

digital (“DS1-level”) signals, and 45 Mbps digital (“DS-3 level”) signals.²⁶² A subloop unbundled offering, line sharing, and line splitting are all included within the scope of Verizon PA’s obligation to provision and maintain unbundled loops.²⁶³ Dark fiber and loop conditioning are among the features, functions and capabilities of the loop.²⁶⁴ Loops must be provisioned in a non-discriminatory manner.

2. Standard of Review

The FCC will examine Verizon PA’s performance in the aggregate (i.e., by all loop types) as well as its performance for specific loop types.²⁶⁵ In doing so, the FCC is looking for any patterns of systemic performance disparities that have resulted in competitive harm or otherwise denied competing carriers a meaningful opportunity to compete.²⁶⁶ The FCC also will evaluate the information provided describing Verizon PA’s processes for installing and maintaining loops, the capabilities of its workforce, and employee training.²⁶⁷

²⁶² Id.

²⁶³ Id. at 154, 163, and 174.

²⁶⁴ Id. at 121 n.393.

²⁶⁵ Id. at 122.

²⁶⁶ Id.

²⁶⁷ Id.

Primary reliance is placed on certain specific activities. Generally, these activities fall into the categories of order processing timeliness, provisioning timeliness, provisioning quality, as well as maintenance and repair. Within these general categories, a critical pre-ordering activity is timely access to loop information. This activity is measured in terms of timeliness of Verizon PA's responses to mechanized loop database queries²⁶⁸ as well as timeliness of Verizon PA's responses to manual loop qualification²⁶⁹ and engineering record requests.²⁷⁰

With respect to access to xDSL-capable loops (also known as "Stand alone" DSL loops), the following activities have been identified by the FCC as critical to competition: whether Verizon PA timely returns firm order confirmations,²⁷¹ whether Verizon PA misses installation appointments,²⁷² how long on average it takes Verizon PA to provision an order,²⁷³ how many x-DSL loops provisioned to CLECs need repair during the first 30 days,²⁷⁴ how long on average it takes Verizon PA to repair a troubled xDSL loop,²⁷⁵ and how often CLECs have to make repeated requests for xDSL loop repairs.²⁷⁶

²⁶⁸ PO-1-06 measures timeliness of Verizon PA's responses to mechanized loop database queries.

²⁶⁹ PO-8-01 measures timeliness of Verizon PA's responses to manual loop qualification requests. This metric is under development and no data is reported.

²⁷⁰ PO-8-02 measures timeliness of Verizon PA's responses to engineering record requests.

²⁷¹ The timely return of firm order confirmations is measured by OR-1 submetrics. The relevant submetrics are OR-1-04, OR-1-06, OR-1-08, OR-1-10, noting that commencing in April the suffix 3342 designates 2-wire xDSL loops and the suffix 3343 designates 2-wire xDSL line sharing. *See also* OR-2-04, OR-2-06, OR-2-08, and OR-2-10 (measuring the relevant rejection notifier).

²⁷² PR-4-04 measures the percentage of missed installation appointments requiring dispatch. *See also* PR-4-05. PR-4-05 measures the percentage of missed installation appointments not requiring dispatch.

²⁷³ PR-2-02 measures the average completion interval. This metric has no standard for xDSL loops.

²⁷⁴ PR-6-01 ("I Code") measures the percent of installation troubles reported and found in Verizon PA's network within the first 30 days.

²⁷⁵ MR-4-02 measures the mean time to repair.

²⁷⁶ MR-5-01 measures the repeat trouble rate.

With respect to access to high-capacity loops (special services), the following activities are critical: whether Verizon PA misses installation appointments,²⁷⁷ how long on average Verizon PA says it will take to provision a DS1 loop,²⁷⁸ how long on average it actually takes Verizon PA to provision a DS1 loop,²⁷⁹ how many high-capacity loops provisioned to CLECs need repair during the first 30 days,²⁸⁰ and how long on average it takes Verizon PA to repair a troubled high-capacity loop.²⁸¹

With respect to access to voice grade loops (“UNE loops”), both as new loops and through hot-cut conversions, the following activities are critical: how long on average it actually takes Verizon PA to provision a voice grade loop,²⁸² whether Verizon PA misses installation appointments,²⁸³ how many voice grade loops provisioned to CLECs need repair within the first seven days,²⁸⁴ how long it takes Verizon PA to complete a necessary repair,²⁸⁵ and whether Verizon PA provisions voice grade loops on time.²⁸⁶

²⁷⁷ PR-4-01 measures percent missed installation appointments.

²⁷⁸ PR-1-07 measures average interval offered.

²⁷⁹ PR-2-07 measures average interval completed.

²⁸⁰ PR-6-01, *supra*.

²⁸¹ MR-4-01, *supra*.

²⁸² PR-2-01 measures average completion interval (no dispatch). PR-2-03 measures average completion interval (dispatch, 1 – 5 lines). PR-2-04 measures average completion interval (dispatch, 6 – 9 lines). PR-2-05 measures average completion interval (dispatch, greater than 10 lines).

²⁸³ PR-4-04 (for dispatch), *supra*. See also PR-4-05 (no dispatch).

²⁸⁴ PR-6-02 (also called “I Code”) measures the percent of installation troubles reported and found in Verizon PA’s network within the first seven days. Compare PR-6-01 measuring trouble reports within the first 30 days.

²⁸⁵ MR-4-01 (measuring central office and loop troubles), *supra*. See also MR-4-02 (measuring loop troubles only).

²⁸⁶ PR-9-01 measures on time performance.

2. Summary of the Evidence Before PAPUC

a. Verizon PA

Record evidence submitted by Verizon PA demonstrating compliance with Checklist item 4 is found in Verizon PA's Checklist Declaration (filed January 8, 2001) at paragraphs 134 to 236 inclusive, PA PUC Docket No. M-00001453 (Checklist Declaration); and, Verizon PA's Supplemental Checklist Declaration (filed April 18, 2001) at paragraphs 134 to 236 inclusive (Supplemental Checklist Declaration). Additional record evidence includes, but is not limited to, technical conference testimony heard on February 1, 15, 27 and 28; *en banc* hearing testimony heard on April 26; certain data request responses; Carrier-to-Carrier Reports for the months of January, February, and March 2001 (C2C Reports); and, Line Sharing Special Reports and DSL Loops Special Reports for the months of January, February, and March 2001.

b. AT&T

In its final comments, AT&T asserts that Verizon PA has not met its obligation to make line splitting currently available in Pennsylvania. Operational procedures for adding DSL to the CLEC UNE-P customer's line are still under development. Verizon PA's commitment to implement agreements reached in the New York DSL line splitting collaborative creates uncertainty because it extends only to what Verizon PA voluntarily agrees upon in New York and does not automatically include requirements ordered by the New York Public Service Commission over the objection of Verizon PA. Delay in implementing a solution for UNE-P line splitting in Pennsylvania can be advantageous to Verizon PA and harmful to CLECs. Verizon PA can use the time to sell its own DSL services, extending its monopoly in the local exchange market to that advance service, thus effectively closing that market to competition before it even have a chance to get started. Verizon PA's advance services affiliate has already garnered over 99 % of the

line sharing arrangements in place in Pennsylvania. AT&T urges the PAPUC to require Verizon PA to import all of the results of the New York collaborative, even results directed by the New York Public Service Commission, to Pennsylvania and on the same timetable as has been established in New York.

During the January report period, Verizon PA failed to meet the CLEC aggregate parity standard for PR-1-01 for hot cut loops, MR-2-02 for loops, and MR-2-03 for loops, but AT&T had no company specific information to bring forward. The January report was inconclusive with respect to PR-4-01 for special services and PR-6-01 for special services because these metrics were listed as “under review” and, therefore, not reported. AT&T Comments 3/16/01; AT&T Comments 3/23/01.

During the February 2001 report period, Verizon PA’s own data for the AT&T business unit that purchases UNE loops from Verizon PA (a unit known as “TPM”) shows continuing failures in three provisioning metrics for UNE loops: PR-1-01, PR-2-01, and PR-9-01. AT&T Comments 4/12/01.

During the March 2001 report period, Verizon failed to meet, in the aggregate, the metrics for PR-1-01 (hot cut loops), PR-2-01 (hot cut loops), PR-4-01 (no product specified), and MR-4-03 (UNE loops). AT&T Resp. to 5/23/01 Staff Data Req. 1.²⁸⁷

c. ASCENT

In its final comments, ASCENT emphasizes use of the “present compliance” standard. It argues that Verizon PA’s line sharing performance do not support a finding of present compliance. First, ASCENT posits that it is premature to conclude Verizon PA is capable of providing line sharing to competitors at commercial levels given the low volume of line sharing orders. Second, ASCENT points to performance results on the

²⁸⁷ AT&T’s did not raise these claims in its formal comments to the March Report filed May 11, 2001. The formal comments address electronic billing, billing completion notices, and flowthrough, but not loops.

available orders, notes that performance is “dismal,” and suggests that if Verizon PA cannot adequately perform on a small number of orders then it will not be able to adequately perform at commercial volumes. It points to the experience of other commenters, including A.R.C. Networks (who challenges Verizon PA’s proposal to require carriers that plan to use Verizon PA’s network for advanced services to contract, at a minimum, for a costly OC-3 line rather than a T-1 line).²⁸⁸

d. Covad

In its final comments, Covad reasserts its challenge to the adequacy of Verizon PA’s actual performance regarding xDSL loops and line sharing, argues that Verizon PA refuses to honor the PAPUC’s Line Sharing Arbitration Order, claims that Verizon PA’s LiveWire database contains inaccurate information, and argues that Verizon PA has not met its legal obligation to make available the capabilities of next generation DLC (NGDLC) to enable CLECs to offer xDSL service directly over the fiber portion of loops. Covad Final Comments at 9 – 17. Covad’s full analysis of performance data is contained in comments on the commercial availability reports. Comments of Covad on January 2001 Data (filed March 16, 2001); Comments of Covad on February 2001 Data (filed April 12, 2001); and Comments of Covad on March 2001 Data (filed May 11, 2001, as supplemented May 15, 2001). While Verizon PA’s own data shows that performance on certain crucial loop metrics is poor, Covad’s data shows Verizon PA’s performance to be even worse than Verizon PA reported.

Covad notes that KPMG did not test line sharing. The PAPUC’s Line Sharing Arbitration Order entered November 15, 2000, requires Verizon PA to provide, among other things, line sharing collocation augments in 30 business days and to provision line

²⁸⁸ARC Comments of Feb. 12, 2001, at 10 citing to Jim Wagner, *Verizon Ups Ante for Small ISPs*, http://www.internetnews.com/isp-news/article/0,,8_581301,00.html. ARC did not present testimony or evidence during the proceeding to support its comments.

sharing orders in three business days. Covad asserts that Verizon PA has refused to abide by the order in the absence of contractual language between the parties.

When Covad queries the LiveWire database, 10 to 15 % of the responses received indicate the loop has a length of zero feet and is non-qualified. Because there is no such thing as a zero foot loop, Covad submits a manual loop qualification request and often times finds that the loop is qualified for xDSL service.

Covad urges the PAPUC to withhold a positive 271 recommendation until Verizon PA completes collaborative discussions on xDSL services over NGDLC. Covad is dissatisfied with Verizon PA's "Packet at the Remote Terminal Service" ("PARTS") proposal because it limits CLEC offerings to the ADSL service. Covad would like to offer more desirable services to end-users, such as SDSL (which allows higher speeds and provides equal upstream and downstream bandwidth).

During the January 2001 report period, Covad's commercial experience indicates some problems with Verizon PA's xDSL loop performance for CLECs in the aggregate. Specifically, Verizon PA reported that loops it provisioned to CLECs experienced trouble within the first 30 days 6.82% of the time (PR-6-01), while loops provisioned to Verizon PA itself experienced trouble only 1.62% of the time. Verizon PA failed to meet parity for submetric PR-2-01 and PR-2-02, which measures the average interval that Verizon completes non-dispatched and dispatched xDSL loop orders. Verizon PA takes approximately one-half day longer to complete CLEC non-dispatched loop orders than VADI orders. Verizon PA failed submetric PR-3-10, which measures the percentage of xDSL loop orders completed within six days. This happens only 83.78% of the time, which misses the 95% standard. The data reported at PR-5-01 (measuring the percentage of missed due dates for xDSL loops that are caused by inadequate Verizon PA facilities) and at PR-5-02 and PR-5-03 (measuring the percentage of loop orders that are held due to lack of Verizon PA facilities for more than 15 and 60 days, respectively) show that Verizon PA never has facilities issues with its own orders, while, conversely, CLECs

experience a lack of facilities for almost 2% of loops and suffer delays beyond 60 days. Because these metrics count loop orders that are eventually completed, not those that are never provisioned or those that are cancelled, Covad adds that these metrics understate the lack of facilities. The data also shows a lack of parity in Verizon PA's maintenance and repair operations for xDSL loops, as measured by MR-2-02 and the MR-4 metrics. In addition, the report shows Verizon PA's performance in provisioning line sharing is not at parity, as measured by PR-2-01, PR-3-03, PR-3-11, PR-4-02, PR-4-05, and PR-6-01. Covad 3/16/01 Comments.

During the February 2001 report period, Verizon PA's performance in provisioning, maintaining and repair xDSL loops deteriorated and remains discriminatory in some respects. Loops provisioned to CLECs in the aggregate experience trouble within the first 30 days 7.48% of the time (PR-6-01), while loops provisioned to Verizon PA reported trouble only 1.69% of the time. The Covad-specific data shows Covad receives even worse performance than CLECs in the aggregate, i.e the xDSL loops provisioned to Covad experience troubles more than five times as often. Verizon PA provisioned non-dispatch loops for itself more than a day quicker than it did for CLECs (PR2-01). According to Covad, Verizon PA improperly manipulated data to meet the six-day interval for delivering dispatched xDSL loops,²⁸⁹ by calculating PR-2-02 using a volume of merely 172 xDSL loops when Covad, by itself, received a substantially greater number of xDSL loops from Verizon PA in February. Covad calculates the average interval between placing an order and the firm order confirmation date to be approximately twice the six-day interval. Also according to Covad, Verizon PA also manipulated results to show 93.14% completed loop orders within six days (PR-3-10). Covad calculates the percentage to be far smaller for completed Covad orders within six days of the order date. The lack of facilities to fulfill CLEC orders, while having

²⁸⁹ See *Petition of Covad Communications Company for an Arbitration Award*, PUC Docket Nos. A-310696F0002 and A-310698F0002, Opinion and Order (Nov. 15, 2000) at 10 (establishing six day interval for delivering dispatched xDSL loops).

sufficient facilities to fulfill Verizon PA orders, is a growing problem (PR-5-01). Covad 4/12/01 Comments.

During the March 2001 report period, the data on Verizon PA's xDSL loop performance reveals that Verizon PA's performance in provisioning, maintaining and repairing xDSL loops is discriminatory. Using Covad-specific data, Covad calculates that trouble reports are filed for xDSL loops within 30 days of installation (PR-6-01) at a rate of significantly greater than show by Verizon PA's calculations for PR-2-02 and PR-3-10. In the aggregate, CLEC xDSL loops experienced troubles almost 19 times as frequently as VADI line-shared loops (MR-2-02) and similar disparity exists for trouble duration intervals (MR-4 metrics). The line sharing volume in March was too low to draw conclusions about Verizon PA's ability to provision line sharing orders in a timely manner (PR-2-01). Covad-specific data contradicts Verizon PA's data on a number of provisioning metrics (PR-2-01, PR-3-03, PR-3-11 and PR-6-01). Missed due dates for CLECs ran roughly at twice the rate for VADI (PR-4-02 and PR-4-05). Therefore, Covad claims there is not parity. Covad 5/11/01 Comments.

The most central xDSL performance metric in this case is PR-6-01, the percentage of troubles reported within 30 days of installing xDSL loops. While Verizon PA claimed originally to have improved its performance in March, Verizon PA subsequently admitted that its calculations were flawed and that the true data shows that 6.65% of loops provisioned to CLECs in the aggregate experience trouble within 30 days of installation. Covad 5/15/01 Comments.

e. OCA

In its final comments, the OCA states that consumers will benefit by the deployment of xDSL to all areas of the Commonwealth. The OCA is concerned that Verizon PA is not providing CLECs with adequate loop qualification information. The OCA submits that Verizon PA has not yet complied with the Global Order directives on

loop information. Specifically, Verizon PA provides itself with mechanized access to the LFACS database, but allows CLECs mechanized access to the inferior “Live Wire” database. Live Wire is inferior to LFACS because Live Wire does not provide an explanation as to why a loop is not qualified. CLECs incur an additional expense to get the explanation. Live Wire also reports erroneously zero foot loop lengths, again necessitating additional CLEC payments for a manual loop qualification. The OCA further argues that CLECs should be able to obtain loop qualification information for a geographic area and should not be required to submit an end-user address to obtain information by customer. Verizon PA should have loop qualification information available for all central offices and remote terminals. The OCA is also concerned about a lack of progress in Verizon PA’s provisioning of line sharing over fiber. Finally, the OCA is concerned about Verizon PA’s marketplace performance, including performance measured by metrics: OR-6 (ordering accuracy), PR-5 (facility missed orders), and PR-6 (installation quality). It would like a metric created to measure the accuracy of loop qualification information that Verizon PA provides (or should be providing) to CLECs.

f. MCIW

In its final comments, MCIW observes that satisfactory progress has been made regarding line splitting. Its initial criticism has been addressed by Verizon PA’s commitment to implement line splitting in Pennsylvania on the same terms and conditions as the company is doing in New York. In addition, MCIW notes that other issues are unresolved, including nondiscriminatory access to loops via electronic loop provisioning, provisioning of unbundled loops over digital loop carrier (“DLC”) systems, and provisioning of DSL over DLC (including access to DSLAMS at the remote terminal). MCIW suggests that resolution of these issues is not required for section 271 approval, however, it urges the PAPUC to carefully monitor Verizon PA’s level of cooperation in workshops or collaboratives where the technical issues are scheduled to be resolved.

g. Sprint

In its final comments, Sprint argues that Verizon PA has refused to provide access to loop qualification information behind the remote terminal, including the presence of DLC or other remote concentration devices. Comments at 20 – 23. Sprint wants access *en masse* to remote terminal information in order to make sound business decisions about providing xDSL-based products to consumers. Sprint points to the PAPUC’s UNE Remand Order for the proposition that the information should be provided to CLECs on an unfiltered basis and also on the basis on the zip code of the end user, NXX code, or any other basis that the incumbent provides information to itself. While Verizon PA has committed to working on Sprint’s request on a special project basis, Verizon PA has made no firm commitment to Sprint.

h. XO

In its final comments, XO contends that Verizon PA is not in compliance with section 271 due to its failure to provide a seamless transition to end-user customers who are willing to switch their demand for local telecommunications services to XO. XO documented instances where Verizon PA prematurely disconnects services to end-user customers. Premature disconnects adversely impact CLEC operations, business interests and competitive standing. They also could have negative implications for ordinary health and safety of the affected end-users, i.e., disconnects disrupt dial tone and end-users cannot readily reach emergency services. XO acknowledges that Verizon PA has actively expressed during the March 22 technical conference its willingness to work with XO to limit and resolve premature disconnection incidents.

During the January 2001 report period, Verizon PA processed orders inaccurately leading to installation problems that are reported within 30 days after the service has been installed. Verizon PA failed to provide parity service to XO on loop orders, as measured by PR-6-01, which shows a reported z score of –18.35 (where z score in excess of –16.45

constitutes discriminatory service). Likewise, Verizon PA failed to provide parity service with respect to percentage of installation troubles reported within seven days on loop orders (PR-6-02). During the February 2001 report period, Verizon PA's also failed to provide parity performance as measured by PR-6-01 and PR-6-02. XO did not file comments on the March 2001 report period. XO 3/19/01 Comments; XO 4/12/01 Comments.

4. Discussion

KPMG's Metrics Study

The PAPUC retained KPMG to examine metrics reports produced by Verizon PA and participating CLECs for the reporting months of January, February, and March 2001. KPMG submitted its Final Report – Metrics on May 31, 2001. A copy is attached as Appendix E.

KPMG's Provisioning Study

The PAPUC retained KPMG to conduct field observations of selected provisioning processes. KPMG conducted “live” commercial observations of Coordinated Loop Migrations (Hot Cuts), ADSL Line Sharing Loops, and Standalone ADSL Loops (Digital Subscriber Loops). It conducted process reviews of Unbundled Sub-Loops, Unbundled Dark Fiber,²⁹⁰ and ADSL Line Splitting. KPMG submitted its Final Report – Provisioning on May 31, 2001. A copy is attached as Appendix D.

²⁹⁰ See discussion of Checklist item 5 Transport, *infra*, for a complete discussion of dark fiber.

a. Loop Make-Up Information²⁹¹

Innovation is encouraged by ready access to information. We observed that Verizon PA must not be permitted to impede CLEC entry into Pennsylvania through a refusal to provide efficient access to crucial loop data such as total length of a loop and the presence of load coils or bridged taps. Global Order at 116–17. “Efficient access” means “real-time access” or “electronic access,” where possible. Id. at 114 – 115. Electronic access allows CLECs greater flexibility in structuring their work force (because research can be done 24-hours per day) and it supports greater volumes of inquires than will manual systems. Id. The loop qualification database available to CLECs via electronic access in 1999 was structured with information of primary value to the provision of Verizon PA’s own retail ADSL services. Id. at 116. Since then, the means of access has not improved. UNE Pricing R.D. at 33.

In the PAPUC’s recently concluded UNE Rate Proceeding, we noted with approval a stipulation reached between Covad/Rhythms and Verizon PA, which was not objected to by any party to that proceeding. The stipulation provides, in pertinent part, that with respect to the LFACs Loop Qualification issue, the parties agree that any charges sought by Verizon PA for CLEC access to the LFACs database for loop makeup information for Pennsylvania loops will be determined in a subsequent proceeding. We further adopted Sprint’s proposal to have an on-the-record, technical conference and/or workshop to engage in the provision of specific loop quality information between the ILEC and the CLECs. (See R.D., at 30 citing Sprint R.B.)²⁹² The further proceeding will

²⁹¹ We address loop qualification issues under Checklist item 4 (Loops), but it also relates to Checklist Item 2 (unbundled network elements, including operations support systems). The FCC addressed loop qualification when reviewing Verizon’s compliance with Checklist item 2 given that the OSS pre-ordering function includes access to loop qualification information. Mass. Order at ¶ 51 n. 143. (Unclear as to what last sentence means).

²⁹²We further note that in the proceeding Re: Structural Separation of Verizon Pennsylvania, Inc.’s Wholesale and Retail Operations, Docket No. M-00001353, (Order entered April 11, 2001), we have directed a collaborative on electronic loop provisioning.

conducted with in previously established proceeding provided for in ordering paragraph 19 of the Functional/Structural Separations Order to be concluded no later than December 31, 2001. UNE Rate Proceeding, at Ordering ¶ 8.

We allowed Verizon PA's proposed rates to be approved as interim rates pending a re-run of the cost studies as directed therein and any modification resulting from the further UNE investigation provided for in the Functional/Structural Separations Order.

In a section 271 context, the FCC requires Verizon PA to demonstrate that it provides access to loop qualification information consistent with the requirements of the FCC's UNE Remand Order. Verizon PA must provide carriers with the same underlying information that it has in any of its own databases or internal records. MA 271 Order at ¶¶ 54–69; SWBT Kansas and Oklahoma 271 Order at ¶¶ 427-431. Recently, in the context of a section 271 application for Massachusetts, the FCC was faced with concerns similar to what we observed in the Global Order. The FCC recognized the validity of the concerns and found that Verizon had initiated concrete and irreversible steps to implement enhancements to the process.

Specifically, through its change management process, Verizon PA has begun implementing a permanent process for providing loop make-up information in real-time and in electronically parsed form through its LSOG 4 and LSOG 5 pre-order interfaces, with availability expected by October 2001. MA 271 Order at ¶ 57. The information will include segment length by gauge; bridge tap location; bridge tap length; loop composition, such as copper or fiber; existence of digital single subscriber carrier; the existence, spacing, type and quality of load coils; and the presence of DLC. The FCC also held that Verizon MA's interim LFACS process provides useful, detailed information to competing carriers in reasonable time frames. Id. at 61. The permanent enhancements to its loop qualification process will be implemented under a proposal that is "detailed, well-developed, and subject to a prioritized time frame." Id. at 62. Under these circumstances, the determination of compliance avoids perversely incenting

competing carriers to delay implementation of improved OSS and Verizon PA to circumvent the change management process. Id. at 63.

In Pennsylvania, Verizon PA is providing CLECs with the exact same underlying loop information that it has made available and will make available to CLECs operating in Massachusetts. Suppl. Cklist Dec. at ¶ 117; 4/26/01 Tr. at 198. In addition, in our Functional/Structural Separation Order, we have directed that a technical trial of the additional capability of electronic loop provisioning be convened within 30 days of the entry date of that order with a subsequent comment and reply comment period. See Ordering ¶ 11. After this trial, we would be in a better position to assess the feasibility of electronic loop provisioning. The FCC found similar circumstances acceptable for purposes of section 271 evaluation.

Finally, we address access to remote terminal information associated with provisioning of xDSL products and find Verizon PA to be in compliance with its section 271 obligations. Verizon PA provides the same remote terminal information as in New York and Massachusetts. During the course of our proceeding, Verizon PA and Sprint made progress on this issue. Sprint agreed that it would not be necessary for Verizon PA to supply remote terminal address zip codes as long as Verizon PA modifies its existing request forms to remove the zip code field or make it optional. Verizon PA agreed that the “RT CLLI could be used in lieu of the RT address, and agreed to modify the request forms accordingly.” Letter to Ms. Davis from Richard L. Rousey of Verizon PA dated April 5, 2001, Suppl. Cklist Dec., Attachment 239; Sprint Resp. to 5/23/01 Staff Data Request 7. Other related agreements were reached. Id. The scope of the agreement applies specifically to one central office and is contemplated to be expanded to other central offices. Id. Verizon PA will ensure that all CLECs, not just Sprint, will receive RT information on a timely and cost efficient basis. Suppl. Cklist Dec. at ¶ 116. Access to the information will be made available through either interconnection agreement or tariff. Verizon PA Resp. to 5/23/01 Staff Data Request 7.

Verizon PA estimates that it can continue to provide information of the same type already provided to Sprint within 10 business days of receipt of such a request on a going forward basis. The following information would be included: (a) list of remote terminals subtending a central office, (b) addresses of each remote terminal and remote terminal CLLI Code, (c) addresses of end user locations subtending each remote terminal and number of terminating lines fed by remote terminal, and (d) type of feeder cable at remote terminal (copper/fiber). The 10 business days estimated interval would be for requests for central office information on up to 10 central offices at a time. Requests for information on more central offices will be honored at negotiated intervals. Verizon PA Supp. Resp. to 5/23/01 Staff Data Request No. 7.

A process for the provision of this information will be firmed up as Verizon PA gains more experience in this area. Verizon PA currently does not have any industry forecasts regarding the extent or frequency at which it will receive such requests. Absent that information, Verizon PA estimates that it will have the final information request application form and their internal procedures firmed up around the middle of August, 2001. It will, however, continue to accept requests and process them according to the intervals outlined above between now and August. Id.

Verizon PA is developing an interim price proposal that it plans to negotiate with Sprint shortly. The interim price would be subject to true-up, if Sprint so chooses. Any final prices would be submitted to the PAPUC for approval. Id.

b. Stand Alone xDSL Loops and High-Capacity Loops²⁹³

²⁹³ xDSL is a wholesale service that allows a CLEC/DLEC to connect to a Verizon PA subscriber loop via virtual or physical collocation arrangements to provide digital services. All xDSL technology must be provisioned using non-loaded copper cable facilities. Dependent on the physical characteristics such as loop length, a loop can be qualified as ADSL, SDSL, and HDSL each of which has specific operational capabilities. SDSL offers digital bandwidth of up to 2.3 megabits per second within 10 kilofeet of the central office. HDSL offers digital bandwidth of 1.536 megabits per second within 12 kilofeet of the central office. This test covers standalone ADSL observations only. Unlike ADSL Line Sharing, a

DSL service is a broadband service provided over standard copper telephone lines. It is used primarily for high-speed, low-cost connection to the Internet by residential and small business customers. At this time, DSL is available only on phone lines that are all copper from the telephone company's central office to the customer's location. DSL is not available over phone lines that are served by a Digital Line Carrier ("DLC"); lines served by a DLC consist of a fiber optic cable running from the central office to a remote terminal near the customer's location, and a shorter copper line running from the remote terminal to the customer. The technology to provide DSL over DLC is just now becoming available.

There are other limitations on the provision of DSL service. DSL cannot be provided over very long loops. At this time, Verizon PA is limiting its own installation of DSL service to loops that are no longer than 15,000 feet from the central office to the customer. Some CLECs are installing DSL on longer loops. Verizon PA is running tests to see if it can extend its own DSL service to 18,000 foot loops. Also, loops that have load coils cannot be used for DSL service (load coils are added to very long telephone lines to improve their performance for voice grade service). According to Verizon PA, all of its loops greater than 18,000 feet have load coils. Some of its shorter loops also have load coils. Verizon PA will remove the load coils free of charge for a CLEC that

standalone ADSL loop will not support voice service. ADSL can only be ordered as a new line. There are no ADSL migrations. KPMG Consulting 5/31/01 Final Provisioning Rep. at 7.

ADSL requires a non-loaded copper cable facility with a loop length \leq 18Kilofeet from the originating central office (CO). DLECs will issue a loop qualification pre-order transaction for a customer's address prior to issuing an LSR for DSL service. The pre-order initiates a look-up in Verizon PA's Live Wire database. The Live Wire database compares customer addresses with the serving cable facilities. A positive acknowledgement does not guarantee that qualified spare facilities exist, only that the customer's address is served by non-loaded copper within the 18 kilofeet limit. KPMG Consulting 5/31/01 Final Provisioning Rep. at 8.

ADSL installation responsibilities fall primarily with the Verizon PA Outside Plant force. Verizon PA's internal Methods and Procedures instruct the technician to perform a battery of tests. These include a load coil test, noise test, leakage test, and removal of any $\frac{1}{2}$ ringers (also known as MLT isolators). The technician also performs cooperative testing with the DLEC. This includes continuity testing and the sharing of demarcation information. KPMG Consulting 5/31/01 Final Provisioning Rep. at 8.

wants to use such a loop for DSL. Verizon PA will not do this on longer loops. Neither the independent CLECs nor Verizon PA's affiliated CLEC (see below) find it economical to pay for the removal of load coils. The process is expensive; the DSL providers are concerned that they will pay for the removal of the load coils only to see the customer drop the service or transfer to a competitor before they can recover the cost of the load coil removal.

There are various kinds of DSL service. Two distinct categories include "stand-alone" DSL and "line sharing" DSL. "Line splitting" DSL is physically the same as line sharing DSL but it involves different companies. Stand-alone DSL is provided exclusively by the independent CLECs. This type of service is provided by a CLEC that leases a loop from Verizon PA that is separate from any loops used to provide voice telephone service to that customer. The loop is terminated to a DSLAM, a piece of equipment in the CLEC's collocation space in the Verizon PA central office. This type of service always requires a CLEC to obtain a loop that is not already in use. Typically, stand-alone DSL is ordered primarily by small businesses, where as line sharing DSL is aimed at the residential market. Because stand-alone DSL requires a separate loop, the CLEC must pay Verizon PA the monthly recurring charge for the loop.

There are also different grades of DSL service. Generally, the more a customer pays, the faster the service will be made to work. In addition, there are two performance related categories of DSL service: ADSL (Asymmetrical DSL) and SDSL (Symmetrical DSL). With ADSL, the line speed in each direction is not the same; typically, the signals are transferred to the customer at a much higher rate than those going from the customer to the Internet. With SDSL, the line speed in each direction is the same. ADSL is sufficient for many residential customers who simply want faster Internet service; they are interested in primarily download speeds, which is enhanced to a much greater degree than the upload speeds. SDSL is of greater interest to business customers due to their differing requirements. Typically, line sharing DSL is ADSL.

Currently, Verizon PA provides three unbundled loop products intended for use in the provision of xDSL service (2-wire ADSL, 2-wire HDSL, and 4-wire HDSL) plus digital designed loops, which provide loop-conditioning options. Cklist Dec., at ¶ 156. No participant challenged this portion of Verizon PA's data.

Verizon PA recently announced a proposal to make DSL available over some of their DLC lines. On February 6, 2001, members of PAPUC staff attended a meeting in New York, NY, hosted by Verizon PA and held at their corporate headquarters. Verizon PA presented a proposal for an "end-to-end" transport service which Verizon PA asserts is the way to legally implement the concept of providing CLECs with remote terminal access where there is a copper/fiber mix of technology. The proposal is entitled Packet at Remote Terminal Service ("PARTS"). This would involve the installation of special line cards in those remote terminals that are capable of handling them. This would obviously entail primarily the newer remote terminals. This would immediately make DSL available to some customers who cannot now obtain the service. To the extent that Verizon PA would replace all of its longer copper loops with DLC systems, all telephone customers could potentially obtain DSL service.

On April 11, 2001, the PAPUC established a Pennsylvania collaborative "to address the design and deployment of fiber and New [sic] Generation Digital Line Carrier ("NGDLC") and equal access to DSL over fiber." Functional/Structural Separation Order, ordering ¶ 11. The collaborative is tentatively scheduled to be held between July 1 and September 20, 2001 and will include consideration of Verizon PA's PARTS proposal. Covad's dissatisfaction with Verizon PA's PARTS proposal can be most appropriately addressed at the collaborative.

Accordingly, we will not withhold a positive section 271 recommendation pending the outcome of the collaborative discussions on xDSL services over NGDLC.

(1) Field Observations of Standalone ADSL Loop Provisioning

Table 1 below shows results of ADSL provisioning observations, which were conducted by the KPMG Consulting/PAPUC team.

Table 1: ADSL Findings

Product	Observation Point(s)	Provisioning Activity M&P Compliance Assessment			Provisioning Activation Timeliness Assessment		
		# Of Tasks Observed	# Of Compliant Tasks	% Of Compliant Tasks	# Of Activation Attempts Observed	# Of Activation Attempts Completed on Time	% Of Activation Attempts Completed on Time
ADSL (Stand alone)	Various Customer Premises in PA	33	32	97%	8	7	88%

KPMG Consulting 5/31/01 Final Provisioning Rep. at 16.

KPMG reviewed the following Verizon PA M&Ps: *Unbundled 2-Wire Digital Loop-ADSL qualified – 1999-00358-OSP and Wholesale I&M Cooperative Continuity Testing -1999-00538-MDP*. These documents stipulate a wide range of tests for ADSL circuits and include cooperative testing requirements with the DLEC. These include continuity, noise and stress tests, a load coil check and the removal of MLT isolators on outside NIDs. These documents also stipulate that the Verizon PA technician should initiate a cooperative continuity test with the DLEC and provide the demarcation location. KPMG Consulting believes that these documents detail and address all relevant ADSL provisioning issues. KPMG Consulting 5/31/01 Final Provisioning Rep. at 16.

The KPMG Consulting/PAPUC team measured Verizon PA ability to comply with tasks defined in their M&P documentation. The team evaluated each ADSL installation to validate that Verizon PA technicians followed the proper sequence for the defined

tasks. Verizon PA's M&Ps identify certain tasks that technicians must complete during ADSL installations. Depending on the type of the NID, a step may need to be added to check for the presence of a half ringer. The half ringer introduces added capacitance on the line, which must be removed before ADSL service can be provisioned. It is not necessarily the case that non-adherence to methods and procedures results in an adverse impact to the CLECs. For example, tasks that were executed out of sequence presented no adverse impact to the ADSL installation. Id. at 17.

During eight installations, the evaluation team observed a total of 33 tasks. Thirty-two tasks (97%) were executed in accordance with Verizon PA's methods and procedures. (The 3% non-compliance did have an impact on that specific order and resulted in a missed Local Service Confirmation [LSC] date). KPMG Consulting did not include in the results one order that was cancelled due to a lack of access at the customer's premise. Ensuring access is the responsibility of the DLEC. Id.

The KPMG Consulting/Pa PUC Staff team observed eight "live" CLEC ADSL installations to verify that the installations were completed on the agreed-upon due date. Verizon PA provisioned seven of the eight circuits (88 %) where facilities were available, on the agreed-upon due date. The one compliance failure occurred because Verizon PA did not complete a pending disconnect order which would have allowed them to provide the facilities. It should also be noted that one observation was canceled because the Verizon PA technician was unable to gain access to the DLEC's customer premise. It should be further noted that following acceptance of one order, when the Data Competitive Local Exchange Carrier ("DLEC") dispatched a technician to install at the end user location, the circuit failed due to a tie pair trouble on the Verizon PA MDF. While this observation counted as a "pass," this trouble would fall under the C2C metric of installation quality. This metric tracks Verizon PA's ability to provision circuits which are defect free for 30 days after the initial installation. KPMG Provisioning Final Rep. at 17.

(2) KPMG Consulting Metrics Discrepancy Repair

Key measurements for stand alone (xDSL capable loops) are timely return of Firm Order Confirmations; percent missed installation appointments; average completion interval (PR-2-02); provisioning quality or the “I-Code” rate (PR-6-01) because advance service customers that experience substantial troubles in the period following installation of an xDSL-capable loop are unlikely to remain with a competing carrier; mean time to repair; and repeat trouble rate (MR-5-01). Similarly, key measurements for high capacity loops were PR-4-01 (missed appointments), MR-4-01 (mean time to repair), PR-1-07 (average interval offered), PR-2-07 (average interval completed); and, PR-6-01 (percent Installation Troubles within 30 days).

KPMG’s examination of the January, February and March 2001 C2C reports could not substantiate any instances where CLEC identified discrepancies with the Verizon PA PA reported values. KPMG has successfully replaced Verizon’s C2C report.

c. Subloops²⁹⁴

Verizon PA allows collocation inside remote terminals on a space-available basis. Where space is unavailable, competitor may deploy an adjacent cabinet to access subloops through an interconnection cable. Verizon PA allows access regardless of transmission medium. And, competitors may gain access to subloops at technically feasible points of interconnection other than the FDI, e.g., the NID, or the MPOE.

Verizon PA asserts that 12 CLECS have signed interconnection agreements so as to obtain unbundled subloops, and three CLECs have actually purchased subloops. Verizon PA states that it has three standard offerings for subloops: (1) access to the FDI (feeder distribution interface) to the customer's premises (2) access from the feeder distribution interface to the CO and (3) to the extent where it is located in Pennsylvania, house and riser as a subloop offering. Finally, CLECs can order other types of subloops through the BFR process.

(1) KPMG Consulting Process Review of Unbundled Sub-Loops

KPMG reviewed Verizon PA M&Ps: *Telecom Industry Services Operations Center (TISOC) Unbundled Sub-Loop Arrangement (USLA), DRAFT – Outside Plant Engineering Staff Letter, Unbundled Sub-Loop Arrangement (USLA) and DRAFT Copy Unbundled Sub-Loop Network Element Technical Description*. KPMG Consulting reviewed these documents, which focus on two specific service scenarios:

²⁹⁴ A Sub-Loop, as it relates to Unbundled Sub-Loop Arrangement (“USLA”) service, refers to the “loop distribution” or F2 portion of a local loop, extending from the NID or the Rate Demarcation Point (RDP) at the End User premises. It then continues on to an outside plant cabinet in the field. This cabinet is called the “Feeder Distribution Interface” (“FDI”). The FDI houses distribution pairs, and is the point of interconnection between F2 loop facilities and F1, or “feeder” loop facilities, which extend from the FDI back to the Central Office. KPMG Provisioning Final Rep. at 9-10.

USLA service allows a CLEC, with its own switching and F1 facilities, to gain access to Verizon PA's “Sub-Loop” (“F2”) facilities by building its own cabinet, called a “Telecommunications Outside Plant Interconnection Cabinet” (“TOPIC”). The TOPIC is connected by cable to Verizon PA's FDI. USLA service, therefore, provides a CLEC with a 2-Wire or 4-Wire transmission channel, capable of supporting voice or data services, running between the CLEC's TOPIC and the NID or the RDP at the End User location. KPMG Provisioning Final Rep. at 10.

(1) Reactivation of service to an End User, re-use of drop and NID facilities: the Verizon PA technician is dispatched to the Feeder Distribution Interface (FDI) on due date to complete FDI cross connections. The technician will also complete any work at the drop if warranted. For this offering the CLEC is responsible for arranging its dial tone (or DSL equivalent) prior to the due date.

(2) Activation of service to end user, new drop and NID facilities: the Verizon PA technician is dispatched to the FDI and to the end user premises on due date. For this offering the CLEC is responsible for arranging its dial tone (or DSL equivalent) prior to due date.

KPMG Provisioning Final Rep. at 18.

Verizon PA's documentation identifies application intervals for each service scenario: Scenario #1- 44 days, Scenario #2 – 32 days. The CLEC then is afforded 45 days to decide whether to proceed with the installation. The overall installation interval is negotiated on a case-by-case basis and is dependent on many factors such as obtaining rights-of-way and building permits. Verizon PA's documentation details the application process, workflows, ILEC and CLEC responsibilities, architectural requirements and coordinated testing activities. Id.

The USLA is a CLEC specific offering. An Interconnection Cable that is placed to a Telecommunications Outside Plant Interconnection Cabinet ("TOPIC") is provisioned for the use of a single CLEC. It is recommended that the process revolve around a dedicated Interconnection cabinet for each interconnected CLEC. There are positive features in the single carrier TOPIC architecture such as security and accountability for forecasting and infrastructure requests. There are also negative features such as a potential for excess construction of Interconnect cable facilities if cable fill rates are low. The construction of individual cabinets could raise concerns of neighbors and municipal-

zoning officials, as there is potential for multiple clusters around specific FDI cabinet sites. Id.

The establishment and execution of the individual service order requires detailed coordinated activities between the OSS of Verizon PA and the systems of the CLEC requesting newly installed or existing conversions. In the present network architecture a service that is using a distribution cable is associated with a feeder cable and the records are set up so that a circuit ID can reference both elements. A USLA will require an individual record reference. Id. at 19-20.

As described by KPMG Consulting, the following is Verizon PA's proposal to aid in the modification of the OSS to support CLEC USLA provisioning:

The service establishment process will be a two-step process with the site identification and the TOPIC interconnection construction required in advance of individual service order acceptance. Once the TOPIC is constructed and the assignment records are created, the CLEC will be able to send an LSR (Loop Services Request) to establish individual cross connections to sub-loops. The provisioning process will involve a complex mixture of OSS such as Loop Facility & Assignment Control System (LFACS), Service Order Processor (SOP), Premise Information System (PREMIS), and WFA/DO that will have to be adapted to create assignment facilities to connect individual networks together. KPMG Consulting is not aware of any telecommunications carrier that has adapted these affected shared systems in a manner applicable to USLA requirements.

The major impact of the USLA architecture is on the LFACS inventory and provisioning system. LFACS will require modification in the assignment process that uses a link between the end user address and the serving facility to establish an outside plant assignment. LFACS is programmed to operate with the fundamental assumption that a complete network connection is needed for the establishment of service to the end user. Cable counts within