

HB 3065 Carrier of Last Resort Public Process

PUC White Paper

House Bill 3065 (2019) requires the Oregon Public Utility Commission (PUC) to investigate the continuing relevance of the carrier of last resort (COLR) obligations provided for under [ORS 759.500 to 759.570](#). The primary purpose of this white paper is to provide background information to enable the general public to participate and make informed contributions to this public process required by HB 3065.¹ A secondary purpose is to provide a common knowledgebase to inform stakeholder discussions at workshops relating to HB 3065.

COLR obligations, which derive from long-standing laws and policy, affect people, providers, and policy across Oregon. The legislature directed the PUC to focus its investigation on whether developing industry trends, technologies, and policy drivers in the telecommunications sector impact the existing regulatory system administered by the PUC to ensure adequate and reasonable access for residential customers to telecommunications service in all areas of this state. To inform initial participation in this process, this white paper offers background information on policy developments and providers that have shaped the existing regulatory system and telecommunications sector.

As part of the HB 3065 process, the PUC is required to investigate changes that could accommodate developing industry trends and support new policy objectives without compromising residential customers' access to reliable and safe service at just and reasonable prices in an adequate and nondiscriminatory manner. The legislature has specifically directed the PUC to focus on and solicit comment on three issues:

- Customers whose individual circumstances and needs may impact their access to and usage of telecommunications services, including low-income customers
- Residential customers with access at their home to fewer than two of the following terrestrial or land-based services:
 - telecommunications services provided by a facilities-based competitive local exchange carrier
 - voice service offered via interconnected Voice over Internet Protocol (VoIP), or
 - voice service offered by a cellular communications service

¹ <https://olis.leg.state.or.us/liz/2019R1/Downloads/MeasureDocument/HB3065/Enrolled>

- The comparability of voice service offered by wireless Internet and satellite service providers.

The telecommunications sector has a particularly long and intricate history of legal, technological, and commercial evolution. As a result, the regulatory framework in which the PUC operates is complex. While a complete account of this history and the resulting framework is outside the scope of this white paper, the PUC hopes to provide sufficient context to assist stakeholders in engaging in conversations about the issues on which the legislature has directed the PUC to focus, including the potential consequences of changes to the existing regulatory system and incentives pertaining to COLR obligations.

Two preliminary notes for the reader. First, we recommend using the electronic version of this white paper to benefit from hyperlinks. Second, although we have endeavored to avoid unnecessary jargon, this paper does include many technical terms and acronyms used in telecommunications. To assist the reader, we have compiled a list of acronyms, which is attached as Appendix A. Some readers may benefit from using the “Telecom” section of <https://www.allacronyms.com> to understand unfamiliar acronyms.

As many of the issues the legislature has directed the PUC to investigate may be viewed differently by different stakeholders, we look forward to public input on the issues identified in HB 3065 and on what it might mean to “pull on the COLR thread.”

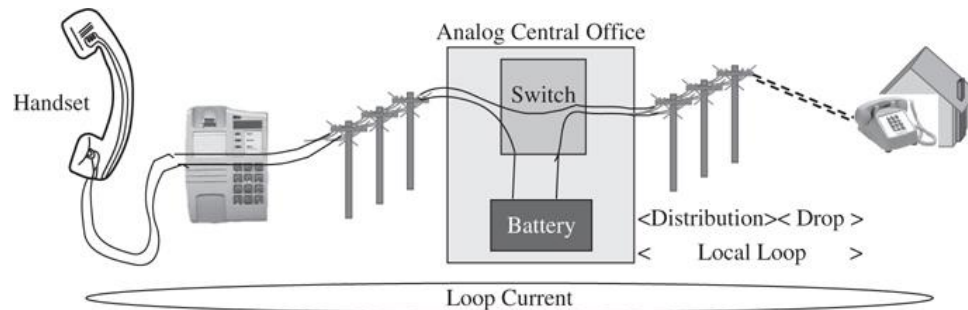
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I. Voice Telephone Systems - *Telephony 101*

A brief description of the public switched telephone network (PSTN) and the impact of related technological innovations helps set the stage for understanding how telephone service works and how it has been regulated.

The PSTN began as a voice-only analog system with these basic elements:



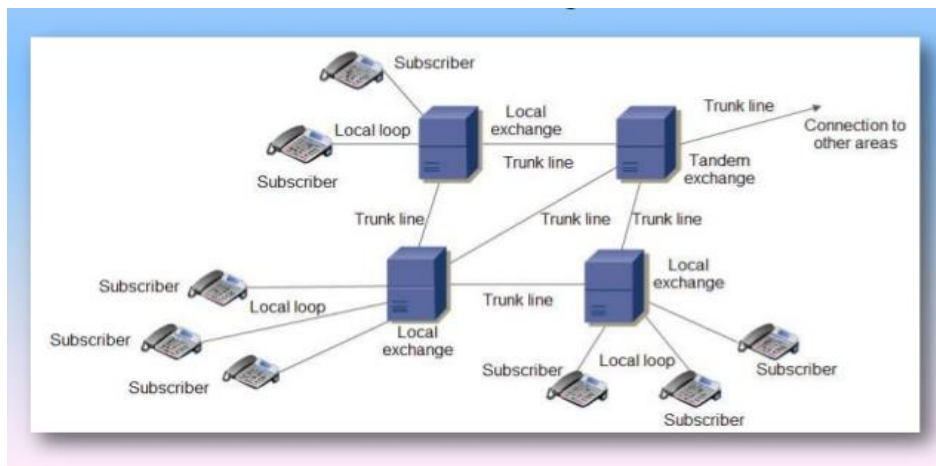
The telephone would convert voice sound waves to electrical signals, which would be sent on twisted copper wire pairs routed from every home and business to a central office (or wire center). Switches in the central office would then identify and connect the call to the distribution cable containing the copper wire pairs serving the dialed telephone number. The system was powered by batteries with standby generators to ensure operation during power outages.

The first “switches” were human telephone operators (shown below).



Operators were eventually replaced with electro-mechanical or electro-magnetic step switches. Eventually, the analog network and mechanical switching gave way to a

digital network with electronic switching that used transistors and eventually integrated circuits and microprocessors.



Exchanges are a building block of the telephone network and are comprised of three major components: the local loops, the trunks, and the switching office. Local loops connect the subscriber to the

nearest end office (or local central office). The switching office establishes a connection between two subscribers. The trunk transmits traffic between switching offices. Over time, the PSTN network grew to include many exchanges.

Each exchange is generally served by at least one central office located in the principal community at the time the networks were constructed. Some exchanges have more than one wire center, while each have a central office. When an exchange has multiple wire centers, there is normally one host central office with an end central office in each wire center. The host central office normally facilitates the connections to other exchanges, while the end offices connect to the host office.



Twisted Copper Pairs



Fiber Optics

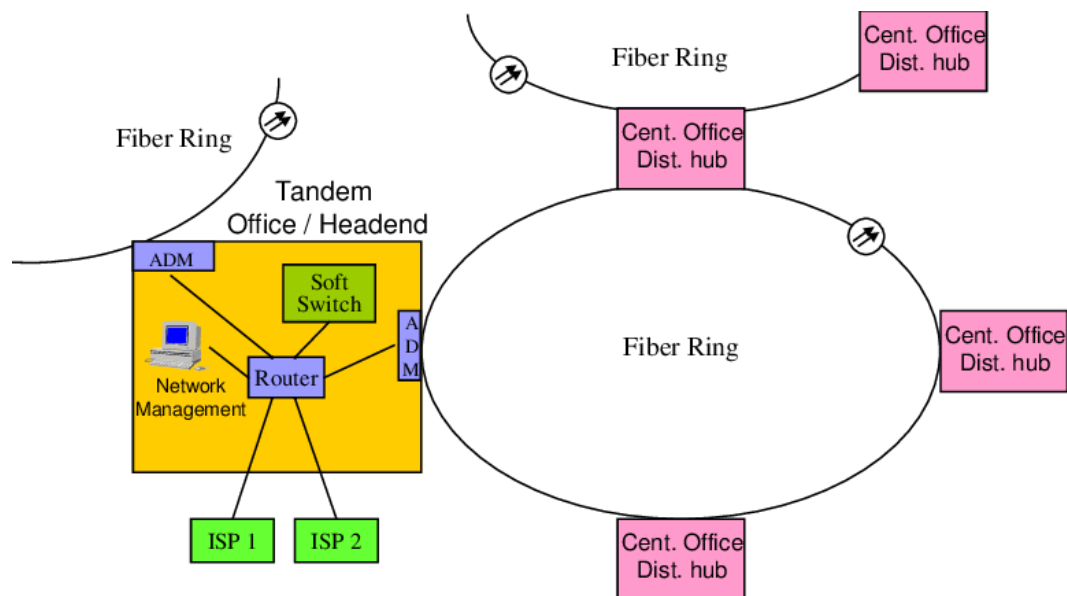
Through a variety of technological advancements, the PSTN has been modernized. Fiber has replaced copper wires in more densely populated areas, and the network grid has been replaced with fiber rings (shown in the diagram on the next page), which

enables communications to flow in either direction. This provides system redundancy if there is a single cut in the ring.²

The PSTN continues to play a major role in an era of expanded communication and information technology. The cellular network relies heavily on the wireline network. The PSTN is connected to the cellular infrastructure to make sure that everyone can call everyone else.³

The PSTN also contributes a significant portion of the backbone to provide broadband service and support the internet.⁴ Modern telecommunication networks are essentially dual or multi-purpose networks—they provide any combination of voice, internet access, and video content.

An internet service provider (ISP) bundles its access to the internet onto a carrier broadband service often using the same facility that provides a regulated or non-regulated voice service. In some cases the carrier and the ISP are the same entity or affiliated entities. Voice service uses only a small portion of the available capacity on a copper, fiber, or wireless facility.



² The following link describes the PSTN. <https://www.youtube.com/watch?v=fukXUnLVCuE>.

³ This nine minute video shows how your cellular calling works, and explains the heavy reliance on the wireline network to enable "wireless" calling. https://www.youtube.com/watch?v=1JZG9x_VOWA

⁴ Broadband is a term that means different things depending on who is using it and why. In the context of telecommunications, broadband is a form of wide bandwidth data transmission that transports multiple signals and traffic types. In the context of Internet access, broadband means any dedicated high-speed Internet access.

This figure depicts a tandem office (mustard colored box) as the point where internet traffic aggregates or packet switched voice service can be generated.

II. Milestones in Telecommunications History

Next, we provide an overview of the development of telecommunications service in the United States, and introduce concepts related to monopoly providers and economic regulation. We summarize the rise and break-up of the dominant provider of voice telephony, American Telegraph & Telephone (AT&T), and highlight federal regulatory policies and technological advances that significantly impacted the provision of telecommunications via the wireline network.

Voice telecommunications service, like energy and water service, developed as a natural monopoly for a variety of reasons. First, the infrastructure required to provide telecommunications service was very expensive to build and maintain. Second, having only one service provider and one local telephone network promoted overall economic efficiencies. This picture illustrates the possible inefficiencies associated with multiple providers and networks.



Because these monopoly providers lacked competition, governments created regulatory bodies to protect the public interest and ensure adequate service was being provided safely and reliably, and at just and reasonable rates. In some regulatory frameworks regulatory oversight also helps ensure that utility providers receive sufficient revenues to ensure their continued provision of essential public services.⁵

⁵ One economist identified four primary benefits associated with the regulation of monopoly providers:

First, if firms were to compete actively, much waste of economic resources would take place. For example, four electric transmission firms might each lay a transmission line when one would be enough. Second, as already explained, severe price competition among the firms would eventually drive out all but one firm. Consumers would then suffer from the restricted output and high prices of an unregulated monopolist. Third, firms might anticipate ruinous competition and so enter into a collusive agreement to avoid price competition. The result would be a waste of resources stemming from unnecessary duplication of facilities along with restricted output and high monopoly prices. Finally, firms may not enter such industries at all. * * * If companies avoid such industries altogether, consumers would be without some essential services. Bronfenbrenner, Sichel, Gardner, "Economics," 1984.

A. The Bell System (Ma Bell)

The first 100 years of telephony in the United States was dominated by AT&T. Shortly after receiving a patent for the invention of the telephone in 1876, Alexander Graham Bell formed the Bell Telephone Company, which later became AT&T. Following the opening of the first telephone exchange in New Haven, Connecticut, AT&T created exchanges across the United States. The telephone market saw an increase in competition in 1894 when Bell's original patent expired, but AT&T adopted a campaign to acquire many of its competitors over the next several decades, resulting in it becoming one of the largest companies in the world. At its peak, the Bell System had assets of \$150 billion (equivalent to \$370 billion in 2019) and employed more than one million people.

"Ma Bell" became a term that referred generally to all AT&T companies, which included four major divisions:



- Bell Operating Companies: the local exchange telephone carriers
- AT&T: long line carriers to connect local exchanges and provide long-distance calling
- Western Electric Company: equipment manufacturing
- Bell Labs: research and development

Ma Bell effectively owned and controlled most telephone service in the United States, from local and long-distance service to the telephone equipment used to provide the service.

B. Communications Act of 1934

Congress adopted the first comprehensive telecommunications policy in the Communications Act of 1934. Its purpose was to make "a rapid, efficient, nationwide, and world-wide wire and radio communication service with adequate facilities at reasonable charges" "available, so far as possible, to all the people of the United States" on a nondiscriminatory basis by "regulating interstate and foreign commerce in communication by wire and radio."⁶

The Communications Act of 1934 also created the Federal Communications Commission (FCC), which assumed regulation of AT&T. Under the resulting dual state-federal regulatory scheme that remains in effect today, the FCC regulates interstate and foreign calling, while states regulate intrastate and local calling.

⁶ Communications Act of 1934, Pub. L. No. 73-416 § 1, 48 Stat. 1064 (1934).

Among other things, the FCC regulated how costs of providing telecommunications service were to be accounted for in the dual state-federal regulatory system in what is known as the separations process. Some facilities used to provide local telephone service, such as the local loop, are also used to originate and terminate interstate long-distance calls. The FCC directed that a portion of these shared costs be “assigned to the interstate jurisdiction and recovered through the rates that AT&T charged for interstate long-distance calls,” with the balance being “assigned to the intrastate jurisdiction and recovered through the charges for intrastate services regulated by the state commissions.”⁷

C. Breakup of the Bell System

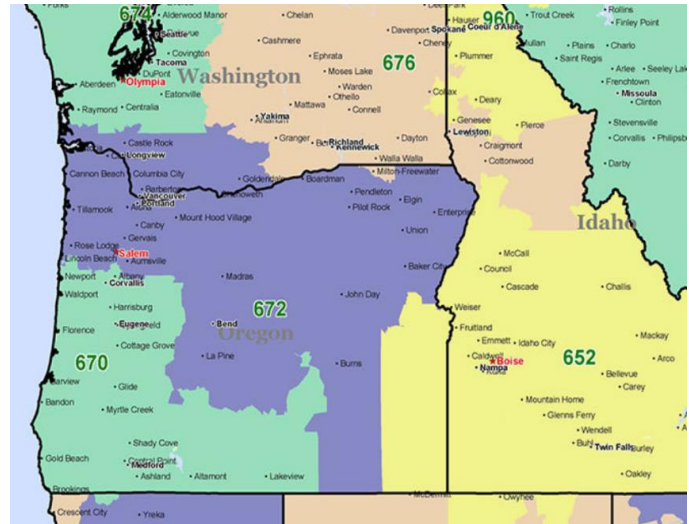
An antitrust lawsuit filed by the United States Department of Justice eventually led to the breakup of the Bell System in 1984. The action resulted in splitting the system into separate companies that provided different types of telephone service. AT&T would continue to provide long distance service, while the Regional Bell Operating Companies (RBOCs) became seven independent companies that would provide local service.



⁷ FCC Order No. 00-193, paragraph 5 (2000).

The break-up of the Bell System helped introduce competition in the long-distance market, which benefitted companies such as MCI Communications and Sprint. Local access and transport areas (LATAs) were created—drawn around markets and not state boundaries. These areas were used to divide the long distance market among the long distance providers and local exchange carriers.

Calls staying within the LATA could be transported by local telephone companies. Calls between LATAs had to be transported by long distance companies.



D. Telecommunications Act of 1996

In a major overhaul to the law governing telecommunications, Congress sought to promote competition in the local exchange market with the Telecommunications Act of 1996. The goal of Congress was to open up markets to competition by removing regulatory barriers to: "provide for a pro-competitive, de-regulatory national policy framework designed to accelerate rapidly private sector deployment of advanced information technologies and services to all Americans by opening all telecommunications markets to competition."⁸

Among other things, the Telecommunications Act of 1996 mandated that incumbent local exchange carriers (ILECs) provide access to parts of their network on a resale basis to enable competitors to provide service.⁹ Those competitors, which are referred to as competitive local exchange carriers (CLECs), purchase these “unbundled network elements” (UNEs) to provide services to end users that compete with the services provided by the ILECs. Some CLECs eventually built their own physical networks.

Opening up local telephone competition was a major way that federal law attempted to pave the path for a more competitive environment. As the market has evolved, the

⁸ Conference Report, Telecommunications Act of 1996, House of Representatives, 104th Congress, 2d Session, H.Rept. 104-458, at p. 1.

⁹ Other requirements include: (1) not to prohibit or limit the resale of its telecommunications services; (2) allow customers to retain their phone number when switching carriers (number portability); (3) provide dialing parity to competing providers of local and long distance service, including nondiscriminatory access to telephone numbers, operator services, directory assistance, and directory listing; and (4) to afford access to the poles, ducts, conduits, and right-of-way under approved rates, terms and conditions.

regulatory obligations on ILECs resulting from the Telecommunications Act of 1996 have changed substantially, including their obligation to provide UNEs to competitors.

E. Impact of Technological Advancements

Advances in technology have also proved to be a great influence on competition in the telecommunications sector. As a result, competition for voice service has emerged from new types of providers using new technology.

The development of wireless technology provided a new means to provide voice service through radio technology. Commercial wireless service began in the early 1980s, and has now become a largely popular means of obtaining voice communication service. Wireless carriers have had more freedom in setting prices for their services, as they did not evolve against the backdrop of regulations designed to address a historical monopoly.

Technological advances the early 1990s allowed cable television (CATV) providers the ability to offer telecommunications services to their cable TV customers.¹⁰ They use a hybrid network of fiber and shielded cable to serve their customers and typically serve higher density areas.

Another alternative that has emerged to traditional local telephone providers is Voice over the Internet Protocol (VoIP) calling. This uses Internet Protocol (IP) packet switching to move individual packets in diverse routes instead of creating a single path as is done in traditional circuit switching.¹¹

These and other emerging technologies (such as satellite) have allowed competition to develop, and not just through regulatory changes enacted by lawmakers and policy makers. As a result, many customers now have options among technologies and service providers. Voice services can be obtained through means of landline, wireless, cable, or internet-based providers from a variety of carriers offering differing service and price options. Gone are the days when all customers were served by traditional landline telephone providers who held legal (and technological) exclusive franchises.

¹⁰ Cable television has its roots in Oregon. The service began in 1948 in Oregon, Arkansas, and Pennsylvania to enhance poor TV signal quality due to geography and remoteness. By 1952 there were 70 systems serving around 14,000 subscribers nationwide.

¹¹ Packet switching is a more efficient use of bandwidth because it doesn't reserve the entire bandwidth of a circuit during a telephone call. Packet switching is illustrated in the video at this link --- <https://www.youtube.com/watch?v=B1tEIYnFqL8> It should be noted that modern circuit switched voice service also packetizes digital voice samples the same as IP.

III. Telecommunications in Oregon

We now turn to Oregon, where telecommunications started in the late 1800's and early 1900's as AT&T and other companies began to offer services. Generally speaking, AT&T acquired territories in the more densely populated areas of the state. General Telephone and Electronics Corporation (GTE) and Sprint/United Telephone, nationwide competitors of AT&T, also acquired numerous territories across the state. Various small independent carriers helped provide service to remaining areas—most notably those in rural parts of the state.

A. Territory Allocation and COLR Obligations

Oregon law allows carriers to acquire “allocated territories” to help ensure that telecommunications utilities, cooperative corporations, and municipalities provide adequate and safe service to the customers of Oregon and serve all customers in an adequate and nondiscriminatory manner.¹² An allocated territory is a geographic area—generally referred to as a local exchange—for which the PUC “has allocated to no more than one person the authority to provide local exchange service, the boundaries of which are set forth on an exchange map filed with and approved by the [PUC].”¹³

Over time, local carriers were allocated territories covering most of the populated areas in Oregon. There are currently 267 allocated telephone exchanges in Oregon. The map attached as Appendix B shows the territories allocated in Oregon. The hierarchical network structure, network costs, and population centers drove exchange design. The same factors tend to keep exchanges static over time even during the consolidations and changing names of the service providers. The exchange boundaries have therefore rarely changed once established, but the areas served by wire centers and number of wire centers have changed to provide additional capacity.

With the exclusive right to serve an allocated territory comes the obligation to provide service to all customers located in that geographic area—otherwise known as being the carrier of last resort (COLR). The PUC has some statutory authority to exempt a provider from the COLR obligations, but only with respect to property with four or more single-family dwellings.¹⁴ Specifically, the PUC may provide an exemption if it finds that (1) the owner or developer permits another provider to install facilities for local exchange service on a condition of exclusion during the construction phase; (2) the owner or developer accepts or agrees to incentives or rewards from another provider contingent on the exclusive provision of service by that provider; or (3) the owner or

¹² ORS 759.506.

¹³ ORS 759.500(1).

¹⁴ ORS 759.506(3)(a)-(c).

developer collects mandatory charges from residents for provision of another provider's services.¹⁵

B. Incumbent Local Exchange Carriers (ILECs)

Thirty-three different ILECs have been allocated territory under Oregon law. CenturyLink, the largest ILEC in Oregon, traces its past to the break-up of the Bell System. What was Pacific Northwest Bell became US WEST Communications, which served many communities along the Interstate 5 and Interstate 84 corridors, as well as central Oregon. In the late 1990s, US WEST was acquired by QWEST Communications, which in turn was acquired in 2011 by CenturyTel, Inc. The resulting entity and group of affiliates became known as CenturyLink. Today, CenturyLink serves approximately 334,802 access lines in 155 local exchanges.

CenturyLink also includes the former carrier Sprint/United, which serves areas in and around Hood River, the northern coast, and southern Oregon. Sprint/United first sold its local phone division to Embarq Corporation, which then merged with CenturyTel in 2009. Currently, the CenturyLink affiliates, which all operate as ILECs in Oregon, include: Qwest Corporation, CenturyTel of Oregon, CenturyTel of Eastern Oregon, and United Telecommunications of the Northwest.

Frontier, Oregon's second largest ILEC, traces its roots back to GTE, which took the name Verizon in 2000. In 2010, Frontier, formerly known as Citizens Communications, purchased Verizon's Oregon local telephone business along with those in 13 other states. Currently, Frontier operates the former Verizon and Citizens exchanges, serving approximately 127,200 access lines in 54 exchanges located primarily in west Portland, northeastern Oregon, and the southern coast.

In addition to CenturyLink and Frontier, the two affiliated large carriers, 27 rural local exchange carriers (RLECs) provide service to Oregonians. Some of these entities are under common ownership or control; others are cooperative associations or government providers, which are exempt from many aspects of PUC regulation. These entities generally service rural areas across the state and are as follows: Asotin Telephone Co., Beaver Creek Cooperative Telephone Co., Canby Telephone Association, Cascade Utilities, Clear Creek Mutual Telephone Co., Colton Telephone Co., Eagle Telephone Co., Gervais Telephone Co., Helix Telephone Co., Home Telephone Co., Inc., Humbolt Telephone Company of Nevada, Molalla Telephone Co., Monitor Cooperative Telephone Co., Monroe Telephone Co., Mt. Angel Telephone Co., Nehalem Telecommunications Inc., North-State Telephone Co., Oregon-Idaho Utilities, Inc., Oregon Telephone Corp., Peoples Tel Co., Pine Telephone System, Pioneer

¹⁵ A property owner may seek the PUC to reassign COLR obligations to a telecommunications utility, cooperative corporation, or municipality upon certain findings and determinations. ORS 759.506(4).

Telephone Cooperative, Roome Telecommunications, Inc., Scio Mutual Telephone Association, St. Paul Cooperative Telephone Association, Stayton Cooperative Telephone Co., and Trans-Cascades Telephone Co. In all, these RLECs serve approximately 46,712 access lines in 58 local exchanges across Oregon.

A spreadsheet attached as Appendix C summarizes all ILECs operating in Oregon, and provides information as to their regulatory status, and the number of exchanges and customers served.

C. Regulatory Oversight by the PUC

The Oregon Public Utility Commission (PUC) provides rate and service oversight of investor-owned ILECs (though not cooperatives or government-owned providers). The PUC's enabling statutes provide that, in serving this function, the agency:

[S]hall represent the customers of any public utility or telecommunications utility and the public generally in all controversies respecting rates, valuations, service and all matters of which the commission has jurisdiction. In respect thereof the commission shall make use of the jurisdiction and powers of the office to protect such customers, and the public generally, from unjust and unreasonable exactions and practices and to obtain for them adequate service at fair and reasonable rates.¹⁶

For our purposes here, we focus on three key areas of the PUC's regulatory oversight: (1) economic regulation; (2) service quality; and (3) universal service programs.¹⁷

1. Economic Regulation

The PUC's primary function as an economic regulator is to ensure that customers of investor-owned utilities receive safe and reliable service at just and reasonable rates. Ratemaking involves an exercise of PUC discretion to balance the interests of the utility investor and the customer. The PUC has historically performed this function through cost-of-service regulation, which attempts to set rates sufficient for the carrier to have the opportunity to recover reasonable operating costs, including the cost of capital. The ratemaking exercise to set cost-of-service rates is comprised of two primary steps. First, determining the carrier's revenue requirement;¹⁸ and second, designing rates for

¹⁶ ORS 756.040.

¹⁷ The PUC also regulates public safety and plays a role in pole attachment and other issues.

¹⁸ To determine how much revenue a utility should be allowed to receive, the PUC uses a standard ratemaking formula generally expressed as $R = E + (V-d)r$. "R" represents revenue requirement, "E" represents allowable operating expenses, "V" represents rate base, "d" represents accumulated depreciation, and "r" represents the rate of return allowed on the rate base.

various services and classes of customers to give the carrier the opportunity to collect that revenue requirement through the rates it charges its customers.

Ratemaking is prospective in nature, meaning that the PUC examines the utility's expected costs going forward, and cannot consider a utility's past business losses or past excessive revenues. Once rates are set, the utility must charge those rates on a non-discriminatory basis until changed by the PUC. For residential customers, the PUC has traditionally required statewide average pricing, which generally requires all customers to be charged the same rate regardless of where they live in the utility's service territories.

Cost-of-service regulation is not the only way the PUC regulates utility rates. In 2002, the Oregon Legislature authorized the PUC to adopt an alternative form of regulation in the form of a price plan.¹⁹ The price plan statute was intended to allow ILECs the ability to adjust prices flexibly to respond to competitive pressures. Instead of focusing on the cost of service to determine the rates for regulated services, price plans generally set a price floor and a price cap for various services, and allows the utility to adjust its rates within that pre-determined range. Price plans also incorporate other types of rules meant to balance consumer protection and the provider's financial health and interests.

Oregon's two largest carriers, CenturyLink and Frontier, are currently regulated under price plans. Qwest was the first ILEC to apply for alternative regulation under the statute. It received its first Price Plan in 2008,²⁰ and a second in 2014.²¹ Frontier followed Qwest, applying for its first Price Plan in 2014²² near the same time as and its affiliates', CenturyTel and United, first application²³.

Currently, all Oregon affiliated large ILECs operate under price plans.²⁴ Generally, these price plans allow the carriers to raise their prices for residential primary line basic service up to an established cap, but provide no caps for business and other services. A price floor requirement for all services is set at the carrier's cost. The price plans also waive numerous statutory provisions in order to reduce the regulatory burden on the carriers. The price plan statute does not, however, give the PUC the authority to waive COLR obligations.

¹⁹ ORS 759.255. In the 1990's, the Oregon legislature had previously authorized the use of price caps as an alternative form of regulation. See ORS 759.425-445.

²⁰ Order No. 08-408, Docket UM 1354 (Oct 3, 2014).

²¹ Order No. 14-346, Docket UM 1481 (Oct 3, 2014).

²² Order No. 14-290, Docket UM 1677 (Aug 18, 2014).

²³ Order No. 14-347, Docket UM 1686 (Oct 7, 2014).

²⁴ Frontier and Citizens Commission Order No. 18-303, August 17, 2018, amended by Order No. 19-038, (Docket UM 1895) and Qwest, CenturyTel and United, Order No. 18-359 (Docket UM 1908).

2. Service Quality

The PUC also regulates the quality of service provided by investor-owned ILECs (but not for cooperatives or government providers). Oregon law requires all telecommunications utilities to provide safe and adequate service on a nondiscriminatory basis,²⁵ and the PUC has adopted minimum service quality standards for telecommunications service to ensure safe and adequate service.²⁶

Retail telecommunications service quality standards address a number of aspects of service quality. Examples of these standards are requirements related to technical measurements affecting voice quality, timeliness of installation and repair commitments, number of trouble reports, and representative telephone answer time.

3. Universal Service

The PUC and the FCC administer state and federal universal service fund programs. These programs provide subsidies to certain service providers to further the goal that service be available to everyone. In passing the Telecommunications Act of 1996, this goal was furthered by the introduction of the federal Universal Service Fund. The Telecommunications Act of 1996 reserved the states' authority to develop state universal service programs as well.

The federal Universal Service Fund (USF) is based on several principles prescribed by the Telecommunications Act of 1996. Quality services must be provided at "just, reasonable, and affordable rates;" access to advanced telecommunications and information services be provided in all regions of the nation, including to "low-income consumers and those in rural, insular, and high cost areas;" and providers "should make an equitable and nondiscriminatory contribution to the preservation and advancement of universal service."²⁷ Additional statutory principles include serving all public and nonprofit elementary and secondary school classrooms, health care providers, and libraries, and maintaining predictable federal and state funding mechanisms.²⁸

The FCC, in establishing the services to be supported by the federal Universal Service Fund, considers the extent to which such services are "essential to education, public health or public safety," consistent with "public interest, convenience and necessity", and the extent to which such services were subscribed to by consumers and deployed in networks and carriers.²⁹ The federal Universal Service Fund provides subsidies

²⁵ ORS 759.035 (imposing the duty to furnish adequate and safe service at reasonable rates); ORS 759.450(1) (imposing minimum service quality standards).

²⁶ ORS 759.450(2) (requiring the PUC to adopt minimum service quality standards).

²⁷ 47 U.S.C. § 254(b).

²⁸ *Id.*

²⁹ 47 U.S.C. § 254(c)(1)(A)-(D).

intended to further the provision of service to rural areas, low-income consumers, residents of Tribal lands, schools and libraries, and rural health care providers. Based on a similar principle of fostering service to all, the Oregon Universal Service Fund (OUSF) is intended to support the availability of telecommunications services that are reasonably comparable in quality and price in all areas of the state.

In both the state and federal programs, customer charges are typically used by carriers to recoup their contributions to the program funding pots. These programs are structured to provide explicit subsidies, in contrast to the implicit subsidies that would have been folded into general rates charged for service. The distributions from the federal and state universal service funds were initially designed to replace revenue carriers no longer received when prices that included implicit subsidies were disallowed.

Both the federal fund and OUSF are paid for by contributions from providers of telecommunications services based on an assessment of their revenues. A variety of telecommunications carriers contribute to one or both funds, including wireline, wireless, and interconnected VoIP providers.³⁰ Contributors are allowed to, but are not required to, recoup their USF contributions from customers up to the level of contribution. The fund contributions are then distributed to providers for the purpose of furthering the provision of supported services.

D. Other Carriers/Providers

Because HB 3065 has asked the PUC to investigate the COLR obligations, this paper has focused primarily on ILEC carriers and the PUC's regulation of them. Many other carriers and companies, however, provide telecommunications service in Oregon. To help ensure a better understanding of the telecommunications landscape, here is a brief summary of those other providers and the level of regulatory oversight.

1. Competitive Local Exchange Carriers (CLECs)

Competitive telecommunications providers, also called competitive local exchange carriers or CLECs, are a class of telecommunication carriers that are certificated by the PUC to provide service in Oregon.³¹ Prospective carriers often apply for an Oregon certificate because certification supports their obtaining telephone numbers. These providers must follow the terms of their certificate, PUC rules, and laws applicable to competitive providers. The certificate lists the areas in which CLECs are authorized to provide service to the public. The PUC does not regulate the price, terms, or conditions by which CLECs provide service in Oregon.

³⁰ An interconnected VoIP provider is one who has connections to the PSTN, enabling use of telephone numbers.

³¹ ORS 759.020.

CATV companies, a type of CLEC where they provide telephone service, are regulated by franchise agreements, city and county ordinance, the FCC, and federal and state law. Some of these types of regulations can be similar to the PUC's telecommunications service quality rules in that franchises and ordinances often contain build-out requirements, telephone response times, and installation and repair response minimums. Cable providers may also be required to contribute facilities, community access channels, and make financial payments in certain circumstances.

2. Eligible Telecommunications Carriers (ETC)

The PUC presides over and approves eligible telecommunications carrier (ETC) designations, which enables a designee to receive federal USF.³² The PUC and FCC both have requirements for providers to meet to be designated as an ETC. Although the FCC has been rolling back its requirements, such that ETC status does not impose obligations that match Oregon's COLR obligations. For example, the FCC has designated census blocks in some service areas where providers no longer need to provide voice service. State COLR laws, where they exist, may be the remaining backstop for such a requirement.

All of Oregon's 33 ILECs and three competitive providers—Douglas Fastnet (landline), Comspan (landline), and Viasat Carrier Services, Inc. (satellite)—are certified as ETCs. Some wireless companies also operate under ETC designations for the Oregon Lifeline Program,³³ which correlate to the low-income portion of the federal USF program. In Oregon, the eligible telecommunications provider (ETP) status is analogous to an ETC designation, and is required for a company to receive Oregon Lifeline assistance funding.

3. Long Distance Carriers

In today's market, long distance and local service are now commonly bundled by wireless, competitive providers, and landline telephone companies. Long distance carriers are now commonly divisions of or affiliates of carriers, and provide two basic types of service: within LATAs and between LATAs. The PUC does not regulate the interstate rates of long distance carriers, but imposes certain rules and requirements, including service quality measures.³⁴ The PUC has provided Qwest, United, and Frontier certain forms of regulatory relief in connection with their status as long distance carriers, as well as obligations to provide certain types of service, such as toll service in RLEC territories.³⁵

³² Some states do not make ETC designations; in those cases the FCC makes such designations.

³³ Add footnote

³⁴ OAR 860-023-0054.

³⁵ See, e.g., Order No. 15-112 (Apr 13, 2015).

4. Wireless / Cellular Companies

Wireless carriers are primarily regulated by the FCC. Some statutes have limited rules regarding service quality and contributions to state universal service funds. In Oregon, wireless carriers are exempt from the PUC service quality rules. The PUC's Consumer Services Section fields wireless complaints under an agreement with the Oregon Department of Justice, which has agreements with many wireless providers regarding their conduct.

5. Internet Service Providers (ISPs)

ISPs provide access to the internet. They normally bundle their internet access on a broadband service and are referred to as broadband internet access service (BIAS) providers. The price, terms, and conditions of BIAS are not regulated by the PUC. Providers of BIAS are required to report information to the FCC and have some other obligations under state and federal law.

6. Wireless Internet Service Providers (WISPs) and Satellite Companies

Wireless Internet Service Providers (WISPs), which are also BIAS providers, provide internet access service using wireless technology. They can also provide other services, including voice communications. Wireless connections used by WISPs commonly require line-of-site with an antennae on the customer premises. WISPs are similar to satellite providers except a WISP uses earth-bound antennae on a tower or mountain. WISPs and Satellite providers are dependent on land based facilities, usually fiber connections to provide access to the internet and PSTN connectivity. WISPs are similar to BIAS providers their regulatory requirements and may have additional spectrum regulatory issues.

Recently a satellite provider, Viasat Carrier Services, Inc., became an Oregon ETC in order to be eligible to receive federal universal service funds in 3,105 of Oregon's more than 196,000 census blocks. Viasat is an Oregon-certificated common carrier. It is required to abide by its certificate conditions and related rules. The primary regulation of its participation in the federal universal service program will rest with the FCC.

7. iVoIP Providers

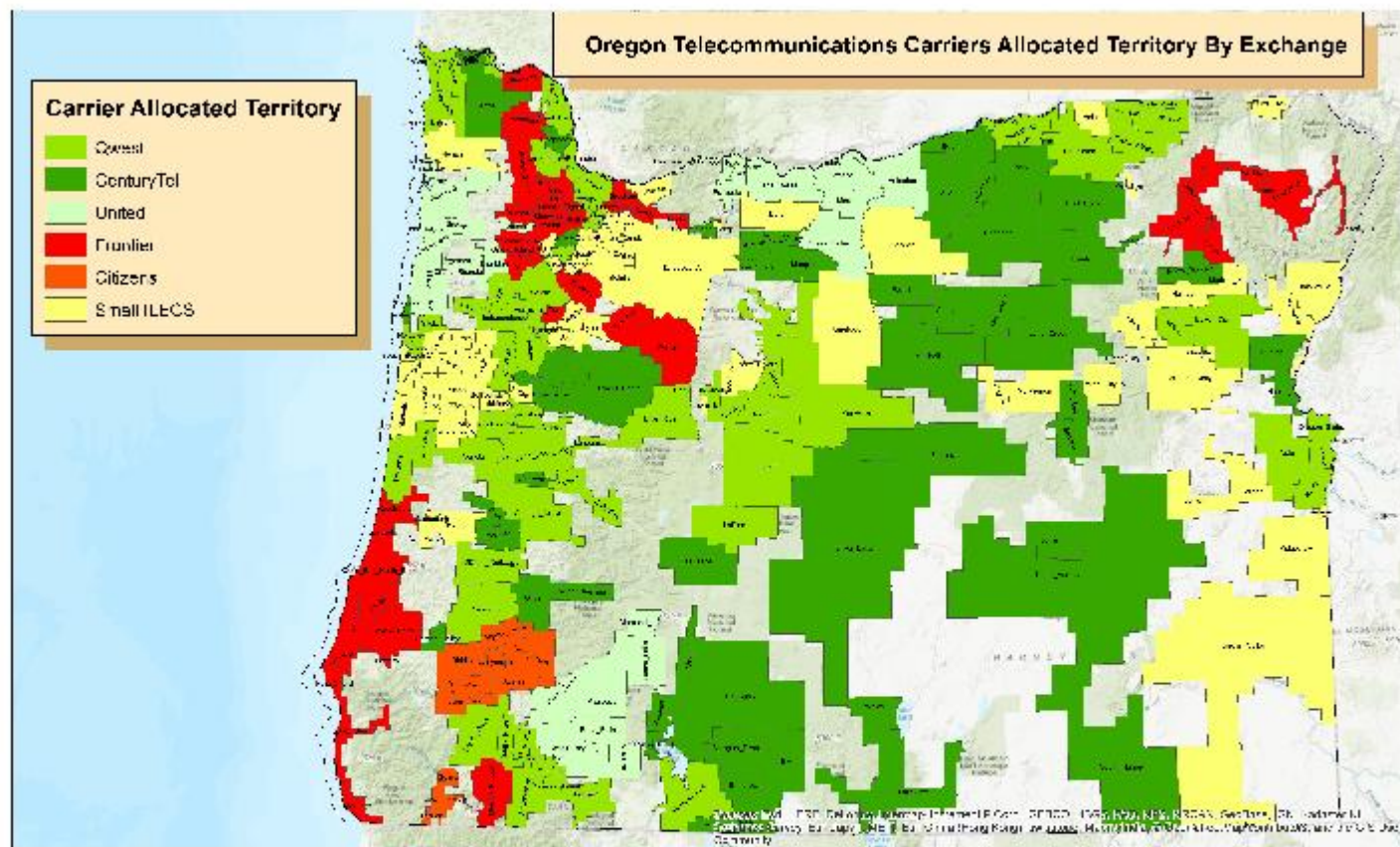
iVoIP providers are authorized by the FCC in order to obtain phone numbers and contribute to the federal universal service fund. The FCC has preempted certain forms of state regulation of iVoIP providers, such as in Oregon, iVoIP providers contribute to the Oregon Lifeline Program.

IV Appendices

Appendix A – PUC White Paper List of Acronyms

AT&T	American Telephone and Telegraph
BOC	Bell Operating Company
CATV	Cable Television
CLEC	Competitive Local Exchange Carrier
COLR	Carrier of Last Resort
ETC	Eligible Telecommunications Carriers
ETP	Eligible Telecommunications Provider
FCC	Federal Communications Commission
GTE	General Telephone and Electronics Corporation
ILEC	Incumbent Local Exchange Carrier
ISP	Internet Service Provider
iVoIP	Interconnected Voice over Internet Protocol
LATA	Local Access and Transport Areas
OUSF	Oregon Universal Service Fund
PSTN	Public Switch Telephone Network
PUC	Oregon Public Utility Commission
RBOC	Regional Bell Operating Companies
UNE	Unbundles Network Elements
USF	Universal Service Fund
VoIP	Voice over Internet Protocol
WISP	Wireless Internet Service Provider

Appendix B – MAP - Oregon Telecommunications Carriers Allocated Territory By Exchange



Appendix C – Oregon ILEC & ETC Regulation & Customers

Operating Company Name	Utility/Coop/CP	Regulation Type			Allocated Exchanges	EOY 2018 Access Lines*
		Rate of Return	Price Cap	ETC		
Asotin Telephone Company	Utility	X		X	1	97
Beaver Creek Cooperative Telephone Co.	Cooperative	X		X	1	2,536
Canby Telephone Association	Cooperative	X		X	3	6,720
Cascade Utilities Inc.	Utility	X		X	7	6,032
CenturyTel of Eastern Oregon, Inc.	Utility		X	X	46	14,321
CenturyTel of Oregon, Inc.	Utility		X	X	11	12,188
Citizens Telecom Co of Oregon	Utility		X	X	10	5,597
Clear Creek Mutual Telephone Co.	Cooperative	X		X	1	1,750
Colton Telephone Co.	Cooperative	X		X	1	622
Comspan	Competitive Provider			X	N/A	992
Douglas Fastnet	Competitive Provider			X	N/A	1,649
Eagle Telephone System, Inc.	Utility	X		X	1	388
Frontier Communications Northwest, Inc. - OR	Utility		X	X	44	121,603
Gervais Telephone Co.	Cooperative	X		X	1	404
Helix Telephone Co.	Utility	X		X	1	185
Home Telephone Company, Inc.	Utility	X		X	1	544
Humbolt Telephone Company of Nevada	Utility	X		X	1	Combined Report with Oregon-Idaho Utilities
Molalla Telephone Co.	Cooperative	X		X	1	2,935
Monitor Cooperative Telephone Co.	Cooperative	X		X	1	336
Monroe Telephone Co.	Utility	X		X	1	744
Nehalem Telecomms Inc.	Utility	X		X	1	1,766
North-State Telephone Co.	Utility	X		X	1	361
Oregon Telephone Corp.	Utility	X		X	7	1,511
Oregon-Idaho Utilities, Inc.	Utility	X		X	3	550
Peoples Tel Co	Utility	X		X	1	691
Pine Telephone System Inc.	Utility	X		X	4	776
Pioneer Telephone Cooperative	Cooperative	X		X	14	9,091
Qwest Corporation	Utility		X	X	69	287,001
Roome Telecommunications, Inc	Utility	X		X	1	252
Scio Mutual Telephone Association	Cooperative	X		X	1	1,280
St Paul Cooperative Telephone Association	Cooperative	X		X	1	544
Stayton Cooperative Telephone Co.	Cooperative	X		X	1	3,786
Trans-Cascades Telephone Co.	Utility	X		X	1	170
United Telephone of the Northwest	Utility		X	X	29	21,292
Viasat Carrier Services	Competitive Provider			X	N/A	Not in service in 2018
Warm Springs	Competitive Provider			X	N/A	775
Totals					267	508,714
* May include UNE lines for some companies.						