FitchRatings

Structured Finance
Digital Infrastructure
United States

Frontier Issuer, LLC, Secured Fiber Network Revenue Term Notes, Series 2024-1

Capital Structure

Class	Amount ($)	Rating	Rating Outlook	Debt/Fitch NCF (x)	ARD	Rated Final Payment Date
2023-2, Class A-1[a,c]	500,000,000	A	Stable	6.7[b]	July 2026	August 2053
2023-1, Class A-2	1,119,514,000	A	Stable	6.7[b]	July 2028	August 2053
2024-1, Class A-2	530,000,000	A(EXP)	Stable	6.7[b]	May 2031	June 2054
2023-1, Class B	154,866,000	BBB	Stable	7.6[b]	July 2028	August 2053
2024-1, Class B	73,000,000	BBB(EXP)	Stable	7.6[b]	May 2031	June 2054
2023-1, Class C	311,598,000	BB–	Stable	9.5[b]	July 2028	August 2053
2024-1, Class C	147,000,000	BB-(EXP)	Stable	9.5[b]	May 2031	June 2054
Total	**2,335,978,000**[b]					

[a]This class comprises a variable funding note (VFN) and has a maximum commitment of $500 million, contingent on leverage consistent with that of class A-2 notes and draws subject to rating agency confirmation. [b]Leverage multiples and total outstanding principal balance shown reflect the base case cash flow scenario, wherein there is no draw on the VFN. [c]The class A-1-V notes reflect an anticipated repayment date (ARD) of July 2026 and may be extended to July 2028, following the manager exercising the first and second one year extension options. ARD – Anticipated repayment date. EXP – Expected. NCF – Net cash flow.

This transaction is a securitization of contract payments derived from an existing fiber-to-the-premises (FTTP) network. The collateral assets include conduits, cables, network-level equipment, access rights, customer contracts, transaction accounts and a shared infrastructure service agreement for common assets. Debt is secured by net revenue from operations and benefits from a perfected security interest in the securitized assets.

The collateral network consists of the sponsor's retail fiber network, including 728,012 fiber passings and 215,059 copper passings across several submarkets in Dallas, TX and the greater North Texas area. The network supports broadband, phone, video and non-switch (point-to-point ethernet) services for approximately 329,357 residential and commercial fiber subscribers as of February 2024.

The 2024-1 issuance of notes includes additional collateral consisting of the sponsor's other seasoned submarkets located in North Texas. The new collateral comprises 8.8% of transaction revenue and passes over 133,000 locations with a penetration rate of approximately 35%. Overall, the additional assets securitized with the 2024-1 series of notes are similar in credit quality to prior issuances.

The ratings reflect a structured finance analysis of cash flows from the ownership interest in the underlying fiber optic network, rather than an assessment of the corporate default risk of the ultimate parent, Frontier Communications Parent, Inc. (B+/Negative).

Key Rating Drivers

Net Cash Flow and Leverage: Fitch Ratings' net cash flow (NCF) on the pool is $247.0 million, implying a 12.7% haircut to issuer NCF. The debt multiple relative to Fitch's NCF on the rated classes is 9.5x, compared with debt/issuer NCF leverage of 8.25x.

Inside This Report

This presale report reflects information in Fitch Ratings' possession at the time that Fitch's expected ratings are issued. The transaction has yet to be finalized and changes could occur. As a result, the expected ratings disclosed in this report do not reflect final ratings but are solely based on information provided by the issuer as of Feb. 29, 2024. These expected ratings are contingent on final documents conforming to information already received. Ratings are not a recommendation to buy, sell or hold any security. The prospectus and other material should be reviewed prior to any purchase.

Fitch's related Rating Action Commentary issued at transaction closing will include final ratings, which will include an assessment of any material information that may have changed subsequent to the publication of the presale.

Representations, Warranties and Enforcement Mechanisms Appendix

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Credit Risk Factors: The major factors affecting Fitch's determination of cash flow and maximum potential leverage (MPL) include the high quality of the underlying collateral networks, scale of the customer base, market position and penetration, market concentration, capability of the operator and strength of the transaction structure.

Technology-Dependent Credit: Due to the specialized nature of the collateral and potential for changes in technology to affect long-term demand for digital infrastructure, the senior classes of this transaction do not achieve ratings above 'Asf'. The securities have a rated final payment date 30 years after closing, and the long-term tenor of the securities increases the risk that an alternative technology, rendering obsolete the current transmission of data through fiber optic cables, will be developed. Fiber optic cable networks are currently the fastest and most reliable means to transmit information, and data providers continue to invest in and utilize this technology.

Highlights

Effect	Highlight
Neutral	**Limited Changes from Recent Issuances:** This transaction is the fourth subclass series outstanding and issued out of this master trust, which typically occurs annually. The past several transactions were collateralized with a nearly identical pool of assets, with an identical structure and transaction parties.
—	**Significant North Texas Concentration:** The transaction is backed by collateral entirely securitized in North Texas. As of February 2024, 91.2% of transaction revenue was generated from submarkets located in Dallas, TX with the remaining 8.8% of revenue generated from various markets in the greater North Texas area. However, the increased competitive risk due to the North Texas concentration is partially mitigated by the size and scale of the collateral network which consists of 943,071 passings and 473,674 broadband units.
Neutral	**Consistent Liability Structure:** The transaction structure is similar to that of other digital infrastructure securitizations rated by Fitch. Attributes include an in-place backup manager, triggers related to cash flow decline, a six-month liquidity reserve and an anticipated repayment date (ARD) structure consistent with what Fitch typically observes in the space and appropriate for the ratings.

Source: Fitch Ratings

Libor Exposure

Assets	Rated Notes	Hedges
No Libor exposure	No Libor exposure	No hedges

Source: Fitch Ratings, Frontier Issuer, LLC, Secured Fiber Network Revenue Term Notes, Series 2024-1 (Frontier 2024-1)

Key Rating Drivers (Negative/Positive/Neutral)

Rating Impact	Key Rating Driver
Neutral	Net Cash Flow and Leverage
Neutral	Credit Risk Factors
Negative	Technology-Dependent Credit

Transactional Highlights

Trust Balance ($ Bil.)	2.34[b]
Number of Units	473,674
Fitch NCF ($ Mil.)	247.0
NCF Variance (%)	12.7
Fitch Debt Multiple (x)	9.5[a]
Fitch Debt Yield (%)	10.6[a]

[a]This reflects the debt balance and Fitch NCF, absent draws on the VFN. NCF – Net cash flow, Source: Fitch Ratings, Frontier 2024-1

Applicable Criteria

Global Structured Finance Rating Criteria (January 2024)

Structured Finance and Covered Bonds Counterparty Rating Criteria (November 2023)

Digital Infrastructure Securitization Rating Criteria (June 2023)

Structured Finance and Covered Bonds Country Risk Rating Criteria (July 2023)

Key Transaction Parties

Role	Name	Fitch Rating
Issuer	Frontier Issuer LLC	NR
Servicer	Drivetrain Agency Services, LLC	NR
Indenture Trustee	Citibank, N.A.	A+/F1/Stable
Guarantor	Frontier SPE Guarantor LLC	NR
Manager	Frontier Communications Holdings, LLC	B+/Negative
Backup Manager	FTI Consulting, Inc.	NR
Structuring Agent	Goldman Sachs & Co. LLC	A+/F1/Stable
Underwriter	Goldman Sachs & Co. LLC	A+/F1/Stable

NR – Not rated
Source: Fitch Ratings, Frontier 2024-1

Transaction Comparisons

The transaction comparison table below reflects issuances of securities backed by collateral from comparable competitors with similar liability structures.

	Frontier Issuer LLC, 2024-1	Frontier Issuer LLC, 2023-1 and 2023-2	MetroNet Issuer LLC, 2024-1	ALLO Issuer LLC, 2023-1
Date of Issuance	July 2024	August 2023	March 2024	June 2023
Sponsor Rating (as of Issuance)	B+	BB–	NR	NR
Trust Balance ($ Mil.)	2,836.0[a]	2,086.0[a]	3,475.4[a]	709.0[a]
Number of Customer Contracts/Units	473,674	440,684	478,853	107,890
Top Technology Type (% of Revenue)	100.0	100.0	100.0	100.0
Investment-Grade Contracts (% of Revenue)	12.6	11.0	0.0	0.0
Top Three Tenants (% of Revenue)	14.6	12.9	0.0	2.1
Weighted Average Tenant Contract Term (Years)	0.1	0.1	0.1	0.1
Owned Sites (% of Cash Flow)	100.0	100.0	100.0	100.0
Fitch NCF ($ Mil.)	247.0	213.3[a]	354.7[a]	79.6
Fitch Debt Multiple (x)				
AAA	—	—		—
A	6.7[b]	7.6[a]	7.2[a]	6.8[a]
A–	—	—	—	—
BBB	7.6[b]	8.3[a]	8.1[a]	7.5[a]
BBB–	—	—	—	—
BB	—	—	—	—
BB–	9.5[b]	9.8[a]	9.8[a]	8.9[a]

[a]Assumes fully drawn facilities, required corresponding cash flow for draws and the risk retention classes. [b]Leverage multiples shown reflect the base case cash flow scenario, wherein there is no draw on the VFN
Source: Fitch Ratings, Frontier 2024-1

Asset Analysis

Collateral

The notes will be secured by a first-priority-perfected security interest in all equity interests in the issuer and the asset entities; all of the obligors' right, title and interest in, and to, the customer contracts; any other fiber assets owned by the obligors; and funds held in transaction accounts. These include perfected security interests in the conduits, fiber optic cables, network-level equipment, access rights and transaction accounts.

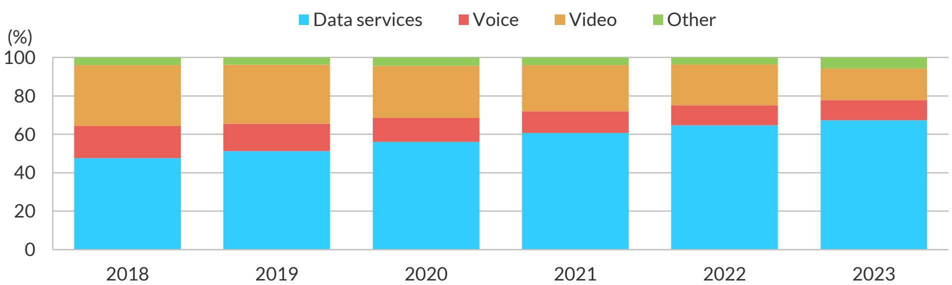
These collateral fiber assets consist of high-quality fiber lines for the provision of fiber to the premises. Strand counts are consistent with competitive fiber providers and offer speeds of 5 gigabit per second (Gbps), with plans to upgrade the network to be capable of providing 10Gbps speeds to residential customers. Commercial offerings are available with speeds of up to 5Gbps.

In limited circumstances, these speeds can be achieved on wireless networks. However, coverage at this speed is very limited and subject to disruption from obstructions, such as buildings, trees, walls and the end user.

The collateral network consists of the sponsor's retail fiber network in the greater Dallas market and the issuer-defined North Texas market The network now consists of approximately 728,012 fiber passings and 215,059 copper passings. The newly contributed assets make up approximately 14% of the transaction's total fiber passings and 16% of the total copper passings. Frontier acquired the assets from Verizon Communications Inc. (A–/Stable) in 2015, along with networks in Florida and California, at a cost of $10.54 billion. Initial construction of the Dallas market network began in 2004 as part of Verizon's first fiber network and took approximately four years to complete. Since acquisition, fiber penetration for the Dallas market has remained stable, averaging 45% between 2018 and 2023, which is slightly above average, given the market's size and competitive landscape.

Frontier's offerings include fiber-based data services (55.4% of securitized revenue), copper-based data services (0.8%), non-switch data services (14.6%), voice (9.5%) and video (14.4%), as well as other auxiliary services.

Market Revenue Mix by Product



Source: Frontier 2024-1

The securitization's customer base consists of retail contracts with residential (71.8% of securitized revenue) and commercial customers (28.2%). Revenue from residential customers is primarily driven by month-to-month contracts for fiber-based data services, representing the collateral's fast-growing customer and product segment, with approximately 19,000 net adds between 2018 and 2023. Historical churn for residential customers has remained relatively low given the market's competitive landscape, but to the extent that churn does occur, customer moves were the top-cited reason, per a third-party consultant report provided to Fitch.

Commercial customers include wholesale (16.7% of securitized revenue), small and medium-sized businesses (SMB; 6.1%) and enterprise (5.5%) customers. SMB revenue is primarily fiber data and voice services, while enterprise revenue is driven by voice services as well as fiber data and what the sponsor refers to as "all other data".

The top three wholesale customers accounted for 91% of YE 2023 wholesale revenue. The wholesale product revenue mix is primarily driven by non-switch data services. Frontier stated that wholesale contracts typically range from month-to-month to five years, with some contracts reaching eight-year terms.

Variable Funding Notes

The transaction is structured with class A-1 and A-2 notes, including A-1-V notes, which are VFNs. These notes will rank pari passu with all class A notes. The class A-1-V notes reflect an anticipated repayment date (ARD) of July 2026 and may be extended to July 2028, following the manager exercising the first and second one year extension options..

Class A-1 notes have an initial balance of $0 and a commitment amount of $500 million. Draws on the VFN are contingent on leverage consistent with class A-2 notes and subject to rating agency confirmation.

Additional Fiber Networks

Additional fiber networks and the related customer contracts may be acquired after the closing date as additional collateral for the notes, and are subject to, among other considerations, the following parameters:

- Confirmation by Fitch, unless the additional fiber networks are expected to contribute less than 5% of annual run rate revenue (ARRR) in a given fiscal year.
- The indenture trustee and the servicer have received opinions of counsel.
- Servicer consent, if during a special servicing period.
- If the fiber network is an additional obligor fiber network, the additional asset entity executes and delivers to the indenture trustee a joinder agreement.
- The manager delivers an updated schedule reflecting such additional fiber networks to the indenture trustee, the servicer, the backup manager and Fitch.

Cash Flow Analysis

Fitch's adjusted cash flow for the transaction is $247.0 million, which is 12.7% lower than the issuer cash flow of $283.0 million. Fitch's cash flow analysis focuses on the durability of cash flow generated from contracts in place.

In Fitch's Net Cash Flow (NCF) assessment, a 7.5% stress to revenue was applied, based on historical contract churn rates, excluding moves and transfers. A 50% stress was also applied to residential phone, copper data and non-switch (private network internet) revenue, given the long-term viability of this business line. However, the haircut for non-switch revenue from wholesale customers was reduced to 20%, as revenue from this customer type is expected to be more stable. Furthermore, Fitch stressed direct operating expenses to reflect long-term historical ratios, third-party estimates and issuer guidance, as appropriate.

The issuer-underwritten management fee of 44.7% on LQA Feb 2024 gross revenue includes cost of goods sold, sales and marketing expenses, operating expenses (34.9% of transaction revenue) and maintenance capex (9.8%) associated with the buildout required to replace customers upon churn. Fitch applied a management fee of 45.7% on the Fitch gross revenue, which also includes cost of goods sold (31.3% of Fitch gross revenue), operating expenses (39.2%) and maintenance capex (10.0%).

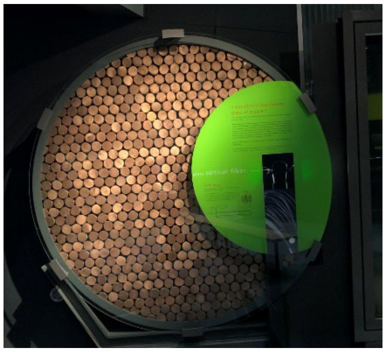
In determining its cash flow, Fitch reviewed historical revenue, operating expenses and capex between 2018 and 2023. Fitch also reviewed the forward-looking budget provided by Frontier, as corroborated, and third-party estimates provided by FTI Consulting, in conjunction with its team of industry experts. Fitch then determined appropriate expense levels, based on the various expense categories, as informed by historical and budgeted levels.

Fiber Overview

Fiber optic cables transmit data via pulses of light along glass strands that are encased in a rubber conduit. The presence or absence of light in short bursts transmits information through binary code. Prior to fiber's advent, copper wire transmitted binary code via pulses of electricity and pairs of copper wire strands.

The change in asset represents a tremendous difference in speed, owing to differences in the speed at which light and pulses of electricity travel. One glass strand inside a fiber optic cable is roughly equal to the amount of copper wire shown at the right.

This technology has enabled internet speeds to improve tremendously. Fiber optic cables can be routed into homes, such that a user can operate internet through wireline or connect to a router and broadcast internet wirelessly via spectrum, similar to how wireless towers broadcast signal.



Source: Corning Institute of Glass

The proximity of the broadcast is critical, as obstructions can substantially degrade signal quality. Given obstructions such as buildings, trees, walls, windows and weather, fast indoor internet speeds are hard to achieve with cellular phones.

Increased data usage has driven higher need for data speeds, which are split among a growing array of wireless devices. Total input speeds will need to continue to increase to keep pace with demand for data, which is expected to continue to increase in the short to medium term, if not longer.

Fiber Industry Overview

The provision of cable and internet has long been dominated by a few key players, such as AT&T Inc. (BBB+/Stable); Charter Communications, Inc. (BB+/Stable); and Comcast Corp. (A–/Stable). Similar to traditional infrastructure, the initial capital outlay associated with developing a fiber network is substantial. Therefore, the number of providers in any given market is very limited, with many locales featuring only one service provider option.

Given the reluctance to upgrade expensive networks due to cost, supply has lagged demand for these services. Overbuilders, which build new fiber networks “over” existing infrastructure, entered the market in recent years, deploying newer, faster fiber networks to replace legacy networks.

These businesses include retail service offerings, as well as bulk offerings in states where the provision of utilities is governed by homeowners’ associations. Retail offerings typically comprise month-to-month agreements with a consumer or commercial counterparty.

Relative to legacy copper or hybrid-fiber coaxial cables, fiber cables are purpose-built infrastructure for the provision of data. Fiber lines are capable of transmitting far more data than legacy technologies. The deliverable speeds on a fiber network are also easier and cheaper to upgrade, with incremental equipment purchases enabling these improvements. Conversely, copper wireline has physical limitations that make upgrades very difficult to undertake and maintenance capex far more expensive than is necessary for fiber networks.

Background — Frontier

Founded in 1935, Frontier is a major provider of copper and fiber-based cable television, phone and data services in 25 states, including California, Texas, Florida, Indiana and South Carolina. Frontier’s national fiber network consists of 6.5 million residential and commercial passings, with plans to increase the total number of passings to 10.1 million. Frontier’s 2023 EBITDA was $2.1 billion, of which fiber business segments accounted for $1.3 billion.

The company was downgraded from ‘BB-’ to ‘B+’ ‘by Fitch, with a Negative Rating Outlook, on Feb. 7, 2024. The downgrade and Negative Rating Outlook reflect Fitch's view that continued fiber expansion in the next few years will require additional capital raises that will keep financial leverage high and free cash flow meaningfully negative over the ratings horizon.

Frontier's capital allocation policy following its April 2021 bankruptcy emergence largely centers on accelerated plans to invest in fiber to the home (FTTH) as well as to target fiber deployment to small and medium-sized businesses, enterprises and the wholesale market. The company's financial policy targets net leverage in the mid-3x range, although it is above this range following the acceleration of its fiber build in 2022 (4.3x reported at September 2023).

At the sponsor level, revenue is primarily driven by data services (61% of 2023 revenue) for business (45%) and residential (54%) customers. Fiber and copper-based products are nearly evenly split in terms of revenue representation, although the company has focused on deploying additional fiber networks to replace legacy copper networks. Of the sponsor’s non-expansion footprint, market penetration increased to 44.5% as of YE 2023 from 41.9% as of YE 2021.

Expected Rating Sensitivity

This section of the report provides greater insight into performance and rating sensitivities the transaction faces when applying various deterministic stresses. The factors being stressed in the defined sensitivities stresses are Fitch NCF and network revenues. The results below should only be considered as potential outcomes, as the transaction is exposed to a variety of additional risk factors that are all dynamic variables.

Defined Sensitivities

Defined sensitivities describe the reduction in NCF required to reduce a rating by one full category, to non-investment grade and to 'CCCsf'. The following table shows the impact on ratings for each additional defined stress to NCF.

The Rating Sensitivity section provides insight into the model-implied sensitivities the transaction faces when one assumption is stressed while holding others equal. The modeling process uses the estimation and stress of these variables to reflect asset performance in a stressed environment. The results to the left should only be considered as one potential outcome, as the transaction is exposed to multiple dynamic risk factors. They should not be used as indicators of possible future performance.

- No change or positive change
- Negative change within same category
- – 1 category change
- – 2 category change
- – 3 or larger category change

See report for further details.

Defined Sensitivities

(%)	Class A-2	Class B	Class C
Original Rating	Asf	BBBsf	BB–sf
One Full Category	11	24	14
Non-Investment Grade	22	24	0
To CCCsf	43	34	20

Source: Fitch Ratings

Defined Stresses

As Fitch NCF is the only assumption expected to change over time, defined stresses reflect adjustments of an additional 10%, 20% and 30% from Fitch NCF at the time of issuance. Declines to NCF result in higher leverage ratios and would imply downgrades based on Fitch's determination of MPL, as informed by the presence or absence of credit risk factors.

Rating Stresses to NCF Decline

	Class A-2	Class B	Class C
Original Rating	Asf	BBBsf	BB–sf
20% NCF Increase	Asf	Asf	BBBsf
10% NCF Decline	BBB+sf	BBB-sf	Bsf
20% NCF Decline	BBB-sf	BB-sf	CCCsf
30% NCF Decline	BB-sf	Bsf	CCCsf

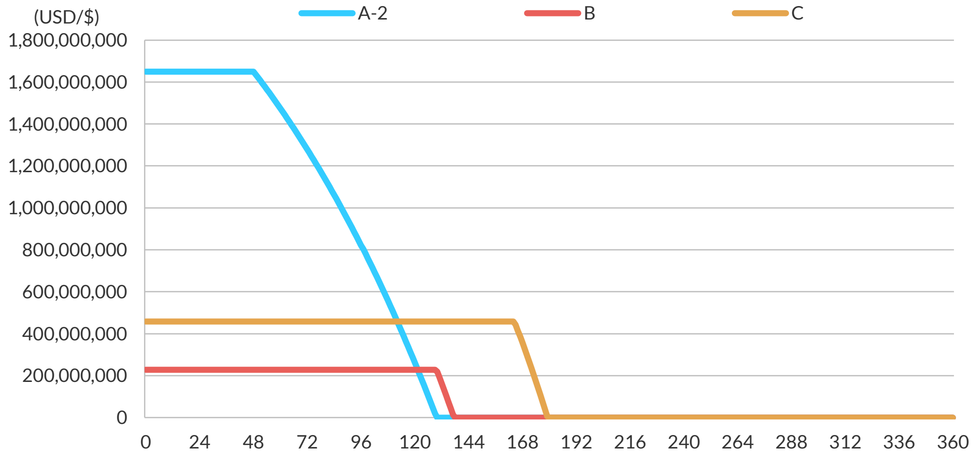
NCF – Net cash flow
Source: Fitch Ratings

Stress Scenarios

Fitch performed stress scenarios to the issuer NCF, wherein Fitch stressed revenue. The issuer's base case assumes 2.6% NCF growth through the transaction's ARD period. The results of these stresses are as follows.

Issuer Base Case

Frontier 2023-1 & 2024-1

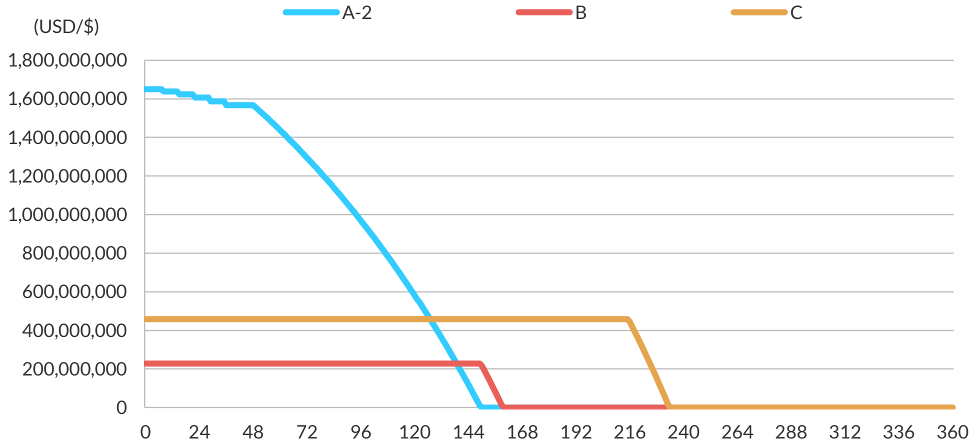


Source: Fitch Ratings, Frontier 2024-1

In its analysis, Fitch conducted a payback period scenario that assumes a 12.7% stress to the issuer's NCF as of February 2024 to reflect Fitch's base case NCF of $247.0 million. In this scenario, margins were capped at current levels underwritten by Fitch. The result of this stress is as follows:

Fitch Net Cash Flow Base Case

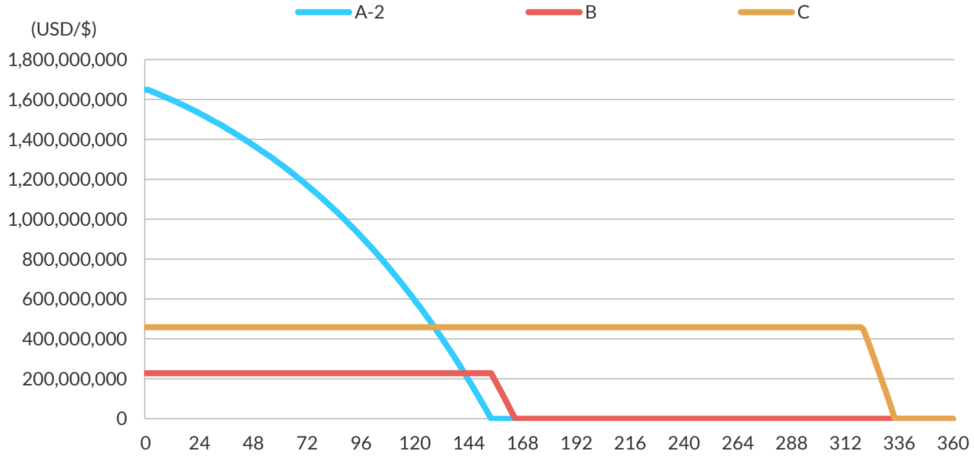
Frontier 2023-1 & 2024-1



Source: Fitch Ratings, Frontier 2024-1

In its analysis, Fitch considered the possibility of a 25% revenue haircut on day one of the close of the transaction.

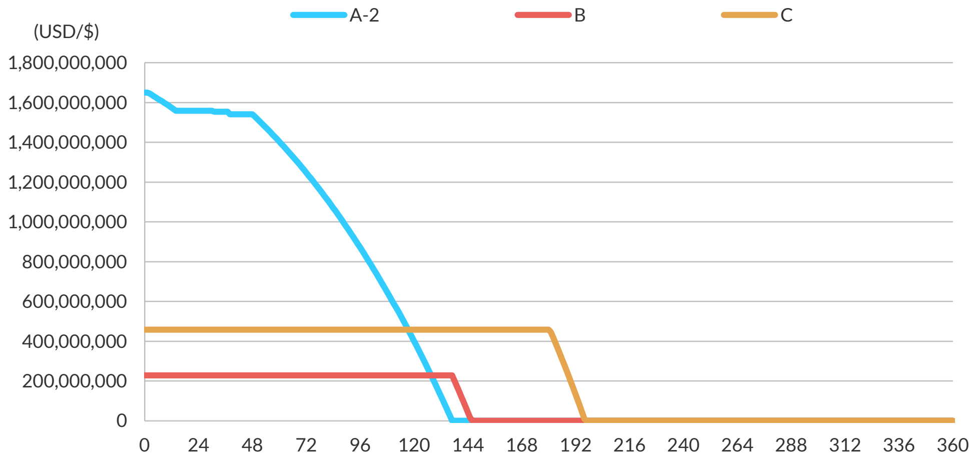
25% Day-1 Haircut
Frontier 2023-1 & 2024-1



Source: Fitch Ratings, Frontier 2024-1

Collateral performance exclusive of no phone or video business is relatively unchanged. This is due to the fact that, while revenue will be lost, gross margin on these two business segments are low. While the exclusion of the company's voice and video business segment has a negative impact on the transaction's repayment time horizon, this impact is very limited.

No Video or Voice Revenue
Frontier 2023-1 & 2024-1



Source: Fitch Ratings, Frontier 2024-1

Upgrades are unlikely for these transactions, given the provision for the issuer to issue additional notes, which will rank pari passu or subordinate to existing notes, without the benefit of additional collateral. In addition, the transaction is capped at 'A', given the risk of technological obsolescence.

Best- and Worst-Case Scenarios

Fitch's ratings of structured finance transactions have a best-case rating upgrade scenario (defined as the 99th percentile of rating transitions, measured in a positive direction) of seven notches over a three-year rating horizon and a worst-case rating downgrade scenario (defined as the 99th percentile of rating transitions, measured in a negative direction) of seven notches over three years. The complete span of best- and worst-case scenario credit ratings for all rating categories ranges from 'AAA' to 'D'. Best- and worst-case scenario credit ratings are based on historical performance. For more information about the methodology used to determine sector-specific best- and worst-case scenario credit ratings, click here.

Transaction Structure

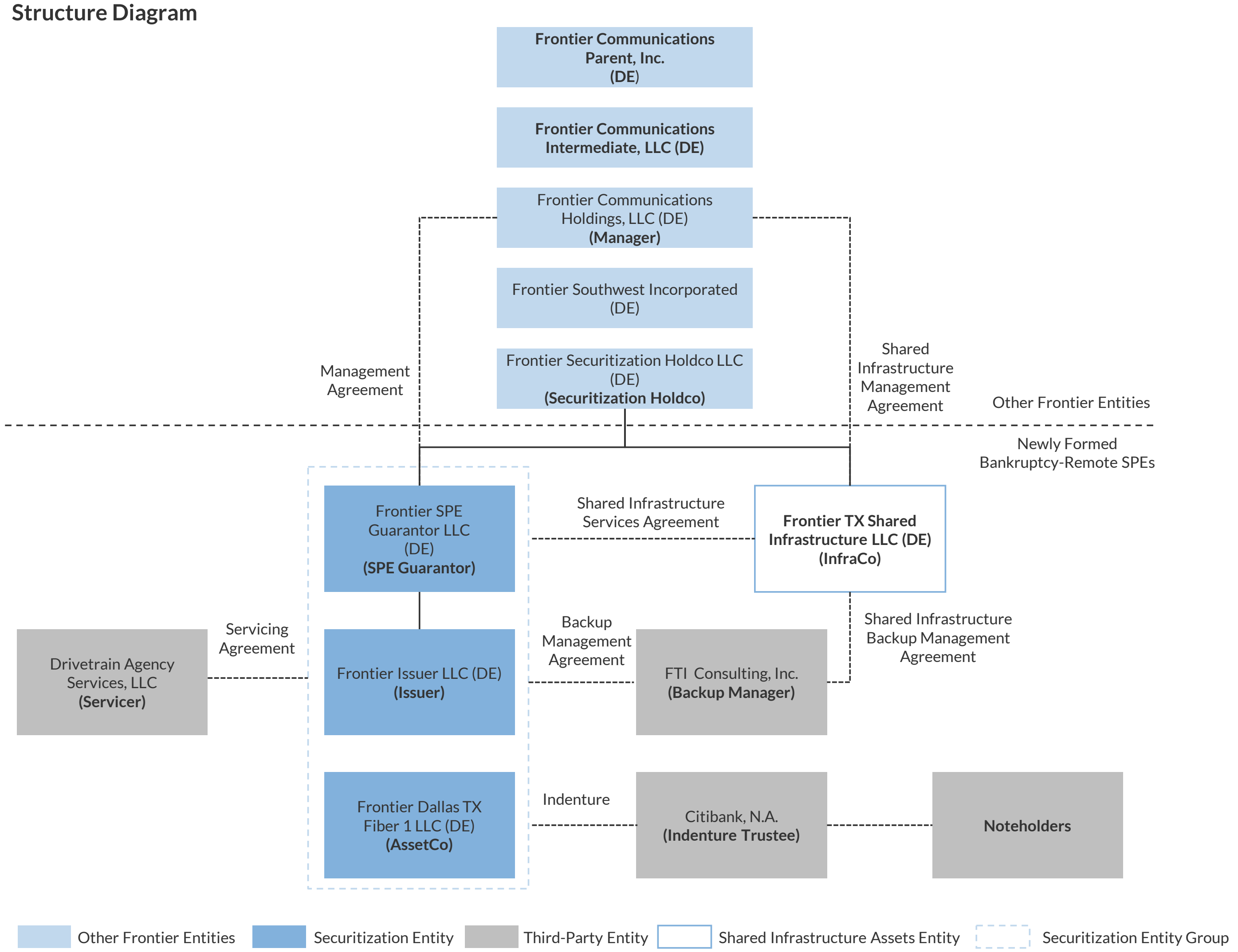
The notes will be issued pursuant to an indenture with an effective date as of the expected closing date. The issuer is a special-purpose entity (SPE) that will own no assets other than the equity interest in the asset entities. The asset entities own no assets other than the transaction collateral and are prohibited from acquiring other assets or incurring any liabilities, other than as contemplated in the indenture, and will have no employees.

Issuer and Issuer Entities

The issuer is Frontier Issuer LLC, a newly formed Delaware limited liability company. At the time of the initial closing date, the equity interests in Frontier Dallas TX Fiber 1 LLC (the original asset entity), a Delaware limited liability company, were assigned to the guarantor, Frontier SPE Guarantor LLC, a newly formed Delaware limited liability company, and, in turn, the guarantor contributed such equity interests to the issuer, making the issuer the direct parent of Frontier Dallas TX Fiber 1 LLC.

Frontier SPE Guarantor LLC guarantees the payment of amounts due under the notes and all other monetary obligations of the issuer, the asset entities under the indenture and the other transaction documents. All the fiber assets and customer contracts included as collateral for the notes are held through Frontier Issuer LLC.

Structure Diagram



DE - Delaware Entity
Source: Frontier 2024-1

Legal Structure

Fitch expects the legal structure of the transaction to provide that a bankruptcy of Frontier Communications Parent, Inc. (the parent) would not impair the timeliness of interest payments on the securities.

Fitch will review the legal opinions to the effect that the asset entities will not be consolidated with the parent or the manager in the event of bankruptcy. Furthermore, Fitch expects to receive an opinion of counsel that the indenture trustee has a first-priority-perfected security interest in the equity interests of the SPE issuer, the asset entities that own the collateral and cash flows backing the notes.

In addition, Fitch expects to receive a legal opinion to the effect that the assets owned by Frontier TX Shared Infrastructure LLC, which owns the shared infrastructure (as described below), would not be consolidated with the parent or manager in the event of bankruptcy.

Shared Infrastructure

The transaction collateral does not include the shared infrastructure, which is the main data center associated with the network. The transaction will instead make payments based on the proportion of all direct operating costs of obtaining, constructing, maintaining, repairing and operating costs attributable to the collateral. In the event access to this entity is lost under any circumstance, the transaction would have sufficient cash to pay for an alternative third-party data center.

In the event of a temporary issue, data center operations could be conducted via another data center within the manager's network. Furthermore, the headend technology center is built to withstand weather events such as hurricanes and has access to gas-powered generators, which would allow it to continue to operate.

These assets will be owned by Frontier SPE Guarantor LLC, a separate SPE, which will own no assets other than the shared infrastructure and is prohibited from acquiring other assets or incurring any liabilities, other than as contemplated in the indenture, and will have no employees.

Special-Purpose Entity and Bankruptcy Remoteness

Structured finance transactions rely on the concept of a bankruptcy-remote SPE to enhance the likelihood of the separation of the SPE from its originator and other affiliates in the event of insolvency of any such affiliates. The key feature that distinguishes a structured finance transaction from a corporate credit is the structural isolation, or delinking, of an underlying pool of assets from the corporate credit risk of the owner, or originator, of those assets.

This is typically achieved in structured finance via the sale of an identifiable and specific pool of the originator's assets to an SPE so that neither the assets nor their proceeds on realization will be available for distribution as part of the bankruptcy estate of the originator. The SPE asset entities already hold the assets. For this transaction, the asset entities' organizational documents were amended to include two independent directors who must consent to certain bankruptcy-related materials. These independent directors can only be removed for cause.

Representations and Warranties

The obligors, including the issuer, asset entities and guarantor, have made representations and warranties with regard to their formation and authority to enter into and perform obligations arising from this transaction to conduct business and compliance with applicable laws and regulations, including zoning requirements and permits, among other items.

Credit Enhancement

Credit enhancement (CE) for each class is provided by the subordination of classes with a later alphabetical designation. CE for class A is provided by classes B and C. Any additional securities will rank pari passu with the class of securities bearing the same alphabetical class designation and be subordinate to any earlier alphabetical classes, regardless of maturity, in the receipt of interest and principal.

Any additional securities will rank pari passu with the class of securities bearing the same alphabetical class designation and be subordinate to any earlier alphabetical classes, regardless of maturity, in the receipt of interest and principal.

Interest Allocation

Monthly interest is allocated sequentially among the securities in direct alphabetical order (pro rata within each class), based on the amount of accrued interest. Accrued interest for each security will be calculated on the basis of a 360-day year consisting of 12 30-day months.

Principal Allocation

Principal payments will be paid in accordance with the amortization schedule. No principal payments will be required prior to the ARD of each series, unless a cash flow sweep or amortization period commences, an event of default under the indenture occurs and is continuing, or certain casualty or condemnation events occur, or with proceeds from the disposition of fiber assets.

Priority of Payments

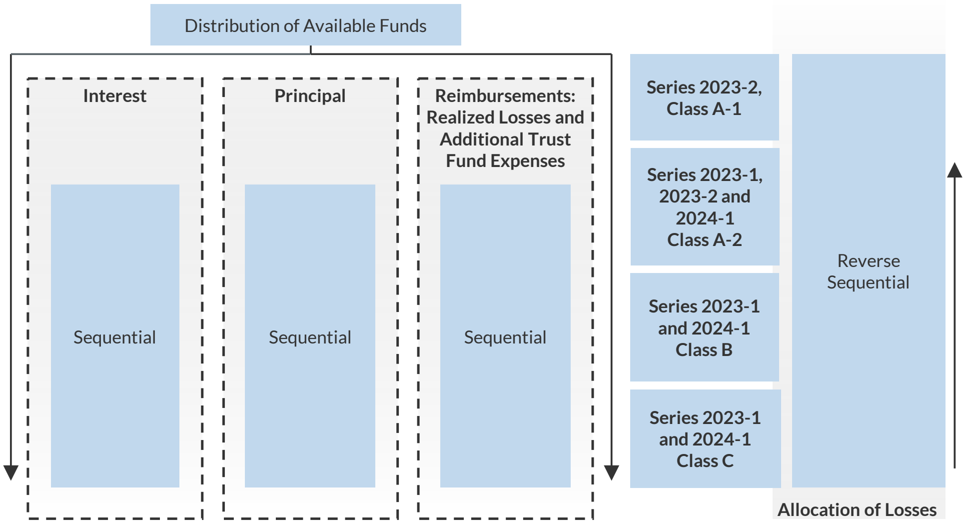
1	First, senior expenses, including indenture trustee, backup manager, rating agency, servicer and other servicing fees; second, additional obligor expenses paid to the servicer; and, third, any additional obligor expenses, including any unreimbursed advances to the trustee and servicer and any and all other amounts due to the servicer, backup manager, rating agency and indenture trustee.
2	Management fee (defined below).

Priority of Payments

3	If an (i) amortization period or (ii) ARD period or acceleration has not occurred: (a) to holders of each class of securities, in direct alphabetical order and pro rata for securities bearing the same alphabetical designation, interest due and accrued and (b) accrued and unpaid commitment fees under the variable funding note (VFN) purchase agreement.
4	During an (i) amortization period or (ii) ARD period and if no acceleration has occurred, to class A and B noteholders, in direct alphabetical order and pro rata for securities bearing the same alphabetical designation, interest due and accrued, and accrued and unpaid commitment fees under the VFN.
5	If an (i) amortization period or (ii) ARD period and acceleration have not occurred: first, monthly amortization amounts due and, second, additional principal payment amount and prepayment consideration.
6	To the liquidity reserve account, the required liquidity reserve amount. The required liquidity reserve amount is sized to equal six months of interest payments, senior fees and fixed direct costs.
7	To the cash trap reserve accounts, if a cash trap condition (defined below) is continuing and neither an amortization period nor an ARD period is in effect, and no acceleration has occurred and is continuing, 50% of remaining funds available in the collection account.
8	If a cash sweep condition (defined below) is continuing and neither an amortization period nor an ARD period is in effect, and no acceleration has occurred and is continuing, to holders of each class of securities: the product of the cash sweep percentage and the remaining funds available in the collection account, in alphanumerical order, principal pro rata to holders of each class of securities.
9	If an acceleration following an event of default has occurred or is continuing, in alphabetical order, pro rata, principal.
10	During a rapid amortization period, to class A and B noteholders, in alphanumerical order, pro rata, principal.
11	During an ARD period, in alphanumerical order, pro rata, principal (i) to VFN noteholders and (ii) to class A and B noteholders for the notes that are in an ARD period.
12	During a (i) rapid amortization period or (ii) ARD period, if no acceleration following the occurrence or continuation of an event of default, to class C noteholders, accrued and unpaid class C interest.
13	During a rapid amortization period, if no acceleration following the occurrence or continuation of an event of default, to class C noteholders, class C principal.
14	During an ARD period, to class C noteholders, class C principal.
15	During a post-ARD period, to all noteholders, in alphanumerical order, pro rata, (i) post-ARD additional interest and (ii) deferred post-ARD additional interest.
16	To holders of each class of notes, in order of alphanumerical designation, any unpaid prepayment consideration.
17	To VFN noteholders, an amount equal to the optional prepayment amount so designated by the issuer.
18	To the manager, for reimbursement for any advance made by the manager, along with interest payable.
19	Any excess cash flow to holders of equity interests in the issuer.

Source: Fitch Ratings, Frontier 2024-1

Sequential-Pay Structure



This chart describes the manner in which the rights of various classes will be senior to the rights of other classes. Entitlement to receive P&I on any distribution date is depicted in descending order. The manner in which loan losses are allocated is depicted in ascending order. Allocation of interest, principal and any losses will be pro rata for classes of notes that bear the same alphabetical designation.
Source: Frontier 2023-1, 2023-2 and 2024-1

Cash Management

At closing, all customers within contributed neighborhoods will deposit bills into accounts maintained by Frontier / non-securitized Frontier affiliates (Frontier accounts) or accounts established and maintained by the indentured trustee (collectively, the control accounts). The collections attributable to contributed neighborhoods in Frontier accounts will be remitted to control accounts within two business days of their receipt. Both accounts are covered under a grant of security interest and, in the event of default (EOD), shall be pursuant to remedies allowed by the transaction documents, including taking control of such accounts.

A 25% cash trap will be triggered, if it is determined that the manager has failed to use reasonable efforts to cause at least 50% of retained collections from customers to be directly deposited into control accounts by the sixth collection period following the closing date; the cash trap will remain in place until such effect is remedied. The sponsor expects that approximately 73.5% of monthly collections will be deposited into control accounts by the series 2024-1 closing date.

Reserve Accounts and Liquidity

The following reserve accounts will be funded, as required, as of the closing date for the benefit of noteholders:

- Cash trap reserve account — to accumulate cash if a cash trap condition has occurred.
- Liquidity reserve account — to reserve six months of interest and senior fees due to the indenture trustee, backup manager, rating agency and servicer, as well as fixed direct costs.

Cash Trap Reserve and Cash Sweep Conditions

The cash trap condition is triggered by a decline in the debt service coverage ratio (DSCR) to 1.40x or below, or a decline in the senior DSCR to 2.00x or below at the end of any calendar month. Under these conditions, 50% of excess cash will be trapped until the DSCR is greater than 1.40x and the senior DSCR is greater than 2.00x. The DSCR test will be based on interest payments and senior fees only on a monthly basis.

A 25% cash trap will be triggered, if it is determined that the manager has failed to use reasonable efforts to cause at least 50% of retained collections from customers to be directly deposited into control accounts by the sixth collection period following the closing date; the cash trap will remain in place until such effect is remedied. If a cash trap continues for six months, a cash sweep condition will be triggered and 50% of available funds in accordance with the priority of payments will be paid to amortize the notes.

In the event the DSCR falls below 1.30x or the senior DSCR falls below 1.80x, a cash sweep condition will be triggered and 75% of available funds in accordance with the priority of payments will be paid to amortize the notes until the DSCR is greater than 1.30x and the senior DSCR is greater than 1.80x. The DSCR test will be based on interest payments and senior fees only on a monthly basis.

A full cash flow sweep is triggered if total leverage exceeds 11.0x at its monthly determination date; all cash flow will be swept to pay down debt until leverage is below 11.0x.

A full cash flow sweep is also triggered in the event, as of the most recent closing date or additional fiber network acquisition date, the Dallas market annualized collections are greater than 25% of the total annualized collections and the penetration rate for these markets as a whole is less than 30% (46.6% as of YE 2023). This will be tested on a monthly basis, with collections based on the immediately preceding three-month period.

Dallas markets comprise the Metro, North Central and Twin City districts, which include the Dallas counties: Dallas, Tarrant, Collin, Denton, Wise and Rockwall. At closing, Dallas market collections are expected to account for 100% of total collections; this trigger is expected to be active.

Management Fee

The manager will be entitled to the management fee for each monthly collection period, reflective of all expenses, including sales and marketing, operating expenses, capex and cost of goods sold. The management fee for any given period will be an amount equal to the sum of:

i. (a) $88.80 x the average number of video units in the previous month and (b) $24.95 x the average number of broadband units in the previous month;

ii. $522 x the gross number of broadband unit adds in the previous month; and

iii. (a) $500 x the gross consumer unit adds as of the end of the previous calendar month, (b) $3,585 x the number of gross business unit adds as of the end of the previous calendar month and (c) $0.42 x the number of passed locations as of the end of the previous calendar month.

The issuer may utilize a new management fee calculation if the following conditions are met:

i. the issuer submits, in writing, the calculation of the new formula to the indenture trustee and servicer in consultation with the backup manager;

ii. the issuer discloses the formula in each manager report; and

iii. the indenture trustee and servicer have received rating agency confirmation.

Insurance

The issuer is required to maintain, among other requirements, the following types and amounts of insurance coverage for each property:

- Commercial general liability, with a minimum of $1,000,000 in coverage per occurrence and $2,000,000 in aggregate per year.
- Umbrella/excess liability, with a limit of no less than $10,000,000 per occurrence/claim.

Among other requirements, the issuer must maintain insurance coverage with providers having an insurer financial strength rating of at least 'A-' by Fitch, S&P Global Ratings, Moody's or AM Best. The provider must carry a rating of either 'BBB' or 'F2' by Fitch following a downgrade of the provider. The indenture trustee, on behalf of the noteholders and secured parties, is to be named an "additional insured" for each policy.

Disposition of Fiber Network Assets

Fiber network assets may be disposed of, subject to certain conditions, in connection with the prepayment or repayment in full of a series of notes and in certain other circumstances.

Disposition of fiber network assets in connection with the prepayment or repayment in full of a series of notes is subject to the following disposition conditions:

- No EOD has occurred and is continuing, and no amortization period has commenced.
- While the notes are specially serviced notes, the servicer consents.
- Notice is provided to Fitch (and confirmation is obtained if disposition is 10% or more of the aggregate initial class principal balances of outstanding notes).
- The servicer, the indenture trustee and the backup manager receive all unpaid additional securitization expenses and all other unpaid fees, expenses and indemnities to the extent then due.
- The senior DSCR, after giving effect to disposition and prepayment, is greater than 2.0x.

In connection with a disposition, the issuer must prepay the notes in an amount equal to 125% of the allocated balance.

However, the issuer may dispose of fiber assets under the following conditions:

- If the fiber assets have an aggregate value of less than $5,000,000, provided the applicable asset entity has provided written certification to the indenture trustee and servicer that such disposal is in accordance with prudent business practices to maximize the aggregate value of the fiber networks, subject to servicer consent in the event the assets are specially serviced.
- Rating agency confirmation is obtained.
- If the disposed assets consist of copper network infrastructure and the disposition would not have an adverse impact on collateral cash flow and the functionality of noncopper infrastructure.
- In the event of involuntary transfers or losses due to condemnation or casualty events.
- In the event of transfers of property of an obligor to another obligor.

Site Substitution

Up to 5% of the security balance may be substituted per year through the ARD, with any unused portion of such limit permitted to be carried over into subsequent years, subject to a 25% cap. Any substitution will be permitted, provided that, as certified to the servicer and indenture trustee (among other provisions):

- The DSCR, after giving effect to the substitution, is no less than it was immediately prior to such substitution.
- Rating agency confirmation is obtained.

These requirements may be amended without noteholder request, subject to rating agency confirmation.

Controlling Class Representative

As of any determination date, the controlling class will be the most subordinate class of securities, without regard to allocation to a particular series, having a class principal balance net of any value reductions of at least 25% of the aggregate initial class principal balance. If no class of securities has a balance satisfying the described condition, the controlling class will be the class of outstanding securities with the lowest alphabetical designation.

The holders of the controlling class whose securities represent more than 50% of the related class principal balance are entitled, in accordance with the servicing agreement and indenture, to select or replace a representative (the controlling class representative), executable upon the indenture trustee receiving written confirmation of acceptance from the elected controlling class representative, or removal or resignation of the existing controlling class representative. No affiliate of the issuer may act as controlling class representative.

The controlling class representative retains certain rights and powers, including the ability to advise the servicer in transfers of ownership of fiber networks or ownership of equity interests of any of the obligors. The servicer is not permitted to execute transfers if a written notice of dissent is presented to the servicer and the indenture trustee by the controlling class representative within 10 business days. If such written notice is not received within the 10-day period, the approval of the controlling class representative will be assumed.

If the controlling class representative disapproves, the servicer must revise the request and deliver it to the controlling class representative within 30 days. The servicer will be required to implement the action for which approval was most recently requested upon the earlier of the failure of the controlling class representative to disapprove within 10 business days, or 60 days elapse and the servicer determines not doing so would violate the servicing standard.

Events of Default

To protect noteholders from issuer insolvency or breaches of obligation, the transaction includes several EODs. As with other fiber network transactions and cell tower transactions, which have similar liability structures, EODs covering missed interest payments or compliance with transaction documents, as well as bankruptcy and insolvency events of the issuer, obligors, guarantor and the company that owns the shared infrastructure, are incorporated into the structure. A missed or partial payment of the class A monthly amortization amount on any payment date (other than the rated final payment date) or prepayment penalty does not constitute an EOD.

Additional Notes

The transaction allows for issuance of additional notes. The additional notes will rank pari passu with any class of notes bearing the same class designation and are subject to, among other provisions, (i) the senior DSCR after issuance of additional notes must be equal to or greater than 2.0x, (ii) leverage after issuance of additional notes must be equal to or less than 9.5x or (iii) Fitch confirmation. As Fitch monitors the transaction, the possibility of rating upgrades may be limited due to the provision that allows for additional notes and cash flow deterioration.

Rated Final Payment Date

The rated final payment date for series 2023-1 class A-2, 2023-1 class B and 2023-1 class C notes is August 2053. The rated final payment date for the 2023-2 class A-1 notes is also August 2053. The rated final payment date for series 2024-1 class A-2, 2024-1 class B and 2024-1 class C notes is June 2054.

Anticipated Repayment Date

There is a five-year and seven-year ARD for the 2023-1, 2023-2 and 2024-1 series, respectively.

The ARD for the 2023-1 and 2024-1 series of notes is July 2028, and May 2031 respectively.

If the issuer fails to repay the notes of a series in full on the series ARD, additional interest will accrue on such series, and the outstanding principal balance of such series will begin to amortize on a monthly basis to the extent excess cash flow is available for such purpose. Fitch's rating does not address additional interest accrued following the ARD.

Rating Confirmations

Fitch is not a transaction party and has no obligation to provide rating confirmations. Fitch will continue to exercise its discretion in choosing to issue a rating confirmation or otherwise. Where relevant to Fitch's ratings, the agency prefers to issue public commentary on the rating impact of the change. Fitch's approach to and concerns regarding rating confirmations are highlighted in "Rating Confirmations in Structured Finance and Covered Bonds."

Disclaimer

Fitch relies in its credit analysis on legal and/or tax opinions provided by transaction counsel for the avoidance of doubt. Fitch has always made clear that it does not provide legal and/or tax advice or confirm that the legal and/or tax opinions, or any other transaction documents, or any transaction structures, are sufficient for any purpose. The disclaimer at the foot of this report makes it clear that this report does not constitute legal, tax and/or structuring advice from Fitch and should not be used or interpreted as legal, tax and/or structuring advice from Fitch. Should readers of this report need legal, tax and/or structuring advice, they are urged to contact relevant advisers in the relevant jurisdictions. dv01, a Fitch Solutions company, and an affiliate of Fitch Ratings, may from time to time serve as loan data agent on certain structured finance transactions rated by Fitch Ratings.

Counterparty Risk

The manager of the fiber network, Frontier Communications Holdings, LLC, may be terminated at the servicer's direction upon the occurrence of one of the following events: an EOD; if the DSCR falls below 1.10x due to poor management; fraud, gross negligence or willful misconduct; or breach of the management agreement. Absent these events, the management contract will automatically renew each calendar month.

Drivetrain Agency Services, LLC is the servicer for the transaction.

The indenture trustee, Citibank, N.A. (A+/Stable), may replace the servicer upon a servicer termination event.

Fitch assesses the counterparty risk under its "Structured Finance and Covered Bonds Counterparty Rating Criteria" to be in line with the ratings assigned, based on the documentation provisions and analytical adjustments described in the following table.

Counterparty Risk Exposures

Counterparty Role/Risk	Counterparty	Relevant Ratings Under Criteria	Minimum Ratings and Remedial Actions	Adjustment to Analysis If Minimum Ratings and Remedial Actions Not in Line with Criteria
Issuer Account Bank Risk	Citibank, N.A.	Deposit ratings: BBB/F2 or segregated trust account	Minimum ratings of BBB or segregated trust account within 30 days thereof.	Minimum ratings and remedial actions are in line with criteria for eligible accounts.
Servicer/ Commingling Risk	Frontier Communications Parent, Inc.	If commingling for more than two business days: Long-Term IDR: BBB or Short-Term IDR: F2	None.	Commingling risk is assessed as mitigated in accordance with Fitch's counterparty criteria, given that funds are required to be transferred from the control account to the collection account (controlled by the indenture trustee) within two business days.
Servicing[a] Continuity	Frontier Communications Holdings, LLC	N.A.	There is no minimum rating for the servicer. The issuer must find a new servicer to be acceptable to the indenture trustee; otherwise, the indenture trustee may act as servicer until the servicer is replaced.	N.A.; servicer continuity risk is assessed as mitigated in accordance with Fitch's counterparty criteria because of the depth of the servicing market, sufficient economic incentives to attract a high-quality replacement servicer and the in-place backup manager.

[a]In the context of this transaction, the manager serves in the role typically defined as the servicer in other structured finance transactions and in connection with Fitch's counterparty criteria. IDR – Issuer Default Rating. N.A. – Not applicable.
Source: Fitch Ratings, Frontier 2024-1

Criteria Application, Model and Data Adequacy

Criteria Application

See page 2 for the list of Applicable Criteria.

Fitch applied its criteria for rating digital infrastructure securitizations. The criteria take into account the durability of cash flow as informed by credit risk factors. These credit risk factors include tenancy/payors, collateral, sponsor/manager quality, the operating environment and transaction/structure attributes. The "Digital Infrastructure Securization Rating Criteria" can be found on Fitch's website at www.fitchratings.com.

Use of Third-Party Due Diligence Pursuant to SEC Rule 17g-10

Form ABS Due Diligence-15E was not provided to or reviewed by Fitch in relation to this rating action.

Surveillance

Information is reported monthly by the servicer and the indenture trustee.

Factors that may lead to positive rating action include increasing cash flow without an increase in corresponding debt from new contracts. However, the transaction is capped in the 'A' rating category, given the potential for new competitive technologies and resulting adverse market dynamics, geographic concentration, and operating and asset maintenance risk.

Factors that may lead to negative rating action include declining cash flow as a result of higher expenses or churn, the development of an alternative technology for the transmission of data, or the creation of a competing network with similar capacity and breadth of coverage; increased leverage due to additional note issuances; and other aspects of the key rating drivers discussed in this report.

For more information on how Fitch monitors its transactions, see "Digital Infrastructure Securitization Rating Criteria," available at www.fitchratings.com.

Appendix 1: ESG Relevance Score

FitchRatings **Frontier Issuer LLC, Secured Fiber Network Revenue Term Notes, Series 2024-1**

SF ESG Navigator
CMBS

Credit-Relevant ESG Derivation

Frontier Issuer LLC, Secured Fiber Network Revenue Term Notes, Series 2024-1 has 10 ESG potential rating drivers

- Frontier Issuer LLC, Secured Fiber Network Revenue Term Notes, Series 2024-1 has exposure to asset, operations and/or cash flow exposure to extreme weather events and other catastrophe risk, including but not limited to flooding, hurricanes, tornadoes, and earthquakes but this has very low impact on the rating.
- Frontier Issuer LLC, Secured Fiber Network Revenue Term Notes, Series 2024-1 has exposure to low income housing; GSE/agency issued or provision for social good but this has very low impact on the rating.
- Frontier Issuer LLC, Secured Fiber Network Revenue Term Notes, Series 2024-1
- Frontier Issuer LLC, Secured Fiber Network Revenue Term Notes, Series 2024-1 has exposure to labor practices and employee (dis)satisfaction, especially for hotels and healthcare properties; tenant safety and wellbeing but this has very low impact on the rating.
- Frontier Issuer LLC, Secured Fiber Network Revenue Term Notes, Series 2024-1
- Frontier Issuer LLC, Secured Fiber Network Revenue Term Notes, Series 2024-1 has exposure to sustained structural shift in secular preferences affecting consumer trends, occupancy trends, etc. but this has very low impact on the rating.

Showing top 6 issues

			ESG Relevance to Credit Rating
key driver	0	issues	5
driver	0	issues	4
potential driver	10	issues	3
not a rating driver	0	issues	2
	4	issues	1

Environmental (E) Relevance Scores

General Issues	E Score	Sector-Specific Issues	Reference	E Relevance
GHG Emissions & Air Quality	1	Regulatory risks, fines, or compliance costs from building emissions standards (including energy consumption) and related reporting standards	Asset Quality; Financial Structure; Surveillance	5
Energy Management	1	n.a. - included in sustainable building practices	n.a.	4
Water & Wastewater Management	1	n.a. - included in sustainable building practices	n.a.	3
Waste & Hazardous Materials Management; Ecological Impacts	1	Environmental site risk and associated remediation/liability costs; sustainable building practices including Green building certificate credentials	Asset Quality; Financial Structure; Surveillance	2
Exposure to Environmental Impacts	3	Asset, operations and/or cash flow exposure to extreme weather events and other catastrophe risk, including but not limited to flooding, hurricanes, tornadoes, and earthquakes	Asset Quality; Financial Structure; Surveillance	1

Social (S) Relevance Scores

General Issues	S Score	Sector-Specific Issues	Reference	S Relevance
Human Rights, Community Relations, Access & Affordability	3	Low income housing; GSE/agency issued or provision for social good	Asset Quality; Financial Structure; Surveillance	5
Customer Welfare - Fair Messaging, Privacy & Data Security	3	n.a.	n.a.	4
Labor Relations & Practices	3	Labor practices and employee (dis)satisfaction, especially for hotels and healthcare properties; tenant safety and wellbeing	Asset Quality; Financial Structure; Surveillance	3
Employee Wellbeing	3	n.a.	n.a.	2
Exposure to Social Impacts	3	Sustained structural shift in secular preferences affecting consumer trends, occupancy trends, etc.	Asset Quality; Financial Structure; Surveillance	1

Governance (G) Relevance Scores

General Issues	G Score	Sector-Specific Issues	Reference	G Relevance
Rule of Law, Institutional and Regulatory Quality	3	Jurisdictional legal risks; regulatory effectiveness; supervisory oversight; foreclosure laws; government support and intervention	Asset Isolation and Legal Structure; Asset Quality; Rating Caps; Surveillance	5
Transaction & Collateral Structure	3	Asset isolation; resolution/insolvency remoteness; legal structure; structural risk mitigants; complex structures	Asset Isolation and Legal Structure; Asset Quality; Financial Structure; Rating Caps; Surveillance	4
Transaction Parties & Operational Risk	3	Counterparty risk; origination, underwriting and/or aggregator standards; borrower/lessee/sponsor risk; originator/servicer/manager/operational risk	Asset Quality; Financial Structure; Operational Risk; Rating Caps; Surveillance	3
Data Transparency & Privacy	3	Transaction data and periodic reporting	Asset Isolation and Legal Structure; Asset Quality; Financial Structure; Surveillance	2
				1

How to Read This Page
ESG relevance scores range from 1 to 5 based on a 15-level color gradation. Red (5) is most relevant to the credit rating and green (1) is least relevant.
The Environmental (E), Social (S) and Governance (G) tables break out the ESG general issues and the sector-specific issues that are most relevant to each industry group. Relevance scores are assigned to each sector-specific issue, signaling the credit-relevance of the sector-specific issues to the issuer's overall credit rating. The Criteria Reference column highlights the factor(s) within which the corresponding ESG issues are captured in Fitch's credit analysis. The vertical color bars are visualizations of the frequency of occurrence of the highest constituent relevance scores. They do not represent an aggregate of the relevance scores or aggregate ESG credit relevance.
The Credit-Relevant ESG Derivation table's far right column is a visualization of the frequency of occurrence of the highest ESG relevance scores across the combined E, S and G categories. The three columns to the left of ESG Relevance to Credit Rating summarize rating relevance and impact to credit from ESG issues. The box on the far left identifies any ESG Relevance Sub-factor issues that are drivers or potential drivers of the issuer's credit rating (corresponding with scores of 3, 4 or 5) and provides a brief explanation for the relevance score. All scores of '4' and '5' are assumed to reflect a negative impact unless indicated with a '+' sign for positive impact.
Classification of ESG issues has been developed from Fitch's sector ratings criteria. The General Issues and Sector-Specific Issues draw on the classification standards published by the United Nations Principles for Responsible Investing (PRI), the Sustainability Accounting Standards Board (SASB), and the World Bank.

CREDIT-RELEVANT ESG SCALE - DEFINITIONS

How relevant are E, S and G issues to the overall credit rating?	
5	Highly relevant; a key transaction or program rating driver that has a significant impact on an individual basis.
4	Relevant to transaction or program ratings; not a key rating driver but has an impact on the ratings in combination with other factors.
3	Minimally relevant to ratings; either very low impact or actively mitigated in a way that results in no impact on the transaction or program ratings.
2	Irrelevant to the transaction or program ratings; relevant to the sector.
1	Irrelevant to the transaction or program ratings; irrelevant to the sector.

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For information on the solicitation status of the ratings included within this report, please refer to the solicitation status shown in the relevant entity's summary page of the Fitch Ratings website.

For information on the participation status in the rating process of an issuer listed in this report, please refer to the most recent rating action commentary for the relevant issuer, available on the Fitch Ratings website.

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