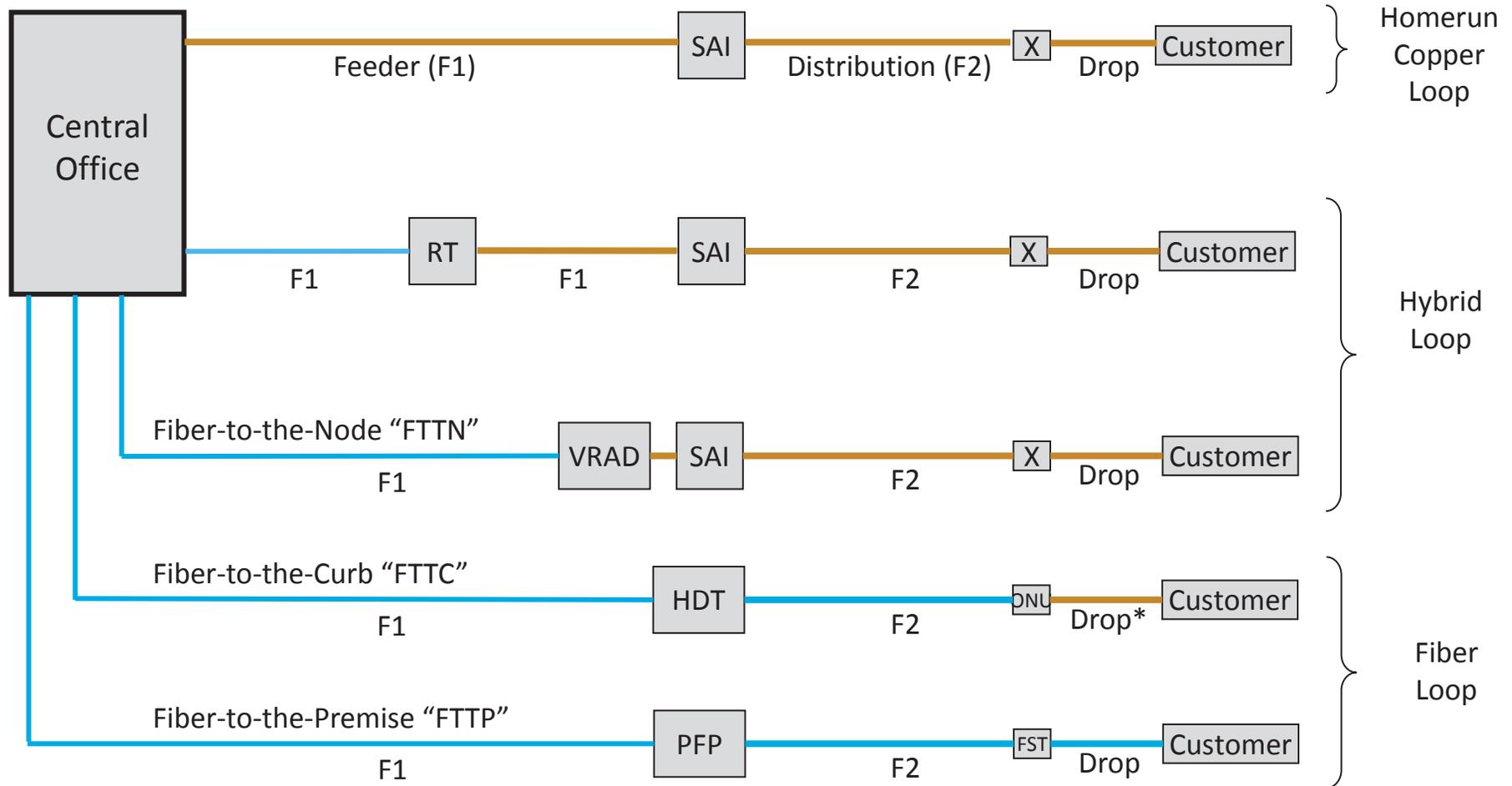


Unbundled Network Elements Loops

May 2014



Architectures Offered Today – Illustrative



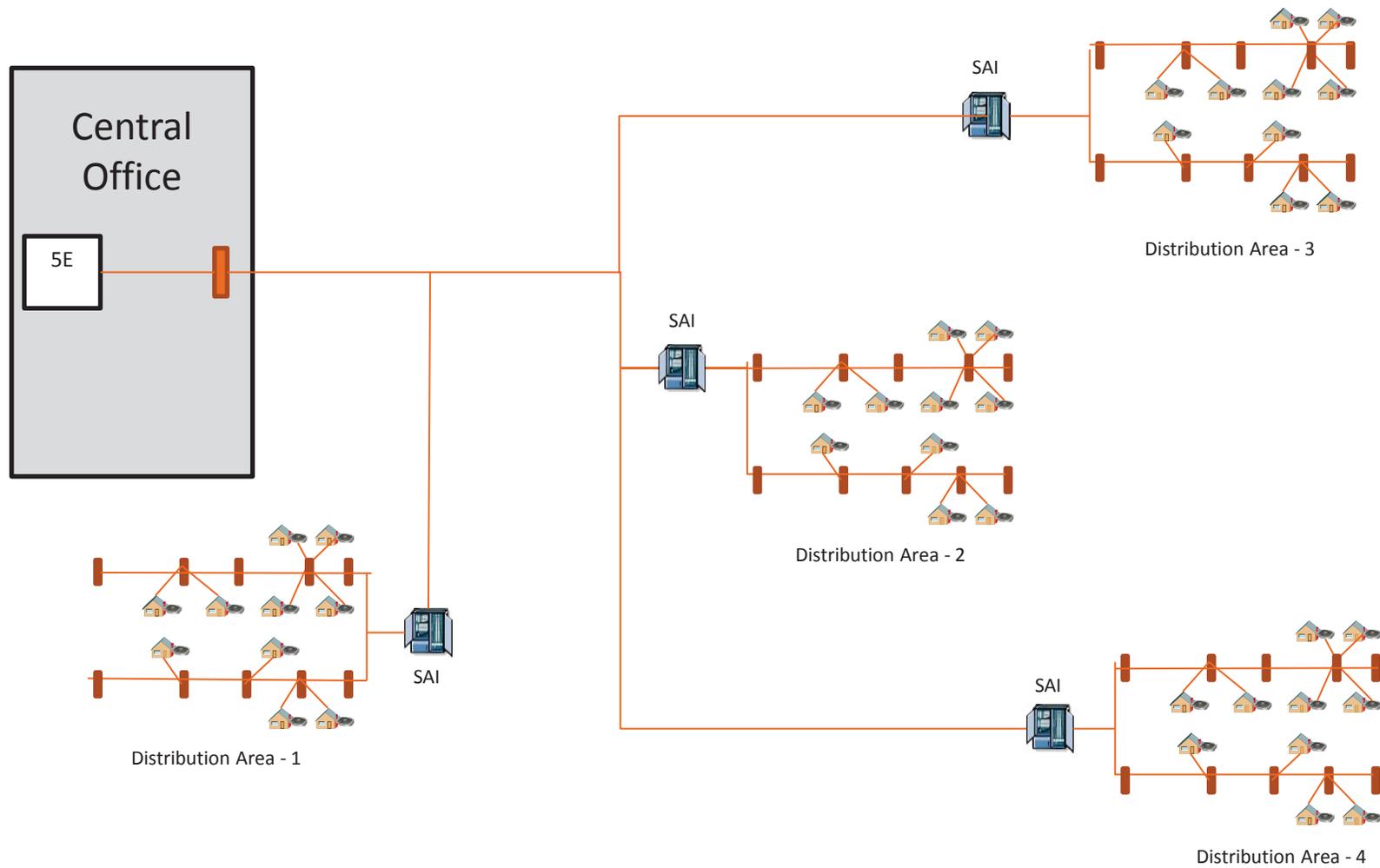
— Copper
— Fiber

SAI = Serving Area Interface
X = Serving Terminal
RT = Remote Terminal

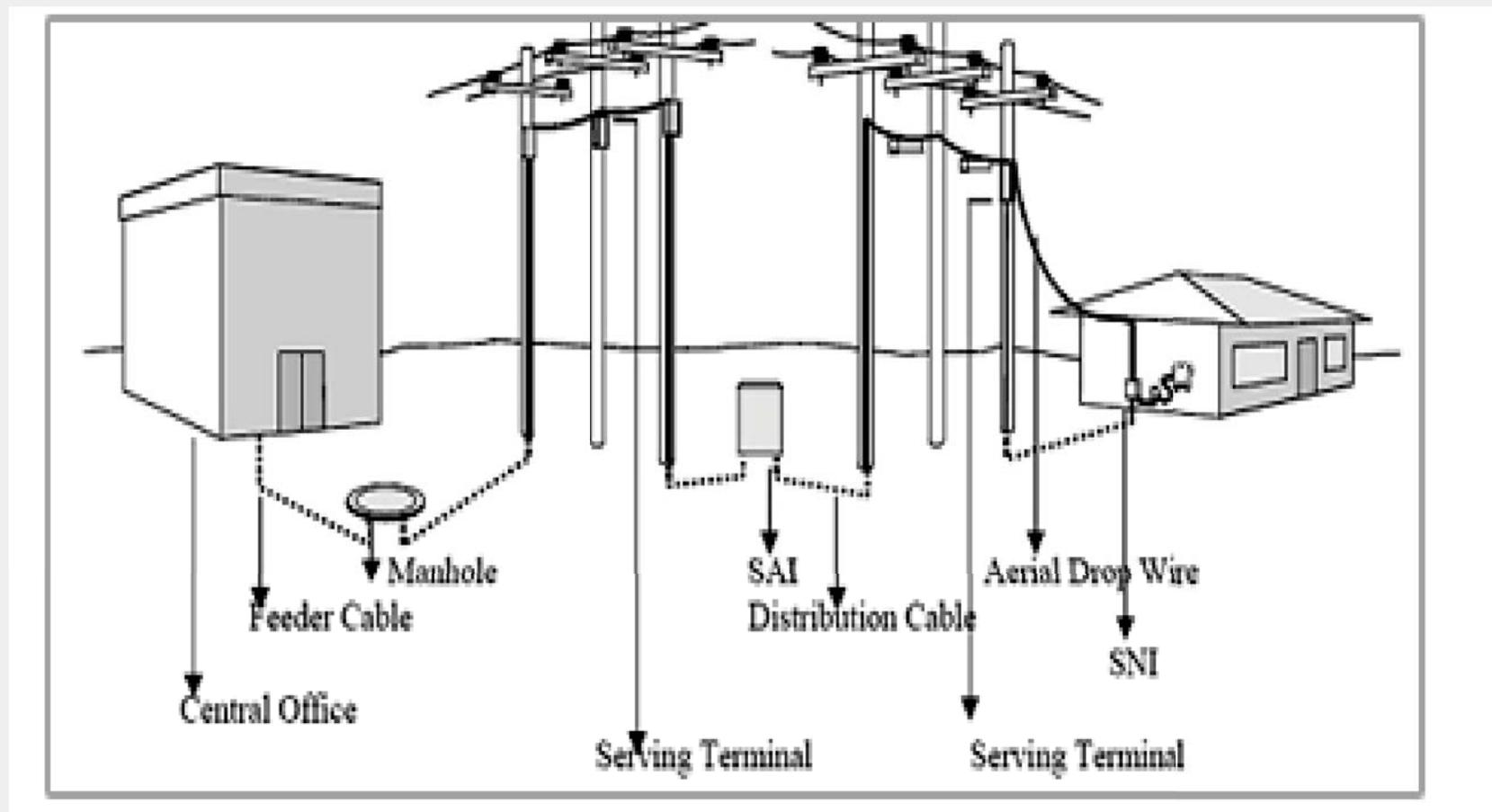
VRAD = Video Ready Access Device
HDT = Host Digital Terminal
ONU = Optical Network Unit
PFP = Primary Flex Point
FST = Fiber Serving Terminal
Drop* = FTTC copper drop < 500'



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CLEC Collocation and Access Rights

General Points of Collocation

Central Office	(CO)
Remote Terminal	(RT)
Controlled Environment Vault	(CEV)
Hut	
Serving Area Interface	(SAI)
Multi-Dwelling Unit	(MDU)
Multi-Tenant Environment	(MTE)



CO



SAI



600 Pair Cable

Nondiscriminatory Access to:

- Poles
- Ducts
- Conduits
- Rights-of-way



CURRENT LOOP AND TRANSPORT UNBUNDLING OBLIGATIONS

Copper Loops



National Impairment. ILEC required to make active and spare facilities (including TDM loop electronics) available as UNEs.

Hybrid Loops



Access to TDM-based features in two contexts:

CLEC provides narrowband (i.e., voice/DS0) services: ILEC provides either:

- hybrid loop (TDM only) capable of voice grade service; or
- Spare-home run copper loop.

CLEC provides broadband services: ILEC provides access to TDM features of hybrid loop, including DS1 or DS3 capacity (where impairment exists).

Fiber Loops (FTTC/FTTP)



Overbuilds (“Brownfield”): Must provide access to the overbuilt copper loop. If copper loop retired, must provide 64kpbs path over fiber loop.



CURRENT LOOP AND TRANSPORT UNBUNDLING OBLIGATIONS (con't)

High Capacity (DS1/DS3) Loops



Unbundling required, subject to certain per-building caps, except in wire centers where specific triggers met.

Sub-loops (Distribution)



Must provide copper sub-loop as a UNE. Also must provide unbundled access to multiunit premises wiring regardless of capacity level or type of loop.

Sub-loop (Feeder)



Access required only as part of complete transmission path for stand-alone copper loop (*i.e.*, where the feeder is copper) or a hybrid loop (where feeder is fiber) but only to the TDM functionality of such hybrid loops.

Dedicated Transport



Required to provide DS1, DS3 and Dark Fiber dedicated transport as UNEs except where certain triggers met.



WHAT DOESN'T HAVE TO BE UNBUNDLED NOW?

Hybrid Loops



No unbundled access to packet-switched features. Also no obligation to build TDM functionality into a new hybrid loop or into an existing hybrid loop that never had TDM functionality.

Fiber Loops (FTTC/FTTH)



New loops ("Greenfield"): Not required to provide fiber loops as a UNE to customer premise previously not served by any loop
Overbuilds ("Brownfield"): Generally no requirement to provide UNE access to fiber loop (except for 64 kbps channel when copper loop retired).

Subloop (Feeder)



No obligation to offer as a stand alone subloop.

Dark Fiber Loops
Local Circuit Switching
Packet Switching



No Unbundling requirement.

Ethernet



Fiber Loops and Hybrid Copper-Fiber Loops

Rationale for Non-Impairment Finding

“[O]ur decision not to unbundle stand-alone packet switching is also guided by the goals of, and our obligations under, Section 706 of the Act. In order to ensure that both incumbent LECs and competitive LECs retain sufficient incentives to invest in and deploy broadband infrastructure, such as packet switches, we find that requiring no unbundling best serves our statutorily-required goal. Thus, we decline to require unbundling on a national basis for stand-alone packet switching because it is the type of equipment used in the delivery of broadband.” *Triennial Review Order*, ¶541.

“We therefore hold that the Commission reasonably interpreted § 251(c)(3) to allow it to withhold unbundling orders [for hybrid loops], even in the face of some impairment, where such unbundling would pose excessive impediments to infrastructure investment.” *United States Telecom Ass’n v. FCC*, 359 F.3d 554, 580 (D.C. Cir. 20014), *cert. denied*, 543 U.S. 925 (2004).

“An unbundling requirement under these circumstances seems likely to delay infrastructure investment, with CLECs tempted to wait for ILECs to deploy FTTH and ILECs fearful that CLEC access would undermine the investments' potential return. Absence of unbundling, by contrast, will give all parties an incentive to take a shot at this potentially lucrative market.” *USTA* at 584.



Result

Massive investment in broadband

ILECs, Cable MSOs, CLECs, wireless providers and others are providing speeds up to 1Gbps



Increased competition for IP and Packet Switched services

CLECs are among the top providers of Ethernet services*

- tw telecom (#3)
- XO (#7)
- Level 3 (#9)

Cable companies are also among the top providers of Ethernet services*

- Time Warner Cable (#5)
- Cox (#6)
- Comcast (#8)

*2013 U.S. Carrier Ethernet Leaderboard; Aggressive service pricing intensifies in metro markets and Cable MSOs gain ground, Vertical Systems Group (Feb. 12, 2014), available at <http://www.verticalsystems.com/vsqli/2013-u-s-carrier-ethernet-leaderboard/>.



Impact of TDM-to-IP Transition on UNEs

Broadband elements with no existing unbundling obligation (e.g. packet switching, fiber loops)



No change

Copper loops



Obligation to provide bare copper loops/subloops will continue unless and until copper loop (or feeder portion) is retired. No obligation to make available packet switched loop electronics.

Hybrid Loops



No UNE requirements for new packet-switched only hybrid loops. Must provide home run copper loop or a copper subloop (distribution) if the copper has not been retired.

High Capacity (DS1/DS3) Loops



As “TDM-based services” (per *TRO ¶1294*), no high capacity loop UNE requirement in all-IP environment. Must provide home run copper loop/subloop (to extent copper has not been retired and is available) to which CLEC can attach own electronics.

Sub-loops



No change in existing requirements

“No Degradation” Rule

Loop unbundling rules prohibit ILECs from engineering the transmission capabilities of the network in a manner, or engaging in any policy, practice or procedure, “that disrupts or degrades access to a local loop or subloop,” including the TDM capabilities of the hybrid loop, for which a CLEC may obtain or has obtained access under those rules. 47 C.F.R. ¶51.319(a)(8).

Rule adopted in the *TRO* as a means of enforcing the ILECs’ nondiscrimination obligations under Section 251(c)(3). *TRO*, ¶294.

Rule not intended to preclude an ILEC from retiring the *entire* TDM network.

- The FCC noted in the *TRO* that the prohibition against disrupting or degrading the TDM capabilities of hybrid loops was *not* intended to prevent ILECs from removing copper loops from their plant, so long as they complied with the applicable network notification requirements. *TRO*, ¶294 and n. 847.
- Requiring an ILEC to continue to maintain and make available to TDM-based transmission facilities as UNEs if the ILEC would not otherwise do so for itself or its retail customers would conflict with the Commission’s stated goal of facilitating the transition to all-IP broadband networks and services.



Network Modification Rules

ILECs required to provide public notice, such as through industry fora or publications, of “any network change” that:

- “will affect a competing service provider’s performance or ability to provide service”;
- “will affect the ILEC’s interoperability with other service providers;”
- “will affect the manner in which customer premises equipment is attached to the interstate network;”, or
- “will result in the retirement of copper loops or copper subloops, and the replacement of such loops with “fiber-to-the-home loops” or “fiber-to-the-curb loops.”

47 C.F.R. § § 51.325, 51.329.

Affected carriers may object to the *timing* of the proposed modification. The *fact* of the proposed modification is not subject to objection or Commission review/approval.

Rules are consistent with Section 251(c)(5), which provides only that an ILEC must provide reasonable public notice of network changes.

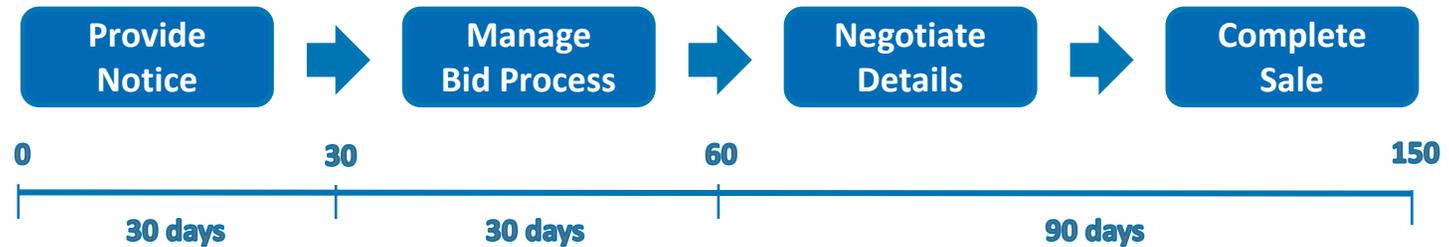
CLECs cannot demand access to “a yet unbuilt superior” network, and thus must take an ILEC’s network as they find it. *Iowa Utils. Bd. v. FCC*, 120 F.3d 753, 813 (8th Cir. 1997), *rev’d in part on other grounds*, 525 U.S. 366 (1997).

“[R]equiring an incumbent to maintain two networks ... reduce[s] the incentive for incumbents to deploy” next-generation facilities and “siphon[s] investments away from new networks and services.” *National Broadband Plan* at 49.



AT&T proposes to sell its Retired Copper to CLECs

Process & Timing



Commercial Agreement

Bill of Sale	Standalone Structured Access
<p>General T&Cs</p> <ul style="list-style-type: none">• Commercial Offering• Price, terms and conditions for the retired copper cable• Cost of re-terminating cable at frame and SAI are borne by purchaser• Facilities are accepted "as-is" with no warranties• All maintenance and liabilities are assumed by purchaser• 90 days to negotiate and sign agreement, otherwise offer is rescinded <p>Transitional Services Agreement</p> <ul style="list-style-type: none">• Provides a 90 day transition period• Sets forth responsibilities of both parties during the transition period• Includes operational issues such as maintenance, air pressure, etc.	<p>Structured Access Agreement</p> <ul style="list-style-type: none">• Access to poles and/or conduit• Sale and/or lease terms for poles• Lease terms for conduit

