

REDACTED – FOR PUBLIC INSPECTION

CenturyLink

**IP Trial
Operating Plan**

November 12, 2014

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Section 1: Introduction and Overview

In this Operating Plan, CenturyLink sets forth a detailed plan for conducting its proposed IP trial in a geographic area roughly equivalent to 12 wire centers in Las Vegas, Nevada. The trial will separately examine the TDM-to-IP transition from the perspectives of business customers newly subscribing to VoIP services, and service providers beginning to exchange VoIP-to-VoIP traffic over commercially-negotiated VoIP connectivity arrangements. This Plan identifies the geographic area in which the proposed trial will take place (hereinafter referred to as the Trial Area), the CenturyLink VoIP services to which participating business customers will subscribe, and the network architecture for the commercially-negotiated VoIP connectivity arrangements that will be used in the trial. It also details how CenturyLink proposes to meet the Commission's requirement that trials satisfy the "enduring values" identified in the *Technology Transitions Order*,¹ as well as the data that will be collected.

CenturyLink seeks expeditious approval of the proposed trial, so that it and its CLEC trial partners can begin implementing the trial to help facilitate this important transition.

Section 2: Statement of Purpose

CenturyLink's proposed trial has two primary objectives. *First*, it will explore the TDM-to-IP transition from the perspective of a business user, and generate information—to be shared with the Commission and interested parties—regarding the operational and end user-experience aspects of business customers' transition to VoIP, including an opportunity for feedback from participating business customers on all aspects of the transition. Any lessons learned during the trial will help facilitate the transition for future customers, as it accelerates and TDM networks eventually begin to be decommissioned. *Second*, the trial will examine the use of a commercially-negotiated VoIP connectivity arrangement to exchange voice traffic that originates and terminates in Nevada in SIP protocol, using CenturyLink's state-level IP connectivity model. This aspect of the trial will provide technical and operational experience for CenturyLink and the CLEC participants, while giving them a vehicle for identifying and resolving any operational, technical or logistical issues that arise. Ultimately this will enable CenturyLink to design IP connectivity arrangements with other CLECs.

Section 3: Description of Trial Wire Centers

3.1 Overview

CenturyLink has selected Las Vegas as the geographical location for the trial. Because CenturyLink's trial is limited to business customers and business VoIP services, this section focuses on aspects of the Trial Area relevant to these customer/services. Among the key attributes that make Las Vegas an ideal location for this trial are its scale and scope as a highly

¹ *In the Matter of Technology Transitions; AT&T Petition to Launch a Proceeding Concerning the TDM-to-IP Transition*, GN Docket Nos. 13-5, 12-353, Order, 29 FCC Rcd 1433 (rel. Jan. 31, 2014) (*Technology Transitions Order*).

dense major metropolitan area, the presence of a large number of potential candidate business services customers, and the existence of an already-in-place CenturyLink IP network capability. Both of CenturyLink's CLEC partners also have network infrastructure and a customer base in Las Vegas.

3.2 Geography

The Trial Area is depicted in detail via maps attached hereto as Appendix A. Most of the city of Las Vegas falls within the Trial Area, which is an area of roughly 680 square miles.²

3.3 Demographics

The total population in the Trial Area is approximately 1.6 million and the population density is 2,353 per square mile.³ Approximately 64% of the population is white, 28% are Hispanic, 10% are Asian, 10% are African American, and 0.7% are American Indian or Alaska Native.⁴ Since CenturyLink's trial is focused on business customers only, the following business-related demographics are also provided:

- There are approximately 105,389 businesses in the Trial Area.⁵
- Of these businesses, 5% are black-owned, .06% are American Indian and Alaska Native-owned, 10% are Asian owned, 9% are Hispanic owned, and 29% are women-owned.⁶
- 25% of the population is under 18 years and 11% is 65 years and over.⁷
- 36% of the population speaks a language other than English at home.⁸

² 2010 Census Summary File 1 data available at <http://www.census.gov/2010census/news/press-kits/summary-file-1.html> (2010 Census Data). For this data, CenturyLink mapped census blocks to an area roughly equivalent to the Trial Area to obtain Trial Area statistics.

³ 2010 Census Data. CenturyLink mapped census blocks roughly to the Trial Area to obtain Trial Area statistics.

⁴ 2010 Census Data. CenturyLink mapped census blocks roughly to the Trial Area to obtain Trial Area statistics.

⁵ Census Bureau Data for cities and Census Designated Places (CDP) of Enterprise, Las Vegas, Paradise, Spring Valley, Sunrise Manor, Whitney, and Winchester (which are located within the Trial Area) available at <http://quickfacts.census.gov/qfd/states/32000.html>.

⁶ 2010 Census Data. CenturyLink mapped census blocks roughly to the Trial Area to obtain Trial Area statistics.

⁷ *Id.*

3.4 Wire Center Profile

As described above, the trial will focus solely on business VoIP services. The trial services will be provided by CenturyLink's national affiliate, CenturyLink Communications, LLC. As part of the planning for the trial, CenturyLink has performed a careful analysis of the availability of candidates for wireline IP-based business services in the Trial Area. Based on this study, CenturyLink has determined that ***BEGIN HIGHLY CONFIDENTIAL END HIGHLY CONFIDENTIAL*** of the Las Vegas market is VoIP-enabled. And, CenturyLink holds ***BEGIN HIGHLY CONFIDENTIAL END HIGHLY CONFIDENTIAL*** of the VoIP-enabled business market in Las Vegas. CenturyLink calculates that there is also available growth of an additional ***BEGIN HIGHLY CONFIDENTIAL END HIGHLY CONFIDENTIAL*** customers among VoIP-enabled businesses. At the same time, as noted above, the trial is targeted to existing Las Vegas CenturyLink business customers. And, a subset of the Las Vegas market (roughly equivalent to the area served by 6 of the 12 Las Vegas CenturyLink wire centers) is the source of ***BEGIN HIGHLY CONFIDENTIAL END HIGHLY CONFIDENTIAL*** of CenturyLink's total Las Vegas business revenue. Thus, the trial is expected to focus primarily in that area (the "Focus Area") – roughly depicted as the oval-shaped shaded area on the maps enclosed as Appendix A.

3.5 Schools and Libraries

Because the trial is focused solely on business customers, it is anticipated that there will be no schools or libraries participating in the trial. Regardless, since this is a limited trial that replaces no existing services, their services will not be impacted. In the event any schools or libraries choose to participate, the facilities used to provide their TDM services will remain in place.

3.6 Competitors

Among others, CenturyLink has identified cable, other wireline providers, and wireless providers that compete aggressively and head-to-head for business voice and broadband customers. These include: Cox Communications; MegaPath Corporation; Las Vegas WIFI Communications; LV.net; Advanced Telecom; Inc.; Level 3; tw telecom of Nevada; AT&T; Sprint; Cricket; Metro PCS; T-Mobile; and Verizon. The map in Appendix A shows the coverage of these competitors in the Trial Area.

3.7 State, Tribal, and Other Government Entities

CenturyLink does not expect to need any authorization from other Federal, State, Tribal or other governmental entities to conduct the trial. There are no Tribal governments in the Trial Area. Although no authorizations will be required, CenturyLink plans to inform, educate and

⁸ *Id.*

coordinate with government entities in the Trial Areas.⁹ CenturyLink requests no preemption by the FCC of any state or local law to conduct the trials at this time. In the course of the trials, CenturyLink will comply with all applicable State laws and regulations.¹⁰ Finally, because the trial is focused solely on business customers, it is anticipated that there will be no state, tribal and other government entities participating in the trial. And, since this is a limited trial that replaces no existing services, the services they obtain from CenturyLink will not be impacted. In the event any government entities choose to participate, the facilities used to provide their TDM services will remain in place.

CenturyLink also provides the following contact information for the relevant state and local government agencies in the Trial Area:

State

Carson City

Office of Governor Brian Sandoval
State Capitol Building
101 North Carson Street
Carson City, NV 89701
775.684.5670
Chief of Staff: Mike Willden

Las Vegas

Office of Governor Brian Sandoval
Grant Sawyer State Office Building
555 East Washington Avenue, Suite 5100
Las Vegas, NV 89101
702.486.2500
Office Manager: Annalyn Bo Carillo

Public Utilities Commission of Nevada

Donna Skau
Commission Secretary
1150 E. William Street
Carson City, NV 89701-3109

⁹ See Section 5.

¹⁰ CenturyLink's VoIP services meet or exceed all current federal, state, and local requirements for 911 emergency services. See also Section 6.1, Public Safety and National Security.

Donna Skau
Commission Secretary
9075 W. Diablo Drive, Suite 250
Las Vegas, NV 89148

County

Clark County
Clark County Government Center
500 S. Grand Central Pkwy.
Las Vegas, NV 89155-1111
702-455-0000

Cities

City of Las Vegas
495 S. Main St.
Las Vegas, NV 89101
702-229-6629

City of North Las Vegas
2250 Las Vegas Blvd North
North Las Vegas Nevada 89030
702.633.1000

City of Henderson
240 Water Street
Henderson, Nevada 89015
702.267.2323

911 Authorities

Las Vegas Metropolitan Police Department
4591 W Russell Rd
Las Vegas, NV 89118
Barbara Doran, Director of Communications
702-828-7174

City of Henderson Police Department
223 Lead St
Henderson, NV 89015
Barbara Brabenec, Administrator

702 267-4902

City of North Las Vegas Police Department
1301 E Lake Mead Blvd
North Las Vegas, NV 89030
Jennifer Spivey, Communications Manager
702 633-1548

Section 4: Technical Parameters and Timeline

CenturyLink describes below the network architecture that will be used for the proposed trial. CenturyLink also identifies the existing TDM-based services and their IP-based replacements involved in the parts of the trial examining the migration to business VoIP services and the exchange of VoIP-to-VoIP traffic in SIP protocol over a commercially-negotiated VoIP Connectivity arrangement. For customers not involved in the trial, there should be no impact on the retail and wholesale services they obtain from CenturyLink. With regard to the timeline, CenturyLink projects that the trial will extend for approximately six months from the date the Commission approves the trial.

4.1 Migration to Business VoIP Services

In this part of the trial, participating CenturyLink business customers will voluntarily transition from TDM-based voice services to VoIP services.

4.1.1 Business Services

Participating business customers may transition from a variety of TDM-based voice services, including traditional basic exchange service, Integrated Services Digital Network-Primary Rate Interface (ISDN-PRI) service, and Centrex.¹¹ These customers will also have various IP-based voice options from CenturyLink. For example, a customer currently getting basic exchange service might transition to CenturyLink's SIP trunk service,¹² and a ISDN-PRI or

¹¹ See, e.g., CenturyLink website, <http://www.centurylink.com/business/voice/choice-business-phone.html> (traditional local business phone service); <http://www.centurylink.com/business/voice/primary-rate-service-isdn.html> (ISDN PRI); <http://www.centurylink.com/business/voice/centrex-prime.html> (Centrex).

¹² See CenturyLink website, <http://www.centurylink.com/business/voice/sip-trunk.html>. CenturyLink is in the process of upgrading this service to iQ SIP Trunk, which will be provided over an upgraded platform with enhanced capabilities and features. CenturyLink recently filed a request for authority to cease offering the legacy SIP Trunk product to new customers. See *In the Matter of Section 63.71 Application of CenturyLink For Authority to Cease Providing Legacy SIP Trunk VoIP Service to New Customers*, Section 63.71 Application (filed Oct. 31, 2014).

Centrex customer might switch to CenturyLink's Hosted VoIP service, or various packages that include Hosted VoIP, such as Managed Office, Core Connect Enterprise or Fiber + Enterprise.¹³ The trial will assess customers' experience in "on boarding" to their new VoIP services.

4.1.2 *Service Application and Device Compatibility*

CenturyLink's SIP Trunk and Hosted VoIP services support the majority of the applications and devices listed in Appendix B of the *Technology Transitions Order*. For example, the following services can be accessed from CenturyLink's VoIP services in the same manner as from TDM-based voice services: emergency services, such as E-911; Teletypewriter (TTY) services; toll-free services; and directory assistance services.

However, certain applications are not available or compatible with CenturyLink's VoIP services, at least at this time. Third-party pay-per-call services, such as 500, 900, and 976 calls, and in-bound payphone calls are not available with CenturyLink's VoIP services, just as they are not enabled on CenturyLink's TDM network. CenturyLink's VoIP services support calling card, outbound live operator, and collect calls, assuming the called party accepts such calls and CenturyLink has billing agreements with the called party's provider. However, inbound collect, sent paid, and third party billed charges to VoIP accounts are not supported. CenturyLink's VoIP services also do not support abbreviated dialing, such as 211, 311, 511, 811, though the company will evaluate whether such codes should be made available as part of its VoIP service offerings upon transition to an all-IP network.

Customer devices designed for TDM networks are compatible with CenturyLink's VoIP services in some cases but not others. For example, and as noted, CenturyLink has ensured compatibility of its VoIP services with TTY equipment pursuant to the Commission's Telecommunications Relay Service (TRS) requirements. The compatibility of other devices, such as fax machines and monitoring devices, will depend on the particular device. Some fax machines, for example, will function over a VoIP line, but may transmit more slowly than on a TDM line, or may require different settings. In general, these devices are compatible if their transmission is similar to the standards for TTY equipment. Increasingly, services such as alarm monitoring and credit card merchant services can be readily converted to work on a broadband connection, such as the one over which the customer's business VoIP service runs.¹⁴ With regard

¹³ See CenturyLink website, <http://www.centurylink.com/business/voice/hosted-voip.html> (Hosted VoIP); <http://www.centurylink.com/business/managed-services/managed-office.html> (Managed Office); <http://www.centurylink.com/business/data/core-connect-enterprise.html> (Core Connect Enterprise); <http://www.centurylink.com/business/data/fiber-plus-enterprise.html> (Fiber + Enterprise).

¹⁴ See, e.g., Home Technology Store website, <http://www.home-technology-store.com/home-security/NA-ABN3A.aspx> (\$70 adapter to allow a landline-enabled alarm system to be used through broadband Internet connection); Custom Credit Card Processing website,

to medical monitoring, the Better Health Together coalition, of which CenturyLink is a member, has been investigating and encouraging the transition of medical monitoring to broadband connections.¹⁵ Further, the Alliance for Telecommunications Industry Solutions (ATIS) IP-Transition of Public Safety Related Applications Task Force (PSRA-TF), of which CenturyLink also is a member, is addressing the migration of infrastructure associated with public safety and has reached out to many of the various industry associations that rely upon devices that use the current TDM network. The Task Force will ultimately propose recommendations to smooth the transition of communications networks to IP.

4.2 Exchange of VoIP-to-VoIP Traffic Via VoIP Connectivity

In this part of the trial, CenturyLink will exchange VoIP-to-VoIP traffic originating and terminating in Nevada with CLEC participants Bandwidth.com, CLEC, LLC, and its affiliates (Bandwidth) and Inteliquent. Bandwidth is a North Carolina-based company that provides VoIP and various other IP-based services to business customers.¹⁶ Inteliquent, formerly known as Neutral Tandem, is a Chicago-based provider that “provides a comprehensive suite of innovative voice services.”¹⁷ According to Inteliquent, its competitive tandem network is used by the largest wireless, cable, CLEC and long distance carriers in the U.S.¹⁸

Today, CenturyLink’s ILEC affiliates interconnect with CLECs such as Bandwidth and Inteliquent in at least one point in each LATA, over TDM trunks running from a CenturyLink tandem or end office to the CLEC’s switch. It is generally understood that such an architecture would be ill-suited for the connectivity of IP networks. CenturyLink investigated various alternative architectures before concluding that state-level IP connectivity—with a single Point of Connectivity (POC) in each state—offered the appropriate balance of efficiency and redundancy.

CenturyLink is currently negotiating the details of VoIP connectivity for the trial with Bandwidth and Inteliquent. Once those commercial agreements are finalized, CenturyLink will submit those trial agreements to the Commission. In the meantime, Figure 1 provides a high-level overview of the network architecture that will be used in the trial. CenturyLink’s national affiliate, CenturyLink Communications, LLC, and the participating CLECs will connect at the IP

http://www.cccpinc.com/products_processing_equipment.asp (wide array of point-of-sale terminals that work with either dial-up or broadband connections) (last visited Oct. 8, 2014).

¹⁵ See Robert E. Litan, *Vital Signs via Broadband: Remote Health Monitoring Transmits Savings, Enhances Lives* (Oct. 24, 2008), available at <https://www.corp.att.com/healthcare/docs/litan.pdf>.

¹⁶ See Bandwidth website, <http://bandwidth.com>.

¹⁷ See Inteliquent website, <http://www.inteliquent.com/voice/index.cfm>.

¹⁸ *Id.*

Core, shown in the lower right corner in Figure 1 below, which will likely be located in a carrier hotel in Las Vegas, with a dedicated IP connection between the providers' session border controllers (SBCs). In CenturyLink's network, the POC connects to application servers and soft-switches, which provide core voice routing functions for CenturyLink's Hosted VoIP and SIP Trunk services, respectively.¹⁹ These servers and soft-switches are regional platforms that will generally serve multiple states in a redundant configuration. The green lines depict connections used for signaling and session control, whereas the red lines are used for both session control and media carriage.

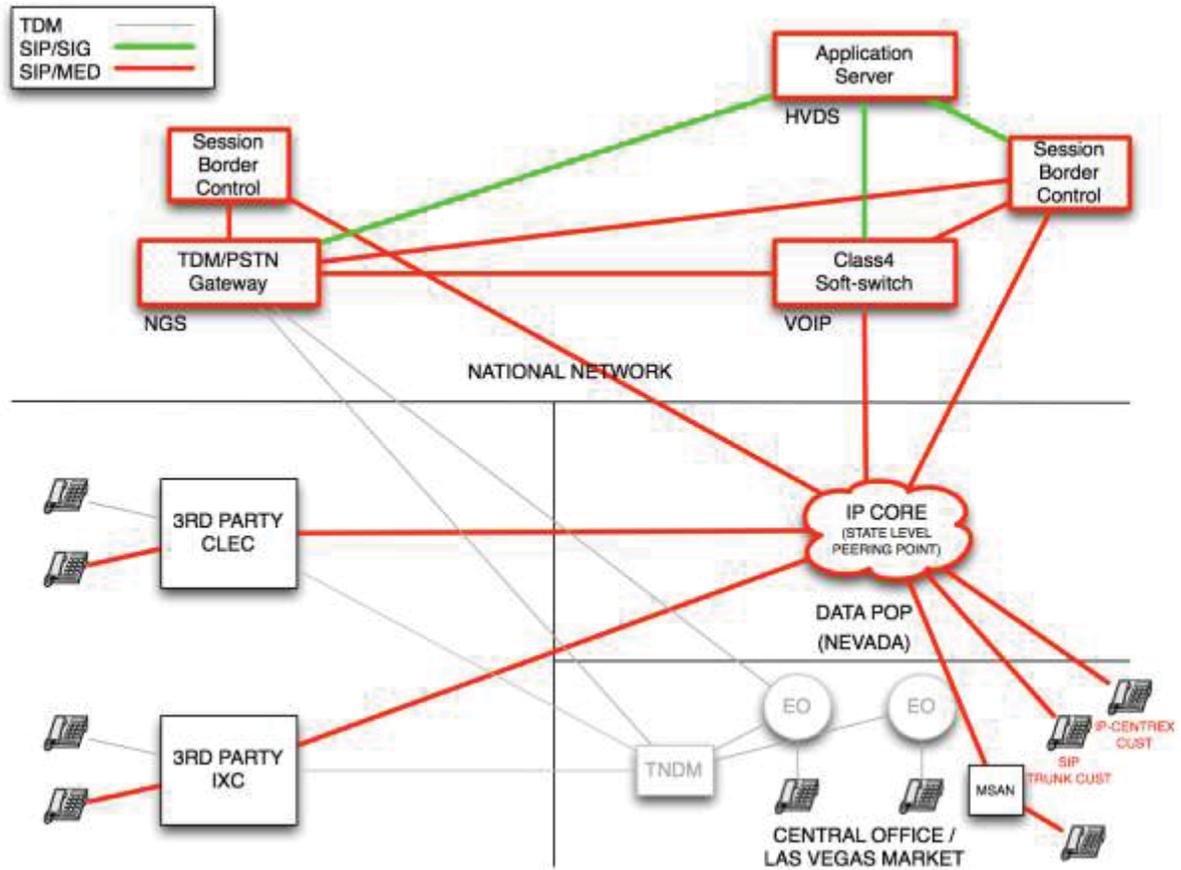


Figure 1

¹⁹ The SBC in the upper right corner of Figure 1 functions as a security gateway for the soft-switches.

Figure 2 illustrates the traffic flow between a CenturyLink VoIP customer in Las Vegas and a Bandwidth or Inteliquent VoIP customer in Nevada. The CenturyLink VoIP customer is located in the upper left corner of Figure 2. If that customer calls a Bandwidth or Inteliquent VoIP customer in Nevada, the calling customer's SBC communicates with CenturyLink's SBC, which in turn communicates with CenturyLink's application server or soft-switch. That server or soft-switch routes the customer's call to the CLEC over the IP connectivity point. In the unlikely event the call cannot get to the CLEC over the IP connection, it will overflow to a TDM connection to the access tandem (in the bottom right corner of Figure 2) to reach the CLEC. If the CenturyLink customer instead dials 911, the applicable server will route the call to a 911 service provider on the top of the diagram. That service provider will then automatically look up the PSAP and route the call to the appropriate destination.

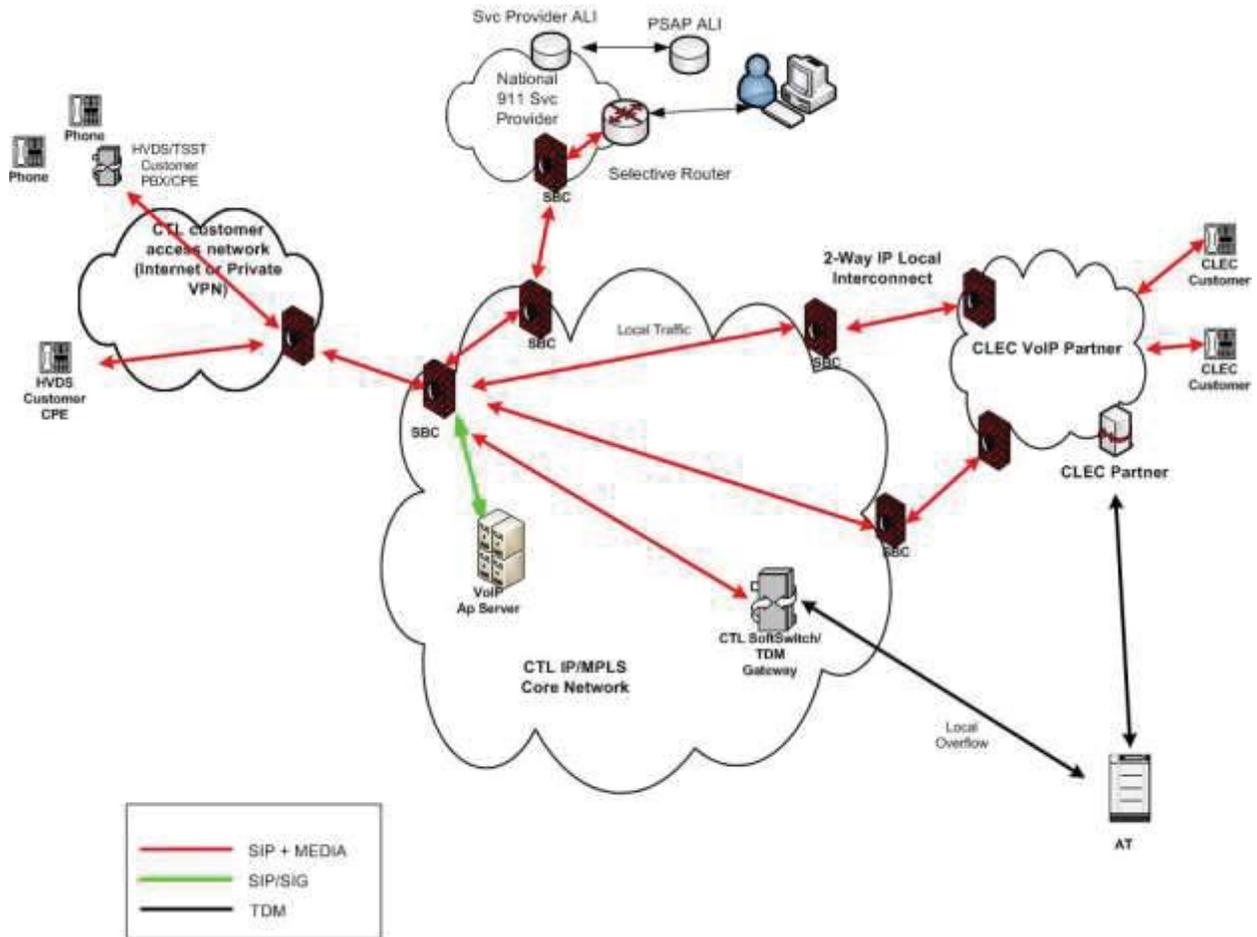


Figure 2

Note that this architecture will be used only for voice traffic that is IP on an end-to-end basis and that originates and terminates in Nevada. Other traffic between the providers will continue to be exchanged through the same TDM interconnection arrangements as today.

Section 5: Customer Outreach and Notice

Because CenturyLink is not seeking to discontinue any services, even for purposes of the trial, broad customer outreach and notice is unnecessary. Nevertheless, CenturyLink has already briefed state and local leaders, including the Nevada Public Utilities Commission, regarding CenturyLink's general plans for the proposed trial. CenturyLink will continue to keep these stakeholders informed on the trial's progress. CenturyLink also intends to post information about the trial on its website.

5.1 Customer Outreach

CenturyLink will engage in customer outreach to recruit business customers in Las Vegas to participate in the trial. CenturyLink intends to use existing sales channels and practices for this purpose. Sales professionals will comb through their account bases to identify potential leads—specifically, customers in the Trial Area who are currently subscribed to TDM-based voice services and may be interested in transitioning to one of CenturyLink's VoIP services. The sales professionals will particularly look for customers with multiple business lines, small business Centrex, PBX Trunks, Digital PBX Trunks (Trunks over T1) and ISDN PRIs. Sales personnel will be able to use existing tools and processes for qualifying service or bundle solutions, including generating a proposal and presenting a contract for services.

CenturyLink's sales teams will also create scripts for presenting this opportunity to prospective VoIP customers, including potential responses to possible objections. As part of that script, the sales professionals will explain the nature of the trial and ask customers signing up for VoIP services to participate in the trial. For those customers who opt to participate in the trial, TDM network infrastructure will be kept in place, allowing them to transition back to TDM services at any time during the trial.

Sales professionals will then call prospective customers, set up appointments for face-to-face meetings and follow up systematically to close as many of these opportunities as possible. When contacting customers, sales professionals will comply with applicable customer proprietary network information (CPNI) requirements. While many of these customer contacts will start with a phone call, sales professionals may also discuss moving to VoIP in the course of personal customer visits on other topics.

Once a customer has signed a contract, the opportunity will move to established processes in Post-Sales Support. These processes will vary depending on the product sold. For Managed Office, for example, a Project Manager will be assigned to guide all aspects of turning up all the components of the package, while à la carte solutions will typically be managed more

by Post-Sales Support in the sales organization, whether through an account consultant or post-sales engineer.

As it begins this process, CenturyLink will assess the need for incentives to gather a sufficient base of business customers participating in the trial.

5.2 Customer Notice

As part of the intake process noted above, CenturyLink will provide notice to new VoIP customers in the Trial Area that opt to participate in the trial. With regard to the VoIP connectivity part of the trial, CenturyLink will be working closely with Bandwidth and Inteliquent to set up the commercially-negotiated VoIP connectivity trial arrangement, using SIP protocol, and work through any issues that arise during the trial.

Section 6: Enduring Values

6.1 Public Safety and National Security

CenturyLink shares the Commission's commitment to public safety and national security. It will take all steps necessary to ensure that the existing levels of public safety and national security on CenturyLink's network are maintained during the proposed trial and the ultimate transition to IP networks and services.

6.1.1 Preserving 911/E911 and Next Generation 911 Capabilities

As a condition to approving any proposed service-based trial, the Commission made clear that services provided by trial participants must "in no way diminish consumer access to 911/E911 emergency services" and that Public Safety Answering Points (PSAPs) must "continue to receive all consumer, phone identifying, and automatically-provided street address location information associated with a 911/E911 call, consistent with existing Commission rules and regulations."²⁰ The Commission further directed that PSAPs must be "provided with at least the same level of network access, resiliency, redundancy, and security that they enjoy under agreements and tariffs currently framing the legacy emergency network."²¹ As discussed below, CenturyLink's proposed trial will meet these important conditions.

CenturyLink's VoIP services that will be used in the trial—SIP Trunk and Hosted VoIP—already meet these conditions. They provide the same access to 911/E911 and Next Generation 911 (NG911) available through CenturyLink's TDM services. CenturyLink's

²⁰ *Technology Transitions Order*, 29 FCC Rcd at 1447 ¶ 39.

²¹ *Id.*

business customers can buy fixed VoIP services, but also can opt for a nomadic feature.²² When a CenturyLink VoIP customer dials 911, his or her call is routed to CenturyLink’s server or soft-switch, which will then route the call to CenturyLink’s 911 service provider. That provider will then perform an automatic look up of the PSAP associated with the customer’s number and route the call to that PSAP. As is the case with traditional TDM-based calls, CenturyLink’s VoIP services provide the PSAP with both the user’s call-back number (referred to as “automatic number identification” or ANI) and the automatic location information (ALI) where the PSAP is capable of receiving such information, consistent with Commission requirements. This ALI information also is verified with the Master Street Address Guide database. In cases where PSAPs are unable to receive ANI or ALI data, 911 calls from CenturyLink customers will be routed to the 911 service provider’s call center, which will in turn route calls to the appropriate PSAP while the caller remains on the line. CenturyLink’s VoIP services thus already provide reliable and accurate E911 service equivalent to that available for TDM-based voice services.

Some PSAPs are starting to transition to NG911, which will provide them with enhanced features, including real-time text, still images, and video. In the Trial Area, however, no PSAPs have deployed NG911, so, barring any developments between now and the trial, CenturyLink’s VoIP services will provide routing for 911 calls to the PSAPs in that area in the manner described above and consistent with the Commission’s rules. In the event a PSAP expresses its intent to migrate before or during the trial, CenturyLink will provide the Commission with supplemental information demonstrating CenturyLink’s intention to comply with the requirements of the *911 Network Reliability Order*.²³

6.1.2 Safeguards to Ensure Public Safety Functionality in Adverse Conditions

The Commission has directed a provider proposing a service-based trial to “ensure that, in the event of a public safety failure, the provider will be able to immediately restore its legacy service, fix its IP-based service, or provide a comparable service,” and that the provider “will implement safeguards “to maintain the connectivity and public safety functionality of the underlying legacy service or the IP-based service when the proposed experiment encounters

²² CenturyLink offers non-fixed or nomadic VoIP applications that expand the reach of some business VoIP services. For those services, CenturyLink adheres to the Commission’s 911/E911 requirements. In particular, for nomadic interconnected VoIP services, the relevant PSAP is provided with the caller’s Registered Location, as initially captured by CenturyLink during the order process and forwarded to the server provider, but which can be updated by the subscriber. See 47 C.F.R. § 9.3. CenturyLink also has Commission-required disclosures in place to inform customers of limitations associated with their VoIP service.

²³ See *Improving 911 Reliability; Reliability and Continuity of Communications Networks, Including Broadband Technologies*, PS Docket Nos. 13-75, 11-60, Report and Order, 28 FCC Rcd 17476 (rel. Dec. 12, 2013) (*911 Network Reliability Order*).

adverse conditions.”²⁴ CenturyLink already fulfills this condition in three respects. First, the CenturyLink VoIP services that will be tested in the trial are highly reliable services. Second, CenturyLink has well-established processes and procedures for addressing occasional service disruptions and more severe adverse conditions. Third, CenturyLink’s network architecture for the wholesale VoIP connectivity portion of the trial includes backup TDM interconnection to ensure successful delivery of VoIP traffic between CenturyLink and the participating CLECs.

The VoIP services that CenturyLink plans to use during the proposed trial are already enabled in the Trial Area,²⁵ as well as in hundreds of other locations across the nation via CenturyLink’s non-ILEC subsidiary CenturyLink Communications, LLC. While CenturyLink is a relatively small provider of VoIP services, those services have been tested over time and under various conditions. These services are generally available in the marketplace, and have been for years, and therefore are in no way new or experimental. CenturyLink thus already has practices and procedures in place to maintain and test facilities and to address service disruptions. During the proposed trial, CenturyLink will exercise the same standard of maintenance, repair, and replacement for its IP-based services that it applies when maintaining, repairing, and replacing legacy services.

In addition to everyday efforts to maintain and repair its VoIP services, CenturyLink stands ready, today, to respond to man-made and natural disasters that are capable of inflicting significant damage to communities at large, resulting in commercial power outages and destruction of facilities. CenturyLink has comprehensive incident management structure and business continuity plans to maintain critical functions throughout the enterprise, and at locations across the U.S., as well as international locations. CenturyLink designed these plans to ensure that the company can continue to serve its customers in the event of a significant business disruption. CenturyLink’s commitment to business continuity planning is reflected in its institution of corporate standards regarding plan development, review, training, updating and testing. These standards are outlined in the *2014 CenturyLink Disaster Preparedness White Paper: Business Continuity Program Overview*, which is attached as Appendix B.

CenturyLink’s crisis management and business continuity program incorporates best practices acknowledged by Disaster Recover Institute International and the Business Continuity Institute. Under this plan, regional teams with representation from all critical business and support units are activated in an event that affects or has the potential to affect one or more business units or critical business functions in a geographic area. Other teams include an IT Recovery Management Team and Damage Assessment and Rapid Response teams that can mobilize on short notice. CenturyLink’s three-layer crisis management approach is similar to the

²⁴ *Technology Transitions Order*, 29 FCC Rcd at 1522, Appendix B ¶ 17.

²⁵ As noted, CenturyLink is in the process of upgrading its SIP Trunk service SIP Trunk.

Incident Command System used by federal response agencies, but is tailored to meet the needs of CenturyLink and its customers.

These resources are equally available for all CenturyLink services. Therefore a customer's transition from a TDM-based service to VoIP will not diminish CenturyLink's investment in disaster recovery preparedness, lessen the company's commitment to respond quickly to service crisis events, or otherwise undermine CenturyLink's ability to respond to such events. Whatever the adverse condition, CenturyLink has a contingency plan in place to address it.

CenturyLink has also taken steps to ensure redundancy of the connectivity arrangement between CenturyLink and the participating CLECs by incorporating existing TDM-based overflow interconnection trunks that will be used if traffic cannot be delivered through the VoIP connectivity arrangements established for the trial.

6.1.3 Protect Essential Communications Services for Safety of Life and National Security

In the *Technology Transitions Order*, the Commission emphasizes that the proposed trials will not "be permitted to threaten our country's essential national security and public safety communications systems."²⁶ The Commission expressed particular concern for the reliability of the TDM-based communications systems the Department of Defense and other Federal executive branch agencies, such as the Federal Aviation Administration.²⁷ The Commission therefore directed applicants to "allow for the continuation of TDM-based networks and services for critical Federal systems until it is proven that IP-based solutions can meet system requirements for the performance of safety of life and national security missions."²⁸

Since CenturyLink's proposed trial will not result in the discontinuance of any TDM-based service, even during the trial, the trial will have no impact on the TDM-based services provided to the Federal government or any other customer not participating in the trial. In addition, CenturyLink does not intend to target Federal agencies to participate in the trial. But in the event a Federal agency opts to participate in the proposed trial, CenturyLink will maintain facilities to allow the agency to return to them if necessary, as it will for any other customer participating in the trial.

²⁶ *Technology Transitions Order*, 29 FCC Rcd at 1447-48 ¶ 42.

²⁷ *Id.*

²⁸ *Id.*

6.1.4 Ensure Network Security

In the *Technology Transitions Order*, the Commission requests detailed descriptions, including supporting data, regarding the security practices that applicants have undertaken to secure IP-based infrastructure and descriptions of the Supply Chain Risk Management (SCRM) practices applicants will follow in the course of conducting their experiments.²⁹ CenturyLink has in place today a comprehensive and state-of-the-art risk management program to ensure the security and integrity of its network and services, including its IP-based infrastructure. In this section, CenturyLink provides an overview of that program. More detailed information will be provided upon request.

CenturyLink has a long history of collaborating with the Commission on emerging issues and security standards development through the Communications Security Reliability and Interoperability Council (CSRIC). CenturyLink also participates in the communications sector coordination process for critical infrastructure, which is led by the U.S. Department of Homeland Security (DHS). CenturyLink also engaged extensively in the collaborative process that led to the National Institute of Standards and Technology's (NIST) initial baseline Cybersecurity Framework, published earlier this year, fulfilling President Obama's Executive Order on cybersecurity.³⁰ NIST designed that framework based on industry standards and best practices, with input from the communications sector and other stakeholders.

a. Security Practices

CenturyLink's corporate policy and practice is to protect its information resources from unauthorized or improper use, theft, accidental or unauthorized modification, disclosure, transfer, or destruction, and to implement protective measures commensurate with their sensitivity, value, and criticality. CenturyLink's information resources include any owned or managed systems, applications, and network elements, and the information stored, transmitted, or processed with these resources.

CenturyLink maintains, as part of overall corporate strategy, a corporate Information and Physical security program (Corporate Security Program). This program is based on the ISO/IEC 27001:2005 industry standard. The CenturyLink Corporate Security Program is in place to protect CenturyLink information resources from unauthorized or improper use, theft, accidental

²⁹ *Technology Transitions Order*, 29 FCC Rcd at 1522, Appendix B ¶ 20.

³⁰ *Framework for Improving Critical Infrastructure Cybersecurity*, Version 1.0, National Institute of Standards and Technology (Feb. 12, 2014), available at <http://www.nist.gov/cyberframework/upload/cybersecurity-framework-021214.pdf>

or unauthorized modification, disclosure, transfer, or destruction. Security measures are implemented based on the value to the business of the information resources.

CenturyLink's information resources include owned or managed systems, applications, and network elements. The CenturyLink Corporate Security Program includes policies, standards and technical best practices to be used to guide the secure implementation and use of the information resources. The program undergoes continual review from both internal and external parties to assure effectiveness of the program.

Many CenturyLink lines of business have industry required certifications such as (PCI) Data Security Standard (DSS), SSAE16 SOC 1 and 2 with Type 2, ISO 27002 and ISO 9001. In order to minimize security risk, CenturyLink requires the participation of information and physical security as well as privacy subject matter experts in the creation of contract language applicable to all vendors and business partner relationships. In addition, these subject matter experts must review any modifications to contract template language.

Further, CenturyLink actively participates in a wide range of standards bodies that address initiatives related to information security including the Internet Engineering Task Force (IETF), Alliance for Telecommunications Industry Solutions (ATIS), and the National Institute of Standards and Technology (NIST).

More specific to cybersecurity, CenturyLink maintains an extensive security program for the detection and mitigation of cyber threats. There are multiple components to the program including physical and logical access controls; network perimeter protection; intrusion detection; workstation security management; security status checking and vulnerability testing; risk management; a security advisory program; security incident reporting; management and response; security compliance reviews; internal and external reviews and audits; real time traffic monitoring; change management; business continuity and disaster recovery; CenturyLink corporate management engagement; a strategy for continuous improvement; personnel security; security awareness and education; and security training and certifications.

CenturyLink also has in place control frameworks that span various network assets including applications, databases, servers, end-user devices (*e.g.*, personal computers), modems, routers and switches, and firewalls. These control areas can include, but are not limited to, as appropriate, authentication, authorization, user and session management, data protection, data validation, error and exception handling, auditing and login, configuration management, account control, identification, system protection and integrity, patch management, anti-virus, disk encryption, host intrusion, and a variety of other security controls. With respect to company security practices that may be broadly applicable across sectors and throughout industry, CenturyLink employs processes and procedures in each of the following functional categories: separation of business from operational systems; separation of duties for administrators and users; use of encryption and key management; identification and authorization of users accessing

system; asset identification and management; monitoring and incident detection tools and capabilities; incident handling policies and procedures; mission/system resiliency practices; and security engineering practices.

CenturyLink and its employees also interact with and participate in several domestic and international security organizations, including, but not limited to the following:

- Communications Sector Coordinating Council (CSCC)
- Partnership for Critical Infrastructure Security (All SCCs)
- DHS National Coordinating Center (NCC)/Comm ISAC
- National Security Telecommunications Advisory Council (NSTAC)
- Computer Emergency Response Team/Coordination Center (CERT/CC)
- DHS' National Security Telecommunications Advisory Committee (NSTAC) and its National Coordinating Center (NCC) for Communications
- National Security Information Exchange (NSIE)
- National Council of Sharing and Analysis Centers (ISAC)
- US InfraGard
- Security activities within the Internet Engineering Task Force (IETF)

CenturyLink also participates in the following government cybersecurity initiatives:

- National Infrastructure Protection Center (NIPC)
- Network Reliability Steering Committee (NRSC)
- National Cyber Forensic Training Alliance (NCFTA)
- DHS Cyber Information Sharing and Collaboration Program (CISCP)
- DHS NCCIC Cyber Unified Coordination Group

b. Supply Chain Security Requirements

CenturyLink's voice and data networks are part of the national communications critical infrastructure. As such, CenturyLink has developed rigorous supply chain processes and controls to limit, to the greatest extent possible, the likelihood of data or network compromise.

In particular, the CenturyLink Vendor Management program mandates that CenturyLink purchase only from trusted vendors. CenturyLink's Supply Chain Management organization, in conjunction with its network organization, also performs extensive investigation of possible vendors, checking their reputation in the industry, whether they have faced any government sanctions, and their financial stability and provenance. Vendors successfully passing these reviews are then required to respond to extensive RFP questionnaires focusing on security and functionality features. In addition, all network equipment undergoes extensive testing in CenturyLink's labs before going into production. These tests include performance testing, secure configuration, data confidentiality and integrity controls, secure access, and logging capability testing. Following successful testing, the agreements CenturyLink executes with these vendors

contain terms and conditions whereby the vendor is responsible for ongoing security updates on a proactive and reactive basis.

CenturyLink also purchases network gear only from vendors able to prove performance and security capabilities recognized by various federal and industry standards bodies. These capabilities are not only tested and confirmed prior to purchase, but are continually evaluated throughout the product lifecycle. Our commercial vendor RFP security requirements are based on RFC IETF RFC 3871, “Operations Security Requirements for Large Internet Service Provider (ISP IP Network Infrastructure)”, September 2004. For vendor gear to be used to service federal customers, CenturyLink mandates compliance with the NIST and FIPS-140 security standards as well.

c. IP Telephony

The security challenges associated with IP services include the risk of toll fraud, concerns over data transmission and eavesdropping, voice phishing, denial of service attacks and spam. Most, if not all, of these threats are not new; they existed on traditional in-band TDM networks too. With proper precautions in place, security threats can be managed and minimized. Recently, a range of standards and best practices to address these concerns have emerged.

CenturyLink follows standard security practices for IP-based services as part of its security risk management program. During the trial, and throughout the transition, CenturyLink will continue its review of emerging cybersecurity threats and security standards to determine which are appropriate to protect its IP-based infrastructure. In 2010, the Commission, through CSRIC, refreshed its cybersecurity best practices from its predecessor, the Network Reliability and Interoperability Council (NRIC), and added several practices related to VoIP. These include the suggestions that: service providers and network operators should use dedicated VoIP servers; service providers and network operators should block protocols meant for internal VoIP call control use at the VoIP perimeter; service providers should proxy remote HTTP access to VoIP perimeter firewalls; network operators should ensure that network services are hardened and have authentication, integrity and authorization controls in place to avoid inappropriate use of services; and equipment suppliers should harden their equipment.

These recommended practices are based upon standards developed by the Defense Information Systems Agency (DISA), the National Security Agency's (NSA) Security Guidance for Deploying IP Telephony Systems and the PacketCable Security Specifications. In addition, the industry has developed a range of common practices for the protection of IP-based telephony services, including NIST 800-58 Security Considerations for Voice Over IP Systems. Most of these documents apply existing cybersecurity practices—such as hardening, encryption, access controls etc.—in a VoIP configuration.

6.1.5 Ensure Adequate Backup Power

In the *Technology Transitions Order*, the Commission asked applicants to supply sufficient information to help the Commission “evaluate the measures that will be taken to maintain communications services in the event of a power outage.”³¹ In particular, applicants must comply with the rules adopted in the *911 Network Reliability Order*. In that order, the Commission directed “Covered 911 Service Providers” to submit an annual reliability certification, which includes certifications with respect to backup power.³² That rule requires certification with respect to the manner of backup power (fixed or portable generators, batteries, fuel cells, or combination), the duration of backup power (24 hours for Central Offices that directly serve a PSAP; 72 hours for such Central Offices if they also host a selective router), testing and maintenance of backup power equipment, and design of backup power equipment (e.g., fully automatic operation, stand-alone functioning).³³ If the Covered 911 Service Provider cannot certify to all these elements, the rule also allows it to certify to alternative measures employed by the provider to mitigate loss of service.

With respect to the Trial Area, CenturyLink is a Covered 911 Service Provider and, as such, it fully intends to comply with all applicable Commission rules regarding 911 network reliability and backup power. Today, on the network side, CenturyLink’s IP networks rely on commercial power with a combination of fixed and portable generators and batteries to supply backup power in case of loss of commercial power.

The wire centers in the Trial Area have fixed diesel-fueled, backup engines. For its disaster recovery efforts, CenturyLink has an emergency fueling plan, which is managed by its Central Office Operations team. And CenturyLink has a strategic partnership with a couple of national fueling vendors that are capable of drawing upon resources from around the country in support of emergency refueling efforts.

³¹ *Technology Transitions Order*, 29 FCC Rcd at 1448 ¶ 44.

³² A “Covered 911 Service Provider” is defined as: “Any entity that: (A) Provides 911, E911, or NG911 capabilities such as call routing, automatic location information (ALI), automatic number identification (ANI), or the functional equivalent of those capabilities, directly to a public safety answering point (PSAP), statewide default answering point, or appropriate local emergency authority as defined in sections 64.3000(b) and 20.3; and/or (B) Operates one or more central offices that directly serve a PSAP. For purposes of this section, a central office directly serves a PSAP if it hosts a selective router or ALI/ANI database, provides equivalent NG911 capabilities, or is the last service-provider facility through which a 911 trunk or administrative line passes before connecting to a PSAP.” *911 Network Reliability Order*, Appendix B, Rule 12.4(a)(4).

³³ *911 Network Reliability Order*, Appendix B, Rule 12.4(c)(2).

In addition to the backup engines, each wire center in the Trial Area has supplemental backup battery arrays. Besides these backup arrays, CenturyLink has portable generators available to support the fixed engines in the event of a failure for any reason. Portable generators are not typically staged at the wire center, but they are close enough for CenturyLink to deploy them before exhaustion of the battery reserve life of the direct-current plant (*i.e.*, backup battery array) for each office. With the portable generators, run times vary by the size of tank and the engine and current office load.

A significant difference between the network architecture of the TDM network and the IP network is that the IP network is more distributed, meaning that not all of the critical network elements are found within the confines of a wire center. These distributed elements are also powered by commercial power with battery backup power. Power to these distributed facilities, like a Digital Loop Carrier (DLC) remote terminal, is also backed up by portable generators that are designed to be easily and quickly deployed and operationalized. The only distributed network facility that does not rely upon CenturyLink-provided generator backup is the fiber-to-the-premises optical network terminal (ONT), which normally operates on commercial power drawn from the subscriber's place of business. Depending on the circumstances, the ONT backup power lasts approximately eight hours to support TDM voice services, while broadband services may be supported with less priority depending on the ONT.³⁴ CenturyLink anticipates that few, if any, customers in the trial will be served over the ONT architecture due to the trial's focus on business customers within the Las Vegas market, where power backup is generally provided on the customer side of the demarcation point.

On the customer side of the demarcation point, customers can and do choose on their own whether to establish backup capability. The customer may obtain such backup using a third party or through CenturyLink's service offerings.³⁵

6.1.6 Report Network Outages

In the *Technology Transitions Order*, the Commission stated that, during any "experiments," the trial applicants should "commit[] to filing outage reports and PSAP notifications consistent with the Part 4 rules."³⁶ CenturyLink currently submits outage reports consistent with the Commission's rules and also conducts annual training of its network personnel to ensure compliance. CenturyLink is committed to continuing to do so during the trial and beyond.

³⁴ See CenturyLink website, <http://qc.centurylink.com/customerService/batteryBackUp/index.html>.

³⁵ CenturyLink offers optional CPE backup power with subscription to its Fiber Plus, Hosted VoIP, and Managed Office IP-based products.

³⁶ *Technology Transitions Order*, 29 FCC Rcd at 1449 ¶ 45.

6.1.7 Continued Compliance with CALEA

The Commission seeks acknowledgement from applicants that services used by customers during any approved trial “will satisfy the Communications Assistance for Law Enforcement Act (CALEA), their obligations under Titles 18 and 50, and similar State requirements.”³⁷ CenturyLink’s VoIP services presently comply with CALEA and other law enforcement obligations. With respect to CALEA in particular, CenturyLink’s VoIP services are compliant with the ATIS-1000678.v2.2006 (also known as T1.678) standard.

6.1.8 Maintain Network Reliability

As previously noted, the Commission is expecting trial applicants to show that they will maintain the “current levels of reliability, including the ability to function during commercial power failures and security from external attack, should be maintained in an experiment.”³⁸ To this end, the Commission is interested in “the extent to which applicants will follow the CSRIC best practices in the course of conducting their experiments,” both with regard to their new networks and their transitioned networks.³⁹

In its efforts to build and maintain a reliable and resilient network, CenturyLink strives to apply best practices wherever and whenever such practices are appropriate to the situation at hand. CenturyLink is an active participant in CSRIC, and has willingly adopted CSRIC best practices as appropriate to the field conditions and the nature of the service offering. During the trial, CenturyLink will continue to follow the CSRIC best practices, as applicable, with respect to its legacy network and in the provision of VoIP services.

CenturyLink VoIP services are at least as reliable as competitive fixed VoIP services. Apart from the inherent reliability of the CenturyLink VoIP services, CenturyLink has committed to a program to address, in its network, the occasional, temporary loss of commercial power (see discussion above on Backup Power), as well as the more serious challenges posed during and after man-made and nature disasters (see Safeguards to Ensure Public Safety above)—assuming the customer has taken steps to ensure that its customer premises equipment remains operational.

6.1.9 Provision of Public Alerts

The Commission correctly presumes that “applicants who support provision of Wireless Emergency Alerts (WEA) over some or all of their service areas’ legacy infrastructure will

³⁷ *Technology Transitions Order*, 29 FCC Rcd at 1449 ¶ 46.

³⁸ *Technology Transitions Order*, 29 FCC Rcd at 1525, Appendix B ¶ 24.

³⁹ *Id.*

continue to provide WEA or provide equivalent alerting capability in such areas.”⁴⁰ With regard to CenturyLink, that presumption is correct. Emergency Alert Systems (EAS) will not be affected by the proposed trial because EAS are not dependent on legacy TDM facilities. Accordingly, during the trial, there should be no issue with sustaining and providing current levels of public alerts.

6.1.10 Public Safety Priority Services

The Commission also presumes that during any trial, applicants “will accommodate priority access, routing, provisioning, and restoration for essential national security and emergency preparedness communications.”⁴¹ In particular, the Commission highlighted the importance of Wireless Priority Service (WPS), Government Emergency Telecommunications Service (GETS), and Telecommunications Service Priority (TSP) as being “at the core of continuity planning” and “vital for tactical, emergency response.”⁴² None of these services will be adversely affected by the proposed trial.

IP-based 911 circuits are tagged as emergency services circuits and monitored with priority and given priority handling to be turned up first in the event of an outage. During the trial, CenturyLink also will support and comply with all TSP rules and policies for applicable services—*i.e.*, those services that have a Layer 1 component to the circuit. Specifically, in the Trial Area, CenturyLink will be able to tag its VoIP service circuits to provide priority service to the extent TSP subscribers participate in the trial.

6.2 Universal Access

6.2.1 Access for Person with Disabilities and Populations With Unique Needs

During the IP transition, CenturyLink will satisfy the communications needs of persons with disabilities and populations with special accessibility needs. Due to the limited scope of the trial, CenturyLink cannot predict whether persons with disabilities and other special accessibility needs will use the trial services. To the extent that such persons do participate, CenturyLink will work with these customers to identify accessible technology solutions and provide appropriate customer care and support. CenturyLink does not anticipate that participating customers with special needs would experience any service interruptions by moving to IP-based platforms.

⁴⁰ *Technology Transitions Order*, 29 FCC Rcd at 1525, Appendix B ¶ 25.

⁴¹ *Technology Transitions Order*, 29 FCC Rcd at 1525, Appendix B ¶ 27.

⁴² *Technology Transitions Order*, 29 FCC Rcd at 1525, Appendix B ¶ 27.

a. Outreach/Communications

CenturyLink will seek to identify whether any of the persons that volunteer to participate in the trial have special needs that need to be addressed, beyond those accommodations already in place for VoIP customers. CenturyLink already makes accommodations for such customers in order placement and service changes, bills tailored to particular access needs and means to communicate with CenturyLink with any concerns or issues they may have.

In particular as affects the trial, as discussed in Section 5.2, CenturyLink has developed an outreach and communications plan to ensure that participating customers receive appropriate notice and information about the trials. CenturyLink will include in this outreach initiative messages and communications media specifically tailored to identify whether there are any persons with special needs that might want to participate in the trial or who might be impacted by it. Additionally, CenturyLink will ensure that information it posts to the web about the trials will be accessible to customers who are blind, with low vision, or other disabilities.

b. Customer Care Process

CenturyLink's customer care and support processes are already designed to accommodate persons with disabilities and populations with special access needs. To the extent the trial may impact persons with hearing impairments, CenturyLink will continue providing TTY (Teletypewriter) and TRS (Telecommunications Relay Service) and other special-needs based services using the same programs and processes by which they are provided today using both TDM or IP-based services. In addition to our off-line accommodations, CenturyLink has designed its customer care webpages and online tools to be accessible by persons with special needs. These accommodations will be available throughout the course of the trial.

c. Technology

CenturyLink will also strive to address other accessibility issues that may arise during the trial and to develop appropriate technical solutions, consistent with our product/service design and development process outlined above.

6.2.2 *Maintaining Universal Service Status Quo*

Consistent with the Commission's presumption in the *Technology Transitions Order*, CenturyLink will maintain its existing Eligible Telecommunications Carrier (ETC) status and comply with all obligations arising from that status. ETC status and compliance is not impacted in any way because the trial entails only offering business IP-based services on a voluntary basis in a limited area to business customers that voluntarily choose to transition to those services.

6.2.3 Preserving and Enhancing Broadband Access

CenturyLink has long been committed to deploying next generation broadband facilities and services to as much of its service territory and customers as possible. Where it is economic to do so, CenturyLink is expanding its broadband footprint and replacing its traditional TDM-based DSL broadband technology (which is approaching the end of its life cycle) in order to provide higher-speed, IP-based wireline broadband. In particular, CenturyLink added 6.7 terabits per second of capacity to its backbone network in 2013, ending the year with a total capacity of approximately 16 terabits per second.⁴³ CenturyLink also improved broadband speed availability across its footprint and launched its first three 1 Gbps markets.⁴⁴ Additionally, CenturyLink continues its focused deployment of fiber to multi-tenant buildings, adding 1,000 fiber-fed buildings in 2013.⁴⁵ Also in 2013, CenturyLink built fiber to 4,100 cell towers and ended the year with more than 18,800 fiber-connected towers.⁴⁶ In 2014, the company plans to add another 3000-3500 towers.⁴⁷ In designing and engineering these fiber-to-the-tower builds, the company works to maximize the number of potential new business customers passed by its fiber network. The trial will provide additional insights for the company as it continues its deployment of VoIP business services and, thus, to the build-out of broadband networks and IP-based service more broadly.

6.2.4 Maintaining Quality of Services

As the Commission itself has recognized, converged IP networks are more dynamic, versatile, resilient, and efficient than the single-purpose TDM networks they are replacing. IP-based networks have the potential to enable a variety of new services, features and functions that will benefit customers and provide a platform for growth and innovation. Not everything will be exactly the same and certain functionalities will be lost as the transition proceeds. Section 4.1, above, provides details regarding how the functionality of VoIP services compares to legacy voice services. In designing its VoIP services, CenturyLink has sought to carry over those features and functions that customers demand, and that are necessary to meet the foregoing fundamental principles and values. And, of course, IP services are continuing to evolve, and they undoubtedly will provide even greater levels of functionality and higher quality to users than they do now. But, the trial is intended, in part, to address and provide insights regarding these very issues. Similar concerns have occurred with the evolution of CMRS

⁴³ CenturyLink 2013 Annual Report, available at: <http://ir.centurylink.com/Cache/25620309.PDF?Y=&O=PDF&D=&FID=25620309&T=&OSID=9&IID=>.

⁴⁴ *Id.*, at ¶ 4.

⁴⁵ *Id.*, at ¶ 4.

⁴⁶ *Id.*, at ¶ 5.

⁴⁷ *Id.*

networks and services. For example, there has been much debate about whether CMRS service quality currently differs from that of traditional, TDM voice services (which were designed solely to transmit voice communications). Nonetheless, over 40 percent of American households have cut the cord entirely and rely solely on CMRS service for their voice communications needs.

6.3 Competition

6.3.1 *Maintaining Wholesale Access*

As detailed above, one of the primary purposes of the trial is to enable CenturyLink and the CLEC participants to experiment with the exchange of VoIP-to-VoIP traffic over commercially-negotiated IP connectivity arrangements. This will be done on a limited basis without impacting existing wholesale access arrangements at all. Consistent with the *Technology Transitions Order*, participation is entirely voluntary⁴⁸ – for both potential trial business VoIP customers and for participating CLECs. And, consistent with the *Technology Transitions Order*,⁴⁹ CenturyLink is not seeking to resolve through this application or in this proposed trial any of the myriad and complex legal and policy questions implicated by the IP transition - including those concerning the extent to which wholesale obligations associated with an ILEC's provision of TDM-based services, such as the required unbundling of high capacity loops or the resale of telecommunications services, apply to IP-based services.⁵⁰ In fact, one of the strengths of the trial is that it represents an effort by potential adversaries on these complicated issues to put aside any disagreements and simply experiment with limited aspects of the technical challenges entailed. CenturyLink describes below its plans for addressing the other specific conditions and presumptions established in the *Technology Transitions Order*.

a. Wholesale Access

As noted above, and as required in the *Technology Transitions Order*,⁵¹ the participation of Bandwidth and Inteliquent in this trial is entirely voluntary. No customer will be forced to migrate to alternative services or products, or to alter its current wholesale arrangements with CenturyLink. The same wholesale customers that currently use CenturyLink's network in the

⁴⁸ *Technology Transitions Order*, ¶ 59 and n.91.

⁴⁹ *Id.*, at ¶ 8 (stating that the Commission did not intend to resolve legal and policy questions resulting from the transition in the context of any trials.)

⁵⁰ Additionally, as noted above, CenturyLink Communications, LLC, the affiliate that will be offering the trial services, is not an ILEC.

⁵¹ *Id.*

wire centers in the Trial Area will continue to be able to do so during the proposed trial.⁵² There are no plans to change the types of wholesale access that customers who do not participate in the trial currently receive, or to alter the price or cost of that access.

b. Interconnection

The proposed trial satisfies the condition established in the *Order* to “maintain the status quo in providing interconnection arrangements to both existing and new customers.”⁵³ In particular, the proposed trial will not result “in the cessation or impairment of service” for other providers or for end user customers.⁵⁴ The interconnection arrangements necessary to carry traffic to and from the embedded base of TDM customers in the wire centers in the Trial Area will be unaffected during the trial. As described above, the existing TDM services in place for trial customers will remain in place.

Of course, as described above, the exchange of traffic for customers subscribing to the trial services will entail differences in call routing from that for customers subscribing to CenturyLink’s legacy wireline TDM services. This is a central purpose of the trial. The discussion above provides the overall network architecture that will be used in the trial. As described there, CenturyLink’s national affiliate, CenturyLink Communications, LLC, and the participating CLECs will connect at the IP Core POC located in a carrier hotel in Las Vegas. In CenturyLink’s network, the POC connects to an application server or soft-switch, which provides core voice routing functions for CenturyLink’s Hosted VoIP and SIP Trunk services, respectively. When a trial business customer calls a Bandwidth or Inteliquent VoIP customer in the Trial Area, the customer’s call will be routed to the CLEC over the IP connectivity point. In the unlikely event the call cannot get to the CLEC over the IP connection, it will overflow to an existing TDM connection to the access tandem to reach the CLEC. This architecture/routing will be used only for voice traffic between CenturyLink and one of the participating CLECs that are IP on an end-to-end basis and that originate and terminate in Nevada. Other traffic between the providers will continue to be exchanged through the same TDM interconnection arrangements as today.

Finally, the *Technology Transitions Order* notes that the Commission wants to “be able to evaluate whether customers in experiment arenas will be able to select their own interexchange carrier (IXC) and how IXCs will terminate interstate interexchange or international calls to customers participating in the experiment.”⁵⁵ Because the trial is limited to VoIP-to-VoIP traffic

⁵² See *Technology Transitions Order*, Appendix B, ¶ 35 (applicant must “ensure that the same types of wholesale customers can continue to use its network. . . .”).

⁵³ *Id.*, ¶ 61.

⁵⁴ See *id.*, ¶ 62.

⁵⁵ *Id.*, ¶ 62.

originating and terminating in Nevada, the proposed trials will have no effect on how IXCs terminate interstate interexchange or international calls. CenturyLink also notes that retail business customers who voluntarily choose to participate in the trial—and thus to subscribe to a CenturyLink business VoIP service—will not select a separate IXC to carry long distance calls. Indeed, assuming it is even technically feasible, imposing such a requirement on these IP-based services would be prohibitively expensive and fundamentally at odds with the “any distance” nature of IP services

6.3.2 Intercarrier Compensation

During the trial, CenturyLink will maintain the intercarrier compensation *status quo ante* in accordance with the Commission’s *USF/ICC Transformation Order*.⁵⁶ Indeed, because the traffic involved in the trial is, by definition, limited to IP-to-IP traffic, the FCC’s current rules regarding intercarrier compensation are not implicated. CenturyLink’s trial does not involve any change to its existing services and therefore the existing intercarrier compensation regimes – for example, for PSTN, VoIP-PSTN or CMRS-PSTN traffic are not implicated.

Intercarrier compensation revenues and obligations would change only due to customers’ shifts between services subject to different intercarrier compensation regimes rather than any impact from the trial itself. For example, calls by participating business VoIP customers that fall outside the scope of the trial (i.e. other than their IP-to-IP traffic originating and terminating in Nevada) that are subject to the existing intercarrier compensation regimes will be subject to the intercarrier compensation *status quo ante* applicable to such services. But, that is a function of the intercarrier compensation regime itself and is the case any time a customer switches, even outside a trial. Similarly, CenturyLink does not and will not as part of the trial charge subscriber line charges (“SLCs”) or access recovery charges (“ARCs”) on VoIP services. Accordingly, CenturyLink seeks no new authorization to tariff or otherwise charge SLCs or ARCs for the customers in the trial. In addition, the trials as proposed should not have material impact on CenturyLink’s Eligible Recovery.⁵⁷

Finally, CenturyLink agrees that policy issues, including those related to compensation between providers in an all-IP environment, are appropriately addressed outside of service trials,⁵⁸ and, as the Commission notes, it “need not address these issues before proceeding with

⁵⁶ See generally Connect America Fund, et al., WC Docket No. 10-90, et al., Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663 (rel. Nov. 18, 2011) (*USF/ICC Transformation Order*), (subsequent regulatory history omitted), *aff’d sub nom.*, *In re: FCC 11-161*, 753 F.3d 1015 (10th Cir. 2014), *reh’g denied* (10th Cir., Orders, Nos. 11-9900, et al., Aug. 27, 2014).

⁵⁷ 47 C.F.R. § 51.915(d).

⁵⁸ See *USF/ICC Transformation Order*, 26 FCC Rcd at 18123-18147 ¶¶ 1335-1398 (seeking comment on IP-to-IP interconnection issues).

the experiments.”⁵⁹ As noted above, this trial will not affect wholesale access or interconnection, and therefore, resolving policy and legal issues related to compensation for IP interconnection is not within the scope of the trial. In fact, as described above, one of the strengths of the trial is that it represents an effort by potential adversaries on these complicated issues to put aside their disagreements and simply experiment with limited aspects of the technical challenges entailed.

6.4 Consumer Protection

6.4.1 Consumer Privacy

CenturyLink will conduct all aspects of the trial consistent with the CenturyLink Privacy Policy, which applies to CenturyLink’s legacy TDM services, as well as IP-based services. In addition, CenturyLink will continue to comply with applicable privacy laws and regulations, including those concerning CPNI that apply to both its TDM and VoIP services.⁶⁰ CenturyLink has established corporate operating procedures that are adequate to ensure compliance with the CPNI rules. Those processes and procedures are described in CenturyLink’s annual CPNI compliance certifications, which have been publicly available since 2011.⁶¹ The entity that will provide the trial services – CenturyLink Communications, LLC – will apply these processes and procedures to safeguard the CPNI of CenturyLink’s interconnected VoIP customers.

6.4.2 Truth-in-Billing

During the trial, CenturyLink will comply with the Commission’s truth-in-billing, slamming and cramming requirements in our provision of IP-based VoIP services, regardless of the regulatory classification of those services. Given that CenturyLink’s VoIP services are all-distance voice services allowing unlimited domestic voice calls, CenturyLink’s bills do not distinguish between deniable and non-deniable charges. Nor do those bills reflect third-party bill charges. Additionally, the way CenturyLink’s VoIP services are configured and provided, we do not anticipate that the Commission’s change-of-carrier rules would play a material role in the trial. Accordingly, customers purchasing CenturyLink’s VoIP services will receive the protections of the truth-in-billing (and concomitantly the Commission’s cramming) requirements throughout the trial.

⁵⁹ *Technology Transitions Order* 29 FCC Rcd at 1455 ¶¶ 64.

⁶⁰ *See Implementation of the Telecommunications Act of 1996: Telecommunications Carriers’ Use of Customer Proprietary Network Information and Other Customer Information*, 22 FCC Rcd. 6927, ¶¶ 54-59 (rel. Apr. 2, 2007).

⁶¹ 47 C.F.R. § 64.2009. *See e.g.*, CenturyLink Annual CPNI Compliance Certification Calendar Year 2012, EB Docket No. 06-36, filed Mar. 1, 2013; CenturyLink Annual CPNI Compliance Certification Calendar Year 2011, EB Docket No. 06-36, filed Mar. 1, 2012; CenturyLink Annual CPNI Compliance Certification Calendar Year 2010, EB Docket No. 06-36, filed Mar. 1, 2011.

6.4.3 Number Portability

The Commission has directed that, for any experiments, its “number portability rules and policies will continue to apply,”⁶² and asks whether “other providers’ customers could potentially be affected by a proposed experiment” and whether “the ability of other providers’ customers to keep and port their numbers will not be jeopardized.”⁶³ CenturyLink has a long history of collaborating with the industry on local number portability issues and best practice development through the North American Numbering Council’s Local Number Portability Administration Working Group. In the Trial Area, CenturyLink will replace legacy TDM services with interconnected VoIP services that already are in the market. These services are subject to and fully comply with the Commission’s number portability rules and policies. As a consequence, both CenturyLink customers and the customers of competing providers will be able to port their numbers during the trial to the same extent that they are able to port their numbers today.

6.4.4 Routing

CenturyLink strongly supports the Commission’s efforts to ensure the reliable and efficient operation of the nation’s telephone network and that will be no different under the trials.⁶⁴ CenturyLink’s VoIP services are already operational and available in the market. All call completion, routing and signaling, other than traffic exchanged over the trial’s VoIP connectivity arrangement, will be handled as it is today for these services. Call completion, routing and signaling for traffic covered by the trial will be handled as described above. CenturyLink holds itself and its vendors to high standards for handling all traffic. Our customers expect as much from CenturyLink. CenturyLink ensures proper, high-quality routing and signaling through internal procedures, including rigorous oversight of vendors, and compliance with industry best practices.⁶⁵ Moreover, CenturyLink’s VoIP services are subject to the *Rural Call Completion Order*⁶⁶ and the signaling rules under the *USF/ICC*

⁶² *Technology Transitions Order*, 29 FCC Rcd 1433, at ¶ 68.

⁶³ *Id.*, Appendix B, ¶ 42.

⁶⁴ Comments and Reply Comments of CenturyLink, WC Docket No. 13-39, Rural Call Competition (filed Jan. 16, 2014 and Feb. 18, 2014, respectively).

⁶⁵ CenturyLink complies with and has been actively involved in development of best practices through ATIS. See “Alliance for Telecommunications Industry Solutions, ATIS Standard on Intercarrier Call Completion/Call Termination Handbook,” ATIS-0300106, available at <https://www.atis.org/docstore/product.aspx?id=26780> (rel. Mar. 2013).

⁶⁶ See generally *In the Matter of Rural Call Completion*, WC Docket No 13-39, Report and Order and Further Notice of Proposed Rulemaking, 28 FCC Rcd 16154 (rel. Nov. 8, 2013) (*RCC Order*).

Transformation Order.⁶⁷ CenturyLink will continue to operate these services in the trial consistent with the terms of these orders and rules.⁶⁸ Together, the Commission's rules, CenturyLink's company procedures, and industry best practices ensure that no systemic routing problem exists, and when an isolated problem is identified, CenturyLink can quickly and effectively resolve the issue. CenturyLink expects the trial to raise no key technical issues that would affect routing or signaling but to the extent a routing or signaling concern surfaces, even if unrelated to the trial, CenturyLink will work promptly and cooperatively toward a resolution.

6.5 Data Collection and Reporting

As part of the trial, CenturyLink will collect and report to the Commission a variety of data, including data regarding the progress of the trial, customer complaints, network performance, service quality, and issues relating to access by persons with disabilities. This section describes these data below. The proposed data collection and reporting is tailored appropriately for a trial that will be of limited scope and limited duration.

6.5.1. *Transition Progress Reports*

CenturyLink will provide an interim and a final transition progress report that will track and report the number of customer migrations from TDM products to IP products.

6.5.2. *Customer and Carrier Issues Reports*

CenturyLink will provide an interim and a final transition progress report that will summarize trial-specific customer issues. Data will be collected from: direct customer input to trial-specific web sites, calls to CenturyLink customer care centers and issues identified by field representatives having customer contact. CenturyLink will classify issues in a way that is reflective of the type of issues customers are describing, such as: accessibility, product availability or product performance.

CenturyLink will also provide an interim and a final transition progress report that will summarize trial-specific issues between CenturyLink and its CLEC partners. CenturyLink anticipates that this report will include sections describing a joint response of CenturyLink and the participating carriers – as well as section providing an opportunity for CenturyLink and the participating carriers to provide distinct perspectives as appropriate.

⁶⁷ See *USF/ICC Transformation Order* at ¶¶ 702-735.

⁶⁸ CenturyLink Petition for Waiver, WC Docket No. 13-39, In The Matter of *Rural Call Completion* (filed Jul. 28, 2014).

6.5.3. Customer Service Quality Reports

CenturyLink will track and report on an interim and final basis data concerning the quality of its performance in transitioning business customers to wireline IP-based voice service. CenturyLink will select a nearby wire center to serve as a “control group” to ensure that both the Trial Area and control wire centers are subject to similar weather conditions, traffic congestion, and other Network-affecting events. CenturyLink will provide performance data for the trial customers and the same data for the control wire centers. In each case, CenturyLink will provide:

- **VoIP - % Due Dates Missed**

Description: This metric is calculated as the volume of VoIP customer sales orders not completed on or before the due date, divided by the volume of VoIP customer sales orders, times 100.

- **TDM - % Due Dates Missed**

Description: This metric is calculated as the volume of TDM customer sales orders not completed on or before the due date, divided by the volume of TDM customer sales orders, times 100.

- **VoIP – % Trouble Report**

Description: This metric is calculated as the volume of measured VoIP trouble tickets received during the reporting period, divided by the number of VoIP services at the end of the reporting period, times 100.

- **TDM – % Trouble Report**

Description: This metric is calculated as the volume of measured TDM trouble tickets received during the reporting period, divided by the number of TDM services at the end of the reporting period, times 100.

6.5.4. Carrier Service Quality Reports

CenturyLink will track and report on an interim and final basis data concerning the performance of the limited VoIP connectivity aspect of the trial along with the TDM control group. Specifically, CenturyLink will provide:

- **VoIP - % Blocking on IP Connectivity**

Description: Measures total blocked calls across those dedicated IP connectivity arrangements where CenturyLink controls capacity, divided by total call attempts across the dedicated IP connectivity where CenturyLink controls capacity, times 100.

- **TDM - % Blocking on Interconnection Trunks**

Description: Measures total blocked calls across those dedicated TDM interconnection trunk groups where CenturyLink controls trunk capacity, divided by total call attempts across the dedicated interconnection trunk groups where CenturyLink controls trunk capacity, times 100.

6.5.5 Access By Persons with Disabilities

Due to the unknown nature or extent of potential accessibility needs that CenturyLink may encounter in the trial wire centers, we believe that qualitative data concerning issues or problems involving persons with disabilities will be more instructive than quantitative data. Accordingly, CenturyLink will separately track and report on an interim and final basis complaints to CenturyLink's Office of the President from the trial wire centers where a customer self-identifies him- or herself as having a disability, or the customer's issue relates to assistive technology.

6.5.6 IP Network Outage Reports

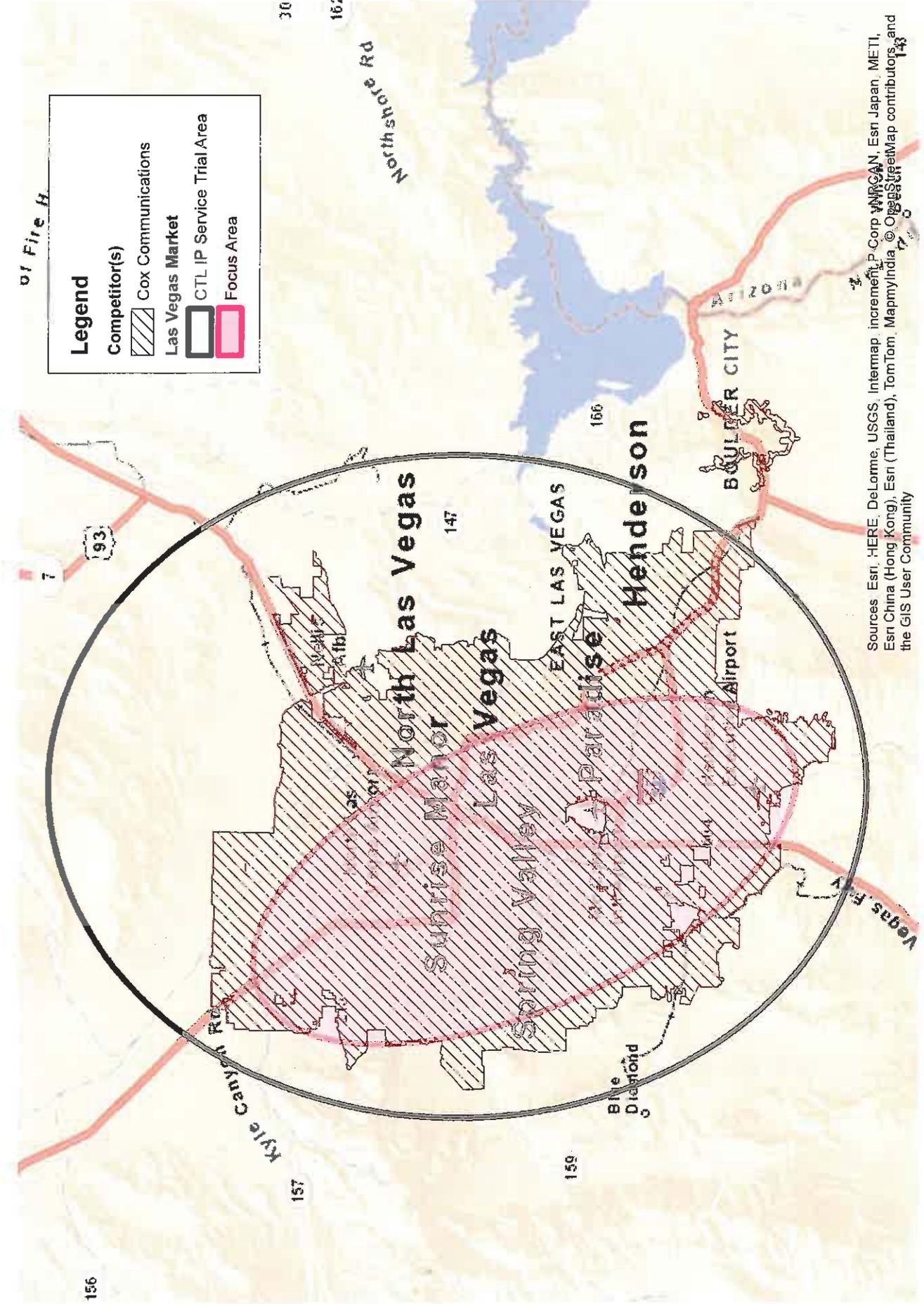
CenturyLink also will submit in the record of this proceeding an interim and final report summarizing network outages that affected voice services in the Trial Area that were reported to the FCC via NORS, pursuant 47 CFR Part 4.

CENTURYLINK IP TRIAL OPERATING PLAN
(AS ATTACHED TO CENTURYLINK PROPOSAL FOR IP SERVICE TRIAL AND REQUEST FOR
DECLARATORY RULING)

CENTURYLINK APPENDIX A

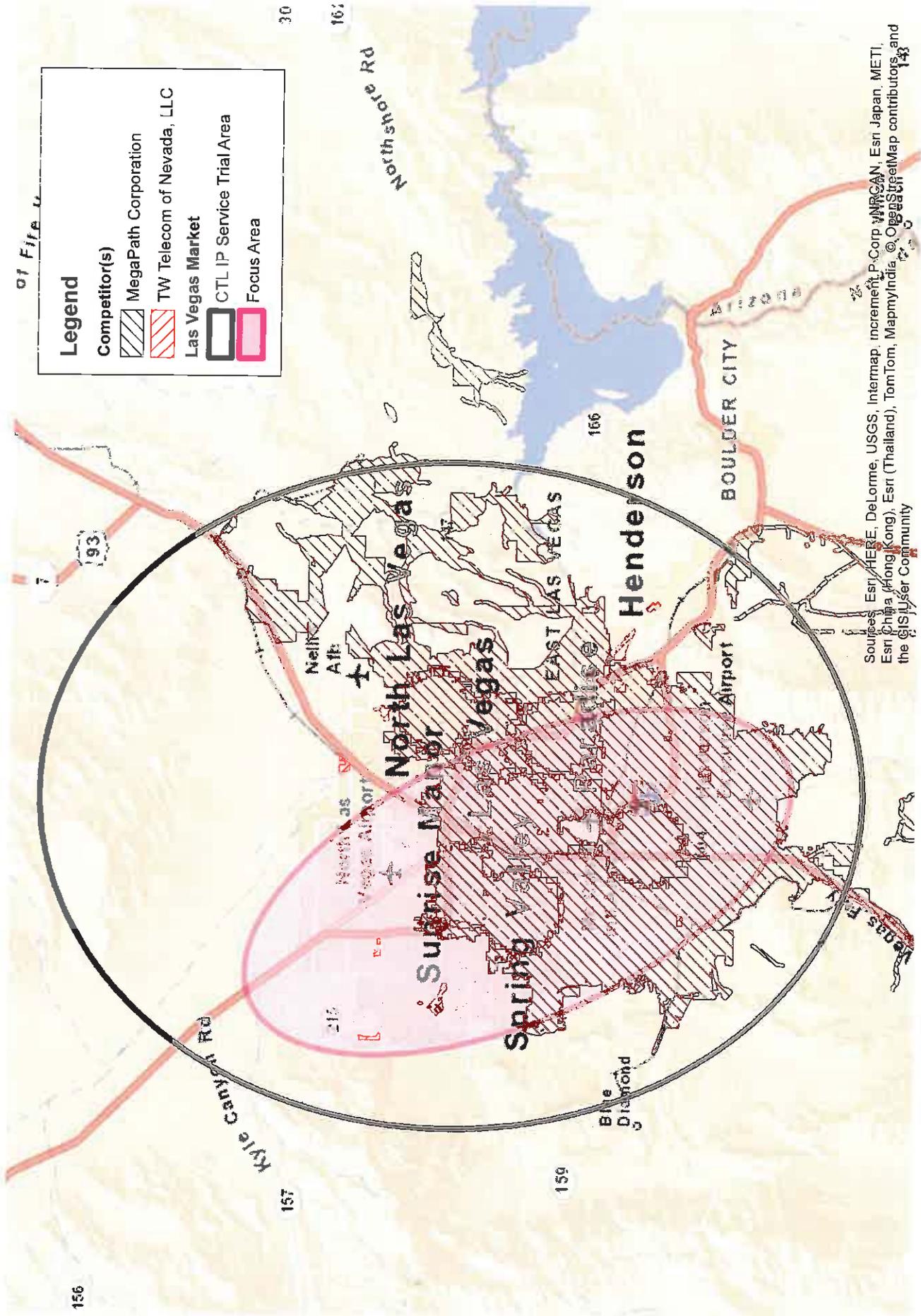
NOVEMBER 13, 2014

Las Vegas, NV IP Trial Cable Competition



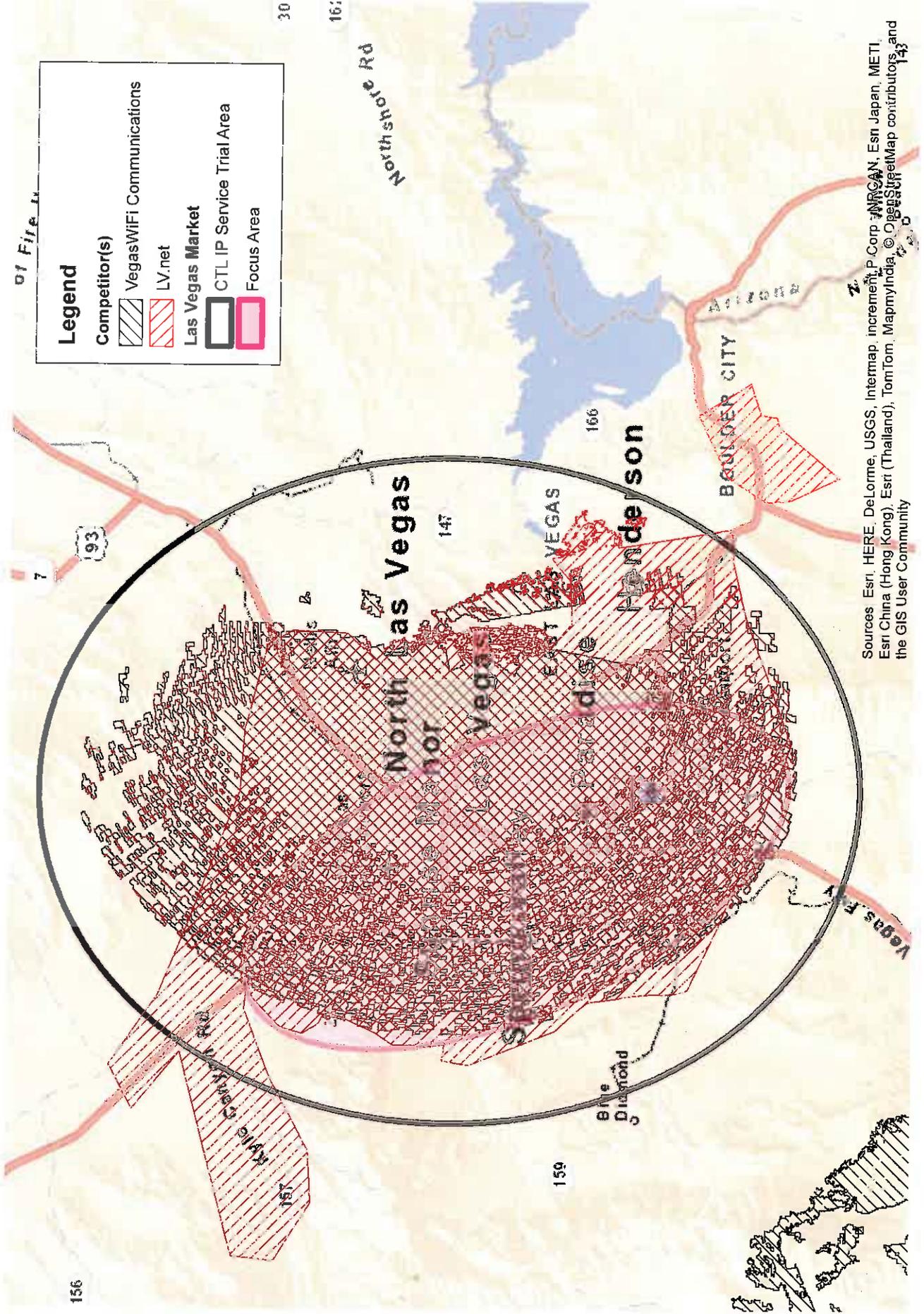
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp, NAVCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Las Vegas, NV IP Trial DSL/Copper Competition



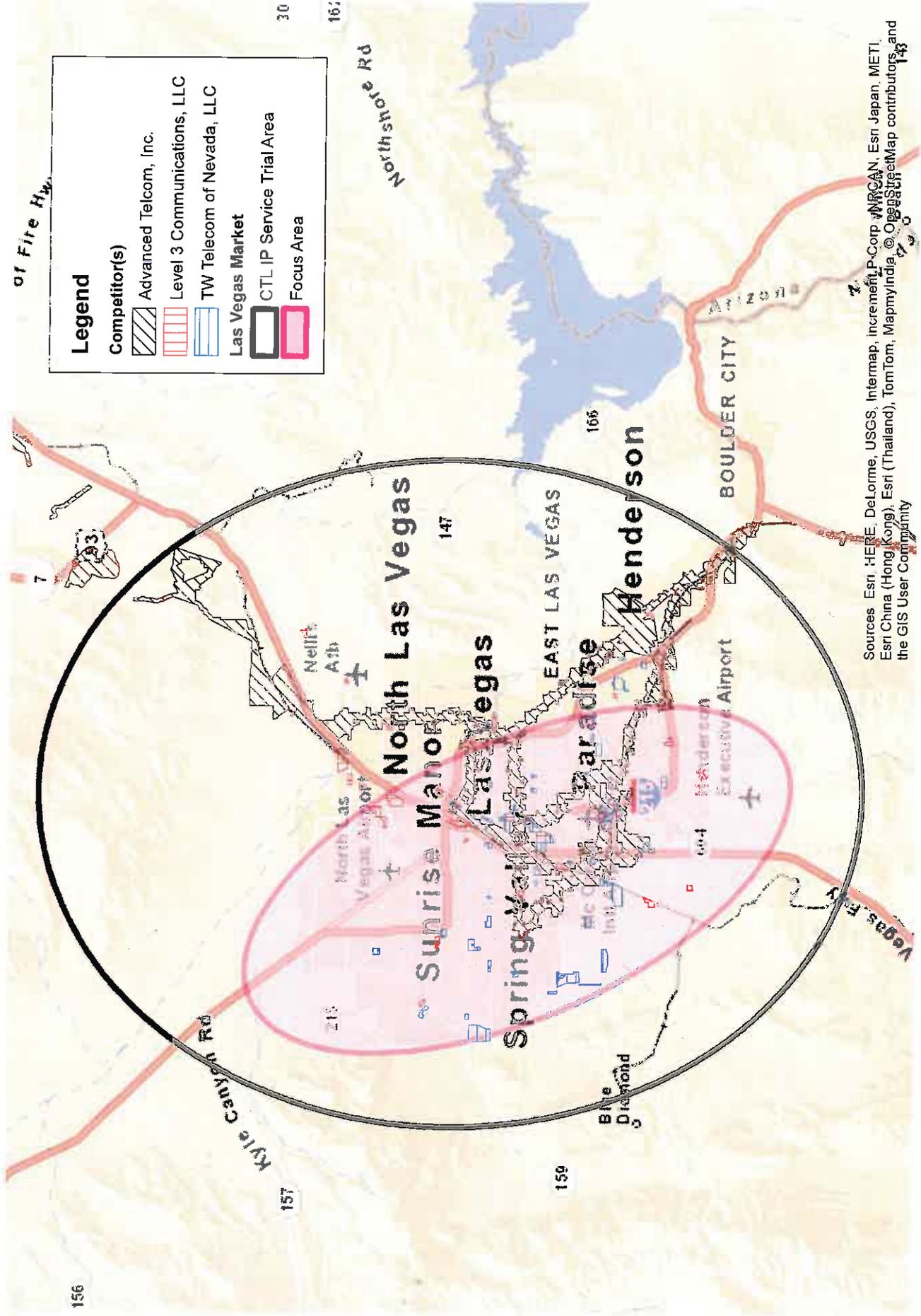
Sources: Esri/HEE, DeLorme, USGS, Intermap, increment P-Corp, VNR/CAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Las Vegas, NV IP Trial Fixed Wireless Competition



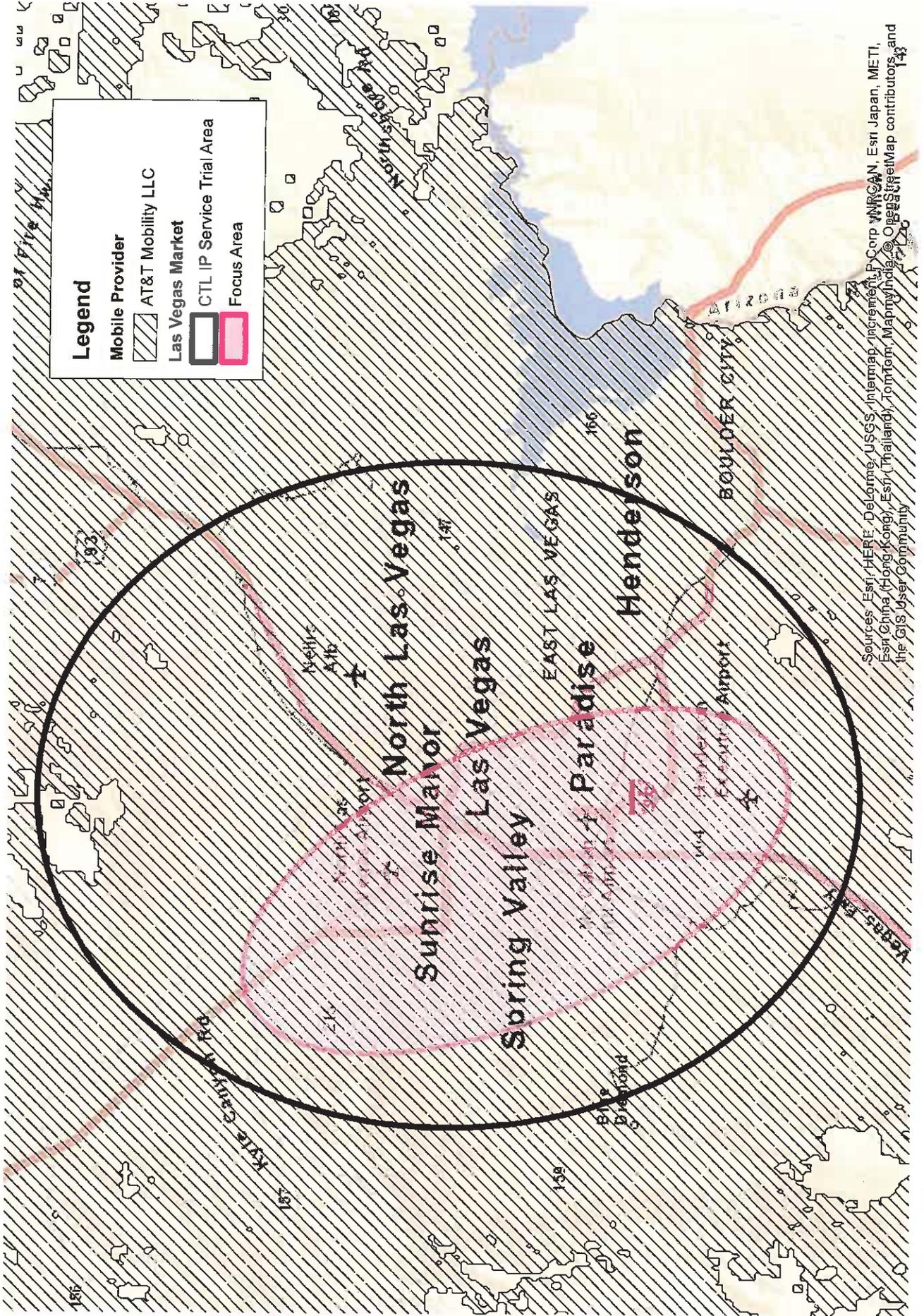
Sources Esri, HERE DeLorme, USGS, Intermap, increment P Corp., NAVCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Las Vegas, NV IP Trial Fiber Based Competition



Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Las Vegas, NV IP Trial AT&T - Wireless Competition

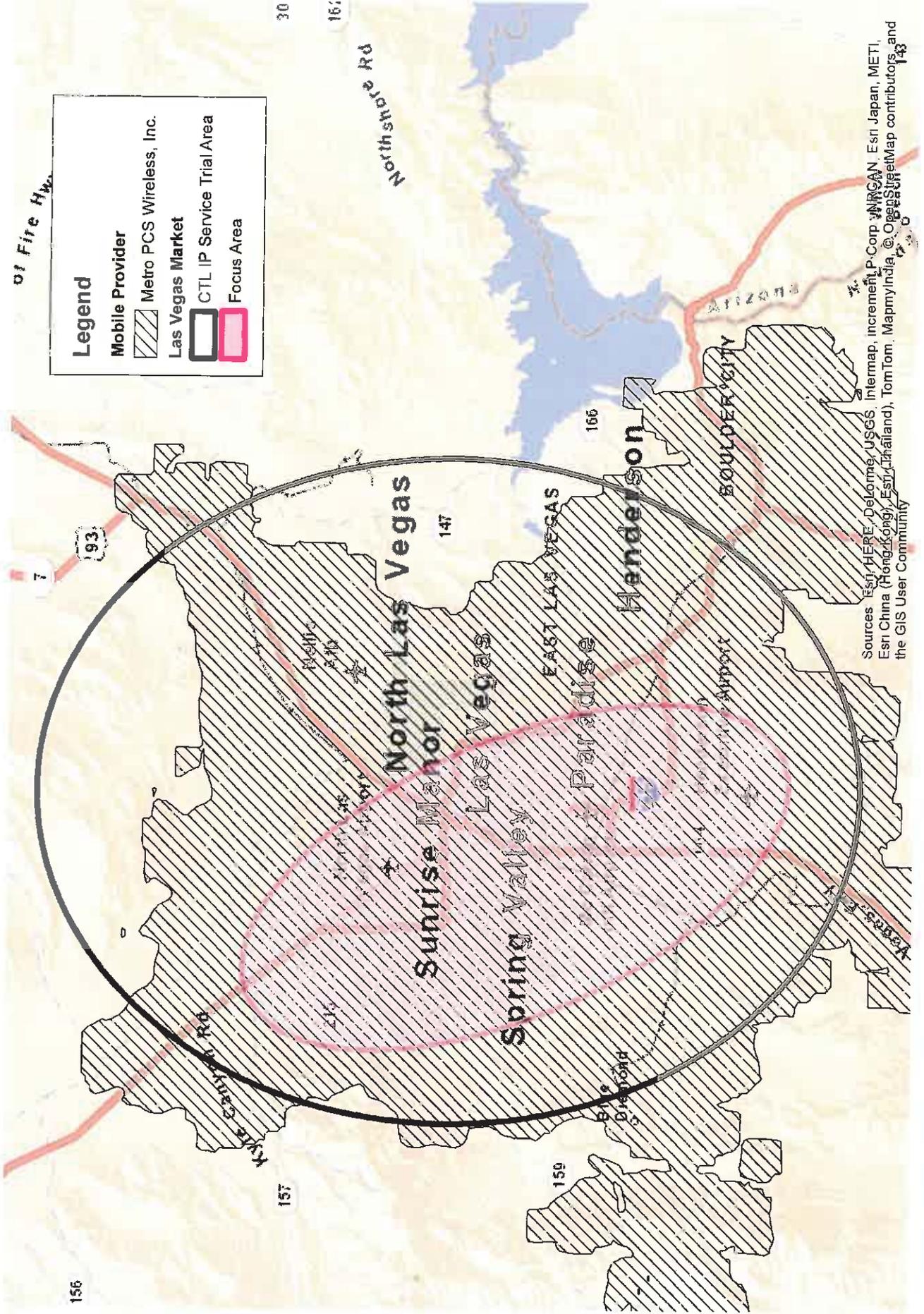


Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp, @NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, Mapbox, Intel, OpenStreetMap contributors, and the GIS User Community

Las Vegas, NV IP Trial Metro PCS - Wireless Competition



CenturyLink®

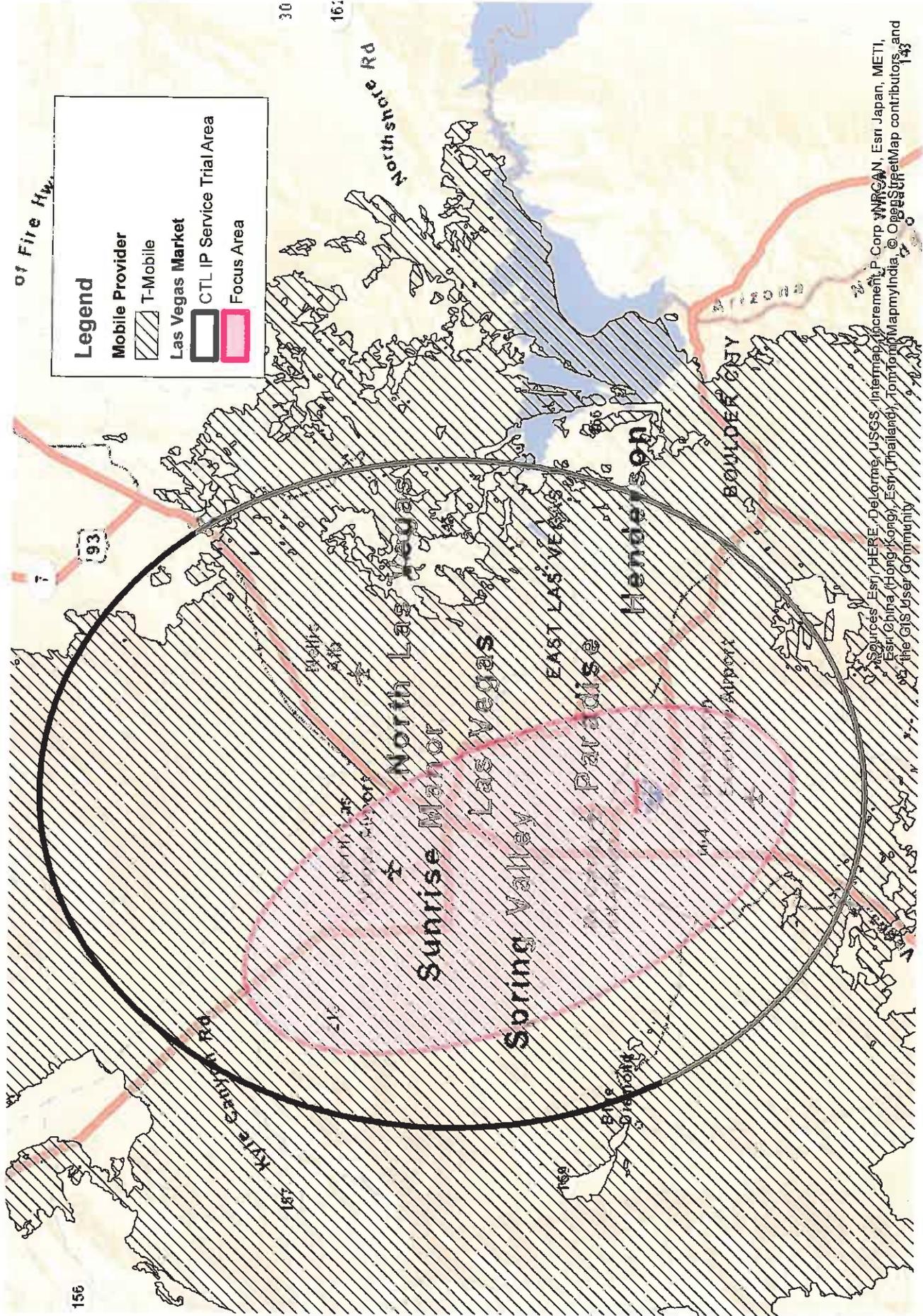


Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Swisstopo, Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Las Vegas, NV IP Trial T-Mobile - Wireless Competition



CenturyLink®



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CENTURYLINK IP TRIAL OPERATING PLAN
(AS ATTACHED TO CENTURYLINK PROPOSAL FOR IP SERVICE TRIAL AND
REQUEST FOR DECLARATORY RULING)

CENTURYLINK APPENDIX B



2014 CenturyLink Disaster Preparedness White Paper Business Continuity Program Overview

► Overview

Contents ▼

- 1 Overview & Governance
- 2 Best Practices & Staffing
- 4 Planning Approach
- 5 Key Plan Elements
- 6 Crisis Management
- 8 Sustainability

CenturyLink has a comprehensive incident management structure and business continuity plans for critical functions occurring throughout the enterprise, and at locations across the U.S. and internationally.

We designed these plans to ensure that CenturyLink is prepared to continue providing services to our customers in the event of a significant business disruption.

CenturyLink’s commitment to business continuity planning is reflected in its institution of corporate standards regarding plan development, review, training, updating, and testing.

This document summarizes CenturyLink’s crisis management and business continuity program, plans, and related activities.



“Improve lives, strengthen businesses and connect communities by delivering advanced technologies and solutions with honest and personal service.”

CenturyLink Vision

During the 2013 Colorado floods, two CenturyLink helicopters rescued roughly 16 people, and ten cats and dogs near the mountain town of Drake.

► Governance

BC/DR Policy ▼

- Key individuals named in plans will be trained annually
- Plans will be tested or reviewed annually

Corporate Policy.

CenturyLink’s corporate policy requires the development of business continuity plans, disaster recovery plans, and crisis communications.

Plans are to be developed for critical functions and technology that, if disrupted, would significantly impact our ability to provide customer services.

Leadership Involvement.

CenturyLink leaders support the disaster preparedness programs and they are an integral part of crisis management.

Recognized Standards.

In addition to a number of planning elements required by regulation, we have aligned our program to adhere to ISO22301 standards and expect them to be integrated by 2015.



2014 CenturyLink Disaster Preparedness White Paper Business Continuity Program Overview

► Best Practices

Certified.

CenturyLink's program and plans have been developed with the involvement of certified business continuity professionals (MBCP, CBCP, and MBCI), and we incorporate best practices acknowledged by Disaster Recovery Institute International (DRII) and the Business Continuity Institute (BCI).

Best practices employed by CenturyLink include, but are not limited to:

- Threat Assessment & Business Impact Analysis results as a basis for Business Continuity planning
- Geographic diversity of recovery resources
- Consideration of third-party resources
- Multiple business resumption options for critical functions
- Routine plan reviews, updating and testing
- Consistent and integrated planning approach across the enterprise



Replacing washed-out cable in a 120-foot deep ravine in Plainview, CO

► Disaster Preparedness Staffing

Team ▼	Roles & Responsibilities – All Levels ▼
Leadership	CenturyLink leaders are responsible for providing leadership and direction following a catastrophic event, or an event that may have consequences beyond those typically managed by the Crisis Management Team.
Regional	Five regional CenturyLink teams are led by a regional director and comprised of representation from all critical business and support units at the local level. These teams are activated when there is an event that affects or has the potential to affect one or more business units or critical business functions in a geographic area.
Disaster Preparedness	CenturyLink staffs a full-time group of disaster preparedness professionals to oversee and support all elements of the corporate program. Staff members hold CBCP and MBCI certifications, graduate degrees, and have experience in telecommunications or IT operations.
Crisis Management/Communications	CenturyLink's critical business units are represented within this structure and activated whenever there is a severe multi-region business interruption or potential threat to the corporation at large. Primary and alternate team members provide corporate-wide resources as necessary to assist regional teams in addressing key issues, identifying support needs, and coordinating recovery activities within their respective business units. Team members participate in drills, crisis simulations, and receive annual training.



2014 CenturyLink Disaster Preparedness White Paper Business Continuity Program Overview

Team ▼	Roles & Responsibilities – All Levels ▼
Business Continuity Managers & Planners	Departmental business continuity managers and planners within each business unit are responsible for assisting in the identification of critical functions and resource recovery needs. These individuals engage subject matter experts for BC planning, testing, and reviews to ensure that plans are accurate and valid.
IT Disaster Recovery Services	This group is responsible for all application and hardware recovery plans, as well as integrating outage management with Crisis Management and Business Continuity activities. This group coordinates the IT Recovery Management Team, which is a “SWAT-like” team designed to manage rapid application recovery.
Damage Assessment & Rapid Response	These teams include individuals familiar with network elements, engineering and construction processes who mobilize on short notice. People used in this effort have hands-on experience or working knowledge of the network infrastructure and may include engineers, technicians or other subject matter experts with the training and skills to make accurate preliminary reports.
Network Reliability Operations Center	CenturyLink Network Reliability Operations Center (NROC) organization staffs a 24x7x365 center that monitors our telecommunications network to rapidly identify potential issues and respond to real-time outages. The NROC is the focal point for network restoration, and is an integral component of the overall Crisis Management structure.
Environmental Health & Safety	CenturyLink is committed to protecting the environment and the health and safety of our employees, customers and the communities we serve by conducting our business in a safe and environmentally responsible manner. The Environmental Health and Safety staff provides support to the business units and is engaged at all levels during major events or disasters.
Contingency Planning	CenturyLink maintains Contingency Plans to provide for employee resource planning which may be associated with any disaster, including work force stoppages and pandemic planning.



Coordinating work with Local, State, and Federal agencies to replace washed out fiber lines during the Colorado floods. Over 10,000 truckloads of dirt were hauled to backfill the span on the left.





2014 CenturyLink Disaster Preparedness White Paper Business Continuity Program Overview

► Planning Approach



In order to avoid disruptions to services, you need to have a plan. We have a plan. In fact, we have several plans that are designed to minimize disruption of

CenturyLink services. The plans address critical internal business functions that, if disrupted, could lead to service outages.

Approach ▼	Planning Description ▼
Enterprise-Wide Scope	CenturyLink recognizes that large enterprises continually increase in complexity and inter-dependence, and that no functions operate in isolation. Accordingly, CenturyLink’s business continuity plans address critical functions concerning the recoverability of CenturyLink’s technological infrastructure, the ability to provide customer support to new and existing customers, and the ability to receive and fulfill customer orders. Each of these plans recognizes and accounts for operational interdependencies involving both internal and external resources. CenturyLink’s plans engage company resources from around the globe for the purposes of continuing critical business functions.
All-Hazards Planning	CenturyLink’s all-hazards approach to business continuity planning focuses on the impacts that may result from a broad range of natural disasters, infrastructure failures, and human-induced disasters. Consequently, CenturyLink’s business continuity plans enable the company to respond to a myriad of disaster-related impacts to include site closures, technology and infrastructure failures, external vendor/contractor disruptions, employee impacts, pandemics, and others.
Strategic Diversity	CenturyLink employs the use of multiple business continuity strategies in business continuity plans. By using a combination of mutual support agreements, remote work arrangements, technology failover and redundancy and third-party agreements, we believe that our plans enable us to effectively respond to business disruptions. This approach allows us to respond, even in light of the uncertain and the dynamic nature of current and potential threats.
Pandemic/ Staffing/ Absenteeism	CenturyLink has incorporated into its business continuity planning a methodology to address potential or significant disruptions in employee staffing levels. Additionally, CenturyLink has a comprehensive wellness program that includes influenza vaccinations at no-charge.
Dedicated Resources	CenturyLink has dedicated business continuity resources on a full-time and a part-time basis. Full-time disaster preparedness managers act as internal consultants to business units to identify and help implement planning needs. Subject matter experts and leaders within each business unit provide detailed technical expertise to support the development and maintenance of preparedness activities.



2014 CenturyLink Disaster Preparedness White Paper Business Continuity Program Overview

Approach ▼	Planning Description ▼
Training & Awareness	Strategic CenturyLink employees participate in quarterly disaster awareness meetings, business continuity training, and receive targeted emails.
Exercise Resources	CenturyLink performs annual testing through checklist, tabletop, simulation exercise or actual events. Any gaps are identified, documented and tracked to resolution.



► Key Plan Elements

While specific business continuity plan contents are proprietary, CenturyLink is pleased to summarize plan contents for its current and future customers, and for its insurers.

CenturyLink uses a standard planning model across the enterprise to facilitate consistency in planning and to optimize integration of departmental plans. Major plan elements include:

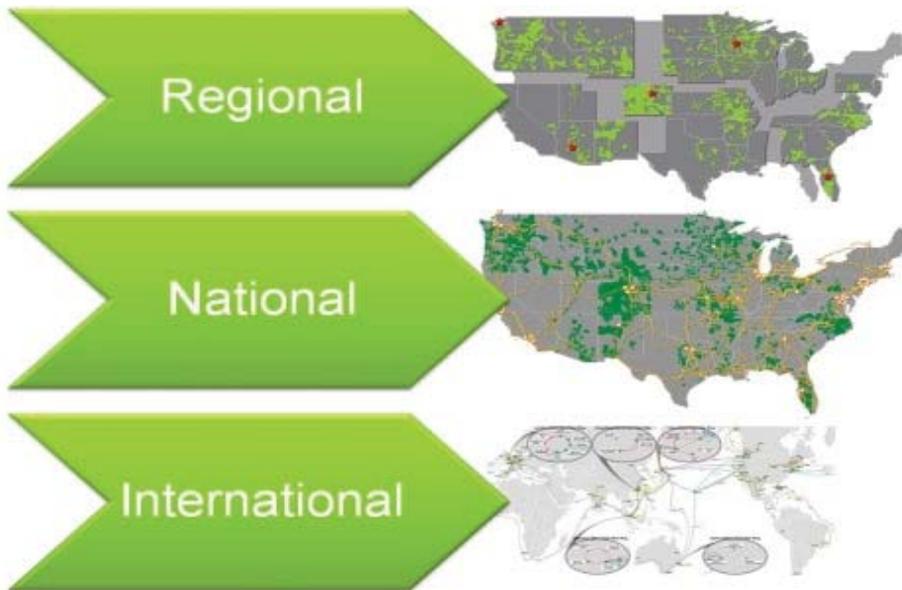
Approach ▼	Planning Description ▼
Immediate Actions	As business disruptions frequently accompany emergency situations, CenturyLink plans describe how employees transition from an emergency situation to business resumption activities, whether they are at the office or away from work.
Internal Communications	CenturyLink plans describe internal communications that are required to engage company resources in order to implement business continuity measures and to inform appropriate CenturyLink departments and employees that may be impacted by the event.
Business Resumption Procedures	CenturyLink plans provide department-specific, step-by-step instructions and/or options that will be implemented to resume critical functions if a CenturyLink site is inaccessible or if essential resources are unavailable. Procedures may involve transition of work to alternate locations, re-prioritization of work activities, establishing virtual offices, implementing manual contingencies, and others.
External Communications	CenturyLink plans describe how the company will communicate with customers, suppliers, contractors, business partners, media and other entities that may be impacted by a disruption or are vital to continuing critical business functions. CenturyLink is a member of the National Communications System to ensure telecommunications are available and prioritized through the Government Emergency Telecommunications Service and Wireless Priority Service.



2014 CenturyLink Disaster Preparedness White Paper Business Continuity Program Overview

Approach ▼	Planning Description ▼
Vital Resources	CenturyLink plans describe how departments obtain resources that are necessary to perform critical functions. Resources may include vital records and data, computing equipment, human resources, and others.
Disaster Service Support	CenturyLink retains support for disaster services in the areas of cloud services, facility recovery, records recovery, and telecommunications recovery. These services assist CenturyLink by providing technical telecommunications support related to network element protection, response and recovery recommendations.
Mutual Aid	CenturyLink has agreements with major telecommunication companies to provide mutual support in the event of a disaster. CenturyLink has both provided and received support as a result of the mutual aid agreement. Examples of when support was both given and received include a recent flood and hurricane.
Disaster Recovery Trailers	CenturyLink owns seven mobile switching trailers that can be rapidly deployed to assist in the recovery of a damaged switch location. Trailers are geographically dispersed for nationwide deployment and operate on both commercial power and an on-board diesel generator.

► Crisis Management Structure



Crisis Management Structure.

While we are proud of our continuity planning, we also know that disasters happen, and we must be ready to respond to them quickly.

Crisis Management Framework.

CenturyLink has developed a three-layer crisis management approach. Regional, National and International Command Centers involve key leaders, decision-makers, and subject matter experts at all levels of the organization.

The system is similar to the Incident Command System used by federal response agencies, but is tailored to meet the needs of CenturyLink.

Crisis Management Team members participate in an annual exercise, as well as more frequent activation drills.



2014 CenturyLink Disaster Preparedness White Paper Business Continuity Program Overview

► Command Centers



CenturyLink maintains a number of Command Centers to support incident management activities. The corporate Command Center is located in Littleton, Colorado.

The Command Center is equipped with multiple media sources, telecommunications diversity, HF radio, emergency power, robust computer support, and various emergency supplies.

CenturyLink also maintains regional Command Centers that are equipped with, at a minimum, emergency power and robust IT and telecommunications. Many are also equipped with HF radio. The corporate Command Center is also equipped with a federal government-sponsored SHARES radio (Shared Resources High Frequency Radio Program).

► Crisis Management Support



CenturyLink has established contractual relationships with several disaster services companies to assist in recovery operations.

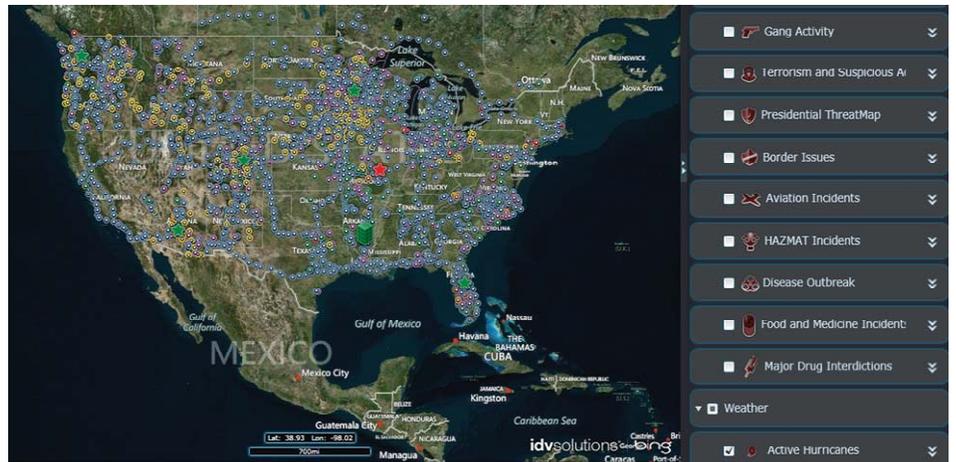
These service companies are available to provide 24x7x365 support nationwide

CenturyLink maintains contracts that provide telecommunications-specific support.

► Geographic Information Systems

We believe that our risk assessment decision support is greatly enhanced by the use of Geographic Information Systems (GIS). This enables CenturyLink to rapidly acquire situational awareness during an event, thus improving decision-making and reducing the time required to make those decisions.

CenturyLink continuously expands its use of GIS by building or updating additional layers of information gained during a business impact analysis and site threat assessments. CenturyLink gets automated alerts based on the proximity of incidents to over 70,000 sites that we monitor for a fast response.





► Environmental Sustainability

Super Storm Sandy drew attention to the increasing climate-related risks for communities and businesses. Weather related disasters are happening more frequently and with greater intensity. CenturyLink supports greening initiatives that aid the environment while aligning with recovery objectives. That's why the CenturyLink Environmental Sustainability Governance Council ("The Green Team") was created. CenturyLink's risk-based approach to disaster mitigation focuses on the hydrological cycle, biodiversity, slope, topography, water quality, and climate.



Storm hardening requirements are considered in the engineering and design process. This elevated cabinet, positioned on coastal terrain, was built up 20 feet to avoid storm surge.



Alternative Energy. CenturyLink is expanding its sustainability commitments by installing Bloom Energy fuel cells to generate up to 500 kilowatts of clean power for one of its Irvine, California data centers. This configuration enables CenturyLink to receive primary power for its critical loads from Bloom Energy Servers, protecting those loads from electrical outages without the need for backup UPS and generator systems.

Environmentally Sound Disaster Strategy. Although our industry faces many environmental challenges, CenturyLink is committed to working toward solving them. CenturyLink uses remote work strategies to minimize the impact to customers and the environment during disasters. Environmentally sound data center design and virtualization contribute to resiliency, high availability, and recoverability.

Contact Us ▼

For more information, please contact CenturyLink Disaster Preparedness:
DPER@CenturyLink.com