I will explain in greater detail below when an ISP purchases Level 3's (3)Connect® Managed Modem Product they are buying a bundled product that provides multiple components. Those components are:

- Direct Inward Dialing (DID) Service in the Local Calling Area
- Transport from the Local Calling Area to the Level 3 network
- Conversion of the TDM based modem connection to IP
- Authentication Services
- Operations Support
- Access to the Internet

Q. PLEASE EXPLAIN HOW WHOLESALE ISP SERVICES ARE USED.

A. End users who still require dial up access to the Internet – whether for reasons of availability or price - require access to such local numbers at the local level because none

[2] Most people casually refer to ILEC landline networks as the "PSTN" which is short for "Public Switched Telephone Network. This is a misnomer. All regulated wireline and wireless networks are part of the public switched telephone network. They are regulated and they must be made available to the public according to legal and regulatory requirements. Level 3 is a key part of the PSTN because of the connectivity its IP-based softswitch network provides within and outside of Washington.

can afford or are willing to pay toll charges to reach the Internet. Neither Level 3 nor its ISP customers assess toll charges on dialup customers. This is because ISP-dialup is offered as a local service on a local basis. Most ISPs charge very low flat rates or give away connectivity for accessing the Internet worldwide. So unlike traditional long distance voice where customers were charged anywhere from 5 to 10 cents per minute to make long distance calls, Qwest's local exchange customers make no changes to their local telephone service to call the Internet. They simply pay a low flat rate to an ISP to connect them to the Internet, provide email addresses, browser interfaces, security, and other valuable services that people use every day to shop, pay bills, communicate with friends and loved ones, do homework or catch up on the news.

Q. FROM A TECHNICAL PERSPECTIVE, HOW DOES LEVEL 3 ENABLE WHOLESALE ISP SERVICES?

A. At a high level, Level 3 deploys a vast national network using the latest generations of communications equipment. Because the latest generations of equipment can be very expensive, Level 3 deploys the equipment on a national and regional basis. For example, despite the fact that Level 3 is the nation's single largest provider of Internet services, the devices providing a key component to modem service (as well as VoIP) are deployed in approximately 26 locations nationwide. Seattle, for example is one of those locations. But this is only the beginning of the picture because there are multiple components in multiple regions supporting these services. This diversity allows Level 3 to achieve redundancy on its network as well. I will explain individual components of our service, including individual call flows later in my testimony.

Q. CAN YOU EXPLAIN HOW LEVEL 3 PROVIDES WHOLESALE ISP AND VOIP SERVICES IN WASHINGTON?

A. Yes. Level 3 does not deploy "modem banks" to accept calls to ISPs for dial up service. No one, not even Qwest, deploys "modem banks" anymore. Instead, Level 3 uses Media

Gateways to manage modem and VoIP traffic simultaneously. These gateways also connect Level 3's SS7 signaling systems to provide greater functionality more efficiently. This allows Level 3 to increase the density and number of ports that these devices support, which is efficient, driving down costs.

Moving outward from Level 3's network toward circuit switched incumbent networks, we establish interconnection by building fiber and collocating directly within ILEC central offices, through arrangements with other CLECs from whom we may purchase connectivity, through private lines purchased from ILECs and through cost-based transport where Level 3 is required under state law to pay backhaul of ILEC-originated traffic to points of interconnection. Attached as **Confidential Exhibit MDG-2** is a diagram showing the locations of Level 3's network interconnection in the state of Washington; **Exhibit MDG-3** provides a more detailed illustration of the network equipment involved in Level 3's interconnection with Qwest in the state of Washington and **Exhibit MDG-4** shows the close similarities between Qwest's and Level 3's provision of competing wholesale VoIP and wholesale dialup ISP services.

Q. SO LEVEL 3 USES THE SAME INTERCONNECTION NETWORK FOR ISP AND VOIP TRAFFIC?

A. Yes. As I will illustrate in several call flow diagrams, attached as **Confidential Exhibit MDG-5**, Level 3 maximizes efficiency and maintains low costs through efficient utilization of its interconnection architecture.

Q. YOU MENTIONED THAT LEVEL 3 COMPETES WITH QWEST FOR PROVISION OF WHOLESALE DIALUP, WHOLESALE VOIP AND OTHER SERVICES. HOW DO YOU KNOW THIS?

A. Qwest is well known to anyone in the industry as one of the few national networks competing in these markets. The chart below illustrates this.

Level 3	Qwest
(3) Connect Modem: Level 3 is the market leader in managed modem service. Our network processes more than 30 billion minutes per month – more than any other U.S. provider. As the leader in managed modem services, Level 3 enables you to provide dial-up connections to 90 percent of the United States without the costs and difficulties associated with building and maintaining your own nationwide infrastructure. (http://www.level3.com/559.html)	**Qwest Wholesale Dial**: "Dial-up network infrastructure (network-based modems support, V.90 V.92 and V.44 with dial coverage from over 2,500 points-of-presence (PoPs), and covering over 84% of the U.S. population with a local call." (*See* http://www.qwest.com/wholesale/pcat/natdial.html) Your ***end users' PCs dial local access numbers*** provided by Qwest to connect to local exchange carriers (LECs). Calls are authenticated via a Qwest-provided remote authentication dial-in service (RADIUS) proxy server communicating with your RADIUS authentication server. After an end user is authenticated and the end-user software negotiates the IP connection, the Qwest Network Access Server (NAS) ***routes end-user packets to the Internet,*** based on the destination IP address. (*Available at* http://www.qwest.com/wholesale/pcat/natdial.html)

Level 3	Qwest
Voice Termination for the Industry's Leading Carriers As a facilities-based carrier, choosing the right partner to enable and extend your service offerings is critical. Your underlying provider must have the reliability to deliver consistent performance and the flexibility to adapt to the rapid changes affecting a dynamic telecommunications landscape. The Level 3 Voice Termination service is delivered over the Level 3 voice network, which is engineered and purpose-built to the specifications of the world's largest, most demanding service providers. With North America's largest next-generation network and a 100 percent on-net nationwide footprint, Level 3 has the operational control to ensure end-to-end quality management of your voice traffic. Our integrated Time Division Multiplex (TDM) and IP voice backbone delivers on the promise of convergence. Whether you're offering traditional TDM services or pursuing cutting-edge VoIP applications – or both – Level 3 gives you the interconnection and termination options to fit your needs both now and in the future. **Enhanced routing and rating options** Level 3's superior network availability, high call completion and ***competitive, Local Access and Transport Area (LATA)- and LEC-based tiered pricing plans offer carriers of all sizes exceptional value.*** And for traffic that originates from your end users as IP, Level 3 is able to take advantage of regulatory structures to give you the benefit of even greater cost-effective termination. (*See* http://www.level3.com/2309.html)	**Wholesale Voice Termination Services** Wholesale ***Voice Termination Services*** provide high quality long distance service over our Macro Capacity® Fiber Network. A fundamental component of any size business, long distance service is a key building block in Qwest's ***virtual enterprise solution***, providing a complete suite of communication tools to meet our customers' needs. Voice Termination Services are part of the Qwest Express brand and give the customer the option of an RBOC/ITC or Blended rate. The RBOC/ITC option gives the customer two rates ***per LATA*** depending on whether termination is through the RBOC or an ITC. The Blended option gives the customer ***one rate per LATA***. For both types of service Qwest carries and bills for the call from the time the carrier' s originating switch signals the Qwest switch to the terminating point of the call. (*See* http://www.qwest.com/wholesale/pcat/natdial.html)

Level 3	Qwest
The VoIP Your Customers Want – With The Control You Need VoIP technology is gaining momentum, and your company wants to establish itself in the growing market. But with your brand on the line, you need to go to your customers with the features, coverage and experience they expect. The Level 3 VoIP Enhanced Local service is a wholesale solution that enables companies that operate their own Class-5 switching infrastructure to launch IP-based local and long-distance communications services to residential and business customers through their broadband connections. Level 3's proprietary Softswitch platform makes the service extremely efficient, and enables you to get to market quickly and cost-effectively with a high-quality VoIP service. (*See* http://www.level3.com/3184.html)	

Q. PLEASE DESCRIBE HOW LEVEL 3 AND QWEST COMPETE FOR THE PROVISION OF WHOLESALE VOIP SERVICES.

A. Both Qwest (and/or QCC) and Level 3 utilize the same network architectures to provide these services to providers nationwide. The call flow paths are the same; network utilization and expense incurred are the same and Level 3 exchanges virtually all of this traffic on a local basis with Qwest. Accordingly, imposing greater costs in the form of network configurations or imposing upon Level 3 higher compensation is irrational and harms competition.

Q. BASED UPON YOUR UNDERSTANDING OF THE QWEST NETWORK, DO QWEST AND LEVEL 3 UTILIZE FUNCTIONALLY THE SAME NETWORK ARCHITECTURE TO TRANSPORT AND TERMINATE ISP BOUND TRAFFIC?

A. Yes. From a technical perspective, Level 3's use of a POI and/or direct end office transport to assume responsibility for the transport and termination of ISP-bound traffic is

not materially different than Qwest's and its subsidiaries' use of PRIs for the same function. There is no functional difference between Qwest and Level 3's architecture for the provision of these competing services.

As Mr. Wilson explains in Section 5 of his Direct Testimony, Qwest uses the same architecture to provide its wholesale service by also extending its network into the Local Calling Area and backhauling the circuits to their switching platform. The only difference in the two companies' architectures for this service is that Qwest chooses to use D Channel PRI signaling in the DS-1s it provisions for DID service while Level 3 uses what Level 3 considers is a more robust SS7 signaling solution for the DID call quality, routing and service control. Table 1, below, summarizes these network similarities and differences.

TABLE 1

Component	Function	Level 3	Qwest
DID Number Blocks	Provides group of numbers to a customer to use.	**SAME:** Secures own Numbers from NANPA	**SAME:** Secures own Numbers from NANPA
Multiplexer	Allows multiple circuits to be aggregated on a larger circuit for more efficient transport	**SAME:** Owns and Leases	**SAME:** Owns and Leases
Private Line Transport	Provides connectivity for services from one area to another	**SAME:** Owns and Leases	**SAME:** Owns and Leases
Signaling	Allows for call management	**SAME:** SS7 signaling	**SAME:** PRI D Channel signaling is a subset of SS7 signaling.

This is no different than how Qwest provides such services.[3] Payments from QCC to Qwest for this connectivity, if they are made, have no impact on Qwest's cost of service, and therefore, no impact on customer pricing because both companies are wholly-owned subsidiaries of Qwest Communications International, which is the publicly traded entity. And there is no difference between Level 3's network configuration and the configuration Qwest sells to its subsidiary. This is illustrated in attached **Exhibit MDG-3,** which includes details of Qwest's and Level 3's networks within the Seattle Washington LATA.

Q. BASED UPON YOUR UNDERSTANDING OF THE QWEST NETWORK, DO QWEST AND LEVEL 3 ALSO UTILIZE THE SAME NETWORK ARCHITECTURE TO TRANSPORT AND TERMINATE VOIP TRAFFIC?

A. Yes. From a technical perspective, Level 3's use of a POI and/or direct end office transport to assume responsibility for the transport and termination of VoIP traffic is not materially different than Qwest and its subsidiaries use of PRIs for the same function. There is no functional difference between Qwest's and Level 3's architectures for the provision of these competing services.

Q. SIMILARLY, BASED UPON YOUR UNDERSTANDING, DO LEVEL 3S ISP AND ESP CUSTOMERS NEED LEVEL 3 TO PROVIDE THEM WITH THE ABILITY TO RECEIVE TRAFFIC FROM QWEST?

A. Yes.

IV. ISSUES IN DISPUTE

Q. PLEASE DESCRIBE THE MAIN AREAS OF DISPUTE.

A. As I noted above, this case is about whether Level 3 should pay Qwest more money for deploying network gear regionally rather than locally. Qwest seeks more money in three basic ways:

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[3] For a full description of Qwest's Wholesale Dial product, *see* Qwest's webpage at the following: http://www.qwest.com/wholesale/pcat/wholesaledial.html

1. *Compensation for ISP-Bound Traffic.* The key issue presented in this arbitration is the scope of intercarrier compensation for calls that Qwest's end users make to Internet Service Providers ("ISPs") enabled by Level 3. Qwest agrees that, where some of the equipment that is used to provide affordable dial-up Internet in Washington are located in the calling party's local calling area, the FCC's compensation regime of $0.0007 per minute applies. The dispute is over what to do when the "modems" (and what Qwest defines as "end users") are not located in the caller's local calling area – and, in particular, when the ISP receives calls using "virtual NXX" or "VNXX" arrangements.

In this regard, Level 3 believes the normal compensation regime still applies. Qwest, however, seeks an unfair benefit – they want Level 3 to pay Qwest's costs for originating this traffic. First, the FCC's low per-minute rate already compensates Qwest for its transport costs by giving Qwest a substantial discount off cost-based call termination rates. Second, those transport costs are *de minimis.* Sound economic and public policy favors adopting Level 3's position on ISP-bound traffic, including traffic Qwest contends is "VNXX".

2. *Compensation for VoIP Traffic.* The same arrangements that make dialup ISP service affordable – arrangements that Qwest opposes – also make VoIP affordable. Qwest wants the VoIP end of the call to be deemed to be at the "VoIP POP" – a term Qwest never actually defines in the contract. Level 3 assumes this is a reference to the location where a plain old telephone call is converted to VoIP format or vice versa, but other approved sections of the Agreement are contradictory or, at best, make this unclear. This lack of definition and clarity over a term that directly affects network planning decisions can only lead to costly and protracted future disputes – ultimately creating an

uncertain and precarious business climate in Washington that will inhibit investment in this vital Internet technology.[4]

Level 3 proposes that the Commission apply the same compensation rule to VoIP traffic that applies ISP-bound traffic – the networks supporting ISP-bound and VoIP are the same. So are the costs. There must be a clear and unambiguous rule governing compensation for this traffic to ease contract administration and to minimize future disputes.

3. *Combined Traffic Types on LIS Trunks.* Level 3 would like to use its existing and deployed network to provide low cost long distance termination in competition with the nation's largest carriers: Verizon, SBC and Qwest. Each has entered long distance markets, is doing well, and each owns a long distance affiliate. This means that in-region that they pay access charges to themselves – which provides an enormous cost advantage. Level 3 is not and never has been a traditional retail long distance carrier, but we reached agreements with SBC, Verizon and BellSouth permitting us to offer low cost termination services for other long distance carriers using our existing interconnection facilities. Doing so allows Level 3 to a 15% increase in network efficiency.

[4] The FCC rejected any requirement that a VoIP provider track physical location where there is no service driven reason for doing so. *See* In the matter of Vonage Holdings Corporation Petition for Declaratory Ruling Concerning an Order of the Minnesota Public Utilities Commission, *Memorandum Opinion And Order* WC Docket No. 03-211, FCC 04-267, ¶¶ 25, 29 (rel. November 12, 2004), ("*Vonage Order*"). ("Rather than ***encouraging and promoting the development of innovative, competitive advanced service offerings, we would be taking the opposite course,*** molding this new service into the same old familiar shape.")

A. ISSUE 1: WHETHER EACH PARTY BEARS ITS OWN COSTS OF EXCHANGING TRAFFIC AT A SINGLE POINT OF INTERCONNECTION PER LATA.

Q. HOW DOES LEVEL 3 PROVIDE CONNECTIVITY WITH QWEST IN WASHINGTON?

A. In Washington as well as nationwide, Level 3 primarily deploys a fiber optic network, but modifies that approach according to technical demands and business realities. In the core of its network, therefore, Level 3 deploys and maintains an extensive network of intercity and metro fiber facilities. The intercity fiber facilities interconnect at network gateways, which I previously described as massive collocation and interconnection facilities. In addition to this fiber optic core network, Level 3 utilizes leased facilities to establish connectivity to Qwest tandem offices where construction of entirely new plant is infeasible. Regardless of the method chosen – leased or constructed transport facilities, **Confidential Exhibit MDG-2**, attached, illustrates how deeply Level 3 has built out its interconnection network in Washington.

Q. EXPLAIN IN PRACTICAL TERMS WHAT LEVEL 3'S INTERCONNECTION PERMITS IN WASHINGTON?

A. This configuration allows Level 3 to maximize the use of the network end points and bring traffic back to centrally located switches and routers. The Level 3 network is based upon Internet Protocol (or IP) but must have interfaces based upon Time Division Multiplexing (TDM) in order to exchange traffic with circuit switched networks, such as the one Qwest deploys in Washington.[5] In addition local loops to customer facilities are based upon TDM even if they are used for Internet connectivity, Private Line

[5] Qwest has been working since 2001 to upgrade to an all-IP network. *See* "Qwest First Local Carrier to Serve Customers Using Voice Over Packet Network Architecture" *available at*: http://www.nortelnetworks.com/corporate/news/newsreleases/2001d/10_11_01_qwest.html ("Qwest intends to use to replace traditional, circuit-switched networks throughout its 14-state region with a softswitch packet network and serve customers using a voice over packet network architecture.").

Connectivity or Voice Service. (the diagram below illustrates a Tandem POI configuration in Washington where Level 3 provides many services from the location, including connectivity for still popular low cost dialup as well as increasingly popular VoIP services). This diagram roughly corresponds to the red dots shown in **Confidential Exhibit MDG-2,** which reflect locations where Level 3 provides such connectivity at Qwest Tandem Offices within Washington.

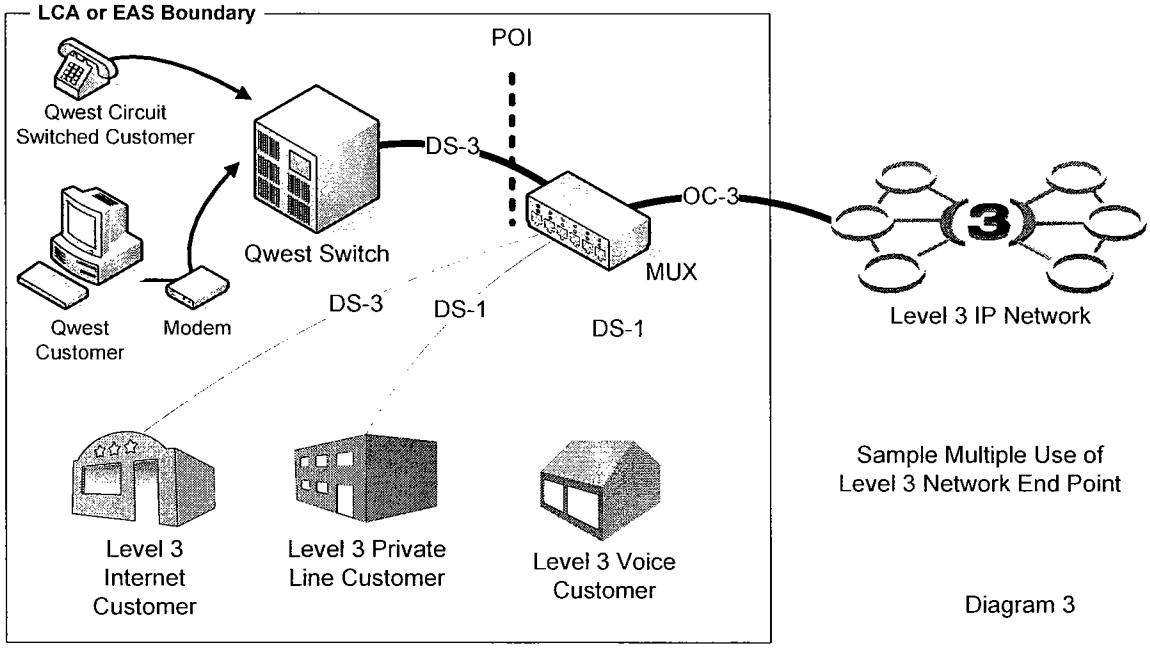

Diagram 3

Q. IF LEVEL 3 IS PICKING UP MILLIONS OF TELEPHONE CALLS FROM AND DELIVERING AN INCREASING NUMBER OF CALLS PER DAY TO QWEST'S CUSTOMERS IN QWEST LATAS, DOESN'T THIS IMPOSE SUBSTANTIAL COST UPON QWEST?

A. No. If one examines the actual physical configuration of Level 3's network, one can see that Level 3 establishes connectivity at POIs throughout the state. Moreover, as I demonstrate below, even if we assume a single POI for a particular LATA, the cost is extremely low. This should be obvious in the first analysis because customers are paying for local calling area service from Qwest. If Level 3 picks up traffic within the local calling area, there is no additional cost imposed upon Qwest because the call simply

leaves their network in that LCA. If, alternatively, Level 3 picks that call up outside of the local calling area, then the question is what the additional transport costs from the caller's LCA to the point at which it leaves Qwest's network and enters Level 3's networks. But this cost is very low as well.

Q. PLEASE EXPLAIN THE CONCEPT OF A VNXX CALL AS YOU UNDERSTAND IT.

A. Assume that Level 3 wants callers outside of Seattle to be able to reach its network using their Qwest local telephone service. As a local exchange carrier, Level 3 updates a national database - the Local Exchange Routing Guide ("LERG") with instructions that tell switches in the circuit-swiched world to send those calls to ports on Level 3's softswitch – whereever it may be located. If, for example, Level 3 did not have a POI in a particular local calling area, when the Qwest customer within that calling area dails Level 3's number, the switch asks for and receives instructions to direct that call over common or dedicated (usually dedicated) facilities that connect to a specific port on Level 3's softswitch. Qwest, therefore, would have to carry – or "backhaul" in industry terms – this call from its switch to Level 3's POI within the LATA where that LCA is located. The real question, therefore, is not whether single POI is technically feasibile or an expensive method of interconnection – because nothing occurs that isn't standard on all circuit-switched networks - it is simply one of the incremental cost of transport between certain local calling areas for traffic originating on or terminating to Qwest's network.

Q. BEFORE WE PROCEED FURTHER, DOES LEVEL 3'S REQUEST FOR A SINGLE POI MEAN THAT LEVEL 3 WILL REMOVE EXISTING INTERCONNECTION FACILITIES?

A. No. Level 3 has built out and continues to invest in its network independent of single POI per LATA requirements, which simply establish a floor for basic interconnection obligations. Level 3 has sound business reasons for doing so.

Level 3 guarantees superior network performance and tight network performance controls for the services it provides to its customers. The service quality guarantees and our customers' expectations for service quality require Level 3 to control as much of the network as reasonable. In order to maintain superior performance standards and control Level 3 has chosen to employ an extensive physical network, which, over time, has grown to accommodate a vast majority of Washington traffic on a local basis. Moreover, where Level 3 does not have a POI, Level 3 and Qwest cooperatively configure dedicated capacity bypassing Qwest tandem switching, which is more efficient than using common transport and conserves tandem switch capacity.

Q. HAVE YOU LOOKED AT QWEST'S PROPOSAL TO USE FGD AS A SINGLE TRUNKING NETWORK?

A. Yes, I looked at March Traffic and the Qwest FGD Tariff. The tariff has no provisions that we could find for local traffic. But based upon Level 3's February 2006 ISP Bound traffic the tariff for FGD would have us pay Qwest approximately 296% more than we pay right now for the traffic we exchange. The calculations for this figure are contained in **Confidential Exhibit MDG-5G**.

Q. IF ONE ASSUMES THAT LEVEL 3 MAINTAINS IT'S EXISTING ARCHITECTURE, WHAT COST IS IMPOSED ON QWEST?

A. We have every reason to believe that Qwest's switches – whether end office or tandem – are connected by fiber optic facilities. Given traffic volumes between Level 3 and Qwest, no reasonable network engineer would deploy anything less than facilities capable of

carrying a DS-3's worth of traffic (equivalent to 672 individual lines) between Qwest's end offices and tandems. If we then use Qwest's SGAT DS3 mileage rate element, we can begin to examine actual costs of exchanging traffic. The recurring DS-3 mileage element is $11.55 (*See* Qwest Washington SGAT: Section 7.3.3.4 Over 8 to 25 miles = $11.55 recurring/mile). Each DS3 carries about 29 million minutes of use. (672 circuits X 30 days X 24 hours X 60 minutes = 29,030,400 minutes). Because all people do not stay online all day and all night, and because dialup users must disconnect to use their telephones, Qwest's facilities carrying its traffic are typically underutilized. In Level 3's experience we have found it relatively accurate to assume these facilities carry about 50 percent of the minutes per month that are theoretically possible. This works out to about 14.5 million minutes per month. Assuming Level 3 were to maintain it's existing POIs in the Seattle LATA, then determining the cost would require we multiply the DS3 monthly cost of $11.55 per mile by the total weighted miles outside of the of the LCA with POIs of 10.04 miles. This calculation shows that there is an incremental network cost of approximately $116.00. Dividing this number by the average minutes on a DS3 to calculate the per minute cost comes to only **$0.000008 per minute of use**. The math looks like this:

1,601,408	Access Lines in LCAs with POIs
1,840,895	Access Lines in LATA 674
5.79	LCA Weighted Total Mileage
15.83	LATA Weighted Total Mileage
10.04	Mileage Difference
$11.55	DS3 Per Mile Rate (Telric Per Mile 8-25 Miles)
14,500,000	MOUs supported by a DS3 in a Month
$0.000008	**Cost per MOU to extend past LCA to LATA**

So if one uses Washington approved TELRIC rates, it is clear that Level 3's network Architecture imposes very little cost. As I describe more fully below, and as is a generally accepted network valuation principle, Level 3's network provides Qwest customers value by permitting them to access more functionalities – including Internet via a flat rate telephone line or to receive telephone calls from Voice over Internet Protocol providers. This is also demonstrated by comparing Qwest's SGAT rate for local termination of $0.001178 per minute to the rate Level 3 says should apply to ISP-bound and VoIP traffic - $0.0007; one can see that the special rate for ISP bound more than takes into account any cost that Qwest would bear on it's side of the POI.

Q. IF LEVEL 3 MAINTAINS ITS CURRENT POIS, IS ANY COST IMPOSED UPON QWEST?

A. As calculated above, very little. The cost is so little because the actual amount of traffic that Qwest backhauls from local calling areas where Level 3 does not have a POI to a Level 3 POI is extremely small. Because Qwest's local rates recover all costs of facilities for local calling, it can only possibly complain about areas where Level 3 does not already have a POI in the LCA, but even there, the cost is very small.

Q. SO SINGLE POI IMPOSES RELATIVELY LITTLE ADDITIONAL COST UPON QWEST?

A. Correct.

Q. AND THIS WOULD BE TRUE OF VNXX AS WELL?

A. Yes, because Qwest does not incur any cost beyond the point of interconnection.

B. ISSUE 2: WHETHER LEVEL 3 MAY EXCHANGE ALL TRAFFIC OVER THE INTERCONNECTION TRUNKS ESTABLISHED UNDER THE AGREEMENT.

Q. WHAT IS LEVEL 3'S POSITION ON THIS ISSUE?

A. Level 3 and Qwest should not be required to set up different trunk groups for "types" of traffic solely as a result of regulatory classification. Instead, Level 3 should be allowed

to make efficient use of its network to carry ISP-bound, VoIP and terminate traditional interexchange traffic over existing network facilities. While different compensation applies to these types of traffic, Level 3 has worked out traffic monitoring and payment arrangements with Verizon, AT&T and BellSouth that ensure each party's financial interests are protected. Otherwise, why would these carriers have agreed to Level 3's proposals? Moreover, neither the networks they deploy nor the traffic exchanged is different than what Level 3 does and proposes to do with Qwest.

Long story short, the nation's largest local telephone companies agreed to use a single interconnection network with Level 3 because it was efficient for them as well – one road between the networks is easier to manage than two roads and we use fewer on and off ramps as well. It also turns out –based upon over a year's experience doing this with Verizon, AT&T and BellSouth - that Level 3's billing methods are less costly but just as accurate – we've had no billing disputes result from terminating traffic in this manner – even after our acquisition of WilTel. This makes sense because network integration is a gradual process. Agreed upon sections of the Agreement already provide for Joint Planning and Forecasting, so there can be no sudden change in the amount of access traffic over the network.[6]

Q. IS LEVEL 3 TRYING TO AVOID PAYING ACCESS CHARGES ON INTEREXCHANGE TRAFFIC?

A. Absolutely not. Level 3 agrees that this traffic is subject to access charges, and has language in its proposed agreement that provides for the payment of those access charges.

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[6] Agreed upon Section 7.2.2.8 requires that the parties work in good faith to define a mutually agreed upon forecasts, participate in semi-annual joint planning meetings "to establish trunk design and Provisioning requirements", maintain a rolling six (6) month advance planning window to ensure that Qwest has sufficient switch capacity, and follow forecasting and provisioning requirements of the Agreement for the appropriate sizing of trunks, and use of direct End Office Switch vs. Tandem Switch routing. It also requires that Level 3 make advance deposits when Level 3's forecasted amounts are too low. This section is agreed upon; it is not in dispute.

Q. DO LEVEL 3'S PROPOSALS PROTECT QWEST?

A. Yes. Qwest would receive payments in exactly the same manner, exactly the same amount and exactly the same timeframe it receives for such traffic from traditional long distance carriers. Moreover, Level 3 is one of the nation's most interconnected carriers. We actively support fair and accurate billing. To do otherwise would be detrimental to our ability to compete with Qwest for low cost termination of interexchange traffic. Carriers and non-carriers alike rely upon Level 3's proven integrity to serve their business needs.

Q. WHAT OTHER TRUNKING ISSUES EXIST BETWEEN LEVEL 3 AND QWEST?

A. Qwest seems reluctant to accept incoming IP-enabled traffic (that is, traffic that originated by means of a broadband data connection as opposed to a normal telephone) at all. To the extent that it will accept the traffic, however, it wants that traffic, too, to be on trunks other than the existing "local" interconnection trunks. In addition, Qwest may even want separate trunking for some calls from its customers to ISPs served by Level 3.

Q. IS THERE ANY TECHNICAL REASON TO REQUIRE SEPARATE TRUNK GROUPS FOR LOCAL, INTRALATA, INTERLATA, ISP-BOUND, AND/OR IP-ENABLED CALLS?

A. None whatsoever. As Mr. Wilson explains in Sections 3 and 4 of his testimony, although various kinds of calls might begin in non-PSTN format, or be transported some or all of the way along their journey in a non-PSTN format (such as IP-enabled), Level 3 delivers all of its traffic bound for Qwest subscribers in standard PSTN circuit switched format. Level 3 also provides standard SS7 signaling, and receives all traffic from Qwest in that same, standard format. (As I mentioned above, one of the capabilities of our softswitches is to perform the necessary conversions from IP to TDM format and vice-versa). So, all traffic coming from Qwest is obviously in TDM format, and by the time we deliver any

of this traffic to Qwest, it is all in that same format as well - no matter what changes the traffic may undergo at other parts of its journey.

Q. WHAT COST ELEMENTS ARE ADDED TO THE NETWORK WHEN MULTIPLE SEPARATE TRUNK GROUPS MUST BE MAINTAINED?

A. In physical terms, to establish a DS1 trunk group between two switches requires, essentially, the following. First, each switch must be programmed to separately identify the traffic bound for the particular trunk group and to direct that traffic to the appropriate "port" on the switch. Second, there must actually ***be*** a trunk port (a separate physical device) available on the switch to accommodate the new DS1 trunk group. The capacity of switches to accommodate new trunk ports is limited; at some point it is necessary to add new switch modules (that contain more ports) in order to add new trunk groups, and, for any given switch, at some point the total number of ports is reached and the only way to establish a new trunk port is to add a new switch.

The same holds true for the transmission medium (in Level 3's case, typically optical fiber) used to carry a DS1 trunk group between Level 3 and Qwest. The DS1 trunk physically runs from the Level 3 switch to a device known as a digital cross-connect system (DCS) – which has its own DS1 ports and port-capacity limits – and then on to the fiber optic terminal (FOT) that actually sends and receives the laser signals used to convey information over optical fiber. The FOT also has its own DS1 ports and port-capacity limits. Adding DS1s, therefore, sooner or later requires the purchase of additional trunk ports on switches, DCSs, and FOTs, eventually requiring that these devices be "grown" or that new switches, DCSs, and/or FOTs be purchased. Obviously, over time this will greatly increase the capital requirements of operating the network.

From Level 3's perspective, when it is necessary to incur these costs due to growth in traffic volume, we of course do so. But at the same time, if it is ***not*** necessary

to incur these costs in order to carry a given volume of traffic, we obviously do not want to do so. This is why the issue of using efficient trunking arrangements is so important to Level 3, and why we believe that it is entirely unreasonable to allow Qwest to require that traffic be broken down into multiple, smaller trunk groups if there is no technical reason for doing it.

Q. WOULD QWEST FACE THE SAME INEFFICIENCIES FROM MULTIPLE TRUNK GROUPS THAT YOU HAVE DESCRIBED ABOVE FOR LEVEL 3?

A. Yes. Just like Level 3, Qwest would need to dedicate DS1 ports on its FOTs, DCSs, and switches to the additional DS1 trunk groups made necessary by inefficient, multiple trunk groups.

Q. WHY WOULD QWEST WANT TO IMPOSE SUCH INEFFICIENCIES ON ITSELF?

A. I obviously can't say for sure. That said, it is well known among telecommunications engineers that traffic is migrating off the traditional landline PSTN. Some normal voice traffic is just "disappearing" as end users communicate via email and instant messaging, rather than making telephone calls at all. Some PSTN voice traffic is migrating to wireless, as people use their cell phones to make calls that would otherwise have been made over the landline network. Some PSTN voice traffic (although not as much as Qwest might want the Commission to believe, at least in the short run, is migrating to VoIP services such as those offered by Vonage or Skype. Unless Qwest had perfect foresight, it is quite possible that it overestimated its own needs for capacity and could well have over-invested in switch, DCS, and/or FOT capacity. (Of course, since Level 3 is a relatively new and still-growing carrier, Level 3 is not sitting around with excess capacity on its switches, FOTs, etc. Level 3 has to spend capital dollars to meet growing demand.) In that situation, Qwest might see it as advantageous to ***require*** a competitor like Level 3 to use an inefficiently large number of trunks. If Qwest already has the

excess capacity on hand - which it would, if total demand for its services was shrinking - then it could impose large capital and other costs on Level 3, with little or no new cost to itself, simply by convincing this Commission that there was some reason to require multiple, inefficient trunk groups.

Q. ARE THERE STILL OTHER POTENTIAL PROBLEMS WITH QWEST'S PROPOSAL?

A. Yes. Taking essentially the reverse of the situation described above, if Qwest does ***not*** have excess capacity, Qwest might actually not be able to add the necessary trunk ports in a timely fashion. This would put an effective limit on the rate at which Level 3 could grow and make competitive inroads in the market. At least from the perspective of the industry as a whole, this is not hypothetical. As I understand it, in a case within the last year or so, the FCC found that Verizon had violated the Communications Act by reason of having insufficient capacity to permit interconnection with a competitor (Core Communications) to grow. If a true industry giant like Verizon did not invest in enough capacity to handle growth in interconnection requirements, it is of course possible that Qwest would be in the same position.

Q. DOES COMBINING DIFFERENT REGULATORY "TYPES" OF TRAFFIC (SUCH AS LOCAL AND ACCESS TRAFFIC) ON THE SAME TRUNK GROUP RESULT IN AN INCREASE IN THE POSSIBILITY OF FRAUD OR INTENTIONAL MISROUTING OF CALLS?

A. No. Any company can intentionally misroute calls to perpetrate fraud, whether or not traffic is combined on a single trunk group. Dishonest carriers can change the SS7 call identification information to make access traffic appear to be local traffic if they so choose. This can be done whether the traffic is put on separate trunk groups or on a single trunk group. Level 3 always pays the appropriate access charges for access traffic and has no intention of changing call information or inappropriately routing calls to avoid

access charges. But requiring separate trunk groups to prevent so-called "call laundering" is no more useful or effective than it would be to require banks to provide one copy of everyone's bank statement on plain white paper, and then an extra copy on special yellow-and red-striped paper, be to prevent "money laundering." You can establish such a requirement - obviously at an increased cost - but doing so has nothing to do with preventing the problem at issue.

Q. PLEASE DESCRIBE THE PROCESS BY WHICH PROPER BILLS FOR INTERCARRIER COMPENSATION ARE DEVELOPED.

A. Normally billing for intercarrier compensation is accomplished in several stages. First, the SS7 signaling network transmits data about an incoming call, such as the identification of the carrier delivering the call, the calling number, the dialed number, the LRN if the dialed number has been ported, etc. The switch receiving the traffic generates a record, known as an "AMA" record in traditional PSTN circuit switches, that records this information, along with other information such as the time (to the second) that the call starts and stops, perhaps the specific trunk on which the call was received, and other switch-specific information. These "AMA" records are then processed through what is known as a "mediation" system into industry-standard "EMI" (or "electronic message interchange") records. The EMI record basically takes the AMA or equivalent data and puts it into an industry-standard format (sometimes known as a "CDR," or "call detail record"). These records are then run through a billing system that applies programmed logic to the data in the records to determine whether, how much, and who to bill.

This process normally occurs on a call-record-by-call-record basis. So, it doesn't actually matter, for LEC-to-LEC traffic exchange, whether the traffic on a given trunk is subject to different charging regimes or the same; each call is (or can be) rated individually.

Q. IS THAT THE WAY ALL CARRIERS ACTUALLY BILL FOR THIS TYPE OF TRAFFIC EXCHANGE?

A. No. First, some carriers have less capable mediation or billing systems than others, so not all carriers are capable of performing the call-by-call review. Another carrier might have a bill-and-keep arrangement with respect to much or all of the traffic exchanged with interconnected LECs, and so not need to go through the call-by-call process. Second, carriers can establish a Percent Local Use (PLU) and Percent Interstate Use (PIU) for calls on a trunk group, updating the information periodically to assure that it is correct. Basically, instead of reviewing the call-by-call data on a monthly basis for billing, all or a sample of a month's traffic is reviewed periodically to determine what percent of traffic falls into which billing category. In this regard, Level 3 has offered to track the Percent of IP Use (PIPU) to measure the percent of IP-Enabled traffic that is exchanged between the parties. This information can be audited if there is any doubt as to its validity. These two methods are being used today by various CLECs and ILECs to manage the combining of different traffic types on trunk groups.

Q. HOW DOES LEVEL 3 PROPOSE TO CALCULATE THE PLU FACTOR?

A. I describe the process in detail below in Section 6 of Ken Wilson's testimony, "Combining Different Traffic Types on Interconnection Trunks." This process is being used by Level 3 in all of the Bell South states, SBC states, and Verizon states, and similar processes are used by other CLECs with the ILECs.

Q. HAVE OTHER COMPANIES DEALT WITH THE BILLING ISSUES ASSOCIATED WITH COMBINING DIFFERENT TYPES OF TRAFFIC ON INTERCONNECTION TRUNKS?

A. Yes. Other CLECs have been using factors in many states for more than five years. Several IXCs with CLEC affiliates combine different traffic types on FGD trunks with Qwest, using PLU to handle carrier billing. These IXCs started off with an FGD network for the purpose of exchanging intrastate and interstate access traffic. As their business strategy changed and these carriers decided to enter the local market, they made use of the FGD network that was already in place to handle the exchange of all their traffic. Similarly, Level 3 started out with a local network established for the purpose of exchanging local traffic. As described above, there is no technical or "billing"-related reason that Level 3 should not be able to use those same trunks for terminating FGD and other types of traffic. Qwest and Level 3 will be able to do so if Qwest is required to allow the exchange of all traffic over the existing local trunks.[7]

Q. DOES QWEST USE A PLU FOR DISTINGUISHING LOCAL AND INTRALATA TOLL TRAFFIC ON INTERCONNECTION TRUNKS?

A. Yes. That is, Qwest already permits the combination of local and intraLATA toll traffic - normally subject to different charging regimes - on a single trunk group, and uses PLU factors for determining how many minutes are subject to access charges and how many are subject to reciprocal compensation. In other words, even Qwest allows mixed traffic on the same trunk group today. To distinguish the traffic that is subject to reciprocal compensation from the traffic that is subject to intrastate access, it provides on a quarterly basis, a PLU factor to the terminating carrier. Likewise, it expects any carrier originating

[7] Qwest calls these "LIS" trunks, for "Local Interconnection Service," but that is actually a misnomer. Qwest and Level 3 are co-carriers; although each is responsible for the transport and termination of traffic delivered by the other, Qwest is not providing Level 3 a "service" in the normal sense, any more than Level 3 is providing Qwest a "service." Rather, in order for each carrier to provide full "service" to its respective customers, the two carriers enter into interconnection arrangements.

traffic that terminates to Qwest to provide a PLU factor to Qwest. It is neither technically challenging nor in any way unreasonable to extend that process to include a PIU or other factors to determine the distribution of traffic among whatever different regulatory traffic "types" might end up existing under our final contract.

Q. DOES LEVEL 3 HAVE AN FGD NETWORK AVAILABLE BY VIRTUE OF ITS ACQISITION OF WILTEL?

A. No. Although WilTel has a Feature Group D network, there are many technical, operational and business reasons that make Level 3's use of such a network infeasible. First, to continue to achieve the stated benefits of the transaction, Level 3 must find the most efficient utilization of both networks. Because WilTel's network employs circuit switches; it is the most efficient network. Moreover, it is not maximized for the exchange of IP traffic. Continued use of WilTel's FGD network, therefore, is not efficient. Second, Level 3's volume of local traffic is enormous. Since Level 3's network is already interconnected on a vast scale to exchange such traffic and WilTel's is not, shifting Level 3's traffic over to the WilTel network would be disruptive to both networks. Third, even if the first and second concerns could be addressed, switching over to FGD routing in one part of the country while the company utilizes a single interconnection network in most of the rest of the country would cause routing and billing inconsistencies across Level 3's nationwide footprint. This is because Level 3 already terminates traditional long distance traffic over its interconnection network with Verizon, AT&T and BellSouth. Level 3's agreements permitting single interconnection network with these carriers are publicly available. Qwest or one of its CLEC subsidiaries can easily opt into these agreements out of region, realizing the same cost savings as Level 3, while requiring Level 3 to maintain two networks inside of Qwest's traditional ILEC territory. The advantage is obvious because Qwest's affiliates have long since

constructed a FGD network within Qwest's 14 state region, which today they pay continue to pay Qwest. As Qwest and its CLEC and ESP affiliates are all owned by the same parent, the payment of such amounts makes no difference to the public traded parent corporation.

Lastly, it is well known that the WilTel FGD network lacks incremental capacity to encompass additional traffic and much of the existing capacity was due to purchase commitments by AT&T which will expire in the next two years. Furthermore, any transition, even if it could be accomplished, would be subject to the inherent risks to the quality of service to customers, including disconnects and outages. Accordingly, Level 3 should be encouraged to make the most efficient use of its existing network investment.

Simply put, requiring Level 3 to construct and operate a second interconnection network – whether shifting traffic to WilTel or by forcing Level 3 to suffer the costs and delays of purchasing such a network from Qwest – would significantly impair Level 3's ability to compete with Qwest, Verizon and AT&T for low cost termination of traditional long distance traffic.

Q. HAS LEVEL 3 AGREED TO SEND ONLY "LOCAL" TRAFFIC TO QWEST'S "LOCAL ONLY" TANDEM SWITCHES?

A. Yes. Most Qwest switches are currently carrying both local and toll traffic. These switches can easily handle trunk groups that carry both local and toll traffic. Where Qwest has a tandem switch that currently only handles local traffic, however, Level 3 has agreed to send only local traffic to such switches.

Q. HAS LEVEL 3 AGREED NOT TO SEND TOLL TRAFFIC THAT DOESN'T TERMINATE TO QWEST END USERS OR UNE/RESALE CUSTOMERS TO QWEST END OFFICE SWITCHES?

A. Yes. Qwest has told Level 3 that is expects difficulty with Independent Telephone Companies ("ITCs") and other CLECs that expect to receive recording data from the

Qwest tandem switch when an IXC terminates traffic to such other carrier's through Qwest's network. Because Qwest has configured its so-called "LIS" trunks without the same recording capabilities as FGD trunks, Qwest will not be able to provide such data to these carriers. This would create a situation in which these 3rd party LECs would receive traffic as to which they would have inadequate information to actually render an access charge bill. To avoid this situation, for the relatively limited amount of IXC traffic that Level 3 will deliver to Qwest for further delivery to ITCs or other CLECs, Level 3 has agreed to send such traffic only to Qwest's toll tandems where adequate recordings for the 3rd parties can be made.

Q. QWEST STATES THAT LEVEL 3 MUST DESIGN ITS INTERCONNECTION TO COMPORT WITH QWEST'S EXISTING NETWORK AND NOT INTERCONNECT IN A MANNER THAT RISKS EXHAUSTING QWEST TANDEMS. ARE THESE STATEMENTS JUSTIFIED?

A. Qwest is completely wrong to suggest that Level 3 is or should be required to design any part of its network to mirror, match, duplicate, or conform to Qwest's network design. Network technology has changed so much since Qwest started deploying its network in Washington that if ***Qwest*** were building a new network today, to serve its own existing customer base, ***Qwest itself*** would not re-generate the same network that it actually has today.

Now, that said, Qwest does have a legitimate technical concern that neither Level 3 nor any other interconnected carrier should deliver such large amounts of traffic to Qwest's tandem that the capacity of the tandem itself would be overloaded. It is standard practice in the circuit-switched telephone industry to establish direct trunks between switches when the level of traffic between them exceeds a certain level. Given this, Level 3 is perfectly willing to work with Qwest to avoid the problem of tandem overload by jointly engineering separate trunk groups that go directly between Level 3

and those Qwest end offices with enough traffic to justify the direct trunking. These are known in the industry as "Direct End Office Trunks," or DEOTs.

Q. GIVEN THESE TECHNICAL CONCERNS WITH ESTABLISHING MULTIPLE TRUNK GROUPS ALONG THE LINES QWEST IS SUGGESTING, HOW DO THE KEY TECHNOLOGY POLICIES YOU IDENTIFIED EARLIER IN YOUR TESTIMONY RELATE TO THE QUESTION OF ESTABLISHING MULTIPLE TRUNK GROUPS TO THE SAME QWEST SWITCH OR SWITCHES?

A. Level 3 proposes to deliver traffic to each Qwest switch on the single, efficient, combined trunk group that Level 3 currently has in place and is exchanging traffic over with Qwest today. Qwest, however, provides no technical justification for its requirement nor does it provide any evidence that its proposals better serve economic efficiency such that imposing the costs, delays and outright risks of network harm upon Level 3 are justified.

Q. HOW DOES THE ISSUE OF ESTABLISHING SEPARATE TRUNK GROUPS FOR DIFFERENT TYPES OF TRAFFIC RELATE TO THE QUESTION OF ESTABLISHING NEW, PHYSICAL POINTS OF INTERCONECTION - THAT IS, NEW TRANSMISSION FACILITIES - BETWEEN LEVEL 3 AND QWEST?

A. Physical transmission facilities and trunk groups are two different things. One way to look at it is to consider a physical highway running between two cities. Looking just at the one city-to-city route, the transmission "facility" is the physical slab of concrete and asphalt that the cars and trunks will drive on. Setting up a trunk group is analogous to drawing lane lines on the concrete, indicating that some lanes are for traffic going northbound, some for traffic going southbound, some for trucks only, some for passenger cars only, etc.

As between two communications networks, a single, high-capacity fiber optic facility between the two networks can easily contain dozens of different trunk groups. One trunk group might be traffic directed to the ILEC tandem. Another trunk group might be traffic directed to a specific ILEC end office switch. Still another trunk group might carry traffic bound for the ILEC's operator service network. But whatever might

lead the carriers to establish different trunk groups (such as traffic bound for different switches), that is a totally separate question from any need to establish different physical facilities linking the carriers' networks. The idea behind setting up a physical interconnection point between two networks is that each carrier is responsible for all the switching, transmission and related facilities on its side of the interconnection point.

Because a single high capacity fiber optic facility can carry multiple trunks, there is no need to provision separate ***facilities*** linking Level 3 with Qwest end offices. To the contrary, the ***facilities*** to carry the trunks from the Qwest tandem location (where Level 3 will normally physically interconnect in a LATA) to the affected end office already exist; they are the same facilities (normally optical fiber) that carry the traffic from the tandem to the end office before the DEOT is established. The new DEOT trunk group will ride the same fiber optic interconnection facility between Qwest and Level 3 that all other traffic rides, at the parties' single POI in the LATA.

All that said, it makes no sense at all to suggest, as Qwest does, that putting local, toll, or other types of traffic on a single combined trunk group will risk exhausting Qwest tandems in any way. What avoids exhausting Qwest's tandem is establishing DEOTs to carry ***all*** the traffic from Level 3 to a Qwest end office on an efficient basis. Level 3 is willing to do this. Simply provisioning several inefficient trunk groups of separate "types" of traffic to Qwest's tandem will cause the tandem to exhaust its trunk port capacity more rapidly than keeping the different types of traffic together in the same trunk group. Again, the solution to tandem exhaust is DEOTs - which separate traffic out based on ***destination switch*** - not the type of traffic.

Q. WHAT IS LEVEL 3 ASKING THIS COMMISSION TO DECIDE ON THIS ISSUE?

A. Level 3 is asking this Commission to rule that Qwest must allow Level 3 to use single interconnection trunk groups between the carrier's switches instead of multiple trunk groups, using PLU, PIU and PIPU for carrier compensation and billing purposes. This will preserve network efficiency, maintain reasonable call blocking standards, and minimize the trunking and switching equipment both parties need for interconnection. The language that Level 3 is proposing for this issue is fair and balanced and will allow the efficient use of trunks by both companies.

C. ISSUE 3: WHETHER QWEST'S ELECTION TO BE SUBJECT TO THE ISP-REMAND ORDER FOR THE EXCHANGE OF ISP-BOUND TRAFFIC REQUIRES QWEST TO COMPENSATE LEVEL 3 FOR ALL ISP-BOUND TRAFFIC AT THE RATE OF $0.0007 PER MINUTE OF USE.

Q. WHAT IS LEVEL 3'S POSITION ON ISSUE 3?

A. Mr. Wilson addresses the fallacy of VNXX as a network routing matter. I address it in this testimony in terms of actual cost of interconnection as well as in terms of the discriminatory nature of Qwest's proposals to require Level 3 to either collocate switching gear in every Washington local calling area or resell Qwest service.

D. ISSUE 4: WHETHER QWEST AND LEVEL 3 WILL COMPENSATE EACH OTHER AT THE RATE OF $0.0007 PER MINUTE OF USE FOR THE EXCHANGE OF IP ENABLED OR VOICE OVER INTERNET PROTOCOL TRAFFIC.

Q. WHAT IS VOICE OVER INTERNET PROTOCOL, OR VOIP?

A. One of the basic protocols of the Internet is called "IP," which means (sensibly enough) "Internet Protocol." Another basic protocol is called "TCP," or "Transaction Control Protocol." There are many, many protocols that work with these basic protocols to define how the Internet performs various functions. These include SMTP (Simple Mail Transfer Protocol, used for email); FTP (File Transfer Protocol, used to allow the retrieval of files

from remote locations); HTTP (Hyper-Text Transfer Protocol, used for transmitting web pages and establishing web links); and many others. All of these different protocols rely on the basic TCP/IP protocols to permit different applications (email, file transfer, world-wide web, etc.) to function on the Internet.

Voice over Internet Protocol, or VoIP, refers to various specific protocols that use the basic TCP/IP system to treat voice communications like any other Internet application. With VoIP, telephony signals, including voice signals, are digitized and transmitted as packets to their destination, just as with an email, streaming video, or any other kind of IP transaction. While the PSTN, as noted above, was designed with a laser-sharp focus on one thing - delivering voice calls - the Internet focuses equally sharply on something very different - delivering data packets, no matter what those data packets might represent. This means that while the PSTN treats data as some unusual thing that requires special treatment, the Internet treats all data the same - even if the data in question happens to represent a voice call. As a result, the Internet essentially destroys the old distinctions between "voice" and "data" that are a standard part of PSTN thinking.

Indeed, because the information associated with any particular application is broken down into packets of bits and does not re-assume its original form (i.e. sound, text or pictures) until it is reassembled at the terminating end, it is virtually impossible to assign the transmission of packets to any particular service classification at any point other than origin or destination. An IP network provider, for example, can be carrying real-time two-way voice packets without actually offering voice service to any end-user customer.

When a VoIP call starts with a computer or with some device on a broadband data network (such as a DSL line or a cable modem service), and then is delivered to the PSTN, the protocol, or format, of the transmission has clearly and fundamentally

changed. Specifically, a net protocol conversion is required to convert the packetized IP data into the Time Division Multiplexed (TDM) signal that is used on the PSTN. Today, VoIP applications come in many forms. Some resemble traditional phone service, from the point of view of the end user, more than others. But the application as a whole clearly entails changing the form (and perhaps even the content) of the signals at issue.

Q. WHAT TYPE OF CUSTOMER PREMISES EQUIPMENT IS NEEDED FOR VOIP?

A. VoIP requires specialized Customer Premises Equipment (CPE). Standard Touch Tone or dial pulse phones will not work on a VoIP network, unless they themselves are connected to a computer or similar device that ***can*** handle VoIP format. Special phones, called "SIP" phones ("SIP" stands for "Session Initiation Protocol," and is another Internet-related protocol like FTP, SMTP, and HTTP) can be used for VoIP. These phones have small computers built into them that packetize the voice data and generate SIP messages. Computers with headsets and microphones can also be used for VoIP.

Q. CAN A VOIP CUSTOMER MOVE HIS OR HER SIP PHONE OR COMPUTER PHONE TO DIFFERENT LOCATIONS, WHILE STILL MAINTAINING THE SAME PHONE NUMBER?

A. Yes. A SIP phone or computer phone can be plugged into any broadband connection to receive VoIP service. The end user could send and receive calls from any location with this type of broadband connection. This gives VoIP users a degree of mobility that is not available to users of PSTN service. This type of mobility is coming to be known in the industry as a "nomadic" service, in order to distinguish it from more traditional "mobile" service of the kind provided by normal wireless phones.

Q. IS THERE CURRENTLY ANY WAY TO DETERMINE WHERE A VOIP USER IS LOCATED WHEN THEY MAKE A CALL?

A. No. At present, the geographic location of a VoIP user is indeterminate. He or she can take a computer from one location to another and make VoIP calls in either location. Since the "telephone number" is resident in the computer terminal or SIP phone, the calling number is the same whether the device is located in Minnesota or Washington. Of course, as one might imagine, an indeterminate location makes it challenging for VoIP services to function properly in connection with location-based E911 services. The VoIP industry is working on this issue, and the FCC recently required VoIP services that use normal telephone numbers and that meet certain other criteria to find a way to supply "normal" 911 capabilities to their users.

Q. DO QWEST'S END USERS CUSTOMERS NEED LEVEL 3 TO PROVIDE ITS CUSTOMERS THE ABILITY TO RECEIVE TRAFFIC FROM THE PSTN AND TO ORIGINATE TRAFFIC BOUND FOR THE PSTN?

A. Yes. Many of Qwest's end users today receive or make VoIP calls. Level 3's VoIP customers need Level 3 to complete calls to Qwest end users and to receive calls from Qwest end users bound for Level 3's customers' end users.

Q. CAN YOU GIVE A GENERAL DESCRIPTION OF WHAT HAPPENS WITH A VOIP CALL?

A. **Exhibit MDG-3** illustrates Level 3's interconnection network for providing VoIP connectivity. **Confidential Exhibit MDG-5** provides detailed call flow diagrams with explanations of how these calls are handled. But as a general matter, one can imagine calls flowing between an end user sitting at a VoIP terminal who wants to connect to customer Qwest local exchange customer – or the reverse – where the Qwest local exchange customer wants to call someone using a VoIP phone. In the first instance, the VoIP terminal uses a broadband connection to access a VoIP Feature Server ('FS"). The VoIP terminal and the FS negotiate features and functionality, giving the user a wide

variety of options. The VoIP terminal initiates signaling protocol that is passed through the FS, through the Level 3 IP network, and on to the Level 3 Softswitch and SS7 Gateway. The Level 3 SS7 Gateway turns the SIP messages into SS7 messages and thru the SS7 Signaling Transfer Points ("STP") passes them on to the Qwest network, where appropriate trunking is negotiated. When this call set up has been completed, the VoIP phone begins passing packetized voice data to the Level 3 IP network. The Level 3 IP network sends the packets on to the Level 3 Media Gateway ("MG"), which completes a net protocol conversion on the packetized voice to turn it into Time Division Multiplex (TDM) signals that are recognized by the Qwest trunks and switches. The Qwest switch sends the call on to the Qwest end user. In this example voice type data is passed between the end users. Again, these and other examples, are discussed in great detail in **Confidential Exhibit MDG-5.**

Q. DOES THE QWEST NETWORK NEED TO TERMINATE VOIP CALLS IN A MANNER THAT IS DIFFERENT FROM THE TERMINATION OF NORMAL PSTN BASED LOCAL TELEPHONE CALLS?

A. No. Qwest terminates VoIP calls to its end users in the same manner they would use to terminate regular PSTN based local calls to their end users. There are no extra processes, no additional transport, and no additional switching. This is possible because Level 3 itself has already done the work of converting the IP-format data stream into a TDM-format circuit-switched voice call that Qwest's network is capable of recognizing and handling and transporting that call to the Qwest network for termination to its end users.

Q. HOW DO THE KEY ISSUES THAT YOU DISCUSSED EARLIER IN YOUR TESTIMONY RELATE TO THE ISSUE OF VOIP CALLS?

A. At a high level, VoIP is an innovative Internet application that turns the voice-centric world of the PSTN on its head by treating voice communication as just another data-oriented application on the worldwide Internet. While the PSTN can provide only a

limited, low-bandwidth form of data communications (basically, dial-up access to the Internet at 56 kilobits per second), the Internet can do everything the PSTN can do, and more.

One of the features of the Internet is that distance and location are largely irrelevant. As the FCC has noted, the contents of a single web page can come from a variety of different servers in a variety of different locations. Most of us familiar with modern business travel have learned that our email can reach us anywhere, either downloaded to a computer in a hotel room by means of now-ubiquitous broadband connections offered by business hotels, or to wireless devices such as a Blackberry.

VoIP is an Internet application first and a voice application second. By this I mean that VoIP partakes in the distance-insensitive, location-insensitive characteristics of Internet applications. No matter what telephone number might be assigned to a VoIP customer (if any number is assigned at all), the customer might be participating in a call from next door or from around the world.

It is obviously challenging from a regulatory perspective to figure out what to do with VoIP traffic. The FCC has a number of ongoing proceedings trying to sort it out. But one thing is clear: whatever VoIP is, it is not traditional "telephone toll service," where the end user makes a call from some fixed location, completes it to some distant location, and is charged a separate toll charge for the privilege.

In these circumstances, the choice between assessing traditional access charges or lower and more economical reciprocal compensation rates on this traffic should actually be very clear. This is a new and innovative service that we should all want to encourage. That means that we should impose the lowest reasonable charges on it, when it needs to interface with the PSTN. That means that as a policy matter this traffic should be subject to reciprocal compensation rates, not access charges.

Permitting VoIP traffic to be terminated at reciprocal compensation rates will encourage competition. VoIP is exactly the kind of new and innovative service that we should be trying to encourage, so it should not be subject to high access charges when lower reciprocal compensation rates provide adequate compensation to Qwest.

V. DETERMINATION OF TRAFFIC TYPES.

Q. WHAT IS THE BEST MANNER BY WHICH TO DETERMINE TRAFFIC TYPES?

A. In order to efficiently combine traffic on single interconnection trunk groups, a Percent Local Use (PLU), Percent Interstate Use (PIU) and Percent Internet Enabled Use (PIPU) must be calculated to determine traffic types for billing. Qwest, unfortunately, is proposing a new, technically infeasible method of determining whether traffic is local or toll.

Q. HOW DOES LEVEL 3 PROPOSE TO CALCULATE THE PLU, PIU AND PIPU FACTORS?

A. Level 3 maintains local calling area tables as does Qwest. Over a given period of time, Level 3 collects all call data on calls exchanged between the parties. Once this data is collected Level 3 will, per industry standard, calculate and report the Percent Interstate Usage (PIU). The remaining traffic is a combination of local and intrastate traffic. Level 3 will then once again compare the remaining call data with call tables and from this calculation determine the PLU as the percent of local traffic compared to the percent of intrastate traffic. So, by first determining the percentage of interstate traffic from the total traffic and then determining the local traffic from the remaining traffic, you end up with the traffic that is intrastate toll and the traffic that is local. For IP-Enabled traffic, Level 3 will create a Percent IP Use (PIPU) for both originating and terminating traffic.

This will allow Qwest and Level 3 to properly compensate each other for IP traffic. Let me provide an example:

Number of Total Minutes	100
Less Number of Interstate Minutes	10
Total Number of Local and Intrastate Minutes =	90
Less Breakdown of IP Enabled Traffic (10 Minutes) =	80
Breakdown of Local vs. Intrastate Minutes =	60 Local; 20 Intrastate
PLU Factor =	0.60 Local (60/100)
	0.33 Intrastate (20/60)
PIU Factor =	0.10 (10/100)
PIPU Factor =	0.10 (10/100)

Q. IF LEVEL 3 PROVIDES QWEST WITH PIPU FACTORS FOR THE COMPENSATION OF IP TRAFFIC, IS THERE ANY NEED FOR THE SEPARATE IDENTIFICATION OF IP TRAFFIC?

A. Not really. The use of PIPU will allow the companies to correctly compensate each other for IP traffic without the use of an additional data record. The record 29 identifier for IP traffic is only needed if the companies want to track every IP call. The PIPU factor makes such identification unnecessary.

Q. CAN LEVEL 3 ACCURATELY CALCULATE THE PLU, PIU AND PIPU?

A. Yes. The calculation of PLU, PIU and PIPU is based upon the raw call detail record data measured over a specified period of time. It is accurate, can be used for billing purposes on traffic that is originated by Level 3 and subject o verification and audit by Qwest. Qwest can perform the same calculations on the calls that it originates. Level 3 can create PIPU for both originating and terminating traffic, as is discussed below in our proposed contract language.

Q. DOES BELLSOUTH HAVE A PROCEDURE FOR ADMINISTERING PLU WITH LEVEL 3 AND OTHER CLECS?

A. Yes. BellSouth has agreed to allow Level 3 to combine different traffic types on interconnection trunks, and they have established a procedure for administering the PIU and PLU. I am including the Bell South procedure for PLU below for comparison:

PLU – Percent Local Usage

This factor is the percentage of intrastate terminating usage that is categorized as Local Jurisdiction. For purposes of this guide the total intrastate usage includes intrastate local usage and intrastate non-local usage. The local jurisdiction is applicable to Competitive Local Exchange Carriers (CLECs) that are terminating local traffic from their network to the BellSouth network. CLECs that totally utilize resale or unbundled network elements to provision local services are not required to report PLU factors. Interexchange Carriers that do not terminate local traffic as a CLEC are not required to report PLU factors. The local jurisdiction is normally defined per Local Interconnection contractual agreements and is calculated as follows where MOUs are billed minutes of use: *Total Local MOUs [divided by] Total Intrastate MOUs.* The total intrastate minutes can be determined by multiplying the total minutes by (1- PIU). Therefore the PLU may also be calculated as follows:

Total Local MOUs [divided by] (Total MOUs) x (1-TPIU)

This factor is calculated on a statewide basis by Access Carrier Name Abbreviation (ACNA).

Q. DOES LEVEL 3 HAVE CONTRACT LANGUAGE THAT IT IS PROPOSING FOR THE CALCULATION OF PLU, PIU AND PIPU AND FOR THE TRANSMISSION AND ASSURANCE OF ACCURACY OF THESE MEASURES?

A. Yes, Level 3 is proposing contract language for definition and calculation of PLU, PIU and PIPU as well as language for the verification of these traffic factors on a monthly basis. That language is contained in Level 3's proposals for Section 7 of the Interconnection Agreement.

Q. DO THESE CONTRACT PROVISIONS ADEQUATELY MEMORIALIZE THE ACCURATE COLLECTION OF DATA, CALCULATION OF FACTORS, EXCHANGE OF FACTORS AND VERIFICATION BY THE PARTIES THAT IS NECESSARY FOR PROPER BILLING OF CALLS?

A. Yes. Based on a review of the attached contract provisions, it seems clear that they spell out the responsibilities of Level 3 in generating accurate factors and Qwest's right to verify and audit the results. Clearly, they have been satisfactory to the other RBOCs. By using these procedures, the companies can bill each other for access charges and reciprocal compensation for all types of traffic flowing over the interconnection trunks.

Q. IS THERE A BASIC DISPUTE BETWEEN QWEST AND LEVEL 3 ON HOW TO DETERMINE WHETHER TRAFFIC IS "LOCAL"?

A. Yes. There is a fundamental disagreement between the parties with respect to what traffic is properly characterized as "local" and what is not. The dispute is basically this: Level 3 contends that since the only thing the PSTN "knows" about a call is the originating and terminating telephone number, the status of traffic as "local" should be determined based on the geographic area associated with the telephone numbers of the calling and called parties. Qwest, by contrast, seeks to change that traditional arrangement and to attempt to assess the status of a call as "local" or not based on the actual physical location of the calling and called parties.

Q. WHAT IS QWEST'S POSITION ON HOW TO CHARACTERIZE TRAFFIC AS "LOCAL" OR NOT?

A. As noted, Qwest maintains that the definition of a local call should be changed to reflect the geographic location of the purported "physical" location" of the ESP as opposed to the originating and terminating phone numbers that have traditionally been used.

Q. DOES LEVEL 3 AGREE WITH THIS NEW METHOD?

A. No. There are a number of problems with the method that Qwest is promoting.

Q. HAS THE CUSTOMER PREMISES LOCATION BEEN THE DETERMINING FACTOR IN THE DEFINITION OF A LOCAL CALL IN THE PAST?

A. No. As I described above in connection with routing calls, the PSTN uses the calling party's number and the called party's number to determine if a call is a local call.

Q. DO LOCAL SWITCHES KNOW THE LOCATION OF THE PARTIES WHEN A CALL IS MADE?

A. No. Circuit switches have no way of knowing the geographic location of the calling or called party end user. The switch is programmed with a list of which numbers are "native" to its area and treats calls to and from such numbers accordingly (i.e., it routes them on trunks to other switches to which it is connected, based on the NPA-NXX dialed). Calls that it recognizes as "toll" are routed to the caller's presubscribed IXC.

Q. HOW ARE CALLS ROUTED IN THE PSTN?

A. Local calls are routed between switches according to the routing tables in each switch. Depending on the number dialed (putting aside number portability), a switch either handles a call entirely on its own (such as a call between next-door neighbors); or it sends the call off to some other switch by routing it outbound on a particular trunk port. Toll calls - that is, calls carried by IXCs - are routed according to the Local Exchange Routing Guide (LERG). The LERG is a database that identifies switches and numbers associated with those switches, based on the NPA NXX codes of the North American Numbering Plan (NANP), as well as specific physical locations at which traffic bound for particular switches may be delivered.

Q. SO CALLS BETWEEN TWO LOCAL NUMBERS ARE TREATED AS LOCAL CALLS?

A. Yes. As noted above, each end office switch has a table of NPA-NXXs that the particular switch views as "local." For all such NPA-NXXs, the switch has to make only one decision: "Is this call 'mine' or do I need to send it to some other switch?" If the dialed

number "belongs" to the originating switch, as noted above, the call stays there. But if the dialed number "belongs" to some other switch, the only thing the originating switch needs to know is which trunk port to send the call out on.

Note that, from this network perspective, the only truly "local" calls are calls that begin and end in the same physical switching device. Long ago, however, retail local calling plans grew to include customers served by many different switches. As a result, what constitutes a "local" call for a retail customer is not really a technical matter at all. While intrastate tariffs were originally developed to regulate service in a monopoly environment, and while state jurisdiction is still very important to interconnection, when one examines the actual network configurations of providing service, the designation "local" simply reflects a retail marketing decision by the originating carrier. It is essentially an arbitrary decision which NPA-NXXs to include on the programmed list of "local" calls and which to exclude (which means, usually, that the customer has to dial a "1" before the NPA-NXX-XXXX in order to complete the call).

Q. FROM A TECHNICAL NETWORK PERSPECTIVE, IS THERE ANY LIMITATION ON THE DISTANCE THAT A "LOCAL" CALL CAN TRAVEL, THE SIZE OF A "LOCAL" CALLING AREA, OR THE NUMBER OF CUSTOMERS IN A "LOCAL" CALLING AREA?

A. None at all. And, in fact, the size and scope of "local calling areas" varies greatly from place to place around the country. Some states have large local calling areas; others have small local calling areas. Again, from this perspective, the technical network personnel have no basis to care one way or another. The carrier's marketing and/or regulatory personnel just have to tell the engineers which NPA-NXXs to include on the "local" list for any given switch. The originating switch does not "care" (in the sense of doing anything at all technically different) where it is actually sending a "local" call to a number served by some other switch; and the terminating switch does "care" (in the same

sense) where a "local" call is coming from. These are retail marketing questions, not technical questions.

Q. HOW WOULD SWITCHES IMPLEMENT THE QWEST IDEA OF USING THE GEOGRAPHIC LOCATION AS THE DETERMINATION FOR A LOCAL CALL?

A. I have no idea. A switch has no way of storing information regarding the premises location associated with a phone number assigned to that switch, and no way of receiving or storing information about the premises location assigned to a phone number calling someone served by that switch. The SS7 protocol that sends information between switches for call set-up and billing purposes does not have any parameters to identify the premises locations of calling or called parties.

As I pointed out above, setting aside regulation of traditional monopoly services, the status of any given call as "local" or not is an arbitrary marketing retail choice, not anything that affects or is driven by any relevant network technology. This is reflected by the popularity of flat rate calling plans offering nationwide service – whether via VoIP, landline (Qwest advertises "triple play" packages featuring nationwide local calling), or wireless (almost all plans are nationwide local).

Q. WHAT IS FOREIGN EXCHANGE (FX) SERVICE?

A. FX is a service that has been offered by phone companies for many years. The service allows an end user to be assigned a phone number from a switch that serves a different local calling area than the one in which they are located. This allows customers in the calling area from which the FX number is assigned to call the FX customer without incurring toll charges. On the other hand, if the FX customer's next-door neighbor called, it ***would*** be a toll call. In traditional FX service, the customer pays the providing carrier for an arrangement (a special trunk or other facility) that connects them to the switch covering the distant area, a.k.a. "foreign exchange". The customer is assigned a

phone number out of a switch in the distant area so that end users in that foreign local calling area can call them by dialing a local phone number. In other words, Qwest's FX service has historically removed any link between the geographic location of the end user dialing the local telephone number and the geographic location of the customer of the telephone number dialed.

Q. HOW ARE FX CALLS ROUTED?

A. FX calls are routed between the local switches as normal local calls, or as toll calls, depending on whether the NPA-NXX of the FX number being called is included in the calling switch's table of "locally dialable" NPA-NXXs. Neither the originating nor terminating switch has any way to know where the end user with the FX line is actually located, nor does it matter for proper switching and delivery of the traffic. The switch that hosts the FX customer has a circuit coming in that it associates with phone service, providing dial tone and other local services. The switch has no way to know whether the customer loop is 500 yards, 2 miles, or 200 miles long.

Q. HOW ARE FX CALLS BILLED?

A. When a customer of one phone company places a call to a customer of another phone company and the originating and terminating phone numbers are assigned to rate centers which are rated as "local" to each other by the originating carrier, the call is rated as a local call and there is no toll charge. It does not matter if the calling or called party is 500 yards, 2 miles, or 200 miles from the end office out of which the number is assigned. The FX line is paid for separately by the FX customer to the FX providing carrier. No toll charges are applied to calls to the FX number from numbers assigned within the same local calling area as the FX number. Interestingly, when the FX customer with a phone number assigned to a foreign exchange receives a call from some who is physically

within the same exchange - like a next door neighbor - toll charges are applied. Intercarrier compensation is based on the originating and terminating phone numbers.

Q. IS QWEST'S INTERCONNECTION TRUNKING THE SAME NO MATTER WHERE THE LEVEL 3 END USER CUSTOMER IS LOCATED?

A. Yes. Qwest's trunking is always to the POI, no matter where the Level 3 end-user customer is located. It doesn't matter if the Level 3 customer is 500 yards, 2 miles, or 200 miles from the POI. Level 3 carries the traffic to its end-user customer, no matter where they are located. Qwest's interconnection trunking to the POI is the same no matter where the Level 3 customer that they are calling is actually located.

Q. SO THE DISTANCE QWEST TRANSPORTS TRAFFIC IS THE SAME WHETHER THE LEVEL 3 CUSTOMER IS 500 YARDS, 2 MILES, OR 200 MILES FROM THE POI?

A. Yes. Qwest transports calls that it originates to the POI, regardless of where the Level 3 customer is located. The location of the Level 3 customer or end user is immaterial to Qwest's call transport or for Qwest's costs for that matter.

VI. CONCLUSIONS.

Q. HAVE YOU REVIEWED THE CONTRACT LANGUAGE PROPOSED BY LEVEL 3 AND QWEST IN THIS CASE?

A. Yes, I have.

Q. FOR THE ISSUES YOU HAVE ADDRESSED, WHICH LANGUAGE IS MORE CONSISTENT WITH THE POINTS YOU HAVE MADE IN THIS TESTIMONY?

A. Level 3's language is reasonable and balanced from a technical and engineering standpoint and is consistent with the FCC's orders from an engineering point of view. Adoption of Qwest's language, by contrast, would require the parties to degrade the efficiency of their networks, imposing substantial costs on Level 3 and possibly on Qwest as well, while at the same time potentially permitted Qwest to bill Level 3 for costs and charges for functions that Qwest itself should perform without a charge to Level 3.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes

EXHIBITS

Confidential Exhibit MDG-2	Map of Level 3 network in the State of Washington.
Exhibit MDG-3	Schematic of Level 3 and Qwest networks interconnection in Washington.
Exhibit MDG-4	Schematic diagram showing that Level 3's DID/DOD service and Qwest's PRI services are functional equivalents.
Confidential Exhibit MDG-5	ISP-bound traffic and VoIP traffic call flow diagrams.

CERTIFICATE OF SERVICE

I hereby certify that I have this 30th day of May, 2006, served the true and correct original, along with the correct number of copies, of the foregoing document upon the WUTC, via the method(s) noted below, properly addressed as follows:

Carole Washburn
Executive Secretary
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1300 S Evergreen Park Drive SW
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I hereby certify that I have this 30th day of May, 2006, served a true and correct copy of the foregoing document upon parties of record, via the method(s) noted below, properly addressed as follows:

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I declare under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

DATED this 30th day of May, 2006, at Seattle, Washington.

_____