

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Technology Transitions)	GN Docket No. 13-5
)	
Policies and Rules Governing Retirement Of Copper Loops by Incumbent Local Exchange Carriers)	RM-11358
)	
Special Access for Price Cap Local Exchange Carriers)	WC Docket No. 05-25
)	
AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services)	RM-10593
)	

**COMMENTS OF THE
EDISON ELECTRIC INSTITUTE**

The Edison Electric Institute (“EEI”) hereby submits these comments in response to the Federal Communications Commission’s (“FCC” or “Commission”) Further Notice of Proposed Rulemaking and Declaratory Ruling (“FNPRM”) released in the above-referenced proceeding on August 7, 2015.¹ In the FNPRM the Commission seeks comment, *inter alia*, on the criteria which should be used to determine the adequacy of a substitute service and the procedures which should be followed. Among the criteria about which the Commission seeks comment are the following: communications network capacity and reliability, service quality, network security, coverage, communications security transition and the need to ensure reliable and cost-efficient network capacity and reliability, service quality and coverage.

¹ *In the Matter of Technology Transitions, et al.*, Report and Order, Order on Reconsideration, and Further Notice of Proposed Rulemaking, FCC 15-97, GN Docket No. 13-5, *et al.* (Aug. 7, 2015).

Given the importance to electric utilities of copper loops and various related services and equipment, as well as problems utilities are coming to face as a result of section 214 discontinuances, EEI focusses its comments on these topics.

I. SUMMARY

EEI is an association of United States investor-owned electric utilities and industry associates worldwide. Its U.S. members serve almost 95 percent of all customers served by the shareholder-owned segment of the U.S. industry, about 70 percent of all electricity customers, and generate about 70 percent of the electricity delivered in the U.S. EEI frequently represents its U.S. members before Federal agencies, courts and Congress in matters of common concern, and has filed comments with this Commission and others in various proceedings affecting the interests of its members.

EEI's members make extensive use of communications as providers of critical infrastructure industry ("CII") services, both as owners and operators of private communications systems, and as end-users of commercial communications networks. Electric utilities are in fact among this nation's largest users of communications networks and services and, over the years, have invested and continue to invest billions of dollars in communications infrastructure as this nation's electric grid is modernized. Even with such investments in their own networks to promote security, reliability and efficiency, these utilities still make extensive use of wireline services, particularly copper loops and related services and equipment for their non-critical (*e.g.* not related to public safety or grid management operations) but still important communications.

Electric utilities therefore have a substantial stake in the technology transitions that are now underway, and as CII entities these utilities have unique interests and concerns with respect to IP Transitions that vary meaningfully from the interests of residential users of

communications networks. Consequently EEI, in its prior comments in this proceeding, asked the Commission to take the following actions with respect to copper retirements:

1. Ensure that electric utilities and other CII entities are provided with adequate notice of, and an opportunity to comment on service discontinuances contemplated by carriers.
2. Ensure that ILECs offer reliable, resilient and cost-efficient substitutes for discontinued facilities and services.²

EEI appreciates the Commission's recognition in its FNPRM that utilities have specialized communications needs, and it welcomes the FCC's actions to address notice issues associated with copper retirement by requiring carriers to give utilities 180 days' notice of these retirements. EEI further supports the Commission's decision to define copper retirements to include *de facto* retirements, *i.e.*, failure to maintain copper loops, subloops, or feeders, which is the functional equivalent of removing or disabling this equipment.³ However, in further recognition of the special communications needs of utilities and other CII entities, EEI urges the FCC to require carriers to comply with additional metrics before they may discontinue service to CII entities.

II. COMMENTS

A. Electric Utilities Have Unique Communications Needs That Warrant Additional Metrics.

The Commission in its FNPRM correctly recognizes that electric utilities and other large end users have unique communications needs and concerns that vary greatly from those typically experienced by residential consumers, and as a result utilities approach these issues from a very different perspective than the typical residential customer of communications services. Electric utilities are CII entities, and they rely on communications for such critical functions as network

² See Comments of the Edison Electric Institute, PS Docket No. 14-174 (filed Mar. 9, 2015).

³ FNPRM at PP 80, 90.

monitoring and substation control, which are vital to maintaining reliability of the electric grid. As a result, utilities require a higher quality of service – both in reliability and in performance – than service levels normally provided to residential consumers. As a result, reliance on standards and metrics designed for residential service is insufficient for utilities.

Utilities face a very real threat to the extent discontinued legacy communications services or equipment leads to a loss in functionality or otherwise inhibits utilities’ ability to adequately monitor and control their grid facilities, including substations. In certain circumstances, this could adversely impact system reliability and the security of the nation’s integrated electric grid, as well as delay or obstruct emergency response efforts. As a result of electric utilities’ need for higher quality service, due to their unique status as CII service providers, EEI urges the FCC to consider and implement different and additional metrics applicable to utilities. Further supporting the need for specialized utility-centric metrics, many electric utilities are rate-regulated and as such have reliability service requirements subject to federal and state regulations. Moreover, many electric utilities have vast service areas with complicated communications networks, and may be served by several communications carriers.

B. EEI Urges the FCC to Be Mindful That the IP Transition Presents Novel Issues and Challenges to the Utility Industry, Including Utility Telecommunications to Substations.

Most utility Supervisory Control and Data Acquisition (“SCADA”) networks have low throughput requirements, often 100 kilobits per second (“kbps”) or less. Even advanced wide-area situational awareness systems known as “Synchrophasors” that employ Global Positioning System-timed measurements have relatively modest bandwidth requirements, especially compared to the typical consumer video stream. While these applications (Synchrophasors in particular) can be somewhat delay-sensitive, public Multi-Protocol Label Switching (“MPLS”)

Virtual Private Network (“VPN”) services can generally meet the needs of the typical SCADA application.

The transition from traditional wireline to IP-based technology poses the biggest challenge for electric utilities in the area of protective relaying. Protective relaying systems provide for the safe operation of transmission lines, transformers, and other components that make up power systems. Many of these protection systems communicate with each other to ensure reliability of the power grid as a whole. Transmission line protection systems often rely on dedicated communications channels between substations in order to quickly detect fault conditions and remove faulted lines from service. Improper operation (either failure-to-operate or unintended operation) of these systems can result in cascading outages that turn into widespread blackouts.

In order to maintain grid stability and to keep system reliability at a high level, teleprotection systems are designed to react and remove faults very quickly, often within 30 milliseconds or less. Since the relays themselves need some of this time to detect the fault and react, the acceptable communications delay is often constrained to be no more than 10 milliseconds. Furthermore, not only does the latency need to be kept extremely low, but the jitter (*i.e.*, the variance in latency) also needs to be very low (approximately 1-4 milliseconds) in order to tightly synchronize the comparison of measurements taken at opposite ends of the transmission line.

The communications channels utilities have traditionally used in teleprotection and SCADA systems have been deterministic – very predictable – in nature. This has included using a mix of privately-owned and public carrier services to connect substations to each other and to

control centers. Many of these legacy connections are dedicated point-to-point copper or fiber; others are built on top of larger, wide-area time division multiplexing (“TDM”) networks. However, as networking technology has evolved from analog and TDM to packet-based architectures, options for deterministic communications media, particularly in the public carrier space, have become limited. The elimination of leased copper and analog (tone) channels will force utilities to move to packet networks or install their own fiber for dedicated protection channels. While modern packet networks can offer high throughput, they are not deterministic and end-to-end propagation delay is most often unpredictable. While certain MPLS-based technologies have been demonstrated to be viable for teleprotection applications, these approaches require specialized architectures that are tightly managed to put bounds on the randomness inherent in packet networks. Most public packet networks lack these features and cannot guarantee the level of service required to meet the low-latency, low-jitter, and high-reliability requirements of protective relaying applications.

C. EEI Generally Supports the Commission’s Proposed Criteria For Evaluating Replacement and Legacy Services, But Urges the FCC to Also Assess Operability During Emergencies and Affordability.

The Commission in its FNPRM has proposed that a carrier seeking to discontinue an existing retail service must demonstrate that any substitute service meet a series of criteria. As discussed below, EEI supports the criteria proposed by the FCC, and believes that compliance with these measures should be mandatory. However special emphasis should be given to network capacity, performance, quality of service and reliability. Further, EEI urges the Commission to expand its proposed criteria to include two additional standards: (1) operability during emergencies, and (2) affordability.

In particular, EEI sees much value in the following criteria:

- ***Network Capacity and Reliability:*** The FCC’s proposed requirement that carriers demonstrate that network capacity and reliability will be maintained is essential for utilities that, as described above, rely greatly on communications services for their critical functions. Consequently, EEI strongly supports the FCC’s proposal that any substitute service should (a) afford utilities with the same or greater capacity as the existing service and (b) afford utilities with the same reliability as the existing service particularly during periods of network congestion. However, in addition to network capacity and reliability, performance and quality of service are important metrics that the Commission should weigh. Utilities migrating to shared IP infrastructure have at times experienced quality of service issues, as uplink and downlink capacity at individual cell towers can vary significantly, causing a loss or delay of signal. Capacity and latency of shared IP infrastructure can also vary to great degrees based on time of day, or events that might occur. Replacement services employed by carriers should have high quality of service levels, to ensure that utilities’ critical communications are not interrupted.
- ***Interoperability:*** Ensuring device interoperability is essential for electric utilities using devices for critical communications. Utilities and CII emergency service providers should not be forced to use a multitude of devices to accommodate different types of communications technologies that might be employed by carriers. To do so would be overly cumbersome and costly, and may reduce response time and endanger the public at large. Ensuring interoperability of devices will also reduce the cost of the IP Transition for CII entities that might otherwise need to replace thousands of devices. Carriers should therefore implement industry-standard solutions consistently

throughout their networks, to allow for sufficient compatibility within the vendor market.

- ***Comparable Network Security & Protection:*** EEI further supports the Commission’s proposal requiring carriers to show that their substitute or alternative services offer comparably effective protection from network security risks. Network security is vital to electric utilities, which provide a critical service to the public. It is well-recognized that utilities are CII entities that face certain network and cyber security risks and challenges,⁴ and telecommunications service providers and utilities are collaborating to address cyber-related issues. Utilities have taken significant steps to protect their networks, and should not be made to face additional vulnerabilities through use of unsecure carrier networks. Security must not be overlooked or compromised as a result of the IP Transition.
- ***Coverage:*** Adequacy of the coverage provided by a provider’s substitute service is another important consideration for utilities given the large and geographically diverse service territories that many of them serve. Any substitute service should be available throughout the entire service area previously covered by the legacy offering. To be sure, coordinating IP Transition schedules with a carrier can become problematic for any large enterprise. However these complications are quickly exacerbated for electric utilities, many of which are served by multiple carriers in their service area, making coordination of transition schedules a considerable challenge. Consequently, it is important that the Commission require that the

⁴ See, e.g., Executive Order on Improving Critical Infrastructure Cybersecurity (Feb. 12, 2013), available at <https://www.whitehouse.gov/the-press-office/2013/02/12/executive-order-improving-critical-infrastructure-cybersecurity>.

discontinuing carrier make a clear demonstration that the substitute coverage will be adequate.

Even so, the 100 millisecond latency metric proposed by the Commission is not sufficient for certain utility applications, such as protective relaying (as discussed above) or distribution automation, which currently require less than 100 millisecond predictable latency. Utilities employ various and often complex operational schemes that rely on predetermined sequencing which, if out of sequence, may result in customer service interruptions.

In addition to these and other criteria identified in the FNPRM, EEI urges the FCC to retain as part of its service replacement analysis two key factors: (1) operability during emergencies; and (2) affordability. In the view of EEI, these standards are essential, and should not be removed from consideration. With respect to operability during emergency events, EEI notes that the FCC's current dockets pertaining to this issue generally do not address the communications needs of CII entities, much less their needs during a severe weather event, such as the June 2012 Derecho which devastated 911 networks in the Midwest and Mid-Atlantic.⁵

Affordability of replacement services is another key metric that cannot go overlooked. Costs and affordability of such replacement services are issues of particular concern for electric utilities, which are rate-regulated by state public utility commissions. Expenses associated with new communications services must be recovered through utility rates that require approval from state commissions. Costs of replacement services provided by carriers, then, translate into costs that utility customers must pay.

⁵ See FCC PUB. SAFETY & HOMELAND SEC. BUREAU, IMPACT OF THE JUNE 2012 DERECHO ON COMMUNICATIONS NETWORKS AND SERVICES: REPORT AND RECOMMENDATIONS at 40-41 (PSHSB, rel. Jan. 10, 2013), available at <http://www.fcc.gov/document/derecho-report-and-recommendations>.

In addition to the criteria listed above, and in connection with service provided to utilities and other CII entities, the FCC should also consider the following metrics to determine whether a given service is an adequate substitute or alternative for the discontinued service:

- Latency;
- Availability of service;
- Bandwidth/Speed;
- Availability of knowledgeable carrier support resources for replacement services;
- Reliability (measured by the amount of time a given replacement service is fully operational, as impacted by network design and carrier response times, which may differ based on class of service delivered); and
- Security (accounting for risks posed by use of IP networks).

D. The Commission’s Proposed Self-Certification Process Is Insufficient and Should Be Revised to Require Carriers to File Supporting Evidence Demonstrating Compliance.

EEI believes that the self-certification process proposed by the Commission is insufficient. As described above, communications are essential to the reliability of critical infrastructure operated by electric utilities and other CII entities. Due to this vital nexus, and its implications for the public at large, the FCC should require carriers to make a detailed showing that they have complied with all applicable criteria before the Commission accepts their self-certification in connection with all discontinuances that might impact service to utilities.

As proposed by the Commission, a new section 63.602(a) would require self-certifying carriers to certify “that there is an adequate substitute service available for the service to be discontinued, reduced, or impaired,” and that the substitute service adequately meets certain specified criteria. However proposed section 63.602(b), which applies to non-certifying carriers, imposes a more stringent obligation to the extent it requires these carriers to “*provide supporting*

evidence regarding the degree to which the substitute service(s)” adequately meet these criteria (emphasis added).

There is no reason to put self-certifying carriers to a lesser burden than non-certifying carriers. In fact, requiring carriers to make the same showing under subsections (a) and (b) would most likely lead to fewer disputes and a much more transparent process. Consequently, as part of carriers’ request for the automatic grant of a certification, *all* carriers should be required to file supporting evidence demonstrating compliance with the criteria specified by the Commission.

E. EEI Supports FCC’s Proposed 180-Day Notice Requirement – Which is the Absolute Minimum Notification Period Needed by Electric Utilities – But Sees Value In Creation of a Good Faith Consultation Requirement.

In its prior comments in this proceeding, EEI noted that utilities must receive adequate notice of, and an opportunity to comment on service discontinuances contemplated by carriers.⁶ EEI supports the FCC’s proposal that utilities and other commercial enterprises receive 180 days’ notice of a proposed discontinuance; however EEI stresses that this window is the absolute minimum necessary for utilities. EEI further believes that given the importance of the discontinued services, utilities and other CII entities should be permitted to comment on proposed discontinuances. The benefits of permitting CII entities to do so outweigh any associated costs.

Finally, carriers should be required to consult with all affected utilities in good faith prior to any anticipated discontinuance. This consultation should occur at the appropriate corporate level – discussions between sales managers, *e.g.*, is not sufficient. To facilitate this, the FCC should adopt specific objective criteria by which to evaluate whether the carriers are

⁶ Comments of the Edison Electric Institute, PS Docket No. 14-174 at 3, 6-7 (filed Mar. 9, 2015).

communicating in good faith not only with interconnecting carriers but also with CII entities such as utilities.

III. CONCLUSION

Electric utilities provide a vital service to customers across the country, and depend heavily on varied and robust communications networks – both private and public – to do so. While the utility community supports the continued transition away from legacy services towards services that enhance utilities’ ability to deliver safe and reliable service, it is important that they be afforded ample time to fully prepare for this transition, and be assured that any replacement service will meet or exceed the discontinued service.

Ultimately, the transition to a new communications service should benefit the user of that service, and do so in a manner that both controls costs and ensures continued service reliability. To that end, EEI supports the FCC’s efforts in this proceeding to consider issues critical to the IP Transition, and it asks the Commission to act consistent with these comments to ensure that electric utilities and other CII entities that have specialized communications needs are adequately protected.

Respectfully submitted,

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