COMMON BUSINESS MODELS

CROSS-SECTOR INFRASTRUCTURE SHARING TOOLKIT
3 Common business models

156. Cross-sector infrastructure sharing arrangements take many forms and are often designed around the unique circumstances and needs of participating infrastructure owners and telecommunications network operators. This module generically describes and provides examples of some of the more common business models. These business models are not mutually exclusive, nor is every model appropriate for every infrastructure owner. An infrastructure owner and the telecommunications network operators with whom it shares infrastructure can take advantage of more than one at a time, or combine them into hybrid forms.

3.1 Joint planning and construction of infrastructure

157. The most efficient form of infrastructure sharing involves joint planning and construction of infrastructure. This business model typically also involves the adoption of an additional business model for the relationship between the parties and the infrastructure following the planning and construction phase. Even where each participant will separately own and control its improvements, fixtures and equipment, this business model inherently involves ongoing sharing of the same lateral corridor. Through joint planning and construction, infrastructure owners and telecommunications operators can coordinate the deployment or refurbishment of infrastructure. By working together in this way, the participants save on costs and can produce a superior outcome in terms of infrastructure suitability and flexibility, with less disruption to economic and social activities in the area of construction than may be created by separate projects at different times.

158. Under this model, because sharing is considered beforehand, there is a greater potential to maximize the possible efficiencies. Infrastructure sharing can be built into the design to most efficiently address the needs of all participating parties, including telecommunications operators. In contrast, after-the-fact sharing often requires additional expenditures to modify or supplement the existing infrastructure, such as the cost of extending connectivity from the infrastructure access points to where telecommunications operators need it. After-the-fact sharing also often requires telecommunications operators to accept suboptimal technical or geographic conditions that could have been optimized if sharing had been anticipated when the existing infrastructure was constructed or refurbished.

Box 4: Roads and urban planning authorities can provide leadership in proactive planning

An excellent example of joint planning and construction of infrastructure is the Kennedy Interchange, a successfully completed roadway construction project in Cobb County, Georgia, USA. In that project, the Georgia Department of Transportation managed construction of a new four-lane roadway, including a bridge and an overpass, to provide access to local businesses and land that would later be developed from major highways. To obtain some contribution toward its own construction costs, the Department of Transportation involved local electric utilities, telecommunications operators and cable television companies in the planning process. Following a joint planning exercise, the utilities and network operators agreed to share the cost of the construction of a duct system in the median of the new road that would house their electricity lines and fiber optic cables.

By including these parties in the planning and construction process, the Department of Transportation ensured a more efficient and less costly investment by all participants. The
telecommunications operators, cable television companies and electric utilities avoided the cost of separately burying their own cables alongside the roadway and hanging them from the side of the roadway’s bridge and overpass. In turn, the Department of Transportation avoided the need for disruption of traffic and damage to its new infrastructure which otherwise would have been necessary. The Department of Transportation also reduced its required investment in constructing the new roadway by sharing costs with participating utilities and telecommunications operators who also benefited from cost savings.

Government planning agencies can also ensure that new infrastructure is constructed to allow for future sharing. One example is the Abu Dhabi Urban Planning Council, a statutory government agency created in 2007 to address Abu Dhabi’s urban development. In 2014, the Council issued an extensive Utility Corridors Design Manual to provide roadway planners, developers and engineers with guidelines for the location and width of underground corridors for utilities such as water and pipes, electricity lines, and fiber optic cables beneath newly constructed roads.

159. Where practical, joint planning and construction projects obviously benefit all parties involved. However, they inherently have limited potential, and are only practical when the host infrastructure is being developed or refurbished. Where sharable infrastructure already exists, and is not slated for refurbishment any time soon, broadband networks which share infrastructure must do so by being retrofitted on the existing infrastructure.

3.2 Hosting third-party telecommunications facilities

160. Another common business model for infrastructure sharing is for the infrastructure owner to host third-party telecommunications facilities installed by network operators in, on or under the owner’s existing infrastructure. This is the business model previously employed by railways in hosting telegraph poles and lines in their rights of way and still employed by electric utilities in hosting copper telephone lines, coaxial cable television lines and fiber optic cables on their distribution poles. It is the oldest and most common form of cross-sector infrastructure sharing between the telecommunications sector and other network sectors.

161. Under this business model, the host infrastructure owner authorizes a telecommunications network operator to install its own facilities on the host infrastructure. The compensation to the infrastructure owner may comprise a combination of cash payments (which could be one-time and/or recurring), in-kind use of excess capacity on the telecommunications facilities installed, or the provision of telecommunications services by the operator to the infrastructure owner.

162. The host infrastructure owner’s role is limited to being a passive landlord through allowing defined use of its land corridors and the improvements and fixtures in those corridors. The host is not required to invest in or own any telecommunications facilities or provide any telecommunications services to the guest network operator. Although the specific arrangements may vary, the telecommunications network owner is essentially leasing space for the installation

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4 “Retrofitting,” as used here, refers to the installation of new elements on, or partial replacement of existing elements of, existing infrastructure to permit its joint use for telecommunications.
of facilities. Often, much of the value to the telecommunications network operator is the ability to piggyback on the existing rights of way of the host infrastructure, such as an existing road, railway, pipeline or electricity transmission line, and possibly to make use of the host owner’s other improvements and fixtures, such as ducts, poles or towers.

Box 5: Utilities can host third-party telecommunications facilities

One example of an infrastructure owner that hosts third-party telecommunications facilities is Lesotho Electricity Company (LEC). LEC is a state-owned monopoly provider of electricity transmission and distribution services in Lesotho. LEC’s distribution grid is extensive and distributes electricity to all of its retail customers. Responding to the commercial need of Vodacom Lesotho, one of two mobile network operators in Lesotho, to connect its mobile radio base stations with fiber optic cable, in 2015 LEC authorized Vodacom to install fiber optic cable on its electricity distribution poles. Vodacom has completed the first phase of installing ADSS cable below the electric cables on the poles, and plans to install additional cables in later phases as it extends fiber to more towers.\(^5\)

Vodacom is compensating LEC for the pole attachment authorization through three components. First, Vodacom will pay a one-time upfront fee for any “make ready” work required by LEC to make a pole ready to allow telecommunications attachments. Second, Vodacom will pay LEC an annual fee for each pole used. Third, Vodacom will provide LEC with free use of one dark fiber pair in each cable for internal electric utility use. LEC plans to use the dark fiber pair to support the implementation of smart grid technology in its electricity business which will allow pre-pay customers to recharge their accounts from the premises being served. LEC has also offered to provide additional operations and maintenance services to Vodacom, whereby LEC’s line crews can, on request, provide additional ancillary maintenance and repair services, such as switching over lines to new poles when a pole has to be replaced or moved.

Another example of an infrastructure owner that hosts third-party telecommunications facilities is found in Tokyo’s sewer system. The Tokyo Metropolitan Government began installing fiber optic cables in its existing sewage conduits in the late 1980s to be able to control sewage treatment plans remotely. Subsequently, the Tokyo Government began to authorize third-party telecommunications network operators to install fiber in its sewer system.

3.3 Commercializing excess utility dark fiber

163. Another common business model for cross-sector infrastructure sharing is the provision by the infrastructure owner to telecommunications network operators of use of dark fiber installed and owned by the infrastructure owner. In common telecommunications industry parlance, dark fiber has not been connected to transmission equipment, whereas lit fiber has been.

164. The dark fiber business model is often adopted by infrastructure owners which have already installed (or planned to install) fiber optic cable for internal use. Increasingly, infrastructure owners install their own fiber optic cables for internal communications purposes. For example, electric utilities around the world now routinely install fiber optic cable on all new or refurbished electricity transmission grids to enable network protection, SCADA activities, and better load management through interaction between supplies and loads on the grid. Railway operators also

\(^{5}\) In a hybrid approach, LEC has employed the hosting business model on the electricity distribution system, and the dark fiber business model (discussed in the next submodule) on the electricity transmission grid, providing Vodacom with an end-to-end fiber solution for every tower in its mobile network.
routinely install fiber optic cables along their railways to manage signaling, switching and rail track safety equipment. Though less common, road authorities and pipeline operators sometimes install fiber optic cable to enable management of their various transport networks.

165. Fiber optic cable usually contains multiple fibers, which are typically lit and used in pairs with a separate fiber carrying traffic in each direction. The capacity of fiber to carry large amounts of data at high speed, and the relatively small bandwidth needs of infrastructure owners, result in the utility or other infrastructure owner typically needing only one or two fiber pairs for internal use. For example, electric utilities typically require two fiber pairs, one for protection and the other for all other internal communications. However, fiber optic cable used in terrestrial applications (as opposed to submarine fiber optic cable) typically contains well more than two pairs of fiber, with, for example, the total fiber count in optical ground wire (OPGW) cables used by electric utilities ranging from ranging from 12 to 144 fibers (i.e. six to 72 pairs). This inherent excess capacity of dark fiber means virtually every utility which has installed fiber optic cable on its infrastructure is in a position to share dark fiber with commercial telecommunications network operators.

166. In some older fiber optic cable installations, infrastructure owners tended to install cable with the minimum fiber count available, but this was still more than necessary for the owner’s internal needs. As utilities have begun to recognize the opportunity to commercialize excess dark fiber, many now install cable with higher fiber counts than the minimum. This is because the marginal cost of the additional fibers is minimal in relation to the project investment and the additional fiber expands the utility’s opportunities to commercialize its spare dark fiber without running out.

167. In these transactions, ownership of dark fiber is typically not sold by the utility to the telecommunications operator, as the fiber remains an integral part of the fiber optic cable installed on the host infrastructure and used in the utility’s core business. However, the dark fiber can be made available for use by telecommunications network operators on either:

- a capital lease basis (long-term right of use with a large portion of the total consideration being paid up front as a purchase price for the right of use and a smaller increments of the total consideration being paid on a recurring basis as operations and maintenance fees); or
- an operating lease basis (short-term right of use, typically renewable, with the total consideration being paid on a recurring basis as rent or service fees).

168. Where dark fiber is made available on a capital lease basis, the typical interest granted is called an indefeasible right of use (or IRU). An IRU is a unique form of property right conceived in the early 1960s and first noted in a regulatory proceeding to enable AT&T to obtain authorization for the TAT-4 copper-based submarine cable system from the US Federal Communications Commission. In that proceeding, AT&T agreed to share ownership interests in the channels on the cable with multiple operators, each of which would be assured of long-term availability and predictable pricing, as a condition for securing the requested cable landing license.

169. An IRU is analogous to a capital lease, although different in certain respects. For example, the owner of an IRU in a fiber pair in a cable is usually only granted access rights to the fibers at the end points of each segment of cable where the fiber may be connected to equipment or spliced or patched to other fiber. An IRU purchaser typically does not take possession of the property.

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acquired, and does not have rights to access or interfere with the fiber optic cable containing the fiber in which an IRU is purchases except at the segment endpoints.

170. The acquisition of an IRU is usually considered a *purchase of a property interest* which is fully vested for a variety of purposes. These include bankruptcy and insolvency, where the IRU owner has rights under the contract establishing the IRU which are perfected and not executory, and therefore cannot be rejected or avoided by the IRU grantor’s estate as an executory obligation. An IRU is also considered a property interest under property and contract law, where the IRU owner’s rights are treated as an equitable interest in the fiber optic cable enforceable against subsequent owners of the fiber optic cable who may not be bound by contracts entered into by the IRU purchaser with the previous owners of the cable. Of significant importance to many telecommunications operators is that an IRU, if properly drafted, is treated as the purchase of a capital asset for financial accounting purposes.

171. A dark fiber lease is treated as the *provision of a service* pursuant to an executory contract. It subjects the customer to risks of provider insolvency and third-party transfers, and payments are accounted as an operating expense. On the other hand, the dark fiber customer typically does not pay in advance for more than a year of service (and the recurring payments may also be quarterly or monthly), so the risks from insolvency or third-party transfers are minimal. While loss of capital expenditure treatment can adversely impact the customer’s profit and loss statements, a dark fiber lease offers the advantage of requiring significantly less financial commitment by the dark fiber customer.

172. In the case of either a dark fiber IRU or dark fiber lease, a distinguishing aspect of a dark fiber is that the cable owner makes the fiber available without equipment. The telecommunications operator must install, operate and maintain its own equipment to enable the dark fiber to be used as a fiber optic network.

173. Although the host retains ownership of the fiber optic cable in which fiber is offered to third-party telecommunications network operators on an IRU basis, the host only *offers passive infrastructure* and, where an IRU is involved, the host *sells a property interest* in that infrastructure. For this reason, the law in many (but not all) jurisdictions treats dark fiber transactions as not involving the provision of telecommunications, and therefore not requiring a license to provide telecommunications or electronic communications services. However, the host may nonetheless be regulated in respect of offering dark fiber, but as a utility or infrastructure owner offering mandated access to utility installations or infrastructure rather than as a telecommunications or electronic communications services licensee.

174. Unfortunately, even where the law appears to have contemplated this regulatory framework, some regulators have treated dark fiber IRUs and dark fiber leases as the provision of telecommunications or electronic communications services and insisted that infrastructure owners obtain a license as a prerequisite to sharing their infrastructure.

**Box 6: Utilities can commercialize excess capacity on existing fiber networks**

One example of an infrastructure owner which has implemented the dark fiber business model is Administrador de Infraestructuras Ferroviarias (Adif) in Spain. Adif is a state-owned enterprise which owns and manages of 15,130 km of railway lines and the associated rights of way. Adif installed fiber optic cable along its long-haul and metropolitan railway lines for internal use. To generate alternative revenue sources from its fiber investment, Adif leases dark fiber to
telecommunications network operators. As of 2014, Adif was Spain’s largest neutral dark fiber operator, managing 25% of the commercialized dark fiber in Spain.

A second example of the dark fiber business model was implemented by Southern Telecom in the United States. Southern Telecom is the telecommunications subsidiary of Southern Company, a public utility holding company which owns electric utility operating subsidiaries serving customers in the states of Alabama, Florida, Georgia and Mississippi. Southern Telecom was established to commercialize excess dark fiber on the transmission grids of Southern’s electric utility operating subsidiaries. Today, Southern Telecom’s fiber network comprises 1,300 route miles, including fiber routes on the transmission grid of other electric utilities which Southern Telecom has obtained through fiber swaps, and it provides long-haul and metropolitan dark fiber connecting Atlanta with other smaller cities throughout the southeastern United States. Its primary customers are major telecommunications operators.

A third example of the dark fiber business model has been implemented by Lesotho Electricity Company (LEC), which, as noted in Submodule 2.2, has adopted a hosting model on its distribution system to supplement its offering of dark fiber on its transmission grid. LEC had invested heavily in constructing an internal fiber optic network along its transmission grid to support teleprotection, SCADA and internal voice and data communications. LEC installed ADSS fiber on its lines around the capital, Maseru, in 2002 and had a more extensive national fiber rollout in 2012 using OPGW fiber. All of LEC’s installed fiber optic cables had 12 core fibers (6 pairs) each, but LEC only requires one fiber pair for its own use, leaving 5 pairs available for commercialization.

In 2015, LEC entered into an agreement to sell Vodacom Lesotho, a mobile network operator, 15-year indefeasible rights of use of three separate bundles of dark fiber pairs to be put into service over a three-year period. The first bundle, to be put in service immediately after signing, comprises a dark fiber pair on all existing fiber optic cable installed on LEC’s transmission grid located in metropolitan Maseru, the capital city of Lesotho. The second bundle, to be put in service a year after signing, comprises a dark fiber pair on all existing fiber optic cable installed on LEC’s national transmission grid. The third bundle, to be put in service two years after signing, comprises a dark fiber pair on specified metropolitan and national route segments of LEC’s transmission grid on which LEC committed to install fiber optic cable prior to the agreed ready-for-service date.

Under the agreement, LEC maintains ownership and responsibility for operations and maintenance of the dark fiber in which Vodacom has purchased IRUs. The consideration paid by Vodacom to LEC comprises an upfront purchase price paid for the IRU and an annual maintenance fee payable after the first year. LEC plans to use part of the proceeds of the sale of the IRUs in the first two bundles to finance its construction of the fiber optic cable required for the third fiber bundle, which will also expand the footprint of LEC’s internal network to close critical gaps.

A third example of this business model is the dark fiber leasing business conducted by Bombay Gas. This example is distinct from the others in that the fiber installed on the host infrastructure was intended to be commercialized and was never used by Bombay Gas for internal purposes. Rather, Bombay Gas owns pipes, conduits, service-pipes and other infrastructure installed under streets and bridges over 150 years ago for the delivery of piped gas in what is now the city of Mumbai. In the mid-1980s, the piped gas business was discontinued at the direction of the

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Government of India, which favored development of natural gas. However, about a decade ago, investors realized the potential to use Bombay Gas’s existing but dormant rights of way and pipes to install fiber optic cable. By mid-2015, Bombay Gas had installed over 100 km of fiber optic cable, from which it leases dark fiber to many of India’s major telecommunications network operators. Such leasing provides an attractive alternative for the network operators, which would otherwise have to bury or hang their own fiber networks in congested Mumbai, where burying fiber in public streets is costly and difficult and where aerial fiber, the likely alternative, is vulnerable to vandalism, traffic accidents, the elements and other risks.

3.4 Utility joint venture with a third-party telecommunications operator

Another common business model is for an infrastructure owner to enter into a joint venture with a third-party telecommunications network operator. In this business model, the host infrastructure owner provides its existing utility infrastructure, including the excess capacity in any existing fiber optic cable facilities. Either or both of the parties may provide the capital to fit out the existing excess fiber or new fiber as an operating telecommunications network, although the telecommunications operator will typically assume that responsibility. In addition, the telecommunications operator will assume responsibility for operating the network, marketing and sales of services, providing services and customer support, billing and collections. The financial arrangements between the joint venture parties can vary widely depending on the relative contribution each makes, how those contributions are valued, the market potential of the business, the preferences of the parties, and the regulatory environment.

Box 7: Utilities can establish joint ventures with experienced telecommunications operators

One example of the joint venture model is the telecommunications business of CEC Liquid Telecom, a joint venture of the Copperbelt Energy Company Plc (CEC) and Liquid Telecommunications Holdings Limited of Mauritius (Liquid Telecom). CEC is a Zambian electric utility that owns and operates transmission and distribution systems to supply electricity to mining companies based in the “Copperbelt” region of Zambia. CEC has installed OPGW fiber optic cables on its electricity transmission lines. Liquid Telecom is a major telecommunications network operator in Eastern, Central and Southern Africa serving Africa’s largest mobile network operators, ISPs and businesses with fixed international and domestic telecommunications services.

Liquid Telecom sought to expand its business into Zambia and CEC was seeking a partner with telecommunications expertise and a customer portfolio. The two businesses formed a joint venture in 2011. CEC transferred control of its existing telecommunications infrastructure to the joint venture. The joint venture operates a commercial telecommunications business in Zambia. CEC still operates and maintains the fiber optic cable network for an arm’s-length service fee. The joint venture primarily offers wholesale capacity to telecommunications operators between points of presence on CEC’s electricity grid, but is expanding coverage to include a FTTP network in some heavily populated areas.

Another example of the joint venture model is the telecommunications business of Electricity Supply Corporation of Malawi (ESCOM), Malawi’s monopoly provider of electricity generation, transmission and distribution services. In 2004, ESCOM established a fiber optic unit tasked with providing reliable fiber connections between substations and power stations to support teleprotection applications, a SCADA system and internal communications. The fiber installed on the transmission system comprised 6-pair OPGW on the transmission grid and 6-pair ADSS on
the distribution system. Two pairs were reserved for ESCOM’s internal use, leaving four spare pairs.

Several years later, ESCOM’s fiber optic unit decided to commercialize this existing unused fiber. Facing competition from the partially privatized former fixed-line operator, which had itself established an extensive fiber optic intercity and metropolitan network in Malawi, ESCOM initially leased two dark fiber pairs to telecommunications operators. ESCOM then decided to use its remaining two pairs of excess dark fiber to provide wholesale telecommunications services rather than leasing the dark fiber. To accomplish this, ESCOM entered into a 10-year joint venture with Globe Internet, a Malawi ISP. Under the terms of their partnership, Globe is responsible for ESCOM’s network expansion and provision of telecommunications services.

The joint venture does not encompass all telecommunications-related activities of the two parties in Malawi. ESCOM may still offer dark fiber leasing on its pre-existing lines without involving Globe. Globe may separately enter into arrangements with customers that do not involve ESCOM’s network. As of 2014, the Globe/ESCOM partnership had overtaken incumbent Malawi Telecommunications Limited to capture the largest share of the carrier’s carrier market in Malawi, with all major ISPs and several large telecommunications operators as customers.

3.5 Utility provision of wholesale telecommunications services

176. Another common business model for cross-sector infrastructure sharing involves the host infrastructure owner building out its own commercial telecommunications network and providing wholesale telecommunications services to telecommunications network operators. In some sense, this model does not actually involve the sharing of infrastructure. Rather, it involves the provision of telecommunications services using utility infrastructure. However, it fundamentally achieves the same purpose – availing the telecommunication sector of the benefit of the infrastructure.

177. This business model requires a significantly bigger step into the telecommunications sector by the owner utility than any of the other models discussed. To enter this business, the infrastructure owner must invest in a fiber optic cable network, including the design, procurement and installation of equipment, as well as fiber, to enable the system to operate as a carrier grade fiber optic network. The owner must obtain the requisite licenses to operate a commercial telecommunications network and provide commercial telecommunications services, and will be subject to the associated regulation by the telecommunications sector regulator. The owner must operate and maintain the network, and, importantly, do so to the exacting standards and service levels required by its wholesale customers. This business model thus involves substantial investment by the owner in upfront capital expenditures and fixed recurring operation expenses, even before earning any revenue.

178. This business model thus involves much higher risk, in relation to potential rewards, for the utility than the other business models. Its chances of success depend heavily on the owner’s ability to develop technical and business capabilities, and a culture, within its telecommunications business unit to operate in a highly competitive and demanding environment in a sector outside the infrastructure owner’s core business. Experience shows that host infrastructure owners are often quite adept at building, owning and operating backbone telecommunications networks. However, because they are typically monopolies in their core business, they often struggle to thrive in competitive telecommunications markets. Nonetheless, numerous successful implementations of this business model exist.
Box 8: Utilities can enter the market for wholesale telecommunications services

One example of the wholesale telecommunications services model is the fiber business of RailTel Corporation of India Ltd. (RailTel). RailTel is a wholly owned subsidiary of Indian Railways, the state-owned railway company of India with over 65,000 route km of railway track in India. When RailTel was formed in 2000, Indian Railways assigned RailTel an irrevocable right to use its rights of way. By early 2015, RailTel had laid over 45,000 route km of 12-pair fiber optic cable in ducts along these rights of way, reaching over 4,300 towns and cities across India, including many in remote and rural areas.

In each cable, four fiber pairs are reserved for internal use by Indian Railways. The remaining fiber is available to RailTel for commercial services. RailTel initially adopted the dark fiber business model. RailTel later refocused its business on wholesale telecommunications services. RailTel’s decision was based on its determination that wholesale telecommunications services would be more profitable and also concerns that dark fiber customers would use their dark fiber to compete against RailTel for other potential dark fiber customers. Today, in addition to wholesale bandwidth services for telecommunications network operators, RailTel has further expanded to offer retail telecommunications and data center services to large institutional customers, including business enterprises, banks, educational institutions and government organs and agencies.

Another example of a utility embracing this wholesale telecommunications model is Interconexión Eléctrica S.A. E.S.P. (ISA), a majority-state-owned electric utility based in Medellin, Colombia. ISA’s core business is electricity transmission. It was established in 1967 to construct, maintain and administer Colombia’s high voltage electric transmission grid. As of 2017, ISA owned over 70% of Colombia’s national grid, and had become one of the largest electricity transmission operators throughout Central and South America.

ISA established its first fiber optic telecommunications network in 1998. ISA transferred its telecommunications network assets to its subsidiary Internexa, S.A. in 2001. Internexa’s core business was built around installation of fiber optic cable telecommunications systems on electric transmission lines owned by ISA, its subsidiaries and other electric utilities. Through its subsidiaries and partnerships, Internexa has expanded its operations beyond Colombia to operate networks in Argentina, Brazil, Chile, Ecuador, Peru and Venezuela. Internexa offers a variety of wholesale data transport, IP and IT services to customers in these markets.

3.6 Providing co-location space, tower sites and ancillary services

179. The previous submodules have focused on various basic business models for cross-sector sharing of lateral infrastructure, such as the land corridors and the fixtures and improvements in those corridors, including fiber assets. This infrastructure supports fiber connectivity from point to point, but does not address the need to install equipment and other facilities at the various fiber access points. Therefore, regardless of the business model selected, infrastructure owners often supplement their lateral infrastructure offerings with ancillary services such as the provision of co-location space and tower sites to telecommunications operators. Though such ancillary infrastructure often has relatively low value in its own right, offering shared use of it in conjunction the lateral infrastructure can enhance the value of the lateral infrastructure to telecommunications operators and can generate additional revenue for the infrastructure owner.

180. For example, to lease dark fiber or sell an IRU in dark fiber, a utility may need to make co-location space for the telecommunications operator at the fiber access points in electricity or water...
substations, or transport junctions, and possibly at other points throughout the network. This is necessary to enable the telecommunications operator to use the dark fiber by installing equipment in property of the infrastructure owner at the fiber access points. Further, if the telecommunications operator operates a metropolitan or access network from the network access point at the substation provided by the utility, the utility may be able to supply infrastructure such as a duct between the substation and the property boundary, or lease the customer the right to erect a structure or mast for wireless equipment.

181. The utility may also generate revenues through constructing and leasing co-location buildings providing a suitable environment for onsite telecommunications equipment, or allowing the telecommunications operators to install such buildings for payment of an agreed ground rental, with suitable power for the equipment to be installed.

182. Access to land on or around a utility’s substations also offers other ancillary opportunities for sharing. The utility may lease space for installation of towers for telecommunications operator cell tower (BTS) sites. These can even be fenced off separately within the utility’s land area but with a separate entrance allowing the operator’s staff to enter it directly from outside without having to pass through usual security control.

183. Electricity utilities may be able to provide low-voltage power for telecommunications equipment interfacing with the electronic equipment, as well as for cellular base station equipment, back-up batteries, and physical space for back-up generators.

184. A utility will typically already operate its own security and maintenance services for internal purposes, and can also offer these activities to telecommunications operators as a separate service. The incremental costs of providing these services to third parties are relatively low because the utility already needs security and maintenance at its substations for its own electricity operations. Adding to these the degree necessary for the telecommunications operators will represent very little extra resources and costs. Similarly, some utilities sharing infrastructure with telecommunications operators may also provide “hands and eyes” services, whereby they provide customers with 24-hour readiness to carry out visual checks and various basic physical interventions under instructions from the customer (e.g., cycling power on the equipment, replacing hardware and changing cables).

185. Some utilities also offer their telecommunications operator customers with emergency and routine repair and maintenance services. This involves having utility work crews perform basic field repair and maintenance functions for the network operator to correct failures they observe while servicing the utility’s own facilities. For example, an electric utility which hosts telecommunications lines on its utility poles may agree to reattach or move those lines when it replaces or repairs a worn out or damaged pole. This can save the network operator the cost of a separate truck roll, reduce the risk or duration of an outage or damage to the hosted telecommunications facilities, and increase the speed of restoration.