



## FEDERAL COMMUNICATIONS COMMISSION

### 47 CFR Part 51

[WC Docket No. 19-308; FCC 20-152; FRS 17221]

### Modernizing Unbundling and Resale Requirements in an Era of Next-Generation Networks and Services

**AGENCY:** Federal Communications Commission.

**ACTION:** Final rule.

**SUMMARY:** In this document, the Commission eliminates unbundling requirements, subject to reasonable transition periods, for enterprise-grade DS1 and DS3 loops where there is evidence of actual and potential competition, for broadband-capable DS0 loops and subloops in the most densely populated areas, for operations support systems nationwide except for the purposes of managing remaining UNEs, number portability, and interconnection, and for voice-grade narrowband loops, multiunit premises subloops, and network interface devices nationwide. The Commission preserves unbundling requirements for DS0 loops in less densely populated areas and DS1 and DS3 loops in areas without sufficient evidence of competition. The Commission further eliminates unbundled dark fiber transport provisioned from wire centers within a half-mile of competitive fiber networks, but provides an eight-year transition period for existing circuits so as to avoid stranding investment and last-mile deployment by competitive LECs that may harm consumers. The *Report and Order* also forbears from remaining Avoided-Cost Resale obligations. In all, the Commission ends unbundling and resale requirements where they stifle technology transitions and broadband deployment, but preserves unbundling requirements where they are still necessary to realize the 1996 Act's goal of robust intermodal competition benefiting all Americans.

**DATES:** Effective [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**FOR FURTHER INFORMATION CONTACT:** For further information, please contact Megan Danner, Competition Policy Division, Wireline Competition Bureau, at [Megan.Danner@fcc.gov](mailto:Megan.Danner@fcc.gov), 202.418.1151.

**SUPPLEMENTARY INFORMATION:** The full text of this document, WC Docket No. 19-308; FCC 20-1522, adopted on October 27, 2020, and released on October 28, 2020, is available for public inspection on the Commission's website at: <https://docs.fcc.gov/public/attachments/FCC-20-152A1.pdf>.

## **I. INTRODUCTION**

1. The Telecommunications Act of 1996 (the 1996 Act) changed the focus of telecommunications law and policy from the regulation of monopolies to the encouragement of robust intermodal competition. Few of its effects were as consequential as ending the local exchange monopolies held by incumbent local exchange carriers (LECs) and opening local markets to competition. To facilitate new entry into the local exchange market, the 1996 Act imposed special obligations on incumbent LECs, including requirements to offer these new competitive carriers unbundled network elements and retail telecommunications services for resale, both on a rate-regulated basis.

2. In the nearly quarter-century since the passage of the 1996 Act, the telecommunications marketplace has transformed from a marketplace dominated by monopolies to a marketplace characterized by competition and technological innovation. Former monopolist incumbent LECs are now one of many intermodal competitors, facing fierce competition from competitive LECs, cable providers, and wireless providers, among others. And that competition has itself shifted from siloed markets to the Internet, as increasingly local and long distance voice, data, video, and nearly all communications technologies are delivered via broadband connections. The Commission has repeatedly adjusted the incumbent LEC-specific obligations in the 1996 Act to account for changed circumstances.

3. In this document, we continue on that path of modernizing our unbundling and resale regulations. We eliminate unbundling requirements, subject to a reasonable transition period, for enterprise-grade DS1 and DS3 loops where there is evidence of actual and potential competition, for broadband-capable DS0 loops in the most densely populated areas, and for voice-grade narrowband loops nationwide. But we preserve unbundling requirements for DS0 loops in less densely populated areas and DS1 and DS3 loops in areas without sufficient evidence of competition. We eliminate

unbundled dark fiber transport provisioned from wire centers within a half-mile of competitive fiber networks, but provide an eight-year transition period for existing circuits so as to avoid stranding investment and last-mile deployment by competitive LECs that may harm consumers. In all, we end unbundling and resale requirements where they stifle technology transitions and broadband deployment, but preserve unbundling requirements where they are still necessary to realize the 1996 Act's goal of robust intermodal competition benefiting all Americans.

## **II. BACKGROUND**

4. The 1996 Act and implementing Commission regulations imposed a number of obligations on incumbent LECs to promote competitive entry into the telecommunications marketplace, including obligations to unbundle network elements to other carriers on a rate-regulated basis and to offer telecommunications services for resale on a rate-regulated basis. In the 24 years since the passage of the 1996 Act, the Commission has continually reviewed and, when warranted, reduced incumbent LEC unbundling and resale obligations to encourage competition and development of advanced telecommunications capability within the changing communications marketplace. The Commission has consistently aimed to promote sustainable facilities-based competition, recognizing that permanent unbundling obligations can reduce incentives for both incumbent and competitive LECs to deploy next-generation networks.

### **A. The 1996 Act's Market-Opening Provisions**

5. Before the enactment of the 1996 Act, incumbent LECs controlled more than 99% of the local voice marketplace because of their "virtually ubiquitous" networks and subsequently low relative incremental costs. To open this monopolized market, Congress required, among other things, incumbent LECs to offer their competitors unbundled network elements and telecommunications services for resale on a discounted basis.

6. *Unbundled Network Elements.* Section 251(c)(3) of the Communications Act of 1934, as amended (the Act) sets forth incumbent LECs' unbundling obligations. Following Congress's directive that the Commission determine which network elements should be subject to the unbundling rules, the

Commission created a list of unbundled network elements (UNEs) that competitive LECs can lease from incumbent LECs in order to provide competitive local service. When identifying network elements subject to unbundling obligations, section 251(d)(2) requires that the Commission consider, “at a minimum,” whether “the failure to provide access to such network elements would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer.” The statute also requires that the Commission determine whether access to proprietary network elements is “necessary.” However, the Commission does not currently require incumbent LECs to make any proprietary network elements available on an unbundled basis. The identified UNEs were then to be made available at cost-based rates. Parties may negotiate agreed-upon rates for UNEs, which the state must then approve. If the parties cannot come to an agreement, the rates are set by state arbitration and will be “based on the cost (determined without reference to a rate-of-return or other rate-based proceeding) of providing the interconnection or network element” and “may include a reasonable profit.”

7. The impairment inquiry considers whether a hypothetical “reasonably efficient competitor” would be impaired when lack of access to a particular network element creates a barrier to entry that renders entry uneconomic. The Commission presumes that the reasonably efficient competitor would use “reasonably efficient technologies and take advantage of existing alternative facilities deployment where possible.” The impairment inquiry makes reasonable inferences about competition, including that if competitive providers have successfully entered using their own facilities in one market, other providers could enter similar markets on a similar basis. The Commission’s impairment determinations account for the existence of intermodal competition, as “[t]he fact that an entrant has deployed its own facilities—regardless of the technology chosen—may provide evidence that any barriers to entry can be overcome.” Furthermore, the courts and the Commission have interpreted section 251(d)(2)’s “at a minimum” language to allow the Commission to consider other factors “rationally related to the goals of the Act,” even where impairment exists. The Commission has identified broadband deployment, as called for by section 706 of the 1996 Act, as one such goal.

8. When first implementing section 251(d)(2) and adopting the unbundling requirements, the Commission acknowledged that the availability of UNEs to competitive LECs “is a necessary precondition to the development of self-provisioned network facilities.” Consistent with its preference for facilities-based competition, the Commission expected UNEs to provide competitors a means to enter the local marketplace in order to obtain a sufficient subscriber base and revenue to support the development of their own competitive facilities. The Commission also recognized that rural areas face higher deployment costs and longer deployment timeframes.

9. *Avoided-Cost Resale.* In addition to unbundling obligations, section 251 includes an Avoided-Cost Resale provision that requires incumbent LECs to “offer for resale at wholesale rates any telecommunications service that the carrier provides at retail to subscribers who are not telecommunications carriers.” Congress defined the methodology to determine wholesale rates as “retail rates . . . excluding the portion thereof attributable to any marketing, billing, collection, and other costs that will be avoided by the local exchange carrier.” As a practical matter, incumbent LECs implement this Avoided-Cost Resale obligation by incorporating in their interconnection agreements with competitive LECs discounted rates established by each state for the incumbent LECs’ telecommunications services. The Avoided-Cost Resale obligations in section 251(c)(4) go beyond the more general resale requirement in section 251(b)(1) of the Act, which applies to incumbent and competitive LECs alike, and does not include a wholesale discount rate mandate. Avoided-Cost Resale services are predominately used by competitive LECs today to provision legacy TDM voice services to business and government customers.

10. *Forbearance.* Section 10 of the Act, as amended by the 1996 Act, requires the Commission to forbear from applying any requirement of the Act or one of its regulations to a telecommunications carrier or telecommunications service if and only if the Commission determines that: (1) enforcement of the requirement “is not necessary to ensure that the charges, practices, classifications, or regulations by, for, or in connection with that telecommunications carrier or telecommunications service are just and reasonable and are not unjustly or unreasonably

discriminatory,” (2) enforcement of that requirement “is not necessary for the protection of consumers,” and (3) “forbearance from applying that requirement is consistent with the public interest.” Forbearance is warranted only if all three criteria are satisfied. In making the public interest determination, the Commission must also consider, pursuant to section 10(b) of the Act, “whether forbearance from enforcing the provision or regulation will promote competitive market conditions.”

11. The Commission has broad discretion in analyzing whether the forbearance criteria have been satisfied, and “the agency [may] reasonably interpret[] the statute to allow the forbearance analysis to vary depending on the circumstances.” When the Commission undertakes a competitive analysis, “the statute imposes no particular mode of market analysis or level of geographic rigor.” In addition, the Commission can consider the section 706 goal of fostering the deployment of advanced telecommunications capabilities in making forbearance decisions. In considering forbearance from unbundling obligations, the Commission is entitled to rely on its expert predictive judgment and may balance “the positive short-term impact of unbundling” against the “longer-term positive impact that *not* unbundling would have . . . .” Furthermore, the Commission may forbear without conducting a competitive analysis when changed circumstances have rendered a regulatory requirement unnecessary for other reasons.

12. *Unbundling and Resale Obligations Since 1996.* Pursuant to the provisions of the 1996 Act, the Commission has over the years reassessed and, when warranted, reduced its unbundling and resale requirements to account for changes in communications service markets where competition among incumbent and competitive LECs has flourished. Congress expressly authorized the Commission to forbear from any regulatory obligations, including section 251(c) obligations, once the agency determined that they are no longer necessary, and encouraged the Commission to use forbearance and other means to encourage deployment of advanced telecommunications capability and remove barriers to infrastructure deployment. With respect to forbearing from section 251(c), Congress first required that section to be fully implemented. The Commission has specifically found that section 251(c) has

been fully implemented—i.e., that the Commission has adopted rules implementing the statute and that those rules have become effective.

13. In its initial orders implementing section 251(c)(3), the Commission adopted nationwide unbundling obligations for local loops used to serve mass market and enterprise customers on a technology-neutral basis, for dedicated and shared interoffice transport, and various other network elements. The courts rejected these initial attempts, in whole or in part, for a variety of reasons, including that overly-broad unbundling is inappropriate. For example, the Supreme Court vacated the Commission's first order implementing broad unbundling regulations because it failed "to apply *some* limiting standard, rationally related to the goals of the Act," as the Act requires. In a separate opinion, Justice Breyer observed that "given the Act's basic purpose, it requires a convincing explanation of why facilities should be shared or unbundled where a new entrant could compete effectively without the facility, or where practical alternatives to that facility are available." Justice Breyer went on to explain that unbundling "by itself does not automatically mean increased competition. It is in the *un* shared, not in the shared, portions of the enterprise that meaningful competition would likely emerge." The D.C. Circuit later vacated and remanded the Commission's next attempt to adopt unbundling rules, because, among other things, the agency failed to weigh potential negative effects of unbundling on incentives to invest in facilities-based competition, failed to analyze impairment on a sufficiently granular level, and did not adequately consider the role of intermodal competition. Citing Justice Breyer's separate opinion, the D.C. Circuit explained that "mandatory unbundling comes at a cost, including disincentives to research and development by both incumbent LECs, competitive LECs and the tangled management inherent in shared use of a common resource."

14. Following the D.C. Circuit's remand, the Commission issued the *Triennial Review Order* in 2003 (68 FR 52276, Sept. 2, 2003), at the same time as the local markets were seeing the increased deployment of next-generation fiber-based loops. Considering section 251(c)(3)'s "at a minimum" language, the Commission declined to require unbundling for most fiber-based loops because it seemed likely to undermine important goals of the 1996 Act, specifically the exhortation in section 706 to

encourage deployment of advanced telecommunications capability to all Americans by removing barriers to investment. The Commission recognized that unbundling fiber-based loops could reduce incentives for both incumbent and competitive LECs to deploy advanced facilities. The Commission reasoned that refraining from imposing such obligations would increase incentives for incumbent LECs to develop and deploy innovative new networks, while forcing competitive LECs to “seek innovative network access options to serve end users and to fully compete against incumbent LECs in the mass market,” with consumers benefitting from the race to build next-generation networks and increased competition in broadband service. The Court of Appeals for the D.C. Circuit affirmed the Commission’s decision not to require the unbundling of fiber-based loops, but remanded many other aspects of the *Triennial Review Order*, including the Commission’s nationwide impairment determinations with respect to dedicated transport elements and its decision that wireless carriers were impaired without access to unbundled dedicated transport.

15. In 2004, in response to the D.C. Circuit’s remand, the Commission adopted the *Triennial Review Remand Order* (70 FR 8940, Feb. 24, 2005). Acknowledging that certain markets were already sufficiently competitive and that competition could be expected to develop in markets with similar characteristics, the Commission limited incumbent LECs’ DS1 and DS3 loop unbundling obligations to buildings served by incumbent LEC wire centers without sufficient competitive presence and service demand. It also limited the DS1, DS3, and dark fiber interoffice transport unbundling obligations depending on the level of current and anticipated competition by classifying wire centers into tiers “based on indicia of the potential revenues and suitability for competitive transport deployment.” The Commission also declined to require unbundling of network elements for competitors to use exclusively for providing long distance and mobile voice services because of the presence of pervasive competition in those markets that occurred without reliance on UNEs. Although the Commission declined to eliminate unbundling requirements for competitors seeking to offer local telephone service, despite evidence of some intermodal competition, it acknowledged that ending those unbundling obligations “might someday be appropriate, upon findings of sufficient facilities-based competition in the local

exchange market.” The Commission ultimately imposed unbundling obligations only in those situations where it found unbundling “does not frustrate sustainable, facilities-based competition.”

16. While the *Triennial Review Remand Order* was the last time the Commission applied its impairment inquiry to consider the extent to which unbundling obligations should apply, the Commission has refined and reduced its unbundling rules by forbearing from UNE loop and transport obligations where there is evidence of facilities-based deployment and competition, or that continued unbundling requirements slow the transition to next-generation services. For example, in 2005, the Commission granted the incumbent LEC Qwest relief from UNE loop and transport obligations in portions of its service territory in the Omaha Metropolitan Statistical Area (MSA) where a facilities-based cable competitor had substantially built out its local network in competition with Qwest. The Commission relied on the “substantial intermodal competition” presented by the cable competitor, Cox, over its “own extensive facilities” and, though noting that it had earlier determined that intermodal competition from cable providers “had not blossomed into a full substitute” for wireline voice service, determined that Cox had changed those circumstances within the Omaha MSA as a result of its investment in the network infrastructure in that area. In 2007, the Commission granted similar relief to ACS of Anchorage in wire centers located in the Anchorage study area “where the level of facilities-based competition by the local cable operator [GCI] ensures that market forces will protect the interests of consumers and that such regulation, therefore, is unnecessary.” In 2015, to further its goal of advancing the TDM to IP transition for next generation networks and services, the Commission eliminated one of the last unbundling requirements applicable to next-generation networks by granting forbearance on a forward-looking basis to incumbent LECs from the requirement to make available a 64 kbps voice-grade channel over overbuilt fiber loops.

17. More recently, in 2019, in response to USTelecom’s petition for forbearance, we granted forbearance from certain loop and transport unbundling and resale obligations that had become increasingly outdated due to competitive fiber deployment, technological change, and intermodal competition. Throughout this Order, when referencing the *BDS Remand Order/UNE*

*Transport Forbearance Order* (84 FR 38566, Aug. 7, 2019), we cite the portions containing the Commission’s findings in response to the Eighth Circuit’s partial remand of *Business Data Services in an Internet Protocol Environment et al.*, WC Docket Nos. 16-143 et al., Report and Order, 32 FCC Rcd 3459 (2017) (82 FR 25660, June 2, 2017) (*BDS Order*), as the *BDS Remand Order*, and we cite the portions addressing aspects of the May 2018 forbearance petition filed by USTelecom—The Broadband Association (USTelecom) as the *UNE Transport Forbearance Order*. In two orders (the *UNE Transport Forbearance Order* (84 FR 38566, Aug. 7, 2019) and *UNE Analog Loop and Avoided-Cost Resale Forbearance Order* (34 FCC Rcd 6503, Aug. 2, 2019), collectively, *2019 UNE Forbearance Orders*), we determined that forbearance from unbundling obligations was warranted for: (1) DS1/DS3 dedicated interoffice transport (UNE DS1/DS3 Transport) between price cap incumbent LEC wire centers within a half mile of competitive fiber network deployment; (2) two-wire and four-wire analog voice-grade copper loops, including the attached equipment (UNE Analog Loops) for price cap incumbent LECs throughout the entirety of their service areas; and (3) Avoided-Cost Resale obligations throughout the entirety of price cap incumbent LECs’ service areas. We found that these obligations, which are overwhelmingly used to provide TDM-based local voice service, were no longer necessary based on “the sweeping changes in the communications marketplace” since 1996, including the increasing migration of consumers of all types to “newer, any-distance voice services over next-generation wireline and wireless networks,” as well as the wide range of intermodal competitors in the voice marketplace. We further found that “the public interest is no longer served by maintaining these legacy regulatory obligations and their associated costs.”

18. *Current Unbundling and Resale Requirements.* Currently, the Commission’s unbundling rules, subject to forbearance as described above, require that incumbent LECs unbundle (1) mass market copper digital and xDSL-capable loops (collectively, UNE DSO Loops) nationwide; (2) UNE Analog Loops in non-price cap incumbent LEC service areas; (3) the TDM capabilities, features, and functionalities of hybrid fiber-copper loops nationwide; (4) enterprise loops (i.e., DS1 and DS3 loops) subject to the limitations adopted in the *Triennial Review Remand Order* reflecting current and potential competition (UNE DS1 and DS3 Loops); (5) subloops, including subloops for multiunit premises wiring,

nationwide; (6) network interface devices nationwide; (7) dedicated interoffice transport (i.e., DS1, DS3, and dark fiber transport) subject to limitations reflecting potential competition in the *Triennial Review Remand Order* and our forbearance for UNE DS1/DS3 Transport in wire centers within a half mile of competitive fiber in the *UNE Transport Forbearance Order*; (8) operations support systems nationwide; and (9) 911/E911 databases nationwide. As discussed above, the Commission has at times granted requested forbearance relief to petitioning carriers for particular UNEs in specific geographic markets. Incumbent LECs are also required to maintain access to a 64 kbps channel over fiber loops for existing customers. The Commission has not found impairment with respect to any new unbundled network elements since 2004. In addition, non-price cap incumbent LECs must offer Avoided-Cost Resale to requesting carriers in their local exchange service areas.

19. In November 2019, we adopted the *Modernizing Unbundling and Resale Requirements in an Era of Next-Generation Networks and Services Notice of Proposed Rulemaking (NPRM)* (85 FR 472, Jan. 6, 2020) to comprehensively reexamine the Commission's current unbundling rules in light of the substantial changes in voice and broadband service competition in the communications landscape. The *NPRM* sought comment on proposals to modernize and update incumbent LECs' remaining unbundling and resale obligations to better reflect the current marketplace realities of intermodal voice and broadband competition. The sole unbundling obligation that the *NPRM* did not propose to modify or eliminate is the requirement to unbundle 911/E911 databases. The Commission also sought comment on the costs and benefits of its proposals, as well as proposed transition time frames.

20. Various parties, particularly incumbent and competitive LECs, vigorously debated the issues raised by the *NPRM* in comments and reply comments filed in February and March 2020, and in *ex parte* letters filed thereafter. On August 5, 2020, INCOMPAS, USTelecom, and many of their respective members (Joint Parties), "in recognition of the current state of competition in the communications marketplace," filed a compromise resolution (Compromise Proposal) in this docket for the Commission to consider regarding whether and to what extent incumbent LECs must continue to provide access to unbundled DS0 loops and associated copper subloops, DS1 loops, DS3 loops, and OSS.

Specifically, aside from the trade associations, INCOMPAS and USTelecom, the parties to this agreement include: many of USTelecom's incumbent LEC members—AT&T Services, Inc., CenturyLink, Inc. (now Lumen), Consolidated Communications, Inc., Frontier Communications Corp., and Verizon Communications Inc.—and many of INCOMPAS' competitive LEC members—Allstream Business US, LLC, Digital West, First Communications, LLC, Biddeford Internet Corporation d/b/a GWI, IdeaTek Telecom, Mammoth Networks and Visionary Broadband, SnowCrest ISP & SnowCrest Telephone, Socket Telecom, LLC, TelNet Worldwide, Inc., and TPx Communications. Windstream Services, LLC signed as a member of both trade associations, in its capacity as an incumbent LEC and competitive LEC. The Joint Parties discussed but did not reach a compromise regarding dark fiber transport at that time and avoided-cost resale. The Joint Parties did not discuss UNE Analog Loops in non-price cap areas, 64 kbps voice-grade channels over last-mile fiber loops, Multiunit Premises UNE Subloops, NIDs, and the TDM capabilities, features, and functionalities of hybrid loops. The Joint Parties emphasized that the Compromise Proposal was a “bargained-for, negotiated outcome that reflects trade-offs and concessions between” nearly every interested competitive LEC and incumbent LEC in this docket that have previously disputed the appropriate scope of the Commission's unbundling rules at the Commission, in this proceeding and in other proceedings, and in court. The Joint Parties further noted that the Compromise Proposal “necessarily departs in at least some ways from the specific positions each individual signatory has advanced in this proceeding,” but each proposal is a direct response to the record in this proceeding. The Joint Parties also assert that these resolutions are lawful and are logical outgrowths of the *NPRM* proposals, “within the reasonable range of conclusions supported by the record,” and in the public interest.

21. On September 14, 2020, INCOMPAS, USTelecom, and many of their respective members, representing a majority of buyers and sellers of UNE Dark Fiber Transport, additionally reached a compromise proposal with regard to UNE Dark Fiber Transport. The parties agreed that the Commission should forbear and find non-impairment vis-a-vis Tier 3 wire centers located within half a mile of alternative fiber, subject to an eight-year transition period for existing UNE Dark Fiber Transport.

## **B. Today's Communications Marketplace**

22. The communications marketplace has dramatically transformed since Congress passed the 1996 Act. Incumbent LECs controlled 99.7% of the local telephone service market at that time. Incumbent LECs' wireline voice subscriptions now account for only approximately 39% of all wireline voice subscriptions and only 9% of all voice subscriptions across all technologies. The fixed voice marketplace, once monopolized by incumbent LECs, now includes cable companies offering VoIP, fixed wireless providers, over-the-top VoIP providers, as well as competitive and incumbent LECs. As for fixed broadband, incumbent LECs are just one of many intermodal competitors, providing only about 22% of residential broadband subscriptions at or above 25/3 Mbps, which the Commission has defined as advanced telecommunications capability. Connections data are collected at the census tract level. Incumbent LEC affiliation is determined at the holding company level and the census block level. The incumbent LEC's connections are counted as within the incumbent's study area if any portion of its study area overlaps the census tract. Cable providers provide approximately 75% of 25/3 Mbps residential subscriptions. As of December 31, 2019, 99% of Americans had access to three providers of mobile voice and broadband. As of the date of this Order, December 2019 is the latest data available to the Commission, so we cannot report coverage after the T-Mobile/Sprint merger, and this data treats T-Mobile and Sprint as separate providers. Finally, as the Commission found in the *BDS Order*, the enterprise market is subject to "intense competition," with 95% of census blocks with business data services demand in price cap MSAs, representing 99% of business establishments, featuring at least one competitive provider in addition to the incumbent LEC.

23. The communications marketplace has also seen rapid technological change. In the enterprise services marketplace, DS1 and DS3 loops, dominated by incumbent LECs, have been increasingly replaced by packet-based services, provided by a range of providers who benefit from a "considerably more level playing field" compared to TDM-based services. The copper-to-fiber and TDM-to-IP transitions have also increasingly reached residential consumers, as incumbent LECs have been retiring last-mile copper and replacing it with fiber or fixed wireless technologies. And of course,

American consumers have themselves transitioned to newer technologies, increasingly moving from fixed legacy voice to fixed or nomadic voice over Internet protocol (VoIP) and mobile voice services, and from DSL to broadband provided over fiber and fixed and mobile wireless. The widespread deployment of 5G wireless networks will only accelerate this process.

### **III. DISCUSSION**

24. In this document, we modernize our unbundling rules in light of the dramatic changes to the communications marketplace since 2004, when the Commission last examined unbundling obligations through the impairment lens. We eliminate, subject to a transition period, unbundling obligations for loops, transport, and other elements where record evidence shows that they are no longer necessary for reasonably efficient competitors to enter the market. Recognizing that some unbundling obligations have continued benefits in providing competitive telecommunications services and broadband access in rural areas, where competitive entry is harder because of entry barriers to fixed broadband services, including sunk costs, we maintain several unbundling requirements, including for mass market broadband-capable loops in less densely populated areas. Sunk costs are investments that have no scrap value or value in an alternative use, e.g., a fiber cable connecting a customer's location to the provider's network. Most wireline network costs are sunk for at least twenty years. In addition, entrants may face other entry barriers including achieving scale economies and absolute cost disadvantages. Scale economies can be a barrier to entry if entrants are likely to attract fewer customers than competitors, making it more difficult for the entrant to compete against its competitors if it faces higher average cost and the market retail price is close to its competitor's average cost. Absolute cost advantages can occur if the incumbent providers have privileged access to resources. An incumbent firm may also have other first mover advantages, e.g., because they have a relatively high penetration rate for their services and consumers face high costs in switching providers. We find that our impairment and forbearance findings, when taken together with the necessary transition periods and conditions we adopt for each element, best fulfill our statutory responsibilities and promote our policy objectives.

**A. UNE Loops**

25. Loops are the “last mile of a carrier’s network,” connecting end-users to the network to access voice, broadband, and other technologies. Under existing law, incumbent LECs must provide at least some limited unbundled access nationwide to (1) DS1 and DS3 loops and associated subloops, (2) DS0 loops and associated subloops, and (3) the TDM-capabilities, features, and functionalities of hybrid copper-fiber loops. Subject to previous grants of forbearance, incumbent LECs must also provide unbundled access to UNE Analog Loops in non-price cap incumbent LEC service areas and to 64-kbps channels over fiber loops that were ordered before 2015.

**1. UNE DS1 and DS3 Loops**

26. We proposed in the *NPRM* to find that competitive LECs are no longer impaired in those counties and study areas deemed competitive in the *BDS Order* and *Rate-of-Return (RoR) BDS Order* (83 FR 67098, Dec. 28, 2018) (collectively, Competitive Counties), subject to a carve-out for UNE DS1 Loops used for residential purposes. Based on the record in this proceeding, as well as the Commission’s findings in the *BDS Order*, we adopt a modified version of this proposal and find that unbundled access to DS1 and DS3 loops in the Competitive Counties, where demand for business data services is most highly concentrated, is unwarranted because competitive LECs are no longer impaired without access to these UNEs, and thus, incumbent LECs no longer need to provide unbundled access in these locations, subject to the transition periods and associated conditions we adopt. Moreover, we find that continued unbundling of those network elements is not warranted because it frustrates the congressionally mandated policy goal of ensuring the deployment of next-generation networks and services. Further, independent of our non-impairment finding, we find that, subject to the transition periods and conditions, forbearance from these obligations in the Competitive Counties is warranted. The record overwhelmingly supports this conclusion. INCOMPAS, USTelecom, and most of their members participating in this proceeding agree that both the non-impairment finding and forbearance conclusions are appropriate for the Competitive Counties, subject to the transition periods and associated conditions we also adopt. None of these findings, however, apply to non-competitive

counties, where UNE DS1 and DS3 Loops will remain available, subject to the limits established in the *Triennial Review Remand Order*. Finally, we decline to adopt a residential carve-out for UNE DS1 Loops, finding that the costs and burdens associated with such an exemption outweigh the benefits.

27. *Background.* Our rules require that incumbent LECs make DS1 and DS3 loops, which are predominantly used to provision service to enterprise customers, available as UNEs on a limited basis. These loops operate at a total digital signal speed of 1.544 Mbps and 44.736 Mbps, respectively. The Commission adopted these unbundling requirements for DS1 and DS3 loops more than 16 years ago. The Commission based its impairment analysis at that time on two factors: the existence of actual competition and the inference to be drawn from the potential for competition in similar markets. The Commission found that “the presence of fiber-based collocations in a wire center service area is a good indicator of the potential for competitive deployment of fiber rings” and “a wire center service area’s business line count is indicative of its location in or near a large central business district, which is likely to house multiple competitive fiber rings (and thus numerous splice points) with laterals to multiple buildings.” When viewed together, the Commission explained, these characteristics “are likely to correspond with actual self-deployment of competitive LEC loops or to indicate where deployment would be economic and potential deployment likely.” It thus found that competitive LECs were not impaired without unbundled access to DS1 loops only in wire centers where there are at least 60,000 business lines and four or more fiber-based collocators. It also found that competitive LECs were not impaired without unbundled access to DS3 loops in wire centers where there are at least 38,000 business lines and four or more fiber-based collocators.

28. In explaining these findings, the Commission noted that its “selection of specific criteria is not an exact science, and the Commission may exercise line-drawing discretion when rendering determinations based on agency expertise, our reading of the record before us, and a desire to provide an easily implemented and reasonable bright-line rule to guide the industry.” The Commission limited the availability of these UNEs to ten UNE DS1 Loops and one UNE DS3 Loop per building, respectively, finding that competitors are more likely to self-provision higher capacity loops at a certain level of

bandwidth demand because of the greater economic feasibility resulting from the fact that “revenue opportunities increase with the capacity level.” It also indicated that even these revised unbundling obligations were designed to be removed “over time as carriers deploy their own networks and downstream local exchange markets exhibit the same robust competition that characterizes the long distance and wireless markets.”

29. In the more recent *BDS Order*, the Commission undertook a comprehensive analysis of the business data services market. Business data services refers to the dedicated point-to-point transmission of data at certain guaranteed speeds and service levels using high-capacity connections. This analysis focused extensively on the market for TDM-based DS1 and DS3 channel terminations, which are functionally identical products to UNE DS1 and DS3 Loops. The Commission found that “[t]o a large extent in the business data services market, the competition envisioned in the [1996 Act] has been realized,” and “any prior advantage an incumbent might have enjoyed at lower bandwidths is now less competitively relevant in light of customer demand that attracts a number of traditional and non-traditional competitors that are improving legacy cable networks and expanding with new facilities to meet demand.”

30. Relying upon the most comprehensive data collected from both purchasers and providers of BDS services to date, including circuit-based and packet-based BDS providers and significant providers of best-efforts services, and Form 477 data, the Commission created a Competitive Market Test to determine which counties are competitive for purposes of business data services. Best-efforts services are Internet access services generally marketed to residential and small business consumers, rather than enterprise consumers. Unlike dedicated packet-based BDS, best-efforts services often provide asymmetrical speeds and lack service performance guarantees. While the Commission found in the *BDS Order* that best-efforts services generally did not directly compete with fiber-based BDS, the Commission found that the underlying facilities used to provision best-efforts services were being modernized to provide competitive BDS. Providers report their broadband deployment to the Commission semi-annually using FCC Form 477. The Eighth Circuit upheld the portion of the *BDS Order*

adopting the Competitive Market Test, while remanding other portions of the *BDS Order* on notice grounds. The Commission determined that combining these two data sets would “approximate the full spectrum of competition in the business data services market, including competition from medium-term entrants.” The Commission determined that basing the Competitive Market Test on “the geographic unit of a county or county-equivalent” would “significantly reduce[] the over-and under-inclusivity issue posed by MSAs [metropolitan statistical areas] . . . and avoid[] the administrability issues posed by smaller geographic units of measure.” It went on to determine that “nearby [non-incumbent LEC wireline] competitors” with “nearby networks” are “effective competitor[s] in meeting BDS demand at a location if it either delivers BDS to a location or has a network within one half mile of the location with BDS demand, and/or is a cable company with a widespread HFC [hybrid fiber coax] network that surrounds the location with BDS demand.” The Commission determined that a county will be deemed competitive when either (1) at least 50% of the locations with BDS demand within the county are within a half mile of a competitive provider’s network, or (2) a cable competitor’s network serves at least 75% of the census blocks with BDS demand within the county.

31. *Impairment Analysis.* UNE DS1 and DS3 Loops are functionally equivalent to DS1 and DS3 BDS end-user channel terminations, with the only real difference being their respective prices. Indeed, UNE DS1 and DS3 Loops and DS1 and DS3 BDS end-user channel terminations use the very same incumbent LEC facilities. So where there is evidence that competition for BDS DS1 and DS3 end-user channel terminations exists, as demonstrated by the Competitive Market Test, such competition also exists for UNE DS1 and DS3 Loops. And that competition includes packet-based alternatives to DS1 and DS3 Loops, which are more versatile and capable of handling the increasingly higher bandwidth needs of business customers, thus demonstrating that DS1 and DS3 loops are no longer a reasonably efficient technology to enter the enterprise marketplace in the Competitive Counties. The existence of actual and potential competition, intermodal or otherwise, in the Competitive Counties leads us to conclude that unbundling DS1 and DS3 loops is unwarranted even in the face of some level of impairment. Finally, continuing the unbundling obligations for DS1 and DS3 loops is at odds with Congress’s mandate in section 706 that we take action to encourage the deployment of advanced telecommunications

capabilities. Thus, consistent with our proposal in the *NPRM*, we find that where the Commission in the *BDS* proceeding found actual or potential competition, and subject to the transition periods in this Order, competitive LECs seeking to enter the business data services market are no longer impaired without unbundled access to DS1 and DS3 Loops, and those UNE requirements are no longer necessary.

32. Given the demands for ever-increasing broadband speeds, and packet-based services, we find that a reasonably efficient competitor would not use UNE DS1 and DS3 Loops as a reasonably efficient technology for entering the enterprise services market in the Competitive Counties. The communications marketplace today is dramatically different from the one that existed when the Commission last addressed impairment over a decade ago. Incumbent LECs were the dominant providers of TDM-based DS1s and DS3s in 2004, and cable was only beginning to make inroads into the enterprise services market at that time. Today, TDM-based DS1 and DS3 loops are becoming obsolete in the face of increasing bandwidth demands and the transition to IP-based networks and services. Their availability will become further constrained as incumbent LECs move forward with retiring their copper facilities, deploying packet-based services, and phasing out TDM services like DS1 and DS3 business data services. Indeed, the Commission found in the *BDS Order* that “[f]unctionally, TDM and packet-based services are broadly interchangeable in the business data services realm as both are used to provide connectivity for data network and point-to-point transmissions and both services can be delivered over the same network infrastructure.” It thus went on to find that “legacy TDM business data services suppliers would be constrained by the threat of potential customer loss to packet-based business data services suppliers.” And it noted the diminishing use and availability of UNE DS1 and DS3 Loops. One competitive LEC commenter in this proceeding made this clear when it noted that the bandwidth available through bonding multiple DS1 loops “might let a small business survive until another solution can be found.” But where competition, or the potential for competition, exists, such other solution has, by definition, been found because that competition comes from facilities-based providers using non-incumbent LEC facilities. And that competition includes packet-based services, which are scalable for the ever-increasing bandwidth needs of enterprise customers. In light of this next-generation competition, we find that a reasonably efficient competitor would not use UNE DS1 and DS3 Loops

when seeking to enter the enterprise marketplace in the Competitive Counties. Thus, where the Competitive Market Test has shown that a particular county or study area is competitive, we no longer require incumbent LECs to make UNE DS1 and DS3 Loops available after an appropriate transition period.

33. This actual and potential competition comes in many forms, including from cable and fixed wireless providers who entered, or are entering, the market without reliance on UNEs. The record demonstrates that cable providers are even more significant competitors for enterprise services today than they were when the Commission explained their significance three years ago in the *BDS Order*. And while the Commission previously found that fixed wireless had a limited role in the BDS marketplace, it noted “the promise of 5G technology to provide quality high-bandwidth fixed wireless services to businesses in urban areas” and found that “fixed wireless services should be included in the product market discussion because they may have a competitive effect on the market.” This is the competition envisioned by the 1996 Act, and we would be remiss to not take into account competition from these providers. Indeed, in the context of affirming the Commission’s decision not to require incumbent LECs to unbundle the broadband capabilities of hybrid loops, the D.C. Circuit stated “we agree with the Commission that robust intermodal competition from cable providers . . . means that even if all CLECs were driven from the broadband market, mass market consumers will still have the benefits of competition between cable providers and ILECs.” To ignore this competition and to allow continued reliance on UNEs in these areas would slow the transition to next-generation services, in contravention of the goals of section 706 and our preference for sustainable facilities-based competition, goals we are permitted to consider based on our “at a minimum” authority.

34. We realize that the *BDS Order* examined competition on a county level, whereas the Commission made its 2004 impairment findings based on an analysis of the smaller geographical level of wire centers. The Commission specifically found that “basing the competitive market test at the county level strikes the best balance between being sufficiently granular and administratively feasible,” a finding upheld by the Eighth Circuit. This concept of striking a balance between granularity and

administrability is equally relevant and important in the UNE context. We infer from the level of competition in the Competitive Counties now and the growth in competitive providers deploying in areas previously outside their footprints that these locations will ultimately become competitive. Thus, while some customers within a Competitive County may not currently have available to them the competition relied on by the Commission in deeming that county to be competitive, that number will be relatively small and will likely shrink over time. Indeed, the Commission noted in the *BDS Order* that it expected as much. This approach is consistent with the Commission's use of the impairment inquiry in 2004, when the Commission "dr[e]w reasonable inferences regarding the prospects for competition in one geographic market based on the state of competition in other, similar markets."

35. Some competitive LEC commenters assert that the Commission's reliance on the *BDS Order's* competitive findings is at odds with "the level of competition required by the [*Triennial Review Remand Order's*] findings." We disagree. We note that INCOMPAS, along with the majority of its members that have filed comments in this proceeding, signed the Compromise Proposal that states that the competitive providers are no longer impaired in the Competitive Counties without access to UNE DS1 and DS3 Loops. As the Commission specifically found in the *BDS Order*, for the purposes of enterprise services, "the largest benefits from competition come from the presence of a second provider, with added benefits of additional providers falling thereafter, in part because, consistent with other industries with large sunk costs, the impact of a second provider is likely to be particularly profound in the case of wireline network providers." This is consistent with the Commission's conclusion in the *Restoring Internet Freedom Order* (83 FR 7852, Feb. 22, 2018) that the presence of two wireline Internet service providers "can be expected to produce more efficient outcomes than any regulated alternative" relevant to our consideration in this context. Moreover, the competitive findings in the *BDS Order* support our findings of (1) no impairment, (2) the existence of intermodal competition supporting unbundling even in the face of some level of impairment, and (3) that eliminating this unbundling obligation furthers the goal of advancing deployment of next-generation facilities and services. The Commission found in the *BDS Order*, "[t]o a large extent in the business data services market, the competition envisioned in the Telecommunications Act of 1996 . . . has been realized." The

existence of wireline competitors in the Competitive Counties demonstrates that market entry and thus competition without UNE DS1 and DS3 Loops is possible in these areas. Indeed, we found in last year's *BDS Remand Order* that the vast majority of business locations in Competitive Counties are served by wire centers within a half-mile of competitive fiber. And the Commission found in the *BDS Order* that the level of competition based on the Competitive Market Test was likely understated and that it will only continue to grow, and the competition that existed at the time of the 2015 Data Collection will not recede because those competitors have already incurred substantial sunk costs. Those competitors, including intermodal competitors providing advanced telecommunications capability over next-generation networks, did not need to rely on UNE DS1 and DS3 Loops to enter these markets. We thus disagree with commenters who assert that a reasonably efficient competitor would still need to rely on UNE DS1 and DS3 Loops to enter a new market.

36. We also disagree with competitive LEC objections to the Commission taking into consideration competition from cable providers in conducting its impairment analysis. Cable providers are much more significant competitors for enterprise services than they were 15 years ago when the Commission initially considered their role in the marketplace for determining unbundling obligations for DS1 and DS3 loops. Indeed, only three years later in the *Qwest Omaha Order* (20 FCC Rcd 19415, Dec. 2, 2005), the Commission viewed such providers as a source of competition for forbearance purposes. Fast forward almost a decade to the *BDS Order*, and the Commission noted the dramatic strides of cable providers in becoming "formidable competitors" over their own fiber and hybrid facilities in the business data services market. Cable providers now offer robust enterprise-grade business services that were not widely available in 2004, as found by the Commission in the *BDS Order*, including for multi-regional customers with low to medium bandwidth needs who still require enterprise-grade features. The Commission previously also found that 5G networks "have the potential to represent a significant additional source of competition for the provision of business data services." And the BDS marketplace has only become more competitive in the seven years since the data collected in the 2015 Data Collection.

37. We also reject commenter arguments concerning the *Triennial Review Remand Order's* finding that the availability of UNEs at that time served to constrain business data service pricing (such services were called special access services at the time). Today, the widespread intermodal competition and entry for enterprise services constrains pricing, making “synthetic” UNE-based competition unnecessary, particularly as the continued obligation to provide UNEs in Competitive Counties could reduce investment incentives for packet-based services. We reiterate that the 1996 Act’s market-opening provisions were intended to foster competition, not support specific competitors or business models. We find the evidence of facilities-based competition for products and services here to be sufficient to demonstrate that reasonably efficient competitors have the ability to deploy their own services without the use of UNEs. While certain competitive LEC commenters may wish to continue relying on UNE DS1 and DS3 Loops for their business models, this does not mean that a reasonably efficient competitor is impaired without access to those UNEs. Indeed, the business data services on which these commenters rely are now subject to competition from other business data services, including through cable deployment that developed without the reliance on UNEs, an indication that there is no longer impairment.

38. We are further unpersuaded by commenter assertions that the findings in the *BDS Order* are flawed because they are based on Form 477 data, which have recently been the subject of challenges regarding their accuracy. As the Commission made clear in the *BDS Order*, its findings were not based solely on Form 477 data. Rather, its findings were based largely on the 2015 Data Collection (with respect to traditional competitive LECs). The Commission used the Form 477 data to supplement the 2015 Data Collection with respect to cable providers, which added only an additional 0.5% of all competitive counties and county equivalents.

39. *Forbearance Analysis.* Independent of our finding of non-impairment for UNE DS1 and DS3 Loops, we find that the forbearance criteria are met for UNE DS1 and DS3 Loop requirements in the same geographical areas—i.e., the Competitive Counties. In doing so, we have the flexibility to conduct our forbearance analysis based on the specific circumstances at issue. Although we forbear from our

UNE DS1 and DS3 Loop requirements in the Competitive Counties, we conclude that competitive LECs will be able to obtain DS1 and DS3 services as business data services or through section 251(b)(1) resale. And because the marketplace for DS1 and DS3 BDS channel terminations is competitive, the marketplace will discipline the prices of those services.

40. *Section 10(a)(1)*. We conclude that enforcement of UNE DS1 and DS3 Loop obligations is not necessary to ensure just and reasonable rates. To the extent competitive LECs seek to continue purchasing DS1 and DS3 services, they are able to do so through commercial offerings. The Commission found in the *BDS Order* that market pressure from competitive alternatives, including packet-based services, will ensure reasonable prices. Thus, the existence of competitive alternatives already available or that could economically be made available will ensure reasonable prices and no harm to consumers. Indeed, we find that competition will more effectively ensure just and reasonable rates more effectively than maintenance of these UNE requirements. Accordingly, although these UNE obligations may have served to constrain DS1 and DS3 prices at reasonable levels 16 years ago, they no longer serve that purpose.

41. *Section 10(a)(2)*. We find that the evolving marketplace and the statutory and regulatory safeguards that work to ensure just and reasonable rates also ensure that consumers will not be harmed by forbearance from enforcement of the UNE DS1 and DS3 Loops obligations. And as with ensuring just and reasonable rates, we find that competition will better protect consumers—in this instance, enterprise customers—from harm than continued enforcement of these outdated unbundling obligations. Moreover, absent the availability of UNE DS1 or DS3 Loops, competitors will still be able to purchase DS1 and DS3 end-user channel terminations as business data services via commercial agreements or pursuant to section 251(b)(1) resale, albeit at a higher price. Such higher prices, resulting from marketplace dynamics rather than regulatory mandates, will serve to encourage end-user customers to migrate to next-generation services, thus helping to advance Congress’s goal as stated in section 706. The rules adopted in 2004 and still in force today placed limits on UNE DS1 and DS3 Loop availability, both by wire center characteristics and by the numerical cap. Competitors, including

incumbent LECs outside of their incumbent territories, already use DS1 and DS3 BDS end-user channel terminations to compete, including facilities purchased from other competitive LECs and from cable providers. And DS1 and DS3 end-user channel terminations are increasingly becoming obsolete in light of the pressure for applications requiring increasing bandwidth. Indeed, the Commission found in the *BDS Order* that “use and availability of UNEs is diminishing.”

42. *Section 10(a)(3)*. Finally, we find that forbearing from the UNE DS1 and DS3 Loop obligations in Competitive Counties is in the public interest as it promotes the policy of ensuring the deployment of next-generation networks and services. The Commission has found that “[p]acket-based services represent the future of business data services” and “will lead to greater returns on investment and in turn, greater incentives for facilities-based entry into the business data services market.” Continuing to enable reliance on legacy lower-speed technologies unnecessarily reduces incentives and thus slows this deployment in the face of competitive alternatives as well as commercially available DS1 and DS3 products at market-based prices. We find that the benefit of encouraging the deployment of advanced telecommunications capabilities and next-generation networks outweighs any loss of competitors in the market as long as some level of competition remains.

43. *UNE DS1/DS3 Loops in Non-Competitive and Grandfathered Counties*. We decline to extend our DS1 and DS3 loop unbundling relief to non-competitive and grandfathered counties, consistent with our proposal in the *NPRM*. A number of incumbent LEC commenters take the position that we should eliminate unbundling obligations for DS1 and DS3 loops in non-competitive counties as well, arguing that the existence of continued price cap regulation in those counties obviates the need for UNE DS1 and DS3 Loops. However, the fact that price cap regulation continues in these counties does not demonstrate that either the non-impairment or forbearance standard has been met. The Commission’s findings in the *BDS Order* about actual and potential competition in these areas indicate that there is insufficient evidence to conclude that competition in the enterprise market currently exists or is likely to exist in the near future without the use of UNEs, and the continued existence of price cap regulation does not undermine those findings. Nor is there sufficient evidence in this proceeding to

conclude that reasonably efficient competitors could enter in these areas without the use of UNE DS1 and DS3 Loops. And UNE DS1 and DS3 requirements in these locations continue to be necessary for the protection of consumers and for the public interest, based on the limited degree of competition found in those areas in the *BDS Order*.

44. We also decline to eliminate UNE DS1 and DS3 requirements in grandfathered counties, as one commenter requests. The *BDS Order* did not find these counties competitive based on the Competitive Market Test, but rather refrained from imposing new price cap regulation because they were previously granted Phase II pricing flexibility. In the *BDS Order*, the Commission determined not to reimpose price cap regulation in these counties because it favored a “conservative” approach to avoid regulatory disruption, rather than on other considerations, such as the underlying conditions when those areas were granted Phase II pricing flexibility. The interest in a conservative approach to regulatory disruption weighs in favor of retaining UNE DS1 and DS3 Loops in the grandfathered counties, as those UNEs are currently available in these locations and were not affected by Phase II pricing flexibility.

45. *No DS1 Residential Exemption.* In the *NPRM*, we proposed exempting from any non-impairment findings UNE DS1 Loops used for providing mass market broadband in rural census blocks of Competitive Counties. We decline to adopt such an exemption. The record in this proceeding does not support such an exemption, and we find that the burdens to incumbent LECs of administering any such exemption outweigh any benefits. The number of existing UNE DS1 Loops in rural census blocks of Competitive Counties is exceedingly small in the first place, and the subset of such loops used for residential purposes is orders of magnitudes smaller. According to AT&T, fewer than one percent of the UNE DS1 Loops it sells in rural census blocks within Competitive Counties serve residential addresses. We find that the small number of these UNEs used in rural areas does not warrant such treatment, particularly because the *BDS Order* found these specific areas to be competitive for DS1 and DS3 channel terminations. According to AT&T, fewer than one percent of the UNE DS1 Loops it sells in rural census blocks within Competitive Counties serve residential addresses. This is not surprising given that

competitive LECs use UNE DS1 and DS3 Loops almost exclusively to provision service to enterprise customers. Moreover, to administer the proposed exemption on a going forward basis, incumbent LECs would be required to make costly modifications to their processes, which they would then need to update and monitor. Some incumbent LECs state they would also have to manually validate whether each new address, of which they receive hundreds daily, qualified for the exemption. One incumbent LEC commenter describes in detail the system changes necessary for a carrier to implement such an exemption and the substantial cost involved in implementing those changes. For example, Verizon describes the changes it would have to implement in order to accommodate a rural residential DS1 exemption, “at a minimum”: (1) “Create a new “yes/no” field in its provisioning and inventory systems to determine whether each individual end user address in Verizon’s territory (millions of addresses) is located in census blocks subject to relief . . . [and] constantly update this data, including to incorporate the hundreds of new addresses added on a daily basis;” (2) “Build intelligence into the ordering system to limit the availability of the [DS1] UNE loops to only census blocks not subject to relief; (3) “Modify billing systems if required to bill the UNE loops subject to relief at a different rate from those loops not subject to relief (e.g., a different rate during a transition period);” and (4) “validating the residential and broadband classification of the circuit.” Indeed, the cost per provider for implementing such changes could be “at least hundreds of thousands of dollars.” While INCOMPAS and NWTa point to one competitive LEC’s use of UNE DS1 Loops to serve some residential customers based upon filings made in the 2018 USTelecom forbearance proceeding, neither this competitive LEC nor any other individual competitive LEC indicated any such use in their filings in this proceeding or supported such an exemption. INCOMPAS and NWTa also pointed to Virginia Global, but that citation suffers from the same infirmities as the citation to Sonic. While INCOMPAS initially called for expanding the proposed exemption to enterprise customers, it was a party to the Compromise Proposal, which did not provide a DS1 exemption for residential or enterprise customers in the Competitive Counties. Because of the negligible benefits and significant costs, we decline to provide a residential DS1 exemption.

46. *Transition Period.* In the *NPRM*, we proposed a uniform transition period for UNE DS1 and DS3 Loops that would provide a 36-month transition period for existing UNE DS1 and DS3 Loops

without a period for new orders. Based on the record, we find that different transition plans for UNE DS1s and UNE DS3 Loops are warranted. Instead, for UNE DS1 Loop obligations, we adopt a two-part transition of 24 months for new orders and 42 months for existing UNE DS1 Loops. For existing UNE DS3 Loops, consistent with our proposal in the *NPRM*, we adopt a single transition period of 36 months with no additional period for placing new orders. Carriers may not convert existing special access circuits to UNEs after the effective date of this Order.

47. Our decision to adopt modified and different transition timeframes for these enterprise UNE loops is based on both record evidence and the Compromise Proposal between and among a majority of incumbent and competitive LEC stakeholders and participants in this proceeding, each of which individually would have preferred a shorter or longer transition period having different accompanying conditions than what their compromise proposal suggests. The Commission has long found compromise proposals negotiated by interested parties representing different interests to be reasonable and to serve the public interest. We acknowledge, however, the need to base our findings on an independent rationale. We find the transition periods contained in the Compromise Proposal to be reasonable and in the public interest, based both on the record in this proceeding and because the proposal has been advanced by most of the major buyers and sellers of these UNEs. We therefore adopt the following transition timeframes for eliminating the availability of UNE DS1 and DS3 Loops. We also reject Verizon's assertion that we should modify the "provision-then-dispute" process adopted in the *Triennial Review Remand Order* as we significantly reduce the availability of UNEs in this Order only to areas where they remain necessary, and there is no evidence in the record to support changing the process for obtaining UNEs in the limited areas where they remain.

48. First, we permit competitive LECs to order new UNE DS1 Loops for 24 months after the effective date of this order. This timeframe will enable competitive LECs to continue to execute short-term business plans and honor contractual obligations with new or existing customers, including small businesses, while they determine which alternative voice service option will best serve their customers' needs. Second, we adopt a 42-month grandfathering period for UNE DS1 Loops for all competitive LEC

customers. We adopt a 36-month grandfathering period for UNE DS3 Loops for all competitive LEC customers, with no period included for new orders. The record demonstrates that demand for UNE DS3 Loops is *de minimis*, justifying a shorter grandfathering period and no transition period for new orders, as compared to UNE DS1 Loops.

49. We reject proposals for either a longer transition period or a shorter transition period and find the Compromise Proposal to be reasonable. Indeed, Puerto Rico Telephone Company, which was not a party to the INCOMPAS-USTelecom Compromise Proposal, supports the DS1 relief, transition period, and associated conditions because as a whole, it “strikes a reasonable balance that modernizes regulatory requirements and promotes competition,” providing additional evidence of its reasonableness. We find that these transition periods will provide competitive LECs with sufficient time to make alternative arrangements, particularly given the availability of DS1 and DS3 BDS channel terminations as discussed above, without continuing to impose these burdensome and costly requirements on incumbent LECs for longer than necessary.

50. The 42-month transition timeframe within which all UNE DS1 Loops (including any new UNE DS1 Loops ordered during the first 24 months) and the 36-month transition timeframe within which all UNE DS3 Loops must be transitioned to alternative arrangements will commence on the effective date of this order. These transition periods should provide more than enough time for competitive LECs and their customers to transition to alternative voice and broadband service arrangements as evidenced by the willingness of the major competitive LEC trade association and the majority of its members to support this timeframe. Competitive LECs that have provided record information about the length of their customer contracts have typically referenced contract lengths of a minimum of three years with business or government customers. To the extent competitive LECs have entered into longer-term contracts with their customers without securing long-term contracts with their suppliers, they have done so at their own risk like any other business does, and we see no reasonable basis for accommodating that risk. Moreover, the fact that the major incumbent LECs currently subject to these unbundling obligations have agreed to support this transition timeframe suggests the burdens they

claim to incur as a result of continuing to provide such UNEs during the transition are outweighed by the benefit of a compromised transition proposal.

51. In addition, during the relevant transition periods for any competitive LEC customer, any UNE DS1 and DS3 Loops that a competitive LEC leases as of the effective date of this order shall be available for lease from the incumbent LEC at regulated UNE rates. Such rates are established either through negotiated interconnection agreements or through state-commission-arbitrated rates applying certain Commission-developed pricing formulas. Our forbearance action is not intended to upset pre-existing interconnection agreements or other contractual arrangements that may currently exist nor pre-existing state-commission-arbitrated rates during the transition period (including any already-adopted state commission scheduled changes in UNE rates), which should quell concerns of those fearing near-term price increases for UNE DS1 and DS3 Loops resulting from this Order. Of course, the transition mechanism we adopt is simply a default process, and competitive LECs and price cap LECs remain free to negotiate different arrangements superseding this transition period and replacing UNE DS1 and DS3 Loop arrangements with negotiated commercial arrangements at any earlier time. We find this approach will ensure an orderly transition for end-user customers of affected competitive LECs by mitigating any immediate rate changes that could otherwise be experienced by these end users if current rates for UNE DS1 and DS3 Loops were immediately eliminated. The transition timeframes we adopt will also work to ensure that consumers do not experience any undue service disruption as a result.

## **2. UNE DS0 Loops and Associated UNE Copper Subloops**

52. We proposed in the *NPRM* to find that competitive LECs are no longer impaired in urban census blocks without unbundled access to DS0 loops. Based on the record in this proceeding, as well as Commission data, we adopt a modified version of this proposal and find that unbundled access to DS0 loops and their associated copper subloops in urbanized areas (areas of 50,000 or more people), the most densely populated areas of the country, is unwarranted because competitive LECs are no longer impaired without unbundled access to these UNEs. The Census Bureau divides the country into

approximately eleven million census blocks, the smallest unit of geography for which the Census Bureau provides demographic data. Census blocks are classified as being located in an urbanized area (where populations are over 50,000) or an urban cluster (where populations range from 2,500-50,000). Locations with fewer than 2,500 people are considered rural. As of the 2010 Census, 71.2% of Americans lived in urbanized areas, 9.5% lived in urban clusters, and 19.3% lived in rural areas. The record overwhelmingly supports this conclusion. We decline to extend unbundling relief in census blocks in rural areas and urban clusters.

53. Section 51.319(a)(1) of our rules requires incumbent LECs to make available on an unbundled basis digital copper loops and two-wire and four-wire copper loops conditioned to transmit digital signals (collectively, DSOs or UNE DSO Loops). We exclude from the purview of this term UNE Analog Loops, which are addressed separately below. UNE DSO Loops are used predominantly to serve residential and small and medium businesses. UNE Copper Subloops are the portions of the copper DSO loops that are used to connect certain end-user premises with local loops.

54. USTelecom, INCOMPAS, and most of their members participating in this proceeding agree that, subject to the applicable transition period and associated conditions we adopt for UNE DSO Loops in this Order, competitive LECs are no longer impaired without access to UNE DSO Loops in urbanized areas. We agree with this assessment. We also find that continued unbundling of those network elements in urbanized areas frustrates the goal of ensuring deployment of advanced communications capability. Independently, we conclude that forbearance from the UNE DSO Loop obligation is warranted in urbanized areas, subject to the transition period and associated conditions we adopt. Our findings of non-impairment and forbearance from UNE DSO Loops and UNE Copper Subloops requirements do not apply to UNE DSO Loops and associated UNE Copper Subloops in less densely populated urban clusters or rural areas where the record and Commission data do not provide sufficient evidence of entry by facilities-based competitors, intermodal or otherwise, without the use of UNE DSO Loops.

55. *Background.* The current unbundling requirements for DS0 loops and copper subloops were adopted more than 17 years ago. At that time, the Commission found nationwide impairment without unbundled access to DS0 loops. In doing so, it noted that fiber deployment for the mass market was still in its infancy, wireless was not yet a suitable option for providing mass market broadband, and cable telephony had not developed sufficiently to be considered a substitute for traditional wireline telephony.

56. In the past 17 years, the communications marketplace has dramatically changed. The most recent data at the time that the DS0 unbundling requirements were adopted showed that wireline switched access was the leading form of telecommunications, and incumbent LECs were the dominant providers of wireline switched access. It followed that unbundling requirements were focused on providing competitive LECs with the network elements, such as local loops, to provide wireline switched access in competition with incumbent LECs. The data available in early 2003 reported 187.5 million wireline switched access lines, with incumbent LECs providing approximately 167.5 million of those lines, about 88% of the total. Cable providers reported serving only 2% of all switched access lines (via coaxial cable) in the reported data available when the Commission adopted the *Triennial Review Order*. Other forms of wireline voice lines, including interconnected VoIP, were so negligible that they were unreported. Over the last 17 years, wireline switched access lost its role as the leading technology for telecommunications. The most recent data reported 38.4 million total wireline switched access lines, with incumbent LECs providing 29.9 million of those lines, less than one-fifth of the wireline switched access lines they provided in 2003. In the interim, interconnected VoIP went from being irrelevant and thus unreported until 2008, to the most recent data showing 69.5 million interconnected VoIP lines reported, outnumbering wireline switched access lines from all providers. Wireline switched access lines now account for just 8% of all retail voice subscriptions across all technologies, and those provided by incumbent LECs are only about 39% of all wireline end-user subscriptions (both switched access and interconnected VoIP). Overall, incumbent LECs serve over fixed lines only 9% of all voice subscriptions across all technologies. At the same time wireline switched access line counts were decreasing, wireless voice subscribership was increasing. December 2002 data reported 136.2 million mobile wireless

subscribers. As of December 31, 2019, that number had nearly tripled, reaching 355.7 million. And according to the Centers for Disease Control, most adults live wireless-only households, having increased from 45% to 61.3% between 2014 and 2019 and accounting for more than 80% of Americans between the ages of 25 and 34 and 73% of Americans between the ages of 35 and 44.

57. The change over 17 years has been even more dramatic for broadband. In 2003, the Commission defined advanced services as transmission speeds of more than 200 kbps both upstream and downstream, and found just over 20 million mass market advanced service lines in use. The Commission now defines fixed broadband as speeds of at least 25/3 Mbps, and it was available to approximately 96% of all Americans by the end of 2019. We exclude Barrier Communications Corporation's deployment data from our analysis because of inaccuracies and overstatements in that company's Form 477 filings. While the Commission does not yet consider satellite broadband to be a substitute for wireline broadband, the Commission found that "[i]f we include satellite service in our estimate, the December 2018 data shows that fixed 25/3 Mbps service is deployed to nearly every American." Further, more than 87% of Americans had access to fixed speeds of 250/25 Mbps by the end of 2019. Deployment of last-mile fiber loops, which was not widespread in 2003, has expanded extensively. Between 2014 and 2019, residential subscription to a fiber based broadband service more than doubled, increasing from 8.3 million to 16.7 million. And mobile broadband, provided via LTE technology, which did not even exist in 2004, is now available in geographic areas covering virtually all Americans. Approximately 96% of Americans now have access to both 25/3 Mbps terrestrial broadband and 5/1 Mbps Mobile LTE broadband.

58. *Continuing Marketplace Changes.* Competition in the mass market communications space is likely to continue to grow, as barriers to entry have rapidly fallen for broadband providers using fixed wireless technology in densely populated areas. Industry analysts and incumbent wireline providers believe that 5G may allow wireless providers to capture a significant share of the residential broadband marketplace. T-Mobile committed, as a condition of its merger with Sprint, to roll out an in-home broadband service in millions of households, with a goal of serving the majority of zip codes by

2024. These 5G plans, and those of the other two national wireless providers, are most advanced in dense urbanized areas where the deployment business case is most compelling. Other providers, including Starry, are also deploying fixed wireless technologies to serve urban areas in different frequency bands. And wireless as an intermodal alternative to wireline voice and broadband service is only going to increase further as 5G deployment progresses, further pushing DS0 loops into obsolescence. Cable providers have expanded their broadband networks beyond their current footprints to ready themselves for competition from forthcoming 5G services.

59. *Impairment Analysis.* We find sufficient evidence of facilities-based competition and competitive entry in urbanized area census blocks without reliance on UNE DS0 Loops and UNE Copper Subloops to determine that competitive LECs in those locations are no longer impaired without access to those UNEs, and that policy considerations weigh against maintaining these requirements. Because UNE Copper Subloops are used to connect DS0 loops to end-user premises, our conclusions about UNE DS0 Loops apply equally to UNE Copper Subloops. Because of the many competitive alternatives available to customers in urbanized areas, we find that elimination of these unbundling requirements will not impact the provision of 9-1-1 service. Our conclusion is based on three related findings. First, robust intermodal competition, particularly from cable providers, now exists in urbanized areas, meaning that in these areas, “the costs cognizable under the Act of unbundling that UNE outweigh the benefits of unbundling, even if some level of impairment might be present.” Second, reasonably efficient competitors seeking to provide broadband and voice services in urbanized areas would use fixed wireless or other technologies, and not copper-based DS0 loops. Third, in light of this actual intermodal competition and potential competition from entering providers, continuing to require incumbent LECs to offer UNE DS0 Loops reduces incentives to invest and slows the transition to next-generation networks, in contravention of statutory goals we consider under section 251(d)(2) of the Act.

60. Intermodal competition in the form of cable competition alone is enough to establish the existence of sufficient competition even in the absence of UNEs. Nearly all households in urbanized areas (98%) live in census blocks served by cable broadband with speeds of at least 25/3 Mbps, and

incumbent LECs have deployed broadband meeting this speed threshold in 73% of these areas. Incumbent LEC affiliation is determined at the holding company level and for all census block which the incumbent LEC's study area overlaps the census block. We exclude a provider's deployment if the provider is not an incumbent LEC and whose last mile connection is based upon a copper technology (i.e., FCC Form 477 Technology Codes 10, 11, 12, 20 and 30). In addition, 84% of households in urbanized areas live in census blocks served by at least two 25/3 Mbps providers without the use of UNEs, and 90% of households live in census blocks served by at least two 10/1 Mbps providers without the use of UNEs. For purposes of this analysis, we exclude deployment of non-incumbent LECs that report broadband based upon copper facilities on the assumption that these firms are likely using UNEs. Finally, because urbanized area census blocks are relatively small, to the extent that a facilities-based provider already serves one customer in a given census block, economies of scale are more likely to accrue to serve additional customers in that census block, as the Commission long ago noted. There are, on average, 0.057 square miles in a rural census block, 0.017 square miles in an urban cluster census block, and 0.028 square miles in an urbanized area census block.

61. Moreover, it is our predictive judgment, supported by the record, that reasonably efficient competitors seeking to enter the fixed voice and broadband marketplace in urbanized areas for residential and small business customers are likely to use a variety of technologies, including fixed wireless, rather than relying upon the existing copper-based local loop network or building a similar network. That is, the use of DS0 loops to enter the broadband and voice marketplace in urbanized areas is no longer a reasonably efficient technology. Indeed, the three national mobile wireless carriers continue to invest in 5G-based fixed wireless service, which will provide additional fixed-service choices for voice and broadband services, particularly in dense urbanized areas where 5G is being first deployed and where small cell technology is most efficiently used. And other fixed wireless providers are similarly deploying innovative solutions. The record also indicates that a range of providers are deploying fiber-to-the-home networks, including but not limited to incumbent and competitive LECs. To the extent competitive LECs claim they remain dependent upon UNE DS0 Loops in these urbanized areas to serve new customers in order to obtain the necessary scale and revenue to fund such fiber-to-the-home

builds, we no longer find these claims compelling. These competitive LECs are not “new entrants” in these urbanized areas any longer, and network expansion like that for other types of technology providers should no longer be based on unnecessary unbundled DS0 loops. These and other technologies, rather than copper loops, are reasonably efficient methods of entry into urbanized areas today.

62. Our conclusions about actual and potential competition are supported by our “at a minimum” authority under section 251(d)(2). We are not only permitted to look to the impact of unbundling requirements on broadband deployment as “rationally related to the goals of the Act,” but are required to take this important policy goal into account. We reject the Electronic Frontier Foundation’s argument that we should reconsider our decisions in the 2000s to end the unbundling of fiber-to-the-home loops. As the Commission has consistently found, unbundling fiber-based loops could reduce the incentives for both incumbent and competitive LECs to invest in next-generation networks, and there is no evidence to suggest that unbundling’s effect on incentives to invest would be any different in low-income urban markets. In doing so, we find that continued unbundling of DS0 loops would inhibit, rather than promote, broadband deployment and the transition to next-generation networks and services in urbanized areas, because continued unbundling at regulated rates could artificially slow the transition away from legacy services and reduce incentives to invest in more advanced technologies, such as fixed wireless and fiber-based networks.

63. While we proposed in the *NPRM* a finding of no impairment in urban census blocks, which would include both urbanized areas (areas of 50,000 or more people) and urban clusters (areas with at least 2,500 but less than 50,000 people), based on the record and our own data, we conclude that we should limit that finding only to urbanized area census blocks. The data show that there are fewer competitor options in census blocks categorized as urban clusters and rural areas than in urbanized area census blocks. For example, as of December 31, 2019, approximately 84% of households in urbanized areas lived in census blocks with two or more providers of 25/3 Mbps broadband, compared to 59% of households in urban clusters and 42% in rural areas. Incumbent LEC affiliation is

determined at the holding company level and for all census block which the incumbent LEC's study area overlaps the census block. We exclude a provider's deployment if the provider is not an incumbent LEC and whose last mile connection is based upon a copper technology (i.e., FCC Form 477 Technology Codes 10, 11, 12, 20 and 30). We therefore reject arguments that we should extend relief to urban clusters. By limiting DS0 loop unbundling relief to urbanized areas, we also obviate the concerns of commenters that consumers in less densely populated areas, particularly urban clusters, may lose their only source of competition or lose access to high-speed broadband altogether. Commission staff analysis of FCC Form 477 deployment data as of December 31, 2019 and of study area maps indicates that approximately 42,000 households have a single provider option for 25/3 Mbps that may rely on UNE DS0 Loops, based on the number of households who live in census blocks where a single provider reports 25/3 Mbps deployment for residential customers over a copper wire loop. The identification of the provider as a CLEC is based upon the provider's holding company name and incumbent LEC study area maps that indicate that the provider is not the incumbent LEC. About 35,000 of these households live in rural areas and urban clusters where UNE DS0 Loops will remain available. We believe that the approximately 7,000 households who live in urbanized areas (just 0.008% of the 88 million households in urbanized areas) with only one provider of 25/3 Mbps will not be negatively affected by our action today for two reasons. First, as discussed below, we provide a two-part transition period for UNE DS0 Loops in urbanized areas, including a 2-year period for new orders and a 4-year period for existing orders. Second, we believe that these areas may be among the ripest for entry by competitive providers, including fixed wireless providers, based on their relative density and now that UNE DS0 loops will no longer be available in these areas after the transition.

64. *Forbearance Analysis.* The facts supporting our finding of non-impairment equally support an independent finding that forbearance from our UNE DS0 Loop and UNE Copper Subloop requirements in urbanized area census blocks is appropriate. As with UNE DS1 and DS3 Loops, we find that forbearance is appropriate based on our analysis of the specific circumstances at issue. Competitive LECs wanting to continue offering the same services currently provisioned over UNE DS0 Loops in urbanized areas will have access to commercial alternatives, subject to the existence of

“suitable facilities” after the transition. And because the marketplace for mass market last-mile loops is competitive, as discussed above, the marketplace will discipline the prices of those services.

65. *Section 10(a)(1)*. We conclude that enforcement of UNE DS0 Loop obligations in urbanized area census blocks is not necessary to ensure just and reasonable rates. Intermodal competition in urbanized areas has increased dramatically since the Commission adopted the current DS0 loop unbundling obligations, and mass market customers in urbanized areas now have numerous voice and broadband options available to them. The competitive pressures posed by those intermodal competitors will serve to constrain incumbent LEC rates for commercial replacement offerings to UNE DS0 Loops. Both actual and potential competition force incumbent LECs to compete on price in order to retain, and grow, their existing customer bases. Competition overall constrains incumbent LEC rates to end users. And incumbent LECs have an incentive to make wholesale inputs available at reasonable rates so that they will continue to earn revenues from competitive LECs rather than losing those revenues to intermodal competitors. The record supports forbearing from this unbundling obligation, as enforcement of the obligation is not necessary to ensure just and reasonable rates in this competitive environment.

66. *Section 10(a)(2)*. We find that the evolving marketplace and the statutory and regulatory safeguards that work to ensure just and reasonable rates also ensure that consumers will not be harmed by forbearance from enforcement of the UNE DS0 Loop obligation. Most importantly, consumers in urbanized areas now have a multitude of intermodal competitors, with others attempting to enter, vying for their voice and broadband business. The fact that these competitors use more modern technologies than copper-based local loops supports our decision in this document. As we found in the *UNE Analog Loops and Avoided-Cost Resale Forbearance Order*, “regulations that subsidize end-user customers to remain on legacy services and technologies run counter to the Commission’s goal of facilitating technology transitions to the long-term benefit of all consumers.” We also note that there is evidence that wholesale alternatives to UNE DS0 Loops currently exist in certain areas or are starting to emerge. For example, according to CenturyLink, at least three large cable providers launched

products intended to serve as alternatives to UNE Analog Loops shortly after the Commission adopted the *UNE Analog Loops and Avoided-Cost Resale Forbearance Order*. And CenturyLink itself offers a UNE DSO Loop wholesale alternative in areas in which it was previously granted forbearance. Moreover, incumbent LECs have committed to making wholesale alternatives commercially available “where suitable facilities exist” “in any area in which unbundled DSO loops are no longer available,” which competitive LECs can use to provide service.

67. *Section 10(a)(3)*. Finally, we find that forbearing from the UNE DSO Loop obligation in urbanized area census blocks is in the public interest as it promotes the policy of facilitating the deployment of next-generation networks and services and encouraging the transition away from legacy facilities. As we noted in the *UNE Analog Loops and Avoided-Cost Resale Forbearance Order*, end users transitioning from TDM to new technologies and services “will experience the benefits the Commission has recognized as flowing from that transition,” including “not only the benefits from the technologies themselves but also from the vibrant competition associated with next-generation [] services.” Indeed, extensive intermodal competition has already developed in these areas. Retaining UNE DSO Loop obligations in this competitive environment in urbanized area census blocks could actually harm the facilities-based competitive options that are currently available and developing, because the use of UNEs at cost-based rates may allow providers using legacy technologies to undercut new entrants using fixed wireless and other advanced technologies, as well as reducing competitive LECs’ incentives to invest in advanced technologies. And continued reliance on legacy services by end users reduces the incentive of incumbent and competitive LECs alike to deploy advanced networks and services. We therefore find retaining this requirement in urbanized areas would have an adverse effect on the public interest. The Commission has previously expressed its preference for facilities-based competition.

68. *Geographic Area*. Certain commenters urge us to find that competitive LECs are not impaired without access to all UNE DSO Loops or that we should forbear from this obligation on a nationwide basis. We disagree. Two of these commenters (USTelecom and AT&T) subsequently entered into a joint compromise proposal that appears to limit their request for relief to urbanized areas

subject to certain conditions. While broadband deployment and competitive entry may be increasing in urban clusters and rural areas, competitive broadband availability in these areas continues to lag behind densely populated urbanized areas, and the costs of deployment are inherently higher as density falls.

69. Alternatively, other commenters urge us to make our findings of no impairment or forbearance on a county basis rather than on a census block basis, as proposed in the *NPRM*, for purposes of administrative efficiency. Still others request that we implement our findings on a wire center basis, to provide incumbent LECs with flexibility in implementation. We disagree that a geographic basis other than census blocks is the best geographic area to rely upon. The Commission's Form 477 data is reported on a census block level, thus making that geographic boundary the most appropriate for measuring the extent of competitive facilities-based deployment by technology and the availability of competitive broadband alternatives for households. While incumbent LECs provision UNEs at the wire center level, and some wire centers serve both urbanized areas and urban cluster and rural census blocks, to the extent an incumbent LEC does not wish to take measures to distinguish between the different types of census blocks, we find that it is better to err on the side of overinclusiveness for UNE DSO Loops, to avoid eliminating such UNE access for customers located in rural areas and urban clusters. Indeed, the Commission erred on the side of overinclusiveness when defining Tier 3 Wire Centers for the purpose of where to unbundle transport.

70. *Cable Deployment.* Certain commenters assert that reliance on cable deployment as evidence of non-impairment is inappropriate due to cable provider first-mover advantages, because they already had extensive facilities deployed for providing video service and had an established customer base. We disagree. For one, our impairment and forbearance analyses require us to consider competition from all sources. When affirming the Commission's decision not to require the unbundling of the broadband capabilities of hybrid loops, the D.C. Circuit held that "robust intermodal competition from cable providers" was sufficient evidence of competition, in itself, to justify the Commission's decision. The same extensive investment in the legacy cable video network that enabled cable companies to provide competitive voice and broadband service in competition with incumbent LECs and

served as the underpinning of the Commission’s decision to refrain from unbundling hybrid loop broadband capabilities applies equally to our decision today for UNE DS0 Loops. If the Commission was permitted to rely on cable deployment to support a decision not to unbundle the broadband capabilities of hybrid loops, we may rely on it to support our decision to eliminate unbundling for DS0 loops here. Moreover, we can consider the effects of intermodal competition in our decision to weigh other factors when considering whether to order unbundling, particularly the incentives for broadband deployment, based on our section 251(d)(2) authority.

71. *Form 477 Data.* Some commenters assert that we should not rely on Form 477 data to support competition findings because of flaws in that data. We disagree. Our UNE DS0 Loop relief in this Order is limited to urbanized areas. The census blocks in those areas are generally extremely small, meaning even in the unlikely event a provider is serving only one or a few locations in these census blocks, we can infer that the other locations in the census block are extremely likely to be served in the near future. Indeed, based on the most recent Form 477 data, cable’s footprint increased by over 645,000 households, or 1.8 million people, from December 2018 to December 2019. Our assumption of such a deployment strategy, considering the high fixed costs of broadband deployment, is a “reasonable inference[] regarding the prospects for competition in one geographic market from the state of competition in other, similar markets,” as we are required to make per the *United States Telecom Ass’n v. FCC*, 359 F.3d 554 (D.C. Cir. 2004) decision (*USTA II* decision).

72. *5G and Other Nascent Technologies.* Certain commenters assert that we should not rely on potential 5G deployment to support findings of potential competition sufficient to find non-impairment. Again, as we explain above, DS0 loops are no longer a reasonably efficient technology to provide voice or broadband services in urbanized areas. We must look not only to existing competition in making an impairment finding, but to all sources of *potential* competition as well. And the impairment inquiry specifically “presume[s] that a requesting carrier will use reasonably efficient technology.” As we have indicated, we believe it is increasingly likely to be fixed wireless technology, whether provided by 5G or other means. We therefore “explicitly reject arguments that support

unbundling based on the costs associated with a particular architecture or approach – even an architecture or approach employed by the incumbent LEC – where entry using a more efficient available technology would permit economic entry.”

73. *“Natural Forbearance.”* Certain commenters assert that the Commission’s copper retirement rules provide incumbent LECs an avenue for “natural forbearance” and thus assert that we should not provide UNE DS0 Loop relief through deregulatory means. Because section 251(c)(3)’s requirements do not apply to fiber facilities (other than dark fiber transport), *see* 47 CFR 51.319, an incumbent LEC may obtain unbundling relief by deploying fiber or other next-generation networks and then retiring its copper facilities pursuant to our network change disclosure rules. Incumbent LECs retire their copper facilities through a notice-only process, without the need to seek our authorization. The continued unbundling obligation, commenters assert, thus acts as an incentive for incumbent LECs to deploy fiber. We are unpersuaded. First, unbundling imposes significant economic costs not recognized by this argument. Second, unbundling requirements lack sufficient countervailing benefits in densely populated urbanized areas, given the degree of competition and potential entry that already exists in those areas separate from the incumbent LEC’s decision whether or not to retire copper in that area. Given the existence of competition in urbanized areas that does not rely on access to UNE DS0 Loops, we find that this one-sided regulation giving certain competitive LECs an economic advantage where others have entered the market without such an advantage is unwarranted, and incumbent LECs should no longer have to bear this lopsided burden.

74. *Single Competitor Not Enough to Find Non-Impairment.* Certain commenters also oppose the proposed finding of non-impairment in the *NPRM* because, they assert, a single competitor is not sufficient to show that competitive providers are not impaired without unbundled access to the particular network element. However, we find evidence of existing and potential intermodal competition in urbanized areas. Nor is this argument consistent with the D.C. Circuit’s holding in the *USTA II* decision that the presence of intermodal competition from cable providers alone was sufficient to support eliminating unbundling obligations for hybrid loops. In any event, competitive providers will

still have access to UNE DS0 Loops in census blocks in rural and urban cluster areas after the relief we grant in this order becomes effective, thus largely obviating the concerns of these commenters.

75. *Transition Period.* While the *NPRM* proposed a three-year transition period and sought comment on a six-month period for new orders, numerous stakeholders have negotiated and proposed an alternative transition timeframe that we find to be reasonable based on the record in this proceeding and which we adopt instead. We condition our relief from UNE DS0 Loop and associated UNE Copper Subloop obligations on a two-part transition, consistent with the Compromise Proposal. First, we permit competitive LECs to order new UNE DS0 Loops for an additional 24 months after the effective date of this order. This timeframe will enable competitive LECs to continue to execute short-term business plans, honor contractual obligations with new or existing customers, including small businesses, and replace UNE DS0 Loops lost through end-user customer moves or loop degradation, while they determine which alternative voice service option will best serve their customers' needs. Second, we adopt a 48-month grandfathering period for all competitive LEC customers. The 48-month transition timeframe within which all UNE DS0 Loops (including any new UNE DS0 Loops ordered during the first 24 months) must be transitioned to alternative arrangements will commence on the effective date of this order. Industry organizations and their members, accounting for the lion's share of buyers and sellers of these UNEs, agree that this 48-month period is reasonable and should provide more than enough time for competitive LECs and their customers to transition to alternative service arrangements. Competitive LECs typically have contract lengths of a minimum of three years with business or government customers. To the extent competitive LECs have entered into longer-term contracts with their customers without securing long-term contracts with their suppliers, they have done so at their own risk like any other business does, and we see no reasonable basis for accommodating that risk.

76. We reject proposals calling for either a longer transition period or a shorter transition period. We find this four-year period to be a reasonable time frame that is sufficient to enable competitive LECs in these urbanized areas to transition away from depending on UNE DS0 Loops without stranding any investments they may have made while not burdening incumbent LECs with the costs of

unbundling longer than necessary. We note that Puerto Rico Telephone Company, which was not a party to the INCOMPAS-USTelecom Compromise Proposal, supports the UNE DSO relief, transition period, and associated conditions as a “reasonable balance.”

77. During the relevant transition period for any competitive LEC customer, any UNE DSO Loops that a competitive LEC leases as of the effective date of this Order shall be available for lease from the incumbent LEC at regulated UNE rates. Such rates are established either through negotiated interconnection agreements or through state-commission-arbitrated rates applying certain Commission-developed pricing formulas. Our forbearance action is not intended to upset pre-existing interconnection agreements or other contractual arrangements that may currently exist nor pre-existing state-commission-arbitrated rates during the transition period (including any already-adopted state commission scheduled changes in UNE rates), which should quell concerns of those fearing near-term price increases for UNE DSO Loops resulting from this Order. However, beginning with month 37 of the grandfathering period, incumbent LECs may raise their prices by up to 25%. Delaying any price increase for the first three years of the transition period should obviate concerns about economic pressure accompanying any such increase. However, allowing a price increase during the final year of the transition will further incentivize competitive LECs to transition their customers off of legacy networks. And incumbent LECs will be entitled to charge market rates after month 48, when the grandfathering period will expire. And incumbent LECs have committed to providing commercial alternatives for DSOs at the end of the transition period where the facilities exist to do so. Of course, the transition mechanism we adopt is simply a default process, and competitive and incumbent LECs remain free to negotiate different arrangements superseding this transition period and replacing UNE DSO Loop arrangements with negotiated commercial arrangements at any earlier time. We find this approach will ensure an orderly transition for end-user customers of affected competitive LECs by mitigating any immediate service disruption or rate changes that could otherwise be experienced by these end users if current rates for these UNE DSO Loops were immediately eliminated.

### 3. UNE Narrowband Voice-Grade Loops

78. In the *NPRM*, we proposed to eliminate all remaining narrowband voice-grade loop unbundling obligations. We find that competitors are no longer impaired without access to these elements, nationwide. Moreover, we find that continued unbundling of these network elements is no longer justified because it contravenes the Congressionally-mandated policy goal of ensuring the deployment of next-generation networks and services. We also adopt our proposal and independently find that forbearance from the remaining UNE Narrowband Voice-Grade Loop obligations nationwide is warranted.

79. *Background.* Under our current rules, incumbent LECs must provide three specific types of unbundled narrowband voice-grade loops: UNE Analog Loops, 64 kbps voice-grade channels over last-mile fiber loops when an incumbent LEC retires copper (UNE 64 kbps Voice-Grade Channel Over Fiber Loops), and the TDM capabilities of hybrid loops (UNE Hybrid Loops) (collectively, UNE Narrowband Voice-Grade Loops).

80. UNE Analog Loops are one type of copper loop that incumbent LECs must make available to competitors under the Commission's rules implementing section 251(c)(3). Notably, UNE Analog Loops are capable of providing only legacy TDM voice service, often referred to as plain old telephone service, or "POTS." UNE Analog Loops, by definition, are not capable of providing or supporting digital communications, including modern IP-based services or even digital subscriber line (DSL) service. In the recent USTelecom forbearance proceeding, we granted forbearance relief from unbundling requirements for UNE Analog Loops to price cap incumbent LECs in their service areas. We granted this relief due to extensive intermodal competition present in the voice marketplace, the harmful marketplace distortions generated by outdated regulations, and because the continued existence of UNE Analog Loops reduced incentives for both incumbent and competitive LECs to invest in their own facilities and to transition to next-generation networks.

81. UNE Hybrid Loops are another type of loop that incumbent LECs must make available to competitors under the Commission's rules implementing section 251(c)(3). Hybrid loops are local loops

“composed of both fiber optic cable, usually in the feeder plant, and copper wire or cable, usually in the distribution plant.” Our rules currently require that incumbent LECs unbundle either (1) a TDM voice-grade capable 64 kbps channel or (2) a spare copper loop if the requesting carrier seeks to provide narrowband services, and only the TDM features, functions, and capabilities of hybrid loops if the requesting carrier seeks to provision broadband services. UNE Hybrid Loops are used to provide the “exact same legacy TDM-based services that could be provided with UNE Analog Loops.” The only difference is that UNE Hybrid Loops “provide those services partially over fiber facilities, rather than over copper-only facilities.” In the *Triennial Review Order*, the Commission declined to order unbundling of the packet-based capabilities of hybrid loops, because unbundling “these next-generation network elements would blunt the deployment of advanced telecommunications infrastructure by incumbent LECs and the incentive for competitive LECs to invest in their own facilities, in direct opposition to the express statutory goals authorized in section 706.”

82. The UNE 64 kbps Voice-Grade Channel Over Fiber Loops obligation was created when the Commission eliminated unbundled access to fiber-based local loops because, among other reasons, requiring unbundling of fiber-based local loops would “undermine important goals of the 1996 Act,” particularly the section 706 goal to encourage the deployment of advanced telecommunications capability to all Americans. The Commission found, however, that where an incumbent LEC has retired its copper facilities, lack of access to an incumbent LEC fiber loop would impair a competitive carrier in its provision of narrowband voice services it had been providing over the unbundled copper loop. In essence, this “very limited” requirement was intended to prevent incumbents from exercising their “sole control” over the disposition of copper loops (by retiring the copper loop and replacing it with a fiber-based local loop) to disrupt competitors’ provision of narrowband services. By 2015, the Commission recognized that this requirement itself could undermine incentives for broadband deployment and granted forbearance on a forward-looking basis to incumbent LECs from the requirement to make available a 64 kbps voice-grade channel over overbuilt fiber loops. This 64 kbps unbundling requirement remains in the Code of Federal Regulations. The Commission found that this unbundling requirement could impede copper loop retirements and the ongoing transition from copper

to fiber and from legacy TDM-based services to next-generation networks and services. While the Commission found that this UNE had a “decreasingly relevant purpose” as a safeguard to protect narrowband voice competition during the copper-to-fiber transition, it nevertheless retained the 64 kbps voice-grade channel unbundling obligation for existing users.

83. UNE Narrowband Voice-Grade Loops, be they UNE Analog Loops, UNE Hybrid Loops, or UNE 64 kbps Voice-Grade Channel Over Fiber Loops, are used, if at all, almost exclusively for the provision of switched access voice-grade service, which we have found customers are migrating away from in favor of IP- and wireless-based voice services provided by multiple intermodal providers. Our conclusions in the *UNE Analog Loop and Avoided-Cost Resale Forbearance Order* were based on Form 477 data, which is collected on a nationwide basis. Indeed, in 2019, incumbent LEC legacy networks provided only about 8% of retail voice subscriptions across all technologies, serve a minority of both wired residential connections and wired business connections, and face growing competition from voice service alternatives including facilities-based fixed voice providers such as cable companies providing VoIP, mobile wireless facilities-based providers and resellers, and VoIP providers offering over-the-top services via broadband.

84. *Impairment Analysis.* Consistent with our *NPRM* proposal to eliminate these obligations, we find that competitors are not impaired without access to UNE Narrowband Voice-Grade Loops due to the widespread availability of intermodal competition, the declining number of incumbent LEC voice subscriptions, the lack of demand for these UNEs, and the migration away from legacy TDM services. Section 251(d)(2) mandates that the Commission consider “at a minimum” whether access to proprietary network elements is necessary and a competitor would be impaired without access to such network elements. We find that continued unbundling of these network elements contravenes the congressionally mandated policy goal of ensuring the deployment of next-generation networks and services.

85. *UNE Analog Loops.* We find that competitors are not impaired without access to UNE Analog Loops nationwide. Today, there are a multitude of competitive alternatives for voice services

that do not rely on an incumbent LEC's legacy network. We find there is no longer any credible basis to claim competitors are impaired without access to these UNE Analog Loops. First, voice-grade copper loops are no longer a reasonably efficient technology to enter the voice marketplace, in light of facilities-based and over-the-top alternatives to provide voice service. A reasonable entrant would use any of a number of newer technologies and services capable of providing advanced voice and broadband services, including wireless technologies. And a number of over-the-top voice capabilities are available that could also be used to enter the voice market today without constructing network facilities, instead relying on the broadband capabilities of other providers' networks.

86. Second, intermodal competition for voice services is so advanced that competitive providers, including cable providers, wireless providers, and other VoIP providers, have come to dominate the voice service marketplace. The level of competition, much of which evolved without UNEs, is such that the cost of unbundling can no longer be justified. As the Commission noted in 2004, impairment can only be found for low-capacity loops "if no alternatives outside the incumbent's network are available."

87. Finally, the declining share of incumbent LEC switched-access voice subscriptions in recent years and the prevalent deployment of facilities-based alternatives indicates that incumbent LECs no longer have a unique position in the voice service market. We further find that continued unbundling of these network elements that serve only to preserve outdated legacy voice services slows the transition to next-generation networks and services in contravention of our significant policy objectives in promoting the deployment of advanced telecommunications capabilities. Our decision to eliminate UNE Narrowband Voice-Grade Loop obligations furthers the Commission's ultimate goal of fostering the deployment of next-generation networks and services and consumers' migration to next-generation services.

88. *UNE Hybrid Loops.* Nationwide elimination of UNE Hybrid Loop obligations is also appropriate because reasonably efficient competitors are not impaired without access to these UNEs—i.e., no reasonably efficient competitor would seek to enter today's voice-service market by using a loop

solely capable of providing TDM service. The “widespread deployment of facilities-based alternatives” to the TDM-based services provided over UNE Hybrid Loops and the fact that intermodal competition for voice services is so advanced indicates there is no basis for competitors to claim they are impaired without access to TDM-based services, particularly those provided over UNE Hybrid Loops. Further, competitive LECs no longer face significant barriers to entering the voice market without access to the TDM-based services provided over UNE Hybrid Loops owned by incumbent LECs. Competitors have come to dominate the voice service marketplace using technologies that do not include TDM-based voice. The declining amount of incumbent LEC voice subscriptions and the *de minimis* demand for the TDM-based services provided over UNE Hybrid Loops demonstrates that access to these UNEs are not necessary for a reasonably efficient competitor to enter today’s voice-service marketplace. For these reasons, no reasonably efficient competitor would seek to enter today’s voice service market by using a loop solely capable of providing TDM service, just as we find with respect to UNE Analog Loops. Rather, such an entrant using its own facilities would provide any of a number of newer technologies and services capable of providing both voice and broadband services, or provide over-the-top service relying on other providers’ broadband networks. Moreover, eliminating access to the TDM capabilities of UNE Hybrid Loops will reduce potential delays to the TDM-to-IP transition and will promote broadband deployment that will benefit American consumers and businesses, supporting important goals of the Act.

89. *Grandfathered UNE 64 kbps Voice-Grade Channel Over Fiber Loops.* We also eliminate the remaining previously grandfathered UNE 64 kbps Voice-Grade Channel Over Fiber Loops obligation as reasonably efficient carriers are not impaired without continuing access to these grandfathered arrangements. The *de minimis* use of the grandfathered UNE 64 kbps Voice-Grade Channel Over Fiber Loops demonstrates that continued access to these UNEs is not necessary for a reasonably efficient competitor to enter today’s voice-service marketplace. As with the remaining UNE Analog Loops and UNE Hybrid Loops, no competitive LECs or other party in the record has specifically indicated that any provider is relying upon these grandfathered UNEs to provide voice services today. And even where some competitive LECs may continue to do so, this use does not overcome the compelling evidence of

competitive voice alternatives that warrant a finding of non-impairment. In sum, the impact of eliminating these grandfathered UNEs is negligible given the lack of demand for this grandfathered UNE and the migration from legacy TDM voice service to newer technologies and services. A reasonably efficient competitor would not look to UNE 64 kbps Voice-Grade Channel Over Fiber Loops as a reasonably efficient technology for entering the voice services marketplace today. Competitors are therefore not impaired without access to the remaining grandfathered UNE 64 kbps Voice-Grade Channel Over Fiber Loops. And eliminating these remaining channels that perpetuate outdated technology will further reduce potential delays to the TDM-to-IP transition, facilitating the goals of the Act.

90. *Forbearance—Analog Loops. Section 10(a)(1).* As a separate and independent ground for eliminating UNE Narrowband Voice-Grade Loops requirements nationwide, we conclude that the remaining UNE Analog Loop obligations are unnecessary to ensure that the charges for voice services are just and reasonable for the same reasons set forth in the *UNE Analog Loop and Avoided-Cost Resale Forbearance Order*. No party has advanced a theory under which incumbent LECs could engage in unreasonable practices and classifications regarding the remaining UNE Analog and UNE Hybrid Loops without also being able to charge unjust and unreasonable rates. As there is no record evidence to the contrary, we find that that the circumstances in non-price cap areas are indistinguishable from those in price cap areas with respect to these UNEs that can only be used to provision voice-grade service. Further, competitors have not specifically indicated that they are purchasing or relying upon these UNEs to provide voice services in non-price cap areas where other voice alternatives do not exist. Because of lack of record evidence of use of UNE Narrowband Voice-Grade Loops, we also reject the argument that we should expand the rural exemption to include these loops. In fact, very few of these UNEs still exist in non-price cap areas. Price-cap incumbent LECs account for over 99% of UNE loops provisioned to competitors. The record shows virtually uniform support for eliminating the requirements for voice-grade loops due to the changing voice-services marketplace and lack of demonstrated need for these requirements. TPx contends that “[t]he Commission should evaluate whether the loss of analog voice loops makes competition and pricing conditions better or worse in the residential voice market before it

de-lists additional DS0 UNEs based on a claimed competitive residential voice service market,” but does not specifically challenge extending unbundling relief to the remaining UNE Analog Loops. We previously forbore from UNE Analog Loop requirements for price cap incumbent LECs in light of the “overwhelming evidence demonstrating the increasing migration from legacy TDM voice service to IP-based and wireless voice communications capabilities provided by multiple intermodal providers.” UNE Analog Loops in non-price cap areas are used to provide the exact same outdated TDM-based services as UNE Analog Loops in price cap areas. Moreover, UNE DS0 Loops, which can also be used to provide voice service, will still be available in rural and urban cluster census blocks, which account for approximately 85% of the population residing in census blocks overlapping non-price cap study areas. We find that it is in the incumbent LECs’ interest to continue to serve wholesale customers. In fact, incumbent LECs have committed to offer commercial replacements in areas where UNE DS0 Loops will no longer be available. UNE DS0 Loops are provided over the very same facilities as UNE Analog Loops, only without the TDM equipment placed on the loops by the incumbent LEC to limit the loop to voice-grade service. We therefore find that forbearance from the remaining UNE Analog Loop requirements in non-price cap areas will not result in unjust or unreasonable voice service rates.

91. *Section 10(a)(2)*. We also find that enforcement of the remaining UNE Analog Loop obligations is unnecessary for the protection of consumers for the reasons discussed above and in the *UNE Analog Loop and Avoided-Cost Resale Forbearance Order*. Specifically, we find that forbearance will not result in unjust or unreasonable rates for consumers, nor will consumers risk losing service given that competitive LECs continue to have other means by which to offer consumers voice service. While a handful of commenters express concern about increased costs leading to increased prices for consumers, the “explosion of competition [in the voice service market] amply protects consumers far better than narrow, technology-specific Commission dictates ever could.” Moreover, the majority of non-price cap incumbent LECs are rural LECs, most of which qualify for the rural exemption from all section 251(c) requirements, including UNE Analog Loops. They therefore already have no obligation to offer their telecommunications services to competitive LECs at UNE prices while the rural exemption remains in place. Further, UNE DS0 Loops will remain available in urban clusters and rural areas after

forbearance, and incumbent LECs have committed to provide commercial alternatives to UNE DS0 Loops after they are eliminated in urbanized areas. Those UNEs not only afford the same voice capabilities as UNE Analog Loops, they have the added advantage of being capable of carrying broadband service. While retaining UNE DS0 Loops or UNE Narrowband Voice-Grade Loops impose costs on incumbent LECs, we find DS0s are worth keeping available in urban clusters and rural areas because of the benefits DS0s have for rural broadband. The narrowband-only capability of UNE Narrowband Voice-Grade Loops does not have the same benefits for consumers. Additionally, this forbearance continues to facilitate the TDM-to-IP transition, which benefits all consumers in the long term.

92. *Section 10(a)(3)*. Moreover, we find that forbearance from the remaining UNE Analog Loops requirements is consistent with the public interest for the same reasons we detailed in the *UNE Analog Loop and Avoided-Cost Resale Forbearance Order*—that is, reducing reliance on outdated technology encourages competition based on next-generation networks and broadband services. Forbearance from outdated unbundling rules will promote next-generation infrastructure deployment by both incumbent LECs and competitive LECs that otherwise would have relied on UNEs. We reject arguments that we should refrain from forbearance because of a lack of commercial alternatives for voice-grade analog loops. Again, UNE DS0 Loops, which afford the same voice capabilities as UNE Analog Loops and are also capable of carrying broadband service, will remain available after forbearance in rural areas and urban clusters. Additionally, at least one major incumbent LEC is now offering commercial alternatives to UNE Analog Loops, and the other major incumbent LECs have agreed to offer commercial alternatives to UNE DS0 Loops once they are no longer available as UNEs. Finally, the Act requires us to protect competition, not competitors, and we do not believe that the continued availability of UNE Analog Loops is necessary in light of the competitive nature of today's voice marketplace. We thus grant nationwide forbearance from the remaining UNE Analog Loop requirements as "it is no longer necessary to require . . . once-upon-a-time market-opening obligations that today amount to disparate regulatory burdens that frustrate the transition to advanced communications services offered over next-generation networks."

93. *UNE Hybrid Loops.* We also forbear, on a nationwide basis, from our regulations requiring access to UNE Hybrid Loops. The fact that UNE Hybrid Loops are “used to provide the exact same legacy TDM-based services” that can be provided with UNE Analog Loops supports forbearance from this UNE requirement for the same reasons that we forbore from UNE Analog Loops in price-cap areas in the *UNE Analog Loop and Avoided-Cost Resale Forbearance Order* and in non-price cap areas today. There is broad record support for eliminating the requirements for UNE Hybrid Loops nationwide, and no party claims to use or rely on this UNE, nor does any party argue that the obligation should remain in place. Moreover, as the Commission found when it forbore from the 64 kbps voice channel over fiber in 2015, the requirement to provide access to unbundled legacy elements when incumbent LECs upgrade their copper loops to modern facilities can slow the transition to next-generation networks and services. Therefore, forbearance from the remaining UNE Hybrid Loop requirements meets the requirements of section 10(a) of the Act. We conclude that, because no carriers claim to use this UNE, pursuant to section 10(a)(1), forbearance from the UNE Hybrid Loop obligation will not result in unjust or unreasonable voice service rates, and we also find that enforcing the UNE Hybrid Loop obligation is unnecessary for the protection of consumers pursuant to section 10(a)(2). Forbearance from these obligations is also consistent with the public interest pursuant to section 10(a)(3) as it will remove an unnecessary regulatory burden and promote next-generation infrastructure deployment by both incumbent LECs and competitive LECs that otherwise would have relied on UNEs. We thus grant nationwide forbearance from the UNE Hybrid Loop requirements.

94. *Grandfathered UNE 64 kbps Voice-Grade Channel Over Fiber Loops.* We also conclude that nationwide forbearance from the requirement that competitive LECs continue to receive unbundled access to the previously grandfathered 64 kbps voice-grade channels over fiber loops is appropriate pursuant to the requirements of section 10(a) of the Act. The Commission forbore from this requirement on a nationwide basis for all incumbent LECs in 2015 but grandfathered the obligation as to existing UNE 64 kbps Voice-Grade Channels Over Fiber Loops. The record indicates that there are only a small number of grandfathered UNE 64 kbps Voice-Grade Channel Over Fiber Loops that are still being used. Indeed, no commenter argues this obligation should be preserved. To the extent competitors still

rely on the grandfathered 64 kbps voice-grade channel over fiber loops, the three-part forbearance standard would be met for the same reasons it is met with respect to the remaining UNE Analog Loops and UNE Hybrid Loops. We note the lack of clarity in Commission precedent as to the precise status of this grandfathering obligation and find that we need not resolve it in this Order because elimination is justified based on the fact that no commenters argue to retain the UNE obligations for these 64 kbps voice-grade channels. Specifically, even if the cost for incumbent LECs to maintain the legacy equipment and systems is low, continuing to maintain and support this obligation solely to protect narrowband legacy voice service is no longer necessary to ensure just and reasonable rates or protect consumers in light of our prior findings about the state of the voice services marketplace and the *de minimis* use of these unbundled 64 kbps channels provisioned over fiber.

95. *Transition Period.* The *NPRM* proposed a transition period of three years and sought comment on whether we should include a six-month period for new orders for all UNE Narrowband Voice-Grade Loops. Based on record evidence that UNE Narrowband Voice-Grade use is *de minimis* and that no commenter has indicated new orders are being placed, we find a three-year transition period appropriate for these UNEs and is consistent with the *UNE Transport Forbearance Order* and the *UNE Analog Loop and Avoided-Cost Resale Forbearance Order*, each of which provided three-year transition periods, “to fully ensure that current *and* potential competition plays its expected role” to ensure consumers currently using these services are not harmed, and for competitive LECs “to replace their embedded base of legacy TDM customer premises equipment and other increasingly obsolete TDM-based peripheral devices with new IP-capable equipment.” In other contexts, the Commission similarly has adopted a uniform transition period of three years to allow existing customers to facilitate their transition to alternative facilities or arrangements in other deregulatory actions. We find that this transition period supplies the necessary incentives for both incumbent and competitive LECs alike to deploy their own next-generation networks as expeditiously as possible, while ensuring that end users do not experience undue service disruption. Thus, competitive LECs must transition to alternative facilities or services within this three-year transition period that will begin on the effective date of this Order.

96. No commenters specifically argued for a longer or shorter transition period for UNE Narrowband Voice-Grade Loops. We disagree with commenters who made more general assertions that the transition period for these and other UNEs should be shorter than three years for existing customers. We reason that three years is appropriate in this case to alleviate any potentially negative impact on previous investments in legacy customer premises equipment and service disruption.

97. We also disagree with commenters who made general assertions there should be a longer transition period to place new orders and for existing customers to continue services. UNE Narrowband Voice-Grade Loops are no longer an “integral part of the competitive landscape,” and thus three years is sufficient to protect against service disruption, based on the record evidence that these UNEs are not extensively leased or relied upon nationwide. We find that a period longer than three years is unjustified and not in the public interest as it does not coincide with the Commission’s policy goal of advancing next-generation networks and services.

98. As with all UNE relief, we recognize that the transition mechanism we adopt today is simply a default process, and carriers remain free to negotiate alternative arrangements superseding this transition period. Our transition mechanism also does not replace or supersede any commercial arrangements carriers have reached for the continued provision of facilities or services. Therefore, we adopt a three-year transition of existing UNE Narrowband Voice-Grade Loops, commencing on the effective date of this Order.

#### **B. Multiunit Premises UNE Subloops and Network Interface Devices**

99. In the *NPRM*, we proposed to eliminate UNE Subloops, including Multiunit Premises UNE Subloops, in the same geographic areas where we eliminated the underlying UNE Loop, and we take action consistent with that proposal as to UNE Copper Subloops above. Based on the record in this proceeding and in the interest of regulatory parity, however, we diverge from the proposal in the *NPRM* as to Multiunit Premises UNE Subloops and find that competitors are no longer impaired without access to Multiunit Premises UNE Subloop obligations nationwide and that access to this stand-alone UNE is not necessary for competitors to deploy their own facilities. We also independently find that

forbearance is warranted for Multiunit Premises UNE Subloops separate and apart from our impairment analysis. We further find that competitors are no longer impaired without access to the UNE Network Interface Devices (NID) requirement and consistent with the *NPRM*, independently find that forbearance from this obligation is also appropriate because the record indicates that stand-alone NIDs are not necessary for competitive LECs to access potential customers. Therefore, we eliminate these unbundling obligations on a nationwide basis.

100. *Multiunit Premises UNE Subloops.* Subloops are portions of a loop or “smaller included segment[s] of an incumbent LEC’s local loop plant.” Competitive LECs generally order subloops with the intention of taking “the competitor all the way to the customer.” Our rules impose UNE obligations for two types of subloops—copper subloops, discussed above, and multiunit premises subloops. The Commission’s rules separately address Multiunit Premises UNE Subloops due to previously-found specific “impairments associated with facilities-based entry in multiunit buildings or campus environments.” The rule states that incumbent LECs must offer unbundled access to these subloops necessary to access wiring at or near a multiunit customer premises, i.e., all incumbent LEC loop plant between the minimum point of entry at a multiunit premise and the point of demarcation. Unlike copper subloops, the Multiunit Premises UNE Subloop includes the entirety of the loop plant regardless of the capacity level or type of loop the requesting carrier will provision to its customer, that is, including fiber or hybrid loops. The Multiunit Premises UNE Subloop also includes any inside wiring owned and controlled by the incumbent LEC.

101. *Impairment Analysis.* The record demonstrates that incumbent LECs “no longer have a unique competitive position in multiunit premises” and thus, the very reason for requiring incumbent LECs to provide Multiunit Premises UNE Subloops no longer exists. Section 251(d)(2) mandates that the Commission consider “at a minimum” whether access to proprietary network elements is necessary and a competitor would be impaired without access to such network elements. The Commission enacted these particular unbundling obligations to address issues related to facilities-based competitors accessing the customer’s location where access to the premises was controlled or managed by someone

other than the customer. In 2003, the Commission explained that incumbent LECs had “first-mover advantages” with respect to access to customers in multiunit premises because of their prior exclusive access. This no longer holds true today. In fact, the incumbent LEC “frequently is not the ‘incumbent’ in the multiunit premise,” and “it is the owner of the property, and not the [incumbent] LEC or another provider, that typically controls access to the property.” Competitive LECs do not assert the contrary is true. Indeed, cable companies are often the incumbent provider in the MTE. Moreover, competitive LECs “can economically run their own high-capacity facilities to multiunit premises,” and the Commission’s rules prohibit LECs from entering into exclusive access contracts with the owners of commercial and residential multiunit premises. Therefore, we find that there is no evidence that incumbent LECs face lower barriers to entry to serve multiunit premises than competitive LECs. As such, incumbent LECs “enjoy no particular advantage in deploying to [multiunit] premises” and competitive LECs are no longer impaired without access to Multiunit Premises UNE Subloops.

102. INCOMPAS and NWTAs assert that competitive LECs “serving MTEs face significant barriers to entry because of the many anticompetitive practices imposed by MTE owners and managers”—not incumbent LECs—and allude to these anticompetitive practices as “incumbent providers and MTE owners entering into sale-and leaseback agreements”—which are largely agreements between cable providers and building owners. Indeed, most of the arguments against sale-and-leaseback arrangements in the MTE Docket contend that they are used by building owners and cable providers to circumvent the Commission’s cable inside wiring rules, which only apply to certain video providers and not incumbent LECs. This argument is not directed at incumbent LECs, nor does it demonstrate that incumbent LECs face lower barriers to entry than competitive LECs, and is therefore inapplicable in the UNE context. We find that this argument is more appropriately suited for our current MTE proceeding where many incumbent LECs are also calling for action related to what they claim are anticompetitive practices of MTE owners and incumbent providers, often cable providers.

103. Granting relief from this stand-alone requirement will not disrupt any policy decisions that we may make in other proceedings examining competition in multiunit premises. Although

competitive LECs have asserted that special barriers still exist to accessing multiunit premises, we find that concerns about access to multiunit premises should be and would be better addressed in the MTE proceeding, where we are considering ways to improve competitive broadband access to multiple tenant environments, and where any action we take would apply to a broader group of providers rather than only incumbent LECs. The Commission found in the *Triennial Review Remand Order*, “it would be inappropriate to distort our unbundling analysis in an effort to solve alleged deficiencies in other aspects of our regulatory regime.” It thus left “building-specific impediments to be addressed in other Commission proceedings, or in other fora, as appropriate.” Indeed, the Commission has on multiple occasions broadened its rules prohibiting providers from entering into exclusive building access agreements with MTE owners so that similar rules now apply to incumbent LECs serving residential and commercial properties, competitive LECs, and multichannel video programming distributors subject to section 628 of the Act. Any remaining barriers to accessing multiunit premises wiring are independent of accessing the Multiunit Premises UNE Subloop, and no commenters in this proceeding demonstrate that incumbent LECs maintain special advantages in multi-tenant environments today. We clarify that our findings today and our decision to eliminate the Multiunit Premises UNE Subloop requirement do “not in any way prejudice the distinct set of questions regarding the effect on competition of restrictions imposed by a building owner.”

104. The record further supports nationwide elimination of Multiunit Premises UNE Subloops as only a *de minimis* number of multiunit premises subloops are currently being sold, especially on a stand-alone basis. As there is already a lack of demand and usage, reasonably efficient competitors would not generally be impaired by lack of access to this UNE subloop. Moreover, no commenter has presented compelling evidence regarding the necessity of this stand-alone UNE.

105. *Forbearance.* We also find that forbearance is warranted for Multiunit Premises UNE Subloops separate and apart from our non-impairment finding. As evidenced by the current record only a *de minimis* number of multiunit premises subloops are currently being sold, especially on a stand-alone basis. The record also supports forbearing from this requirement as it is economical for

competitive LECs to run their own high-capacity facilities to MTEs. Moreover, incumbent LECs “at risk of losing revenue when traffic shifts from their facilities to competitive offerings will seek to preserve such revenues, in whole or in part, by offering commercial access to their facilities.” Sections 201 and 202 of the Act would also prohibit incumbent LECs from engaging in unreasonably discriminatory behavior. Thus, preservation of this UNE obligation is not necessary to ensure just, reasonable, and nondiscriminatory rates and terms per section 10(a)(1) of the Act.

106. The Commission’s rules prohibiting LECs from entering into exclusive access contracts with the owners of residential multiunit premises serves to protect consumers in accordance with section 10(a)(2) of the Act. Multiunit Premises UNE Subloops are also unnecessary to protect consumers given their lack of use. We further find that retaining this requirement would not be in the public interest as it would contravene the Commission’s and the 1996 Act’s broadband deployment goals—that is, “it would deter competitors from deploying their own facilities to reach the premises and ensuring durable competition for the business of its tenants.” Elimination of unbundling mandates will incentivize and promote new deployment by competitive LECs and broader commercial access to the incumbent LECs’ facilities to thereby achieve lasting facilities-based competition consisted. Therefore, consistent with section 10(a)(3) of the Act, forbearing from Multiunit Premises UNE Subloops would serve the public interest. Accordingly, we find that forbearance from Multiunit Premises UNE Subloops meets the statutory requirements of section 10(a) of the Act.

107. *Network Interface Devices.* The network interface device, or NID, which is always located at the customer’s premises, is defined as any means of interconnecting the incumbent LEC’s distribution plant to wiring at a customer premises location. Apart from its obligation to provide the NID functionality as part of an unbundled loop or subloop, an incumbent LEC must also offer nondiscriminatory access to the NID on an unbundled, stand-alone basis to requesting carriers for the purpose of connecting the competitor’s own loop facilities. Forbearance from this obligation would necessarily coincide with and follow our forbearance proposals related to loops and subloops and previous forbearance grants related to loops. An incumbent LEC must permit a requesting carrier to

connect its own loop facilities to on-premises wiring through the incumbent LEC's NID. The need for unbundled access to an incumbent LEC's NID arose to address scenarios, typically in multiunit locations, where access to the inside wire on the premises was controlled by a premises owner that did not want additional NIDs installed on their premises, or where a customer had no need for a duplicate NID.

108. *Impairment.* We find that reasonably efficient competitors are no longer impaired without access to the UNE NID requirement. Competitive and incumbent LECs have described substantially changed circumstances in the last two-plus decades such that this network element no longer serves any meaningful purpose. Competitive LECs have stated that “[a]s a practical matter, [they] do not purchase network interface device elements separate from unbundled loops.” Incumbent LECs are on record stating that there is “virtually no demand” for stand-alone UNE NIDs. AT&T even specifies that it sells no UNE NIDs, and “has not sold any in some time.” Competitive LECs have not indicated that there are still cases where the NID is the sole means of accessing this customer premise’s wire. The record demonstrates that continued access to these UNEs is not necessary for a reasonably efficient competitor to enter today’s marketplace. As competitors LECs “acknowledge they are not impaired without access to stand-alone unbundled NIDs, there can be no argument that such access is necessary.”

109. *Forbearance.* As proposed in the *NPRM*, we also independently find that forbearance from the UNE NID obligation is appropriate because the record indicates that stand-alone NIDs are no longer necessary for competitive LECs to access potential customers. Stand-alone UNE NIDs no longer serve a meaningful purpose and demand for this UNE is non-existent. We find that the lack of stand-alone UNE NIDs indicates that forbearance from the obligation easily meets the statutory requirements of section 10(a) of the Act. Because carriers are not using this UNE, enforcement of the UNE NID obligation is not necessary to ensure just and reasonable rates or practices. Nor is this obligation necessary to protect consumers, given its lack of use. Finally, because the UNE NID obligation consists of a regulatory burden that serves no beneficial purpose, forbearance from the requirement is consistent with the public interest.

110. *Transition Period.* In the *NPRM*, we proposed a uniform three-year transition period for all Multiunit Premises UNE Subloops and UNE NIDs. We adopt this three-year transition period for existing customers and no period for new orders, consistent with our proposal in the *NPRM*. We find a three year transition period appropriate for the same reasons we did so in the *2019 UNE Forbearance Orders*. Based on record evidence regarding lack of usage or reliance on these UNEs and the fact that no commenter has indicated new orders are being placed for either of these UNEs, we find a three-year transition period is appropriate, and a timeframe for new orders to continue to be unnecessary. We find that this transition period supplies the necessary incentives for both incumbent and competitive LECs alike to deploy their own next-generation networks as expeditiously as possible, while ensuring that end users do not experience undue service disruption. We disagree with generalized arguments in favor of longer or shorter transition periods because we believe a three-year transition for existing UNEs allows competitive LECs to make alternative arrangements, without unduly slowing the transition away from these UNEs. Thus, competitive LECs must transition to alternative facilities or services within this three-year grandfathering period. The transition period will begin on the effective date of this Order.

**C. UNE Dark Fiber Transport**

111. Consistent with our proposal in the *NPRM*, we find that competitive LECs are not impaired without access to UNE Dark Fiber Transport at wire centers that are within a half mile of alternative fiber, subject to the transition period we adopt. The record supports this finding. Independently, we also forbear from our regulations requiring incumbent LECs to provide UNE Dark Fiber Transport from the same wire centers. To sustain the non-impairment finding and forbearance conclusions, and to avoid stranding substantial investment in last-mile networks by competitive LECs, which provide numerous consumers with competitive advanced services over the facilities today that in many instances would not be replicable in the short and medium terms, we provide an eight-year transition period for existing UNE Dark Fiber Transport.

112. *Background.* Dark fiber transport, otherwise known as “interoffice dark fiber,” is fiber-optic cable deployed between incumbent LEC wire centers that has not been “lit” through the addition

of optronic equipment that would make it capable of carrying telecommunications. The Commission's unbundling rules require incumbent LECs to unbundle their interoffice dark fiber and make it available to a requesting carrier where the requested transport involves at least one Tier 3 wire center end point. Where obligated pursuant to our unbundling rules, the incumbent LEC is required to lease its unused, unlit fiber, subject to availability, allowing the competitive LEC to deploy its own electronics to light the dark fiber and provision last-mile service to end users served from the terminating wire center as if such dark fiber were part of its own fiber network.

113. The *Triennial Review Remand Order*, in setting the current unbundling requirements more than fifteen years ago, examined both actual competition and inferences that could be drawn about potential competition. In analyzing potential competition, the Commission found that both the number of fiber-based collocators and a wire center's service area's business line count were indicative of actual and potential competition for transport. The Commission concluded at that time that unbundling was warranted for dark fiber transport originating or ending in Tier 3 wire centers because those routes "show a generally low likelihood of supporting actual or potential competitive transport deployment." For purposes of UNE Dark Fiber Transport, a Tier 3 wire center is any wire center that does not qualify as either a Tier 1 wire center (which has at least four fiber-based collocators or at least 38,000 business lines, 47 CFR 51.319(d)(3)(i)), or a Tier 2 wire center (which has at least three fiber-based collocators or at least 24,000 business lines, 47 CFR 51.319(d)(3)(ii)). By contrast, the Commission found that unbundling was not required on other routes because a reasonably efficient competitor already had or could potentially deploy or obtain dark fiber transport.

114. In the *UNE Transport Forbearance Order*, we concluded that the presence of nearby competitive fiber creates a sufficiently dynamic marketplace for DS1 and DS3 transport, which protects competition and consumers and furthers the public interest. In that *Order*, the Commission forbore from UNE DS1/DS3 Transport obligations for price cap incumbent LECs at wire centers within a half mile of competitive fiber. To administer that forbearance, the Bureau released a list of approximately 11,000 Tier 2 and Tier 3 wire centers identified as having competitive fiber located within a half mile. The

Commission concluded that the presence of alternative fiber within a half mile creates competitive marketplace dynamics, observing that a “facilities-based competitor within a half mile of a location solely served by an incumbent LEC sufficiently restrains incumbent LEC pricing.”

115. In the *NPRM*, we sought comment on our proposal to find that competitive LECs are not impaired without access to unbundled dark fiber transport to wire centers that are within a half mile of alternative fiber. The proposal used the same factual underpinning as the *UNE Transport Forbearance Order*, in which the Commission forbore from UNE DS1/DS3 Transport obligations for price-cap incumbent LECs at wire centers within a half mile of competitive fiber. However, unlike the *UNE Transport Forbearance Order*, which examined whether the presence of nearby competitive fiber protected competition and consumers and furthered the public interest, the *NPRM* observed that the impairment inquiry asks only whether a “reasonably efficient competitor within a half mile of alternative fiber” could either obtain such transport at competitive rates or by building its own network. The Commission also rejected arguments that nearby provider-owned fiber should not be treated as a competitive alternative for UNE DS1/DS3 Transport because other fiber providers are generally uninterested in providing competitive DS1/DS3 transport service and, in particular, cable providers are ill-suited or unwilling to provide such service due to the unique characteristics of their networks. We found that the evidence competitive LECs relied on was outdated and failed to reflect continued fiber deployment, particularly BDS transport, in the past 15 years. We therefore determined that even if cable companies were unwilling to provide transport, the existence of such networks, which serve end users in the same vicinity as the competitor, is likely sufficient to temper price increases and result in reasonably competitive outcomes in the medium term. We also sought comment on whether our observations about competitive fiber located within a half mile of wire centers in the DS1/DS3 transport market in the *UNE Transport Forbearance Order* were applicable to interoffice dark fiber and could support a reasonable inference of no impairment for competitors leasing UNE Dark Fiber Transport that are similarly situated. Lastly, we sought comment on whether to extend forbearance to UNE Dark Fiber Transport obligations for the same wire centers subject to our UNE DS1/DS3 Transport forbearance.

116. *Impairment Analysis.* Based on the record before us, we conclude that competitive LECs are no longer impaired without access to UNE Dark Fiber Transport provisioned from wire centers within a half mile of competitive fiber. The Commission has long envisioned the use of UNEs by competitors as a stepping stone to deployment of their own facilities. The impairment inquiry considers whether a hypothetical reasonably efficient competitor would be impaired when lack of access to a particular network element creates a barrier to entry that renders entry uneconomic. The record demonstrates that competitive LECs have in fact widely deployed facilities without the need for UNE Dark Fiber Transport. But while a competitive LEC may prefer UNE Dark Fiber Transport, “that has no bearing on the fact that the existence of a nearby fiber network suggests the ability of a reasonably efficient competitor to self-provision its own fiber network in competition with the incumbent LEC, regardless of whether that network owner offers lit fiber services or dark fiber facilities.” Indeed, “[t]he fact that an entrant has deployed its own facilities—*regardless of the technology chosen*—may provide evidence that any barriers to entry can be overcome.” Thus, we ask only whether a competitive LEC could “provide the services that it seeks to offer,” irrespective of whether it uses lit or unlit fiber, as we presume that a competitive LEC could “take advantage of existing alternative facilities deployment where possible.”

117. Absent UNE Dark Fiber Transport, competitive LECs have been able to use alternatives such as commercial dark fiber, access to which has expanded greatly since we ordered UNE Dark Fiber Transport. Further, as we observed in the *NPRM* and the 2017 *BDS Order*, competitive LECs have been deploying their own fiber facilities at an accelerating rate over the past two decades, a result of declining costs and increases in potential revenues due to growing demand. We expect, then, that even the data contained in the *BDS Order* underreports the deployment of competitive fiber today, as it has likely improved in the intervening years since the data was collected. Additionally, some competitive LECs have even deployed their own dark fiber transport to replace the unbundled transport leased from incumbent LECs.

118. The rules we adopt in this document modernize our dark fiber unbundling requirements to reflect changes in the marketplace since 2004, when we last revised our UNE Dark Fiber Transport rules. At that time, the Commission limited the extent to which incumbent LECs were obligated to provide UNE Dark Fiber Transport by finding that, under the impairment standard, competitive LECs are not impaired without access to UNE Dark Fiber Transport where both wire centers are classified as either Tier 1 or Tier 2 wire centers. As a result, the unbundling obligations for interoffice dark fiber only applied where at least one terminating end point is a Tier 3 wire center. The Commission has described Tier 3 wire centers as those that “show a generally low likelihood of supporting actual or potential competitive transport deployment.” We refer to these Tier 3 wire centers as “UNE triggering” wire centers. In this document, however, the record reflects that alternative fiber with respect to Tier 3 wire centers has expanded tremendously, indicating that competitive LECs are no longer impaired without the use of UNE Dark Fiber Transport where there is competitive fiber with a half-mile. One commenter suggests that the Commission should also “consider expanding its rural exemption for all elements of its NPRM, should it adopt its proposals,” including UNE Dark Fiber Transport. However, as discussed below, neither the impairment inquiry nor the forbearance criteria distinguish as between rural and urban communities. While we may, for example, extrapolate from routes when examining impairment, and look to, e.g., consumer harm under forbearance, as we explain, the record demonstrates that UNE Dark Fiber Transport is no longer necessary—even in rural communities. Additionally, the fact that dark fiber may be useful for 5G, ultimately has no bearing on either inquiry.

119. While we observed in the *NPRM* that stakeholders disagreed as to the relevance of UNE Dark Fiber Transport in the current marketplace and whether or not competitive LECs are impaired without its continued use, the majority of commenters in the record now concede that competitive LECs are no longer impaired without access to new UNE Dark Fiber Transport. Incumbent LECs urge the Commission to find no impairment and contend generally that these UNEs are no longer justified. AT&T argues that “[t]hanks to the massive data collection in the BDS proceeding, . . . the Commission now has far more information about the actual extent of competitive transport deployment than it did in 2005” when it found no impairment for dark fiber transport *vis-à-vis* Tier 1 and Tier 2 wire centers. AT&T

observes that according to BDS data, “competitors have continued to deploy their own facilities in and near Tier 3 wire centers,” with “competitive supply at thousands of Tier 3 wire centers,” suggesting that a “reasonably efficient competitor *can* feasibly deploy its own facility to serve such wire centers.”

120. The record demonstrates that where alternative fiber exists within a half mile of a wire center, entry is possible—i.e., competing providers have been able to offer service to the area, irrespective of the technology they use. Because the impairment inquiry is technology agnostic, arguments as to the substitutability of dark fiber are irrelevant. As we explained in the *NPRM*, “[w]hile the Commission has previously differentiated lit from dark fiber, that has no bearing on the fact that the existence of a nearby fiber network suggests the ability of a reasonably efficient competitor to self-provision its own fiber network in competition with the incumbent LEC, regardless of whether that network owner offers lit fiber services or dark fiber facilities.”

121. We disagree with commenters that argue that new UNE Dark Fiber Transport remains essential to entry even where alternative fiber exists. Competitive LECs have claimed that unbundled dark fiber is essential to provisioning service, reaching new customers, and that alternative fiber is sometimes unavailable. Several competitive LECs have in fact used unbundled access to interoffice dark fiber and other UNEs to obtain a sufficient customer base within an incumbent LEC’s local market, thus generating enough revenue to eventually build a competing fiber network. The use of UNE Dark Fiber Transport has then allowed many competitors to gradually deploy their own last-mile fiber networks to offer service to consumers, competing directly with incumbent LECs for market share. These arguments fail to engage with the impairment standard, however. While UNE Dark Fiber Transport may have helped new entrants to *enter* the market at the time when we initially ordered unbundling, that does not bear on the argument of whether unbundling of dark fiber continues to be necessary today. Further, these commenters fail to demonstrate that where alternative fiber *is* available—lit or unlit—*new* entrants remain impaired. The existence of alternative fiber—regardless of the technology used—indicates that a reasonably efficient competitor can enter the market. One commenter argues that in considering the issue of alternative fiber, the Commission should differentiate between “commercially

owned dark fiber and dark fiber funded and controlled by government entities, who do not typically make fiber commercially available,” and reiterates the argument that CLECs sometimes do not make their own dark fiber commercially available. However, even if some alternative fiber is government subsidized or controlled—no alternative data is advanced to suggest how much of it is—as explained above, whether or not such fiber is commercially available has no bearing on the analysis. Additionally, with respect to the issue of public safety, no argument is made that eliminating UNE Dark Fiber Transport will create issues for, e.g., accessing 9-1-1, and we do not find that any such public-safety issue arises. Whether a new entrant uses commercial dark fiber or deploys their own network has no bearing on the fact that entry is economically feasible.

122. One commenter argues that the impairment inquiry cannot simply look at whether there is alternative fiber within a half mile of a wire center; rather, it contends that a more granular analysis of whether alternative fiber reaches the same destination is necessary to determine if entry into a particular market is economically feasible, because switching to alternative fiber is otherwise not an option for existing providers. However, the impairment inquiry only asks if a reasonably efficient competitor could enter the market, as evidenced here by the existence of alternative fiber. Whether these competitors then make their fiber commercially available for other providers is not at issue. One commenter has contended that the “presence of competitive fiber within a half-mile of a wire center provides no insight as to the economic viability of such fiber deployments.” However, the Commission may use proxies and draw inferences therefrom rather than analyzing every route individually. In so doing, however, Uniti Fiber claims that the Commission must evaluate routes that are “similarly situated with regard to ‘barriers to entry,’” and that “inferring no impairment in *all* areas where competitive fiber *may* be located within a half mile of the wire center” fails to satisfy the “nuanced approach to impairment demanded” by the courts. However, we need not analyze on a specific-route basis “when and by whom such competitive fiber was deployed, whether the fiber is actually used to provide service in that market, or of the remaining operational and economic barriers to transport deployment” as Uniti Fiber urges. Such a level of granularity would require a case-by-case assessment of impairment, an approach criticized by courts that have instead approved of examining “facilities deployment along

similar”—not identical—“routes . . . .” And we can and must also draw reasonable inferences about deployment by examining similar markets. Further, this alternative fiber suggests the existence of sufficient demand to justify entry absent dark fiber transport UNEs, and competitive LEC commenters ignore potential revenue opportunities despite highlighting hypothetical costs and barriers. Although commenters argue that *existing* networks would be harmed by eliminating UNE Dark Fiber Transport, largely due to reliance interests, we take into account such concerns in adopting a transition period. And while competitive LECs point to various success stories of the kind envisioned by the Commission when it unbundled dark fiber for Tier 3 wire centers, ultimately we must ask only whether providers are now impaired without access to it on an unbundled basis.

123. Further, incumbent LECs claim they see little demand for unbundled dark fiber from competitive LECs and argue that UNE Dark Fiber Transport constitutes a small proportion of available dark fiber transport overall. Verizon reiterates that it both uses and sells a *de minimis* amount of UNE Dark Fiber Transport. Incumbent LECs argue, conversely, that the marketplace for commercial dark fiber transport is thriving, with AT&T explaining that it purchases a large amount of commercial dark fiber transport outside its incumbent franchise areas. According to USTelecom, the record evidence presented by competitive LECs shows their progress in replacing UNE Dark Fiber Transport with their own interoffice transport, further indicating that competitive LECs “have largely, if not entirely, moved on from reliance on these UNEs.” Additionally, use of UNE Dark Fiber Transport for provisioning service to rural areas appears minimal. This not only reinforces our finding of no impairment but also independently, when coupled with the Commission’s findings regarding the competitiveness of the market without reliance on UNEs, persuades us that unbundling should be eliminated pursuant to our “at a minimum” authority even assuming *arguendo* some level of impairment in light of the costs of unbundling.

124. *Forbearance Analysis.* In addition to supporting our finding of non-impairment, the record independently compels us to forbear from our UNE Dark Fiber Transport requirements in the same wire centers. Forbearance is appropriate based on our analysis of the specific circumstances at

issue. We find that the criteria for forbearance are met and therefore do so with respect to our regulations requiring incumbent LECs provide UNE Dark Fiber Transport from these wire centers, subject to the transition period and conditions we adopt.

125. *Section 10(a)(1)*. We conclude that UNE Dark Fiber Transport obligations from Tier 3 wire centers with alternative fiber within a half mile are not necessary to ensure just and reasonable rates. We limit our forbearance only to those wire centers where alternative fiber is present within a half mile of the wire center, which creates market pressure to keep rates down. And given the incentives for providers, we expect those currently using UNE Dark Fiber Transport to either deploy alternative fiber themselves or to use commercially available dark fiber or other transport alternatives, which should further temper rates. We therefore conclude that unbundling obligations are no longer necessary from these wire centers to ensure just and reasonable rates.

126. *Section 10(a)(2)*. We find that the evolving marketplace and the statutory and regulatory safeguards that work to ensure just and reasonable rates also ensure that consumers will not be harmed by forbearance from requiring UNE Dark Fiber Transport from wire centers within a half mile of alternative fiber. With the availability of alternative fiber offerings, incumbent LECs face pressure to constrain rates and to act to retain existing customers. Although not all alternative fiber is dark fiber, such a distinction is ultimately irrelevant to consumers: they are concerned about the end product, not the specific technology used for middle-mile transport. And while competitive LECs transitioning off of UNE Dark Fiber Transport may look to commercial dark fiber as an alternative, where no such alternative exists, we nevertheless anticipate that the timeframe provided for in our transition coupled with the incentives for competitive LECs to deploy their own network facilities as the record indicates they have been doing should ensure that consumers continue receiving service.

127. *Section 10(a)(3)*. Finally, we find that forbearing from UNE Dark Fiber Transport from these wire centers is in the public interest as it promotes the policy of ensuring the deployment of next-generation networks and services. Competition is the preferred method by which the Commission safeguards the public interest. We have found that “disparate treatment of similarly situated

competitors creates marketplace distortions that may harm consumers,” and forbearance eliminates such distortions. Not only must the Commission consider whether forbearance will promote competition, but “[i]f the Commission determines that such forbearance will promote competition among providers of telecommunications services, that determination may be the basis for a Commission finding that forbearance is in the public interest” under section 10(a)(3). Further, we expect that forbearance will promote deployment of a provider’s own fiber, thus facilitating deployment of additional next-generation networks.

128. *Transition Period.* For competitive LECs currently offering services reliant on UNE Dark Fiber Transport, substantial costs, including sunk costs, have been incurred to use such facilities, including, for example, the deployment of fiber-based last-mile networks and enterprise connections, as well as the addition of expensive optronic equipment. These sunk investments in many cases would be rendered useless if a competitive LEC were forced off of UNE Dark Fiber Transport too quickly, and the record indicates that competitive LECs would be unable to continue serving some markets. We therefore grandfather existing UNE Dark Fiber Transport for eight years so as to avoid risking abandonment of services and stranding significant investments reliant on existing dark fiber. This timeframe strikes the appropriate balance between the competing interests of the various stakeholders as well as enjoys support by the majority of those stakeholders as reflected in the record today. We have found such compromises reasonable and in the public interest.

129. Such a transition period for existing UNE Dark Fiber Transport avoids stranding significant investment by competitive LECs and negatively impacting their customers, including those in remote locations. Competitive LECs claim that a loss of UNE Dark Fiber Transport would result in abandoned service in such areas. Specifically, investment into fiber to the home and fiber rings may be abandoned, and some recent awards of government support grants for broadband deployment (e.g., CAF II (83 FR 15982, April 13, 2018)) rely on UNE Dark Fiber Transport for construction. The Connect America Fund Phase II program is a part of the Universal Service High-Cost program designed to expand

broadband and voice services to places where they are unavailable, and the Commission provides funding to subsidize new network infrastructure or upgrades.

130. Incumbent LECs, however, argue that UNE Dark Fiber Transport constitutes a small portion of their dark fiber transport overall. Because this unbundled element comprises such a minute portion of incumbent LECs' business, this suggests that a lengthier period than we adopt for other UNEs today would have a relatively smaller effect on incumbent LECs. And as we have explained, the "at a minimum" language in section 251(d)(2) allows the Commission to consider other factors "rationally related to the goals of the Act," including deployment of broadband, access to which may be impaired. Given the relatively smaller cost to incumbent LECs, we thus find that permitting competitive LECs to continue using UNE Dark Fiber Transport will avoid potential waste and safeguard existing customers.

131. One commenter also argued that competitive LECs should only be allowed to maintain UNE Dark Fiber Transport subject to capacity limits. The commenter claimed that the Commission should "make clear that purchasers are limited to using [UNEs] for transport capacities of no more than the equivalent of 12 DS3s," claiming that in the *Triennial Review Remand Order*, "the Commission found that requesting carriers are *not* impaired without access to transport facilities above 12 DS3s on a given transport route." As such, they believe it would be inconsistent to allow competitive LECs to use dark fiber to "carry almost any capacity depending on the electronics the CLEC attaches to it," which they argue is a "severe anomaly in the Commission's unbundling rules."

132. However, the rationale for limiting transport with respect to DS3s is inapplicable as applied to dark fiber. In the *Triennial Review Remand Order*, we set the 12-DS3 capacity limit to "establish a safeguard to limit access to a carrier that has attained a significant scale on such a route indicating that more than sufficient potential revenues exist to justify deployment . . . ." As INCOMPAS and NWTa explain, in so limiting transport capacities, we undertook an analysis of competitors' revenue potential—something commenters seeking capacity limitations fail to do here. And unlike DS3s, dark fiber requires significant investment by competitive LECs to enable it to carry traffic, which also limits the amount of bandwidth that can be realistically transported. INCOMPAS/NWTa also claim that per-

Mbps revenue has declined over time, and that the record does not provide an economic rationale for limiting the extent to which competitive LECs can upgrade the electronics attached to dark fiber for additional capacity.

133. Many incumbent LECs argued for a short transition period for existing UNE Dark Fiber Transport of only a few years. Prior to agreeing to an eight-year transition period, various incumbent LECs or their representatives argued for transition periods as short as 18 months but no longer than three to five years. However, we agree with competitive LECs that argue that these timelines are too short under the circumstances. For example, proponents of a longer transition timeframe argue that abbreviated transition periods “downplay[] the costs of, and other barriers to, overbuilding existing, unused interoffice dark fiber transport routes,” which even over “the short period of a few years” can “easily run[] into the tens, if not hundreds, of millions of dollars.” In addition, we recognize that carriers may face other deployment issues, including state and local restrictions such as on rights-of-way, “attaching facilities to bridges or prohibitions on boring river levees,” as well as other “local terrain challenges,” at least in some areas dark fiber might not be easily replaceable in some areas in the short term. Considering these possibilities at the same time competitive LECs are transitioning to alternative solutions for unbundled loops that they may be relying on, the result could be that higher capacity advanced services may become unavailable in some areas where competitive LECs providing these services currently rely on UNE Dark Fiber Transport. Given the costs and time needed for deploying new replacement transport facilities at the same time these same competitive LECs are deploying alternative loop facilities, customers of these services could be forced to go without for potentially significant periods of time. Our longer transition period addresses this potential unintended consequence.

134. We do not believe that our eight-year transition period will significantly reduce incentives for continued deployment. Competitive LECs reliant on UNE Dark Fiber Transport have shown their propensity to deploy their own fiber as soon as they can to transition to their own network facilities and eliminate dependence on the incumbent LEC completely. We believe this transition timeframe will provide sufficient time for them to do so without unduly disrupting their customers and

better advance broadband deployment than if these same competitors prematurely lost access to their existing UNE Dark Fiber Transport and instead withdrew from certain geographic markets entirely.

135. On the other hand, we do not believe indefinite grandfathering would be appropriate. Although some commenters convincingly argue that a longer period of time than the three years proposed in the *NPRM* is necessary to transition off of UNE Dark Fiber Transport, they do not advance arguments that would suggest longer than eight years is needed. WorldNet, for example, contends that an exception should be made for Puerto Rico to grandfather UNE Dark Fiber Transport there indefinitely. However, their arguments fail to explain why eight years or another significant period of time would be insufficient to obtain alternative transport. Nor do they engage with either the impairment or forbearance inquiries: while they assert that the situation in Puerto Rico is unique, they do not explain why the presence of alternative fiber does not indicate that a reasonably efficient competitor should be able to deploy or obtain alternative transport, or elaborate on any of the forbearance criteria. And although INCOMPAS and the NWTa have previously argued that “no transition period would be able to offset the harms to consumers and fiber deployment,” claiming some UNE Dark Fiber Transport “is irreplaceable,” INCOMPAS itself contends that recognizing the benefits of UNE Dark Fiber Transport and the challenges of transitioning therefrom is not itself an argument for “permanent grandfathering.” Meanwhile, competitive LECs have variously offered arguments for why incumbent LECs’ proposals are insufficient, or in favor of longer timeframes for UNEs generally, e.g., of seven years minimum. Instead, we agree with the Joint Parties’ explanation of how their proposal “chart[s] a middle course that accommodates the various parties’ needs.” Indeed, Puerto Rico Telephone Company, which was not a party to the Compromise Proposal, agrees that it is supported by the record. As the advocates of the compromise proposal state, this transition period recognizes “the fact that competitive LECs will simultaneously be impacted by transitions away from unbundled access to multiple elements integral to the operation of their networks, including DS0, DS1 and DS3 loops, in addition to dark fiber transport.” We therefore provide a transition period of eight years for UNE Dark Fiber Transport ordered prior to the effective date of this Order.

#### **D. Operations Support Systems**

136. In the *NPRM*, we proposed to forbear from the UNE Operations Support Systems (OSS) obligations except as used to manage UNEs. The *NPRM* did not propose to eliminate unbundled access for 911/E911 databases. Thus, UNE OSS obligations remain for accessing 911/E911 databases for any requesting carrier regardless of any Commission action herein providing UNE OSS relief. The record generally supports this approach, with the exception of local interconnection and local number portability where incumbent LECs maintain such databases. We find that competitors are not impaired without access to UNE OSS, except where carriers are continuing to manage UNEs and for purposes of local interconnection and local number portability. Independently, we forbear from applying UNE OSS requirements, except when unbundled OSS is used to manage other UNEs, local interconnection, and local number portability.

137. Under our current rules, incumbent LECs must offer nondiscriminatory access to their operations support systems, or OSS, for qualifying services on an unbundled basis. OSS consists of pre-ordering, ordering, provisioning, maintenance and repair, and billing functions supported by an incumbent LEC's databases and information. The Commission previously found that the UNE OSS "requirement includes an ongoing obligation on the incumbent LECs to make modifications to existing OSS as necessary to offer competitive carriers nondiscriminatory access and to ensure that the incumbent LEC complies with all of its network element, resale and interconnection obligations in a nondiscriminatory manner." OSS is used to provision other UNEs, and it is also a separate stand-alone UNE that is used for interconnection and other purposes, including number porting. The Commission required incumbent LECs to provide OSS on an unbundled basis in the *Triennial Review Order* because it found that "these functions are essential for carriers to serve mass market and enterprise customers" and because competitive LECs providing these services are "impaired on a national basis without access to OSS."

138. *Impairment Analysis.* We find that competitors are not impaired without access to UNE OSS, except where carriers are continuing to obtain and manage UNEs and for purposes of local

interconnection and local number portability. We note that our impairment and forbearance findings apply to UNE OSS maintained *directly or indirectly* by an incumbent LEC—i.e., it makes no difference “whether the incumbent LEC maintains the OSS database itself or outsources the maintenance but retains control over the database.” We find, based on the record, that UNE OSS is of little value when decoupled from UNE ordering and provisioning, and that there is limited usage of this stand-alone UNE in today’s marketplace. NASUCA’s reply asserts the same arguments raised by NCTA and INCOMPAS, most of which are covered in the Compromise Proposal and adequately address their concerns.

NASUCA also asserts that OSS is used by competitive LECs to make “changes to directory listings” and eliminating the OSS UNE would “impair the ability of competitors to offer service and in doing so would harm consumers who would suffer from incomplete and delayed directory information.” To the extent NASUCA’s directory listing assertion is a stand-alone argument, it is not developed enough to respond to its alleged effects on consumer harm. Nor do the competitive providers which would use directory listings claim that losing unbundled access to such listings would harm them or their end-user consumers. And assuming *arguendo* that directory listings are important to competitive providers, which we do not concede, we find, consistent with our discussion below, that it is in the interest of incumbent LECs to provide assistance with directory listings as part of their wholesale services. We agree with commenters that there is generally “no need to offer regulated unbundled access to OSS in any circumstance where the Commission has eliminated access to the corresponding unbundled network facilities,” except with respect to ordering local interconnection or number portability. As such, we find that the market conditions that warrant unbundling relief on the basis of non-impairment or forbearance above for UNE Loops of multiple types as well as UNE Dark Fiber Transport and other network elements also warrant unbundling relief here. We therefore conclude that this UNE is generally not necessary for a reasonably efficient competitor to enter today’s communications service marketplace, except for local interconnection and number portability. Moreover, we find that it is in the incumbent LEC’s interest to offer necessary services, like OSS, when they provide commercial alternatives to UNEs or other wholesale products. As Sonic, a major purchaser of UNE Loops and

Transport, explains, incumbent LECs “have to maintain ordering systems and will have to manage the sharing of facilities if they offer wholesale services.”

139. We decline to find lack of impairment with regard to UNE OSS used for interconnection and number portability, however, as the record indicates that UNE OSS still plays an important role with respect to these critical local competition tools. Some competitive LECs and cable providers raised network interconnection and number portability implications if this real-time electronic interface is not maintained. Consistent with these comments and the comments of the majority of the LEC stakeholders commenting on this issue recognizing the importance of preserving continued UNE OSS access for these purposes, we maintain the status quo of UNE OSS for purposes of local interconnection and local number portability.

140. *Forbearance.* Consistent with the *NPRM* and the record, we independently forbear from the stand-alone UNE OSS obligation, except for carriers continuing to obtain and manage UNEs and for purposes of local interconnection and local number portability where the incumbent LEC maintains such databases. Based on the record as discussed above and the fact that no commenter opposed forbearance, except with regard to number portability and interconnection, we find that forbearance from the stand-alone UNE OSS obligation, except with respect to ordering local interconnection or number portability, meets the requirements of section 10(a) of the Act. The very limited use of this network element in today’s marketplace except for the purposes for which we continue to make it available and the fact we retain it where it is used to manage UNEs is sufficient evidence that this stand-alone UNE OSS obligation is not necessary to ensure either just and reasonable rates or the protection of consumers pursuant to sections 10(a)(1) and 10(a)(2). Moreover, the elimination of regulatory burdens that serve no purpose is consistent with the public interest pursuant to section 10(a)(3). For the same reasons discussed above, we decline to forbear with regard to its continued availability on an unbundled basis for local interconnection and number portability.

141. We note that elimination of OSS unbundling obligations, as specified above, will not adversely impact public safety. Unbundled access to 911 and E-911 databases will remain available and

the *NPRM* did not even propose to consider limiting access to this UNE, as will unbundled OSS requirements where UNEs are available and for purposes of local interconnection and local number portability. The *NPRM* did not propose to modify the E911/911 UNE. We find that the California Public Utility Commission's assertion that competitive LECs "may struggle to resolve maintenance and repair issues that ultimately could adversely affect an end-user's ability to reach emergency services" is misplaced as that concern relates to the maintenance of copper networks rather than OSS or unbundling generally and thus is not relevant to this proceeding. No commenter, including the competitive providers that use OSS or the California Public Utility Commission, specifically asserts that OSS is needed to resolve maintenance and repair issues, generally. Moreover, UNE OSS remains available to manage existing UNEs which includes aspects of maintenance and repair functions for such UNEs. As discussed above, we find that it is in the incumbent LEC's interest to offer associated services, like OSS, when they provide wholesale products.

142. *Transition Period.* The transition period for UNE OSS used to order and manage UNEs phased out by this Order naturally coincides with the transition periods adopted for each such UNE described above. Incumbent LECs indicate they will also provide commercial access to their OSS systems to requesting carriers in any area in which unbundled OSS functionality is no longer available for particular network elements because of unbundling relief, ensuring a seamless transition away from UNE OSS, availability that coincides with transition timeframes for unbundled network elements.

#### **E. Avoided-Cost Resale**

143. The *NPRM* proposed to extend the forbearance relief granted to price cap incumbent LECs for Avoided-Cost Resale requirements to non-price cap carrier incumbent LECs. We adopt this proposal and grant relief from all remaining Avoided-Cost Resale requirements. Section 251(c)(4) of the 1996 Act requires that incumbent LECs make available to requesting carriers at wholesale rates any telecommunications service they offer to their own non-carrier customers on a retail basis. The record supports forbearing from this obligation for non-price cap incumbent LECs for many of the same reasons that justified forbearance from Avoided-Cost Resale obligations for price cap incumbent LECs.

144. In August 2019, we granted price cap incumbent LECs forbearance from the Avoided-Cost Resale requirement based on “the breadth of the voice service marketplace and the number of wholesale input alternatives to competitive LECs seeking to continue serving customers currently served by Avoided-Cost Resale” and given that “Avoided-Cost Resale requirements . . . serve only to prolong dependence on legacy TDM voice services rather than pave the way for meaningful facilities-based competition over next-generation networks providing advanced communications capability.” We followed that action by seeking comment in the *NPRM* on whether there are any reasons why we should not extend that forbearance to non-price cap incumbent LECs. The record in response to the *NPRM* does not provide any compelling reason to refrain from extending Avoided-Cost Resale forbearance herein to all incumbent LECs. Competitive LEC resellers’ customer base is almost exclusively made up of business and government customers. As a result, forbearance from the Avoided-Cost Resale requirement will not impact mass market customers.

145. As we found in the *UNE Analog Loops and Avoided-Cost Resale Forbearance Order*, competitive LECs almost exclusively use Avoided-Cost Resale to provision legacy TDM voice service to business and government customers. In many cases, these resold legacy voice lines are used for redundancy, and not competitive entry or as a primary voice line for customers of these services. Moreover, TDM service will remain available for purchase by competitive LECs, just not at wholesale rates. As noted elsewhere in this Order, no actions we take today eliminate the availability of legacy TDM-based service. According to Granite, the leading provider of Avoided-Cost Resale, the vast majority of TDM lines resold by competitive LECs are purchased via section 251(b)(1) resale and commercial agreements rather than via Avoided-Cost Resale, and these options will remain available after forbearance from the Avoided-Cost Resale requirements. Commenters responding to our *NPRM* do not provide any evidence that competitive circumstances are any different in non-price cap LEC service areas.

146. The obligations and responsibilities imposed on incumbent LECs by the 1996 Act were “designed to open monopoly telecommunications markets to competitive entry.” This carefully crafted

design applies equally to UNEs and Avoided-Cost Resale. Granite, the primary commenter on this issue, asserts that the Commission conflated UNEs and Avoided-Cost Resale in granting forbearance from the latter in the *UNE Analog Loop and Avoided-Cost Resale Forbearance Order*. While one CLEC other than Granite did comment on Avoided-Cost Resale, it was in the larger context of its use of a “combination of UNEs, avoided-cost resold services, and [its] own fiber network” asserting that it uses Avoided-Cost Resale where the incumbent LEC is the only source of wired voice service. When implementing section 251 of the 1996 Act, however, the Commission viewed Avoided-Cost Resale as an “important entry strategy for many new entrants, especially in the short term when they are building out their own facilities” and that “in some areas and for some new entrants . . . it will remain an important entry strategy over the longer term.” The Commission further noted that “[R]esale will also be an important entry strategy for small businesses that may lack capital to compete in the local exchange market by purchasing unbundled elements or by building their own networks.” Therefore, even at the time that Avoided Cost Resale was enacted, the Commission envisioned that new entrants would utilize the regulation only until they could deploy their own facilities. Indeed, for competitive LECs that engage in their own facilities-based deployments, Avoided-Cost Resale data suggests it is no longer, if it ever was, a particularly important entry strategy. The majority of competitive LEC commenters did not even address Avoided-Cost Resale in their comments filed in this proceeding. While WorldNet mentions resale in its comments in this proceeding, always as “UNEs and resale,” it never discusses why Avoided-Cost Resale is necessary. And the declaration submitted in support of WorldNet’s comments discusses why UNEs are necessary, but it makes no mention at all of resale. As we noted in the *UNE Analog Loops and Avoided-Cost Resale Forbearance Order*, Avoided-Cost Resale was never intended to be the permanent business strategy it seems to have become for certain providers. Granite can hardly be considered the type of “small business” that the Commission was referring to in 1996. Nor are the commenters opposing forbearance from this requirement “new entrants”—Granite, for example, has been in business for nearly two decades and can hardly credibly claim Avoided-Cost Resale obligations in non-price cap service areas, or price-cap service areas for that matter, are necessary to sustain its existence in today’s exceedingly competitive voice services marketplace. And even if it were, the Act

does not protect specific competitors or business models where overwhelming evidence of pervasive competitive alternatives exist for consumers, including those that may currently take service from companies like Granite. Indeed, even “if all CLECs were driven from the ... market,” the existence of “robust intermodal competition” from other providers warrants upholding the Commission’s decision.

147. *Rural exemption.* The majority of non-price cap incumbent LECs are rural LECs, most of which qualify for the rural exemption from all section 251(c) requirements, including Avoided-Cost Resale. They therefore have no obligation to offer their telecommunications services to competitive LECs at wholesale rates while the rural exemption remains in place. Indeed, competitive LECs such as Granite have admitted that they are unable to avail themselves of Avoided-Cost Resale in many rural areas because of the rural exemption. As a result, maintaining Avoided-Cost Resale in non-price cap areas provides little to no benefit to competitive LECs whose business model relies primarily on resold services. In such areas, resale under section 251(b)(1) is the only regulatory resale-related mechanism available to them. Section 251(b)(1) obligations are not implicated by our actions here.

148. *Section 10(a)(1).* We conclude that enforcement of Avoided-Cost Resale obligations is not necessary to ensure just and reasonable rates for voice-grade services. To the extent competition protects against rates, charges, practices, and classifications that are not just and reasonable, it logically follows that it also protects against charges, practices, and classifications that are unjust and unreasonable. Thus, to whatever extent the enforcement of section 251(c)(4) is not necessary to ensure just and reasonable rates, it necessarily follows that such enforcement prevents the opposite from occurring, that is, unjust and unreasonable rates. Competitive LECs such as Granite already purchase the majority of their resold services through either commercially negotiated agreements or section 251(b)(1) resale. While TPx has not made a similar statement, it also has not provided specifics regarding how many of its 12,000 resold lines are purchased via Avoided-Cost Resale and how many via other avenues. Moreover, TPx’s comments themselves, versus the attached declaration, make no mention of Avoided-Cost Resale. Indeed, Granite has previously acknowledged that it purchases the majority of its resold services this way, arguing that it relies on the existence of Avoided-Cost Resale as

leverage for negotiating better rates. Avoided Cost Resale was enacted to help jumpstart competition in the market; it was not intended to serve as a leveraging tool for individual competitors when negotiating agreements. We thus are unpersuaded by Granite's assertion that sections 251(b)(1), 201, 202, and 208 will not serve as sufficient regulatory backstops to ensure unreasonable and unreasonably discriminatory rates. As we stated in the *UNE Analog Loops and Avoided-Cost Resale Forbearance Order*, "even if the rates paid by competitive LECs to resell voice service were to rise based on our grant of forbearance from Avoided-Cost Resale, there is no reason to believe that end-user rates will be unjust or unreasonable." Moreover, UNE DS0 Loops will remain available in rural and urban cluster census blocks, as will UNE DS1 and DS3 Loops in non-competitive counties, to the extent the incumbent LEC is not entitled to the rural LEC exemption. Competitive LECs thus will remain able to provision service to customers in those areas via means other than Avoided-Cost Resale to the same extent they are able to today. Granite asserts that the Commission should retain Avoided-Cost Resale in those areas in which it retains UNE DS0 Loops because they are provided over the same facilities. However, while many competitive LECs use UNE DS0 Loops as a stepping-stone to deployment of their own networks, as well as to provide high-speed broadband, those competitive LECs relying on Avoided-Cost Resale do so almost exclusively to provision only voice-grade services. Thus, while retaining UNE DS0 Loops furthers the congressionally mandated goal of ensuring the provision of advanced services to all Americans, Avoided-Cost Resale does not. Alternative voice services are also available from intermodal competitors, and commercial replacements will be available where UNE Loops are being phased out. The availability of these other voice services serves to constrain incumbent LEC rates for services previously purchased via Avoided-Cost Resale.

149. *Section 10(a)(2)*. We find that the evolving marketplace and the statutory and regulatory safeguards that work to ensure just and reasonable rates also ensure that consumers will not be harmed by forbearance from enforcement of the Avoided-Cost Resale obligation. Competitive LEC resellers' customer base is almost exclusively made up of business and government customers. As a result, forbearance from the Avoided-Cost Resale requirement will not impact mass market customers. Again, competitive LECs have made it clear that they purchase very few of the services they resell via

Avoided-Cost Resale, and they will still have access to TDM-based services via commercial agreements and section 251(b)(1). While this may result in higher prices, this should serve to encourage end-user customers to migrate to next-generation services, thus helping to advance Congress's goal as stated in section 706. They also will still be able to purchase a variety of wholesale inputs, including UNE DS0 Loops in rural and urban cluster census blocks and via UNE DS1 and DS3 Loops in non-competitive counties to the extent they are available today. Even if these competitive LECs choose not to stay in the market via UNEs rather than Avoided-Cost Resale, other competitors may choose to enter these markets via UNEs. And customers will also have access to various intermodal alternative services, to which they have increasingly been migrating.

150. *Section 10(a)(3)*. Finally, we find that forbearing from Avoided-Cost Resale obligations for non-price cap LECs is in the public interest as it promotes the important Commission policy of furthering the deployment of next-generation networks and services and encouraging the rapid transition to IP-based voice services and the benefits that accrue to the public at large from the widespread use of such services. Increased adoption rates of next-generation services provide incentives for incumbent and competitive LECs alike to expend precious resources on deployment of networks capable of supporting those services. To the extent end users are allowed to rely on the availability of legacy services, many will continue to do so and eschew the move to next-generation networks and services.

151. We reject Granite's argument that we cannot consider the public interest benefits of facilities-based competition and expediting the transition to next-generation networks in a forbearance analysis. Indeed, the D.C. Circuit has specifically approved of the Commission considering section 706 goals in a forbearance analysis. Moreover, section 10's public interest determination gives the Commission broad discretion as to what public interest factors it may consider in determining whether section 10(a)(3)'s prong has been met. Commenters raise no new arguments opposing forbearance from the Avoided-Cost Resale requirements to non-price cap LECs than they did in opposing forbearance from those requirements for price cap LECs, except to point to fewer alternatives being available in rural

locales. We address their arguments in detail below. However, as we noted above, rural incumbent LECs are largely exempt from the Avoided-Cost Resale requirements.

152. Moreover, we are unpersuaded that extending forbearance from Avoided-Cost Resale requirements to non-price cap incumbent LECs will provide incentives for incumbent LECs to harm competition and consumers. This argument stems almost wholly from the claimed potential for increased rates that might make particular competitors such as Granite unable to continue providing service to their end-user customers via commercial service offerings that Granite has negotiated with certain incumbent LECs. As we have repeatedly reminded Granite and others, however, the 1996 Act's market-opening provisions were put in place to protect competition, not specific competitors or particular business plans. And nothing in this Order eliminates the availability of TDM-based services. Eliminating the subsidy for legacy services that make them available at a lower price, though, may lead to greater adoption of next-generation services and further Congress's goal and the Commission's mission of encouraging the deployment of advanced communications capabilities.

153. *Line power.* We disagree with commenters who assert that Avoided-Cost Resale should remain available because of the purported benefits of line-powered service. Some commenters claim that "traditional" TDM service is line-powered and thus is more reliable than next-generation services that require backup power to function during power outages. We did not find this argument persuasive in the context of price cap areas, and we do not find it persuasive now as to non-price cap areas. To do otherwise would be inconsistent with incumbent LECs' ability to retire their line-powered copper networks and move their customers to fiber facilities without need for Commission authorization, a process the Commission has worked to expedite and facilitate over the past three years. Line-powered TDM service is available only to the extent that a carrier has not retired its copper loops, a business decision that is made by the carrier and not the Commission. No actions taken in this Order remove the availability of either copper-based facilities or legacy TDM-based services. As we have previously stated: "Nothing about the rules at issue in this order require carriers to maintain line-powered copper loops—whether those loops may be retired is a subject of our copper retirement rules." However, incumbent

LECs retiring their copper facilities must continue providing the same TDM-based service to their customers as before the retirement, just without line power, unless they also seek Commission authorization to discontinue that service. And in such a situation, the incumbent LEC must then comply with our technology transition discontinuance rules. As customer demand for TDM over copper continues to dwindle, incumbents are more likely to retire their copper and focus their resources on deploying next generation networks, at which point line power will not be as readily available. And the Commission has previously taken action to ensure that end users are aware of the need to take action to ensure that their non-copper-based phone service continues to function in the event of a power outage. It is also inconsistent with our goal of speeding the transition to next generation networks and services and our policy to discourage “reliance on outmoded legacy services.” To the extent certain commenters suggest that copper-based TDM service is its own product market, we reject these claims as unsupported by sufficient evidence. Moreover, we have already declined to find TDM-based services in general to be their own product market. Moreover, the Commission has previously noted in other forbearance contexts that “[p]erfect substitutability is not required.” And nothing compels us to apply the type of market power analysis used in the *Qwest Phoenix Order* (25 FCC Rcd 8622, June 22, 2010) to our forbearance here for Avoided-Cost Resale. We now decline to find the even more narrow categorization of copper-based TDM service to be its own product market. To find otherwise would be inconsistent with the Commission’s prior findings that copper retirements come within the purview of the section 251(c)(5) of the Act, requiring only that incumbent LECs provide adequate notice of network changes, and do not constitute a discontinuance of service under section 214(a) of the Act. Moreover, nothing of the sort is required by the Act, and indeed, finding that copper-based TDM service must be maintained would slow the transition to advanced services, in contravention of section 706 of the 1996 Act. Forbearing from this outdated regulation will incentivize carriers to redirect resources to next-generation networks, thus benefiting the public by allowing for more advanced telecommunications capabilities. As the Commission previously stated, “[w]e will not impede the progress toward deployment of next-generation facilities for the many because of the reticence of an ever-shrinking few.”

154. Regardless, when an incumbent LEC retires its copper, which it can do on 90-days' notice and without a need to first obtain Commission authorization, customers will still receive the same TDM-based service, albeit without the legacy feature of line power. At such point, when TDM service is provided over fiber, it requires the use of backup power to operate during power outages. In addition, where copper loops still exist and incumbent LECs provide voice telecommunications services over those loops, copper-based TDM service will remain available for resale under section 251(b)(1) regardless of our forbearance herein. Competitive LECs in non-price cap areas will also be able to purchase these services pursuant to commercially negotiated agreements, which is how they currently purchase the majority of their resold services.

155. Opponents of forbearance also point to the occurrence of natural disasters to support the continued necessity of Avoided-Cost Resale, thereby limiting their argument to TDM-based services provided over copper rather than fiber facilities. However, those same natural disasters can and do lead to expedited copper retirements, meaning that the TDM-based services available for resale are no longer line powered. Indeed, copper tends to perform more poorly in many such situations whereas fiber is more resilient and faces lower outage risks from weather events and aging. The Commission specifically adopted rules in 2017 expressly to accommodate such circumstances, as well as expedited copper retirements resulting from other circumstances outside the incumbent LEC's control. Assertions by the California PUC and Michigan PSC that we must consider public safety concerns are subject to this same response given that no actions taken in this Order remove the availability of legacy TDM-based services.

156. *One stop shop.* Opponents of extending to non-price cap areas forbearance from Avoided-Cost Resale requirements point once again to their multi-location business customers. Because competitive LEC commenters opposing this relief have made no new arguments specific to non-price cap areas, we are not persuaded that the needs of these customers justify retaining this requirement for non-price cap incumbent LECs. First, rural LECs, which include many non-price cap incumbent LECs, are already exempt from the Avoided-Cost Resale requirements. Additionally, to the extent particular non-

price cap incumbent LECs are not exempt from section 251(c)'s requirements, competitive LECs will still be able to purchase these services via section 251(b)(1) resale or commercial agreements. Finally, to the extent broadband is available to these locations, multi-location businesses can link their various locations in other ways, such as through a virtual private network via IP-based services.

157. *VoIP unavailable.* The unavailability of broadband in certain areas and, thus, the unavailability of VoIP in those areas, does not render inappropriate extending forbearance from Avoided-Cost Resale requirements to non-price cap incumbent LECs, contrary to the assertions of certain commenters. First, approximately two-thirds of the Americans residing in rural areas and urban clusters (combined) have access to broadband service from cable providers, and at least three wireless providers are available almost universally. For those areas that lack access to broadband, many incumbent LECs in non-price cap areas qualify for the rural exemption under section 251(f), as noted above. Moreover, TDM service will remain available for resale under section 251(b)(1) in those areas absent the incumbent LEC seeking to discontinue those services. In order to discontinue service, the carrier would have to seek Commission authorization. 47 U.S.C. 214(a). And one of the factors the Commission considers when reviewing discontinuance applications is the adequacy of the available replacement service(s). Indeed, the Commission specifically adopted rules applicable to the discontinuance of legacy TDM-based voice service that encompass just such situations. Finally, the Commission continues its efforts to accelerate broadband deployment to unserved and underserved areas and close the digital divide. As a result, forbearing from the Avoided-Cost Resale requirements in non-price cap areas will have minimal effect.

158. *Deployment incentive.* As discussed in the *UNE Analog Loop and Avoided-Cost Resale Forbearance Order*, forbearing from Avoided-Cost Resale requirements will encourage the transition to next-generation services by leveling the playing field between next-generation services and legacy TDM-based services. We reject Granite's argument that forbearing from the Avoided-Cost Resale requirement acts as a disincentive for incumbent LECs to deploy additional next-generation facilities by making incumbent LECs' TDM-based services delivered over copper more profitable. There is no such

evidence in the record, and indeed Granite's argument is at odds with incumbent LECs' retirement of copper loops and replacement with next-generation alternatives. Moreover, the majority of customers in non-price cap areas have access to service by both cable and wireless providers, which incentivizes incumbent LECs to replace their aging copper facilities with next-generation networks in order to remain competitive. We also reject Granite's argument that nationwide forbearance from the Avoided-Cost Resale requirement is inconsistent with our more granular treatment of UNE DS1 and DS0 Loops. Both UNE DS1 and DS0 Loops can be used to provide broadband services, and in balancing the costs of regulation with the potential benefits that these loops can provide for broadband deployment and access where competition is less developed and entry is less likely, we determine above that these UNE Loops should remain available in limited areas. But Avoided-Cost Resale does not provide similar benefits for broadband deployment, and therefore we do not believe that it would benefit the public interest to retain Avoided-Cost Resale in any specific areas.

159. *Resale as backstop.* Commenters opposing forbearance from Avoided-Cost Resale requirements assert that the Commission has always retained those requirements when granting forbearance from unbundling obligations, such as in the *Qwest Omaha Order*. But *Qwest Omaha* was decided 15 years ago, at a time when the market was dramatically different and TDM service played a much larger role than it does today. In addition, the Commission's decision there was based on the specific facts of that case. The Commission found in *Qwest Omaha* that section 251(b)(1) resale was not an adequate substitute for avoided-cost resale because it lacked a wholesale pricing requirement. However, that *Order* was adopted 15 years ago when the communications marketplace was very different from today's marketplace. In particular, the voice marketplace is replete with facilities-based competition, and incumbent LECs no longer have a dominant role in voice as whole or wireline voice in particular. Moreover, the Commission did not then have before it a record showing that the majority of resold services are purchased by means other than Avoided-Cost Resale.

160. In any event, UNE DS0 Loops will remain available in rural and urban cluster census blocks, and UNE DS1 and DS3 Loops will continue to be available in non-competitive counties, to the

extent the incumbent LEC is not entitled to the rural LEC exemption. Moreover, we find today and similarly found in the *UNE Analog Loops and Avoided-Cost Resale Forbearance Order* that the continued requirement to provide Avoided-Cost Resale slows the transition to next generation services and undermines our goal of sustainable facilities-based competition. Thus, unlike in *Qwest Omaha*, we no longer need to retain Avoided-Cost Resale to ensure voice competition because technology has changed and we know there is competition in the voice market. The circumstances at issue here thus are distinguishable from those at issue in prior UNE forbearance orders that retained Avoided-Cost Resale as a regulatory backstop and alternative to facilities-based competition.

161. *Alternative Proposals.* Granite makes two proposals with respect to retaining the Avoided-Cost Resale requirement. First, it proposes preserving the requirement solely for business and government customers. We have already disposed of this argument in the *UNE Analog Loops and Avoided-Cost Resale Forbearance Order*. Second, it proposes preserving the requirement where UNE DSO Loops will remain available—i.e., in rural and urban cluster census blocks. Granite argues that “where market conditions warrant retaining UNE DSO loops, they equally warrant retaining Avoided-Cost Resale.” However, competitive LECs use Avoided-Cost Resale to provision legacy TDM voice service, while UNE DSO loops are used to provide both broadband and voice service. The Commission’s policy of transitioning to next-generation services therefore warrants forbearance from Avoided-Cost Resale requirements even where market conditions support retaining UNE DSO loops. We decline to adopt either proposal as both undermine the policy of encouraging consumers to transition to next-generation services and are unnecessary to protect consumers or the public interest.

162. *Pending appeal.* INCOMPAS asserts that it is inappropriate for the Commission to extend forbearance from Avoided-Cost Resale requirements to non-price cap incumbent LECs while the appeal of the *UNE Analog Loop and Avoided-Cost Resale Forbearance Order* is pending. We disagree. That *Order* remains effective at this time, and this is a different proceeding with a new record upon which to consider extending Avoided-Cost Resale forbearance. Nothing in this record persuades us that a different conclusion is warranted.

163. *Transition Period.* In the *NPRM*, we proposed a three-year transition period for this forbearance relief, and we sought comment on whether to include a six-month period for new orders. We adopt this proposal and do not include any period for new orders, conditioning our forbearance from non-price cap LEC Avoided-Cost Resale obligations on an appropriate transition period. Competitive LECs using Avoided-Cost Resale to fill in gaps where UNE Loops are unavailable and where they have not yet deployed their own fiber facilities will need to consider whether they can devote resources to deploying their own network facilities during the transition period or make alternative commercial arrangements. And competitive LECs operating on a purely resale basis will need time to negotiate new pricing arrangements under section 251(b)(1) resale, negotiate entirely new commercial wholesale arrangements, or work with their customers to migrate them to IP-based voice services. However, unlike with UNEs, competitive LECs using Avoided-Cost Resale do not have to place new orders to address individual last-mile loops that have deteriorated or to deal with the residential churn that requires competitive LECs using UNE DSO Loops to place new orders when a residential customer at a particular location moves and a new potential residential customer moves into that location.

164. Accordingly, we condition our grant of forbearance from non-price cap LEC Avoided-Cost Resale obligations on a three-year grandfathering period. This transition period will begin on the effective date of this Order. During the relevant transition period, any Avoided-Cost Resale services that a competitive LEC purchases as of the effective date of this order shall be available for purchase from the incumbent LEC at regulated rates. Wholesale discounts are established either through negotiated interconnection agreements or through state-commission-Avoided-Cost Resale rate studies applying certain Commission-developed pricing formulas. Our forbearance action is not intended to upset pre-existing interconnection agreements or other contractual arrangements that may currently exist nor pre-existing state commission wholesale discount rates during the transition period (including any already-adopted state commission scheduled changes in the discount rates), which should quell concerns regarding near-term price increases following forbearance from Avoided-Cost Resale obligations. As with the transition for price cap LEC Avoided-Cost Resale, we find this transition period will minimize the impact of any immediate rate increase for end-user customers of affected competitive

LECs that could otherwise occur if current pricing for these services were immediately eliminated. Further, the process that we describe is a default process from which competitive LECs and non-price cap incumbent LECs remain free to deviate pursuant to mutual agreement. The transition timeframe we adopt will work to ensure that end-user customers do not experience any undue service disruption as a result. We find no reason to adopt any longer transition period and thus we reject INCOMPAS's proposed seven-year transition period. INCOMPAS relies on the seven-year transition period provided for in the *T-Mobile/Sprint Order* (34 FCC Rcd 10578, Nov. 5, 2019) "for DISH to become a facilities-based provider." However, the most vocal opponent to eliminating the Avoided-Cost Resale requirement is Granite, which is not a facilities-based provider and has not professed any desire or intention to become one, and there is little record evidence suggesting Avoided-Cost Resale is used as a bridge to facilities-based competition. And neither INCOMPAS nor Granite provide any evidence that consumers will be harmed without a longer period.

#### **F. Cost Benefit Analysis**

165. We take a dynamic and forward-looking approach to evaluate the benefits and costs of regulation. The Commission has discussed at length the failings of *ex ante* regulation and found that *ex ante* regulation is necessary only where competition cannot be relied upon to reasonably discipline the market. Our consideration of the relative benefits and costs of the obligations for UNE DS0 associated subloops, UNE DS1 and DS3 associated subloops follows the same reasoning as our consideration the underlying Loop obligations for these services discussed in this section. To the extent that we find that the benefits of continuing UNE obligations exceed the costs of obligation, this analysis applies equally to the UNE OSS obligation necessary to provision UNEs and to support number portability. Further, the costs of the obligation to provision Multiunit Premises UNE Subloops, UNE Hybrid Loops, Grandfathered UNE 64 kbps Voice-Grade Channel Over Fiber Loops, UNE NIDs and UNE Narrowband Voice-Grade Loops exceed the benefits of continuing these obligations because there is no indication that these UNEs are used by competitors to any significant degree. Further in the case of Multiunit Premises UNE Subloops, the record indicates that it is the owner of the property, not the incumbent LEC, that controls access

to the property. Thus, competitive LECs concerns with access to the MTEs are beyond the scope of our actions here, and instead belong to the current MTE Docket. The obligation to offer UNEs and Avoided-Cost Resale have been in place for over 23 years, and the Commission has long recognized that unbundling “is an especially intrusive form of economic regulation.” The Commission has found that these obligations can yield negative effects, including diminishing incentives to invest, inhibiting facilities-based competitive entry and forestalling the benefits of competition. Thus, we seek to eliminate UNEs and Avoided-Cost Resale where development of competition means the costs of continuing these obligations outweigh their benefits and where the statutory criteria for declining to impose such requirements are otherwise satisfied.

166. *UNE DS1 and DS3 Loops.* We find that over the medium and long term the costs of maintaining the obligation to supply UNE DS1 and DS3 Loops in those counties and study areas deemed competitive in the *BDS Order* and *RoR BDS Order* exceed any benefits such supply provides. First, the Commission has found UNE DS1 and DS3 Loops to be “particularly close substitutes” for DS1 and DS3 business data services, and deregulated pricing for DS1 and DS3 business data services in the counties and study areas deemed competitive in the *BDS Order* and *RoR BDS Order*. The Commission has found that *ex ante* price regulation for DS1 and DS3 business data services to be unnecessary in these counties and study areas and that the costs of *ex ante* regulations exceed the benefits of *ex ante* regulation for DS1 and DS3 business data services. Because UNE DS1 and DS3 Loops are close substitutes for DS1 and DS3 business data services, the Commission’s conclusions as to the net costs of continued regulation of DS1 and DS3 business data service should apply equally to UNE DS1 and DS3 Loops. Thus, the obligation to offer UNE DS1 and DS3 Loops is no longer needed where the Commission has found that market sufficiently competitive and/or found no need for continued regulation of DS1 and DS3 business data services. Second, the demand for UNE DS1 and DS3 Loops and DS1 and DS3 business data services have declined over time as competitive LECs have built out their own networks and migrated away from TDM-based services; thus suggesting that competitive LECs’ need for these inputs has declined as these competitors have built their own facilities. Consequently, requiring the supply of UNE DS1 and DS3 Loops where relief has been granted for DS1 and DS3 business data services is likely to have a net

expected cost in medium and long term. Finally, as there are no material operational or performance distinctions between UNE DS1 and DS3 Loops and DS1 and DS3 business data services and these services are used interchangeably, there is no benefit to have one regulatory paradigm for UNE DS1 and DS3 Loops and another for DS1 and DS3 business data services, particularly given the impact that a differential regulatory paradigm could have on firms' incentives to invest in their own networks and next-generation services.

167. In the short term, however, we do not want to disrupt the services currently received by customers of competitive LECs that purchase UNE DS1 and DS3 Loops in these areas, particularly given the impact on businesses and consumers from the recession and COVID-19 pandemic which has increased the need for reliable broadband services for businesses and consumers. Consequently, we find that the 42-month transition period for UNE DS1 Loops and the 36-month transition period for UNE DS3 Loops provides sufficient time for the competitive LECs to transition to alternative arrangements and/or to replace these productive inputs with their own facilities. As discussed in the DS1/DS3 section, there is record evidence that the use of UNE DS3 Loops is *de minimis*, justifying a shorter transition period.

168. *UNE DS0 Loops.* We find that the costs of maintaining the obligation to supply UNE DS0 Loops in urbanized areas exceed any benefits such supply provides. UNE obligations are heavy-handed and so carry substantive regulatory costs. They likely distort pricing and investment decisions, as well as choices of product offerings. In urbanized areas, we find that the benefits of the UNE DS0 obligation are negligible because the facilities-based competition such regulations are intended to foster is established to an extent that makes these rules redundant. Currently, 71% of mass market consumers in these areas can obtain broadband services meeting a 25/3 Mbps speed threshold from at least the incumbent LEC and a cable provider. This contrasts with 21% of consumers in rural areas and 27% of consumers in urban clusters. The corresponding figures for broadband services meeting a 10/1 Mbps speed threshold are 82% for urbanized areas, 36% for rural areas, and 59% for urban clusters. And competition and entry by fixed wireless providers continues to increase. Thus, competition between two facilities-based

providers with near ubiquitous networks, and expected entry by fixed wireless providers, without the distortions of UNE regulation, will bring greater benefits over the medium term, than ongoing UNE requirements, which distort incumbent and competitive LECs' incentives to compete.

169. In contrast, the record presents insufficient evidence of competitive changes to end UNE DS0 Loop obligations in urban clusters and rural areas. We find that: (1) mass market customers in these areas often either do not have access to a high speed broadband service or can only obtain such service from a single provider, which sometimes is a competitive LEC that relies on UNE DS0 loops; and (2) certain competitors rely on UNE DS0 loops to connect their customers to their own fiber networks and are swapping out these loops for their own last mile facilities as they build out their fiber network to their end-users' premises. Based on December 2019 Form 477 data, the proportion of households with either no or one provider option for 25/3 Mbps services was 57% in rural areas and 40% in urban clusters compared to 16% in urbanized areas. As noted above, of the approximately 42,000 thousand households who have a single option for 25/3 Mbps service that may rely upon UNE Loops, about 35,000 live in rural areas and urban clusters where UNE DS0 Loops will remain available. Thus, consistent with our initial imposition of UNE DS0 Loop requirements, access to UNE DS0 Loops in urban clusters and rural areas continues to support the development of competition and the deployment of advanced services in these areas.

170. In urbanized areas, we find the two-part transition for UNE DS0s Loops appropriately balances the short-term needs of the competitive LECs to maintain competitive supply while they extend their networks. Competitors claim that the immediate loss of UNE DS0 Loops would strand their investments and cause the cessation of services to their customers, particularly given the recession that has been caused by the COVID-19 pandemic. We find these claims credible as facility-based replacement of existing UNEs requires substantive time and effort.

171. *UNE Dark Fiber Transport.* Consistent with the *UNE Transport Forbearance Order*, we find that the costs of maintaining the obligation to supply new UNE Dark Fiber Transport exceed any benefits such supply provides to wire centers that are within a half mile of alternative fiber. Such an

obligation distorts the incumbent and competitive LECs' incentives to invest in transport networks, e.g., because it is unlikely UNE prices correctly reflect efficient costs in all circumstances. Similarly, competitive LECs may inefficiently prefer to purchase UNEs without any long-term obligations, rather than bearing the multi-decade risk deployment entails.

172. We find that there are net benefits to competitors to retain use of their existing UNE Dark Fiber Transport for a significant period of time, however, because of the risk of stranding competitors' investments that rely upon this transport. This concern is sharpened by the recession caused by the COVID-19 pandemic, which has increased the need for broadband services, and has made it harder to finance deployment. Some competitive LECs rely on embedded UNE Dark Fiber Transport to support the investments they have made in networks, notably including last-mile facilities, which represent substantial investments that are sunk for many years. Competitively replacing the UNE Dark Fiber Transport they currently rely on would in some instances require significant investments (on the part of the providers or third parties) and would take substantial time. The result, in some instances, would be the cessation of services to existing customers and of planned new last-mile deployments. And the cost of continuing to provision existing UNE Dark Fiber Transport is comparatively low. Accordingly, we are persuaded there are significant net benefits to permit competitors' continued use of embedded UNE Dark Fiber Transport at existing terms and conditions for eight years.

173. *Avoided-Cost Resale and UNE Analog Loops.* We find there are net costs of continuing the obligations to offer *Avoided-Cost Resale* and *UNE Analog Loops*. The Commission has found that the availability of these UNEs at subsidized prices distorts competitors' incentives to build their own last mile facilities and the deployment of next-generation facilities, hindering the Commission's policy goals and reducing overall efficiency. The migration away from legacy TDM services is occurring in price-cap and non-price cap areas. The Commission forbore from imposing these obligations for price-cap LECs, and identical reasoning applies to non-price LECs. Allowing competitive LECs access to these services during the three-year transition period will allow an orderly transition to the more efficient end state. In addition, providers with customers that prefer legacy services and that rely upon *Avoided-Cost Resale* to

provision those services, may continue to offer legacy services via section 251(b)(1) resale and commercial agreements.

#### **G. Other Considerations**

174. *SBA Response.* We disagree with the Chief Counsel of the Small Business Administration that removing these UNE and resale obligations for which we grant relief today will prevent small competitive LECs from providing competitive services to consumers and from deploying their own networks, and that the benefits to adopting these changes will have unclear economic benefits. We eliminate UNEs and resale only where they are no longer necessary for competition and entry as the Act requires, and preserve them where they still serve a useful purpose. Moreover, the fact that INCOMPAS and USTelecom and almost all of their members who participated in this proceeding have reached a compromise as to several of the UNEs that SBA raises concerns about, provides us with additional assurance that eliminating certain UNEs subject to transition conditions will not unduly affect small businesses. We expect that the benefits from eliminating these UNEs and resale, including increased competition and deployment of next-generation facilities, will also extend to small businesses. Additionally, any small businesses relying on current UNE Dark Fiber Transport will retain all of their current rights for eight years. To the extent small businesses are burdened, we expect that this generous transition period will provide them sufficient time to act to avoid disruptions to their current business operations.

175. *Puerto Rico.* Based on the record in this proceeding, we do not find that a longer grandfathering period is necessary for Puerto Rico for any UNE or resale obligations for which we grant relief. Although we provided a five-year, rather than three-year, grandfathering period for Puerto Rico due to the state of the economy and ongoing hurricane restoration efforts in the *2019 UNE Forbearance Orders*, a unique transition period is not warranted here for Puerto Rico, and competitive LECs providing service there have been on notice for almost a year now that such UNEs may no longer be available. While we sought comment on a longer transition period for Puerto Rico in the *NPRM*, we did not propose a different transition timeframe. We find that we have provided a sufficient transition period for the UNE and resale obligations for which we grant relief, which should also provide more than

enough time for competitive LECs in Puerto Rico to seamlessly transition their existing customers to alternative facilities or services. A longer transition would unnecessarily continue to impose outdated burdens solely placed on the incumbent LEC, undermining incentives for sustainable facilities-based competition, which is important to encourage as Puerto Rico continues to rebuild. Moreover, we clarify that the transition periods we adopt herein do not supersede or modify any previously-adopted transition periods applicable to Puerto Rico.

176. We also reject WorldNet’s argument that the Commission should exempt Puerto Rico from any elimination or reduction of UNE or resale obligations in this proceeding due to its unique economic circumstances. As WorldNet acknowledges, we recently decided not to exempt Puerto Rico with regard to the UNE and Avoided-Cost Resale obligations at issue in the *UNE Analog Loop and Avoided-Cost Resale Forbearance Order*. For similar reasons, namely, that reducing unbundling obligations will increase incentives for facilities-based deployment, our decision in this document applies to Puerto Rico. Importantly, customers in Puerto Rico will have a number of alternative options that will protect them from unreasonable rates and charges, aided in part by the Commission’s ongoing work to implement the Uniendo a Puerto Rico Fund and ensure that the residents of the island have access to next-generation technologies that are resilient to hurricanes and other natural disasters. Even after our actions today, WorldNet will still be able to make voice services available to its customers via alternative arrangements such as commercial agreements with the incumbent LEC or other providers and section 251(b)(1) resale, or through deployment of its own facilities-based voice services. Thus, we do not find it necessary to exempt Puerto Rico from the UNE and resale obligations that are eliminated or reduced today. Moreover, the transition timeframes that we have adopted should provide more than sufficient time for WorldNet to transition any of its existing customers to alternative facilities or services.

177. *Public Safety.* With respect to concerns that the Commission “should carefully consider the impacts that its proposal . . . would have on public safety,” we note that such issues have been considered with respect to each UNE element where the issue has been raised in the record as well as in the discussion of Avoided-Cost Resale. As discussed above, to the extent commenters raise issues about losing line power and TDM service over copper, this Order will not impact the availability of such

features, nor does it affect the availability of 9-1-1 functionality. And consistent with the *NPRM*, we retain the access to E911/911 database UNE without modification. We therefore find that our actions today will not affect issues related to public safety in any way.

178. *Form 477 Data.* With respect to concerns that there are limitations related to our reliance on Form 477 data, such data is the best, most granular data currently available. Importantly, however, in this Order, we rely on Form 477 data primarily for nationwide findings in the UNE Narrowband Voice-Grade Loops and Avoided-Cost Resale sections, and on findings that apply to urbanized areas as compared to urban clusters and rural areas. Moreover, the nationwide findings we primarily rely on in the UNE Narrowband Voice-Grade Loops and Avoided-Cost Resale sections are voice subscription counts rather than deployment data. While some parties in this proceeding have questioned the reliability of deployment data, none have questioned the validity of voice subscription counts. While some commenters criticize Form 477 deployment data as overstating deployment because a provider need only serve one location in a census block for the block to be considered served, we note that in urbanized areas, where census blocks are extremely small, a provider that serves one location is very likely to be able to serve the other locations in the census block in the near future. To the extent commenters raise concerns about the precision of Form 477 data in specific areas, nothing in our Order relies on such specificity. The findings in the UNE DS1/DS3 and UNE Dark Fiber Transport sections are based on analyses that relied upon the comprehensive BDS Data Collection and the Commission's prior orders that relied upon those analyses. While the Commission is currently developing a new data collection to replace Form 477, it is primarily doing so to improve precision in specific areas, which, while undoubtedly important for Universal Service purposes, is not required for our more general findings to refine unbundling requirements. For purposes of this proceeding, as discussed above, we have accurately captured the "current competitive landscape" nationwide and find that our actions today will "effectively foster competition and benefit consumers."

#### **IV. PROCEDURAL MATTERS**

179. *Final Regulatory Flexibility Analysis.* As required by the Regulatory Flexibility Act of 1980, as amended (RFA), an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the *NPRM* in this proceeding. The Commission sought written comment on the proposals in the *NPRM*, including

comment on the IRFA. The present Final Regulatory Flexibility Analysis (FRFA) addresses comments received on the IRFA and conforms to the RFA.

**A. Need for, and Objectives of, the Rules**

180. In the *NPRM*, the Commission proposed to revise its unbundling and resale requirements to account for changes in communications service markets where competition has flourished, and sought comprehensive comments on these proposals. Thus, this Order provides a new regulatory framework that does away with obsolete regulatory obligations and promotes the deployment of competitive facilities and next-generation networks, spreading the benefits of innovation and facilities-based competition to market entrants and end-users alike, including small businesses in each category.

181. Specifically, in the *NPRM* the Commission sought comment on proposals to eliminate: (1) UNE DS1 and DS3 loop obligations in counties and study areas deemed competitive in the *BDS Order* and *RoR BDS Order*; (2) UNE DS0 loops in urban census blocks; (3) UNE analog loop obligations where they still apply; (4) 64 kbps voice-grade channel over fiber loops obligations where they still apply; (5) unbundling requirements for the narrowband frequencies of hybrid loops; (6) UNE subloops in the particular instances or geographic areas where we propose to eliminate the unbundling obligation for the underlying loop to the customer's premises; (7) unbundled dark fiber transport to wire centers that are within a half mile of alternative fiber; (8) stand-alone UNE network interface device (NID) obligations; (9) operations support systems (OSS) unbundling obligations; and (10) Avoided-Cost Resale obligations in non-price cap areas. The unbundling requirement imposed by the 1996 Act were designed to promote competition, not specific competitors; as such, in evaluating the continued need for particular UNEs or Avoided-Cost Resale, we look to the existence of competition rather than the impact our actions will have on individual competitors.

182. Drawing on the record in this proceeding along with data from a variety of sources, including findings in the *BDS Order*, *RoR BDS Order*, and Form 477 data, the Commission makes findings regarding actual and potential competition in different geographic areas. In those localities where

competition is robust, the Commission finds that continuing to require incumbent LECs to provide access to the UNEs described above is counterproductive. Ending these requirements will minimize burdensome regulations and allow market forces to drive innovation and competitive pricing.

### **1. UNE DS1 and DS3 Loops**

183. Based on the record in this proceeding, as well as the conclusions drawn in the *BDS Order*, the Commission finds competitive LECs are no longer impaired without access to unbundled DS1 and DS3 loops in those counties that are already competitive or where there is the potential for competition (collectively, “Competitive Counties”). Therefore, these UNE requirements are no longer necessary nor appropriate in these locations. Even if there were continuing impairment, requiring provision of these UNEs would contravene the Commission’s mandate to ensure the deployment of next-generation infrastructure. In the alternative, the Commission finds that forbearance from enforcing requirements for UNE DS1 and DS3 loops in Competitive Counties is appropriate. In these competitive localities, market forces will ensure fair pricing. None of these findings apply to non-competitive counties.

### **2. UNE DS0 Loops**

184. Based on the record in this proceeding, as well as Form 477 data, the Commission finds that cable companies provide significant competition, and therefore competitive LECs are no longer impaired without access to unbundled DS0 loops in urbanized census blocks, and independently forbears from the obligation. As such, UNE obligations are no longer appropriate in these areas. This finding does not apply to urban cluster census blocks nor rural census blocks.

### **3. UNE Narrowband Voice-Grade Loops, Multiunit Premises Subloops, and NIDs**

185. The Commission finds that competitors do not face significant barriers to entry into the voice-service market, and therefore forbear from any remaining UNE Narrowband Voice-Grade Loop obligations nationwide. The Commission also finds that impairment no longer exists without access to UNE Multiunit Premises Subloops and NIDs. Further, the Commission finds that competitive LECs are

not impaired by lack of access to these UNEs, and that continued provision thereof contravenes the Commission's mandate to ensure deployment of next-generation networks.

#### **4. UNE Dark Fiber**

186. The Commission finds that competitive LECs are not impaired without UNE dark fiber that is within a half mile from alternative fiber. Further, the Commission independently forbears from any UNE Dark Fiber Transport within a half mile from alternative fiber. However, access will be grandfathered for eight years for those who are already relying on it.

#### **5. Operations Support Systems**

187. The Commission finds that competitive LECs are not impaired without access to OSS, except for the purposes of number portability and interconnection.

#### **6. Avoided-Cost Resale**

188. For the same reasons the Commission granted price-cap incumbent LECs forbearance from the Avoided-Cost Resale requirement in 2019, the Commission now extends that forbearance to non-price-cap incumbent LECs. The Commission finds that enforcement of these obligations is unnecessary to moderate end-user pricing nor to protect competitive LECs' ability to provide service due to the abundance of alternatives available across markets.

### **B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA**

189. In this section, we respond to comments filed in response to the IRFA. To the extent we received comments raising general small business concerns during this proceeding, those comments are discussed throughout the Order and are summarized in part E, below.

190. We reject arguments that ending UNE access for competitive providers would damage their ability to compete in the affected markets because UNE loop obligations are being rolled back only in counties and study areas already deemed competitive, and access to dark fiber will be grandfathered for eight years for all providers currently utilizing it. Furthermore, the Commission's objective in finding non-impairment is to foster competition, not to promote any specific competitor. In making the

impairment inquiry, we make the reasonable inference that if competitive providers have successfully entered one market using their own facilities, other providers can enter similar markets on a similar basis.

191. We also reject the claim that removing access to UNEs will inhibit development of next-generation infrastructure. Indeed, we find that continuing provision of UNEs in areas with robust competition in place will result in stagnation of innovation and delay the deployment of new technologies such as 5G networks.

192. With respect to whether small business customers will lose their choice in providers with the adoption of this Order, or may lose access all together if the only provider in their region is unable to provide service by way of UNEs, we note that because UNE loop obligations will only be removed in markets where competition is sufficiently robust. Additionally, we provide 8 years for competitive LECs to transition from UNE Dark Fiber Transport. While price increases are possible as a result of the transition to commercial pricing for some network elements, these increases do not constitute impairment.

193. With respect to the suggestion that a significant number of small entities may be unaware of this proceeding and that the Commission should engage in educational outreach to inform them of it, we disagree with this assertion because the *NPRM* explained the proposed regulatory changes in detail and solicited comments from all parties. A summary of the *NPRM* was published in the Federal Register, and we believe that such publication constitutes appropriate notice to small businesses subject to the regulations.

**C. Response to Comments by the Chief Counsel for Advocacy of the Small Business Administration**

194. First, we disagree with the Chief Counsel's assertion that the Commission failed to consider in its IRFA the impact of the new regulations on small entities that will be directly impacted by the changes. To the contrary, the Commission specifically requested comments regarding economic impacts on small entities that may result from the changed regulations. Many such comments were

submitted in response, allowing the Commission to consider the concerns of small competitive LECs and other entities throughout this Order. Though the Chief Counsel advises the Commission to issue a further notice of proposed rulemaking with a supplemental IRFA, we believe this is unnecessary because the *NPRM* described in detail the proposed changes to the regulatory framework, posed specific questions on how best to implement the changes, and sought comprehensive comments from all parties. As described in paragraph 193 of this RFA, a summary of the *NPRM* was published in the Federal Register, thus providing notice to all affected entities, including small entities.

195. We disagree with the Chief Counsel's argument that removing these UNE obligations will prevent small competitive LECs from providing competitive services to consumers and from deploying their own networks. Indeed, the Commission is implementing these changes in order to promote facilities-based competition that will benefit large and small providers as well as end-users. Access to UNEs was always intended as a stepping stone for competitors to gain market entry and build their own networks, to be retired once competition was established. In evaluating the need for a given UNE the Commission considers the existence of competition, including intermodal competition, not the impact on any particular competitor. The Commission's impairment determinations consider the existence of intermodal competition because "[t]he fact that an entrant has deployed its own facilities – regardless of the technology chosen – may provide evidence that any barriers to entry can be overcome." Further, examining these same facts, the Commission finds that the forbearance criteria are met, as competition will ensure that rates remain just and reasonable and protect consumers, while also promoting the public interest by spurring deployment of next-generation facilities. Additionally, those entities relying on dark fiber will have a significant period—eight years—to transition from UNE Dark Fiber Transport.

196. Unbundling requirements for DS1 and DS3 loops will be removed only in those counties already determined to be competitive in the *BDS Order* and *RoR BDS Order*. Furthermore, access to equivalent network elements is still available for purchase via commercial agreements, which supports a finding a non-impairment. Indeed, competitive providers already rely on these commercially available

elements to compete. Obligations to provide UNE DS0 loops will cease only in urbanized census blocks where there is ample evidence of intermodal competition; urban cluster and rural census blocks, where the record does not provide evidence of robust competition, will retain the legacy UNE requirements.

197. We disagree with the implication in the Chief Counsel’s comments that the new regulations offer no economic benefit. In implementing these regulatory changes, the Commission is pursuing its congressionally mandated goal of ensuring deployment of next-generation networks and services. Pursuant to the provisions of the 1996 Act, the Commission revises its unbundling and resale requirements to account for changes in communications service markets where competition among incumbent and competitive LECs has flourished and UNEs are no longer necessary to facilitate market entry. Congress authorized the Commission to forbear from any regulatory obligations once the agency determined that they are obsolete, and encouraged the Commission to use forbearance and other means to encourage deployment of advanced telecommunications capability and remove barriers to infrastructure deployment. Promoting investment in innovation and advanced technologies can only provide greater economic benefits for all parties involved.

**D. Description and Estimate of the Number of Small Entities to Which the Rules Will Apply**

198. The RFA directs agencies to provide a description of, and, where feasible, an estimate of, the number of small entities that may be affected by the rules adopted herein. The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.” In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act. A “small business concern” is one which (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).

199. We have included small incumbent LECs in this present RFA analysis. As noted above, a “small business” under the RFA is one that, *inter alia*, meets the pertinent small business size standard

(e.g., a telephone communications business having 1,500 or fewer employees), and “is not dominant in its field of operation.” SBA Advocacy contends that, for RFA purposes, small incumbent LECs are not dominant in their field of operation because any such dominance is not “national” in scope. We have therefore included small incumbent LECs in this RFA analysis, although we emphasize that this RFA action has no effect on Commission analyses and determinations in other, non-RFA contexts.

200. *Wired Telecommunications Carriers.* The U.S. Census Bureau defines this industry as “establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired communications networks. Transmission facilities may be based on a single technology or a combination of technologies. Establishments in this industry use the wired telecommunications network facilities that they operate to provide a variety of services, such as wired telephony services, including VoIP services, wired (cable) audio and video programming distribution, and wired broadband internet services. By exception, establishments providing satellite television distribution services using facilities and infrastructure that they operate are included in this industry.” The SBA has developed a small business size standard for Wired Telecommunications Carriers, which consists of all such companies having 1,500 or fewer employees. U.S. Census Bureau data for 2012 show that there were 3,117 firms that operated that year. Of this total, 3,083 operated with fewer than 1,000 employees. Thus, under this size standard, the majority of firms in this industry can be considered small.

201. *Incumbent Local Exchange Carriers.* Neither the Commission nor the SBA has developed a small business size standard specifically for incumbent local exchange services. The closest applicable NAICS Code category is Wired Telecommunications Carriers. Under the applicable SBA size standard, such a business is small if it has 1,500 or fewer employees. U.S. Census Bureau data for 2012 indicate that 3,117 firms operated the entire year. Of this total, 3,083 operated with fewer than 1,000 employees. Consequently, the Commission estimates that most providers of incumbent local exchange service are small businesses that may be affected by our actions. According to Commission data, one thousand three hundred and seven (1,307) Incumbent Local Exchange Carriers reported that they were

incumbent local exchange service providers. Of this total, an estimated 1,006 have 1,500 or fewer employees. Thus, using the SBA's size standard the majority of incumbent LECs can be considered small entities.

202. *Competitive Local Exchange Carriers, Competitive Access Providers (CAPs), "Shared-Tenant Service Providers," and "Other Local Service Providers."* Neither the Commission nor the SBA has developed a small business size standard specifically for these service providers. The appropriate NAICS Code category is Wired Telecommunications Carriers and under that size standard, such a business is small if it has 1,500 or fewer employees. U.S. Census Bureau data for 2012 indicate that 3,117 firms operated during that year. Of that number, 3,083 operated with fewer than 1,000 employees. Based on these data, the Commission concludes that the majority of Competitive LECS, CAPs, Shared-Tenant Service Providers, and Other Local Service Providers, are small entities. According to Commission data, 1,442 carriers reported that they were engaged in the provision of either competitive local exchange services or competitive access provider services. Of these 1,442 carriers, an estimated 1,256 have 1,500 or fewer employees. In addition, 17 carriers have reported that they are Shared-Tenant Service Providers, and all 17 are estimated to have 1,500 or fewer employees. Also, 72 carriers have reported that they are Other Local Service Providers. Of this total, 70 have 1,500 or fewer employees. Consequently, based on internally researched FCC data, the Commission estimates that most providers of competitive local exchange service, competitive access providers, Shared-Tenant Service Providers, and Other Local Service Providers are small entities.

203. *Interexchange Carriers (IXCs).* Neither the Commission nor the SBA has developed a small business size standard specifically for providers of interexchange services. The closest applicable NAICS Code category is Wired Telecommunications Carriers. The applicable size standard under SBA rules is that such a business is small if it has 1,500 or fewer employees. U.S. Census Bureau data for 2012 indicate that 3,117 firms operated for the entire year. Of that number, 3,083 operated with fewer than 1,000 employees. According to internally developed Commission data, 359 companies reported that their primary telecommunications service activity was the provision of interexchange services. Of

this total, an estimated 317 have 1,500 or fewer employees. Consequently, the Commission estimates that the majority of interexchange service providers are small entities.

204. *Operator Service Providers (OSPs)*. Neither the Commission nor the SBA has developed a small business size standard specifically for OSPs. The closest applicable size standard under SBA rules is for the category Wired Telecommunications Carriers. Under that size standard, such a business is small if it has 1,500 or fewer employees. U.S. Census Bureau data for 2012 show that there were 3,117 firms that operated that year. Of this total, 3,083 operated with fewer than 1,000 employees. Thus under this size standard, the Commission estimates that the majority of firms in this industry are small entities. According to Commission data, 33 carriers have reported that they are engaged in the provision of operator services. Of these, an estimated 31 have 1,500 or fewer employees and 2 have more than 1,500 employees. Consequently, the Commission estimates that the majority of operator service providers are small entities.

205. *Local Resellers*. The SBA has not developed a small business size standard specifically for Local Resellers. The SBA category of Telecommunications Resellers is the closest NAICS code category for local resellers. The Telecommunications Resellers industry comprises establishments engaged in purchasing access and network capacity from owners and operators of telecommunications networks and reselling wired and wireless telecommunications services (except satellite) to businesses and households. Establishments in this industry resell telecommunications; they do not operate transmission facilities and infrastructure. Mobile virtual network operators (MVNOs) are included in this industry. Under the SBA's size standard, such a business is small if it has 1,500 or fewer employees. U.S. Census Bureau data from 2012 show that 1,341 firms provided resale services during that year. Of that number, all operated with fewer than 1,000 employees. Thus, under this category and the associated small business size standard, the majority of these resellers can be considered small entities. According to Commission data, 213 carriers have reported that they are engaged in the provision of local resale services. Of these, an estimated 211 have 1,500 or fewer employees and two have more than 1,500

employees. Consequently, the Commission estimates that the majority of local resellers are small entities.

206. *Other Toll Carriers.* Neither the Commission nor the SBA has developed a size standard for small businesses specifically applicable to “Other Toll Carriers.” This category includes toll carriers that do not fall within the categories of interexchange carriers, operator service providers, prepaid calling card providers, satellite service carriers, or toll resellers. The closest applicable size standard under SBA rules is for Wired Telecommunications Carriers. The applicable SBA size standard consists of all such companies having 1,500 or fewer employees. U.S. Census Bureau data for 2012 indicates that 3,117 firms operated during that year. Of that number, 3,083 operated with fewer than 1,000 employees. Thus, under this category and the associated small business size standard, the majority of Other Toll Carriers can be considered small. According to internally developed Commission data, 284 companies reported that their primary telecommunications service activity was the provision of other toll carriage. Of these, an estimated 279 have 1,500 or fewer employees. Consequently, the Commission estimates that most Other Toll Carriers are small entities.

207. *Wireless Service Providers.* The SBA has developed a small business size standard for wireless firms within the two broad economic census categories of “Paging” and “Cellular and Other Wireless Telecommunications.” Under both SBA categories, a wireless business is small if it has 1,500 or fewer employees. For the census category of Paging, Census Bureau data for 1997 show that there were 1,320 firms in this category, total, that operated for the entire year. Of this total, 1,303 firms had employment of 999 or fewer employees, and an additional 17 firms had employment of 1,000 employees or more. Thus, under this category and associated small business size standard, the great majority of firms can be considered small. For the census category Cellular and Other Wireless Telecommunications, Census Bureau data for 1997 show that there were 977 firms in this category, total, that operated for the entire year. Of this total, 965 firms had employment of 999 or fewer employees, and an additional 12 firms had employment of 1,000 employees or more. Thus, under this second category and size standard, the great majority of firms can, again, be considered small.

208. *Wireless Communications Services.* This service can be used for fixed, mobile, radiolocation, and digital audio broadcasting satellite uses. The Commission defined “small business” for the wireless communications services (WCS) auction as an entity with average gross revenues of \$40 million for each of the three preceding years, and a “very small business” as an entity with average gross revenues of \$15 million for each of the three preceding years. The SBA has approved these small business size standards. In the Commission’s auction for geographic area licenses in the WCS there were seven winning bidders that qualified as “very small business” entities, and one winning bidder that qualified as a “small business” entity.

209. *Wireless Telecommunications Carriers (except Satellite).* This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide communications via the airwaves. Establishments in this industry have spectrum licenses and provide services using that spectrum, such as cellular services, paging services, wireless internet access, and wireless video services. The appropriate size standard under SBA rules is that such a business is small if it has 1,500 or fewer employees. For this industry, U.S. Census Bureau data for 2012 show that there were 967 firms that operated for the entire year. Of this total, 955 firms employed fewer than 1,000 employees and 12 firms employed 1000 employees or more. Thus under this category and the associated size standard, the Commission estimates that the majority of Wireless Telecommunications Carriers (except Satellite) are small entities. *Satellite Telecommunications.* This category comprises firms “primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications.” Satellite telecommunications service providers include satellite and earth station operators. The category has a small business size standard of \$35 million or less in average annual receipts, under SBA rules. For this category, U.S. Census Bureau data for 2012 show that there were a total of 333 firms that operated for the entire year. Of this total, 299 firms had annual receipts of less than \$25 million. Consequently, we estimate that the majority of satellite telecommunications providers are small entities.

210. *Wireless Telephony.* Wireless telephony includes cellular, personal communications services, and specialized mobile radio telephony carriers. The closest applicable SBA category is Wireless Telecommunications Carriers (except Satellite). Under the SBA small business size standard, a business is small if it has 1,500 or fewer employees. For this industry, U.S. Census Bureau data for 2012 show that there were 967 firms that operated for the entire year. Of this total, 955 firms had fewer than 1,000 employees and 12 firms had 1000 employees or more. Thus under this category and the associated size standard, the Commission estimates that a majority of these entities can be considered small. According to Commission data, 413 carriers reported that they were engaged in wireless telephony. Of these, an estimated 261 have 1,500 or fewer employees and 152 have more than 1,500 employees. Therefore, more than half of these entities can be considered small.

211. *Internet Service Providers (Broadband).* While ISPs are only indirectly affected by our present actions, and ISPs are therefore not formally included within this present FRFA, we have addressed them informally to create a fuller record and to recognize their participation in this proceeding. Broadband Internet service providers include wired (e.g., cable, DSL) and VoIP service providers using their own operated wired telecommunications infrastructure fall in the category of Wired Telecommunication Carriers. Wired Telecommunications Carriers are comprised of establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired telecommunications networks. Transmission facilities may be based on a single technology or a combination of technologies. The SBA size standard for this category classifies a business as small if it has 1,500 or fewer employees. U.S. Census Bureau data for 2012 show that there were 3,117 firms that operated that year. Of this total, 3,083 operated with fewer than 1,000 employees. Consequently, under this size standard the majority of firms in this industry can be considered small.

212. *Internet Service Providers (Non-Broadband).* Internet access service providers such as Dial-up Internet service providers, VoIP service providers using client-supplied telecommunications connections and Internet service providers using client-supplied telecommunications connections (e.g.,

dial-up ISPs) fall in the category of All Other Telecommunications. The SBA has developed a small business size standard for All Other Telecommunications which consists of all such firms with gross annual receipts of \$35 million or less. For this category, U.S. Census Bureau data for 2012 show that there were 1,442 firms that operated for the entire year. Of these firms, a total of 1,400 had gross annual receipts of less than \$25 million. Consequently, under this size standard a majority of firms in this industry can be considered small.

213. *All Other Telecommunications.* The “All Other Telecommunications” category is comprised of establishments primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation. This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems. Establishments providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry. The SBA has developed a small business size standard for “All Other Telecommunications”, which consists of all such firms with annual receipts of \$35 million or less. For this category, U.S. Census Bureau data for 2012 show that there were 1,442 firms that operated for the entire year. Of those firms, a total of 1,400 had annual receipts less than \$25 million and 15 firms had annual receipts of \$25 million to \$49, 999,999. Thus, the Commission estimates that the majority of “All Other Telecommunications” firms potentially affected by our action can be considered small.

**E. Description of Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities**

214. The objective of the new regulatory framework is to encourage the deployment of next-generation networks and to unburden incumbent LECs where there is substantial evidence of facilities-based competition and market entry. Beyond the benefits that providers will enjoy from a decreased

regulatory burden on their day-to-day operations, these changes will not affect the reporting, recordkeeping, or other compliance requirements of carriers, including small entities.

**F. Steps Taken to Minimize the Significant Economic Impact on Small Entities, and Significant Alternatives Considered**

215. The RFA requires an agency to describe any significant alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): (1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance, rather than design, standards; and (4) an exemption from coverage of the rule, or any part thereof, for small entities.

216. In arriving at the conclusions described above, the Commission considered various alternatives, which it rejected or accepted for the reasons set forth in the body of this Order, and made certain changes to the rules to reduce undue regulatory burdens, consistent with the Communications Act and with guidance received from the courts. These efforts to reduce regulatory burden will affect both large and small carriers. The significant alternatives that commenters discussed and that we considered are as follows.

217. *Maintaining the status quo.* The main alternative plan that was suggested in the comments was to simply leave the rules as they are. We decline to do so, in light of the importance of deployment of facilities-based competition and next-generation infrastructure, which is one of the central motivations behind this Order as well as the Commission's congressionally mandated goal.

218. *Business Data Services/DS1 & DS3 Loops.* In this Order, we have limited unbundling of DS1 and DS3 loops to areas where there is insufficient evidence of competition. In reaching this conclusion, we considered comments from small competitive LECs, who in general would prefer greater access to these UNEs. We rejected their arguments on the ground that the reasonably efficient competitor would not rely on DS1 or DS3 loops as reasonably efficient technology for market entry.

Furthermore, we find that commenters do not adequately consider the prospect of competitive deployment nor the advantages held out by such deployment, where feasible, for consumers and carriers alike.

219. *Transition Plans.* The Order also sets out transition plans to govern the migration away from UNEs where a particular element is no longer available on an unbundled basis. We have considered various comments indicating that many small businesses have built their business plans on the basis of continued access to UNEs and have worked to ensure that the transition plans will give competing carriers a sufficient opportunity to transition to alternative facilities or arrangements. This alternative represents a reasonable accommodation for small entities and others, which we believe will ultimately result in an orderly and efficient transition. Therefore, as set forth in the Order, we have adopted plans to grandfather unbundled access to dark fiber loops for eight years where they are already in use; for DS1 loops, a two-part transition of 24 months for new orders and 42 months for existing loops; for DS0 loops, a 24 month period for new orders and a 48-month grandfathering period for all competitive LEC customers; for OSS UNEs, a period equivalent to the respective UNE the OSS UNE is used to order and manage; and a three-year transition period for those who currently utilize other UNEs that will cease to be available.

#### **G. Report to Congress**

220. The Commission will send a copy of the Report and Order, including this FRFA, in a report to be sent to Congress pursuant to the Congressional Review Act. In addition, the Commission will send a copy of the Report and Order, including this FRFA, to the Chief Counsel for Advocacy of the SBA. A copy of the Order and FRFA (or summaries thereof) will also be published in the Federal Register.

221. *Paperwork Reduction Act of 1995 Analysis.* This document does not contain information collection(s) subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. In addition, therefore, it does not contain any new or modified information collection burden for small business concerns with fewer than 25 employees, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. 3506(c)(4).

222. *Congressional Review Act.* The Commission has determined, and the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget, concurs that this rule is “non-major” under the Congressional Review Act, 5 U.S.C. 804(2). The Commission will send a copy of this Report and Order to Congress and the Government Accountability Office pursuant to 5 U.S.C. 801(a)(1)(A).

## **V. ORDERING CLAUSES**

223. Accordingly, IT IS ORDERED that, pursuant to sections 1-4, 10, 201, 202, and 251 of the Communications Act of 1934, as amended, 47 U.S.C. 151-154, 160, 201, 202, and 251, this Report and Order IS ADOPTED and SHALL BE EFFECTIVE thirty (30) days after publication in the Federal Register.

224. IT IS FURTHER ORDERED that part 51 of the Commission’s rules IS AMENDED as set forth in the Final Rules and SHALL BE EFFECTIVE on the effective date announced herein.

225. IT IS FURTHER ORDERED that the Commission SHALL SEND a copy of this Report and Order to Congress and the Government Accountability Office pursuant to the Congressional Review Act, see 5 U.S.C. 801(a)(1)(A).

226. IT IS FURTHER ORDERED that the Commission’s Consumer & Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Report and Order, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

### **List of Subjects in 47 CFR Part 51**

Communications, Communications common carriers, Telecommunications, Telephone.

FEDERAL COMMUNICATIONS COMMISSION

**Marlene Dortch,**  
Secretary.

## Final Rules

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR part 51 as follows:

### **PART 51 – INTERCONNECTION**

1. The authority citation for part 51 continues to read as follows:

Authority: 47 U.S.C. 151-55, 201-05, 207-09, 218, 225-27, 251-52, 271, 332 unless otherwise noted.

2. Section 51.319 is amended by:

- a. Revising paragraph (a)(1) introductory text;
- b. Adding paragraphs (a)(1)(v) and (vi);
- c. Removing and reserving paragraph (a)(2)(ii) and removing paragraphs (a)(2)(iii) and (a)(3)(iii)(C);
- d. Revising paragraph (a)(4)(i);
- e. Adding paragraph (a)(4)(iii);
- f. Revising paragraph (a)(5)(i);
- g. Adding paragraph (a)(5)(iii);
- h. Revising paragraph (b) introductory text;
- i. Removing and reserving paragraph (b)(2);
- j. Revising paragraph (b)(3)(i);
- k. Removing paragraph (c);
- l. Redesignating paragraph (d) through (f) as paragraph (c) through (e); and
- m. Revising newly redesignated paragraphs (c)(2)(iv) and (e).

The revisions and additions read as follows:

#### **§ 51.319 Specific unbundling requirements.**

(a) \* \* \*

(1) *Copper loops.* An incumbent LEC shall provide a requesting telecommunications carrier with nondiscriminatory access to the copper on an unbundled basis in census blocks defined as rural or urban cluster by the Census Bureau. A copper loop is a stand-alone local loop comprised entirely of copper wire or cable. For purposes of this section, copper loops include only digital copper loops (e.g., DS0s and integrated services digital network lines) as well as two-wire and four-wire copper loops conditioned to transmit the digital signals needed to provide digital subscriber line services, regardless of whether the copper loops are in service or held as spares. The copper loop does not include packet switching capabilities as defined in paragraph (a)(2)(i) of this section. The availability of DS1 and DS3 copper loops is subject to the requirements of paragraphs (a)(4) and (5) of this section.

\* \* \* \* \*

(v) *Transition period for narrowband loops.* Notwithstanding any other provision of the Commission's rules in this part, an incumbent LEC shall continue to provide a requesting telecommunications carrier with nondiscriminatory access to two-wire and four-wire analog voice grade copper loops, the TDM-features, functions, and capabilities of hybrid loops, or to a 64 kilobits per second transmission path capable of voice grade service over the fiber-to-the-home loop or fiber-to-the-curb loop for 36 months until February 8, 2024, provided such loop was being provided before [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(vi) *Transition period for digital copper loops and two-wire and four-wire copper loops conditioned to transmit digital signals.* Notwithstanding the remainder of paragraph (a)(1) of this section, an incumbent LEC shall continue to provide a requesting telecommunications carrier with nondiscriminatory access to copper loops as defined in this section for 48 months until February 10, 2025, provided that the incumbent LEC began providing such loop no later than [February 8, 2023](#). Incumbent LECs may raise the rates charged for such loops by no more than 25 percent during months 37 to 48 of this transition period and may charge market-based rates after month 48.

\* \* \* \* \*

(4) \* \* \*

(i) *Availability of DS1 loops.* (A) Subject to the cap described in paragraph (a)(4)(ii) of this section, an incumbent LEC shall provide a requesting telecommunications carrier with nondiscriminatory access to a DS1 loop on an unbundled basis to any building not served by a wire center with at least 60,000 business lines and at least four fiber-based collocators, but only if that building is located in:

(1) Any county or portion of a county served by a price cap incumbent LEC that is not included on the list of counties that have been deemed competitive pursuant to the competitive market test established under § 69.803 of this chapter; or

(2) Any study area served by a rate-of-return incumbent LEC provided that study area is not included on the list of competitive study areas pursuant to the competitive market test established under § 61.50 of this chapter.

(B) Once a wire center exceeds both the business line and fiber-based collocator thresholds, no future DS1 loop unbundling will be required in that wire center. A DS1 loop is a digital local loop having a total digital signal speed of 1.544 megabytes per second. DS1 loops include, but are not limited to, two-wire and four-wire copper loops capable of providing high-bit rate digital subscriber line services, including T1 services.

\* \* \* \* \*

(iii) *Transition period.* Notwithstanding paragraph (a)(4)(i) of this section, an incumbent LEC shall continue to provide a requesting telecommunications carrier with nondiscriminatory access to DS1 loops for 42 months until August 8, 2024, provided the incumbent LEC began providing such loop no later than [February 8, 2023](#).

(5) \* \* \*

(i) *Availability of DS1 loops.* (A) Subject to the cap described in paragraph (a)(5)(ii) of this section, an incumbent LEC shall provide a requesting telecommunications carrier with nondiscriminatory access to a DS3 loop on an unbundled basis to any building not served by a wire center with at least 38,000 business lines and at least four fiber-based collocators, but only if that building is located in one of the following:

(1) Any county or portion of a county served by a price cap incumbent LEC that is not included on the list of counties that have been deemed competitive pursuant to the competitive market test established under § 69.803 of this chapter; or

(2) Any study area served by a rate-of-return incumbent LEC provided that study area is not included on the list of competitive study areas pursuant to the competitive market test established under § 61.50 of this chapter.

(B) Once a wire center exceeds the business line and fiber-based collocator thresholds, no future DS3 loop unbundling will be required in that wire center. A DS3 loop is a digital local loop having a total digital signal speed of 44.736 megabytes per second.

\* \* \* \* \*

(iii) *Transition period.* Notwithstanding paragraph (a)(5)(i) of this section, an incumbent LEC shall continue to provide a requesting telecommunications carrier with nondiscriminatory access to DS3 loops for 36 months after until [February 8, 2024](#), provided such loop was being provided before [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

\* \* \* \* \*

(b) *Subloops and network interface devices.* An incumbent LEC shall provide a requesting telecommunications carrier with nondiscriminatory access to subloops on an unbundled basis in accordance with section 251(c)(3) of the Act and this part and as set forth in this paragraph (b), provided that the underlying loop is available as set forth in paragraph (a) of this section.

Notwithstanding any other provision of the Commission's rules in this part, an incumbent LEC shall continue to provide a requesting telecommunications carrier with nondiscriminatory access to the subloop for access to multiunit premises wiring and network interface devices on an unbundled basis for 36 months until [February 8, 2024](#), provided such subloop or network interface device was being provided before [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

\* \* \* \* \*

(3) \* \* \*

(i) *Technical feasibility.* If parties are unable to reach agreement through voluntary negotiations as to whether it is technically feasible, or whether sufficient space is available, to unbundle a copper subloop at the point where a telecommunications carrier requests, the incumbent LEC shall have the burden of demonstrating to the state commission, in state proceedings under section 252 of the Act, that there is not sufficient space available, or that it is not technically feasible to unbundle the subloop at the point requested.

\* \* \* \* \*

(c) \* \* \*

(2) \* \* \*

(iv) *Dark fiber transport.* Dark fiber transport consists of unactivated optical interoffice transmission facilities. Incumbent LECs shall unbundle dark fiber transport between any pair of incumbent LEC wire centers except where, through application of tier classifications described in paragraph (d)(3) of this section, both wire centers defining the route are either Tier 1, Tier 2, or a Tier 3 wire center identified on the list of wire centers that has been found to be within a half mile of alternative fiber pursuant to the Report and Order on Remand and Memorandum Opinion and Order in WC Docket No. 18-14, FCC 19-66 (released July 12, 2019). An incumbent LEC must unbundle dark fiber transport only if a wire center on either end of a requested route is a Tier 3 wire center that is not on the published list of wire centers. Notwithstanding any other provision of the Commission's rules in this part, an incumbent LEC shall continue to provide a requesting telecommunications carrier with nondiscriminatory access to dark fiber transport for eight years until [February 8, 2029](#), provided such dark fiber transport was being provided before [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

\* \* \* \* \*

(e) *Operations support systems.* An incumbent LEC shall provide a requesting telecommunications carrier with nondiscriminatory access to operations support systems on an unbundled basis only when it is used to manage other unbundled network elements, local interconnection, or local number portability, in accordance with section 251(c)(3) of the Act and this part. Operations support system functions consist of pre-ordering, ordering, provisioning, maintenance and repair, and billing functions

supported by an incumbent LEC's databases and information. An incumbent LEC, as part of its duty to provide access to the pre-ordering function, shall provide the requesting telecommunications carrier with nondiscriminatory access to the same detailed information about the loop that is available to the incumbent LEC.

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