

SCFN CARRIER WHOLESALE

PRICING MODEL REVIEW 2023

This report assesses SCFN's current wholesale pricing model for its fiber optic network. The primary objective is to evaluate the competitive landscape and recommend a model that maximizes revenue generation with Direct and Indirect Selling Processes while sustaining relationships with Wholesale Service Provider customers.



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Confidentiality Statement and Legal Disclaimer

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Executive Summary

In 2020, Steuben County Community Foundation (SCCF) sold SCFN to Steuben County REMC to support their broadband expansion plans. SCFN was initially created as iMAN in response to concerns from community members about accessing high-speed Internet. With Steuben County REMC Broadband offering service now, these access to broadband concerns are no longer an issue. Looking forward, Steuben County REMC Broadband's legacy relationship of I-NET as a service provider, ensuring SCFN sells services at market rates, and adjusting SCFN's Carrier Wholesale Channel strategy needs to be reviewed.

Steuben County REMC Broadband buying Steuben County Fiber Network (SCFN) created an excellent opportunity for Steuben County REMC Broadband and the community. Where it makes sense, Steuben County REMC Broadband wants to support The Steuben County Community Foundation's (SCCF) legacy relationship with SCFN and I-NET. One of the byproducts of purchasing SCFN is how Steuben County REMC Broadband works with I-NET and Wholesale Service Providers moving forward. Steuben County REMC Broadband wants to review SCFN pricing and options for direct and indirect sales channels to ensure our fiber services are offered at market rates and in the best interest of Steuben County REMC Broadband.

Steuben County REMC Broadband focuses on serving the community's broadband needs and operating as a last-mile and middle-mile provider. Steuben County REMC Broadband focuses on Enterprise Customers. SCFN has traditionally focused on providing customer fiber services via Service Providers (Carrier Wholesale segment).

SCFN's only customer was I-NET USA, LLC. When Steuben County REMC Broadband purchased SCFN facilities, the I-NET contract leases transferred to Steuben County REMC Broadband. I-NET provides Steuben County REMC Broadband with about \$31,850 per Month in revenue on services to 149 locations (Circuits).

This document reviews and makes pricing recommendations on SCFN's wholesale model to assist Steuben County REMC Broadband in determining a competitive yet sustainable operating structure. This will ensure that Steuben County REMC Broadband can support its existing customers while maximizing revenue generation from the fiber network.

Area 🖵	Circuit Count	Total Revenue
ANG	74	\$15,775
ASH	12	\$1,700
FMT	35	\$7,475
FMT/HUDSON	1	\$450
HAM	7	\$1,850
LAG	2	\$500
ORD	16	\$3,525
PL	2	\$575
Grand Total	149	\$31,850

Based on this report, a few questions for future planning for Steuben County REMC Broadband. 1) Does Steuben County REMC Broadband want SCFN to continue being a Middle-Miler provider? 2) Steuben County REMC Broadband is fully operational; when is a good time to transition SCFN out and brand it as Steuben County REMC Broadband? 3) Is the time right for Steuben County REMC Broadband to develop a policy strategy to migrate specific I-NET customers directly to Steuben County REMC Broadband?

		Ţ,								
Segment	₩	ANG	ASH	FMT	FMT/HUDSON	HAM	LAG	ORD	PL	Grand Tota
Carrier								1		1
Carrier - ENA - Sch	nools	4		3		1		1	1	10
Carrier - Verizon		2		1				2		5
Carrier AT&T		3		3		1		4		11
Carrier Tmobile		1		2				1		4
Enterprise		64	12	26	1	5	2	7	1	118
Grand Total		74	12	35	1	7	2	16	2	149



SCFN's Value Proposition to Service Providers

> SCFN provides Carrier transport service, Last-mile fiber, and a secure and scalable network. The 160 miles of dark fiber SCFN is available for service providers (Carrier Wholesale). SCFN has already been laid in all industrial parks in the county, and 70% of Steuben County businesses are connecting via our fiber infrastructure¹.

SCFN's Sales Channel Review

SCFN operates as a Middle-mile provider, using the backbone infrastructure that connects networks. In contrast, Steuben County REMC Broadband is a last-mile provider connecting individual homes and businesses to the broader network and middle-mile provider; these work in conjunction with middle-mile transport underlying last-mile delivery to end-users.

➤ When Steuben County REMC Broadband purchased SCFN facilities, the I-NET contract leases transferred to Steuben County REMC Broadband. I-NET provides Steuben County REMC Broadband with about \$31,850 per Month in revenue on services to 149 locations (Circuits)².

SCFN uses an Indirect Sales Channel and partners very closely with I-NET. SCFN does not deal with Enterprise or Carrier accounts; they just owned the physical fiber lines. SCFN leased I-NET individual fibers. From the perspective of who owns the customer, I-Net would be considered the "Carrier of Record." This relationship was good for SCFN in the earlier years but now has implications for Steuben County REMC Broadband. An example is what happens if I-NET finds a better alternative than Steuben County REMC Broadband; I-NET owns the customer and could move them when the contract expires.

> SCFN is a more critical brand for I-NET than Steuben County REMC Broadband.

Legacy SCFN only billed one customer: I-NET. Currently, the brand "SCFN" has no customers except for I-NET. Remember that Steuben County REMC Broadband now bills I-NET as a Carrier Wholesale partner. We could not find a website for I-NET for their customers to purchase directly from them. I-NET appears to be relying on SCFN as a sales channel for revenue.

Direct Sales refers to selling directly to end-user customers without any intermediaries. Indirect Sales refers to selling through intermediaries such as I-NET rather than SCFN/ Steuben County REMC Broadband selling directly to the end customer. Before discussing Direct and Indirect Sales Channels, let's quickly review I-NET as they are the only Service Provider working with SCFN today⁴.

I-NET USA, LLC is a US-based company providing Internet and telecommunication services. The company was founded in 2010 and is located in Fremont, Indiana. According to the Indiana Business Search, William Geiger is a Registered Agent and Member/Owner⁵. I-NET USA does not appear to host any domains directly based on the provided information. As a regional ISP, they likely offer internet connectivity and related services to businesses and residents in their local community⁶. More details on I-NET can be found in the Appendix.

¹ https://steubencountyfibernetwork.com/service-providers/

² Information by Dave Short, Steuben County REMC 2023

³ Carrier of Record is a term used to describe who owns the end-user customer

⁴ Information by Dave Short, Steuben County REMC 2023

⁵ https://bsd.sos.in.gov/PublicBusinessSearch/BusinessInformationFromIndex

⁶ https://ipinfo.io/AS394176#block-summary



Enterprise and Carrier customer information

The table below provides an overview of the Enterprise and Carrier wholesale segments I-NET is currently doing business with for SCFN. The table shows how Steuben County REMC Broadband may want to handle the different segments of SCFN's middle-mile services. If I-NET has the current vendor relationships with large carriers, it is easier to manage the relationship as it is currently indirect. Steuben County REMC Broadband has the opportunity to increase pricing on contracts when they renew. The customer options for the service area are likely very limited, so increasing pricing to Market Rates should be manageable. The list of customers and billing details can be seen in the Appendix⁷. The chart indicates ease of conducting business directly via Steuben County REMC Broadband recommendations for when to make pricing adjustments and how to handle relationship management with carriers and enterprise segments.

Segment	Number of Circuits	Total revenue by Segment Monthly Recurring Revenue (MRR)	How easy is it to take business direct and recontract?	Recommendation on how to handle pricing: Adjust pricing when contract expires and renegotiate price to Market Rate	Recommendation on how to handle relationship
Carrier - General	1	\$125	Hard	Yes	Indirect - work with iNET
Carrier - ENA - Schools		\$3,975	Easy	Yes	Try to go Direct, but if not keep Indirect with iNET
Carrier - Verizon	5	\$1,775	Hard	Yes	Indirect - work with iNET
Carrier AT&T	11	\$2,525	Hard	Yes	Indirect - work with iNET
Carrier Tmobile	4	\$1,800	Hard	Yes	Indirect - work with iNET
Enterprise	118	\$21,650	Moderate to Easy	Vac	Try to go Direct, but if not keep Indirect with iNET

SCFN Totals 149 \$31,850

Carrier Wholesale Opportunities (Customers and Competition)

Steuben County REMC Broadband should consider how collaborating with other service providers is essential to deliver seamless service. Here are some of the different ways to work with them:

- 1. Carrier Wholesale Agreements: Buy and Sell services with larger service providers, E.g., AT&T Mobility
 - a. Expand service provider relationships to increase quote opportunities in your network.
- 2. **Interconnection Agreements:** Physically connect your infrastructure with another provider's. This ensures seamless data transfer between networks. (I-NET appears to peer or work with ComNet and Great Plains).
- 3. **SLA (Service Level Agreements):** Establish SLAs with upstream providers to guarantee a certain level of performance, uptime, and quality. This ensures that you can offer reliable service to your end-users.
- 4. **Co-location:** Rent space in another provider's data center or facility to place your equipment. This can give you a presence in areas where building your facilities would be costly or inefficient.
- 5. **Reseller Agreements:** Allow other smaller providers or businesses to sell your services. This can increase your customer base without you having to manage all customer relationships directly. They are an agent; Steuben County REMC Broadband would still bill the customer directly.

Wholesale Channel Strategies

Steuben County REMC Broadband is in a delicate position to provide wholesale services; competing while sharing infrastructure presents unique challenges and opportunities. Here are some options and strategies to consider:

⁷ Information provided by Dave Short, Steuben County REMC -2023



• Differentiation:

- Service Offerings: Offer differentiated services like managed services, VoIP, or cloud services, which competitors might not provide.
- Quality and Reliability: Ensure your service stands out in speed, uptime, and customer service.
- Pricing: Offer competitive pricing models or bundled services.

Cooperation:

 Wholesale: If a competitor has a more substantial presence in a particular segment, consider selling bandwidth to them wholesale, and vice versa.

• Partnerships:

- o Joint Ventures: Explore forming joint ventures with competitors for specific projects or regions.
- Reseller Agreements: Allow businesses to resell their services, expanding their reach without direct competition.

SCFN's Pricing Model

SCFN's current Dark Fiber pricing model is based on the number of fibers and service area. SCFN offers a fixed price for a single fiber or two fibers. For metro connections in Angola, it is \$125/month for a single fiber or \$250/month for two fibers. For relations between the cities and Angola, \$250/month for a single fiber or \$500/month for two fibers. Multi-location connections between cities cost \$500/month for a single fiber or \$1,000/month for two fibers.

The pricing is not based on the geographic distance of the connection. The model offers tiered pricing based on the number of fibers and geographic location.

SCFN's current Dark Fiber pricing structure							
	Single fiber	Two fibers					
Metro Angola	\$125 per month	\$250 per month					
City to Angola	\$250 per month	\$500 per month					
Multi-location: City to City	\$500 per month	\$1,000 per month					

Market Data for Dark Fiber Pricing

Dark fiber pricing varies widely, with estimated ranges of \$500-\$2000 per strand per mile for long-haul fiber and higher pricing in metro areas. Pricing is not typically published. Pricing is based on availability and Individual Case Basis (ICB). Monthly recurring fees of \$100-\$1000 per mile per Month are commonly mentioned. Some providers include additional services like maintenance, emergency restoration, and operations. Construction, make-ready, and custom connectivity services may also be offered.

⁸ SCFN pricing information provided by Dave Short with Steuben County REMC – 2023.



Vendor Comparison - Dark Fiber pricing options (Channel Miles Model)

Vendor 1		
Rivers Public Utilitie	s (California) - pricing model	
Mileages	Single fiber	Two fibers
0 to 1 mile	\$125 to \$150 per month	\$250 to \$500 per month
1 to 3 miles	\$135 to \$450 per month	\$270 to \$900 per month
3 to 5 miles	\$450 to \$750 per month	\$900 to \$1,500 per month
5 to 10 miles	\$750 to \$1,500 per month	\$1,500 to \$3,000 per month
Vendor 2		•
Nashville Electric Se	rvice - pricing model	
Mileages	Single fiber	Two fibers
0 to 1 mile	\$80 to \$144 per month	\$160 to \$288 per month
1 to 3 miles	\$80 to \$432 per month	\$160 to \$864 per month
3 to 5 miles	\$240 to \$720 per month	\$480 to \$1,440 per month
5 to 10 miles	\$400 to \$1,440 per month	\$800 to \$2,880 per month
Vendor 3		
Intelligent Fiber (IFN	l) (Indiana) - member pricing mod	del
Mileages	Single fiber	Two fibers
0 to 1 mile	\$50 per month	\$100 per month
1 to 3 miles	\$50 to \$150 per month	\$100 to \$300 per month
3 to 5 miles	\$150 to \$250 per month	\$300 to \$500 per month
5 to 10 miles	\$250 to \$500 per month	\$500 to \$1,000 per month

Here is a summary of the pricing, pricing models, and services for dark fiber leasing from the various companies and municipalities:

1. Riverside Public Utilities, Riverside, CA:

 Pricing: \$125-\$150 per strand mile per Month, depending on volume. 30% discount for 10-year term. Service: Dark fiber lease only. No electronics or lighting included. Pricing model: Recurring price per strand mile. Maintenance and restoration costs are extra⁹.

2. Nashville Electric Service (NES), Nashville, TN:

Pricing: \$80-144 per fiber per mile per Month depending on mileage. 20% discount for rings.
 Pricing model: Flat monthly rate based on pre-defined route segments. Higher rate for custom routes. Service: Dark fiber lease only. No electronics or lighting included¹⁰.

3. **IFN Member** pricing from IFN, Indiana:

 Pricing: Fiber Lease was \$50 per fiber, per mile per Month, with no annual maintenance. 20-year IRU fiber, if available, was \$1,000 NRC per fiber mile with Annual Maintenance of \$350 per Route Mile¹¹.

⁹ https://www.riversideca.gov/utilities/businesses/dark-fiber-leasing-program 2023

¹⁰ https://nesdarkfiber.com/pricing/ 2023

¹¹ IFN Member pricing (prior to Zayo purchase), 2019.



Recommendations for changing SCFN Dark fiber pricing:

Based on the provided data, here is a summary recommendation for changing to the proposed pricing model. The proposed pricing model aligns closely with competitor pricing and introduces a pricing structure based on mileage tiers. This moves away from SCFN's current flat pricing and closely mirrors industry-standard channel mile pricing. The proposed tiers and pricing are very similar to the competitor examples, with SCFN's pricing being competitive or slightly below for each tier. The main differences are:

The proposed model introduces mileage-based tiers, whereas SCFN currently has flat pricing. This makes pricing more variable and aligned with industry norms. The proposed pricing is similar to Rivers Utilities and slightly below Nashville Electric and IFN for most tiers. This keeps SCFN competitive.

The proposed model introduces over 10-mile pricing as an ICB (individual case basis). This provides flexibility for longer distances. The proposed pricing model offers a competitive, industry-standard approach to dark fiber pricing. The mileage tiers create variability, the pricing is competitive, and the ICB over 10 miles allows flexibility. We recommend adopting the proposed model as it is aligned with industry pricing, keeps SCFN competitive, and introduces more variability and flexibility vs the current flat pricing approach. The model looks sensible, given the competitor data provided.

Mileages	Single fiber	Two fibers
0 to 1 mile	\$150 per month	\$300 per month
1 to 3 miles	\$300 per month	\$600 per month
3 to 5 miles	\$450 per month	\$900 per month
5 to 10 miles	\$600 per month	\$1,200 per month
Over 10 miles	ICB	ICB

SCFN fiber miles between cities12:

							PLEASANT
	ANGOLA	ASHLEY	FREMONT	HAMILTON	LAGRANGE	ORLAND	LAKE
ANGOLA		16.2	12.2	21.5	30.1	22.7	16.9
ASHLEY	16.2		28.3	13.9	46.3	38.9	9.5
FREMONT	12.2	28.3		42.2	42.3	34.9	29.1
HAMILTON	21.5	13.9	42.2		51.0	40.7	3.0
LAGRANGE	30.1	46.3	42.3	51.0		23.3	46.7
ORLAND	2.3	38.9	34.9	40.7	23.3		39.3
PLEASANT LAKE	16.9	9.5	29.1	3.0	46.7	39.3	

¹² Information provided by Dave Short – 2023.



Example of pricing model changes for SCFN:

ACCOUNT#	iNET Customer:	FROM: LOCATION	TO: SERVICE ADDRESS	Current Price to INET	Estimated Fiber miles	Service Area	Numbers of fibers	Vendor 1 Pricing (RPU)	Vendor 2	Vendor 3 Pricing (IFN)	Proposed Pricing Model for SCFN
238504	COLD HEADING (1) FREMONT	205 N. Tolford Street (MDF)	900 S CASSELL	125.00	1.3	Fremont	1	\$135	\$112	\$65	\$150
13872100	ATT TOWER #1 TOLL ROAD ORLAND	306 E. Maumee Street (INETDC)	11870 E 750 N ORLAND RD	225.00	17.9	Angola to Orland	1	\$1,500 +	\$1,440+	\$895	\$600+
13872001	EDUCATION NETWORKS OF AMERICA	202 W. Gilmore Street (MDF)	1350 E. Maumee (AMS)	450.00	1.3	Angola	2	\$585	\$508	\$130	\$600

The data above shows the current price to INET and proposed pricing models for various customers. SCFN is offering very competitive pricing compared to the customers' current costs and other vendor proposals.

For example, customer 238504 Cold Heading currently pays \$125.00 per month to INET. Vendor 1 proposes \$150, Vendor 2 proposes \$112, and Vendor 3 proposes \$65. For customer 13872100 ATT Tower #1, the current price is \$225.00. Vendor 1 proposes over \$600 per month, Vendor 2 proposes over \$895, and Vendor 3 proposes over \$1,500.

The proposed pricing model from the Steuben County Fiber Network (SCFN) is lower than Vendors 1 and 2 in all cases, ranging from \$600 to \$150, depending on the customer. It is okay to be competitively priced, but pricing below market rates is a long-term concern that needs to be addressed over time. The pricing adjustments can happen when the service comes up for renewal with INET.

Local Market Data for LIT Services- Business Pricing

Internet Business pricing

LaGrange County REMC Broadband offers Business Internet Services as follows¹³:

- 1000 Mbps upload & download Internet at \$349.95 per Month
- 500 Mbps upload & download at \$229.95 per Month
- 100 Mbps upload and download at \$109.95 per Month
- There is no published pricing on Lit Ethernet transport services

Enterprise Fiber transport Business pricing

When looking at the competition, there was no published pricing for P2P ethernet service; it is very common to have ICB pricing on the websites. There are a few reasons why ethernet transport pricing is often listed as ICB (Individual Case Basis) on service provider websites:

- Ethernet pricing depends on many factors. The cost of providing ethernet services can vary greatly
 depending on each customer's requirements. Bandwidth, distance, build costs, and contractual
 commitments can significantly impact pricing. Listing a single price is often not feasible.
- Discourage price comparisons Listing ICB pricing makes it harder for customers to compare provider service rates. This gives providers more room for negotiation.
- Allow for confidential pricing Customized ethernet pricing is often considered proprietary information between the client and provider. ICB allows this pricing to remain confidential rather than published.

¹³ https://broadband.lagrangeremc.com/front_end/products



Carrier Wholesale (what carriers are willing to buy from you)

Carriers rely on INDATEL to extend their reach into rural communities. INDATEL's network spans 48 states and includes over 2,300,000 serviceable buildings. Their network is built on fiber and is diverse from major carriers. Steuben County REMC Broadband must deliver the service to a national aggregation PoP. Still, it could then sell to carrier services via INDATEL. SCFN should have access to INDATEL via ComNet meet point today. ComNet is a member of INDATEL. This sample pricing assumes the middle mile, and last-mile provider pricing is included. Taking 50% of the price, a reasonable estimate of your local sell price for the service or Zone 3, 100 MB, on a 36-month agreement would equal about \$520 per month for SCFN. Zone 1 is not shown as it would be an example for the New York area.

Zone 2	NRC ON 1-Year	= \$2500.00 NRC C)N 3-Year = \$1500	0.00 NRC ON 5 Y	ear = \$0.00			
Bandwidth	10 MB	20 MB	50 MB	100 MB	200 MB	500 MB	1GB	
1 Year Term	\$883	\$1,025	\$1,119	\$1,371	\$1,757	\$2,254	\$2,890	
3 Year Term	\$465	\$540	\$589	\$722	\$925	\$1,186	\$1,521	
5 Year Term	\$442	\$513	\$559	\$685	\$879	\$1,127	\$1,445	
Zone 3	NRC ON 1-Year	= \$2500.00 NRC C	ON 3-Year = \$1500	0.00 NRC ON 5 Y	ear = \$0.00			
Bandwidth	10 MB	20 MB	50 MB	100 MB	200 MB	500 MB	1GB	
1 Year Term	\$1,155	\$1,414	\$1,729	\$1,976	\$2,377	\$2,900	\$3,538	
3 Year Term	\$608	\$744	\$910	\$1,040	\$1,251	\$1,526	\$1,862	
5 Year Term	\$577	\$707	\$865	\$988	\$1,189	\$1,450	\$1,769	



APPENDIX

Dark Fiber pricing models

Dark fiber refers to unused optical fiber infrastructure (fiber-optic cables) that has been laid but isn't currently used in fiber-optic communications. Here are some of the standard pricing models for dark fiber:

- 1. **Flat Fee/Indefeasible Right of Use (IRU):** The lessee (buyer) pays a one-time upfront fee for a long-term lease (typically 15-20 years) on the dark fiber. The lessee is often responsible for maintenance costs during the lease term.
- 2. **Monthly/Annual Lease:** The lessee pays a recurring fee (monthly or annually) to lease the dark fiber. This can be more flexible than an IRU but might result in higher overall costs over time.
- 3. Mileage-based Pricing: The cost is determined based on the length of the leased fiber.
- 4. **Strand-based Pricing:** Dark fiber is made up of multiple individual strands. Pricing can be determined by the number of strands a lessee wants to lease.
- 5. **Capacity-based Pricing:** Even though the fiber is "dark" (unused), the potential capacity it offers can be a pricing factor. High-capacity routes might have higher costs.
- 6. **Zone-based Pricing:** The geography or location can affect pricing. For instance, metropolitan areas might have different pricing compared to rural areas.

Background on I-NET USA, LLC14

I-NET USA, LLC is a US-based company providing Internet and telecommunication services. The company was founded in 2010 and is located in Fremont, Indiana. I-NET USA operates the Autonomous System Number 394176, which was allocated to them by ARIN in 2015. They currently have 512 IPv4 addresses in their allocated block of 192.135.60.0/23. The primary point of contact is Jad Donaldson, who is listed as the administrative and technical contact in the WHOIS records.

The company has 3 direct peers - Great Plains Communications LLC, Cameron Memorial Community Hospital, and Com Net, Inc. It receives upstream connectivity from Great Plains Communications LLC and Com Net, Inc. Its single downstream customer is Cameron Memorial Community Hospital. I-NET USA does not appear to host any domains directly based on the provided information. As a regional ISP, they likely offer internet connectivity and related services to businesses and residents in their local community¹⁵.

¹⁴ https://ipinfo.io/AS394176#block-summary

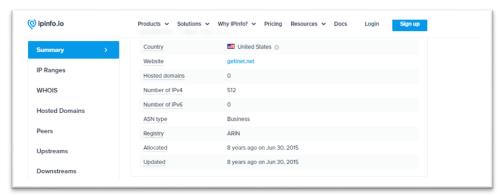
¹⁵ https://ipinfo.io/AS394176#block-whois



I-Net USA, LLC is an individual Domestic LLC governing person, and its owner is William Geiger¹⁶.

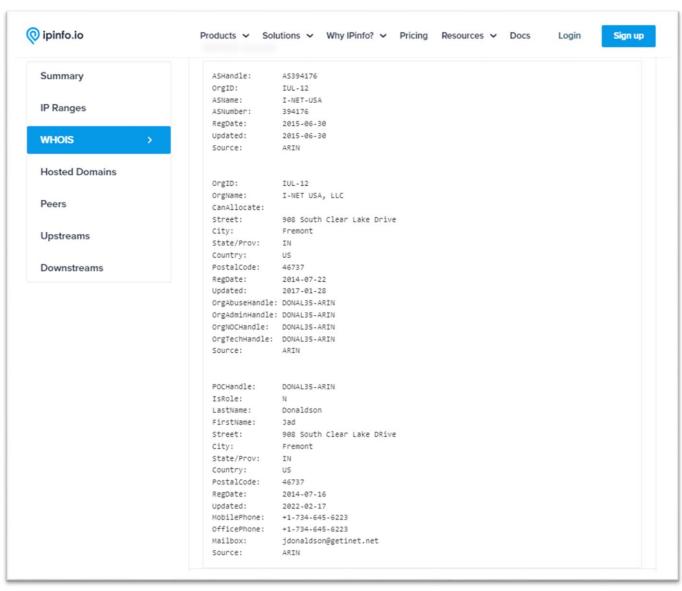


ASN information on I-NET USA, LLC- Autonomous System Numbers (ASNs) are assigned to entities such as Internet Service Providers and other large organizations that control blocks of IP addresses. The ASN details will often correspond to the IP address owner.



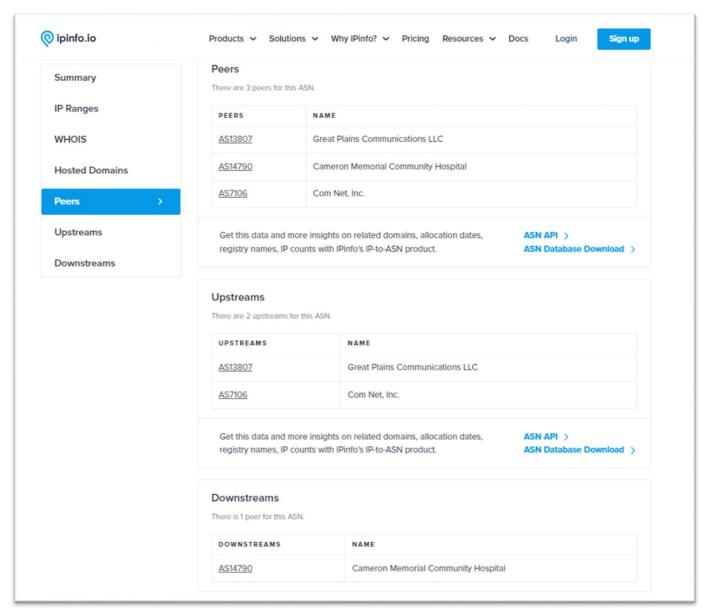
 $^{^{16}\} https://bsd.sos.in.gov/PublicBusinessSearch/BusinessInformationFromIndex$





¹⁷ https://ipinfo.io/AS394176#block-summary





¹⁸ https://ipinfo.io/AS394176#block-summary



Fiber Optics Deployment Costs¹⁹

Fiber Optics Deployment Costs



		Aerial	Underground			
Cost per mile	Typical range	\$32,000 - \$78,500/mile1	\$51,000 - \$220,000/mile ²			
(CPM)	Other common cost drivers	Labor wage, fiber cable cost, brownfield vs. greenfield				
	Dense	\$500 - \$1,000/home passed	\$700 - \$2,200/home passed			
Cost per	Typical sparse	\$2,100 - \$4,300/home passed	\$3,400 - \$5,900/home passed			
home passed (CPHP)	Extremely rural	> \$6,400 /home passed	> \$10,000/home passed			
	Key cost driver	Passing per mile due to density				
	Typical Dense	\$700 - \$1,600/drop				
Cost per drop	range Sparse & rural	\$1,500 - \$4000/drop				
шор	Key cost driver	Aerial vs. underground drops; length of drops				
Other network	Central & distribution electronics per home connected	\$400 - \$850/home connected4				
costs per home	Customer premises equipment (CPE) per home connected	\$300 - \$675/home connected ⁵				
connected ³	Middle-mile / backbone construction per home connected	\$300 (urban) - \$900 (rural)/home connected				

Note: All cost estimates represent "greenfield" development to individual homes, i.e., not discounting for "brownfield" cost savings or deployment model to multi-dwelling units (MDUs).

1. Up to \$60,000 in extreme scenarios; 2. Up to \$400,000 in extreme scenarios. Wide range reflects vastly different build costs on different topographies; 3. Assume 35% take rate; higher take rates would lower cost; 4. There is typically economies of scale with central equipment cost—adding new users may incur less marginal cost; 5. CPE costs include fees and materials for installation.

Sources: Rios Partners / BCG expert interviews & analysis, CTC studies, NRTC report, NCHeartGigabit

9 Internet For All





¹⁹ NTIA - Internet for All, Broadband 101, Fall 2022



Municipal Broadband Providers in the US that offer Dark Fiber 20

		States	Minimum Price, 25 Mbps or	Minimum Price, 100 Mbps or	1 Gbps (1000
Network	Type 3	Serviced -			Mbps) or High
Bowling Green Municipal Utility	Fiber & Dark Fiber	KY	-	-	-
Burbank Water and Power	Fiber & Dark Fiber	CA	-	-	-
Carroll County Broadband	Fiber/Dark Fiber	MD	-	-	-
Centennial	Dark Fiber	CO	-	-	-
Chesterton Fiber Optic Network	Dark Fiber	IN	-	-	-
City of Winter Haven Dark Fiber Network	Dark Fiber	FL	-	-	-
Dover Technology	Dark Fiber	OH	-	-	-
Glendale	Dark Fiber	CA	-	-	-
Idaho Falls Power and Fiber	Fiber & Dark Fiber	ID	-	-	-
Kane County Fiber Optics	Fiber & Dark Fiber	IL	-	-	-
Lawrence	Dark Fiber	KS	-	-	-
Lebanon Utilities	Wireless, Fiber & Dark Fiber	IN	-	-	-
Mahomet Village	Fiber & Dark Fiber	IL	-	-	-
Martin County Dark Fiber	Dark Fiber	FL	-	-	-
Medina County Fiber Network	Fiber & Dark Fiber	ОН	-	-	-
OnLight Aurora	Wireless, Fiber & Dark Fiber	IL	-	-	-
OpenCape	Fiber & Dark Fiber	MA, RI	-	-	_
Oregon South Central Regional Fiber Consortium Lighting the Fiber	Fiber & Dark Fiber	OR	-	-	-
Pasadena	Fiber & Dark Fiber	CA	-	-	-
Port of Lewiston Fiber Network	Dark Fiber	ID	-	-	-
Port of Whitman County	Dark Fiber	WA	-	-	-
Riverside Dark Fiber Network	Dark Fiber	CA	-	-	-
Rochelle Municipal Utilities	Fiber & Dark Fiber	IL	-	-	-
Santa Clara	Dark Fiber	CA	-	-	-
Santa Monica City Net	Fiber & Dark Fiber	CA	-	-	-
Springfield Utility Board	Dark Fiber	OR	-	-	-
Utah Telecommunications Open Infrastructure Agency (UTOPIA)	Fiber & Dark Fiber	UT	-	-	-
ValpoNet	Dark Fiber	IN	-	-	-
Vernon Light & Power	Fiber & Dark Fiber	CA		_	_

Indiana Providers²¹

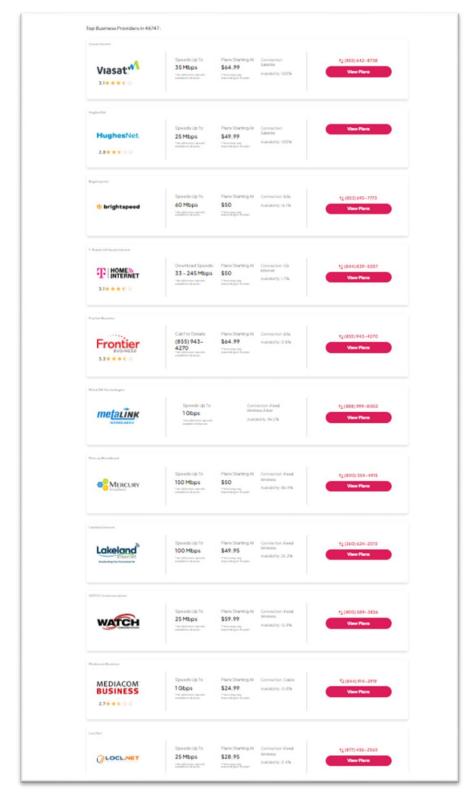
			States	25 Mbps or	100 Mbps or	1 Gbps (1000
Network	Type	¥	Serviced.	Higher -	Higher ▼	Mbps) or High
Anderson Municipal Light and Power	Fiber		IN	-	-	-
Auburn Essential Services	Fiber		IN	\$49.95	\$69.95	\$99.95
Chesterton Fiber Optic Network	Dark Fiber		IN	-	-	-
ChoiceLight, Inc.	Fiber		IN	-	-	-
Jackson Connect	Fiber		IN	-	\$54.95	\$99.95
Johnson County Fiber Network (Johnson County REMC)	Fiber		IN	\$69.95	\$84.95	\$154.95
Lebanon Utilities	Wireless, Fiber &		IN	-	-	-
	Dark Fiber					
Nine Star Connect (Hancock Telecom and Central Indiana Power)	Fiber		IN	\$75	\$100	\$250
ValpoNet	Dark Fiber		IN	-	-	-

https://broadbandnow.com/municipal-providers - 2023
 Prices shown are for residential rates.



Broadbandnow Competitive Data – LIT Business Services

- Zip Codes: 46747, 46779, 46776, 46742, 46705, 46703, and 46737
- Higher bandwidth service Pricing for Fiber service was not readily available.
- BroadbandNow Research endeavors to better understand the social, economic and political issues contributing to the digital divide in America.





Competitor Data

- 1. Auburn Essential Services (fiber) https://broadbandnow.com/Auburn-Essential-Services
- 2. Brightspeed (DSL, fiber) https://broadbandnow.com/brightspeed
- 3. DCMI Broadband (fixed wireless) https://broadbandnow.com/DMCI-Broadband
- 4. Frontier (DSL, Fiber) https://broadbandnow.com/Frontier-Communications
- 5. HughesNet (satellite) https://broadbandnow.com/HughesNet
- 6. LaGrange REMC Broadband (fiber) https://lagrangeremc.com/
- 7. Lakeland Internet (fixed wireless) https://www.lakelandinternet.com/?s1=1758709548.1547688451%3Fs3%3D260-624-2013
- 8. LigTel (fiber) https://www.ligtel.com/?s1=1758709548.1547688451?s3=260-894-7161
- 9. LOCLnet (fixed wireless) https://broadbandnow.com/LoclNet
- 10. MEDIACOM BUSINESS (cable) https://broadbandnow.com/Mediacom-Cable
- 11. Mercury (fiber, wireless) https://broadbandnow.com/mercury-broadband
- 12. MetaLINK (fiber, fixed wireless) https://broadbandnow.com/MetaLINK-Technologies
- 13. SURF Internet (fixed wireless) https://broadbandnow.com/Surf-Broadband-Solutions
- 14. T-Mobile HOMEINTERNET https://broadbandnow.com/5G/t-mobile-home-internet
- 15. Verizon https://broadbandnow.com/5G/verizon-home-internet
- 16. Viasat (satellite) https://broadbandnow.com/Viasat-Internet
- 17. WATCH (fixed wireless) https://broadbandnow.com/WATCH-Communications

Detail Billing for SCFN

See the attached PDF for details.



Detail billing list.pdf

Sample format:

BUSINESS NAME	ACCOUNT#	iNET Customer:	TYPE	SUB	TERM	EFFECTIVE DATE	PPRICING	POC
INET	13886900	FRISKNEY TOWER	P2P	ANG	60	5/31/2027	125.00	JAD DONALDSON
INET	13882400	VZW CELL TWR - 3220 W600N FREMONT (Pokagon)	P2P	FMT	60	6/30/2026	250.00	JAD DONALDSON
INET	13885200	ATT TOWER #2 HAMILTON	P2P	HAM	60	3/1/2027	250.00	JAD DONALDSON
INET	13876300	SWICK TOWER WLKI-WTHD	P2P	ORD	60	1/1/2022	225.00	JAD DONALDSON
INET	13872400	ATT TOWER #6 STROH TOWER	P2P	ORD	60	6/1/2025	225.00	JAD DONALDSON
INET	13872100	ATT TOWER #1 TOLL ROAD ORLAND	P2P	ORD	60	6/1/2025	225.00	
INET	13882600	VZW CELL TWR - FLINT	P2P	ORD	60	6/30/2026	250.00	JAD DONALDSON
INET	13872700	ATT TOWER #11	P2P	ORD	60	3/1/2027	250.00	JAD DONALDSON
INET	13881900	TMOBILE CELL TOWER - 911 WOHLERT	P2P	ANG	120	5/1/2026	450.00	JAD DONALDSON
INET	13880500	TMOBILE CELL NORTHEAST INDIANA TRUCK CENTER	P2P	FMT	120	5/1/2026	450.00	JAD DONALDSON
INET	13880200	TMOBILE TOWER W 275 N	P2P	FMT	120	5/1/2026	450.00	JAD DONALDSON
INET	13880400	TMOBILE TOWER ORLAND	P2P	ORD	120	5/1/2026	450.00	JAD DONALDSON
INET	13879301	METAL SPINNERS	P2P	ANG	M2M	5/1/2022	125.00	Sandra Danilition <sandra< td=""></sandra<>
INET	13905800	FOUR SEASONS REMODELING AND	P2P	ANG	M2M	8/1/2022	125.00	
INET	13882900	SHAMBAUGH & SONS -RES POLYFLO - BRIGHTMARK	P2P	ASH	M2M	2/11/2020	125.00	JAD DONALDSON
INET	13880800	AUBURN DOOR	P2P	ASH	M2M	5/15/2020	125.00	JAD DONALDSON
INET	13870900	LOCAL NET	P2P	ANG			225.00	
INET	13874200	ASHLEY MDF	P2P Internet	ASH	36	1/1/2023	225.00	JAD DONALDSON



Industry Analysis

The SCFN plays a crucial role in connecting people and organizations. Fiber broadband has emerged as a transformative technology, offering high-speed internet connectivity and enabling various applications and services.

Key Market Drivers:

- **Growing Internet Usage:** The proliferation of Internet-based services, such as video streaming, cloud computing, and IoT applications, has led to an exponential increase in Internet traffic. Fiber broadband offers the necessary bandwidth to meet these demands, driving its adoption.
- **Bandwidth-intensive Applications:** Bandwidth-hungry applications like 4K/8K video streaming, virtual reality (VR), and augmented reality (AR) require robust, high-speed connections.
- **Government Initiatives:** The U.S. Government has recognized the importance of high-speed internet connectivity for economic growth and competitiveness. The Broadband Equity, Access, and Deployment (BEAD) Program provides \$42.45 billion to expand high-speed internet access by funding planning, infrastructure deployment and adoption programs in all 50 states²².
- **5G Rollout:** The deployment of 5G technology requires robust backhaul infrastructure to handle the massive data volumes and low latency requirements. Fiber broadband is considered the ideal solution for 5G backhaul, driving its demand from telecommunication providers.

Industry Challenges:

- Infrastructure Investment: Deploying fiber broadband infrastructure requires significant capital expenditure. The cost of laying fiber optic cables, installing network equipment, and upgrading existing infrastructure can be substantial, posing challenges for smaller telecommunication companies.
- Competition from Existing Technologies: While fiber broadband offers superior performance, it faces
 competition from other technologies like cable broadband, DSL, and wireless connectivity. Existing
 infrastructure and customer inertia can present challenges for fiber broadband adoption.

Industry Trends:

- **Gigabit Internet:** Gigabit Internet connections, capable of delivering speeds up to 1 Gbps, are becoming increasingly available in many markets. Telecommunication providers are expanding their gigabit offerings to cater to the growing demand for ultra-fast internet connectivity.
- **Network Virtualization:** Software-defined networking (SDN) and network function virtualization (NFV) are being adopted to enhance the efficiency and flexibility of fiber broadband networks.
- **Fiber in 5G Networks**: As 5G networks continue to roll out, fiber backhaul becomes crucial to support the high-speed, low-latency requirements of 5G. Telecommunication providers invest in fiber infrastructure to deliver the necessary connectivity for 5G deployment.
- Rural Connectivity: Bridging the digital divide and extending high-speed connectivity to rural areas is a
 crucial focus for the U.S. government and telecommunication companies. Fiber broadband is seen as a
 viable solution for rural connectivity, and initiatives are underway to expand its reach in underserved
 areas.

 $^{^{22}\} Broadband\ USA\ 2023-https://broadbandusa.ntia.doc.gov/funding-programs/broadband-equity-access-and-deployment-bead-program-0$



Steuben County REMC acquires iMAN with plans to build fiber to the home network- 2020

ANGOLA, IN - Thursday, October 22, 2020

Steuben County REMC has taken a significant step forward in bringing broadband to rural Steuben County. The REMC's Board of Directors recently authorized the acquisition of iMan, dba Steuben County Fiber Network (SCFN) for \$2.8 Million, effective January 2021, to provide fiber optic services to its members. The Board recognizes the importance of internet access, and the impact it has on the quality of life. They also understand the advantages broadband will bring to future growth and economic development to the region. This decision follows over 24 months of due diligence, including feasibility studies, and market analysis.

This is the first step in the expansion of a fiber to the home network that will bring broadband availability to their membership over the next 4 to 5 years. Steuben County REMC expects this \$25 million investment in infrastructure to be capable of meeting the regions broadband needs into the future. The iMan acquisition will provide a reliable backbone that will bolster the project economics and build-out.

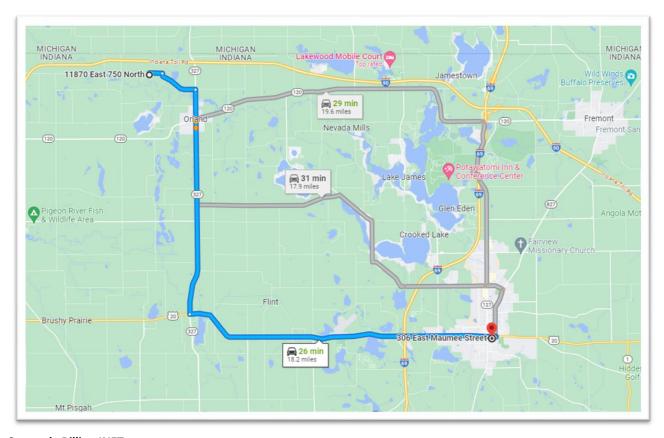
"We have a big job ahead of us, but our members have been here before when we collectively worked together to provide rural Steuben County with electricity at a time when no one else would. Today we find ourselves in a similar circumstance, and it is again time to cooperatively light our future with broadband services." Kevin Keiser, CEO Steuben County REMC

The SCFN currently serves every resident in our community through educational, governmental, healthcare, and business connections, that provide high-speed internet connectivity. In late 2018, the Steuben County Community Foundation proclaimed that the original mission of the fiber network had been achieved, and began a robust process of determining the next chapter of the network. The proceeds from the sale of SCFN will be permanently endowed in a Community Leadership Fund designed to support innovative ideas and foster development of new cross-sector community initiatives. "We look forward to creating similar partnerships for our community's benefit year after year, forever," Jennifer Danic, President and CEO of Steuben County Community Foundation.

"The Steuben County REMC is committed to honoring the founding spirit, and future growth of this community resource. They are dedicated to ensure that current access will not be disrupted, and the networks governance and management will remain local," added Danic. The Steuben County REMC is an electric distribution cooperative with a not-for-profit business model that provides service to individuals and businesses across rural Steuben, LaGrange, and Dekalb counties. Optimizing engineering and deployment, as well as the opportunity to be awarded state and federal grants, the REMC will be able to maintain similar competitive rates, as they do currently. Keiser concludes, "If we consider the alternative of doing nothing as the rest of the world passes us by; the cost to our rates, and more importantly, our way of life, will be far greater.



Pricing Model example for Fiber to Tower for AT&T (INET Customer)



Currently Billing INET:

								Current
*********	INIT CONT.	TARE	EDOM LOCATION	cup.	TO: CERVICE APPRECE		EFFECTIVE	Price to
ACCOUNT#	iNET Customer:	TYPE	FROM: LOCATION	SUB	TO: SERVICE ADDRESS	TERM	DATE	INET
13872100	ATT TOWER #1 TOLL ROAD ORLAND	P2P	306 E. Maumee Street (INETDC)	ORD	11870 E 750 N ORLAND RD	60	6/1/2025	225.00

Example pricing of other Providers and suggested pricing renewal pricing for SCFN to INET²³:

Estimated Fiber miles	Service Area	SCFN Rate	Numbers of fibers	Vendor 1 Pricing (RPU)	Vendor 2 Pricing (NES)	Pr	ndor 3 ricing IFN)	Proposed Pricing Mode for SCFN
17.9	Angola to Orland	\$250	1	\$1500+	\$1,440+	S	895	\$600+

²³ Vendor pricing comparison is explained on page 7.



Pricing Model example for Fiber to Cold Heading in Fremont (INET Customer)



Currently Billing INET:

								Current
							EFFECTIVE	Price to
ACCOUNT#	iNET Customer:	TYPE	FROM: LOCATION	SUB	TO: SERVICE ADDRESS	TERM	DATE	INET
238504	COLD HEADING (1) FREMONT	INTERNET	205 N. Tolford Street (MDF)	FMT	900 S CASSELL	36	1/1/2023	125.00

Example pricing of other Providers and suggested pricing renewal pricing for SCFN to INET²⁴:

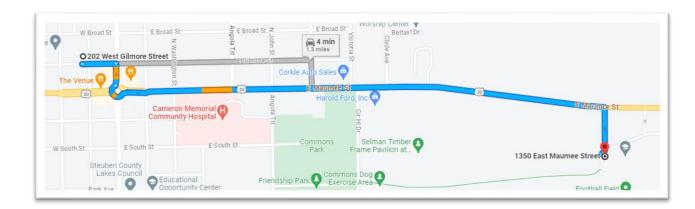
Estimated Fiber miles	Service Area	SCFN Rate	Numbers of fibers	ndor 1 ng (RPU)	Vendor 2 Pricing (NES)		Pri	ndor 3 cing FN)	Proposed Pricing Mode for SCFN	
1.3	Fremont	\$125	1	\$ 135	\$	112	\$	65	\$150	

-

²⁴ Vendor pricing comparison is explained on page 7.



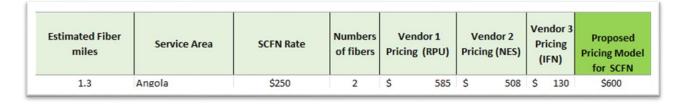
Pricing Model example for ENA in Angola (INET Customer)



Currently Billing INET:



Example pricing of other Providers and suggested pricing renewal pricing for SCFN to INET²⁵:



-

²⁵ Vendor pricing comparison is explained on page 7.



Additional Dark Fiber pricing examples (long haul):

Service: Dark Fiber Pair, Netrality to Otava

Pricing:

Vendor: Crown Castle

• \$1,000.00 Monthly, \$0.00 Installation, 60 Month Term

Vendor: Zayo

• \$1,608.00 Monthly, \$5,000.00 Installation, 36 Month Term

Vendor: Windstream

• \$5,000.00 Monthly, \$10,000 Installation, 60-month term

Service: Dark Fiber Pair, Netrality to Lifeline

Vendor: Crown Castle

• \$1,000.00 Monthly, \$0.00 Installation, 60 Month Term

Vendor: Zayo

• \$1,000.00 Monthly, \$5,000.00 Installation, 36 Month Term

Vendor: Zayo – multiple options, all from Zayo

 2 fiber, 126 miles, P2P between 701 W! Henry St in Indy and a splice point in Brazil IN

Term: 36 months	Term: 60 months	Term: 120 months	Term: 240 months
MRC: \$7,056	MRC: \$5,796	Prepaid NRC: \$365,400	Prepaid NRC: \$466,200
NRC: \$5,000	NRC: \$5,000	Monthly O&M: \$3,675	Monthly O&M: \$3,675

10g and Dark Fiber quotes:

Location A	Location B	Bandwidth	Term	Vendor	MRC	NRC
332 W Broadway	11400 Decimal Dr.	10g	36 Months	Zayo	No Bid - no metro wave	
321 E Breckinridge	11400 Decimal Dr.	10g	36 Months	Zayo	No Bid - no metr	o waves
332 W Broadway	733 W Henry St	10g	36 Months	Zayo	\$1,409.00	\$0.00
321 E Breckinridge	733 W Henry St	10g	36 Months	Zayo	\$1,409.00	\$0.00
332 W Broadway	350 E Cermak	10g	36 Months	Zayo	\$1,347.00	\$0.00
321 E Breckinridge	350 E Cermak	10g	36 Months	Zayo	\$1,444.00	\$0.00
733 W Henry	11400 Decimal Dr.	10g	36 Months	Zayo	\$1,409.00	\$0.00
350 E Cermak	11400 Decimal Dr.	10g	36 Months	Zayo	\$1,456.00	\$0.00
332 W Broadway	733 W Henry St	10g	36 Months	Lumen	\$1,509.12	\$0.00
321 E Breckinridge	733 W Henry St	10g	36 Months	Lumen	\$1,509.12	\$0.00
332 W Broadway	11400 Decimal Dr.	10g	36 Months	Lumen	\$4,403.40	\$0.00
321 E Breckinridge	11400 Decimal Dr.	10g	36 Months	Lumen	\$4,403.40	\$0.0
332 W Broadway	11400 Decimal Dr.	Dark Fiber	36 Months	Zayo	\$3,358.00	\$5,000.00
321 E Breckinridge	11400 Decimal Dr.	Dark Fiber	36 Months	Zayo	\$3,429.00	\$5,000.0
321 E Breckinridge	11400 Decimal Dr.	10g	60 Months	Windstrea	\$3,150.00	\$0.00
332 W Broadway	11400 Decimal Dr.	10g	60 Months	Windstrea	\$1,750.00	\$0.00
321 E Breckinridge	11400 Decimal Dr.	Dark Fiber	60 Months	Windstrea	\$9,000.00	\$35,000.00
332 W Broadway	11400 Decimal Dr.	Dark Fiber	60 Months	Windstrea	\$8,625.00	\$35,000.00