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Frontier Communications
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March 25, 2020

Connie Graley
Executive Secretary
Public Service Commission
201 Brooks Street
Charleston, West Virginia 25323

Re: Case No. 18-0291-T-P
Focus Management Audit

Dear Ms. Graley:

Enclosed are the original and twelve copies of the Verified Motion of Frontier West Virginia Inc. and Citizens Telecommunications Company of West Virginia for a Protective Order, as well as a redacted public copy of the Focused Service Quality Management Audit Report by the Auditor, Schumaker & Company that was filed with the Commission on March 18, 2020.

Sincerely,

Joseph J. Starsick, Jr.
(State Bar No. 3576)

JJSjr/sc

cc: Vincent Trivelli, Esq.
Linda S. Bouvette, Esq.
Christopher Howard, Esq.
Tom White, Esq.

PUBLIC SERVICE COMMISSION
OF WEST VIRGINIA
CHARLESTON

CASE NO. 18-0291-T-P

FRONTIER WEST VIRGINIA INC.
AND CITIZENS TELECOMMUNICATIONS
COMPANY OF WEST VIRGINIA DBA
FRONTIER COMMUNICATIONS OF WEST VIRGINIA

VERIFIED MOTION OF FRONTIER WEST VIRGINIA INC. AND CITIZENS TELECOMMUNICATIONS OF WEST VIRGINIA DBA FRONTIER COMMUNICATIONS OF WEST VIRGINIA FOR PROTECTIVE ORDER

Pursuant to Rule 4.1.f of the Commission's *Rules of Practice and Procedure*, Frontier West Virginia Inc. and Citizens Telecommunications Company of West Virginia dba Frontier Communications of West Virginia (collectively and individually, "Frontier") hereby move for an Order protecting the confidentiality of certain Frontier proprietary, non-public information in the audit report entitled Focused Service Quality Management Audit of Frontier West Virginia Inc. & Citizens Telecommunications Company of West Virginia dba Frontier Communications of West Virginia (hereinafter "Audit Report") filed under seal in this proceeding on March 18, 2020. A redacted public version of the Audit is attached as Exhibit A. Pursuant to confidentiality agreements, all parties to this proceeding already have copies of the confidential version of the Audit Report.

Frontier does not necessarily agree with every aspect of the Audit Report, and we expect to take exceptions to certain findings and recommendations as well as correct

various factual errors and inaccuracies throughout the Audit Report through the appropriate filings. The instant filing is solely intended to address those items that are confidential and proprietary. Although the Audit Report touches on myriad details of Frontier's business, and is replete with Frontier's confidential business information, Frontier's redactions have been carefully limited. The redactions primarily are of information that, if known to competitors, would provide them with key competitive insights into Frontier's business and, conversely, would place Frontier at an undeserved competitive disadvantage, likely resulting in harm to Frontier. Where Frontier could protect the competitively sensitive information by merely redacting the sensitive numerical data, Frontier did so. In some instances, Frontier redacted textual information that detailed Frontier's propriety business processes but made efforts to limit these redactions as reasonably appropriate. The subject matters of the redactions primarily include the following:

- **Non-public, confidential data and details of Frontier's Internet service business**. By law, the Commission is without jurisdiction over Internet service. W.Va. Code § 24-2-1(e). This information was not authorized by the Commission to be in the Audit in the first place. The Commission did not include Internet service as a subject of the audit, and it has no jurisdiction to do so. Further, Frontier provided such information to the auditors on a confidential basis and as a courtesy with the understanding that such information would not be included in the Audit Report. Accordingly, the non-public, confidential information on this aspect of Frontier's business accordingly has been redacted as appropriate.

- **Specific, detailed, non-public data about Frontier's workforce and processes**. This data would give competitors special, non-public insight into Frontier's business strengths and weaknesses, thereby gaining an unfair competitive disadvantage to Frontier's detriment. Moreover, some of the information actually includes certain employee's ages and other personal information. It accordingly has been redacted.

- **Non-public data from which competitors might infer Frontier's investment strategies and capabilities**. The non-public financial performance information as well as the amounts and types of Frontier's specific investments in its network

would provide competitors with insight into Frontier's strategies and capabilities and would aid those competitors in selecting where and how to target *their* own capital investments, as well as in what amounts and types, rather than do the necessary work to gather whatever information that they might be able to infer from the market. This would give Frontier's competitors an unearned advantage in the market and, conversely, would place Frontier at an undeserved competitive disadvantage.

- **Non-public, confidential data on Frontier's network and systems.** This includes specific, detailed non-public information on the deployment, location, nature, age and amount of equipment and investment throughout Frontier network, details on the proprietary computer and other systems that Frontier uses to manage it, and the practices, management tactics and organizations that Frontier uses. The disclosure of this information would give competitors insight into Frontier's network deployment and business strategies, organization, and system strengths and weakness, thereby resulting in likely harm to Frontier.

Frontier cooperated in every aspect of the audit and was fully transparent. It is no secret that Frontier has serious business challenges that it is working hard to overcome. Frontier currently provides only 10%-15% of the voice connections in the State. We are dwarfed by out-of-state competitors that are thousands of times larger than Frontier both in terms of revenue and customers, such as AT&T, Verizon and other wireless competitors, who dominate the voice market. Of the voice providers, Frontier alone is required by the Commission to bear the heavy burden and expense to be the competitor of last resort for universal service to all West Virginians in its service territory, including some of the most rural and difficult-to-serve areas in the State. The Commission should not further tilt the competitive balance in favor of these large competitors and to Frontier's detriment by exposing its sensitive business information resulting from a process to which not one of its competitors is similarly subject. Frontier respectfully asks that the Commission grant confidential treatment for the competitively sensitive, trade secret information contained in the Audit Report.

I. The Confidential Information for Which Frontier Seeks Protection Falls within the Plain Meaning of the West Virginia Freedom of Information Act's Definition of Trade Secret.

"Trade secrets" are "expansively defined," *AT&T Communications of West Virginia Inc. v. Public Service Commission of West Virginia*, 188 W.Va. 250, 423 S.E.2d 859 (1992), under the West Virginia Freedom of Information Act ("WVFOIA") to include:

> (1) Trade secrets, as used in this section which may include, but are not limited to, any formula, plan, pattern, process, tool, mechanism, compound, procedure, production data, or compilation of information which is not patented which is known only to certain individuals within a commercial concern who are using it to fabricate, produce or compound an article or trade or a service or to locate minerals or other substances, having commercial value, and which gives its users an opportunity to obtain business advantage over its competitors;…

W.Va. Code §29B-1-4(1).

A party seeking a protective order under WVFOIA must make "a credible showing of likely harm" that would result were the information to be disclosed. *See AT&T Communications of W.Va., Inc. v. PSC*, 423 S.E.2d 859, 862 (W.Va. 1992). *See also* Order on Motions, *Hope Gas, Inc.*, Case No. 99-0348-G-PS (Dec. 12, 2000) (incorporating the West Virginia Supreme Court of Appeal's six-prong test for determining whether or not "good cause" has been shown for the issuance of a protective order under *State ex rel. Johnson v. Tsapis*), 419 S.E.2d 1 (1992).

The Commission has applied the WVFOIA's "trade secrets" exemption numerous times to protect competitively sensitive information. *See, e.g.*, Commission Order, *West Virginia-American Water Company*, Case No. 06-0597-W-PC (January 26, 2007) (finding information constituted "trade secrets" deserving permanent protection from disclosure, in part because the information in question contained "confidential

information relating to competitive positions[.]" and because "[T]hese documents could not be replicated by competitors without investing considerable resources and having access to the underlying private data."); *see also* Commission Order, p. 30, *Monongahela Power Co.*, Case No. 00-0801-E-PC (recognizing as a protected "trade secret" information regarding "future business plans, opportunities and their relative promise, and/or strategies for implementation."); Commission Order, *Elkem Metals Company*, Case No. 02-2025-E-C (March 4, 2003) (granting protective order for various information regarding company's pricing and operations that could be used by competitors).

This information in the Audit Report is entitled to confidential treatment. First, is a "compilation of information which is not patented." Second, it is known only to certain individuals within Frontier, who use it in connection with investment and operation in Frontier's business. Third, it was developed at a considerable expense for that purpose. Fourth, its release would likely harm Frontier in competition.

All four parts of this test clearly apply here to the information at issue.

As previously noted, the Commission is, by law, without jurisdiction over Internet service. W.Va. Code § 24-2-1(e). This information was not authorized by the Commission to be in the audit in the first place. Among other things, the Audit Report includes an entire section (see pages13-14) on the confidential Internet-related information that Frontier provided to the auditor on a confidential basis and with the understanding that it would not be included in the Audit Report. The release of this non-public information would likely harm Frontier in the competitive marketplace. To make

matters worse, Frontier's formidable, out-of-state competitors would be the undeserved winners if this information were disclosed.

Likewise, the specific, detailed, non-public data about Frontier's workforce would give competitors non-public insight into Frontier's business strengths and weaknesses, thereby gaining an unfair competitive disadvantage to Frontier's detriment. For example, the numbers, qualifications, titles, and other information on Frontier's employees and processes give its competitors insights into the present and future capabilities of Frontier's workforce and its operations. Moreover, some of the workforce information actually includes certain employee's ages and other personal information.

Further, the Commission should protect the non-public data related to Frontier's financial performance and investments from which competitors might infer Frontier's investment strategies. The non-public financial performance data as well as the amounts and types of Frontier's specific investments in its network would provide competitors with insight into Frontier's investment capabilities and strategies and would aid those competitors in selecting where and how to target their own capital investments, as well as in what amounts and types, rather than do the necessary work to gather whatever information that they might be able to infer from the market. For example, the Audit Report includes information on the Frontier's non-public, disaggregated investments. This would give Frontier's competitors a competitively unearned advantage in the market and, conversely, would place Frontier at an undeserved competitive disadvantage.

Finally, the Commission should protect the non-public, confidential data on Frontier's network and systems. This includes specific, detailed non-public information on the deployment, location, nature, age and amount of equipment and investment

throughout Frontier network, details on the proprietary computer and other systems that Frontier uses to manage it, and the practices, management tactics and organizations that Frontier uses. The disclosure of this information would give competitors insight into Frontier's network deployment and business strategies, organization, and system strengths and weakness, thereby resulting in likely harm to Frontier.

For the above reasons, Frontier's confidential, competitively sensitive data and other information qualify as "trade secrets" under West Virginia law. Accordingly, Frontier respectfully asks the Commission to enter an appropriate protective Order.

II. Alternatively, the Commission Need Not Rule Until Such Time as the Information is Received into the Evidentiary Record, and a Public Request, if Any, is Ever Made for It.

In the past several years, the Commission has often deferred its ruling on motions for confidential treatment until such time as an actual public request is made for the information. *See, e.g.*, Commission Order, Case No. 09-0871-T-PC, *et al.*, Frontier Communications Corp., *et al*. (May 13, 2010), pp. 32-33. *Cf.* Commission Order, *General Investigation into the Provision of 9-1-1 Data Base Management Services and Who Pays the Costs of Such Services*, Case No. 04-0102-T-GI (November 20, 2007), p. 22 & Conclusion of Law No. 15. ("[T]here was no need to rule" upon the protective status of sensitive information at issue there, as it was possible for the Commission to issue an Order without including that information. … The Commission "direct[ed] its Executive Secretary to maintain the information separate and apart from the rest of the file. If there is a request filed with the Commission to make such information public, the Commission shall require the entity seeking protective treatment to argue its request for protective treatment at that time.")

As an alternative to granting the protective treatment that Frontier requests at the present time, the Commission could take a similar approach here. If a request filed with the Commission to make the information public, the Commission should require Frontier to argue its request for protective treatment at that time. In the meantime, Frontier will provide the information to the parties under an appropriate confidentiality agreement to prevent its disclosure.

III. Conclusion and Prayer for Relief.

For the foregoing reasons, Frontier respectfully asks the Commission for an Order as follows:

(a) That the information at issue be deemed confidential and thus protected from disclosure by maintaining it under seal;

(b) That the use of any such confidential information in any written filings or submissions made with the Commission be protected from disclosure; and

(c) That the information at issue only be made available to any party under an appropriate agreement between the parties or requirement of the Commission preventing its further disclosure.

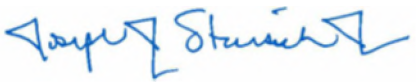
As an alternative to the above relief, Frontier respectfully asks the Commission to enter an Order:

(a) That the Commission's Executive Secretary keep the information separate and apart from the rest of the file in this proceeding, and that the parties treat the information as confidential pending further Commission Order; and

(b) That the Commission, without taking any final position on this Motion, defer consideration of the matter until the Commission receives a request to make the redacted material public.

FRONTIER WEST VIRGINIA INC. AND CITIZENS TELECOMMUNICATIONS COMPANY OF WEST VIRGINIA DBA FRONTIER COMMUNICATIONS OF WEST VIRGINIA

By counsel:



Joseph J. Starsick, Jr. (WV State Bar #3576)
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VERIFICATION

STATE OF NORTH CAROLINA,

COUNTY OF DURHAM, to-wit:

Allison M. Ellis, Senior Vice President, on behalf of Frontier West Virginia Inc. and Citizens Telecommunications Company of West Virginia, being duly sworn, says that she assisted with the compilation of facts stated in the forgoing **Motion for Protective Order** and that she is informed and believes them to be true.

A. Ellis

AFFIANT

Taken, sworn to and subscribed before me this 25th day of March 2019.

Susan A. Miller

NOTARY PUBLIC

SUSAN A. MILLER
Notary Public, North Carolina
Wake County
My Commission Expires
November 14, 2024

PUBLIC VERSION

Schumaker & Company

Focused Service Quality Management Audit of Frontier West Virginia Inc. & Citizens Telecommunications Company of West Virginia dba Frontier Communications of West Virginia

March 2020

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I. Executive Summary

This report is in response to a request for a focused management audit of Frontier's operations in West Virginia by the Public Service Commission of West Virginia and Frontier Communications of West Virginia.

A. Audit Background

On March 2, 2018, the Communications Workers of America, AFL-CIO (CWA) filed a petition with the Public Service Commission of West Virginia (PSC) seeking a general investigation by the PSC into the current status of Frontier's copper network in West Virginia and service quality issues related to the network. The petition was given PSC Case Number 18-0291-T-P. On June 29, 2018, the Staff of the PSC (Staff) issued a Final Joint Staff Memorandum which recommended that the PSC grant the CWA petition and expand the general investigation to encompass additional issues. On August 30, 2018, the Public Service Commission of West Virginia issued an Order in Case No. 18-0291-T-P (Order). Accordingly, the PSC ordered that a focused management audit be conducted by a qualified outside consulting firm chosen through a general solicitation and competitive bidding process.

Our scope of work was centered on seven questions, as follows:

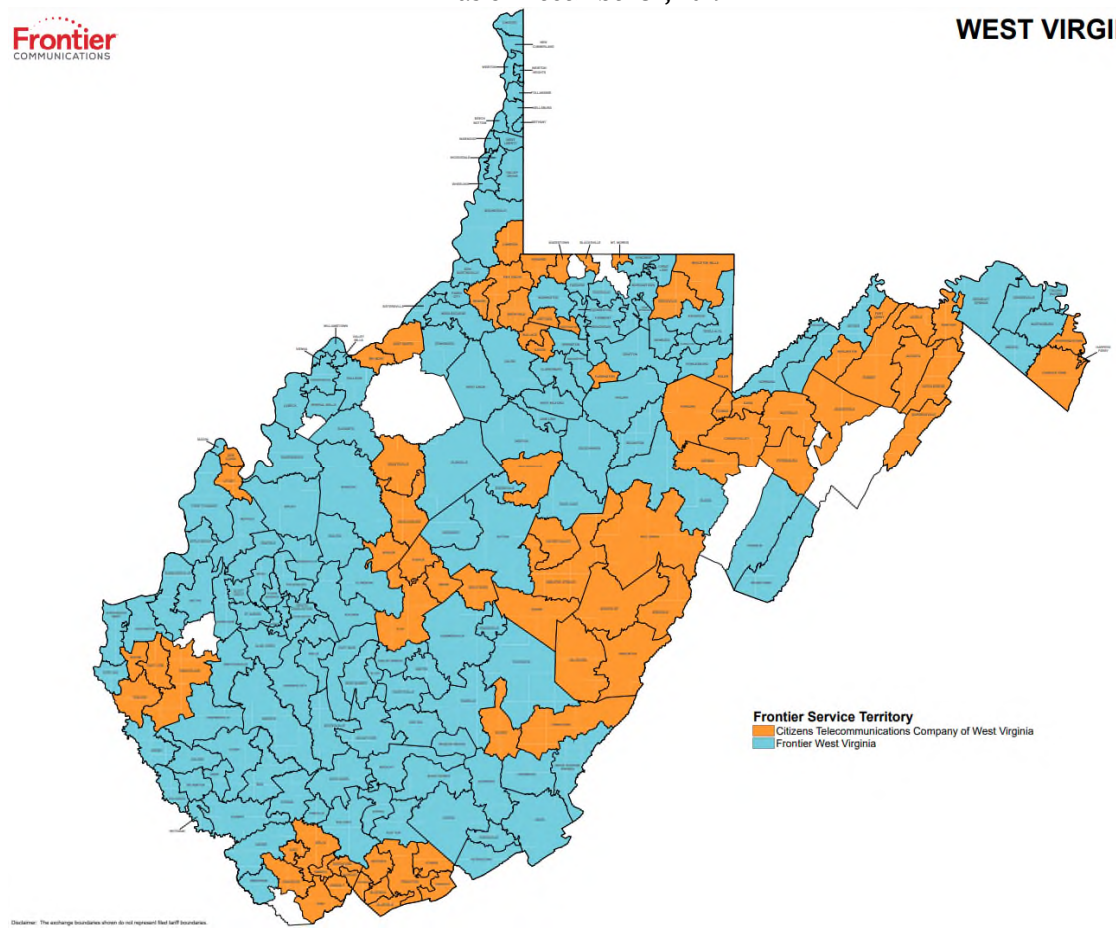
- Evaluation of the current status and condition of Frontier's copper network in West Virginia
- Evaluation of the adequacy of Frontier's staffing levels dedicated to the copper network in West Virginia
- Evaluation of the adequacy of Frontier's capital investment in the copper network since July 2010 for West Virginia
- Evaluation of the adequacy of Frontier's policies and procedures impacting the quality of service in West Virginia
- Evaluation of the adequacy of the service quality metrics currently in place to measure Frontier's quality of service
- Evaluation of the impact of the declining West Virginia customer base on internal cash flow from Frontier Operations, relative to historic and current copper infrastructure maintenance and capital expenditures
- Evaluation of the impact of Frontier's current union bargaining agreements and the ongoing relations between management and labor on customer service quality and response timing

This report is organized into separate chapters that address each of the above questions. This executive summary provides a high level assessment of each of these questions although one will need to refer to the detailed chapter for more discussion.

B. Summary

Frontier Communications is largest landline telecommunications provider in the state of West Virginia as shown in *Exhibit I-1,* although it may no longer be the largest telecommunications provider in West Virginia based on the number of customers. The white areas are other small landline providers, the blue areas are the acquired Verizon services territories and the orange areas are the legacy Citizens Telecommunications Company areas.[1]

Exhibit I-1
West Virginia Frontier Service Area
as of December 31, 2019



Source: Information Response 88

Frontier provides both:

- POTS – Plain Old Telephone Service – regulated by the West Virginia Public Service Commission, and
- Internet Service – Nonregulated service on the copper network

Being the 'big fish" in West Virginia, Frontier probably gets more than its share of criticism, some of which might be justified and some not.

Evaluation of the current status and condition of Frontier's copper network in West Virginia

Frontier's copper network is comparable to other landline telecommunication providers. All of the central offices within West Virginia are digital (as opposed to analog) and many have had recent upgrades. The copper network was originally constructed to serve a higher number of customers (approaching [redacted]), but now only serves around [redacted] customers, although Frontier also provides Internet service (DSL) over the same copper network. [redacted] ([redacted]%) of Frontier WV's network is less than [redacted] years old with [redacted]% being [redacted] years old. Copper wire does not typically go bad or age out however splices (the joining of wire together) can become more of an issue.

There is a fair amount of fiber being placed in the copper network, in particular, where cross boxes exist and customer density can support digital technologies (such as Digital Loop Carrier (DCL) and SLC 96 technologies). One SLC 96 serves up to 96 customers, however, these technologies cannot be economically deployed in certain areas due to customer density issues. There are some areas in the service territory where this can be an issue. The deployment of fiber helps support both POTS and Internet services.

However, trouble reports over the last several years are still showing a slight upward trend, as shown in *REDACTED* Exhibit I-2. Frontier has been making capital investments in facilities to support Internet services (by the CAF and Assurance programs) but it has not necessarily translated into lower number trouble reports. With proper preventive maintenance one would expect this trend to be flat or slightly declining. Company initiated maintenance activities, which are not actual troubles yet, but they should help minimize future troubles.

REDACTED Exhibit I-2
Trouble Report Treads
as of December 31, 2019

Source: Information Response 5

Our bigger concern regarding the copper network has to do with the identification of preventive maintenance activities. Until recently, Frontier has not been placing the focus on Company generated preventive maintenance activities to the extent that they have focused on customer generated work activities. The dispatch center, at this time, only handles customer generated work i.e. new installs and trouble reports. It is up to the local manager to identify and schedule preventive maintenance work which we found was not being done and, unfortunately, at this time, the individual technician does not get credit (points) in the system. Our ride-arounds identified field conditions that needed to be corrected however at that time there was not a systematic process in place to assure these conditions are getting addressed. This deficiency was in the process of being addressed during our ride arounds. However, there needs to be a way to integrate preventive maintenance work into the dispatch process. The current mode of operation within Installation and Repair (I&R) is in the mode of "Break/Fix" as opposed to a "Managed Service" mode. In a "Managed Service" mode, maintenance processes are established to anticipate the "Break" before it happens and take an appropriate action in advance. In the maintenance management practice, companies actually measure the amount of preventive versus corrective maintenance work activities as a measure of success in maintenance management. Finally, West Virginia PSC regulations mandate a preventative maintenance program, in which the telephone company shall adopt and pursue a maintenance program aimed at preventing service interruptions so as to achieve adequately reliable and efficient operation of its systems.

Evaluation of the adequacy of Frontier's staffing levels dedicated to the copper network in West Virginia

Based on our observations during our ride arounds and analysis of what data was available on workloads, it appears the Frontier has adequate staffing levels at this time. However, there are two issues that need to be factored into future projections.

- Increased Maintenance Activities
  - Company originated work will increase with the policy of each local manager having to enter a minimum of [redacted] company originated work orders a week into PPM
- Aging Workforce – Several work areas within Frontier have an aging workforce who will be able to retire within the next [redacted] years
  - The engineering department has a potential for an attrition of [redacted]% during the next [redacted] years
  - I&R could experience a similar attrition of [redacted]% in the next [redacted] years

Evaluation of the adequacy of Frontier's capital investment in the copper network since July 2010 for West Virginia

The amount of capital investment in the West Virginia operations of Frontier Communications has been significant for the nine years – 2010 through 2018. However, both companies experienced negative cash flows during almost the entire period due to expenses charged or allocated to them at the Frontier Corporate level that did not appear in their West Virginia financial reports.[2] During this period of time, Frontier Communications' two local exchange carrier companies, Frontier West Virginia (Frontier WV) and CTC of West Virginia, have invested more than [redacted] in plant and equipment, averaging more than [redacted] per year.[3] [redacted]

Overall capital expenditures have declined over the past nine years by [redacted], from [redacted] in 2010 to [redacted] in 2018. [redacted] over the past six years, from the highest expenditure level in 2012 through 2018, capital expenditures have declined by [redacted] - from [redacted] to [redacted]. Frontier does not prepare an annual capital budget for West Virginia at the beginning of the year. Capital budgets for Frontier West Virginia and CTC of West Virginia were not available for review. Frontier Communications capital budgets are developed annually and reviewed quarterly.[4] This is a top down process with apparently some bottoms up input. However, Frontier Communications does not budget at the state level[5], and therefore, does not maintain current or past year capital budgets at the state level[6]. Only reports of capital spending for capital projects are available by state. It is unclear to Schumaker & Company consultants how capital decisions are being made at the corporate level that

effect West Virginia with little input from West Virginia. It appears to be a top down approach with little bottoms up input.

Evaluation of the adequacy of Frontier's policies and procedures impacting the quality of service in West Virginia

The Frontier's activities surrounding the responding to trouble reports is similar to what we have observed in other telecommunications providers. Company practices and systems are similar to what we have observed at other telecommunications providers whereas the geography served varies significantly throughout the state. Frontier needs to continue to leverage its technology to better support its operations and maintenance activities. The steps currently being taken to address preventive maintenance activities is a start to getting Company originated maintenance activities into the workload mix.

Evaluation the adequacy of the service quality metrics

The WVPSC regulations provide that annual service quality reports be submitted by local exchange providers by March 1st each year. Generally, with a few exceptions, the service metrics are fairly standard within the industry. Schumaker & Company consultants question why the Out of Service Metric has been set at cleared within 48 versus cleared within 24 hours to be consistent with Commission intent in reading WVPSC regulations.

If you really look at the reported metrics, you can see in the trend lines the reason for Commission concerns shown in *Exhibit I-3*.

Exhibit I-3
Service Metrics Trend Lines
as of December 31, 2019

Metric	Trend Line
Out of Service (OOS)	Negative Trend
Service Affecting (SA)	Slight Negative Trend
Repair Appointments Met	Slight Negative Trend
Repeat Troubles	Negative Trend
Residential and Business Answer Times	Negative Trend
Repair Answer Times	Slight Negative Trend
Installation Times (FTR and CTC)	Positive Trend (Flat)

Source: Consultant Analysis

These negative trend lines beg the questions of what Frontier is doing to address these issues. We would expect that Frontier, as a minimum, would be required to explain to the WVPSC the steps being taken to reverse these trends.

Evaluation of the impact of the declining West Virginia customer base on internal cash flow from Frontier Operations, relative to historic and current copper infrastructure maintenance and capital expenditures

Significant financial transactions applicable to Frontier West Virginia and CTC of West Virginia but paid at the corporate level were not included in the financial statements and annual reports of either company and resulted in an incomplete presentation of net income and cash flows.

The number of access lines have declined over the past three and one-half years. Access lines counts in the 222 wire centers have decreased from [redacted] in [redacted] to [redacted] as of June, 2019 – a decline of [redacted]%.[7]

Frontier stated that there was no analysis available that could relate loss of access lines to loss of revenue and/or profitability by wire center. Specifically, there is no profit and loss data available within the Frontier Corporation organization below the independent local exchange carriers (ILECS), Frontier West Virginia and CTC of West Virginia, in West Virginia, and there is no available analysis that would shed light on the differences in access line losses among the 222 wire centers.[8] Frontier West Virginia has no information or analysis concerning the categories of customers that have dropped their service over the past 10 years – whether they were the most profitable customers (businesses, urban, high density) or the rural or least profitable customers.[9]

The lack of cost allocation manual documentation makes it difficult to understand how Frontier Communications records Frontier West Virginia and CTC of West Virginia accounting. Central support expenses are allocated to legal entities based on revenue percentages,[10] however it is difficult to understand how Frontier West Virginia and CTC of West Virginia balance sheet and income statement records are calculated.

Evaluation of the impact of Frontier's current union bargaining agreements and the ongoing relations between management and labor on customer service quality and response timing

Frontier West Virginia has two labor unions, the Communications Workers of America (CWA) and the International Brotherhood of Electrical Workers (IBEW). Approximately 1,250 (95%) of the union workforce is represented by CWA and 62 (5%) by IBEW.[11] There are provisions within both contracts that can possible have an effect on service quality that need to be addressed by management on day to day basis, in short if a technician calls in at the last minute being sick, management would need to take steps to back fill that position to meet a service commitment. Frontier maintains a number of other provisions (using contractors for fiber optic plant work, prohibition against reassigning employees to different locations, and limits on mandatory overtime), which also impact efficiency. However, service quality are being met meaning management and the union have been successfully addressing those issues.

II. Background of Audit

In May 2008 the Consumer Advocate Division (CAD) of the West Virginia Public Service Commission (WVPSC) and Commission Staff jointly petitioned for a general investigation into Verizon's retail and wholesale telecommunication services. The resolution of the petition was addressed later that year when the parties came to a settlement in December 2008, with the adoption of the Retail Service Quality Plan (RSQP) to address poor service quality in Verizon's West Virginia territories. Additionally, the RSQP required Verizon, among other things to supplement its work force and invest additional $11 million in infrastructure improvements.

In May 2010 the WVPSC approved the Frontier acquisition of Verizon properties in the State of West Virginia. The acquisition, when added to Frontier's existing subsidiary in WV (Citizens Telecommunications Company of West Virginia), left Frontier as the local incumbent phone company for all but 5 exchanges in West Virginia. In its May 2010 order approving the acquisition, the WVPSC concluded that Verizon had not been expending sufficient funds for maintenance of its copper network and ordered VZ to establish an escrow account of $72.4[12] million to address service quality issues over a four year period.[13] Additionally, the acquisition order incorporated the existing 2008 Verizon Retail Service Quality Plan (RSQP)[14] which adopted benchmarks for retail service quality applicable to the service area that was *formerly Verizon's West Virginia service territory.*[15] Service quality reports were to be provided on a monthly basis for the first year and quarterly afterwards. In March 2017 Frontier filed notice with the Commission to withdraw from the RSQP, indicating it has met or exceed every metric standard every month since January 2016. However, three months later, the company withdrew its notice.[16]

In February 2018, the Communications Workers of America (CWA) citing an investigation filed a petition requesting a general investigation of status of Frontier's[17] copper network in West Virginia and the service quality problems related to the network.[18] The request included, among other things, that the Commission include a financial analysis of the copper network and revenue and expenditures since 2010 when Frontier acquired the former Verizon properties; staffing levels dedicated to preventative maintenance, repair, installation and customer service since 2010 and an analysis of policies and procedures that impact customer service quality. In March 2018, the Commission directed that Frontier file monthly metrics data and a listing of Frontier West Virginia's 25 wire centers with the highest network trouble reports.[19] Five months later in August 2018, the WVPSC issued an Order[20] initiating a focused management audit.[21] In July 2019, Schumaker & Company was retained to perform the management audit.[22]

III. Telecommunications Overview

The telecommunications industry has undergone significant changes in the last 25 years. Those changes, led by technology and coupled with regulatory changes have expanded consumer choice in their communication platforms (wireless, cable-based, messaging services, etc.). Intermodal competition has resulted in significant line losses to traditional landline telephone companies. Many companies have responded to these changes by offering additional services (primarily broadband and wireless), seeking economies of scale via mergers or acquisitions and providing additional services. The demand for traditional landline telephone services continues to decline. Estimates are now that more than half (57%) of American homes only have wireless communications. The displacement is even more pronounced when viewed through the prism of demographics. Over three quarters (76.5%) of young adults (aged 25-34) live in homes with only wireless connections.[23] There continues to be a decline in landline subscribership in West Virginia and across the nation as consumers adopt alternatives platforms for communication.

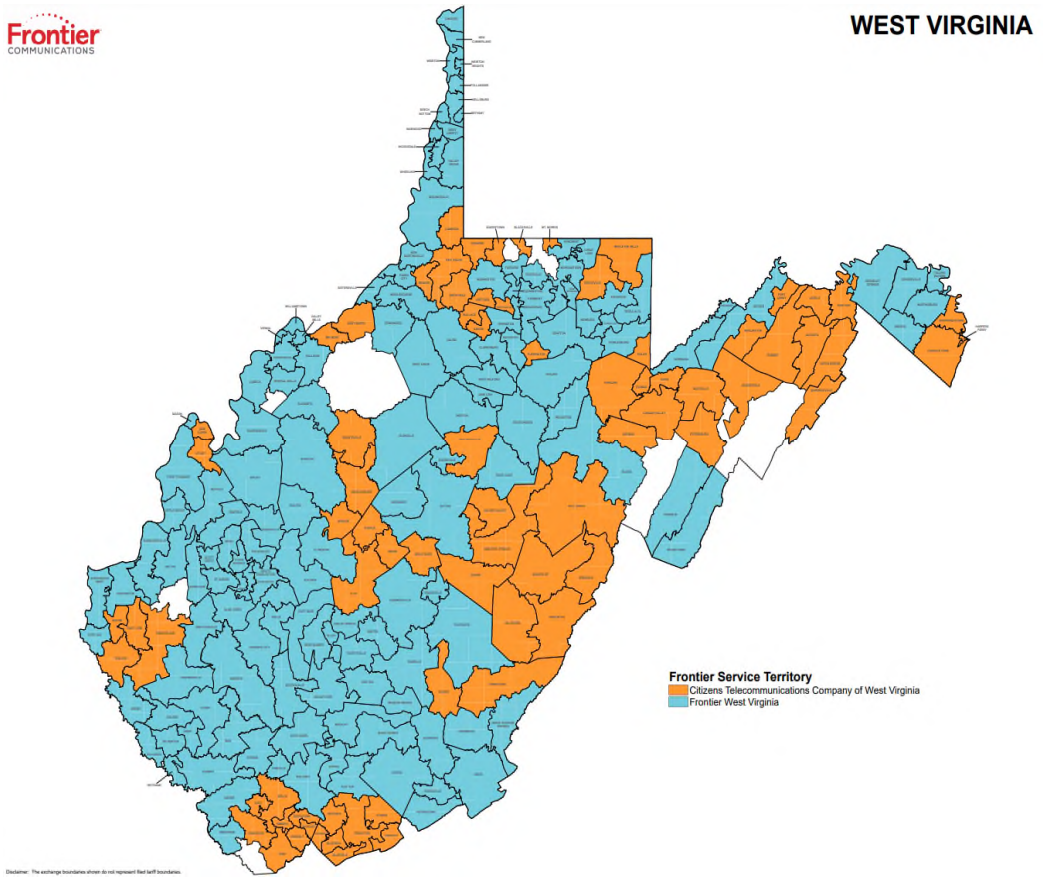
A. Frontier Communications Corporation

Frontier Communications Corporations has acquired a significant number of access lines over the past 10 years. In 2009, it acquired Verizon's landline assets in Arizona, Idaho, Illinois, Indiana, Michigan, Nevada, North Carolina, Ohio, Oregon, South Carolina, Washington, West Virginia, and Wisconsin. A year later it acquired Verizon's exchanges in West Virginia. In 2014 it acquired AT&T's access lines in Connecticut. In 2016, Frontier acquired Verizon's wireline assets in California, Texas and Florida. Frontier Communications Corporation (Frontier) currently provides traditional landline telecommunications and communications services in 29 states[24] serving approximately 4.5 million customers and 3.7 million broadband subscribers. The company also offers video service through its partnership with DISH networks.

Frontier West Virginia

Frontier Communications Corporations operates two subsidiaries in West Virginia; 1) Frontier West Virginia (comprised of the former West Virginia properties of Verizon); and 2) Citizens Telephone Company of West Virginia. These areas are shown in *Exhibit III-1*.

Exhibit III-1
West Virginia Frontier Service Area
as of December 31, 2019



Source: Information Response 88

Frontier West Virginia represents about 76% of the access lines while Citizens represents about 24%. Both companies offer residential and business telephone service (under separate tariffs) and both provide DSL broadband. [redacted].

[redacted][26].

Faced with the challenges of a declining landline business, [redacted] and is constrained by competition from increasing its rates for such services. Absent significant changes, the reliability and integrity of its network and operations will suffer. Frontier's own executives view the outlook as unsustainable:

> *Frontier serves only about ten percent of the state voice lines in its service area—and falling—but has 100 percent of the universal service obligation to serve the most rural and high-cost areas," Executive said in a statement. "Our customer base continues to decline, while the cost of service per line has increased dramatically. This has resulted in an unsustainable model for providing service in rural and high-cost areas, manifesting in increased numbers of service complaints. We plan to reach out to the state's leaders to collaboratively find solutions to this difficult challenge."*[27]

B. Other Services

The primary focus of this review had to do with the provision of Plain Old Telephone Service (POTS). The West Virginia Public Service Commission only has jurisdiction over POTS and does not have jurisdiction over Broadband services in the State of West Virginia. Both services, POTS and Broadband, are provided over the same cooper network using the same workforce; however there is an important distinction in that one service is regulated by the WVPSC and the other is not. Broadband is regulated by the Federal Communications Commission (FCC). However, this is mostly a distinction that only legal minds make whereas most customers only make the connection with Frontier as being the responsible party. In short, issues with POTS or Broadband, go back to Frontier in the customers eyes.

However, there are advantages and benefits that can accrue to the POTS business with the rollout of Broadband service. Broadband is intrinsically a digital service whereas POTS had been traditionally an analog service which is now being migrated more and more to digital service. In short as facilities are installed to carry broadband services, they can also be used to support POTS (voice services) just as easily. Therefore, Schumaker & Company consultants needed to look at how broadband has been factored into POTS service.

Broadband

[redacted]

[redacted]

Exhibit III-2

REDACTED Exhibit III-2
Frontier DSL Lines
as of September 30, 2019

Source: Information Response 99

Broadband Build-Out Requirement in the VZ Acquisition (2010)

A major justification for the Frontier acquisition of Verizon West Virginia centered on the deployment of broadband. Frontier noted that "increasing broadband availability in West Virginia will be a business imperative for Frontier both to provide an added revenue source and to stem the rate of line losses to competitors,"[33] and as a condition of the acquisition, Frontier agreed to the Commission's order[34] which required Frontier to expand broadband availability in the Verizon WV service area so that by the end of the fourth year following the acquisition the broadband service should be available to no less than 85% of the households within the Verizon West Virginia service area. In January 2014, Frontier notified the Commission its broadband was available to over 88% of its customers in the acquired service area.[35]

FCC's Connect America Fund (2015-2020)

The FCC's Connect America Fund provides funding to increase the availability of fixed and mobile broadband services in capable of providing voice and broadband services unserved and rural areas. In addition to expanding the availability of broadband to new customers, the program allows recipients to use funding to increase broadband speeds. For West Virginia, Frontier was granted $38 million[36] each year for six years ($228 million total). From 2015 to 2019, for West Virginia received approximately $178 million from the FCC's Connect America Fund.[37] In exchange for the funding[38] Frontier committed to make broadband (defined 10 Mbps/1 Mbps) available to almost 90,000 households over a six year (2015-2020) period.[39] Frontier has met its household broadband goals for 2017, 2018[40] and may be just shy of its broadband goal for 2019.[41] The FCC's program has no specific requirements regarding a minimum level of funding that should be allocated to capital or expenses, and Frontier has used [redacted]% of the funding on expenses and [redacted]% on capital expenditures.[42]

C. Universal Service Funding

Universal Service is the concept of providing all citizens access to telephone and broadband connectivity. Funding to provide access to telephone service to customers in high cost comes from the FCC's Universal Services Fund which is itself funded from providers of telecommunication services based on an assessment of the interstate and international revenues. The USF has evolved to include support for both telephone and broadband and is now referred to as the Connect America Fund (CAF). Despite such funding, however, some local exchange providers find it difficult to provide and maintain telephone and broadband services with their existing revenue stream. To provide support for universal service a number of states have established their own state universal service fund to provide additional funding. The structure of the funds (eligibility, assessments, criteria etc.) varies by state. [redacted]

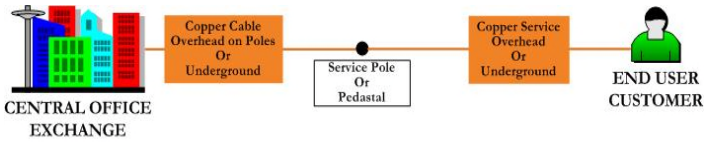
IV. Current Status and Condition of Frontier's Copper Network in West Virginia

A. Background and Perspective

Elements of a Copper Network

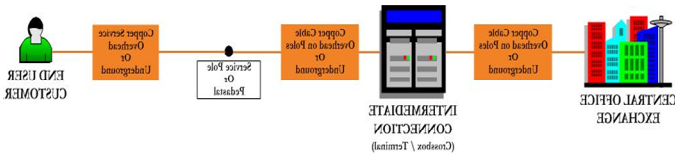
Elements of a Simplified Direct Copper Telephone Network with direct connection between the Central Office Exchange and the customer's service pole or pedestal are shown in *Exhibit IV-1*. *Exhibit IV-2* provides the elements of a Copper Network where the connection between the Central Office Exchange and the customer is routed through an intermediate connection point. Various components (equipment) are housed within the Central Office and Intermediate Connection elements that are required for network operations. The Frontier WV and CDC (FTR) copper network contains the presented elements with various components.[43]

Exhibit IV-1
Simplified Direct Copper Network



Source: Consultant Creation

Exhibit IV-2
Simplified Indirect Copper Telephone Network



Source: Consultant Creation

As can be seen in *Exhibit IV-2*, numerous categories of assets are used to get POTS (Plain Old Telephone Service) connection between the Central Office and the customer. As requested, Frontier provided 55 GIS (Geographic Information System) files, one for each West Virginia County, that were used in assessing the condition of the copper network.[44]

Copper conductor, connected to various electrical and electronic components, is the pathway between the customer and the Central Office as shown in *Exhibit IV-2*. The conductor may be overhead attached to poles or underground either direct buried or placed in conduit. The conductor can also be used as feeder distribution or service drops to customers.[45]

Frontier's GIS copper conductor file contained [redacted] records for [redacted] miles of conductor. [redacted] records ([redacted] miles) were labeled as abandoned and excluded from the analysis. [redacted] records ([redacted] miles) were labeled as service drops and also excluded from the profile. [redacted] records ([redacted] miles) were used for the Copper Network Analysis.[46]

Historically, POTS (Plain Old Telephone Service) has been provided to customers using a network built with copper conductors that uses analog technology. Recently, digital and wireless technology has replaced analog technology but a copper network has limitations in its capability to use digital technology. Because of the limited capability, communications companies have to operate and maintain legacy copper networks for POTS. Frontier's legacy copper network is shown in *REDACTED* Exhibit IV-3.[47]

REDACTED Exhibit IV-3
Frontier WV Legacy Copper Network
November, 2019

Source: Information Response 93 and Consultant Analysis

As digital capability advanced with fiber optic technology, communication companies overlaid their copper networks with fiber cable to extend digital technology out from their central offices. *REDACTED* Exhibit IV-4 shows Frontier's [redacted] mile fiber cable overlay on its copper network.[48]

REDACTED Exhibit IV-4
Frontier WV Fiber Overlay on Copper Network
November, 2019

Source: Information Response 93 and Consultant Analysis

This allowed communication companies to provide limited DSL (Digital Subscriber Line) broadband internet service from their copper network depending on the distance the customer was located from the digital signal equipment. Over the years, Frontier WV, as other communication companies, experienced loss of POTS customers, to wireless telephone service providers, from a copper network that had the capacity for [redacted]

REDACTED Exhibit IV-5 through *REDACTED* Exhibit IV-8 shows by county: the county name; the number of Central Offices in the county; the number of lines from the central offices; [redacted]. "*It must be noted that customers served from a central office may actually be located in an adjacent county.*"[50]

REDACTED Exhibit IV-5
County, Number of Central Offices, Number of Lines, [redacted]
Southern West Virginia Counties
June, 2019

Source: Information Responses 15 and 99 and Consultant Analysis

REDACTED Exhibit IV-6
County, Number of Central Offices, Number of Lines, [redacted]
Central West Virginia Counties
June, 2019

Source: Information Responses 15 and 99 and Consultant Analysis

REDACTED Exhibit IV-7
County, Number of Central Offices, Number of Lines, [redacted]
Northern West Virginia Counties
June, 2019

Source: Information Responses 15 and 99 and Consultant Analysis

REDACTED Exhibit IV-8
County, Number of Central Offices, Number of Lines, [redacted]
Eastern West Virginia Counties
June, 2019

Source: Information Responses 15 and 99 and Consultant Analysis

Copper Network Assets

Copper Cable

[redacted] miles ([redacted] records) of Frontier's copper cable is aerial, [redacted] miles ([redacted] records) is direct buried and underground in conduit, and [redacted] miles ([redacted] records) is labeled as UNKNOWN placement.[51]

[redacted] records ([redacted] miles) of the data had NO INSTALL date. [redacted] miles ([redacted] records) indicate a FUTURE INSTALL date in the future after 2019. [redacted] records ([redacted] miles) indicate an EXCESSIVE INSTALL date prior to 1919 (age greater than [redacted] years). Excluding the NO INSTALL, FUTURE INSTALL, and EXCESSIVE INSTALL date records, [redacted] miles ([redacted] records) was used to create the age profile shown in *REDACTED* Exhibit IV-9.[52]

[redacted] ([redacted]) percent of the conductor in the profile is less than [redacted] years old. The profile indicates spikes in copper cable installations in 1974 and 1983 ([redacted] and [redacted] years in age respectively). [redacted]% of the copper conductor is between [redacted] and [redacted] years old.[53]

REDACTED Exhibit IV-9
Copper Cable Asset Age Profile
November, 2019

Source: Information Response 93 and Consultant Analysis

Any electrically connected circuit has numerous points where connections are made. As systems and networks age, all of the connection points have the potential to cause service interruptions. Frontier, in addition to Central Office Wire Centers, has:[54]

- [redacted] Overhead Splices;
- [redacted] Terminals;
- [redacted] Crossboxes; and
- [redacted] Pedestals.

Overhead Splices

A minimal number of splices are installed during original installation of copper conductor. Later, splices have to be added as repairs are made. As the facilities age, more and more splices, as shown in *Exhibit IV-10*, are added. No installation date data was available for splices.[55]

Exhibit IV-10
Example Splices
October 2019 and January 2020

Source: Interviews 6 and 22

Currently, there are [redacted] splices in Frontier's network with [redacted] miles of copper cable for a system average of [redacted] splices per mile. Ohio County had the highest splices per mile at [redacted]. Hampshire County had the lowest splices per mile at [redacted].[56]

Using the system average splices per mile of [redacted] as the base, *REDACTED* Exhibit IV-11 shows difference between a county's splices per mile and the base.[57]

Splices per Mile Deviation = [redacted]

Green shaded counties indicate splices per mile less than the base and **Red** shaded indicates values greater than the base.[58]

REDACTED Exhibit IV-11
WV County Deviation from System Base
Splices per Mile
November, 2019

Source: Information Response 93 and Consultant Analysis

Terminals

Terminals, examples of which are shown in *Exhibit IV-12*, generally are aerially mounted and used to created connection points from the main copper cables to serve customers.[59]

Exhibit IV-12
Example Terminals
October, 2019 and January, 2020

Source: Interviews 5 and 22

REDACTED Exhibit IV-13 provides the number by county of the total [redacted] Frontier terminals in West Virginias. [redacted] County has the least number at [redacted]. [redacted] County has the most terminals at [redacted].[60]

REDACTED Exhibit IV-13
Frontier WV Terminals
November, 2019

Source: Information Response 93 and Consultant Analysis

Crossboxes

In addition to terminals, crossboxes are used as intermediate connection points between the central office wire center and the customer service point. As seen in *Exhibit IV-14*, crossboxes are larger sized enclosures setting on the ground and may also house electronic equipment. No installation date data was available for crossboxes.[61]

Exhibit IV-14
Example Crossboxes
October, 2019 and January, 2020

Source: Interviews 5 and 22

Frontier has [redacted] crossboxes as shown in *REDACTED* Exhibit IV-15. The median number of crossboxes ([redacted]) occurs in [redacted], [redacted], and [redacted] Counties. [redacted] County [redacted] has the highest number of crossboxes at [redacted]. [redacted] County, at [redacted], has the least number of crossboxes.[62]

REDACTED Exhibit IV-15
Frontier WV Crossboxes
November, 2019

Source: Information Response 93 and Consultant Analysis

Pedestals

Pedestals, generally located on/or under the ground as shown in *Exhibit IV-16*, serve as the connection point of the customer's service to the communications network.[63] Frontier WV has [redacted] pedestals as shown by county in *REDACTED* Exhibit IV-17.[64]

Exhibit IV-16
Example Pedestal
November, 2019

Source: Interview 5

REDACTED Exhibit IV-17
Frontier WV Pedestals
November, 2019

Source: Information Response 93 and Consultant Analysis

Even though there is no installation date data available for splices, terminals, crossboxes, and pedestals, it would seem logical to assume the age profiles of the components is similar to the age profile of the copper cable.[65]

Batteries

Batteries are an integral part of Frontier WV's copper telephone network. They may be located in a building or a remote terminal. There are [redacted] unique sites in which batteries are located[66]. The locations of the batteries are kept on a spread sheet. A sample of the spread sheet is shown in *REDACTED* Exhibit IV-18.[67]

REDACTED Exhibit IV-18
Battery Locations
December, 2019

Source: Information Response 135

Batteries provide backup power to all of these sites where power is required to operate equipment located there should there be a power outage. Without backup power, the equipment will shut down and any customer served from that location would lose telephone service. Loss of service would place customers in harm's way since they would not be able to contact emergency services such as police, fire or medical.[68]

There is no centralized database that contains the battery inspection records. Inspection result are maintained in the battery hut or at the local office.[69]

Technicians are trained to inspect batteries whenever they work at a site that has batteries and report unsafe or damaged equipment. In addition Batteries are tested quarterly[70]. Technicians identify batteries for possible replacement to Engineering. Engineering then has any additional testing performed and determines the need for replacement. If a replacement is justified, Engineering will create a project for funding.[71]

The following shows the number of batteries at each stage of this evaluation and replacement process presently in engineering[72]:

- Submitted to engineering [redacted]
- Accepted by engineering [redacted]
- Accepted and in Progress [redacted]
- Additional information required [redacted]
- Revision submitted to engineering [redacted]

- Projects completed [redacted]
- Requests deferred to next year [redacted]
- Requests denied by engineering [redacted]
- Canceled [redacted]

Engineering maintains a detailed spread sheet to track the status of all battery work orders. *REDACTED* Exhibit IV-19 displays an edited version of the spread sheet showing some of the information kept for each project. Of note, who submitted the request, when the request was submitted and the project is critical or routine are some of the data that is captured.[73]

REDACTED Exhibit IV-19
Battery Project Status
December, 2019

Source: Information Response 135

In addition, when the commercial power goes out at a site the equipment is then powered by the batteries. The site sends an alarm to the National Operations Center indicating that the site is on battery power for awareness and action if necessary. The goal is to have batteries that will support a site for 8 hours. The site will operate without interruption until the commercial power is restored or until the battery depletes its reserve. If the cause of the commercial power outage is expected to be of long duration, then Operations identifies which sites are on battery power and sets up a schedule for deploying portable generators to recharge the batteries and power the site[74]. A re-fueling schedule is set up for the generators if required.

Corrective Maintenance of the Copper Network

Consultants observed numerous facilities needing corrective maintenance during their ride-alongs with field technicians as shown in *Exhibit IV-20*.[75]

Exhibit IV-20
Example Corrective Maintenance Observations
October & December, 2019

Source: Interview 6, 18/19, and 22

The VX Field Work Management System, discussed in the Dispatching section below, has a major shortcoming in that it does not easily enable the dispatcher to dispatch company originated repair work. Dispatchers can create a repair order sent by the National Operations Center via an alarm[76]. However, field trouble observed by a Technician, such as the type shown in *Exhibit IV-20*, cannot be reported back through the system. Technicians are the first line of defense for spotting trouble in the field.

Technicians are supposed to report corrective maintenance issues to their local manager who then keeps a file on this type of work and assigns it when the opportunity arises. There is a procedure to capture corrective work that was observed in use by Central Office technicians and managers. It is the Preventative Plant Maintenance (PPM) system that managers and technicians can enter tickets into;[77] however it does not appear to be a practice that has been followed in the field. This is an easy way to capture this work, store it in a data base and dispatch it for repair. Frontier has recognized this issue and

is in the process of requiring managers to enter [redacted] work orders a week into the PPM system. It will still require manual intervention to get the PPM ticket into the hands of a Technician but Frontier is planning to roll out a replacement system for PPM that will interface with VX Field and enable company originated trouble tickets and scheduled preventative maintenance to be electronically dispatched to field technicians using the VX system.[78]

After the Consultant field visits, Frontier WV began the implementation in the last quarter of 2019 of a PPM as documented in *REDACTED* Exhibit IV-21 through *REDACTED* Exhibit IV-24.[79]

REDACTED Exhibit IV-21
Frontier WV PPM Policy and Procedure
Page 1
as of December 31, 2019

Source: Information Response 80

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REDACTED Exhibit IV-22
Frontier WV PPM Policy and Procedure
Page 2
as of December 31, 2019

Source: Information Response 80

REDACTED Exhibit IV-23
Frontier WV PPM Policy and Procedure
Page 3
as of December 31, 2019

Source: Information Response 80

REDACTED Exhibit IV-24
Frontier WV PPM Policy and Procedure
Page 4
as of December 31, 2019

Source: Information Response 80

VX Field also captures a large amount of data about the repair ticket as discussed in Copper Network Interruptions Section below but does not track trouble down to the piece of cable or equipment.[80] This data can be used to analyze causes of trouble and what equipment is most susceptible to what types of trouble. Frontier tracks customer trouble report rates (CTRR) at the central office level, repeat ticket activity and trouble causation[81]. It does not track trouble down to individual cables or equipment. It is felt this is an area that can be improved. If specific cables and or specific hardware can be identified as a source of trouble than Frontier could more easily make proactive repair or replace decisions knowing what specific pieces of equipment at the operations center were the cause of trouble.

Tree Trimming

Consultants, during the ride alongs, observed numerous locations where tree obscured copper and fiber lines as illustrated in *Exhibit IV-25*.[82]

Exhibit IV-25
Typical Tree Obstruction
December, 2019

Source: Interviews 18 - 19

Frontier WV, as well as most communications companies, has not had a formal tree trimming program because communication cables are jacketed and insulated from contact. Construction crews perform tree trimming as needed.[83]

A Schumaker & Company consultant observed, during a ride-along, a Frontier WV Construction Crew called in by a Repair Tech to trim a tree, so the Tech could make repairs to correct a customer service issue.[84]

Pole Assets

Frontier Communications of West Virginia (Frontier) provided the Consultants with a copy of the database that is maintained to track the poles and towers to which the company attaches its aerial assets. The database indicated Frontier attaches to [redacted] poles and [redacted] towers.[85]

Pole and Tower Ownership

The [redacted] towers are owned by 4 different companies:

- AT&T
- Frontier
- US Cellular
- Verizon [redacted]

The 36 different owners of the [redacted] poles are displayed in *Exhibit IV-26* with Frontier ownership highlighted. The owners of [redacted]% ([redacted]) of the poles are shown in *REDACTED* **Exhibit IV-27** and the owners of the remaining [redacted]% ([redacted]) are shown in *REDACTED* **Exhibit IV-28**.[86]

Exhibit IV-26
Owners of Poles Contacted by Frontier
October, 2019

AEP	MERCER
AEPCO	MON POWER
AP	MONONGAHELA POWER CO
ARMSTRONG TELCO	MP
BLACK DIAMOND POWER CO	NMP
CABLE TV	OTHER TEL
CITIZENS	PHILIPPI MUNICIPAL ELECTRIC
CUSTOMER	POTOMAC EDISON
FIRST ENERGY	POWER
FRONTIER	POWER CO
FTR/AEPCO	PVT
FTR/MP	QWEST
H	RGE
HARRISON RURAL ELEC ASSN, INC	SRE
J-AEP	T
J-CABLE TV	THE POTOMAC EDISON COMPANY
J-POWER CO	UNKUSER
LUMOS	X

Source: Information Response 44

REDACTED Exhibit IV-27
Ownership of [redacted]% of Frontier Contacted Poles
October, 2019

Source: Information Response 44

REDACTED Exhibit IV-28
Ownership of [redacted]% of Frontier Contacted Poles
October, 2019

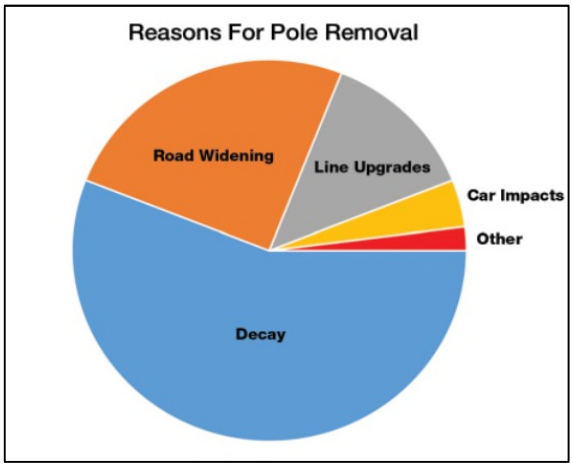
Source: Information Response 44

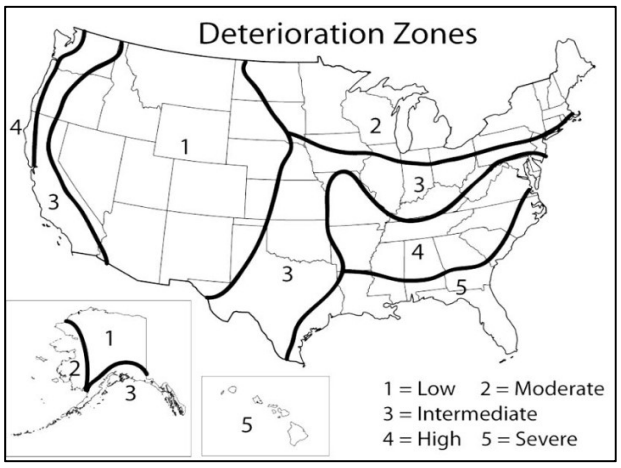
Frontier Pole Inspection and Maintenance

From the "2016 Estimated Life of Wood Poles" study, *Exhibit IV-29* indicates that 56% of pole removals are caused by pole decay across all decay deterioration zones. Frontier pole assets are located in Intermediate (3) and High (4) deterioration zones.[87]

The study also indicates that, based on a study of 751,000, the predicted service life for poles nationwide is 45 years without treatment, and ranged from 40 years in zone 5 to 56.8 years in zone 1.[88]

Exhibit IV-29
Pole Removal / Replacement
March, 2016





Source: https://woodpoles.org/portals/2/documents/TB_ServiceLife.pdf

In order to extend the asset life of wood poles, many electric utility companies use a Typical 10 year Pole Inspection and Treatment Program (one-tenth of poles inspected each year for 10 years and then the cycle starts over). Frontier WV does not use a typical pole inspection program, but uses a pole inspection process as described in *Exhibit IV-30*.[89]

Exhibit IV-30
Frontier WV Pole Inspection Process
Early 1990 through March, 2020

Frontier's current practices for the inspection and treatment of its poles have been in place since the early 1990s when Frontier was part of Bell Atlantic. These practices require a Frontier tech to both visually inspect a pole and test it for soundness before performing any work on the pole. Any pole that has an unsafe condition or is unsound is replaced. In addition, Frontier's routinely replaces poles whenever local officials or residents call to report unsafe conditions. Frontier's experience in other states shows that having a separate program to test and treat poles does not provide any benefit either financially or in terms of improving service quality or reducing risk or liability. Indeed, Frontier established its current pole inspection and treatment practices in West Virginia decades before the current service quality issues arose.

Source: 03/06/2020 E-mail - Subject "Follow-up to meeting with Staff last Week"

Frontier Solely and Jointly Owned Pole Age

There were [redacted] pole records with the ownership highlighted in *Exhibit IV-26*. [redacted] poles were eliminated from the pole age analysis because:

- [redacted] of the records did not have an install year;
- [redacted] records had an install year earlier than [redacted] (age greater than [redacted]); and
- [redacted] records had an install year after 2019 (negative age).

The age profile of the remaining [redacted] poles is shown in *REDACTED* **Exhibit IV-31**.[90]

REDACTED Exhibit IV-31
Frontier Pole Asset Age Profile
October, 2019

Source: Information Response 44

REDACTED **Exhibit IV-31** indicates that the weighted average age of Frontier poles is [redacted] years. [redacted] ([redacted]%) of the poles in the analysis dataset are more than [redacted] years old. Applying the [redacted]% to the poles excluded from the analysis dataset indicates that the total number of Frontier poles in excess of [redacted] years of age may be as high as [redacted] ([redacted] + [redacted]).[91]

Non-Removed Poles

During ride alongs with technicians, Consultants observed numerous instances of side-by-side poles such as shown in *Exhibit IV-32*. These situations occur when a pole that Frontier WV contacts is replaced and the pole is not removed after all facilities on the old pole has been transferred to the new pole.[92]

The pole may or may not be owned by Frontier WV. If the pole is not owned by Frontier WV, joint use agreements between Frontier and the owning company generally documents which company is responsible for pole removal after transfer of facilities.[93]

Frontier's Construction Crews are responsible for installation and removal of Frontier owned poles. Work for construction crews is scheduled from the backlog of work in Frontier's "Varasset" construction management system. Interviews indicated that there is not a process to assure all pole removal jobs have been entered in the "Varasset" system.[94]

Exhibit IV-32
Example Non-Removed Pole
October, 2019

Source: Interview 5

Work Dispatching

Background and Perspective

A Schumaker & Company consultant observed the Dispatching Operation in Connecticut for 6 hours and the dispatcher was very knowledgeable and proficient at using the system.[95] Work for the day, as well as future dated work and work backlog (customer originated), was observed. Future dated customer originated work is in the system as long as there is a date due.

Customer originated work is received in call centers located outside West Virginia and routed to the VX Field Dispatch system used throughout Frontier Communications. The VX Field dispatch system contains all of Frontier WV's work orders which can be executed and dispatched by any dispatcher in any location.[96]

The dispatch center in Connecticut handles the dispatching of Frontier WV.'s [redacted]

[redacted]

There are Three National Teams that work with Dispatching and provide input to the VX Field System:[99]

- Forecasting;
- Capacity Planning; and
- Resource Planning.

The National Forecasting Team just started up in March 2019 and produces forecasts that are based on 20 years of historical data that provides input to the Capacity Planning team. [redacted]

Capacity Planning uses [redacted] and runs this information through an algorithm that produces [redacted] Report [redacted] Exhibit IV-33 [redacted] to match the forecast for a geographic area to the resources that are responsible for the completion of work in that area. [redacted]

REDACTED Exhibit IV-33
Typical [redacted]
November, 2019

Source: Information Response 113

[redacted]

Exhibit IV-33

[redacted]

REDACTED Exhibit IV-34
[redacted]
November, 2019

Source: Information Response 116

The Capacity team then determines how many technicians need to be assigned [redacted] to handle the forecasted work load. [redacted]

The role of the Resource Planning is to populate the [redacted] with employees available to work on a given day. They remove employees that are sick, on vacation or absent for any reason so that when the dispatcher views the "board" it only shows employees scheduled to work in each push group. However, things happen on the work day such as last minute absences, truck break down, emergencies requiring the local manager to pull the technician off of customer originated work for the day. On average about [redacted]% of the technicians are not available on any given day. In those cases, the dispatcher makes adjustments real time on the VX system while in communication with the local manager.[104]

REDACTED Exhibit IV-35 shows one of the "Boards" the Dispatchers have at their disposal that shows [redacted].

REDACTED Exhibit IV-35
Dispatch Board
November, 2019

Source: Information Response 110

Including medical emergencies, work orders are prioritized based on point system incorporated into the VX field system. *REDACTED* Exhibit IV-36 provides an overview of Frontier WV's Policy on Medical Emergency Priority Status.

REDACTED Exhibit IV-37*REDACTED* Exhibit IV-37 through *REDACTED* Exhibit IV-39 shows Frontier WV's Procedure for flagging accounts for customer medical conditions.[106] Procedure for flagging accounts for customer medical conditions.[107]

REDACTED Exhibit IV-36
Frontier WV Medical Emergency Priority Status
Overview
as of January, 2020

Source: Information Response 138-004

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REDACTED Exhibit IV-37
Frontier WV Health Condition Tag on Customer Account
Policy and Procedure- Page 1
as of February, 2020

Source: Information Response 138-001

s

REDACTED Exhibit IV-38
Frontier WV Health Condition Tag on Customer Account
Policy and Procedure- Page 2
as of February, 2020

Source: Information Response 138-001

REDACTED Exhibit IV-39
Frontier WV Health Condition Tag on Customer Account
Policy and Procedure- Page 3
as of February, 2020

Source: Information Response 138-001

Frontier WV provided a clarification about VX Field's role in the Medical Alert Process as shown in *REDACTED* Exhibit IV-40. Dispatchers told the Schumaker & Company consultant that highest priority is given to requests with medical alerts dispatched to field personnel.[108]

REDACTED Exhibit IV-40
Frontier WV Clarification
VX Field Role in Medical Alerts
March, 2020

Source: 03/06/2020 E-mail - Subject "Follow-up to meeting with Staff last Week"

The VX Field system loads the work orders into the technicians que [redacted].

[redacted]

Dispatch for West Virginia was moved to Connecticut in December of 2018 and there are some issues still being worked out. The Frontier WV and Connecticut Dispatch Teams are getting used to working together and getting better at it. There is extensive training and a training manual for Dispatchers.[109]

There are some union rules that add to the difficulty in Frontier WV:[110]

- There is an [redacted] limitation on overtime per tech. If more that that is needed it requires notification to the union officers. There is a max overtime level of [redacted] hours per week per tech.
- There is a rule that allows [redacted]% of the techs off at any given time. However, technicians can call in for a day off for any reason at any given time in the CWA.
- Cannot move IBEW techs into CWA areas and vice versa.
- Liberal sick leave
- CWA does not allow contractors to do fiber work in their territory which creates workload issues.
- [redacted] mile rule. Cannot move techs more than [redacted] miles past the distance the tech travels from his house to his current reporting location.

The VX field system is an excellent tool for dispatching customer originated work. It is actually a work order management system that is used to dispatch customer originated work. It captures and produces "productivity" for each technician an example of which is shown in *REDACTED* Exhibit IV-41. The year, month, level down to the manager. [redacted].[111]

REDACTED Exhibit IV-41
Redacted Technician Scorecard
January 2018

Source: Information Response 58

Copper Network Interruptions

The number of assets in a copper network, as shown in *REDACTED* Exhibit IV-3, creates the potential for numerous network interruptions particularly as the assets age. Frontier WV (FTR) has a trouble reporting process that uses:

- [redacted] different Trouble Ticket Codes for Call Center employees to classify the trouble to a service the customer receives before a trouble repair order is electronically sent to the repair technician in the field (e.g. PD – POTS and DSL Trouble);
- [redacted] different Asset (Plant) codes for a field technician to record the Asset (Plant) class of the piece of equipment where the cause of the trouble occurred (e.g. [redacted]– SPLICE CASE, [redacted]– CONDUCTOR);
- [redacted] different Cause Codes for a field technician to record the cause of the trouble after he/she diagnoses and repairs the trouble (e.g. [redacted]—CORRISION, [redacted]---BAD SECTION;
- [redacted] different Fault Codes for a field technician to record the condition found that was responsible for the trouble (e.g. [redacted]—Open, [redacted]---Shorted);
- [redacted] different Action Codes for a field technician to record the action he/she took to resolve the trouble issue (e.g. [redacted]—Trouble Cleared, [redacted]—Changed Cable Pair).[112]

REDACTED Exhibit IV-42 indicates that over [redacted]% of the causes of trouble calls between September, 2016 and August, 2019 were classified as:

- CORROSION;
- Worn;
- BAD CABLE PAIR; and
- BAD SECTIONS.

These four causes, in addition to others shown in *REDACTED* Exhibit IV-42, are indicators of the condition of the copper network due to age and lack of maintenance.[113]

REDACTED Exhibit IV-42
Wire Center Trouble Causes
September 2016 through August 2019

Source: Information Response 51[114]

Trouble Report Rates

Since *REDACTED* Exhibit IV-42 indicates that significant numbers of trouble calls are caused by the condition of the copper network, an insight as to the condition of the network by wire center gained from reviewing the Wire Center Trouble Report Rates and the Repeat Trouble Repeat Rates defined as:

- **Monthly Wire Center Trouble Report Rate** = Monthly Trouble Calls / Monthly Active Lines
- **Monthly Wire Center Repeat Trouble Rate =** Number Trouble Calls for Same Issue within [redacted] days / Monthly Active Lines

[redacted]months ([redacted] through [redacted]) of monthly trouble report rates were averaged to create a Wire Center Average Trouble Report Rate for each of 222 Wire Centers. Similarly, the monthly Repeat Trouble Report Rates were averaged to create a Wire Center Average Repeat Trouble Report Rate.[115]

The Average Wire Center Trouble Report Rate for all 222 Wire Centers were averaged to create a System Average Trouble Report Rate. Likewise, a System Average Repeat Trouble Rate was created.[116]

The Deviation of the Wire Center Average from the System Average Rates provides an indication of the condition of the Wire Center Copper Network compared to the average condition of the total network.[117]

The top [redacted] best trouble rate performing Wire Centers and the [redacted] worst trouble rate performing wire centers are given in *REDACTED* Exhibit IV-43. The [redacted] Wire Center was the best performer and the [redacted], WV Wire Center was the worst performer. [redacted] of the [redacted] best performing centers were part of FTR WV with the remaining [redacted] CTC WV. [redacted] of the [redacted] worst performing centers were part of FTR WV and the remaining [redacted] were CTC WV[118]

REDACTED Exhibit IV-43
Average Best and Worst Trouble Rate Deviation Wire Centers
January, 2016 through December, 2019

Best Performing Trouble Dev Rate Wire Centers

Worst Performing Trouble Dev Rate Wire Centers

Source: Information Response 5

The Trouble Rate Deviation for all Wire Centers are grouped by best performing (**blue dots**) and worst performing (**orange dots**) and displayed on a county background in *REDACTED* Exhibit IV-44. The legend indicates that **large blue** dots indicate the best performing Wire Centers with deviation between -[redacted] and -[redacted] below the system average deviation of [redacted]. The large **orange dots** indicate the worst performing Wire Centers with deviation between +[redacted] and +[redacted] above the system deviation of [redacted].[119]

REDACTED Exhibit IV-44
Wire Center Trouble Deviation Performance
January, 2016 – December, 2019

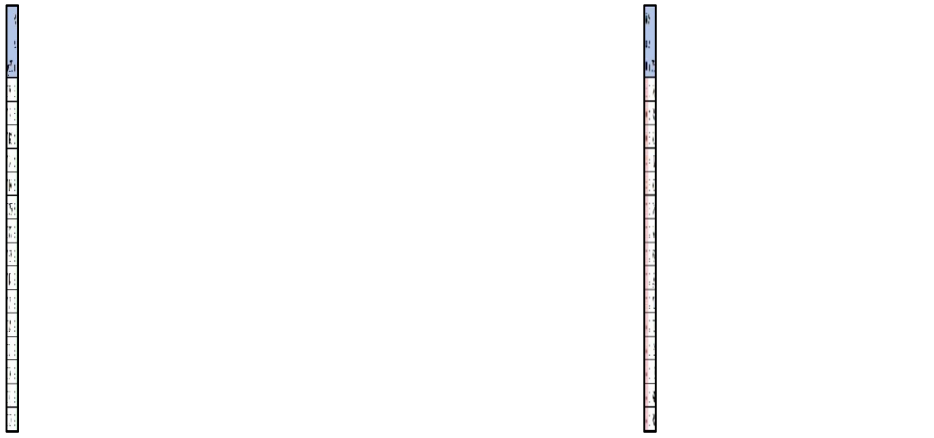
Source: Information Response 5, Google Maps, QGIS, and Consultant Analysis

Repeat Trouble Report Rates

Perhaps the Repeat Deviation Rate is a better indicator of asset conditions because of the repetitive trouble calls caused by the same group of assets. *REDACTED* Exhibit IV-45 shows the [redacted] Best and Worst Wire Centers based of Repeat Rate Deviation. [redacted], WV Wire Center had the best Repeat Rate Deviation and the [redacted], WV center had the Worst repeat deviation. [redacted] of the [redacted] best performers were CTC WV with [redacted] FTR WV. [redacted] ([redacted]) of the [redacted] worst center were FTR WV and [redacted] CTC WV.[120]

REDACTED Exhibit IV-45
Average Best and Worst Repeat Rate Deviation Wire Centers
January, 2016 through June, 2019

Best Performing Repeat Dev Rate Wire Centers **Worst Performing Repeat Dev Rate Wire Centers**



Source: Information Response 6

REDACTED Exhibit IV-46 shows the Repeat Trouble Rate Deviation for all Wire Centers with **green dots** giving the locations of the best performing center and **red dots** displaying the worst performing centers. The best performing ranged from **-** [redacted] **to** [redacted]. The worst performing ranged from [redacted] **to** [redacted].[121]

REDACTED Exhibit IV-46
Wire Center Repeat Trouble Deviation Performance
January, 2016 – June, 2019

Source: Information Response 5, Google Maps, QGIS, and Consultant Analysis

B. Findings and Conclusions

Finding IV-1 **Frontier WV has to operate and maintain a [redacted] mile copper cable network currently serving [redacted] customers that was originally constructed to serve over [redacted].**

REDACTED Exhibit IV-3 shows Frontier's copper network and *REDACTED* Exhibit IV-4 through *REDACTED* Exhibit IV-8 provide the number of lines in June, 2019.[122]

Finding IV-2 **Frontier WV operates and maintains [redacted] miles of fiber optic cable that provides digital capability [redacted].**

REDACTED Exhibit IV-4 shows Frontier's fiber optic cable and *REDACTED* Exhibit IV-4 through *REDACTED* Exhibit IV-8 provide the [redacted] in June, 2019.[123]

Finding IV-3 **[redacted] ([redacted]) percent of the Frontier WV's copper conductor s less than [redacted] years old with [redacted]% being [redacted] years old.**

REDACTED Exhibit IV-9 provides age data for [redacted] miles of copper conductor. It would not be unreasonable to assume the [redacted] miles of copper conductor with, no or inaccurate install dates, have similar age profiles.[124]

Finding IV-4 **Frontier WV's copper network has at least [redacted] connection points that are susceptible to moisture, corrosion, loose connections, etc. that may cause interruptions of service to customers.**

REDACTED Exhibit IV-11, *REDACTED* Exhibit IV-13, *REDACTED* Exhibit IV-15, and *REDACTED* Exhibit IV-17 provides the locations of the connection points.[125]

Finding IV-5 **Frontier WV has a pro-active process to inspect, test, and replace, if necessary, battery assets in a timely manner.**

The company has routine inspections, testing, and alarms to identify emergent issues including a process to sustain backup power in the case of emergencies. In addition, *REDACTED* Exhibit IV-19 indicates that Frontier WV has a process for replacement of batteries.[126]

Finding IV-6 **Frontier WV battery assets are not tracked in its GIS.**

Battery Assets critical to network operations are tracked using a spreadsheet as shown in *REDACTED* Exhibit IV-18.[127]

Finding IV-7 **Frontier WV does not have a documented process for performing preventative and corrective maintenance.**

Interviews indicated that corrective maintenance jobs are not dispatched to field technicians from central dispatching and the manual assignment of corrective work is at the discretion of the local manager.[128]

Finding IV-8 **Frontier WV does not have a documented tree trimming policy and process.**

Even though communication cables have an insulation jacket, trees in contact with the cable will eventually wear off the insulation because of the movement of tree contact caused by wind. In addition "danger trees" prone to falling during storms have the potential to cause interruption of service.[129]

Finding IV-9 **Frontier's ownership records within its pole asset database are deficient.**

It is obvious from *Exhibit IV-26* that ownership data for solely or jointly owned poles contacted by Frontier are not standardized. As an example: AEP, AEPCO, AP are all AEP. POWER could be any of a number of specific electric utilities. Non-standard data elements are a common consequence of combining legacy databases.[130]

Finding IV-10 **Frontier does not use a pro-active based Pole Inspection Process.**

Exhibit IV-30 and interviews indicate that Frontier WV replaces deficient poles only when reported by Field Technicians and/or the Public.[131]

Finding IV-11 **Frontier WV may have to replace a significant number of poles in future years.**

Frontier has as many as [redacted] poles in excess of [redacted] years of age. Frontier has not had a pole inspection program that detects poles that do not meet strength requirements for a number of years. This lack of knowledge about the condition of the pole population may have created a significant backlog of poles that need to be replaced.

Finding IV-12 **Frontier WV does not have a documented process to monitor the status of its poles that need to be removed after the facilities of all companies contacting the pole have been removed.**

Field observations and interviews confirmed the lack of a process.[132]

Finding IV-13 **VX Field does not facilitate the dispatching of company originated repair or maintenance work.**

Currently there is no easy way a company originated scheduled maintenance or trouble repair ticket can move from PPM or a technician into VX Field for dispatch.[133]

Finding IV-14 **VX Field does not capture the unique piece of equipment associated with the cause of trouble.**

VX Field identifies the equipment type such as cable, splice, or pole. It does not specify which splice, or cable.[134]

Finding IV-15 **Frontier WV Call Centers (Central Offices) with the best trouble report rate performances seem to be located in Northern West Virginia.**

REDACTED Exhibit IV-43 lists the Call Centers with the best performance and *REDACTED* Exhibit IV-44 shows the locations by county of the list.

Finding IV-16 **The worst Repeat Trouble Rate performance seems to occur in Frontier WV Call Centers located in the southern part of the state.**

Call Center Repeat Rate Performance shown in *REDACTED* Exhibit IV-46 indicates a large number of centers with the wort performance are located in the southern part of the state.

C. Recommendations

Recommendation IV-1 **Frontier needs to implement the replacement for PPM that will interface with VX-Field. (Refer to Finding IV-7.)**

Frontier is planning to roll out a replacement system for PPM that will interface with VX Field and enable company originated preventative maintenance and trouble tickets to be electronically sent to a repository and then to the dispatch system when resources are available. Frontier needs to set a schedule and follow through on the implementation.[135]

Recommendation IV-2 **Enable VX-Field to capture the specific piece of equipment or location of the source of trouble via GIS or enhancements to the VX-Field program. (Refer to Finding IV-14.)**

Frontier tracks customer Trouble Report Rates, Repeat Trouble Report Rates and trouble causation at the Central Office level.[136]. It does not track trouble down to individual cables or equipment which makes root cause analysis of trouble difficult. Interfacing trouble ticket information (Equipment ID) and Location with Frontier's outside plant Geographic Information System (FROGS) with enable the creation of "layer" in the system that displays all trouble and repair orders geographically linked to

specific equipment or cable. This will enable Frontier WV to focus on trouble hot spots in the copper network and greatly facilitate root cause analysis of trouble.[137]

Recommendation IV-3 **Frontier WV should evaluate the extension of fiber optic digital capability to each of its crossboxes not only based on return on investment but also the reduction in potential interruptions [redacted]. (Refer to Finding IV-4.)**

Extension of fiber optic paths from the central office to crossboxes bypasses major sections of the legacy copper distribution network which eliminates a significant number of points of potential interruptions[redacted]

Recommendation IV-4 **Frontier WV should track its Battery Assets within its GIS and use the PPM System to track preventative maintenance performed. (Refer to Finding IV-6.)**

Integrating battery assets into the GIS data provides a more complete critical path for service to its customers. Tying battery inspection and maintenance records to the specific asset provides additional data to evaluate the performance of the network.[139]

Recommendation IV-5 **Frontier WV should consider developing and implementing a "Hot Spot" tree trimming program. (Refer to Finding IV-8.)**

A "Hot Spot" tree trimming program would only address the worst tree situation and should result in fewer interruptions caused by tree and worn insulation on the cables.

Recommendation IV-6 **Develop and execute a plan to standardize the data stored within the pole asset database. (Refer to Finding IV-9.)**

While deficient pole asset records may not have a significant impact on customer service, it may impact on decisions about:[140]

- Maintenance Responsibility;
- Liability;
- Joint Ownership Agreements; and
- Joint Use Agreements.

Recommendation IV-7 **Frontier should consider doing a random sample inspection of poles identified to be [redacted] or more years old with internal resources and use the results to make decisions about planned pole replacements versus unplanned replacements and possible liability costs. (Refer to Finding IV-10 and Finding IV-11)**

A random sample size of [redacted] from a population of approximately [redacted] poles in excess of [redacted] years of age would provide a Confidence Level of [redacted]% with a Confidence Interval of [redacted] for the results. If these parameters are used and [redacted]% of the sample poles need to be replaced, then there is a [redacted]% confidence that [redacted]% - [redacted]% of the total population of [redacted] poles need to be replaced.[141]

Recommendation IV-8 **Pending results from Recommendation IV-7, Frontier should program, within its Capital Budget, funds to address below average conditions of its pole assets. (Refer to Finding IV-11.)**

An Inspection and Treatment Program will reveal conditions that with have to be corrected using capital dollar resources. The amount of capital dollar resources will likely increase as more and more poles are inspected if no inspection has been done for a number of years.[142]

V. Staffing

Staffing within Frontier West Virginia is somewhat unique since a significant number of functions are handled, staffed and or supplemented at a corporate level[143] and are located outside of West Virginia. The staffing of these functions is outside the control of Frontier West Virginia. These services are provided to other Frontier companies as well.

An example of some of the services provided are those provided by The National Service Group is shown in *Exhibit V-1*.[144]

Exhibit V-1
National Service Group (NSG)
as of December 31, 2019

NSG is responsible for creating, modifying, and implementing national processes to support Operations. They provide ongoing process support, training, and assistance with compliance on existing processes in support of the business. This team is also responsible for representing the business on all IT system enhancements and projects. They provide requirements, user acceptance testing and sign off on all projects that are requested by or impact the Operations business. This team investigates issues in production and assists IT with correcting bugs and outages.

NSG tracks technician and LM performance/scorecards utilizing Spotfire and maintains a database of customer orders and tickets that may be queried for analytics. They provide ad hoc reporting to the field and management on all aspects of customer demand activity.

Source: Information Response 57

Specifically, there is a corporate group, Field Ops Service Group headed by a Senior Vice President that provides the following services for West Virginia Operations shown in *REDACTED* Exhibit V-2.[145]

REDACTED Exhibit V-2
SVP Operations, Field Ops Services Group
as of December 31, 2019

Source: Information Response 117

These services directly influence the staffing of field operations in West Virginia. [redacted]

Some of the other services provided nationally are call centers are located outside of West Virginia with the exception of the National After Hours call center located in Charleston, which handles all after hours calls (after 12 am) for the Frontier companies. The National Dispatch centers are located outside West Virginia as well as other corporate support services such as engineering, finance, information technology, and the National Operation centers. These are all staffed nationally and not under the purview of West Virginia management. The focus of this chapter will be limited to the West Virginia Operations Group and West Virginia Engineering Group located in West Virginia and are dedicated to West Virginia operations.[150]

A. Engineering Staffing

Background and Perspective

Frontier West Virginia has reorganized its Engineering Department several times in the past few years. It was agreed that providing historical data on staffing would not be relevant[151]. The current organizational chart is shown below in *REDACTED* Exhibit V-3.[152]

REDACTED Exhibit V-3
Engineering Organization
as of December 31, 2019

Source: Information Response 61

[redacted] The organization chart indicates that the engineering employees are spread out throughout West Virginia at various locations which facilitates travel to jobs and/or customers and provides direct interface with local operations personnel.[153]

Frontier WV Engineering has an ageing workforce. The following chart in *Exhibit V-4* exhibits the criteria for retirement for Frontier West Virginia employees.[154]

Exhibit V-4
Retirement Criteria
as of December 31, 2019

Your Age	Net Credited Service service
Any age	30 years or more
At least age 50	25 years of more
At least age 55	20 years or more
At least age 60	15 years or more
At least age 65	10 years or more*

Source: E mail from Cassandra Guinness 1/22/20

Consultants were provided a listing of all Frontier WV represented employees with their years of service and age, an example of which is shown in *REDACTED* Exhibit V-5.[155]

REDACTED Exhibit V-5
Employee List
as of January 13, 2020

Source: Information Response 140

Using the information from *Exhibit V-4* and *REDACTED* Exhibit V-5, it was determined that [redacted]% of the engineering assistant B classification are eligible for retirement [redacted]. That number goes up to [redacted]%

within [redacted] years. Most ([redacted] of [redacted]) of the engineering assistant B classification employees are located within the Engineering Department. [redacted] the outside plant technicians (OSP) techs are retirement eligible [redacted]. The [redacted] is eligible [redacted]. [redacted] percent of the facility administrators are retirement eligible now and the number goes up to [redacted]% in [redacted] years.[156] That suggests that the Engineering Department, not counting supervision, may see an attrition rate around [redacted]% in the next [redacted] years. If this were to occur, Frontier WV Engineering would [redacted].

[redacted] The team's respective duties and responsibilities are shown below *REDACTED* Exhibit V-6.[158]

REDACTED Exhibit V-6
Engineering Teams
as of December 31, 2019

Source: Information Response 33

Engineering does not prepare capital budgets for West Virginia. Budgets are prepared by a Capital Budgeting group located in Minnesota[159] Engineering submits forecasts of capital needs to this group. Money is not a problem. West Virginia gets the money it needs to maintain the copper system as requested by the engineering group.[160] Engineering has several corporate tools to use when preparing forecasts of capital needs. One is a corporate program used to develop estimates of capital projects. It is called Infinium. Infinium is an enterprise solution suite that provides financial management, materials management, and human capital management solutions. Infinium is Frontiers' Enterprise Resource planning system. Frontier uses the Infinium system to manage various financial functions. [redacted]

[redacted] A second corporate tool is the Defective Cable Reporting (DCR) in Varasset.[162] This is a corporate system used to determine if a cable needs to be repaired or replaced. There are thresholds that have to be met for a cable to qualify to be submitted into DCR. They are as follows in *REDACTED* Exhibit V-7.[163]

REDACTED Exhibit V-7
DCR Qualifiers
as of December 31, 2019

Source: Information Response 62

A third tool is Varasset which is a system that assigns work to technicians for construction projects. [redacted]

A fourth tool the Engineering Groups has is the Frontier Outside plant Geographic information System (FROGS).[166] Its description is shown below in *REDACTED* Exhibit V-8.[167]

REDACTED Exhibit V-8
FROGS Functionality
as of December 31, 2019

Source: Information Response 63

[redacted] A geographical showing of all trouble orders by type, for instance, tree issues would go a long way toward root cause analysis of trouble and their fixes.

Engineering is not involved in the analysis of any company originated maintenance and inspection programs because there are none for outside plant with the exception of quarterly battery checks. The Outside Plant Engineering team is primarily responsible for the copper network. It is a team focused on dealing with trouble in a reactive way and finding fixes for problems as they arise using Infinium, DCR, and FROGS for capital requests.[168]

As of the writing of this report, it is not clear who is responsible for the analysis of the root cause of trouble associated with the top (worst) wire centers with the highest customer trouble reports. Local management, local engineering or corporate engineering. Fixing the problems at these centers should be a high priority and root cause analysis and recommended solutions should be assigned to a specific group and/or project manager. Depending on where the responsibility lies, staffing changes may have to be made to address this issue.

The [redacted] Local Managers are responsible for initiating and conduction the investigation for the root/cause for the top 25 wire centers with the highest trouble report rate per 100 lines. It is not clear what role engineering plays in the root cause analysis or the recommended fixes. There is no standardized, repeatable, methodology for root cause analysis of the source of trouble affecting the lines Fixing the problems at these centers should be a high priority and root cause analysis and recommended solutions should be fixed to a specific group and/or project manager. Depending on where the responsibility lies, staffing changes may have to be made to address this issue.[169]

Findings and Conclusions

Finding V-1 **Given the present Corporate support, scope of work and tools available the Frontier WV Engineering Group has sufficient staff at present to carry out its function.**

The engineering manager stated in Interview 2 that he has sufficient funds and resources to get the job done.

Finding V-2 **Frontier WV Engineering has the potential for an attrition in personnel around [redacted]% during the next [redacted] years.**

It was determined that [redacted]% of the engineering assistant B classification are eligible for retirement [redacted]. That number goes up to [redacted]% within [redacted] years. Most ([redacted] of [redacted]) of the engineering assistant B classification employees are located within the Engineering Department. [redacted] the outside plant (OSP) technicians are retirement eligible [redacted]. The [redacted] is eligible [redacted]. [redacted]% of the facility administrators are retirement eligible [redacted] and the number goes up to [redacted]% in [redacted] years.[170] That suggests that the Engineering Department, not counting supervision, may see an attrition rate around [redacted]% in the next [redacted] years.

Finding V-3 **The [redacted] Local Managers are responsible for initiating and conduction the investigation for the root/cause for the top 25 wire centers with the highest trouble report rate per 100 lines. It is not clear what role engineering plays in the root cause analysis or the recommended fixes. There is no standardized, repeatable, methodology for root cause analysis of the source of trouble affecting the lines.**

The [redacted] Local Managers are responsible for initiating and conduction the investigation for the root /cause for the top 25 wire centers with the highest trouble report rate per 100 lines[171]. It is not clear what role engineering plays in the root cause analysis or the recommended fixes. Fixes for the most part is to continue with PPM, as shown below in *REDACTED* Exhibit V-9. In the operations staffing section of this report company originated work is shown to have low .priority and there is a significant backlog of work in PPM.[172]

REDACTED Exhibit V-9
Trouble Report Rate per 100 lines by Wire Center
4Q 2019

Source: Information Response 164

It is also evident that there is no standardized procedure/process to be followed when determining root causes for the poor performance of any given wire center. A standardized, repeatable, investigative process for determining root causes of poor performance and recommendation of fixes should be implemented in a consistent way. With [redacted] local managers each doing their own investigation it is doubtful that a institutionalized process exists In addition, after the fixes are implemented, there needs to be a follow up to see if the problems have been fixed. It is felt that the Engineering Department in West Virginia is the right organization to take on the responsibility and accountability for the top 25 (worst) wire centers and develop a standardized methodology for correcting the problem and recommend fixes. Operations should be responsible for executing the fixes.

Recommendations

Recommendation V-1 **Frontier WV should prepare a manpower study and succession plan for the WV Engineering Department. (Refer to Finding V-2.)**

There needs to be a staffing study to determine how many of each of the engineering positions need to be filled as well as a succession plan detailing how they will be filled as attrition occurs. The study needs to cover the next five years and should be updated annually. It is further recommended that this process be institutionalized and become a regular annual occurrence.

Recommendation V-2 **Assign the responsibility and accountability for the improvement of the top 25 (worst) wire centers to the Director of Engineering and consider establishing a specific position such as a project manager to address the top 25 worst call centers and make recommendations to improve their trouble performance and develop a standardized repeatable investigative process for improving the performance of these centers. (Refer to Finding V-3.)**

Presently the responsibility lies with the [redacted] Local Managers to improve the performance of these poor performing centers. In addition, it is evident that there is no standardized procedure/process to be followed when determining root causes for the poor performance of any given wire center. A standardized, repeatable, investigative process for determining root causes of poor performance and recommendation of fixes should be implemented. In addition, after the fixes are implemented, there needs to be a follow up to see if the problems have been fixed. It is felt that the Engineering Department in West Virginia is the right organization to take on the responsibility of improving the worst 25 wire centers.

B. Operations Staffing

Background and Perspective

The Operations group is responsible for all outside plant, predominately copper network, and central offices located in West Virginia. The technicians handle all Installation and Repair requests from customers, maintenance and trouble in the central offices, and construction and repair of the outside plant facilities.

As shown below in *REDACTED* Exhibit V-10, a Senior VP of Operations – Eastern Region, who reports to the EVP – Chief Operations Officer, is responsible for installation, repair, and central office activities in West Virginia. Reporting to the SVP of Operations – Eastern Region for installation and repair activities in West Virginia is an AVP Operations Management WV and a Director – Operations

with [redacted] Local Managers and [redacted] technicians. Reporting to the SVP of Operations – Eastern Region for central office activities are three Local Managers with [redacted] Central Office technicians.[173]

The VP Operations – West Region, reporting to the EVP – Chief Operations Officer, is responsible for construction activities in West Virginia. The Director Construction West Virginia with [redacted] Local Managers and [redacted] Technicians manages the construction activities.[174]

REDACTED Exhibit V-10
Operations, Central Office, and Construction Organization
as of March 2020

Source: Information Response 2

The [redacted] local managers each have a reporting location as shown in *REDACTED* Exhibit V-10;[175] however, there are many more locations where technicians report to work as shown on the map below as green and red dots in *REDACTED* Exhibit V-11. Technicians are positioned as to minimize travel times and to handle work load in the area around their reporting location.[176]

REDACTED Exhibit V-11
Technician Reporting Locations
as of December 31, 2019

Source: Information Response 11

The field technician head count has been reduced over the past [redacted] years by [redacted]%, as shown in the chart below in *REDACTED* Exhibit V-12.[177]

REDACTED Exhibit V-12
Technician Staffing
2014 to 2019
as of August 28, 2019

Source: Information Response 9

Based on the chart in *Exhibit V-4,* the number of cable splicers, central office technicians, and outside plant technicians eligible to retire [redacted] and within [redacted] years is shown below in *REDACTED* Exhibit V-13. It does not take into account attrition for such as health, voluntary leaving the company, or other reasons. These are the technicians mostly responsible for the copper network.[178]

REDACTED Exhibit V-13
Retirement Eligible Key Technical Employees
as of December 31, 2019

Source: Information Response 140

The retirement eligibility of technicians has the potential of reducing the number of cable splicers from [redacted] as of [redacted] to [redacted] or another [redacted]%, central office technicians from [redacted] to [redacted] or another [redacted]%, and outside plant technicians from [redacted] to [redacted] or another [redacted]% during the next [redacted] period. This shows that the field operations employees are ageing and the number of potential retirements [redacted][179]

Frontier's customer base has diminished from [redacted] in the year of 2000 to about [redacted] today[180]. Despite that its physical plant has remained about the same. The chart below shows the footage of cable installed has actually gone up in the last [redacted] years as shown in *REDACTED* Exhibit V-14.[181]

REDACTED Exhibit V-14
Cable Footage 2010 to 2019
as of December 1, 2019

Source: Information Response 127

Company Originated Work

Since the footage of cable has not changed significantly since 12/31/2010. It can be assumed that the supporting infrastructure, poles, cross boxes, central offices and associated equipment has not changed much over the same time period. It is assumed that the same number of technicians dedicated to the maintenance of the system in the year 2000 would be about the same today unless there is a change in work practice. However, there has been a recent change in work practice. Each manager has recently been instructed to create a minimum of [redacted] company originated trouble tickets a week.[182] With [redacted] local managers, this would be an additional [redacted] company original repair tickets per week or at a minimum over [redacted] per year. This process has been rolled out in the fourth Quarter of 2019 in West Virginia East and will be rolled out in West Virginia South by the end of the first quarter of 2020.[183] The amount of company originated maintenance work and the resources required to do the additional work is not known. What is known is there will be an increase in company originated work, at least in the next several years. The increase is expected because the past practice of having technicians turn in trouble tickets in the past was not a rigorous one. It is felt that a lot of maintenance work was not being reported or executed.[184] Based on ride arounds with technicians the current work force should be able to handle a modest amount of additional maintenance work with improvements in capacity planning as recommended in the dispatch section of this report.

The execution of company originated work is left up to each local manager. The local managers primary driver is to "make their numbers" as shown in their scorecard. A portion of a local manager's scorecard is shown below in *REDACTED* Exhibit V-15.[185]

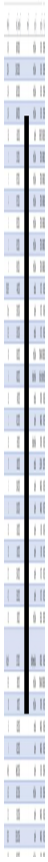
REDACTED Exhibit V-15
Local Managers Scorecard
as of December 31, 2019

Source: Information Response 58

Completion of company originated work has not been a priority. As a result there is a backlog of company originated work. Prior to the fourth quarter of 2019 maintenance projects were not maintained in a central location but managed at the local manager level. Backlogs were kept in various paper records by local managers and technicians. In the fourth quarter of 2019 Frontier began implementation of a new centralized data base to record pending maintenance work[186]. Below is a sample of the [redacted] projects loaded into the data base as of 1/23/2020. Almost all of the projects in the data base were initiated in 2017. It does not include older work or work in 2018 or 2019 nor does it include estimated work hours to complete this work. Work in PPM is non-capital repair work.[187]

REDACTED Exhibit V-16 shows PPM work backlog for 2017.[188]

REDACTED Exhibit V-16
PPM Work Backlog 2017
as of January 31, 2020



Source: Information Response 136

Centralizing the backlog of company originated maintenance work is a step in the right direction. What is needed are goals and metrics measuring the backlog and getting it done. Without measures and goals on the local manager's scorecard it will not get done. Completing the expected increase in company originated work and working down the backlog will have an effect on staffing. The current work force should be able to handle a modest amount of additional maintenance work in slow periods and with improvements in capacity planning as recommended in the dispatch section of this report. It may not be prudent to let the number of field technicians continue to go down without first examining the impact of the new process for reporting company originated work and reducing the backlog especially with the potential of a large number of retirements during the next [redacted] years in *REDACTED* Exhibit V-13. In addition, Frontier should consider giving all work orders that are company originated as well as customer originated a geospatial component and linking this data base to FROGS so that the location of the work orders can be viewed on a map. This will visually show where resources are needed within West Virginia. The amount resources needed to do this work is not known and needs to be studied.

Construction Work

It has been a practice to keep the work assigned to cable splicers doing inspection and repair work separate from cable splicers doing construction work even though the same classification of technician can do both, they are not integrated and kept separate[189]. There are presently [redacted] technicians dedicated to do construction type work.[190] Construction type work is also completed by contractors, as clarified in *REDACTED* Exhibit V-17.[191]

REDACTED Exhibit V-17
Frontier WV Clarification of Contractor Work
March, 2020

Source: 03/06/2020 E-mail - Subject "Follow-up to meeting with Staff last Week"

Construction work to be done is managed in the Varasset System. As described earlier, Varasset is a system that assigns work to technicians for construction projects. Projects are created in Infinium and transferred to Varasset for management of construction. There is a sizeable backlog of work in Varasset. There appears to be a backlog of approximately [redacted] jobs with [redacted] man-hours required to complete them.[192] Below is a portion of the Varasset spreadsheet shown in *REDACTED* Exhibit V-18.[193]

REDACTED Exhibit V-18
Varasset Backlog
as of January 31, 2020

Source: Information Response 152

Upon examining the spreadsheet in its entirety, almost all of the jobs are overdue.

Alarms

Another source of work for operations technicians is responding to alarms received in the National Operations Center. Frontier uses the Netcool system for electronically monitoring key parts of its system. Below is an explanation of the system in *REDACTED* Exhibit V-19.[194]

REDACTED Exhibit V-19
Netcool Monitoring
as of December 31, 2019

Source: Information Response 85

The system prioritizes the alarms according to the following table. Only part of the complete table is shown in *REDACTED* Exhibit V-20.[195]

REDACTED Exhibit V-20
Alarm Prioritization
as of December 31, 2019

Source: Information Response 85

The number of alarms received in the last [redacted] months on the West Virginia system was [redacted].[196] Not all triggered alarms impact customer service. Historical alarm data was requested to examine trends over

the last [redacted] years, but the writing of this report was not available since the data has been archived.[197] A five-year trend, either up, down, or steady could also have an effect on company originated work. However due to the lack of data findings and conclusions could not be made on this subject.

Customer Originated Work

The number of customers and the number of customer originated calls have changed during the last [redacted] years. Customers have reduced from [redacted] to [redacted] in *REDACTED* Exhibit V-21 below.[198]

REDACTED Exhibit V-21
Number of Customer Lines
2016 to 2019

Source: Email 2/11/2020

The number of calls received from customers also show a slight reduction in calls during the same time period, as shown in the chart below in *REDACTED* Exhibit V-22.[199]

REDACTED Exhibit V-22
Customer Originated Calls
2016 to 2019

Source: Information Response 163

Today there is virtually no backlog in customer originated work, as shown in the table below in *REDACTED* Exhibit V-23.[200]

REDACTED Exhibit V-23
Open Jeopardy Calls
as of November 26, 2019

Source: Information Response 120

These calls represent calls not completed due to customers not home and to be rescheduled. Virtually all other customer work is completed as scheduled. Looking to the future, it is felt the number of customers should stabilize and the number of customer initiated work should as well.

Seasonality of call volume is displayed in the chart below in *REDACTED* Exhibit V-24 (historical monthly data before (2016 was not available).[201]

REDACTED Exhibit V-24
Monthly Variations in Customer Orders
Average Number of Calls per Month
from 2016 through 2019

Source: Information Response 163

Despite fluctuations in work load due to seasonality there is sufficient numbers of technicians to handle it. Overtime was relatively low even in peak months. The chart below in *REDACTED* Exhibit V-25 shows the peak month for overtime was [redacted] at [redacted]%, which is in line with calls taken in *REDACTED* Exhibit V-24. [redacted] Factors such as the number of technicians available on any given day, weather, time calls came in, and emergencies to name a few. There is insufficient data to determine what a good base number is, but it is felt that [redacted]% to [redacted]% is a good number. In the data provided [redacted] of the [redacted] months showed overtime [redacted]% or less.[202] A [redacted]% overtime rate (which was based on the number of technicians actually working) is equivalent to a [redacted] week or about [redacted] and about [redacted]% to [redacted]% over base.

REDACTED Exhibit V-25
Percent Overtime Worked
2018 to 2019

Source: Information Response 162

This data and observations made during "ride arounds" with technicians leads to the conclusion that there are sufficient numbers of technicians to handle the current customer originated work load. In fact, it is felt that technicians have available time during slow periods to perform company originated maintenance/construction work should it be assigned overtime by the local managers even if overtime is required to do this work.[203]

Staffing Process

Managers may request that a new position be created or that a vacant position be backfilled based on the needs of the business. A requesting manager documents the rationale for position/backfill and consults with finance to validate the need. If approved a budget is identified for the position and the requesting manager fills out documentation that is routed for required approvals, which may vary depending on the job category and the level of the position for example, new requisition for an Installation and Repair technician [redacted] Procedures and processes to fill all positions are detailed in two of Frontiers corporate documents: The Talent Planning Tool Guide and the Talent Acquisition Approval Matrix.[205]

The Director of Financial Planning and Analysis is responsible for developing the recommended staffing levels for represented employees in West Virginia based on historic work volumes.[206] There is an Excel spreadsheet program used to develop non-management resource requirements, including contractor requirements. West Virginia's operating areas are divided into [redacted] areas and a spreadsheet study is done for each.[207] These charts only cover [redacted] of the [redacted] months in 2019. It is assumed that is

because there was a new program introduced early in 2019 because these spreadsheets are quite different than the ones used in 2018.[208] The models are shown below in *REDACTED* Exhibit V-26, *REDACTED* Exhibit V-27, and *REDACTED* Exhibit V-28.[209]

REDACTED Exhibit V-26
Resource Planning Area 600 April through December 2019
as of March 1, 2019

Source: Information Response 137

REDACTED Exhibit V-27
Resource Planning Area 601 April through December 2019
as of March 31, 2019

Source: Information Response 137

REDACTED Exhibit V-28
Resource Planning area 603 April through December 2019
as of December 31, 2012

Source: Information Response 137

Examining the model, it covers customer originated work only. It only accounts for [redacted] technicians of the [redacted]+ technicians on the payroll. It only covers cable splicers and outside plant technicians assigned to customer originated work. There are about [redacted] cable splicers and outside plant technicians on the payroll. When subtracting [redacted] in the models it leaves about [redacted] unaccounted for. It is assumed these are dedicated to construction work which is about right. Where the model falls short is that it does not cover construction work or the backlog of work in PPM and Varasset. There are a number of months in all three areas that show a surplus of technicians which would allow company originated work to be assigned. There are also a number of months that there are not enough resources but does not suggest overtime or contractors to fill in the gap. These charts also show a misalignment of resources and work load. In area [redacted] for example show a [redacted] months, where as in area [redacted] there is a [redacted] of technicians in in all but [redacted] months. In addition, there does not seem to be a feedback loop that tracks actual information experienced in each area for comparison to the estimates used in the model. This actual information could be used to validate the model and make adjustments to future models. The model falls short since it does not cover all technicians, the backlogs of work in PPM and Varasset, construction work, and company originated maintenance work. There does not seem to be any manpower studies that cover all of the non-supervisory personnel in West Virginia.[210]

Summary Staffing

There are a number of issues affecting staffing: ageing work force, expected increase in company originated work, the backlog of company originated work, a stabilizing of customer originated work**,** alarm trends, the location of work, amount of planned overtime and contractor utilization. The number of techs needed and where they should be located to handle all of the work, customer originated, company originated, backlog reduction and central office, in the future needs to be studied. Although there is a model forecasting staffing needs for customer originated work it does not go far enough to include all work and all technicians. Specifically included in the model should be measures and targets for reducing the backlog of company originated and construction work to an acceptable level and maintaining it. Planned overtime and contractor utilization need to be factored in as well. The number of techs needed for installation and repair tickets as well as those needed to do "construction type" work such as pole setting line transfers and cable replacement must also be included since this work is handled by dedicated resources. Management in West Virginia needs to work with the newly created National Forecasting Team and The National Capacity Team and the Director of Financial Planning and Analysis to study the future work load and resource requirements needed in West Virginia Operations. [redacted] Exhibit V-13 and the new company originated work policy.[211] Lastly all of the data used in the model is forecasted or estimated. There needs to be a feedback mechanism capturing the actual data each month and comparing it to the forecasted data. This will serve the purpose of validating the assumptions used in the model and the data forecasted. In this way model's accuracy can be validated.

Findings and Conclusions

Finding V-4 **Frontier West Virginia has sufficient numbers of technicians available today to handle the current customer originated work.**

There is a small backlog in customer originated work as shown in *REDACTED* Exhibit V-23.

Finding V-5 **Frontier WV company originated work will increase with the new policy of each local manager having to enter a minimum of [redacted] company originated trouble tickets a week into PPM.**

Company originated work will increase, but it is unknown by how much since the new process for capturing company originated work is in the process of implementation.

Finding V-6 **Frontier WV has a backlog of work in PPM and Varasset.**

This is illustrated in *REDACTED* Exhibit V-16 and *REDACTED* Exhibit V-18.

Finding V-7 **The company does not measure or track company originated work.**

There is no provision on the local managers score card to show the backlog of company originated work or its target for completion.

Finding V-8 **Frontier WV's technician work force is aging and a [redacted] number of technicians will be retirement eligible in the next [redacted] years.**

REDACTED Exhibit V-13 shows the potential for a [redacted]% reduction in technicians over the next [redacted] years.

Finding V-9 **The company has a practice of assigning construction work to a dedicated subset of technicians limiting the flexibility of assigning work.**

There are approximately [redacted] technicians dedicated to construction work only.

Finding V-10 **Frontier WV's current model used to forecast resource requirements is not sufficient.**

The current model only covers technicians that do customer originated work and does not cover technicians assigned to company originated work and construction work, it does not predict overtime levels needed to do the work nor does it take into account the use of contractors to do work they are able to perform.

Finding V-11 **The company has a mismatch of resources and work in the three areas modeled in 2019.**

There is a surplus of technicians in [redacted] of the [redacted] modeled in 2019 in area [redacted] and a shortage of technicians in all but [redacted] months modeled in area [redacted] in 2019.

Recommendations

Recommendation V-3 **Frontier WV should conduct, and update annually, a comprehensive manpower study to determine the optimal number of technicians by classification, the optimal amount of work to be contracted out, and the amount of work be performed on overtime. (Refer to Finding V-10.)**

Local operations management needs to work with the National Forecasting team and the National Capacity Planning team to prepare this study covering all [redacted] areas ([redacted], [redacted], and [redacted]). At minimum the following should be included: projected attrition of technicians, a targeted overtime rate for technicians, productivity improvements, the optimal contractor mix, forecasted company and customer originated work, an acceptable backlog of work and a succession plan for each classification of technician. The study should include each of the [redacted] areas and make recommendations that address

the mismatch of resources within the three areas. The study should cover the next [redacted] years, revisited and updated annually and become a standard practice.

Recommendation V-4 **The company should add metrics to local managers scorecard to measure the backlog of company originated work and a target for its completion. (Refer to Finding V-7.)**

There are different metrics that can be used such as total orders backlogged, total orders completed and an age profile of open orders. A suggested goal would be to establish an acceptable time period that orders need to be completed by. For example, no order can be in the open order Que longer than 1 year.

Recommendation V-5 **Frontier WV should phase out the practice of limiting the completion of construction work to a few dedicated technicians. (Refer to Finding V-9.)**

When appropriate and if needed, technicians that are used only for inspection and repair work should be used to augment construction forces and vice versa. This will add flexibility to the work force.

Recommendation V-6 **Improve the modeling used for resource planning to include all work, company originated, construction and customer originated. (Refer to Finding V-10.)**

All technicians should be covered. Add actual data for example, actual overtime worked, actual trouble tickets received, actual productivity achieved, etc. This data would be used to improve modeling in the future. Set targets for acceptable variances between actuals and forecasted and a process to explanations where variances fall outside of the target.

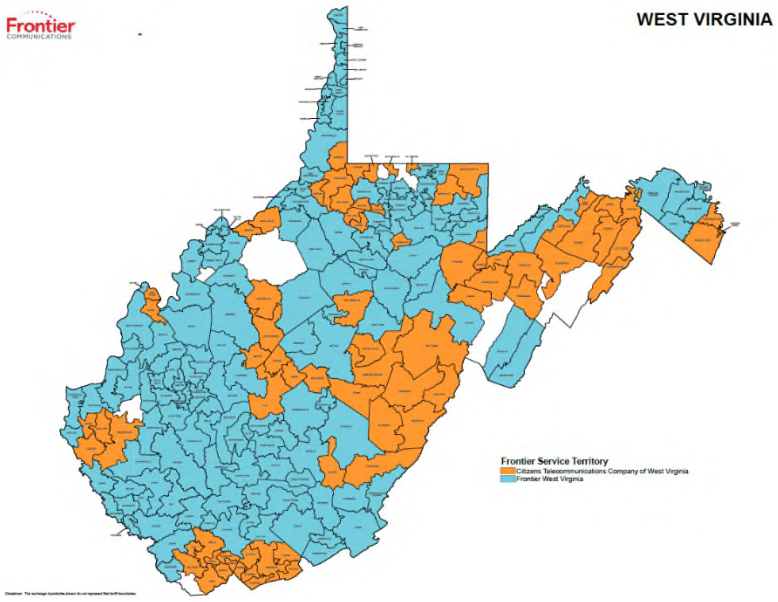
VI. Capital Investment in the Copper Network since July 2010 for West Virginia

A. Background and Perspective

Territory

Exhibit VI-1 shows Frontier's service territory for West Virginia, including Frontier West Virginia and CTC of West Virginia.[212]

Exhibit VI-1
Frontier Service Territory



Source: Information Response 88

Capital Investment

The amount of capital investment in the West Virginia operations of Frontier Communications has been significant for the nine years – 2010 through 2018. During this period of time, Frontier Communications' two local exchange carrier companies, Frontier West Virginia and CTC of West Virginia, have invested more than [redacted] in plant and equipment, averaging more than [redacted] per year.[213]

REDACTED Exhibit VI-2 provides the total West Virginia capital expenditures for 2010 through 2018 by asset type, including spending for both Frontier West Virginia and CTC of West Virginia.[214]

REDACTED Exhibit VI-2
Capital Expenditures by Asset Class
Frontier West Virginia and CTC of West Virginia
2010 to 2018
($000)

Source: Information Response 25

Capital expenditures have declined over the past nine years by [redacted] percent, from [redacted]. Over the past six years, from the highest expenditure level in 2012 through 2018, capital expenditures have declined by [redacted]. The vast majority of capital expenditures consisted [redacted] These two asset categories accounted for over [redacted]% of all capital expenditures from 2010 through 2018.[215]

Operations and Maintenance Expenses

During the nine-year period, 2010 through 2018, Frontier Communications has spent a significant amount of funds supporting its capital investments in West Virginia, with plant specific operations expenses approximating $1.2 billion. Plant specific operations expenses for both Frontier West Virginia and CTC of West Virginia for 2010 through 20018 are shown in *Exhibit VI-3*.[216]

Exhibit VI-3
Plant Specific Operations Expenses
Frontier West Virginia and CTC of West Virginia
2010 to 2018
($000)

Plant Specific Operations Expenses	2,010	2011	2012	2013	2014	2015	2016	2017	2018	Total 2010 - 2018
Network Support Expense	52	1	(736)	12,462	13,021	12,133	11,098	7,182	8,007	63,221
General Support Expense	17,230	23,703	31,234	24,528	21,316	21,421	19,857	20,877	14,631	194,795
Central Office Switching Expense	7,447	13,811	16,369	15,071	14,134	14,077	11,140	9,793	6,056	107,898
Operator Systems Expense	88	76	44	32	20	57	39	13	6	377
Central Office Transmission Expense	4,960	9,943	9,318	8,680	6,331	10,342	13,875	16,323	14,657	94,429
Information Origination/Termination Expenses	4,625	5,606	5,193	6,224	4,214	3,732	5,020	3,980	2,347	40,940
Cable and Wire Facilities Expenses	62,275	97,229	103,892	77,948	73,112	63,477	66,253	63,129	74,815	682,130
Total Plant Specific Operations Expenses	96,676	150,371	165,314	144,944	132,149	125,238	127,282	121,299	120,519	1,183,791

Source: Information Response 17

Plant specific operations expenses have averaged approximately $132 million for the past nine years and have increased by approximately 25% from 2010 through 2018. Similarly to capital expenditures, these expenses have declined since 2012 by 27.1%.[217]

Capital Budgets

Capital budgets are developed at the Frontier Communications level. There were no capital budgets available for either Frontier of West Virginia or CTC of West Virginia. Although capital budgets are developed annually and reviewed quarterly,[218] Frontier Communications does not maintain current or past year capital budgets at the state level, including West Virginia.[219] However, Frontier Communications does report spending for capital projects by state.[220]

Capital Budget Lines for All State Operations

[redacted]

Budget Line Requests and Transfers

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

[redacted]

[redacted]

- [redacted]
- [redacted]
- [redacted]
- [redacted]

[redacted]

- [redacted]
- [redacted]

[redacted], as displayed in the process flow chart below in *Exhibit I-6*.

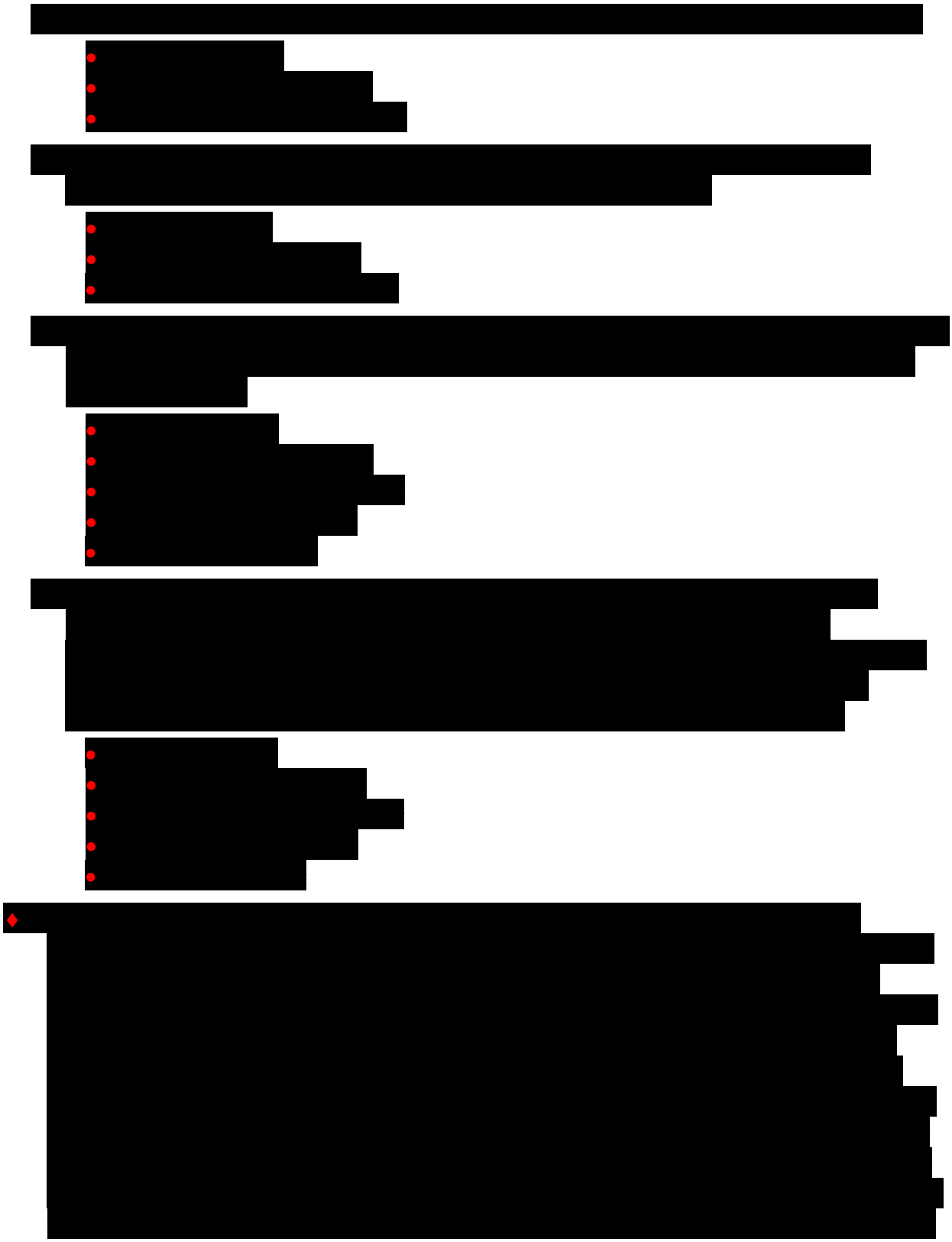
[redacted]

[redacted]

- [redacted]

[redacted]

[redacted]



Connect America Fund Expenditures

Frontier has received funding from the Connect America Fund (CAF and CAF II) nationwide, and for its West Virginia operations.[231] CAFII funding was based on the requirement to meet CAFII milestones for 10/1 Internet availability to specified numbers of households, in eligible census blocks, for the states for which funding was received. CAF II support is intended to cover both the capital expenditures to provide the required speed to the eligible households and the operating expenses to operate and maintain the network to provide the broadband service to these locations. CAFII provided approximately $38,068,337 annually from 2015 to 2020 to bring a minimum 10/1 broadband service to 89,190 locations in West Virginia. Frontier has met all CAF II obligations in West Virginia to date, including the year-end 2018 CAFII milestone of reaching 60% of the locations. Frontier will have met obligations to reach 80% of the eligible locations by year-end 2019 and is on target to reach 100% by year-end 2020.[232]

B. Findings & Conclusions

Finding VI-1 **Capital budgets for Frontier West Virginia and CTC of West Virginia were not available for review**

Frontier Communications capital budgets are developed annually and reviewed quarterly.[233] However, Frontier Communications does not budget at the state level[234], and therefore, does not maintain current or past year capital budgets at the state level[235]. Only reports of capital spending for capital projects are available by state[236].

Finding VI-2 **Annual capital expenditures for Frontier's West Virginia local exchange carrier companies have averaged over $ million for the past nine years.**

Capital Expenditures for the two local exchange carrier companies in West Virginia were from 2010 through 2018, averaging $ for Frontier West Virginia and $ for CTC of West Virginia, for a total West Virginia annual average of . The vast majority of capital expenditures during this time period were for the

Finding VI-3 **For the past few years, capital expenditures for Frontier's West Virginia local exchange carrier companies have declined significantly.**

Capital expenditures have totaled approximately $ million and $ million for Frontier West Virginia and CTC of West Virginia for 2017 and 2018. These amounts are % and % below the average expenditures over the past nine years and over percent less than was spent in the highest capital expenditure year in this period (2012).[238]

Finding VI-4 **Similar to the trend in capital expenditures, maintenance expenditures have also declined in the last few years.**

Plant specific operation expenses (which includes maintenance of assets) have declined over the past few years from their level in 2012 ($165 million). Over the nine-year period, 2010 through 2018, plant specific operations expenses have averaged $131.5 million, but over the past four years of this period have averaged only $123.6 million and are trending downward. This has occurred during the same time that capital expenditures have also trended downward.[239]

C. Recommendations

Recommendation VI-1 Frontier West Virginia and CTC of West Virginia should develop and utilize their own capital budgets. (Refer to Finding III-1)

Both of Frontier's West Virginia local exchange carrier companies, Frontier West Virginia and CTC of West Virginia should develop and manage their own capital budgets. These capital budgets should be developed based on the perceived needs of each company, and capital expenditures should be managed against the budgets developed and approved by local Frontier West Virginia and CTC of West Virginia managers.

VII. Frontier Service Quality Policies and Procedures

A. Background and Perspective

Frontier's practices and systems are similar to what we have observed at other telecommunications providers whereas the geography served various significantly throughout the state. In fact, the policies and procedures are similar to what one would have observed over 20 to 30 years ago in the industry.

Twenty to thirty years ago, the telecommunications industry was transitioning from a predominately analog technology base to digital technology base. This initially began within interoffice facilities and, eventually, migrated to local office facilities 20 to 30 years ago. The focus during those timeframes was in upgrading central office facilities to digital technologies to take advantage of what digital technologies had to offer over the older analog technologies, one of which was lower maintenance requirements. Outside plant facilities (cooper wire and poles) changed very little during that time frame and, quite frankly, were not given much attention. Telecommunications companies usually supported outside plant facilities with Installation & Repair (I&R) personnel who when an issue was identified (broke), they were dispatched to remedy (fix) the situation. The computer industry refers to this as the Break/Fix model.

Eventually, with the advent of digital technologies and the Internet, outside plant facilities became more important because they became 'the last mile" and digital technologies began to be migrated out into the outside plant facilities. Fiber technologies with their corresponding electronics on both ends started to be introduced into the outside plant facilities, primarily from central offices to cross box locations. The traditional cooper network was no longer just a cooper network but a hybrid cooper/fiber network with corresponding electronics and batteries.

B. Findings and Conclusions

Finding VII-1 **Frontier's use of computer systems in support of some of its operations and maintenance activities needs to be improved.**

As discussed in *Chapter IV*, Frontier WV does not have a computer system or management process for performing preventative maintenance. During our review, one was in the process of being setup. However, our concern is that this process needs to be supported by appropriate computer systems and integrated into the system by which I&R technicians receive their work. Currently, interviews indicated that company initiated preventative maintenance jobs are not dispatched to field technicians from central dispatching and the manual assignment of preventative and corrective work is at the discretion of the local manager.[240]

Our review of the orders and observations that we made during our ride arounds in the field have identified field conditions requiring maintenance. However, there is not a readily available system for reporting these field conditions to appropriate chain of command to get the issue resolved.

The steps currently being taken to address preventive maintenance activities is a start to getting Company originated maintenance activities into the workload mix. The activities surrounding the responding to trouble reports is similar to what we have observed in other telecommunications providers.

C. Recommendations

Recommendation VII-1 **Frontier needs to continue to leverage its technology to better support its operations and maintenance activities. Table of (Refer to Finding VII-1.)**

There are several areas which come to mind for improving the use of technology within Frontier operations and maintenance.

- Planned maintenance activities that can be flowed into the I&R work management system after local manager approval.
- Use of I&R technicians phones to take pictures of field conditions that need to be addressed, that can be loaded into a database, for review and approval by the local manager and flowed into the I&R work management system for work completion.
- Periodic Outside Plant Tours – Think about the blue line on Google maps. Periodically drive the Frontier WV network to video the network conditions to identify areas needing attention. This is currently being done in some counties for maintenance of roadways but could probably be done for network facilities.

VIII. Adequacy of the Service Quality Metrics

A. Background and Perspective

Current Service Quality Reporting Requirements

The two Frontier telephone entities operating in West Virginia (Frontier West Virginia and Citizens Telecommunications of West Virginia) have different service quality reporting requirements. While both companies report service quality metrics as required by the West Virginia Public Service Commission regulations, only Frontier West Virginia reports on additional service quality metrics pursuant to various West Virginia Public Service Commission orders. What follows is a brief discussion of the service quality metrics that both companies provide, as well as the metrics reported only by Frontier West Virginia.

West Virginia Public Service Commission Regulation Reporting Requirements (FTR and CTC)

The WVPSC regulations provide that annual service quality reports be submitted by local exchange providers by March 1st each year. These reports include the following 7 measures of performance: as shown in *Exhibit VIII-1*.[241]

Exhibit VIII-1
WVPSC Annual Service Quality Report
as of December 31, 2019

SQ Measure	Objective Range	Actual Annual Performance (2018)	
		FTR WV	Citizens
Installations % Completed w/in 5 Days	90% or More	95.9	95.5
Percent Service Commitments Met	90% or More	97.0	96.7
Held Orders over 30 Calendar Days	90% or More	Not Reported*	Not Reported*
Operator Assistance Requests, % Within 10 Seconds	85% or More	87.4	87.4
Dial-Tone, or Functional Equivalent, % Within 3 Seconds	98% or More	99.88	99.88
Satisfactory Transmission Quality	99% or more of test or sampled calls	Not Reported*	Not Reported*
Satisfactory Call Completion	99% or more of test or sampled calls	Not Reported*	Not Reported*

Source: 150 CSR, P.S.C. FORM NO. T-1

Frontier West Virginia and Citizens filed reports show that each company passed the annual threshold objective for each of the metrics over the past five reported years (2014-2018). Looking at monthly performance, the companies have reported that they performed well missing only 11 (5%) monthly metrics (Citizens) and 7 (3%) (Frontier West Virginia).

Held Orders[242] Greater than 30 Calendar Days, Satisfactory Transmission Quality and Satisfactory Call Completion data has not been submitted per the West Virginia PSC regulations. Neither Frontier West Virginia nor Citizens Telecommunications Corporation has included data on these three metrics in their reported data in the annual reports in the past 5 years.[243] It is unclear if the companies maintain such data.

Retail Service Quality Plan (RSQP) - (FTR Only)

As noted previously, with the acquisition of the West Virginia Verizon properties in 2010, Frontier West Virginia agreed to continue to report service quality in accordance with the RSQP that was in place for the Verizon properties. That agreement did not extend to or encompass the other Frontier property in West Virginia – Citizens Telecommunications of West Virginia. The RSQP, which remains in effect,[244] provides monthly reporting on six service quality metrics. Four of metrics report against established

benchmarks, while the other 2 metrics provide performance data, but no specific benchmark has been established. What follows is a discussion of the four RSQP benchmarked performance measures followed by a discussion of the other two RSQP non-benchmarked performance measures. Finally, it should also be noted that the RSQP included customer credits for missed benchmarks.[245] A discussion of customer billing credits is also included.

SQP – Benchmarked Metrics

The four benchmarked metrics in the RSQP are included in *Exhibit VIII-2*.[246]

Exhibit VIII-2
RSQP Service Quality Metrics/Benchmarks
as of December 31, 2019

Metric	Benchmark
Out of Service (OOS)	85% OOS Cleared in <48 Hours,
Service Affecting (SA)	80% SA Cleared in <72 Hours
Repair Appointments Met	78% Network Troubles Repair commitment dates met
Repeat Troubles	19% Repeat Trouble Reports within 30 days

Source: Case No. 08-0761-T-GI, December 9, 2008, Appendix A, Page 3.

The OOS and the SA benchmarks exclude weekend and holidays, however, the company reports both statistics (one excluding weekends and holidays and one incorporating weekends and holidays).[247]

Out of Service (OOS)

The West Virginia Public Service Commission's regulations reflect an expectation of a 24 hour benchmark for out-of-service troubles:

> *When interruptions occur, the telephone company shall reestablish service with the shortest feasible delay. In general, out-of-service troubles should be cleared within twenty-four (24) hours of the time such troubles are reported or otherwise noticed by the telephone company, except when such service interruptions are caused by emergency situations or acts of God affecting such numbers of customers as to make twenty-four (24) hour service restoration infeasible.*[248]

There is, however, no specific performance benchmark in the West Virginia regulations for OOS. The RSQP has a benchmark, but the benchmark is not OOS cleared within 24 hours, but rather an 85% benchmark for OOS cleared within 48 hours. Frontier West Virginia's performance for OOS cleared within 48 hours is discussed below.

Out of Service Performance (OOS)

Out of Service performance is reported to the Commission on a monthly basis. The term is defined in the RSQP as a customer's inability to communicate via telephonic transmission, due to a service-related interruption in Verizon WV's network.[249] The benchmark is 85% of services should be restored within 48 hours. Performance against benchmark for the past 5 years (2015-2019) shows the company has had trouble consistently meeting the benchmark. The data below illustrates Frontier West Virginia [redacted], with [redacted] falling in the past [redacted]. The company attributes some of the poor performance in 2018 as a result of the labor disputes[250] and emergency weather conditions.[251] As illustrated in *REDACTED* Exhibit VIII-3, however, [redacted].[252]

REDACTED Exhibit VIII-3
OOS < 48 Hours
as of December 31, 2019

Source: Information Response 108

The 48 hour standard for repairs excludes weekends and holidays in its calculation. Thus, for example, a trouble ticket issued on a Friday morning is not considered "missed" until Tuesday. Likewise, some metrics were appropriately adjusted for causes beyond the company's control and OSS metrics for April 2018 and June 2018 recognize and exclude tickets missed due to weather conditions in certain counties.

The OOS standard is a common industry metric to measure how long customers are without dial-tone. The standard is important, particularly for customers who have no voice alternatives to rely on for emergencies. As noted previously, the West Virginia regulations provide an expectation of more immediacy for such repairs. The standard interval measured for performance in several other Frontier jurisdictions is OOS cleared within 24 hours. Had this metric been in place in West Virginia, Frontier would not have met the metric benchmark [redacted]. The critical implications of the loss of communications for emergencies coupled with poor cellular service reception in various parts of the state require a more aggressive metric for out of service.

Service Affecting

Service Affecting (SA) performance is reported to the Commission on a monthly basis. Service affecting means any service-related condition (i.e. static, cross talk, inadequate volume, intermittent transmission, etc.) in Verizon's WV's network that impairs the customer's ability to communicate. The benchmark is that 80% of service affecting conditions should be resolved within 72 hours. Performance against benchmark for the past 5 years (2015-2019) shows the company has had trouble consistently meeting the benchmark. The data below (*REDACTED* Exhibit VIII-4) illustrates Frontier West Virginia missed the metric [redacted] of the [redacted] months illustrated, with [redacted] of those months falling in the past [redacted] months. Similar to OOS performance, the company attributes some of the poor performance in 2018 as a result of the labor disputes and weather.[253]

REDACTED Exhibit VIII-4
Service Affecting < 72 Hours
as of December 31, 2019

Source: Information Response 108

Repair Appointments Met

Under the RSQP Frontier of West Virginia must meet 78% of their repair commitments and consumers are entitled to a bill credit of $25 if Frontier misses the commitment date and does not contact the customer. Frontier has reported that they have met this metric fairly consistently over the past [redacted] years as illustrated in *REDACTED* Exhibit VIII-5. Recently reported data (2019) has brought the trend line down.[254]

REDACTED Exhibit VIII-5
Frontier West Virginia Repair Commitment Performance
as of December 31, 2019

Source: Information Response 108

Repeat Repairs within 30 Days

The fourth and final RSQP metric reported is the percent of repeat repairs within 30 days. This metric provides insight into the quality of the initial repair. Frontier West Virginia is required to have a repeat repair rate of less than 19%. Similar to the repair commitments metric, the company has met this repair repeat rate almost consistently over the past five years. Over the [redacted] months of reported data ([redacted]) the company missed this benchmark [redacted]. Thus, performance has met benchmark; however, again as noted in the trend line (*REDACTED* Exhibit VIII-6), the data suggests performance is trending upward toward the benchmark.[255]

REDACTED Exhibit VIII-6
Frontier West Virginia Repair Repeats within 30 Days
as of December 31, 2019

Source: Information Response 108

There is currently no customer refund for situations where there are multiple repairs for the same trouble within 30 days. This provision should be included in the West Virginia tariffs for both operating companies.

RSQP – Non-Benchmarked Metrics

Frontier West Virginia also provides a number of other service performance metrics to the West Virginia Public Service Commission pursuant to the RSQP on a monthly basis. However, unlike the four metrics identified previously, these metrics are not reported against a benchmark. These additional metrics include:

- Business/Repair Answer Times
- Installations Completed With 5 Days

Business/Repair Answer Times

Business/Repair answer time is provided monthly for both operating entities on an aggregated basis. The statistics reported provide average number of seconds for Business answer time and repair office time. For 2019, the answer time for these two metrics varied from 30 seconds in some months to 5

minutes in other months. There is no benchmark or target for Business/Repair answer times established in reports to the West Virginia Public Service Commission. The statistics provided to the WVPSC via the RSQP reporting provide an average; however, they do not provide insight into the percentage of calls answered within a certain benchmark.[256] Traditionally, such a metric is structured to provide such. A more appropriate metric would report on the percentage of calls handled within a benchmarked target. In fact, Frontier has an internal benchmarking data for Residential and Business/Repair answer time performance. That existing performance benchmark is 80% within 30 seconds. Answer time performance per that metric has trended downward over the past four years.

Residential/business answer time is shown in *REDACTED* Exhibit VIII-7 and Repair answer time in *REDACTED* Exhibit VIII-8.[257]

REDACTED Exhibit VIII-7
Residential and Business Answer Time
as of December 31, 2019

Source: Information Response 14

REDACTED Exhibit VIII-8
Repair Answer Time Performance
as of December 31, 2019

Source: Information Response 14

Installation within 5 Days

Frontier reports monthly on the percentage of service installations completed within 5, 7, and 10 days in the RSQP (for Frontier West Virginia) and reports annually (with monthly data) separately for both companies pursuant to West Virginia regulations. While the RSQP reported data is not accompanied with a benchmark, the annual report includes a benchmark that 90% of the installations should be completed within 5 working days. As illustrated below in *REDACTED* Exhibit VIII-9, Frontier has had little problem meeting the installation benchmark of 90% completed installations within 5 days for either company.[258] *Exhibit VIII-11* shows CTC Station Installations within 5 days.[259]

REDACTED Exhibit VIII-9
Frontier Installations within 5 Days
as of September 30, 2019

Source: Information Response 108

REDACTED Exhibit VIII-10
Citizens Installation within 5 days
as of December 31, 2018

Source: Information Response 27

Consumer Billing Credits

Both companies also provide billing credits to customers for poor performance. Citizens Telecommunications Company customers are provided a pro rata adjustment of the fixed monthly charges in accordance with the company's tariff.[260] In general, these refunds reflect a monthly pro-rated refund for the various metrics. The credits for Frontier West Virginia's customers were established by the RSQP are structured to provide increased refunds as the situation continues. The RSQP provides the following credits, as shown in *Exhibit VIII-11*.[261]

Exhibit VIII-11
Frontier West Virginia
RSQP Billing Credits
as of December 31, 2019

Metric Performance	Customer Credit Allowance
Out of Service >72 Hours but<96 Hours	$10
Out of Service >96 Hours but<120 Hours	$15
Out of Service >120 Hours	$15 + $5 for each 24 Hours thereafter
Service Affecting >120 Hours but <144 Hours	$10
Service Affecting > 144 Hours	$10 + $5 for each 24 Hours thereafter
Missed Repair Appointments w/o contact by 8 PM the prior day	$25

Source: Case No. 08-0761-T-GI, December 9, 2008, Appendix A, Page 3.

As presented below in *REDACTED* Exhibit VIII-12, over the last [redacted] years, Frontier has issued approximately $[redacted] in credits to consumers via the RSQP. The majority of the credits are attributable to the OOS >[redacted] hours. During the 2019, approximately [redacted]% of the credits were for this metric.[262]

REDACTED Exhibit VIII-12
RSQP Billing Credits
as of December 31, 2019

Source: Information Response 149

Other Service Quality Data Reported to the West Virginia Public Service Commission - Top 25 Wire Centers – Trouble Report Rate (TRR)

In March 2018, the Commission directed that Frontier file monthly metrics data and a listing of the 25 wire centers with the highest network trouble reports defined as any oral or written report from a subscriber or user of telecommunications service relating to a physical defect or to difficulty or dissatisfaction with the operation of telecommunications facilities. For the past 20 months, Frontier has provided a listing of the 25 wire centers with the highest network trouble reports along with comments on how Frontier intends to address the performance. Frontier states that these wire centers are always the priority for rehab work and that technicians maybe be moved from their normal reporting locations to an area that has been identified as a high trouble rate to assist with the rehab efforts.[263]

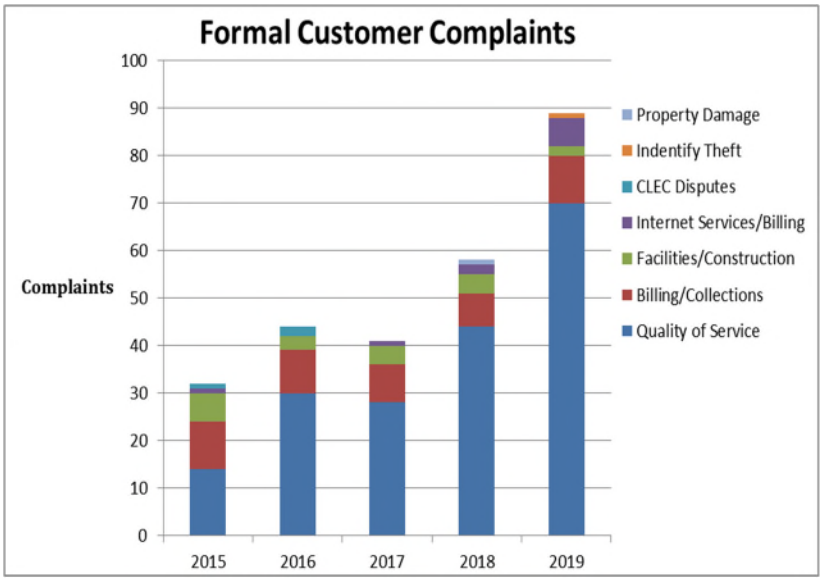
In July 2018, Frontier proposed to implement reporting changes to include the entire Frontier service area and also provide a listing of the 25 wire centers with the highest network trouble report rates. That has not happened. The company currently reports on the top 25 Frontier West Virginia Central Offices even though some of the Citizens Telecommunications of West Virginia Central Office rates are higher than those of the highest 25 Frontier West Virginia Central Offices. There exists no benchmark for the Customer Trouble Report Rate metric.[264]

Customer Complaints

In addition to the monthly RSQP reporting, Frontier reports on both formal and informal complaints (requests for assistance or RFA). Formal complaints are organized into 9 classifications and informal complaints are categorized into 12 categories. As illustrated below in *Exhibit VIII-13*, both types of

complaints have increased over the past five years (2015 – 2019). The majority (70%) of formal complaints relate to quality of service.[265]

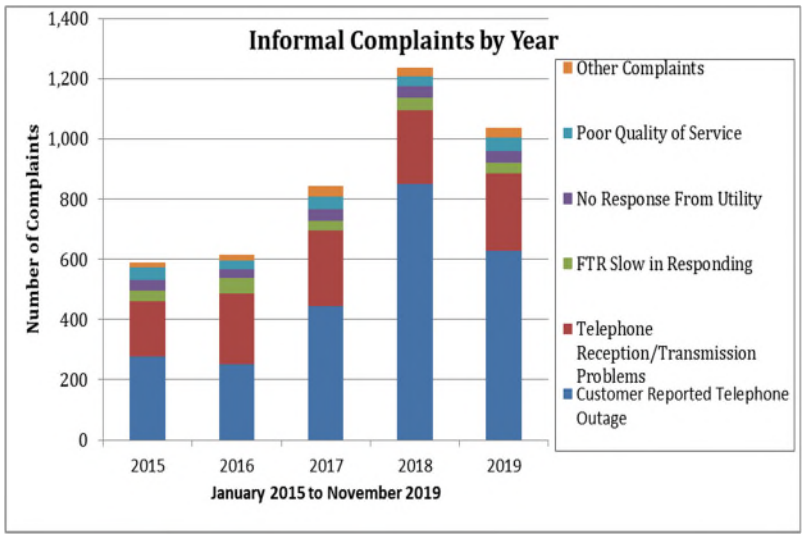
Exhibit VIII-13
Frontier West Virginia Formal Complaints
as of December 31, 2012



Source: Information Response 22

Similarly as illustrated below in *Exhibit IV-14*, the vast majority of informal complaints center on the quality of the telephone reception or transmission issues.

Exhibit VIII-14
Frontier West Virginia – Informal Complaints
as of December 31, 2019



Source: Information Response 22

Public Comments in Case 18-0291

The West Virginia Public Service Commission has an on-line resource where the public can register comments on various cases/proceedings. For the current investigation/audit of Frontier, over 775 comments were filed. No formal analysis of the comments has been conducted by WVPSC or Frontier. To ascertain the issues of concern in the comments, Schumaker & Company consultants reviewed the most recent 100 comments received to ascertain the concerns expressed by the individual(s) providing the comment. Over half (51%) of the comments were related to DSL service, telephone service represented 29% and problems with both services were noted in 20% of the comments. Regarding the details of the comments, the vast majority of the DSL comments were complaints on the slow speed of Frontier's service and delays in getting the service repaired. The major complaint with respect to the telephone service centered on out of service and the poor quality of the voice service (static on line).

From the 100 comments submitted Schumaker & Company consultants selected 15 with enough detail[266] to track the comment against Frontier's customer records. For example, if a customer detailed they were out on a specific date, the date noted by the consumer was matched against Frontier's repair record for the customer's account. While there were a few comments where the actual dates described in the customer's comment did not align with the system dates, overall Schumaker & Company consultants were able to track the date and the appropriate billing credits provided to the customer.

B. Findings and Conclusions

Finding VIII-1 **Frontier has not filed all of the information required in their annual service quality report to the West Virginia Public Service Commission.**

While Frontier files annual service quality information as required by the West Virginia Public Service Commission, reports do not provide data on three of the metrics set forth in those regulations.

Finding VIII-2 **Frontier's RSQP benchmark for out of service is 48 hours. The West Virginia Public Service expectation for out of service is 24 hours.**

The West Virginia regulations provide an expectation of more immediacy for such repairs. The standard interval measured for performance in several other Frontier jurisdictions is OOS>24 hours.

Finding VIII-3 **Frontier Does Not Provide Customers Credit in Situations Where the Same Trouble for the Same Service are Reported on the Same Line Within 30 Days.**

While Frontier provides billing credits for customers for times when their telephone service is interrupted, the company does not provide any credits when a customer has experienced multiple outages in a given month.

Finding VIII-4 **Frontier does not report average answer time against a benchmark to the West Virginia Public Service Commission.**

Frontier calculates the percentage of calls answered within 30 seconds, but does not report this data to the Commission. The Commission receives average number of seconds to answer a call, but against no benchmark. A common industry metric is the percentage of calls answered within 30 seconds or an average speed of answer metric.

Finding VIII-5 **Frontier does not report monthly CTRR for all of its wire centers to the West Virginia Public Service Commission. The company does not include Citizen Telecommunication Corporation wire centers in its "Top 25" CTRR report.**

Frontier does not provide monthly CTRR data to the Commission for all of its wire centers. The sole report addressing CTRR is the "Top 25" wire center report, but that report is only for Frontier West Virginia. Frontier has offered to expand this "Top 25" to include Citizens.

Finding VIII-6 **There exist different service quality standard reporting requirements between Frontier West Virginia and Citizens Telecommunications of West Virginia.**

There are different service quality standards and customer billing credits for the two Frontier companies. There does not appear to be a rationale for continuing the different service quality standards/metrics/rebates.

C. Recommendations

Recommendation VIII-1 **Frontier Should Provide the Required Reporting Data or, Alternatively, Request the Regulations Be Revised to Eliminate Such Reporting (Refer to Finding VIII-1.)**

Absent an amendment or suspension of the West Virginia regulations, Frontier should report this data to the Commission. If Frontier believes the data is no longer relevant, it should petition the Commission to remove the metrics from the annual reporting requirements.

Recommendation VIII-2 **The Out-of-Service Metric Should Be Consistent with the Commission's Intent and Changed From >48 hours to OOS>24 hours. (Refer to Finding VIII-2.)**

The OOS standard is a common industry metric to measure how long customers are without dial-tone. The West Virginia regulations provide an expectation of more immediacy for such repairs. The critical implications of the loss of communications for emergencies coupled with poor cellular service reception in various parts of the state require a more aggressive metric for out of service.

Recommendation VIII-3 **Frontier Should Provide Consumers Credit in Situations Where the Same Trouble for the Same Service are Reported on the Same Line Within 30 Days. (Refer to Finding VIII-3.)**

Frontier should provide customers a credit for multiple outages in a given month. In addition to compensating customers for poor quality service, establishing such a metric would focus attention on quality of repairs.

Recommendation VIII-4 **Frontier Should Report the Percentage of Residential / Business / Repair Calls that Meet its Existing Benchmark (80% within 30 seconds) on a Monthly Basis to the West Virginia Public Service Commission. (Refer to Finding VIII-4.)**

Frontier calculates this metric for internal purposes, yet it does not report the metric to the West Virginia PSC. Instead it reports average number of seconds to answer a call. Reporting against a benchmark would provide better insight to customer wait times.

Recommendation VIII-5 **Frontier should continue to report on the 25 wire centers with the highest network trouble report rate, however, the highest 25 should be the highest 25 for both companies. Alternatively a benchmark should be established for Customer Trouble Repair Rates (CTRR) and monthly data for both companies should be submitted to the WVPSC. (Refer to Finding VIII-5.)**

Frontier only provides customer trouble repair rates for the top 25 wire centers for Frontier West Virginia. Frontier should include Citizens Telephone wire centers in the top 25 reports or alternatively, Frontier should establish a CTRR benchmark and report CTRR for all wire centers for both companies.

Recommendation VIII-6 **Frontier should standardize service quality reporting metrics/benchmarks for Frontier West Virginia and Citizens Telecommunications of West Virginia. (Refer to Finding VIII-6.)**

There are different service quality standards and customer billing credits for the two Frontier companies. There does not appear to be a rationale for continuing the different service quality standards/metrics/rebates. The company should standardize the metrics between the two companies.

IX. Impact of the Declining West Virginia Customer Base on Internal Cash Flow from Frontier Operations, Relative to Historic and Current Copper Infrastructure Maintenance and Capital Expenditures

A. Background and Perspective

Access Line Counts

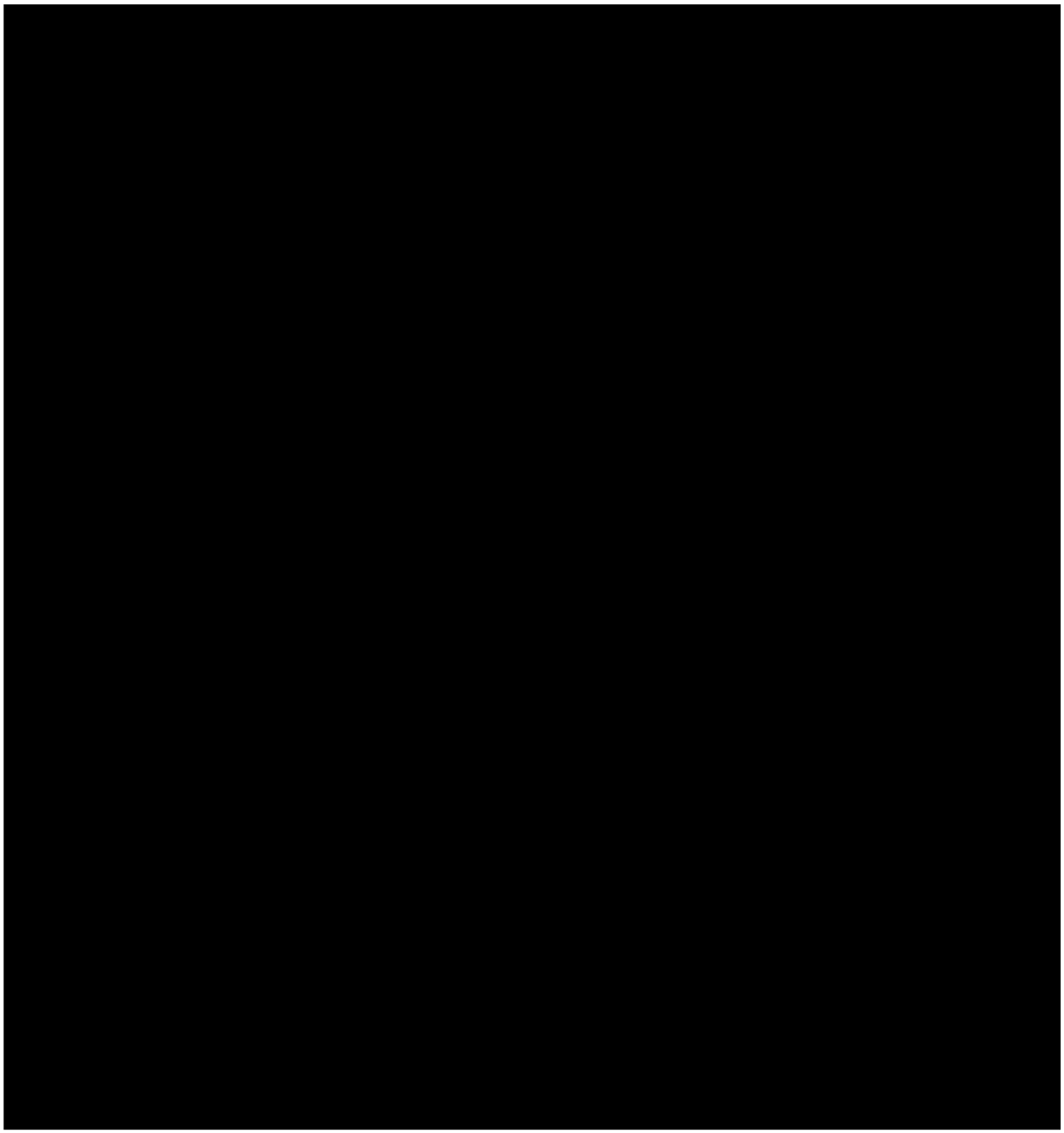
West Virginia has approximately 222 wire center locations in which the total number of access line counts for 2016 to middle of 2019 are shown in *REDACTED* Exhibit IX-1.[267]

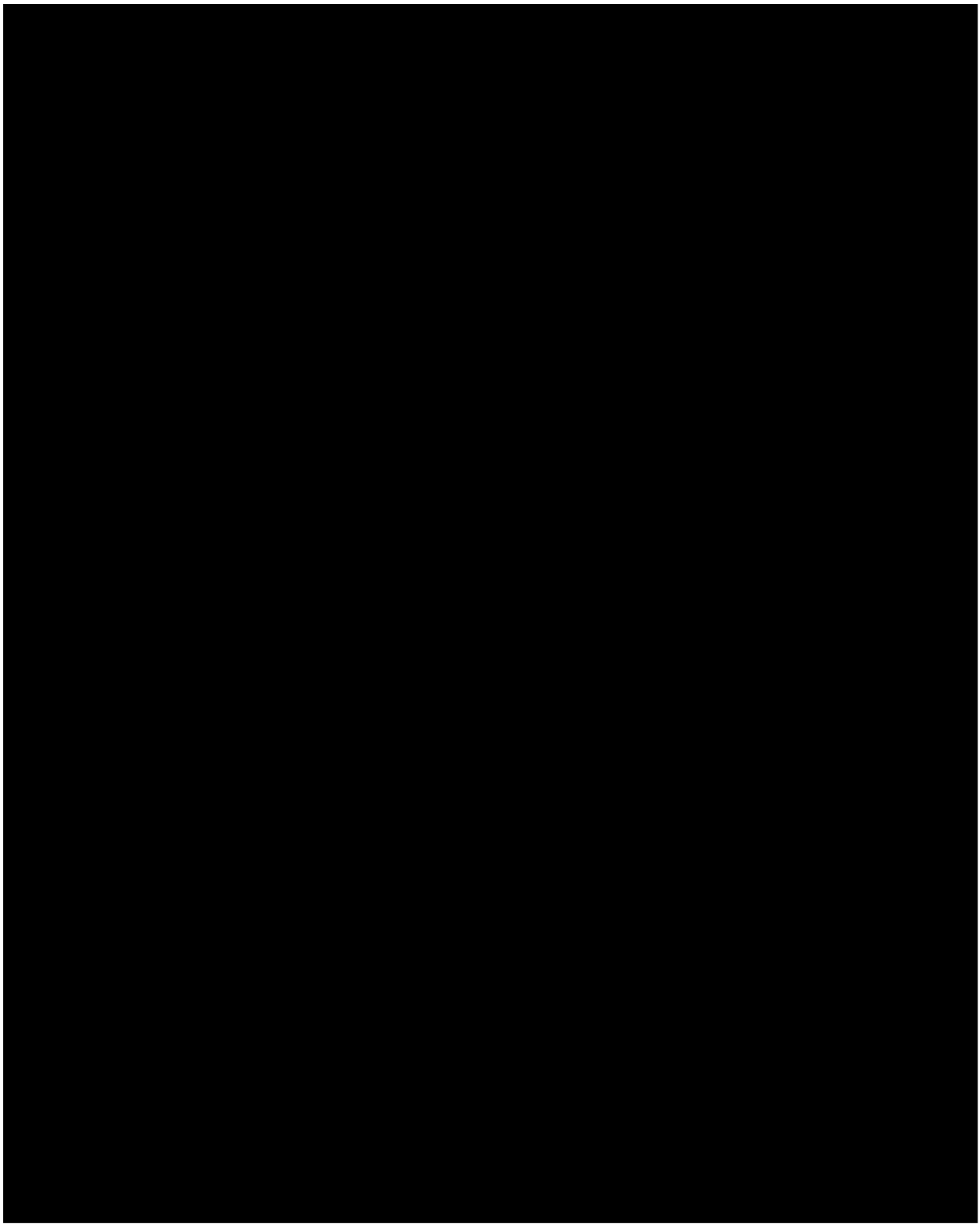
REDACTED Exhibit IX-1
Wire Center Access Line Counts

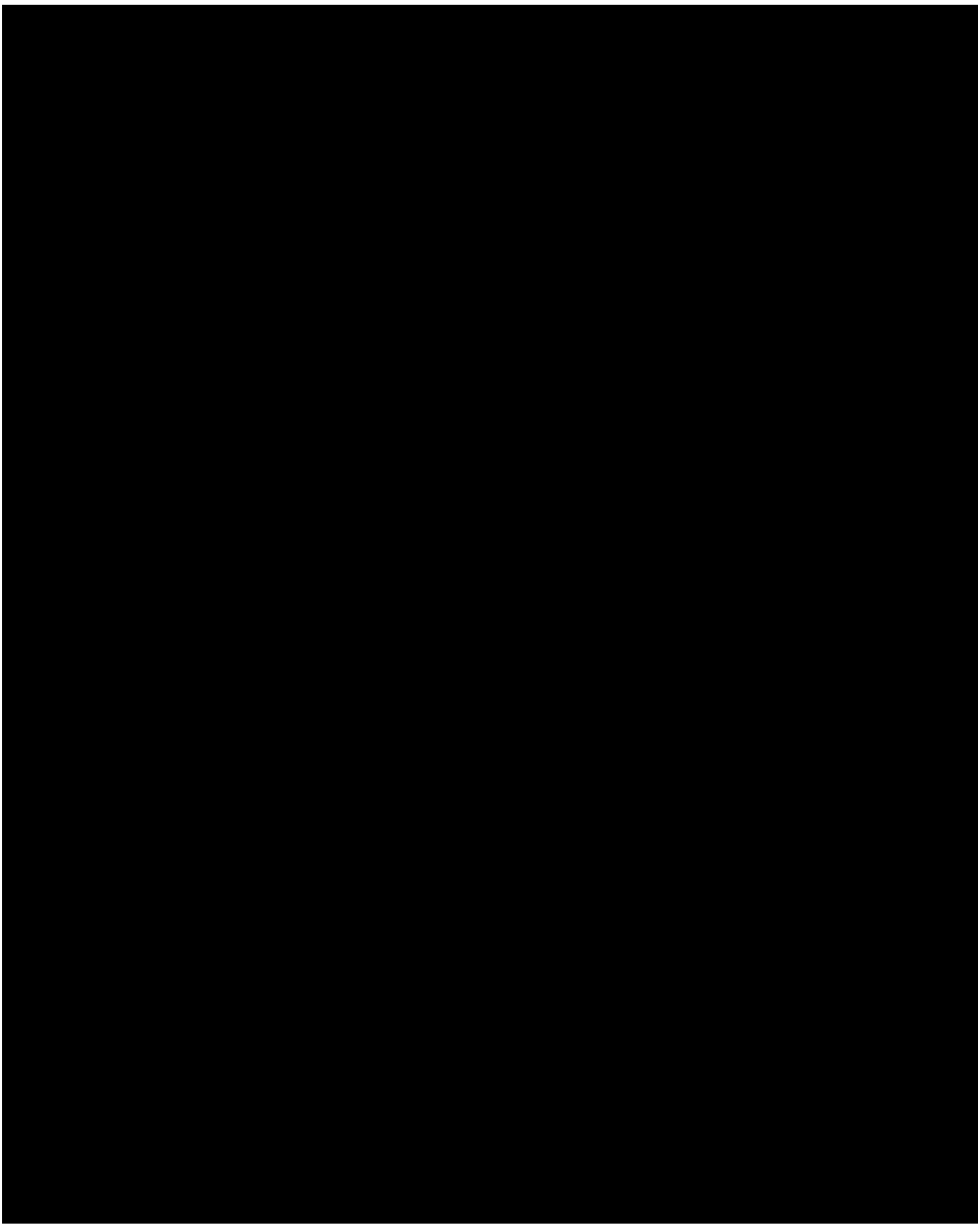
Source: Information Response 15

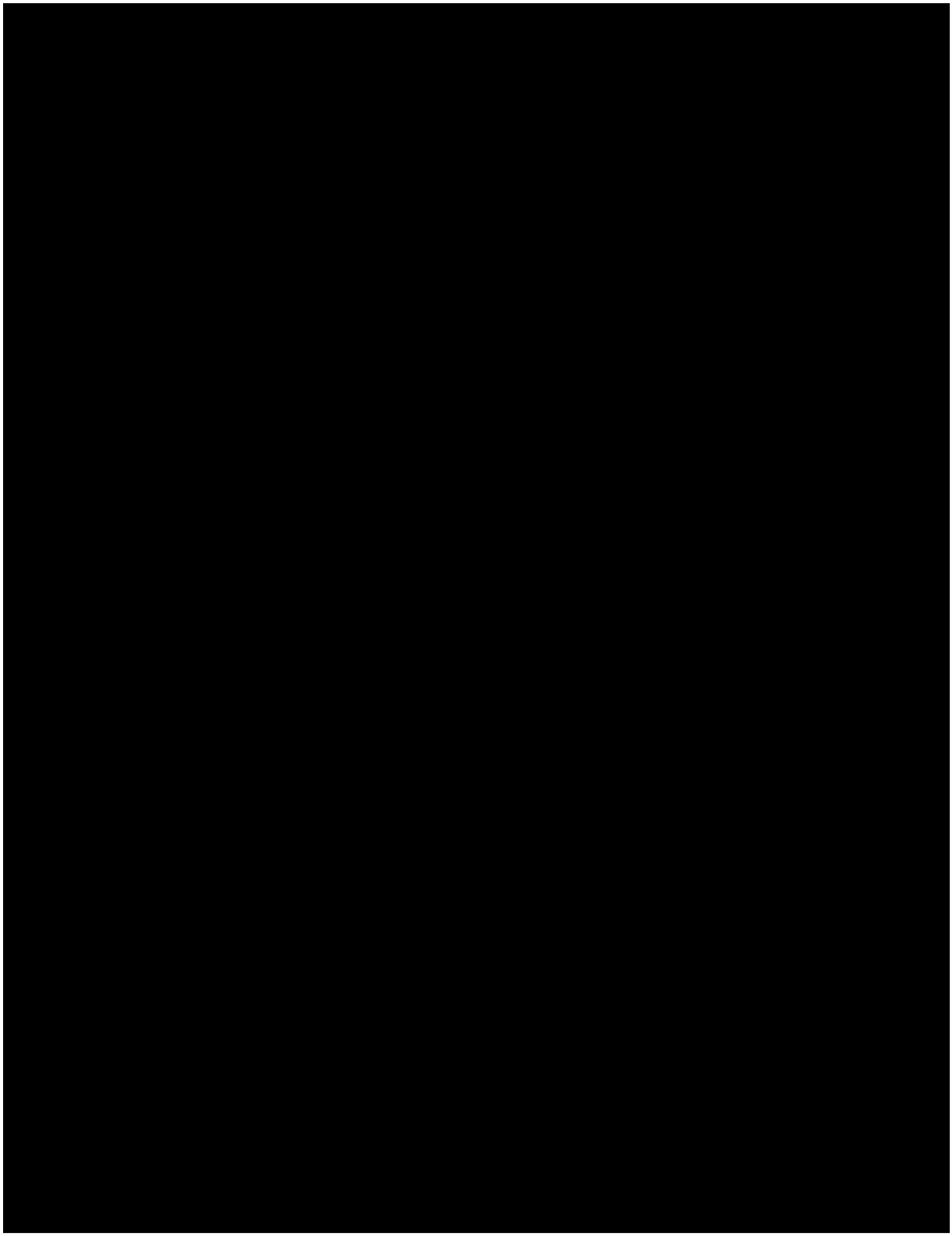
Overall, the number of access lines in all of the wire centers have declined by [redacted]% in the past three years, 2016 through June, 19, 2019. The number of access lines declined in all of the wire centers but one, and that one had a slight increase of [redacted]%. The amount of decline varied by wire center, ranging from a loss of [redacted]% of access lines to a loss of [redacted]% of access lines. The number of access lines for each wire center for the period, 2016 through June 19, 2019 are shown on *REDACTED* Exhibit IX-2.[268]

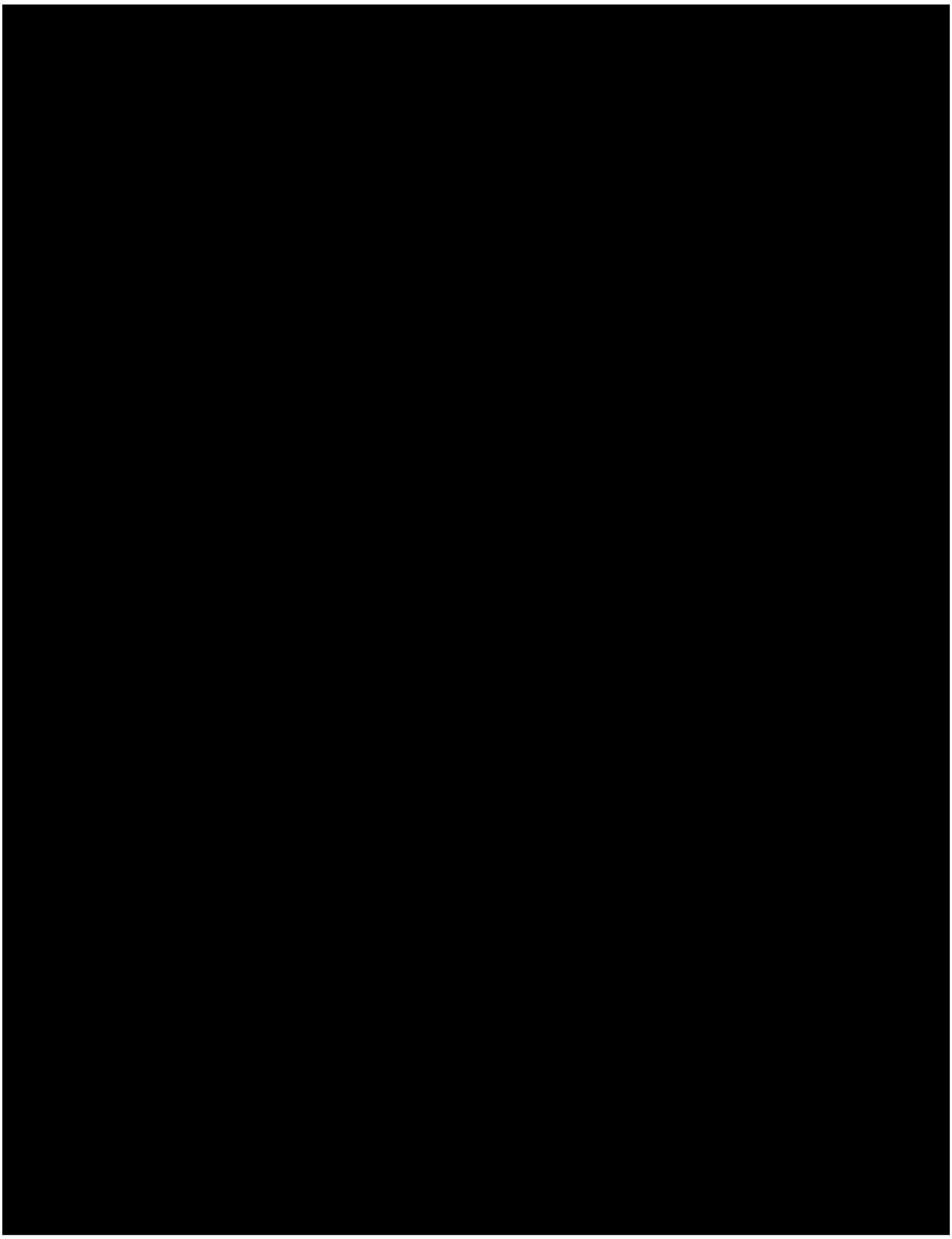
REDACTED Exhibit IX-2
Access Line Counts by Wire Center











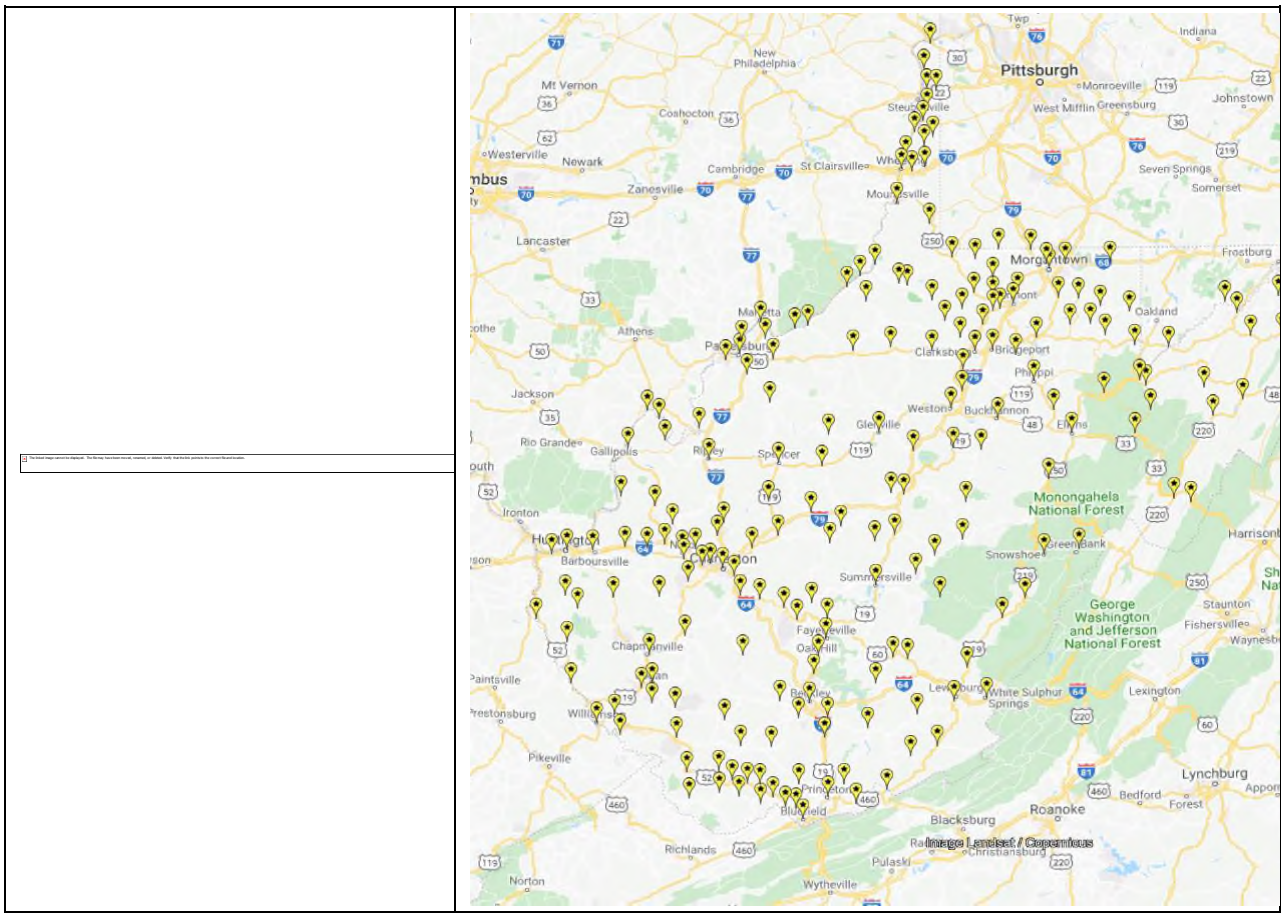
Source: Information Response 15

There is no financial information available at the wire center level. There is no profit and loss data available within the Frontier Corporation organization below the independent local exchange carriers (ILECS), Frontier West Virginia and CTC of West Virginia, in West Virginia, and there is no available analysis that would shed light on the differences in access line losses among the 222 wire centers. Frontier stated that there was no analysis available that could relate loss of access lines to loss of revenue and/or profitability by wire center.[269]

Frontier has no information or analysis concerning the categories of customers that have dropped their service over the past [redacted] years – whether they were the most profitable customers (businesses, urban, high density) or the rural or least profitable customers.[270]

Exhibit IX-3 shows grouping of Wire Centers by county or geographic area.[271]

Exhibit IX-3
Groupings of Wire Centers



Source: Information Response 88

Financial Statements

In looking at financial statements from 2008 to 2018, there is no cash recorded at the ILEC level. Instead, it is all collected and maintained at the Frontier Corporate level, in which billing and receipts from billing come in directly to the Frontier service company (via lock boxes, payment collection centers etc.).[272]

There is some confusion explaining the "Other Noncurrent Assets" balance sheet account for Frontier West Virginia or the "Investment in Affiliate Companies" balance sheet account for CTC. When Schumaker & Company asked Frontier to provide a description of the types of transactions that have been made to these balance sheet accounts from 2010 through 2018 from Frontier West Virginia and from 2008 to 2018 for CTC of West Virginia, Frontier indicated that these accounts represent transfer

payments either to or from the two companies' parent, basically an Intercompany Note Payable or Receivable.[273] The parent would record this as a "Note Payable" to the ILEC. The ILECs report it as other-than-current investments. Frontier West Virginia's balance in this account declined by approximately [redacted], and CTC of West Virginia's account increased by approximately [redacted] during the 2010 through 2018 time period.[274]

Key financial data from the combined income statements of Frontier West Virginia and CTC of West Virginia for the period 2010 through 2018 are shown on REDACTED Exhibit IX-4.[275]

REDACTED Exhibit IX-4
Frontier West Virginia and CTC of West Virginia Combined Income Statements
as of December 31
($000)

Source: Information Response 17 and Information Response 144

The financial results for the regulated operations for Frontier West Virginia and CTC of West Virginia vary considerably over the last ten years, with Regulated Operating Income ranging from a high of [redacted] in 2011 to a low of [redacted] in 2016 and the last three years (2017 – 2019) averaging [redacted]. Operating Income from Non-Regulated Operations has been more constant and for the past eight years exceeded Regulated Operating Income. For seven of the last eight years (2012 through 2018), income from Non-Regulated Operations has been the reason that the West Virginia operations reflected a positive Net Income. A $450 million Goodwill impairment charge in 2019 caused a Net Income loss in 2019.[276]

It must be noted that had the West Virginia ILECS reported the corporate allocations for Pensions, OPEB, and Interest shown in *Exhibit IX-5,* below, the positive Net Income amounts for all of the years in REDACTED Exhibit IX-4 would be negative, with the total Net Loss for the ten years in this schedule amounting to approximately [redacted] million.[277]

Cash Management/Flows

Both ILECs are part of a centralized cash management system; cash is received by the parent on behalf of each ILEC; cash transactions involved include receipts and disbursements for direct operating expenses, income taxes (federal and state), and capital expenditures.[278]

Recent information provided by Frontier states that both of the West Virginia companies are responsible for significant additional cash outflows that are not reflected in the financial statements that are submitted to the West Virginia regulatory authorities. These items requiring cash outflows over the last nine years (2011 through 2019) include [redacted] in Pension Cost Contributions, [redacted] in OPEB Benefit Payments, and [redacted] in Corporate Cash Interest. These amounts were paid on behalf of the West Virginia ILECS by Frontier Corporate, and resulted in an average annual negative cash flow [redacted].[279] *Exhibit IX-5* displays these corporate transactions allocated to the West Virginia ILECS that resulted in negative cash flows for all of the years from 2012 through 2019.[280]

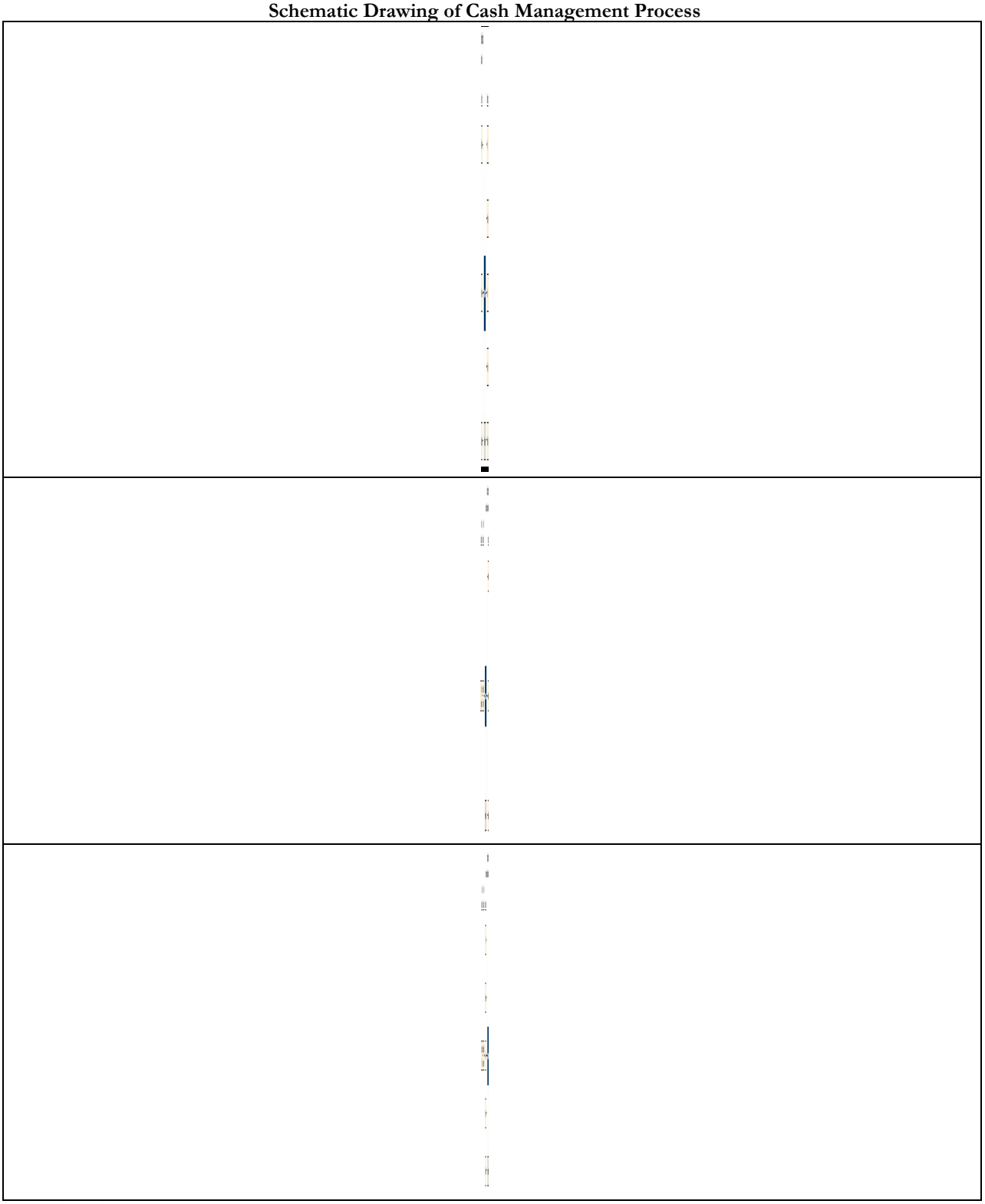
REDACTED Exhibit IX-5
Frontier West Virginia and CTC of West Virginia Combined Net Cash Flow
as of December 31
($000)

[redacted]

Source: Information Response 168

REDACTED Exhibit IX-6 displays a schematic drawing of Frontier's cash management process.[281]

REDACTED Exhibit IX-6
Schematic Drawing of Cash Management Process



Source: Information Response 98

Cost Allocation Manual Documentation

Central support expenses are allocated to legal entities based on Revenue percentages.[282]

A Cost Allocation Manual (CAM) documentation is not required for either ILEC entity.[283] Frontier was granted forbearance from the Federal Communications Communication (FCC) and is not required to maintain a CAM. Also, both ILEC entities were given forbearance from the Public Service Commission of West Virginia.[284]

The FCC Wireline Competition Bureau (Bureau) approved Frontier Communications Compliance Plan, as follows:[285]

- On May 17, 2013, the Commission conditionally granted forbearance to price cap carriers from the "Cost Assignment Rules" that generally require carriers to assign costs to build and maintain the network, and revenues from services provided, to specific categories. The grant of forbearance from these rules for a particular price cap carrier was conditioned on the Wireline Competition Bureau approving a compliance plan to be filed by such carrier electing to take advantage of the forbearance, and the approval of the related information collection under the Paperwork Reduction Act (PRA). In the same order, the Commission conditioned the grant of forbearance from the filing requirement of Automated Reporting Management Information System (ARMIS) Report 43-01, the "Annual Summary Report," on Bureau approval of the compliance plan.
- On March 15, 2015, Frontier Communications filed its Compliance Plan with respect to three of the four conditions for forbearance from the Cost Assignment Rules. Frontier stated that its plan is applicable to all of its local exchange carrier affiliates, with the exception of former Verizon and A&T subsidiaries that have already received approval of their forbearance plans. Frontier asserted that its plan resembles those previously filed by AT&T, Verizon, Qwest, CenturyLink, and Windstream, all of which have been approved. No comments were filed regarding Frontier's Compliance Plan.
- After review of Frontier's Compliance Plan, the Bureau found that Frontier appropriately addresses in its Compliance Plan the conditions that are required for the requested forbearance, as discussed below, and the Bureau therefore approved the plan. Frontier's plan is similar to other price cap carrier plans that have been approved as sufficient to support requested forbearance relief. First, Frontier's plan described in detail how it will continue to fulfill its statutory and regulatory obligations and the conditions of forbearance through a new framework in the absence of the Cost Assignment Rules. In addressing the second forbearance condition, which requires Frontier to continue complying with part 32 USOA rules, Frontier's plan provided a five-part explanation of how the carrier intends to satisfy this requirement. Frontier explained that it "will continue to maintain USOA books of account that include account-specific investment, expense and revenue data for Part 32 accounts," and that these data will remain available for inspection by the Commission. Further, Frontier described how it plans to provide cost allocation information if the Commission requests it in the future.

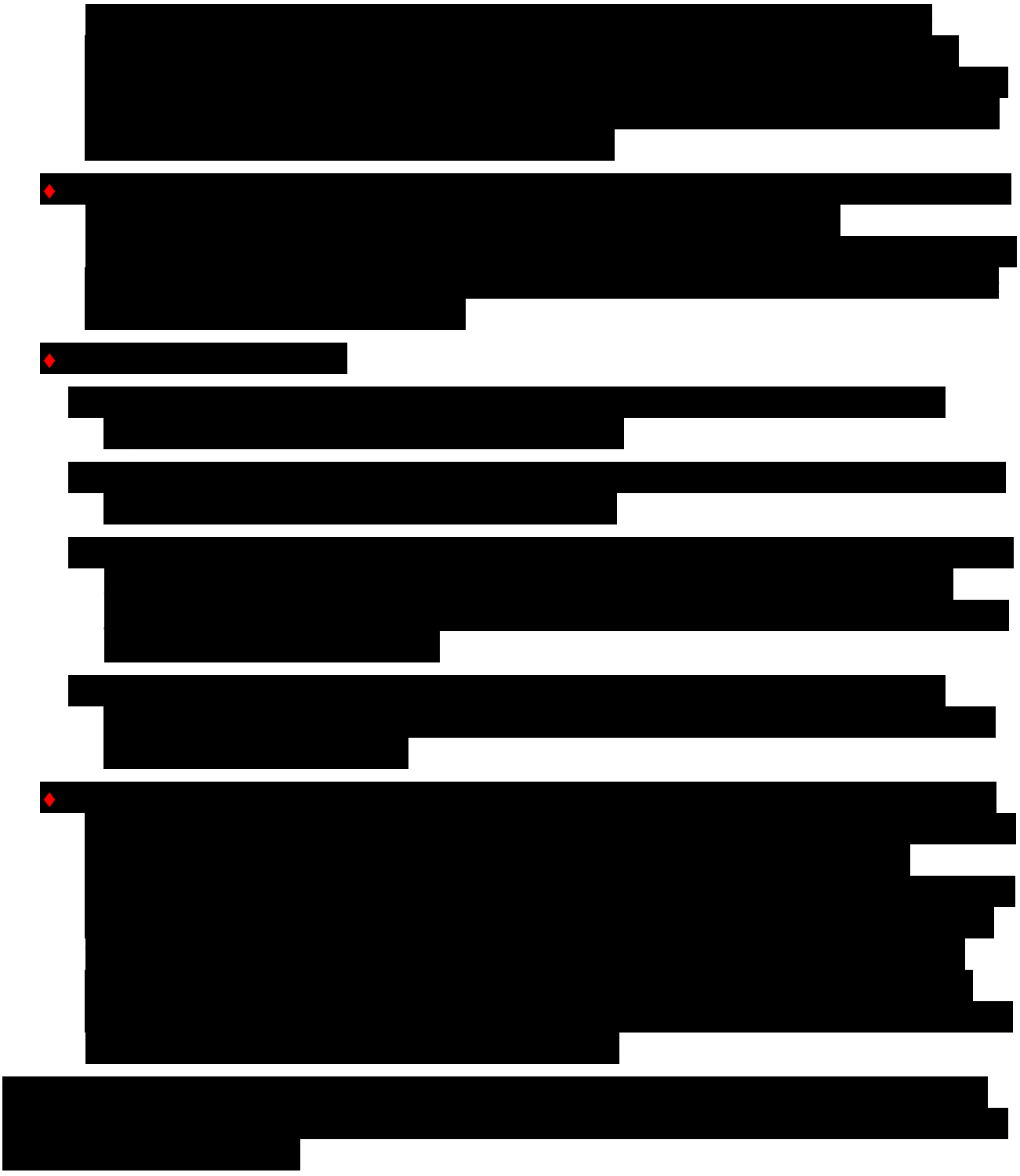
- Next, Frontier explained how it will fulfill a third condition of the forbearance, which requires that it certify, on an annual basis, that it complies with section 254(k) of the Act, and will maintain and provide any requested cost accounting information necessary to prove such compliance. In support of this condition, Frontier included its first annual certification with its Compliance Plan.
- Lastly, Frontier explained that its Compliance Plan does not contain commitments concerning the fourth condition, because it is not seeking to take advantage of forbearance from section 64.1903 of the Commission's rules. Section 64.1903 requires that an independent incumbent LEC providing in-region long distance services do so through the use of a separate affiliate. This rule reduces the need to allocate costs between long distance and other services, although it does not eliminate the need for cost allocation entirely. For example, Section 64.1903 bars the joint ownership of facilities by the long distance affiliate and other operations, but permits sharing of personnel. Frontier's Compliance Plan explained how it will handle cost allocation and affiliate transaction issues in the absence of the Cost Assignment Rules, and how its plan addresses those issues with regard to the separate affiliate rule. Should Frontier later decide it wishes to take advantage of forbearance from this rule and provide in-region long distance service without a Section 64.1903 separate affiliate, Frontier must, as it proposes, file a separate Compliance Plan then, subject to Bureau approval, addressing the conditions to that relief, including the requirement that it describe the imputation methodology it will use, similar to access imputation plans previously filed by the Bell Operating Companies related to section 272 of the Act.
- Accordingly, the Bureau found that Frontier's Compliance Plan satisfies the necessary conditions associated with forbearance from the Cost Assignment Rules, with the exception of the condition involving the affiliate transaction rule, as discussed above. Thus, it approved this Compliance Plan, and Frontier will have forbearance relief from all the Cost Assignment Rules effective immediately. Should Frontier later wish to take advantage of forbearance relief from the affiliate transaction rule in Section 64.1903, Frontier must submit a Compliance Plan explaining compliance with that condition in accordance with the terms of the *USTelecom Forbearance Long Order*.

Annual Reports

Annual Reports were submitted to the Public Service Commission of West Virginia for Frontier West Virginia and CTC of West Virginia for 2010 through 2018, the following existed:[286]

- A Full Annual Report was available for CTC of West Virginia.
- Only selected schedules were available for Frontier West Virginia, as schedules are what was negotiated by Verizon prior to Frontier involvement.
- Cash flow statements were available for CTC of West Virginia, but not included in schedules for Frontier West Virginia.

[redacted]



B. Findings and Conclusions

Finding IX-1 **Net income amounts for both companies, Frontier West Virginia and CTC of West Virginia have increased at a healthy rate from 2010 through 2018, although costs associated with Frontier corporate were not included as discussed in Finding IX-2 and Finding IX-7.**

Net income for the West Virginia ILECS totaled $546.9 million from 2010 through 2018, with an annual average net income of $60.8 million and a compound annual growth rate of 3.49%.[294] However, the initial information responses did not include Frontier corporate charges as discussed in

Finding IX-2 **A Goodwill impairment charge in 2019 eliminated most of the accumulated net income from the previous nine years.**

Frontier West Virginia received a $450 million Goodwill impairment charge in 2019. This single charge wiped out almost all of the accumulated net income for the previous nine years ($546.9 million - $450 million = $96.9 million).[295]

Finding IX-3 **Regulated operating revenues and expenses for both companies, Frontier West Virginia and CTC of West Virginia have varied considerably over the past ten years.**

Regulated operating revenues have ranged from a low of $309 million in 2019 to a high of $540 million in 2011 and 2012 and averaged $398 million during this ten-year period.[296]

Regulated operating expenses ranged from a low of $261 million in 2019 to a high of $510 million in 2012. The average annual operating expenses over this period was $344 million.[297]

Finding IX-4 **Non-regulated operating income has consistently exceeded regulated operating income.**

For the past ten years non-regulated operating income has exceeded regulated operating income except for 2010 and 2011. Non-regulated operating income totaled [redacted] from 2010 through 2019, while regulated operating income totaled [redacted].[298]

Finding IX-5 **No cash balances are recorded at the ILEC level.**

Cash is collected and maintained at the Frontier corporate level. Receipts from billing come in directly to the Frontier service company (via lock boxes, payment collection centers, etc.).[299] Both ILECS are part of a centralized cash management system; cash is received by the parent on behalf of each ILEC; cash transactions involved include receipts and disbursements for direct operating expenses, income taxes (federal and state), and capital expenditures.[300]

Finding IX-6 **Cash transfers between the ILECS and their parent were recorded as investments or noncurrent assets.**

The asset account, "Other Noncurrent Assets" or "Investment in Affiliate Companies" reported by the ILECS represented payments to or from their parent company (Frontier Corporation). The parent would record this as a "Note Payable" to the ILEC. The ILECs report it as other-than-current investments. During the period from 2010 through 2018 the Frontier Corporation [redacted] to Frontier West Virginia in this manner, and CTC of West Virginia transferred [redacted] to the Frontier Corporation.[301]

Finding IX-7 **Corporate transactions that apply to the Frontier West Virginia ILECs were not included in their annual reports to the West Virginia utility regulators and considerably alter the financial picture of both companies.**

A cash flow statement received by the auditors in March 2020 reveals significant cash flow transactions that take place at the corporate level that concern the West Virginia ILECs' operations. These transactions requiring cash outflows over the last nine years (2011 through 2019) include [redacted] in Pension Cost Contributions, [redacted] in OPEB Benefit Payments, and [redacted] in Corporate Cash Interest. These negative cash flow transactions amounted to [redacted] from 2011 through 2019 and resulted in the ILECS having negative cash flows for all of these years with the exception of 2011.[302]

Additionally, had these expense items been included in the Frontier West Virginia and CTC of West Virginia financial statements that were reported to the West Virginia utility regulators, the positive Net Income reported by these companies over the past ten years would have been Net Losses.

Finding IX-8 **The number of access lines for the West Virginia ILECS has declined significantly over the past three and one-half years.**

Access lines counts in the 222 wire centers have decreased from [redacted] in 2016 to [redacted] as of June, 2019 – a decline of [redacted]%.[303]

Finding IX-9 **No analysis has been conducted concerning access line losses.**

There is no profit and loss data available within the Frontier Corporation organization below the independent local exchange carriers (ILECS), Frontier West Virginia and CTC of West Virginia, in West Virginia, and there is no available analysis that would shed light on the differences in access line losses among the 222 Wire Centers. There is no analysis available that could relate loss of access lines to loss of revenue and/or profitability by Wire Center.[304]

Finding IX-10 **There is limited financial information available below the state level.**

There is no profit and loss data available within the Frontier Corporation organization below the independent local exchange carriers (ILECS), Frontier West Virginia and CTC of West Virginia, in West Virginia.[305]

Finding IX-11 **The lack of cost allocation manual documentation makes it difficult to understand how Frontier Communications records Frontier West Virginia and CTC of West Virginia accounting.**

Central support expenses are allocated to legal entities based on revenue percentages,[306] however it is difficult to understand how Frontier West Virginia and CTC of West Virginia balance sheet and income statement records are calculated, as mentioned.

Finding IX-12 [redacted]

C. Recommendations

Recommendation IX-1 **Cash balances that belong to the West Virginia ILECS should be recorded on their financial statements. (Refer to Finding IX-5, Finding IX-6, and Finding IX-7.)**

It is fine and recommended that cash be consolidated at the corporate level in order to take advantage of efficiencies of scale and promote effective cash management processes. However, the cash balances that are associated with the West Virginia ILECs should be reflected on their financial statements in order to present a fair and complete picture of their financial operations.

Recommendation IX-2 **Financial statements should include all appropriate financial transactions that apply to both West Virginia ILECs. (Refer to Finding IX-5, Finding IX-6, and Finding IX-7.)**

Expenses that are paid by Frontier Corporate that apply to and are allocated to Frontier West Virginia and CTC of West Virginia should be included in the two companies' financial statements. In order to present true financial results and correct financial positions, the financial statements and annual reports to the West Virginia utility regulators must provide complete and accurate financial information. For the past ten years certain expenditures paid by Frontier Corporate that included Pension, OPEB, and Interest that were allocated to the West Virginia ILECS were not included in their financial statements and annual reports to state regulators.

Only CTC of West Virginia produces a cash flow statement in its annual report to the West Virginia regulators. Frontier West Virginia's annual report merely states that cash balance are recorded at the consolidated corporate level, and the Frontier West Virginia cash balance is zero. Regardless of the consolidation of cash, Frontier West Virginia's financial statements should reflect the cash balances attributed to its operations, and a cash flow statement should be included so that there is a financial picture of Frontier West Virginia's operations and financial position. Both CTC of West Virginia and Frontier West Virginia should include all cash transactions that affect their operations wherever they originate so that the financial picture presented to regulators is complete and accurate.

Recommendation IX-3 Financial data should be developed concerning the operations below the ILEC level. (Refer to Finding IX-9 and Finding IX-10.)

No financial data is available below the ILEC level in West Virginia. Therefore, it is difficult or impossible to determine the profitability, value, or requirement for individual wire centers. It is also impossible to determine the reason for differing access line changes at wire centers or the financial effect of these changes, or to put in place effective corrective measures.

X. Labor Relations

A. Background and Perspective

Frontier West Virginia has two labor unions, the Communications Workers of America (CWA) and the International Brotherhood of Electrical Workers (IBEW). Approximately 1,250 (95%) of the union workforce is represented by CWA and 62 (5%) by IBEW.[308] The company's most recent contracts with the unions were renegotiated in 2017 – 2018. Relations between CWA and Frontier are described by both sides as professional and cordial. There were expected tensions associated with the renewal of the contracts; however, with the contracts ratified in 2018, relationships have returned to normal.[309]

The IBEW contract was signed in October 2018 and has a three year term, expiring in October 2021. The CWA contract expired in August 2017, and after several extensions (to March 3, 2018) the union went on strike. One major issue in contract negotiations centered on layoffs. CWA sought to maintain layoff protections. After a three week strike, a settlement was reached and a new contract was signed. The current effective and termination dates on the CWA contract are August 6, 2017 to August 7, 2021. For CWA members, the 4 year contract provides job security, a 2% wage increases for three of the contract years and prevention of the closure of three calling centers. For Frontier, the contract included increased medical contributions and no strike clauses. Both contracts layout grievance procedures, overtime, seniority rules, wages, transfers, training and other provisions. The CWA contract provides an Income Security Plan which provides additional payments to employees who leave the company. Frontier operations managers meet with union representatives three or four times a year to discuss any issues they might have.

Frontier West Virginia management believe that they have the most restrictive use of contracts of all of the Frontier companies and cite to specific aspects of the contact that restricts their flexibility. First, they note that they cannot contract out fiber work. While Frontier may contract out the trenching for fiber lays, the actual fiber lays and splicing must be done by Frontier employees. The second restriction noted centers on the ability to implement forced transfers which would allow the relocation of employees beyond a 35 mile limit from their reporting location. The impact, according to Frontier, is that it inhibits a more efficient allocation of resources across its footprint. Additionally, the restriction means that Frontier has to pay additional costs when the technician works outside the zone. There also exists a .[redacted]% per year limit on the number of permanent transfer of CWA bargaining unit jobs, which Frontier believes inhibits the consolidation of work centers outside of West Virginia. Frontier notes the CWA contract has a liberal vacation and excused work day provisions that prevent the company from having the necessary on-the-job resources when needed. Finally, the company notes limits on the ability to mandate overtime work.

Volunteer Separations

Pursuant to the conditions of Frontier's acquisition of Verizon properties, Frontier was required to inform the West Virginia Public Service Commission of any planned workforce reduction greater than [redacted]% of the then existing West Virginia workforce.

Annual reports filed with the WVPSC provide the following data with respect to the workforce reductions, as illustrated in *REDACTED* Exhibit X-1 below.

REDACTED Exhibit X-1
FTR and CTC Employee Reductions
2010-2018

Year	Total FTR and CTC Employees	Total Reduction from Prior Year	Percent Reduction from Previous Year
2010	[redacted]	[redacted]	[redacted]
2011	[redacted]	[redacted]	[redacted]
2012	[redacted]	[redacted]	[redacted]
2013	[redacted]	[redacted]	[redacted]
2014	[redacted]	[redacted]	[redacted]
2015	[redacted]	[redacted]	[redacted]
2016	[redacted]	[redacted]	[redacted]
2017	[redacted]	[redacted]	[redacted]
2018	[redacted]	[redacted]	[redacted]

Source: WVPSC Staff

Despite the data presented above, Frontier reports that the threshold has not been reached since the merger. There appears to be difference in interpretation between WVPSC and FTR as to what is/is not included in the [redacted]% threshold. For example, using 2017 as an example, FTR states that while there were significant reductions, the company offered three different and separate ISPs and because they were entirely voluntary, at the time each was made, the number of employees who would exercise the option to leave was unknown.

However, Frontier has had a number of voluntarily offers to allow [redacted] union personnel to leave under various incentive plants over the past [redacted] years. *Exhibit IX-2* shows Frontier Union separations by date.[310]

REDACTED Exhibit X-2
Frontier Union Separations by Date
as of December 31, 2019

Date	Bargaining Unit	Number of Separations
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

Source: Information Response 106

These [redacted] volunteer separations were across approximately [redacted] different job titles. The percentage of separations by job title is as follows in *REDACTED* Exhibit X-3:[311]

REDACTED Exhibit X-3
Union Separations by Job Title under Incentive Programs
2010 to 2019

Job Title	Number of Separations	Percent of Separations
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

Source: Information Response 106

Performance Incentives

Frontier has established union performance bonus programs to encourage productivity and affording union employees the ability to share in the success of the company. Each union has such a program and they are similar with respect to the various components. Each year certain objectives are established by the company and payouts are calculated against those objectives. The company spends just over a million dollars a year on performance bonuses for union workers.[312]

CWA - Corporate Profit Sharing Plan

The CWA contract continues a corporate profit sharing (CPS) program that provides incentives for employees to receive compensation for increased performance. The program incorporates five measures with the following weights, as shown in *REDACTED* Exhibit X-4.[313]

REDACTED Exhibit X-4
CWA Corporate Profit Sharing Plan Inputs/Weights
as of December 31, 2019

Metric	Weight	Level
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

Source: Information Response 103

For individual CWA members the annual performance bonuses are between $[redacted] and $[redacted] based performance as illustrated below in *REDACTED* Exhibit X-5.[314]

REDACTED Exhibit X-5
CWA Corporate Profit Sharing Plan – Payout Grid
as of December 31, 2019

WV Field Operations Scorecard	Payout
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

Source: Information Response 103

IBEW – Team Performance Bonus Plan

The IBEW contract has a Team Performance Bonus plan to urge and recognize teamwork reward employees for improved productivity. The components and weighting for the IBEW are displayed in *REDACTED* Exhibit X-6:[315]

REDACTED Exhibit X-6
IBEW Team Performance Bonus Plan - Inputs/Weights
as of December 31, 2019

Metric	Weight	Level
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

Source: Information Response 104

The minimum payouts under the IBEW contract are [redacted] of base pay and [redacted] percent of base pay. As an example, the annual base rate for an Inside Technician is $[redacted]. Thus, the minimum Team Bonus Plan payout would be [redacted] percent or $[redacted]*$[redacted]). The maximum would be $[redacted] * $[redacted]).

Grievances

Union grievances, displayed in *REDACTED* Exhibit X-7, have averaged about [redacted] per year, with the largest percentage of grievances ([redacted]%) centering on work assignments, work movements and work expectations.

REDACTED Exhibit X-7
Grievances by Year
as of December 31, 2019

Source: Information Response 154

The second largest issue centers on discipline ([redacted]%) followed by overtime ([redacted]%). *REDACTED* Exhibit X-8 below illustrates the distribution of grievances over the last [redacted] years.

REDACTED Exhibit X-8
Distribution of Grievances
as of December 31, 2019

Source: Information Response 154

Measuring Productivity – Installation and Repair Technicians

Frontier has adopted a Performance Management Program (PMP) the purpose of which is to improve the overall performance (productivity and quality) of its I&R Techs. [redacted]

The PMP program also requires local managers to monitor OPP8 productivity levels and conduct at least [redacted] inspections per month. The local managers are also delegated with meeting with technicians performing below threshold and developing individual performance plans. Finally, increased inspections ([redacted] per week) for employees performing below threshold are required.

The major drawback to the system, as reflected by technicians we interviewed centered on the various tasks/activities, [redacted]

- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

[redacted].

B. Findings and Conclusions

Finding X-1 **Frontier's Performance Management Program Does Not Adequately Capture Maintenance and Other Tasks.**

There are a number of activities undertaken [redacted] to his/her productivity measures. Time spent on these tasks is not [redacted]

C. Recommendations

Recommendation X-1 **Frontier Should Revise the PMP to Incorporate Hours Allocated to Maintenance and Other Tasks. (Refer to Finding X-1.)**

To provide a more accurate measure of productivity, the PMP should be revised to recognize the value of various tasks for [redacted]

[1] / Information Response 88

[2] / Information Response 168

[3] / Information Response 25

[4] / Interview 16

[5] / Interview 17

[6] / Information Response 32 and Interview 16

[7] / Information Response 15

[8] / Interview 14

[9] / Interview 15

[10] / Information Response 23

[11] Interview November 8, 2019.

[12] / The Commission determined that the annualized expenditures of between $[redacted] million and $[redacted] million should be at least doubled (i.e. between $[redacted] million and $[redacted] million) per year.

[13] / Commission Order, Case 08-0761-T-GI, May 10, 2010.

[14] / The RSQP is included as Appendix A in the Commission's December 2008 Case 08-0761-T-GI.

[15] / It should be noted that the RSQP is applicable only to Frontier West Virginia and **not** to the Citizens Telecommunications of West Virginia

[16] / Letter of June 30, 2017 from Kathy Cosco, Manager, Government & External Affairs to Ingrid Ferrell, Executive Secretary, West Virginia Public Service Commission.

[17] / Frontier West Virginia, Inc. and West Virginia (Frontier).

[18] / Letter of February 28, 2018.

[19] Case 17-1200-T-C, Order of March 14, 2018

[20] Case 18-0291-T-P, Order of August 30, 2018

[21] A number of other state utility commissions have also expressed concern about Frontier's service quality. See Minnesota (405/CI-18-122); New York Public Service Commission (18-C-0219); and, Ohio (19-15-82-TP-COC).

[22] While Frontier tracks service quality metrics and responds to individual customer complaints, prior to the instant investigation, Frontier had not conducted any overall study/investigation of service quality, nor have there been any internal audits of such. [IR 28]

[23] / National Center for Health Statistics, Wireless Substitution: Early Release of Estimates From the National Health Interview Survey, July–December 2018 Stephen J. Blumberg, Ph.D., and Julian V. Luke Division of Health Interview Statistics, National Center for Health Statistics, December 2019.

[24] / In May 2019 Frontier announced plans to sell its operations in four states (Washington, Oregon, Idaho, and Montana) which comprise approximately 350,000 access lines

[25] / Case 18-0291-T-P, Staff Memo dated June 29, 2018, p5.

[26] / Information Response 99

[27] / https://www.techdirt.com/articles/20190710/07430942551/west-virginias-biggest-telco-says-broadband-business-unsustainable.shtml

[28] / W.V Code 31.G-1-2(1).

[29] / FCC Broadband Report (Paragraph 12, May 2019)

[30] / The FCC uses census block information to estimate deployment which tends to overstate deployment. The whole census block is classified as served if the Form 477 or the SBI data indicate that service can be provided anywhere in the census block. Further, the service does not have to be readily available, rather classified as available in a census block if the provider does, or could, within a service interval that is typical for that type of connection—that is, without an extraordinary commitment of resources.

[31] / Appendix 1 (2019 FCC Broadband Report)

[32] / Information Response 99

[33] / Petition Page 2, 09-0871

[34] / Appendix A, 09-0871-T-PC

[35] / Frontier Integration Report, January 31, 2014.

[36] / This $[redacted] million annual funding was the highest of all of Frontier's [redacted] states.

[37] / https://data.usac.org/publicreports/caf-map/

[38] / In contrast to the Assurance Plan, the CAF II program does not require that additional households connect to the internet, rather, just that this speed be "available" to those households.

[39] / While the FCC's current definition of broadband is 25 Mbps, the CAF II requirements were lower (10 Mbps).

[40] / Frontier is to file the 2019 expenditures with the FCC in February 2020.

[41] / See January 15, 2020 Letter from Frontier's Vice President, Federal Regulatory to the FCC. In that letter Frontier notes they may not have reached the deployment milestone in West Virginia and twelve other states.

[42] / In addition , in 2015 Frontier and the Attorney General of West Virginia entered into an Assurance of Voluntary Compliance (Assurance Plan) regarding how it marketed its internet speeds.[42] As part of the Assurance Plan, Frontier agreed to invest an additional $150 million[42] to further expand its existing Internet network and to increase access rates of at least 6 Mbps download/1 Mbps upload). By the end of 2018, the Company attests that over 90% of its customers had access to broadband at various speeds. Just over 40% have access to speeds of 25 Mbps download.[42]

[43] / Consultant Knowledge

[44] / Information Response 93

[45] / Consultant Knowledge

[46] / Consultant Analysis

[47] / Information Response 93, Consultant Analysis, and QGIS

[48] / Information Response 93, Consultant Analysis, and QGIS

[49] / Information Responses 15 and 99 and Consultant Analysis

[50] / Information Responses 15 and 99, Consultant Analysis, and QGIS

[51] / Information Response 93 and Consultant Analysis

[52] / Information Response 93 and Consultant Analysis

[53] / Information Response 93 and Consultant Analysis

[54] / Information Response 93 and Consultant Analysis

[55] / Interviews 6 and 22 and Consultant Analysis

[56] / Consultant Analysis

[57] / Information Response 93 and Consultant Analysis

[58] / Information Response 93, Consultant Analysis, and QGIS

[59] / Interviews 5 and 22 and Consultant Knowledge

[60] / Information Response 93, Consultant Analysis, and QGIS

[61] / Interviews 5 and 22 and Consultant Knowledge

[62] / Information Response 93, Consultant Analysis, and QGIS

[63] / Interview 5 and Consultant Knowledge

[64] / Information Response 93, Consultant Analysis, and QGIS

[65] / Consultant Assumption

[66] / Information Response 86

[67] / Information Response 135 and Consultant Knowledge

[68] / Consultant Knowledge

[69] / Frontier feedback at March 4,2020 review of Draft Report

[70] / Information Response 86

[71] / Information Response 122

[72] / Information Response 122

[73] / Information Response 135

[74] / Information Response 122

[75] / Interview 6, 18/19, and 22

[76] / Interview 13

[77] / Information Response 53

[78] / Interview 13

[79] / 03/06/2020 email from Frontier WV with Subject "WV Audit CO tech work p37"

[80] / Information Response 50
[81] / Information Response 67
[82] / Interviews 5-7, 18-19, 22, and, 24
[83] / Interviews 5-7, 18-19, 22, 23, and, 24
[84] / Interview 6
[85] / Information Response-44 and Consultant Analysis
[86] / Information Response 44 and Consultant Analysis
[87] / https://woodpoles.org/portals/2/documents/TB_ServiceLife.pdf
[88] / https://woodpoles.org/portals/2/documents/TB_ServiceLife.pdf
[89] / 03/06/2020 E-mail - Subject "Follow-up to meeting with Staff last Week"
[90] / Information Response 44 and Consultant Analysis
[91] / Consultant Analysis
[92] / Consultant Knowledge
[93] / Consultant Knowledge
[94] / Interview 23
[95] / Interview 13
[96] / Interview 13
[97] / Interview 13
[98] / Interview 13
[99] / Interview 13
[100] / Interview 13 and Information Response 113
[101] / Interview 13 and Information Response 113
[102] / Information Response 116
[103] / Interview 13
[104] / Interview 13
[105] / Interview 13 and Information Response 110
[106] / Information Response 138
[107] / Information Response 138
[108] / Interview 13
[109] / Information Response 69
[110] / Interview 13
[111] / Information Response 58
[112] / Information Response 50
[113] / Information Response 51
[114] / Information Response 51 Insight
[115] / Information Response 5 and Consultant Analysis
[116] / Information Response 5 and Consultant Analysis
[117] / Information Response 5 and Consultant Analysis
[118] / Information Response 5 and Consultant Analysis
[119] / Information Response 5, Google Maps, QGIS, and Consultant Analysis
[120] / Information Response 6 and Consultant Analysis
[121] / Information Response 5, Google Maps, QGIS, and Consultant Analysis
[122] / Information Responses 15 and 93 and Consultant Conclusion
[123] / Information Responses 93 and 99 and Consultant Conclusion
[124] / Consultant Conclusion
[125] / Information Response 93 and Consultant Conclusion
[126] / Information Response 135 and Consultant Conclusion
[127] / Information Response and Consultant Observation

[128] / Interviews 5-7, 18-19, 22, and 24
[129] / Interviews 5-7, 18-19, 22, and 24
[130] / Consultant Analysis and Knowledge
[131] / Interviews 5, 6, 7.
[132] / Interview 5 and 23
[133] / Interviews 5-7, 18-19, 22, and 24
[134] / Information Response 50
[135] / Interview 13
[136] / Information Response 67
[137] / Consultant Knowledge and Experience
[138] / Consultant Conclusion
[139] / Consultant Knowledge
[140] / Consultant Knowledge
[141] / https://www.surveysystem.com/sscalc.htm#one
[142] / Consultant Knowledge
[143] / Interview 1
[144] / Information Response 57
[145] / Information Response117
[146] / Information Response117
[147] / Information Response 117
[148] / Information Response 117
[149] / Information Response 117
[150] / Various Interviews
[151] / Information Response 33
[152] / Information Response 61
[153] / Information Response 61
[154] / E mail from [redacted] 1/22/20
[155] / Information Response 140
[156] / Information Response 140
[157] / Information Response 33
[158] / Information Response 33
[159] / Interview 3
[160] / Interview 3
[161] / Information Response 68
[162] / Information Response 62
[163] / Information Response 62
[164] / Information Response 152
[165] / Information Response 62
[166] / Information Response 63
[167] / Information Response 63
[168] / Interview 3
[169] / Information Response 164 and Consultant Conclusion
[170] / Information Response 140
[171] / Information Response 164
[172] / Information Response 164
[173] / Information Response 2
[174] / Information Response 2
[175] / Information Response 2

[176] / Information Response 11
[177] / Information Response 9
[178] / Information Response 140
[179] / Information Response 140
[180] / Interview 1
[181] / Information Response 127
[182] / Interviews 5,6, and 7
[183] / Information Response 133
[184] / Interviews 5,6, and 7
[185] / Information Response 58
[186] / Information Response 136
[187] / Information Response 136
[188] / Information Response 136
[189] / Interview 23
[190] / Interview 23
[191] / 03/06/2020 E-mail- Subject "Follow-up to meeting with Staff last Week"
[192] / Information Response 152
[193] / Information Response 152
[194] / Information Response 85
[195] / Information Response 85
[196] / Information Response 92
[197] / Information Responses 92 and 111
[198] / Email 2/11/2020
[199] / Information Response 163
[200] / Information Response 120
[201] / Information Response 163
[202] / Information Response 162
[203] / Various Interviews
[204] / Information Response 141
[205] / Information Response 141
[206] / Information Response 137
[207] / Information Response 137
[208] / Information Response 137
[209] / Information Response 137
[210] / Interview 23
[211] / Information Response 133
[212] / Information Response 88
[213] / Information Response 25
[214] / Information Response 25
[215] / Information Response 25
[216] / Information Response 17
[217] / Information Response 17
[218] / Interview 16
[219] / Information Response 32 and Interview 16
[220] / Interview 16
[221] / Information Response 34
[222] / Information Response 34
[223] / Information Response 34

[224] / Information Response 34
[225] / Information Response 34
[226] / Information Response 34
[227] / Information Response 34
[228] / Information Response 34
[229] / Information Response 34
[230] / Information Response 34
[231] / Interview 15
[232] / Information Response 102
[233] / Interview 16
[234] / Interview 17
[235] / Information Response 32 and Interview 16
[236] / Interview 16
[237] / Information Response 25
[238] / Information Response 25
[239] / Information Responses 17 and 25
[240] / Interviews 5-7, 18-19, 22, and 24
[241] These reports are submitted annually, but contain monthly data for each metric reported separately by each company.
[242] Held Orders are defined as applications for establishment of basic exchange service not within thirty (30) days of the date on which the prospective customer desires service. See 150 CSR 6-1, 17r.
[243] IR 27
[244] The term of the RSQP denies Frontier the ability to request termination of the plan until it had met the service quality metrics for nine of the previous twelve months and any missed metrics were within 10% of the metric standard. Frontier has not yet requested and received Commission approval for termination of the RSQP.
[245] Under the RSQP Frontier West Virginia consumers receive varying credits for out of service, service affecting and missed repair appointments. These credits are applied automatically (without the customer having to request such). Similar credits on a pro-rated basis are provided to CTC customers, however, these are not provided automatically. These credits must be requested by the consumer.
[246] / Case No. 08-0761-T-GI, December 9, 2008, Appendix A, Page 3.
[247] Weekends and holidays are not excluded for the purposes of providing consumer billing credits for OOS or SA.
[248] West Virginia Regulations, 150CSR6, 6.5 (d)
[249] RSQP, Appendix A, Page 2
[250] CWA announced a strike in March 3, 2018 that lasted until March 27, 2018
[251] It is important to note, however, that while the RSQP provides adjustments to the data for causes beyond Frontier's control (labor strikes, State of Emergencies), the OOS and SA data as illustrated has already been adjusted to reflect weather conditions for declared State of Emergency for April 16th–May 16th (2018) and for June 4th – July 4th (2018).
[252] / Information Response 108
[253] / Information Response 108
[254] / Information Response 108
[255] / Information Response 108
256 Frontier reports on answering time the benchmark performance of other types of calls. (See West Virginia PSC Regulations 150CSR6-6.3.b.)
[257] / Information Response 14
[258] / Information Response 108
[259] / Information Response 27
260 Unlike Frontier West Virginia customers (where customer credits are provided automatically), customers from Citizens must specifically request such refunds. S2.4.4(B)
261 Customer s may not receive a total credit in any month greater than the monthly recurring charges.
[262] / Information Response 149
263 Case 17-1200-T-C, Order of March 14, 2018

[264] Case 18-0291 T-P, Letter of July 16, 2018 from Frontier Associate General Counsel to Executive Secretary, West Virginia Public Service Commission, Page 2

[265] / Information Response 22

[266] Many of the public comments did not provide detail on dates of outages or dates when or if they contacted Frontier to file a trouble report.

[267] / Information Response 15

[268] / Information Response 15

[269] / Interview 14

[270] / Interview 15

[271] / Information Response 94

[272] / Information Response 17

[273] / Information Response 95

[274] / Information Response 17

[275] / Information Response 17

[276] / Information Responses 144, 145, and 146

[277] / Information Response 168

[278] / Interview 14 and Information Response 35

[279] / Information Response 168

[280] / Information Response 168

[281] / Information Response 98

[282] / Information Response 23

[283] / Interview 14

[284] / Interview 14 and Information Responses 23 and 96

[285] / Information Response 96 (WC Docket Nos. 12-61, 07-204, 07-21)

[286] / Interview 14 and Information Response 24

[287] / Interview 15 and Information Response 29

[288] / Interview 15

[289] / Interview 15

[290] / Interview 15

[291] / Interview 15

[292] / Information Response 101

[293] / Interview 15

[294] / Information Response 17

[295] / Information Response 168

[296] / Information Response 17

[297] / Information Response 17

[298] / Information Response 17 and 144

[299] / Interview 14

[300] / Information Response 35 and Interview 14

[301] / Information Responses 17, 95, and 98

[302] / Information Response 168

[303] / Information Response 15

[304] / Interview 14

[305] / Interview 14

[306] / Information Response 23

[307] / Interview 15

[308] Interview November 8, 2019.

[309] CWA filed a motion with the West Virginia Public Service Commission requesting that the Commission initiate a general investigation into Frontier's copper network. CWA also submitted numerous pictures of what they determined were unsafe

conditions; however, there were some concerns on the part of Frontier management that employees who identified these conditions did so anonymously and may not have followed company's code of conduct. Pursuant to the Frontier Environmental Health & Safety Manual, employees are required to report unsafe conditions to their supervisor who in turn is responsible for correcting the condition.

[310] / Information Response 106

[311] / Information Response 106

[312] Information Response 105

[313] / Information Response 103

[314] / Information Response 103

[315] / Information Response 104

[316] Local Manager, Performance Management Handbook, Page 13.

PUBLIC SERVICE COMMISSION
OF WEST VIRGINIA
CHARLESTON

CASE NO. 18-0291-T-P

FRONTIER WEST VIRGINIA INC.
AND CITIZENS TELECOMMUNICATIONS
COMPANY OF WEST VIRGINIA DBA
FRONTIER COMMUNICATIONS OF WEST VIRGINIA

CERTIFICATE OF SERVICE

I certify service of the foregoing Motion on March 25, 2020, by United States First Class Mail, postage prepaid, as addressed:

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