still takes an average of at least 76 business days, or approximately 105 calendar days, for Verizon to provide collocation. *See* Declaration of Karen A. Maguire at & 3 (Attachment B to Verizon's Petition for Reconsideration, which appears in Attachment E of these Comments). If space must be conditioned, it will take additional weeks, and sometimes months, to perform the needed construction work on the building. In addition, the purported time savings for "ideal" types of arrangements are illusory. For instance, Verizon normally does not build a "cage" around a physical collocation arrangement, because collocators generally avail themselves of the option of building their own cages.

Setting different intervals for different types of collocation is unnecessary and is unworkable in most situations. Verizon routinely receives requests for augments to existing collocation arrangements that include multiple requests for a single arrangement. For example, a single collocation augment application could include a request for additional power, additional cabling and a minor request such as a change in fuse size. Even seemingly straightforward augments, such as adding additional power or augmenting cable capacity, can be more complicated and require even more time than an initial collocation build. In the case of cable augments, it is possible that there is not enough main distributing frame capacity to accommodate the augment. In the case of a power augment, new battery strings and/or rectifiers might be needed to meet the augment request. In both cases, this is core infrastructure that is not usually required for even a new collocation job and will take months to complete. Further, even in simple cases, ordering equipment and coordinating vendor activity requires substantially the same amount of time whether Verizon is building a new arrangement or augmenting an existing one. Because of these and other variables, the Commission should not attempt to set different collocation intervals for different types of collocation applications.

Setting the same interval for new collocation requests and augments will not harm collocators, because collocation arrangements can, and should, be turned over to the customer as soon as they are finished, regardless of the applicable interval. This is Verizon's current practice, which permits Verizon to manage its workforce and its vendors in an efficient manner as well as being responsive to the collocators' needs.

The Commission also asks whether it should specify minimum provisioning intervals for virtual collocation. *See* 2nd Notice at ¶ 115. As in the case of physical collocation, the state commissions are in the best position to determine whether the incumbent local exchange carriers' intervals for virtual collocation are reasonable. The states have recognized that virtual collocation often takes longer than physical, because the incumbent local exchange carrier must install the bay and the collocator's equipment as well as prepare the collocation space, bring in power, and provide interconnecting facilities. For instance, in New York, the shortest interval for virtual collocation is 105 business days (approximately 147 calendar days). If the Commission adopts a default interval for virtual collocation (which it should not), it should adopt an interval no shorter than the New York interval.

VII. Collocation At Remote Terminals Is Limited By the "Necessary" Standard, and by Space Constraints, Security, and Technical Feasibility.

The Commission proposes here to require collocation at remote terminals to facilitate subloop unbundling and asks how it should best provide for such remote terminal collocation.[10] 2nd Notice at && 104-112. The first questions that must be answered, however, are whether

[10] The Commission describes remote terminals as the enclosures used to house remote terminal equipment – controlled environmental vaults ("CEVs"), controlled environmental huts ("huts"), and cabinets. 2nd Notice at & 105. For consistency, Verizon will use the term "remote terminal" to denote such enclosures.

collocation of competitors' equipment at remote terminals is "necessary" for interconnection or access to unbundled network elements and whether such collocation is technically feasible. In most instances, it is neither necessary nor technically feasible.

Most arguments in favor of collocation in remote terminals are by competitors seeking to collocate their own DSLAM equipment to enable them to offer digital subscriber line ("DSL") services.[11] In order to offer DSL, a competitor must gain access to the incumbent's copper loop by placing a DSLAM in close proximity to the incumbent's accessible terminal. As described in the attached Declaration of Charles Kiederer at & 7, which appears in Attachment D, that accessible terminal is generally at a Feeder Distribution Interface ("FDI "), also called the Serving Area Interface, which is generally nearby, but not necessarily in, the remote terminal enclosure.[12]

By contrast, access at the remote terminal itself would require that the incumbent open its splicing arrangement to connect the competitor's facilities to the incumbent's copper loop. This is because the incumbent's derived (copper) feeder must be hard-wired to the protector frame at the remote terminal to protect against power surges and other interference. *See* Kiederer Declaration at & 8. But the Commission has already found that subloop interconnection must take place at an accessible terminal, which is "any point on the loop where technicians can access the wire or fiber within the cable *without removing a splice case to reach the wire or fiber within*." 47 C.F.R. ∋ 51.319(a)(2) (emphasis added). As a result, under the Commission's

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[11] Carriers also ask to install their own line cards containing DSLAM and other functions in the incumbent's equipment. Verizon has shown above why incumbents are not required by the Act to meet that request.

[12] A competitor could also ask to connect to an individual customer at the point where the distribution plant connects to that customer's drop. However, such connections are unlikely to be cost-effective and few, if any, such requests are anticipated.

existing rules, which it has not proposed to change here, the appropriate cross-connect point to the incumbent's distribution plant is at the accessible terminal, which is the FDI, not at the remote terminal.[13]

Collocation is "necessary" only where competitors need to place DSLAM equipment on the incumbent's premises in order to access unbundled network elements through an accessible terminal so that the distance between the DSLAM and the customer is short enough to permit the offering of DSL service. If the competitors can place that equipment in their own enclosure for that purpose, collocation is not "necessary" and cannot be required. For example, the necessary standard is not met in any instance where competitors can obtain their own structures, on an individual or shared basis, close to the accessible terminal, or where they can obtain nearby office building space for that purpose. *See* 2nd Notice at & 106, where the Commission suggests that manufacturers could supply adjacent structures for this purpose. Collocation of the competitor's equipment in the incumbent's remote terminal is, therefore, "necessary" only where there is no other location for that equipment that is sufficiently close to the accessible terminal to allow the competitor to provide service.[14]

At the Commission's forum, competing local exchange carriers argued for collocation but were unwilling even to consider constructing their own remote terminals or leasing nearby

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[13] Although SBC has voluntarily proposed to "hardwire" competitors' equipment to its remote cabinets using an "engineering controlled splice," the Commission has found that incumbents need not provide such an arrangement. And, as the Commission acknowledges, SBC expressed the hope that the proposed collaborative process will identify a more efficient method of facilitating collocation than a hardwired splice. *See* SBC Order at n.96.

[14] Where the competitor's adjacent structure is located on the premises (by ownership, lease, or easement) of an incumbent local exchange carrier, the Act limits equipment that the incumbent must allow the competitor to place in that structure to that which includes only functions that are necessary for interconnection or access to unbundled network elements. If the competitor places its equipment on its own premises, then this limitation is inapplicable.

building space, not because those options are not available, but simply because they are somehow inconvenient. For example, Rhythms' representative enumerated the steps that would be needed for adjacent collocation which, as he readily admitted, are *exactly the same steps* that an incumbent would need to go through to construct an enclosure – placing the pad and equipment; obtaining power, air conditioning, and backup power; acquiring land or easements and receiving permits and zoning authorization. *See* May 10 Forum, Transcript at 85. But the fact that another carrier would need to go through the same expense and obtain the same permits as the incumbent is no reason why collocation is "necessary." Mere inconvenience and expense does not make collocation necessary for interconnection or access to unbundled network elements. The competitors' testimony shows that they simply want the Commission to require the incumbents to suffer the inconvenience and bear the expense for them. But that result is not within the Commission's statutory authority, nor is it good public policy to impose those costs on only one set of competitors.

In fact, in many instances, sufficient space is readily available close to the FDI for collocators to construct their own remote terminals – on an individual or shared basis – to connect to the FDI and easily serve their customers. While in some cases the space may be in the incumbent's easement or right-of-way, which may need to be modified or amended to accommodate competitors, there is no basis for finding that such alternatives are unavailable. In addition, in many instances commercial office space can be rented sufficiently close to the FDI to locate the competitors' equipment.

In regard to technical feasibility, as the Commission recognizes, the incumbent local exchange carrier representatives at the May 10 Forum indicated that collocation of equipment in their existing remote terminals is usually not feasible, simply because of insufficient space. *See*

2nd Notice at n.228, citing May 10 Forum, Transcript at 16-19. Those representatives pointed out that the remotes were installed primarily to support local voice (POTS) traffic needs. Any unused space is generally needed to support projected voice traffic needs and is unavailable for collocation. They also indicated that DSL requires higher power levels than POTS and collocation of multiple DSLAMs will quickly exhaust any power capacity that may exist in such terminals. *See* May 10 Forum, Transcript at 18-19. Space and power limitations are particularly acute in cabinets, which constitute the vast majority of remote terminals in the Verizon region.[15] These are generally small enclosures that are pre-engineered and pre-cabled for standard configurations of channel banks and electronics. *See* Kiederer Declaration at & 4.

This not only reduces costs, it ensures that there is sufficient air circulation to dissipate expected heat levels. As a result, there is little or no room to locate additional equipment in such cabinets. Even if some space were available, installation of additional equipment, particularly equipment such as DSLAMs that generate additional heat, could exceed the dissipation ability of the cabinet, causing damage to the DSLAMs and the other voice electronics housed in the cabinet.

Because space is at a premium in remote terminals, Verizon deploys only the minimum functions needed to provide the services offered to customers that subtend those terminals. Verizon also avoids wherever possible installing any devices that generate significant heat or use substantial amounts of power. Despite these efforts, remote terminal space remains at a premium, with little or no room for physical collocation. *See id.*

[15] In the pre-merger GTE territory, 80% of remote enclosures are cabinets, while in the former Bell Atlantic territory that figure is 62%.

In those few instances where collocation in remote terminals is necessary for interconnection or access to unbundled network elements and is technically feasible, collocation should be required only on a virtual basis or, at least, the Commission should allow incumbents to require that escorts accompany collocators that maintain their own equipment.[16] *See* 2nd Notice at & 112. This is because the small size and close tolerances in all remote terminals makes it impossible for the incumbent to secure its equipment. CEVs and huts are small one-room structures, either above- (huts) or below-ground (CEVs) which are designed to give a technician easy access to all equipment and wiring without having to move about the structure. Cabinets are even smaller enclosures which open to give the technician access to all equipment and wiring from the outside. None of these structures enables the incumbent to secure its equipment from access by competitors. As the Commission has previously found, the incumbent "may take reasonable steps to protect its own equipment." Collocation Order at & 42, cited favorably in *GTE*, 205 F.3d at 426. Restricting collocation to virtual, or, at least, allowing escorts during collocator-provided maintenance, are steps that the Commission should find are reasonable. *See* Kiederer Declaration at && 5-6.

But the Commission asks whether competitors can technically access the subloop by cross-connecting to the copper distribution plant at remote terminals. *See* 5th Notice at & 133. Generally, such access is not technically possible. This is because copper cables extending from the digital loop carrier equipment in the remote terminal are spliced directly to electrical protector blocks to protect the equipment from outside power surges. Likewise, the protector blocks are spliced directly to copper cables leaving the remote terminal enclosure. These splices

[16] Because of the greater possibility of accidental damage, competitors should not be permitted to install their own equipment in remote terminals.

are integral to the remote terminal cabinet as it is delivered from the manufacturer and are the most technically efficient and cost-effective method of provisioning copper facilities through remote terminals. However, such hard-wired arrangements do not lend themselves to interconnection of competitors' facilities, because such interconnection would require opening of the splicing arrangement. Therefore, the remote terminal is not a technically feasible point for such interconnection. And, as discussed above, the 8th Circuit has found that the Commission may not require incumbents to modify their facilities to accommodate access to unbundled network elements. Even if it could, the current arrangements are so integrated within the remote cabinet enclosure that is would not be feasible to undertake those modifications.

In any event, as discussed earlier, connection to the copper sub-loop takes place not at the remote terminal but at a Feeder Distribution Interface, which is an accessible terminal, located nearby. It is this accessible terminal, not the remote, which should be the competitor's point of interconnection.

The Commission also asks whether it should require incumbents to make "more efficient use" of existing structures or allow collocation of competitors' equipment on the same racks or bays as their own. *See* 2nd Notice at & 107. In those instances in which collocation in remote terminals is "necessary," virtual collocation, where space is available, will allow the incumbent's technicians to make efficient use of the limited available space and install and maintain other carriers' equipment with minimal disruption. In nearly all cases, however, existing remotes will not have room for physical collocation, because of the need of incumbents to provide a buffer to isolate competitors' equipment from their own to prevent accidental damage and disruption.

Even with new, larger remotes, physical collocation, besides jeopardizing the incumbents' own operations, would allow fewer carriers to collocate their equipment than would virtual.[17]

In any event, the Commission cannot lawfully require incumbents to undertake the expense and disruption of reconfiguring their remote terminals to "make more efficient use of the space," and meet collocators' space requests. Instead, the incumbents have the right to configure their offices in the manner that best enable them to serve their own customers, not to meet the needs of their competitors. *See GTE*, 205 F.3d at 426 ("It is one thing to say that LECs are forbidden from imposing unreasonable minimum space requirements on competitors; it is quite another thing, however, to say that competitors, over the objection of LEC property owners, are free to pick and choose preferred space on the LECs' premises, subject to only technical feasibility. There is nothing in ∋ 251(c)(6) that endorses this approach"); *Iowa Utilities Board v. FCC*, 120 F.3d 753, 813 (8th Cir. 1997) (the Commission may require incumbents to provide access only to their "existing network - not to a yet unbuilt superior one").

Under the current collocation rules, incumbents are required to take into account anticipated collocation demand when designing new or expanded premises in which competitors may collocate. *See* 47 C.F.R. ∋ 51.323(f)(3). The Commission asks whether a certain amount of space in all remote terminals should be set aside for competitors. *See* 2nd Notice at & 108. It should not. First, as discussed above, in most instances, collocation in remote terminals is not necessary for interconnection or access to unbundled network elements and, therefore, cannot lawfully be required. Second, as the record of the May 10 Forum clearly demonstrates, existing

[17] In response to the Commission's question, Verizon does not intend to retrofit very many remote terminals when they install new digital loop carrier equipment. *See* 2nd Notice at & 105. This is because such retrofits are very labor intensive and generally require that customers be taken out of service while such retrofits take place.

remote terminals have little or no space available, and therefore collocation in those terminals is not technically feasible, even in those few cases where it meets the statutory test of being "necessary." In the case of new remote terminals that an incumbent installs, the incumbent's responsibility should be limited to attempting to size them to take into account the demonstrated needs of competitors for virtual collocation of equipment necessary for interconnection or access to unbundled network elements, assuming that sufficient size remotes are available and that their zoning and easements permit installation of larger enclosures. To ascertain the competitors' needs, incumbents should be permitted to contact authorized local carriers, solicit their requirements, and obtain deposits to help defray the cost of the larger remote terminals and any required variances, permits and easements (in return, the incumbent would agree to allow collocation in those remote terminals). They should not be required to plan remote terminals significantly larger than necessary to meet their own needs and the demonstrated needs of competitors.

The Commission asks for the impact of zoning, right-of-way, and other property laws and regulations on the ability of the incumbent to install larger structures and on competitors to place their own remote terminals on adjacent land. *See id.* at & 111. Depending on the specific provisions of existing easements, rights-of-way, and zoning provisions, the competitors may need to obtain new or amended easements, zoning variances, construction permits, and other approvals. The approval process is not under the incumbent's control but is governed by the requirements and schedules of the responsible public body. The competitor seeking a variance or rezoning should have the burden of taking the needed steps to obtain any needed approvals. As discussed above, however, the need for such approval does not make adjacent collocation infeasible and collocation "necessary."

VIII. There Is No Need For A National Space Reservation Policy.

In the Reconsideration Order, the Commission confirmed that "the state commissions are in the best position to determine whether a carrier has reserved more space than necessary to meet its future needs." Reconsideration Order at & 52. It therefore declined to mandate a maximum period for which incumbents may reserve space in their central offices, instead adopting a non-discrimination provision that the incumbent may not reserve space for its affiliate on a preferential basis. *See id.* at && 52-53. That finding was sound. In the 2nd Notice, however, the Commission asks whether it should set a default policy when a state does not set its own standard. 2nd Notice at & 117. It should not set such a standard.

The ability of an incumbent to reserve space in a central office has a potentially significant impact on its ability to meet future local service requests promptly and without significant additional investment. Many states have not adopted specific reservation rules because they need to look at the circumstances surrounding each case in which the incumbent claims that additional physical collocation space is unavailable. State commissions must determine, in each instance, whether the space that the incumbent has reserved in a particular central office will be needed to serve customers, taking into account the projected service needs in the area served by that central office. An office that serves a mature area with minimal growth prospects would generally require less reserved space than would a rapidly-growing business or residential community. State commissions, which are charged with ensuring that all customers are able to receive the local services they require are in the best position to judge the reasonableness of the incumbent's space reservation request in any given instance. A one-size-fits-all national policy is incapable of taking into account these local variations.

IX. Comprehensive Regulation Will Discourage Deployment of Advanced Technologies and Services.

Attempting to superimpose on new technologies and services similar pervasive regulation that is imposed on existing services and technologies of incumbent local exchange carriers will have the perverse effect of discouraging the incumbents from deploying those technologies and services. Such a result will clearly disserve the public, because it will deprive them of the new capabilities which advances in telecommunications technologies will otherwise bring. It also violates section 706 of the 1996 Act, which requires the Commission to take steps to encourage – not discourage – deployment of advanced telecommunications capability. In the Fifth Notice, the Commission should tread lightly and allow market forces, wherever possible, to substitute for regulation. For this reason, there is no reason for the Commission to change the definition of "subloop" or modify line sharing rules to reflect new technologies. *See* 5th Notice at & 123. Incumbents cannot exercise market dominance in technologies that have not yet been deployed and should be encouraged to invest in new innovative technologies and services without being forced to disgorge any benefit of that investment to their competitors. Allowing all carriers to compete on an equal basis in deploying new technologies and services will benefit the public without harming competition.

For example, the Commission asks whether it should impose unbundling obligations on incumbents that deploy dense wavelength division multiplexing ("DWDM") or similar multiplexing equipment to increase the capacity of a fiber "loop."[18] *See id.* at && 120-122. In

[18] There is really no such thing as a fiber "loop." Verizon deploys fiber facilities with associated electronics to derive multiple services for delivery to multiple customers. The services delivered to the customer are a function of the electronics used with the fiber facilities.

particular, it asks whether an individual optical wavelength generated by DWDM equipment is a "feature, function, or capability" of the loop that should be unbundled. *Id.* at & 121. It is not.

DWDM is simply a method of multiplexing an optical circuit to increase its capacity and should be treated like any other form of multiplexing. For example, an incumbent local exchange carrier may choose to increase the transmission capacity within its network by using DWDM or some other form of multiplexing, such as time division multiplexing techniques. The choice of the form of multiplexing an incumbent carrier uses is based on cost, network efficiency, network topology, capacity requirements, and other operational factors.[19] Incumbents should be obligated to offer loops of various capacities as unbundled network elements, and the services they offer at retail should be made available for resale. However, the choice of the type of multiplexing a carrier deploys to increase its own network capacity should be made by the carrier, based on the factors listed above. There is certainly no justification for attempting to unbundle DWDM multiplexing technology, even if such unbundling were technically possible, which it is not.

DWDM does not support the capability to "hand off" individual wavelengths to another carrier. This technology works in tandem with network transport equipment, such as SONET hardware, to assign transport capacity to specific channels (*i.e.*, wavelengths) of the DWDM system. Network capacity is not accessed directly at the DWDM device but, instead, it is accessed through the associated transport equipment.

The Commission asks whether there are proprietary concerns related to accessing an optical wavelength of the loop. *Id.* DWDM equipment is proprietary – equipment from the same vendor must be used at both ends of a system, and plug-ins from one vendor will not

[19] Verizon currently plans to deploy DWDM primarily for inter-office fiber links.

operate successfully with another vendor's DWDM technology. Even if it were possible to unbundle DWDM into separate wavelengths, which it is not, all carriers that access a particular DWDM technology would need to use matching equipment from the same vendor that the incumbent uses in its network.[20]

The Commission also asks whether it should modify its unbundling rules relating to electronics to exclude only electronics used "primarily" or "exclusively" for advanced services. *Id.* at & 122. There is no basis for imposing any unbundling requirements on electronics, whether or not they are used for advanced services, for several reasons.

First, Verizon could use several kinds of electronics in the loop that are unrelated to any particular service but which cannot technically be unbundled from the transport facilities. These include Digital Loop Carrier, Next Generation Digital Loop Carrier, High Bit-Rate Subscriber Line, Digital Single Subscriber Carrier, Optical Network Units and Fiber-to-the-Home electronics. Each of these technologies provides no service itself. Instead, each technology simply provides a transmission channel to facilitate delivery of specific services to the end user. This transmission channel requires compatible electronics at each end of the transmission path. Without the loop facilities and companion equipment, the electronics would have no value. Therefore, a competitor would receive no transmission capability by obtaining access to these electronics devices, and there is no policy or other reason for requiring such unbundling.

Second, some of the listed electronic devices are used along with the associated network facilities to provide transmission capacity. They themselves are not used to provide any particular "services" – advanced or otherwise. Other equipment, such as a DSLAM, is needed

[20] These comments apply as well to other loop technologies, such as wireless local loops and fiber to the home, which, for the same reasons, should not be subject to wavelength or spectrum unbundling.

before a carrier can offer an advanced service. Therefore, it makes no logical sense to attempt to define such electronics as being "used" to provide advanced services.

Third, the uses of equipment and the definition of "advanced services" are both likely to change over time. Imposing unbundling obligations based upon the use of equipment at any point in time and on evolving definitions ignores the dynamics of the technology and would create uncertainty and endless disputes as to whether a carrier has an unbundling obligation at any particular time. Moreover, certain equipment is likely to incorporate multiple functions which cannot be separately unbundled. For example, a DSLAM may also contain a splitter function. The DSLAM itself is used to provide an advanced service, DSL, and, under the Commission's rules, need not be unbundled. On the other hand, the splitter simply separates the loop spectrum into voice and data channels. A carrier could not technically give a competitor access to only the splitter function, nor would it make any operational sense for it to do so, because the splitter capability is physically integrated into the DSLAM. The Commission should not require unbundled access to individual items of electronics whether or not they are used to provide advanced services.

X. Unbundling and Interconnection Obligations Are Limited to Services and Network Elements, Not Quality of Service Classes Or Other Characteristic of the Transmission Facility.

Incumbent carriers should have the right to deploy fiber anywhere in their network based upon the business judgment of those carriers. The Commission asks about those plans and what network disclosure requirements flow from that deployment. *Id.* at & 124. Verizon plans to deploy fiber, fiber-fed Next Generation Digital loop Carrier systems, and associated multiplexing equipment to meet service requirements. In the future, Verizon plans to migrate to extending fiber facilities to customer premises as service needs and technological developments warrant.

Deployment of fiber does not require a network disclosure unless it affects interconnection by a competitor or the operation of a customer's equipment. In the latter event, network disclosures should meet the current requirements in the Commission's rules, 47 C.F.R. ∋∋ 51.325-51.335.

Unbundling requirements should relate only to network elements the incumbents provide, not classes of service or other network characteristics. *See* 5th Notice at & 125. Network elements which transport digital signals, such as DS1 and DS3, can be accessed through physical connection at a technically feasible location. By contrast, quality of service classes, such as Constant Bit Rate and various forms of Variable Bit Rates, cannot be physically "accessed." Instead, they are attributes of the particular service and may sometimes be created or modified by CPE over which the carrier has no control. For example, CPE could create multiple voice and data channels, each with their own quality of service characteristics, over a transport service, such as DS1, without the carrier's knowledge.

The Commission also asks "whether the provision of multiple CBR and or VBR channels, circuits, paths, or connections over the same fiber feeder facility would cause interference or congestion that could lead to service degradation." *Id.* at & 125. Interference and congestion over a fiber loop facility are caused by multiple data service providers contending for the ATM bandwidth that is allocated over that facility. If ATM bandwidth is purchased by a single data provider and provisioned over the loop facility, then the ATM service provider, not the carrier, creates any interference problem by attempting to support multiple virtual channels or various classes of services. The ATM service provider requests bandwidth from the carrier based on the expected number of customers requiring simultaneous bandwidth, the classes of service provisioned to each customer, the number of virtual channels, and other factors. The quality of service level is negotiated between the data service provider and the end customer and

is not directly related to the carrier's physical facility. The carrier would be directly involved only when it attempts to allocate the available bandwidth on the feeder facility across multiple data providers and customers. In that event, provision of classes of service with a higher priority or higher bandwidth requirements, such as constant bit rate service, could reduce the bandwidth available to be reliably provisioned for low priority classes of service, such as unspecified bit rate.

An incumbent's obligation is to provide unbundled access to a subloop only where capacity exists. Where there is insufficient capacity to serve all competitors' requests, incumbents should fill requests in the order received, just as for any other customer. *See id.* at && 126-127. And the courts have found that the incumbent cannot be required to install new capabilities, such as new electronics, to meet competitors' requests for unbundled network elements. *See Iowa Utilities Board v. FCC*, 120 F.3d 753, 813 (8th Cir. 1997).

XI. Incumbents Should Be Allowed To Retire Obsolete Copper Plant As Business Needs Warrant.

Consistent with its mandate from Congress in section 706, the Commission should encourage all carriers to deploy new technologies and services to the public. Just as it should avoid imposing regulatory constraints that would discourage innovation, the Commission should not force incumbent local exchange carriers to retain obsolete plant that business judgment would dictate should be retired in favor of higher-capacity more advanced technologies. Over time, much of the existing copper plant will be replaced with fiber, which has higher capacity and can support new, innovative services, and the Commission should not artificially constrain this trend. *See* 5th Notice at && 129-131.

Recognizing, however, that existing DSL technology requires use of copper loops, there is no reason to believe that incumbents will prematurely retire existing copper plant that they, or their competitors, are using for DSL. Incumbents are responding to the marketplace by expanding their deployment of DSL to give their customers higher-speed Internet access. While fiber-based technologies will ultimately supplant DSL for high-speed Internet access, there will be no wholesale retirement of existing copper plant in the near term. However, over time, fiber fed Next Generation Digital Loop Carrier and fiber-to-the-home systems may supplant copper as the medium of choice for data as well as voice transmission. When that happens, there should be no obligation to maintain copper plant just so that some carriers that choose not to install state-of-the-art electronics can continue to provide obsolete services. The Commission may find it reasonable to provide for a transition to ensure that competitors are given an opportunity to evolve their networks to the new technology.

In any event, as discussed earlier, connection to the copper sub-loop takes place not at the remote terminal but at a Feeder Distribution Interface, which is an accessible terminal, located nearby. It is this accessible terminal, not the remote, which should be the competitor's point of interconnection.

XII. Conclusion

Although Congress, by enacting section 251(c)(6), gave the Commission a certain amount of takings authority that it previously lacked, that authority remains strictly limited to that permitted under the statutory language. Many of the collocation rules proposed in the Second and Fifth Notices exceed that limited authority and may not lawfully be adopted. Other proposals should be modified or rejected based on policy considerations, as discussed above.

Respectfully Submitted,

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

In the Matter of	)	
	)	
Deployment of Wireline Services Offering Advanced Telecommunications Capability	)	CC Docket No. 98-147
	)	
and	)	
	)	
Implementation of the Local Competition Provisions of the Telecommunications Act of 1996	)	CC Docket No. 96-98

DECLARATION OF CHARLES KIEDERER

1. My name is Charles Kiederer. I am Director, Wholesale Services Technology in the Technology organization for Verizon. In this position, I am responsible for providing support to the Wholesale Services Marketing organization on technical issues associated with the development of wholesale products and services. I earned my Bachelor of Science degree in Electrical Engineering from the Rochester Institute of Technology in 1972 and a Masters of Business Administration degree from Pace University in 1986. I have 29 years of experience in New York Telephone, NYNEX, Bell Atlantic and Verizon. During that time, I have held a variety of positions of increasing responsibility in Technical Services, Engineering and Planning. Prior to my present assignment, I was Director – Network Interoperability. In that position, I was responsible for analyzing and resolving technical issues associated with Interexchange Carriers and Competitive Local Exchange carriers ("CLECs") and the development of overall network architecture recommendations.

2. I present this declaration for the purposes of describing the space limitations within remote terminals that Verizon has installed within the loop environment and the architecture of such remote terminals as they are delivered from the manufacturer and/or assembling organization. I will also describe the manner in which transmissions from a Verizon central office flow through a remote terminal and the technically feasible manner in which a competing carrier may obtain subloops from Verizon in order to offer digital subscriber line ("DSL") services.

3. Verizon uses three basic forms of terminal enclosures to house circuits and equipment remotely located from the central office. These are controlled environmental vaults ("CEVs"), which are below-ground structures that are kept at controlled temperature and humidity conditions; controlled environmental huts, which are similar above-ground enclosures; and cabinets, which are small, above-ground, pad, wall or pole-mounted structures with no environmental controls. In addition to these three types of remote enclosures, loop equipment can also be located in equipment rooms in the basements or other areas of buildings. CEVs and huts are sized so that a technician can enter the enclosure and gain access to the equipment and wiring in the limited space available. However, there is no space for multiple technicians to access and perform activities at the same location. In cabinets a technician gains access to wiring from outside the structure by opening a hinged door.

4. Verizon orders remote terminals that are pre-equipped, generally for a three-year planning period, and they are completely pre-wired for the maximum services and capabilities that can be provided from that terminal. For example, a cabinet could be shipped, assembled and equipped with three channel bank shelves to meet the initial planning design, but it will be totally pre-cabled for the maximum number of channel banks that can be accommodated by the cabinet.

Ordering pre-wired remote terminals is the norm in the industry and is far more cost-effective and efficient than simply ordering enclosures and undertaking to wire them on-site. In the case of cabinets, equipment may be mounted back-to-back in the cabinet, making it difficult to gain access to install cabling to new equipment positions. Once the cabinet is deployed in the field, equipment is physically installed in the cabinet, and the structure is exposed to the environment, there is significant cost, complexity and service disruption potential involved with attempting to route new wiring and cabling through non-accessible wiring ducts within the cabinet. Similarly, in the case of CEVs and huts, equipment is mounted against the wall of the structure, making it extremely difficult to install additional cabling between new and existing equipment. All three types of remote terminals were designed and ordered to meet Verizon's existing and planned needs to provide dialtone telephone service, not to accommodate collocation. As a result, it would be difficult and disruptive to attempt to install and interconnect equipment from other carriers in existing remote terminals. Verizon currently has about 38,000 remote terminals in operations in its service territory. Moreover, in the vast majority of remote terminals, there is little or no vacant space that could accommodate other carriers' equipment.

5. In addition, unlike a central office, it would be physically impossible to segregate Verizon's equipment into separate space in a remote terminal. Securing equipment inside a locked enclosure inside the remote terminal is not a practical solution, because of the additional space such an enclosure would occupy within the structure, in which excess space does not exist. Providing secure access to remote terminal locations would likewise become an increasingly difficult problem to administer and control. Access to the various types of remote terminals range from padlocks, to keys, to special tools. Retrofitting tens of thousands of remote terminals

for new security mechanisms to give other carriers access would be a monumental and costly undertaking.

6. For these reasons, any collocation that is required within remote terminals (in those few instances where any collocation space is available) should be limited to virtual collocation, in which Verizon's own technicians install and maintain equipment that the collocators supply. Virtual collocation will enable Verizon to both protect its equipment, because only its technicians will gain access, and make more efficient use of the limited available space, because it eliminates the need to segregate equipment within the remote terminal. It would also prevent one carrier's collocated equipment from being inadvertently affected by another competitor's technician working in the limited space. If, however, the Commission does require physical collocation, which it should not, the only practical means of protecting telephone company equipment is to allow use of escorts.

7. Collocation in remote terminals is not the most efficient way for a data carrier to connect to the Verizon's network to provide DSL service. This is because the accessible terminal, which is the point of interconnection, is often not in the remote terminal itself. Instead, it is at a feeder distribution interface ("FDI," also called the serving area interface), which is often located near, but not in, the remote terminal. A data carrier that wishes to interconnect could in many cases erect a small cabinet close to the FDI or lease a small amount of space in, or on the outside wall of, a nearby building to locate a cabinet for that purpose.[1]

[1] Several carriers could share such a structure to minimize cost and eliminate the need for multiple zoning or other municipal permits.

8. The reason that interconnection is feasible at the FDI rather than at the remote terminal is because the distribution pairs are terminated and accessible only at the FDI. A remote terminal enclosure does not typically contain an accessible interconnection point. This is due, in large part, to the architecture and engineering design of the Digital Loop Carrier ("DLC") system. The typical architecture of a fiber-fed DLC system is as follows (see Figure 1). The fiber cable from the central office is terminated inside the remote terminal electronics cabinet and is cross-connected, through the use of a mini fiber distribution frame, to the high speed side of the DLC electronics. Copper feeder cable, known as derived feeder pairs, is extended from the DLC electronics and hard-wire connected through electrical protectors units, which protect the DLC equipment from outside power surges. The protector blocks, mounted in the remote terminal enclosure, are subsequently hard-spliced to copper cables leaving the remote terminal and terminating at one or more FDIs. These FDIs may be located adjacent to the remote terminal electronics cabinet, or may be located as much as several thousand feet from the serving remote terminal cabinet, close to the customer location. All splicing is completed in a splice chamber that is part of the cabinet or in splice enclosures at the CEV or hut. In some cases, a splicing manhole may exist near the remote terminal. In order to gain access to the distribution pairs at any point other than the FDI, splices would need to be physically accessed and opened between the remote terminal and the FDI. This becomes a customer service issue, because customers may need to be taken out of service when splices are opened, as well as a very labor-intensive work operation. It is for this reason that federal regulations consider opening splices not to be a technically feasible method of interconnection. Therefore, the FDI is the most logical, cost-efficient and technically, as well as operationally, feasible point in the network to access the distribution sub-loops for interconnection.

9. As a result, there is no need for a competitor to locate equipment in the remote terminal in order to connect to Verizon's distribution network. Even if there were room available in remote terminals for that purpose, which there usually is not, other alternatives for sub-loop interconnection at the FDI are available to competitors.

10. In addition, it would be both inefficient and operationally chaotic to allow competitors to supply their own line cards for insertion into Verizon's network equipment located in remote terminals. Each line card or cards would need to be dedicated to an individual carrier, but it is unlikely that carriers will use all of the circuits available on the line card. This results in an inefficient use of resources in potentially tens of thousands of Verizon's remote terminals. Furthermore, Verizon does not have systems today that can inventory which line cards are assigned to which carrier in which remote terminals. Existing systems were designed to operate under the assumption that all equipment located at a remote terminal is owned and administered by Verizon. The massive changes to these systems needed to accommodate competitors' line cards would be very expensive and time-consuming, assuming they could be made at all.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on October __, 2000

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Charles Kiederer