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Transformation Order Report Card

Many Steps, Some in the Right Direction

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Transformation Order: Two-Year Retrospective

- **The Transformation Order *did*:**
  - **Put the legacy system of Intercarrier Compensation (ICC) payments on a path towards elimination;**
  - **Cap the size of the high-cost support funds, and abolished the "Identical Support" rule for (mainly wireless) competitors to local telcos; and**
  - **Implement the first stages of support mechanisms for the buildout of rural broadband networks by wireless carriers and larger Price Cap landline carriers.**
- **The Transformation Order *did not*:**
  - **Attempt to reform the contribution mechanism for the Universal Service Fund; or**
  - **Break the link between high-cost support and voice access lines for Rate of Return carriers.**
- **The Transformation Order left several items *pending*, including:**
  - **What the replacement for the Quantile Regression Analysis (QRA) will be;**
  - **A potential revision to the level of the allowable rate of return;**
  - **Specification of the cost model for the second phase of the Connect America Fund (CAF), and of the format of the related reverse auction; and**
  - **Determination of the form of the second phase of the Mobility Fund support.**

I. Executive Summary

After years of debate and discussion about reforming the Universal Service Fund (USF) and the Intercarrier Compensation (ICC) system, the FCC issued its Transformation Order in November 2011 (TO-2011). The Transformation Order reflects the FCC's attempt to refocus support away from voice service and towards broadband service, as well as a reorientation of subsidies away from intercarrier access charges and towards direct financial support. While the USF funding mechanism itself was not changed (contributions into the high-cost fund are still based on voice usage), the size of the programs was effectively

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capped for the first time at the FCC's budget target of $4.5 billion annually. In addition, the Transformation Order substantially revamped how rural wireless carriers are awarded support by abandoning the "Identical Support" rule, and moved to address certain perverse incentives and perceived abuses on the landline side.

While the FCC has had some success in providing incremental financial support to rural broadband investment by wireless companies and larger landline carriers, the Transformation Order did not address all aspects of rural broadband investment support, and not all of its provisions have been implemented on schedule. In particular, the initial changes to the support mechanisms for the smaller rate-of-return carriers created uncertainties that chilled investment in broadband networks by those carriers. Tom Wheeler, who took office as the new FCC Chairman on November 4, 2013, indicated plans to abandon the agency's Quantile Regression Analysis (QRA) approach, which had capped individual rate of return carriers' cost recovery under the USF. Uncertainty remains, however, about how best to support the further buildout of landline broadband network in high-cost areas.[1]

II. Background/Overview

The principle of "universal service" was codified in the Telecommunications Act of 1996, but the financial support mechanisms originated long before that, in an era of monopoly telecommunications providers. Access to modern telecommunications services is critically important for rural America; and during the 20th century, this meant switched voice telephone service. The cost of building out and operating networks in rural areas is typically higher than it is in more densely populated territories; in many cases it would have been uneconomical to do so without significant subsidies. A complex web of support mechanisms grew up over the decades to ensure that rural voters had access to phone service that was comparable in both quality and price to what their counterparts in more urban areas enjoyed. Broadly, high-priced long-distance service (mostly paid for by businesses) subsidized high-cost rural (mostly residential) service.

More recently, technological change and the introduction of competition to the market for telecommunications services have rendered the legacy support mechanisms unwieldy and, in some cases, unworkable. Optical fiber and IP routers are replacing traditional circuit switches and copper wiring. From a landline perspective, universal access to high-speed broadband service is now more important than access to voice service, which is increasingly the domain of wireless carriers. This is not to say, however, that landline networks are becoming less important – smartphones and new high-speed wireless data networks are driving *increases* of traffic on landline networks.

Broadband access is vital to the economic health of rural America. A World Bank study found that developed countries "enjoyed a 1.21 percentage point increase in per capita GDP growth" for each 10 percent increase in broadband penetration rates.[2] Broadband is a critical link for job growth, education, and the developing field of telemedicine, so the urban/rural broadband access gap is an important policy concern.[3] According to the National Telecommunications and Information Administration, while broadband availability has increased significantly in the U.S. in recent years, adoption in urban areas (72 percent) has outpaced adoption in rural areas (58 percent).[4] This disparity may be due in part to differing demographics, as rural areas typically include a higher

[1] CoBank understands the challenges faced by carriers that are deploying broadband in high-cost rural areas, and the need for sufficient, sustainable, and predictable cost recovery mechanisms. CoBank's Ex Parte filings with the FCC concerning flaws in the QRA approach (May 8, 2012) and issues surrounding the acceptable rate of return (June 21, 2013) have been cited by the industry press and referenced by NTCA, WTA, US Telecom, OPASTCO, communication carriers and industry consultants to support their respective comments to the FCC.

[2] "Economic Impacts of Broadband", Qiang and Rossotto, The World Bank, 2009, p. 45.

[3] Four Years of Broadband Growth, Office of Science and Technology Policy & The National Economic Council, June 2013.

[4] National Telecommunications and Information Administration, "U.S. Broadband Availability: June 2010 – June 2012," May 2013.

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proportion of older, less technologically savvy citizens. Differing levels of access to high-speed data service also plays a role. Nearly all urban residents now have access to download speeds of 6 Mbps or more from one or more service providers, but the same is true for only 82 percent of rural residents.[5]

The TO-2011 represents an attempt by the FCC to modernize and rationalize the ICC and the USF, and separately to support the rollout of mobile wireless broadband service. Intercarrier access charges tied to voice service are being eliminated over a six- to nine-year transition period. A budget target for the total dollar amount of USF support was set at $4.5 billion per year, and the allocation of that support has changed. For example, the Order phases out the "Identical Support" rule, which had granted competitive (mainly wireless) carriers the same amount of subsidy per line that the incumbent was receiving in a given service area without corresponding obligations.

The Transformation Order affects three sets of communications carriers differently:

- **Price Cap Carriers:** These are the larger independent local exchange carriers (LECs) and the former regional Bell operating companies (RBOCs) (e.g., Verizon and AT&T). The FCC estimated at the time of the Transformation Order that "83 percent of the approximately 18 million Americans that lack access to residential fixed broadband at or above the Commission's broadband speed benchmark live in areas served by price cap carriers."[6] Support for price cap carriers under the CAF is linked specifically to broadband service, and will include both one-time grants as well as up to $1.8 million annually in ongoing support.
- **Rate of Return Carriers:** This group, consisting of hundreds of smaller independent LECs, is the most vulnerable to changes in the support mechanisms. As a group, they serve fewer than five percent of the access lines in the U.S., but include some of the country's most difficult and expensive areas to serve. Rate of return carriers have traditionally relied on ICC and USF funding to recover a significant portion of these costs. The TO-2011 effectively does away with the ICC source of funding, and caps the size of the USF going to rate of return carriers in aggregate. USF/CAF support for rate of return carriers is still tied to the *provision* of (not just the offering or availability of) a voice access line. The carriers are also required to offer 4 Mbps/1 Mbps broadband "upon their customers' reasonable request." More problematically, the FCC subsequently introduced a QRA mechanism aimed at capping individual rate of return carriers' cost recovery. This measure had the immediate effect of slowing their broadband investments, and also froze M&A activity.
- **Wireless Carriers:** This group will lose the USF support that they had been receiving under the old "Identical Support" system, which granted USF support funds to competitive eligible telecommunications carriers (CETCs, mainly wireless carriers). However, they are benefitting from explicit support under the new "Mobility Fund," which includes a one-time $300 million program as well as a longer-term program that is set to disburse $500 million per year. The first portion of this fund has been implemented, and several carriers are participating with the support of CoBank-issued letters of credit.

III. Connect America Fund & Intercarrier Compensation Reform Order – Two Years On

In the two years since the FCC issued the Transformation Order, various industry groups have attempted to block, delay or modify some of its provisions. Efforts to do away with the QRA appear to have been successful, although it is unclear what will replace it. There are still legal actions pending that were filed by various industry groups that challenge the FCC's authority to make the changes

[5] Ibid, NTIA May 2013.

[6] USF/ICC Transformation Order ("Transformation Order"), October 27, 2011, FCC 11-161, p 11.

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Exhibit 1: CAF I – Round 1 Awards
(Millions of Dollars)

	Awarded	Accepted
CenturyLink	$89.9	$35.1
Frontier Communictions	$72.0	$72.0
Windstream	$60.4	$0.7
AT&T	$47.9	$0.0
Verizon	$19.7	$0.0
Fairpoint	$4.9	$2.0
Alaska Communications	$4.2	$4.2
Consolidated Communications	$0.4	$0.4
Hawaiian Telcom	$0.4	$0.4
Virgin Islands Telephone	$0.3	$0.0
Total:	**$300.0**	**$114.8**

outlined in the TO-2011, so it is possible (though not likely) that the entire process could be rolled back by judicial fiat. Moreover, implementation of certain parts of TO-2011 has taken longer than the FCC originally anticipated.

Intercarrier Compensation refers to the system under which carriers pay each other to terminate, transport or originate traffic on their networks and under which voice toll calls were billed at rates in excess of their costs. This provided an indirect subsidy to rural carriers. The ICC charges for terminating traffic are being phased out in favor of a "bill and keep" regime, so this source of revenue will go away over the course of nine years for Rate of Return carriers and six years for Price Cap carriers. Ultimately, ICC will move to bill-and-keep for most traffic, and carriers will recover the costs of building, maintaining and operating their networks primarily from their own subscribers, and secondarily from the revamped universal service support. In any case, however, rate of return carriers are expected to lose about $1 billion of ICC revenue annually once the termination charges are phased out in 2020.

For price cap carriers, the Connect America Fund (CAF) is the centerpiece of the USF part of the Order. The CAF was established to provide targeted and efficient financial support for the buildout of broadband service in two phases. The first phase of the program (CAF I) is designed to provide a rapid, one-time injection of $300 million while the longer-term program known as CAF II was being designed and implemented. *(See Exhibit 1.)* Under CAF I, the FCC offered $300 million to several price cap carriers in 2012, but the carriers ultimately accepted only $115 million of that due to restrictions on how it could be spent.

According to TO-2011, the second phase of the CAF (CAF II) will use a forward-looking broadband cost model and/or competitive bidding to deploy $1.8 billion annually in subsidies to support networks in high-cost areas where there are no unsubsidized competitors. Incumbent price cap LECs will have the option of accepting or declining whatever level of support the model calculates on a statewide basis for five years. If the incumbent declines the model-based support, the funds will instead be allotted by reverse auction.

Because the full implementation of CAF II was delayed, the FCC undertook a second round of CAF I awards in FY2013. For Round 2, the FCC added an additional $300 million to the unused funding from Round 1, and loosened some of the restrictions that had dampened the carriers' enthusiasm. For example, carriers were allowed to use the funds for buildouts of broadband not just to areas that are completely unserved by broadband, but also to "underserved" areas where existing broadband service already exists, but at speeds of less than 3Mbps/768Kbps. This effectively tripled the number of areas eligible for Phase I subsidies. Three rural price cap carriers – CenturyLink, Frontier and Windstream – agreed to match the Round 2 funding dollar for dollar. Those carriers accepting the awards are still required to build out the award areas to 4 Mbps/1 Mbps speeds within three years. These changes improved the take-rate for Round 2, under which $386 million is ultimately expected to be made available to support broadband buildout to over 600,000 locations, although $98 million of this was still subject to challenges as of December 5, 2013.[7]

The Transformation Order anticipated that the cost model and the auction mechanism would be formalized by December 2012, and that disbursements under CAF II would begin in 2013. This has not happened. While

[7] "FCC Authorizes $255 Million in Subsidies to Expand Broadband", Connected Nation Policy Brief, December 12, 2013.

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the FCC has garnered valuable experience with cost modelling under the QRA exercise, and with reverse auctions under the Mobility Fund's Phase I, the CAF II presents a unique set of complexities. Two stand out.

First, in relation to the cost model, with a fixed amount of money available annually, the definition of "high cost area" will be important. If the "band" of cost levels eligible to receive support is set too wide, the dollars per location may be too small to be effective. Since the incumbents have the right of first refusal, non-telcos (mainly cable companies) who are competitors or potential competitors do not want the minimum cost level set too low, as they do not want the price cap carriers to overbuild their service areas with subsidized funds. For the same reason, there is some debate as to how to define "unserved/underserved" areas, and whether the target speed of 4 Mbps/1 Mbps is sufficient. This question in turn relates to the issue of whether the cost model should be based on brownfield or greenfield costs. In the longer term, it may not make sense to subsidize incumbent carriers' modest upgrades of existing plants, versus targeting the support money to build out entirely new fiber-to-the-premises (FTTP) networks.

Secondly, the details of the reverse auction have not been finalized. The Price Cap carriers, for example, would like to know ahead of time whether turning down state-wide, model-based support will disqualify them from bidding in the reverse auction. Also, the Transformation Order requires that bidders be designated as Eligible Telecommunications Carriers (ETCs), which many potential bidders (such as cable companies) are not. Designation of ETC status is the purview of state regulators, who often impose additional burdens such as carrier of last resort (COLR) requirements. Various industry groups are actively expressing their views to the FCC about these and similar issues.

For rate of return carriers, the Transformation Order set a budget target for the amount of USF funding that carriers receive in the aggregate at the 2011 level of about $2.0 billion per year, and left access to support funding tied to the provision of voice access lines. Given that consumer demand for voice landline service has been falling, and that the Transformation Order does not provide support for standalone broadband, it is clear that TO-2011 does not represent the final word in the ongoing restructuring of support mechanisms. More problematically, one follow-up regulatory initiative, the QRA, also unintentionally inhibited rate of return carriers' ability and willingness to make new investments in their broadband networks, and a further initiative may further reduce carriers' cash flows.

Due to the nature of rate of return regulation, individual carriers' support is based on capital investment and operating costs. With no limits on their overall spending, carriers under this regime receive more support as their spending increases. In particular, with the size of the fund now effectively capped at $2.0 billion, each individual carrier could *theoretically* be motivated to spend as much as possible in order to garner the maximum amount of support at the expense of other

How Fast is "Fast" Broadband?

The U.S. government commonly defines the "basic" speed for broadband at 3 Mbps downstream and 768 kbps upstream (3 Mbps/786 kbps).[a] The FCC used 4 Mbps/1 Mbps in the Transformation Order. To put this in perspective, in one typical neighborhood in suburban Denver, the incumbent ILEC is offering 20 Mbps download speeds for $29.99/month over its upgraded legacy copper plant, and the dominant cable company is offering 50 Mbps for $76.95 over its upgraded (DOCSIS 3.0) HFC plant, and 105 Mbps for $114.95/month. Verizon recently introduced 500 Mbps/100 Mbps for $300/month in some of its FiOS (fiber to the home) markets. On the wireless side, a recent PC Magazine article reported average actual wireless (4G/LTE) data speeds of 11.1 Mbps across 30 test cities.[b]

[a] Four Years of Broadband Growth, Office of Science and Technology Policy & The National Economic Council, June 2013.

[b] Fastest Mobile Networks 2013, Sascha Segan, PC Magazine, June 17 2013.

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carriers that receive high-cost support, or face falling support levels as other carriers outspend them. (It should be noted that *in practice* this phenomenon is mitigated by the facts that (1) a carrier does not necessarily receive 100 percent recovery of its costs, and (2) carriers do not have unlimited financial resources to invest.)

In order to discourage this potential "race to the top", the FCC introduced the QRA cost model in 2012, which sought to penalize those carriers whose costs it deemed excessive by reducing their support and redistributing it to other rate of return carriers. Under the QRA, the carriers with expenses in the top 10 percent were deemed to have incurred excessive costs. However, the model is both extremely complicated and inherently backward-looking, making it impossible for a rate of return carrier to judge ahead of time whether it would be able to recover the costs of its investments in new broadband infrastructure. This situation is analogous to monitoring the speeds of all drivers on a highway for a month and issuing fines *afterwards* to the fastest 10 percent of the drivers.

It is CoBank's view that the QRA approach has inhibited investment in rural broadband networks.[8] A study released in 2013 by the NTCA, which represents 900 rural telcos, found that 70 percent of its membership had stopped or slowed down planned broadband investments. The FCC reportedly received 80 letters from U.S. Senators and Congressmen objecting to the QRA. The new FCC Chairman, Tom Wheeler, evidently saw the overwhelming logic of their position and shortly after taking office announced in a House Subcommittee hearing in December that he had instructed his staff to draft an order eliminating the QRA. As the FCC has not yet issued the proposed order, it is not yet known what will replace it.

Another regulatory initiative that increased uncertainty to rate of return carriers' cash flows was the possible change to the "allowable rate of return." In May 2013, an FCC report recommended that the 11.25 percent rate of return that had prevailed since 1990 should be lowered to between 8.06 percent and 8.72 percent.[9] The RLECs' reaction to this initiative was understandably negative, and it is not yet clear what the time frame for revision of the rate is, nor what the ultimate rate will be.

For wireless carriers, the Transformation Order institutes a new Mobility Fund to replace the support that wireless carriers had been receiving as CETCs under existing programs. The Mobility Fund will directly support the build out and operation of wireless broadband networks in underserved areas. The Mobility Fund consists of two parts: a one-time $300 million Phase I, which has largely been completed; and $500 million to be distributed annually under Phase II.

Phase I funding was allotted via reverse auction to wireless carriers who undertook to build out 3G or 4G service to unserved areas. These funds, which are intended to support capital investments, were awarded in FY2012 and distributed in 2013. Several wireless carriers won funding under the Phase I program, and CoBank provided a significant portion of the letters of credit that backed the carriers' bids.

Phase II, when implemented, will provide ongoing operational support for rural wireless broadband networks. The Transformation Order did not specify a distribution mechanism for Phase II support. As with the CAF II for landline Price Cap carriers, the FCC anticipated that the distribution mechanism would be formalized by the end of 2012, and that it would be implemented in 2013. As with the CAF II, this did not happen. The Transformation Order, however, did provide that the step-down of support to wireless carriers under the legacy "Identical Support" rules would stop if Phase II was not implemented by mid-2014, so about $600 million in annual legacy support should continue to flow to these carriers.[10]

[8] CoBank ACB Ex Parte filing of May 8, 2012.

[9] Prescribing the Authorized Rate of Return: Analysis of Methods for Establishing Just and Reasonable Rates for Local Exchange Carriers, FCC Wireline Competition Bureau Staff Report, DA 13-1111, May 16, 2013.

[10] Transformation Order, p. 13.

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Mobility Fund Phase I/901 Auction Overview

The first phase of the Mobility Fund is distributing $300 million in grants to fund the build-out of rural areas with 3G or 4G wireless service. The money was allocated via a reverse action (the "901 Auction") based on cost per road mile in the territories to be served. The winning bidders were those that bid the lowest on a dollar per road mile basis, and bids were accepted up to the point where the entire $300 million was awarded. Under this auction method, carriers typically did not compete head-to-head against other carriers providing service in their service areas, but rather competed against carriers serving other territories on a "cost per road mile" basis.

The winning bidders are required to build out wireless broadband coverage to at least 75 percent of each covered territories within two years (three years in the case of 4G service) of the first disbursement of award funds. The funds are disbursed upfront, but the carriers were required to post Letters of Credit, and any carrier that does not achieve 75 percent coverage by the deadline will have to refund all of the money that it has been awarded for that specific service area, plus 10 percent of the total original award.

The $500 million annual support currently earmarked for the Mobility Fund is considerably less than what wireless CETCs were previously reaping under the "Identical Support" rule. Under that regime, wireless CETCs were eligible for per-line support levels equal to those of the ILECs against which they were competing, regardless of substantially differing costs, and with no "carrier of last resort" or build-out requirements on the part of the wireless carriers.

Summary

The FCC's Transformation Order represents a significant step towards moving telecom regulation away from a monopoly-oriented, circuit-switched world and towards a competitive, Internet protocol (IP) environment. While most industry participants agree that this needs to be done, the details are proving to be contentious. Implementation has gone more slowly than the FCC had planned, and several major issues remain to be resolved within the context of the Transformation Order, including the design of the CAF II cost model and auction programs, and most of the second phase of the Mobility Fund. Furthermore, the TO-2011 did not decisively address issues such as changes to the contribution mechanisms of the support funds, and the linkage of rate of return carriers' support funding to their customers' demand for voice access lines. The new leadership at the FCC has indicated that it will abandon the QRA mechanism, which may remove a major disincentive for CoBank borrowers to invest in their broadband networks. Greater predictability of rate of return carriers' revenues may also spur merger and acquisition activity, although there will likely be a time lag. In addition, if the FCC requires award recipients under the CAF II reverse auction to post letters of credit similar to the way it did under the Mobility Fund auction, this stipulation could increase demand for that form of financing from CoBank borrowers. ■

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Glossary

Access charges – The fees long distance companies and other network users pay to local telephone companies to originate and terminate calls on their networks.

Access line – A communications facility extending from a customer's premises to a serving central office switch, sometimes referred to as a subscriber loop, local loop, or the "last mile."

Carrier of Last Resort (COLR) – The carrier that commits (or is required by law) to provide service to any customer in a service area that requests it, even if serving that customer would not be economically viable at prevailing rates.

Digital subscriber line (DSL) – A technology that brings high-bandwidth information services to the home or small business over legacy telephone loop plant. DSL technology enables a loop to simultaneously carry voice, which takes little bandwidth, and high-speed data.

DOCSIS ("Data over Cable Service Interface Specification") – An international telecommunications standard used by most cable system operators in the U.S. to provide high-speed Internet service over cable TV plant. The original version, DOCSIS 1.0, was issued in 1997. Subsequent revisions have enhanced the speed and quality of service. DOCSIS 3.0 was released in 2006, and has already been widely adopted. The prospective DOCSIS 3.1 platform is expected to support capacities of at least 10 Gbps downstream and 1 Gbps upstream

Ethernet – Originally developed as a local area network (LAN) technology to connect computers, printers, servers, etc., in one physical location, Ethernet has evolved and expanded across the telecommunications network. Ethernet can be implemented over various types physical infrastructure, including twisted pair (copper), optical fiber, coaxial cable, and wireless interfaces.

High cost loop (HCL) support – This Federal USF fund provides support to offset high local loop costs (see "access line" definition).

Hybrid Fiber-Coaxial (HFC) – A network infrastructure architecture commonly used by cable system operators in the U.S. that combines a fiber optic network backbone or "core" with legacy coaxial "last mile" connections to homes and businesses.

Interstate common line support (ICLS) – This USF fund supports the interstate common line costs of rate-of-return ILECs by funding the residual between the ILEC's interstate common line costs or revenue requirement and the revenue collected from the common line rate elements charged pursuant to NECA's FCC Tariff No. 5.

Incumbent local exchange carrier (ILEC) – The telephone company that, on the date of enactment of the Telecommunications Act of 1996 (February 8, 1996), provided telephone exchange service in a specific area and was deemed to be a member of NECA pursuant to the FCC's regulations (47 C.F.R. 69.601(b)).

Regional Bell Operating Company (RBOC) – One of the former operating subsidiaries of AT&T that were spun off into separate companies after the 1983 divestiture order. The seven original RBOCs were Ameritech, Bell Atlantic, BellSouth, NYNEX, Pacific Bell, Southwestern Bell, and US WEST.

Intercarrier compensation – Flows of payments among telecommunications carriers that result from the interconnection of telecommunications networks under current systems of regulation.

Internet protocol (IP) - The method by which packet data is sent from one computer to another. Every server, router, and switch in an IP network is uniquely identified by at least one IP address.

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Minutes of Use (MOU) – A total of all premium and non-premium originating and terminating interstate traffic sensitive switched access minutes, which are switched in a Class 5 (local) end office.

Price Cap Carrier – A carrier that is not subject to rate base/rate-of-return regulation. A price cap carrier is limited in its ability to raise rates based on a formula defined by the FCC. The extent to which a carrier can raise rates depends on its growth in expenses and a productivity growth factor.

Rate-of-Return (RoR) Carrier – A carrier that is allowed to set rates on its various products and services so that it earns no more than the rate-of-return authorized by the FCC. FCC rules define the rate base (specified plant items) upon which a carrier is allowed to earn a return.

Universal Service Fund (USF) – A group of federal funding programs that promote universal service goals created by the FCC to provide support for high cost telcos, low income consumers, rural health care initiatives, and schools and libraries.

Voice over Internet protocol (VoIP) – A technology that allows users to make telephone calls using a broadband Internet connection instead of a regular (or analog) phone line.

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