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## ACCESS SERVICE

### 4. SPECIAL ACCESS SERVICE

#### 4.1. GENERAL

Except as set forth in 4.2 and 4.3 following, Special Access Services are not generally available but may be provided subject to the terms, conditions, and limitations set forth in Section 5.2, following, for Special Assemblies and Individual Case Basis Arrangements.

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#### 4.1.1. DEFINITIONS

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The following definitions apply to Comcast Services in Section 4.

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- A. "Agreement" consists of the Enterprise Master Services Agreement executed by the Customer and accepted by Comcast, the Product-Specific Attachment, the terms and conditions contained in this Tariff, any written amendments executed by both parties, and each Sales Order accepted by Comcast under the Agreement.
- B. "Comcast" refers to the operating company affiliate or subsidiary of Comcast that provides the Services.
- C. "Comcast Equipment" refers to any and all facilities, equipment or devices provided by Comcast or its authorized contractors at the Service Location(s) that are used to deliver any of the Services including, but not limited to, all terminals, wires, modems, lines, circuits, ports, routers, gateways, switches, channel service units, data service units, cabinets, and racks. Notwithstanding the above, inside telephone wiring within the Service Location, whether or not installed by Comcast, shall not be considered Comcast Equipment.
- D. "Customer" refers to the company, corporation or other entity that purchases Services from Comcast.
- E. "Estimated Availability Date" means the target date for delivery of Service
- F. "Interconnection Facilities" means transmission capacity provided by Comcast, Customer or a third-party supplier to extend the Comcast Equipment from a Comcast terminal to any other location (e.g., a local loop provided by a local exchange company or other communications company).

(M) Material previously on this Sheet now appears on Sheet 3 of this Section.

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### **4. SPECIAL ACCESS SERVICE**

#### **4.1. GENERAL (CONT'D)**

##### **4.1.1. DEFINITIONS (CONT'D)**

(T)

- G. “Jitter”, also known as Frame Delay Variation, is defined as the short-term variations measured for a portion of successfully delivered service frames over a 30 day period.
- H. “Latency”, also known as Frame Delay, is defined as the maximum delay measured for a portion of successfully delivered service frames over a 30 day period.
- I. “Objective” – As it relates to Technical Specifications and Performance Standards is the definition of how the Service is provisioned. It does not constitute a guarantee. For guarantees, please see Section 4.2.15 – Service Level Agreement (SLA).
- J. “Off-Net” - means geographical locations that are outside of Comcast’s service area and/or geographical locations that are within Comcast’s service area generally, but are not readily accessible by Comcast Network facilities. All Off-Net Services are provided by third-party service providers.
- K. “On-Net” - means geographical locations where Comcast currently provides Services through its Comcast Network. On-Net Services may be provisioned over a fiber optic network, or via a hybrid fiber coax network (“HFC Network”), as available through Comcast.
- L. “Packet Loss”, also known as Frame Loss, is the difference between the number of service frames transmitted at the ingress UNI and the total number of service frames received at the egress UNI over a 30 day period.
- M. “Planned Service Interruption” means any Service Interruption caused by planned work such as scheduled maintenance or planned enhancements or upgrades to the network.
- N. “Product Specific Attachment(s) (PSA)” refers to the additional terms and conditions applicable to Services ordered by Customer under the Agreement.
- O. “Sales Order” means a request for Comcast to provide the Services to a service location submitted by Customer to Comcast (a) on a then-current Comcast form designated for that purpose or (b) if available, through a Comcast electronic order processing system designated for that purpose.

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**4. SPECIAL ACCESS SERVICE**

**4.1. GENERAL (CONT'D)**

**4.1.1. DEFINITIONS (CONT'D)**

- P. "Service" means (1) Ethernet Transport Services, when used in 4.2 of this Section and (2) Business Wavelength Services when used in 4.3 of this Section. (T)  
(C)
- Q. "Service Commencement Date" means the date(s) on which Comcast first makes Service available for use by Customer. A single Sales Order containing multiple Service Locations or Services may have multiple Service Commencement Dates.
- R. "Service Interruption" means a complete loss of signal that renders the Service unusable.
- S. "Service Location" means the Customer location(s) where Comcast provides Services, to the extent the Customer owns, leases, or otherwise controls such location(s).
- T. "Service Term" means the duration of time (commencing on the Service Commencement Date) for which Services are ordered, as specified in a Sales Order.
- U. "Termination Charges" refers to charges that may be imposed by Comcast if, prior to the end of the applicable Service Term (a) Comcast terminates Services for cause or (b) Customer terminates Services without cause. Termination Charges are as set forth in each PSA, and are in addition to any other rights and remedies under the Agreement.

**4.2. ETHERNET TRANSPORT SERVICES**

Comcast's Ethernet Transport Services will be provided in accordance with the service descriptions, technical specifications, and performance standards set forth in this Section 4.2 of this Tariff. If any of the definitions or regulations contained in this Section 4.2 conflict with those elsewhere in this Tariff, those contained in this Section 4.2 shall prevail.

**4.2.1. DEFINITIONS**

Definitions for this Service are set forth in Section 4.1.1.

(M) Material on this Sheet previously appeared on Sheet 1 of this Section.

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**4.2. ETHERNET TRANSPORT SERVICES (CONT'D)**

**4.2.2. PROVISIONING ENTITY**

On-Net Service shall be provided by Comcast Business Communications, LLC. On-Net Service provided over the HFC Network and Off-Net Services are available in a limited number of Comcast markets.

**4.2.3. REGULATORY APPROVAL; TRAFFIC MIX**

Comcast's pricing for Service may be subject to FCC, public service commission or other regulatory approval. Customer agrees to indemnify and hold Comcast harmless from any claims by third parties resulting from or arising out of Customer's failure to properly represent or certify the jurisdictional nature of its use of Service.

**4.2.4. SPECIAL CONSTRUCTION**

All rates and charges quoted herein provide for the furnishing of facilities when suitable facilities are available or where the design or construction of the necessary facilities does not involve unusual costs. When, at the request of Customer, Comcast designs and/or constructs facilities that it would otherwise not construct, or the construction of such facilities involves a greater expense than would otherwise be incurred, Special Construction nonrecurring charges may apply.

Once Comcast accepts a Sales Order for Service, Comcast will invoice Customer for all special construction fee(s). Customer will pay such fee(s) within thirty (30) days of the invoice date unless a payment schedule is specified in the applicable Service Order.

**4.2.5. PROVISIONING INTERVAL**

Following its acceptance of a Sales Order, Comcast shall notify Customer of the Estimated Availability Date applicable to that Sales Order. Comcast shall use commercially reasonable efforts to provision the Service on or before the Estimated Availability Date; provided, however, that Comcast's failure to provision by said date shall not constitute a breach of the Agreement.

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**4. SPECIAL ACCESS SERVICE**

**4.2. ETHERNET TRANSPORT SERVICES (CONT'D)**

**4.2.6. SERVICE COMMENCEMENT DATE**

Comcast shall inform Customer when Service is available and performing in accordance with the "Performance Standards" set forth in Section 4.2.10 ("Availability Notification"). Charges for Service shall begin to accrue as of the Service Commencement Date. The Service Commencement Date shall be earliest of: (a) the date on which Customer confirms receipt of and concurrence with the Availability Notification; (b) five (5) business days following the date of the Availability Notification, if Customer fails to notify Comcast that the Service does not comply materially with the specifications set forth in Section 4.2.14 hereto; or (c) the date on which Customer first uses the Service.

**4.2.7. MINIMUM SERVICE TERM**

The charges set forth or referenced in each Sales Order have been extended to Customer in reliance on the Service Term set forth therein. To the extent that a Service Term has not been expressly set forth in a Sales Order, the minimum Service Term for Services is twelve (12) months.

**4.2.8. TERMINATION CHARGES**

**A. Termination Charges for On-Net Services**

1. In the event that On-Net Service is terminated following Comcast's acceptance of the applicable Sales Order but prior to the Service Commencement Date, Customer shall pay Termination Charges equal to the costs and expenses incurred by Comcast in installing or preparing to install the On-Net Service plus twenty percent (20%).

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**4. SPECIAL ACCESS SERVICE**

**4.2. ETHERNET TRANSPORT SERVICES (CONT'D)**

**4.2.8. TERMINATION CHARGES (CONT'D)**

**A. Termination Charges for On-Net Services (Cont'd)**

2. In the event that On-Net Service is terminated on or following the Service Commencement Date but prior to the end of the applicable Service Term, Customer shall pay Termination Charges equal to a percentage of the monthly recurring charges remaining for the unexpired portion of the then-current Service Term, calculated as follows:
  - a. 100% of the monthly recurring charges with respect to months 1-12 of the Service Term; plus
  - b. 80% of the monthly recurring charges with respect to months 13-24 of the Service Term; plus
  - c. 65% of the monthly recurring charges with respect to months 25 through the end of the Service Term; plus
  - d. 100% of any remaining, unpaid Special Construction Fees.

Termination Charges shall be immediately due and payable upon cancellation or termination and shall be in addition to any and all accrued and unpaid charges for the Service rendered by Comcast through the date of cancellation or termination.

**B. Termination Charges for Off-Net Services**

In the event Customer terminates Off-Net Service following Comcast's acceptance of the applicable Sales Order but prior to the end of the applicable Service Term, Customer shall pay Termination Charges equal to:

1. 100% of the monthly recurring charges remaining through the end of the Service Term plus
2. 100% of any remaining, unpaid Custom Installation Fees; plus
3. any third-party charges, incurred by Comcast as a result of the early termination of service by the Customer.

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**4.2. ETHERNET TRANSPORT SERVICES (CONT'D)**

**4.2.8. TERMINATION CHARGES (CONT'D)**

C. Exclusions

Termination Charges shall not apply to Service terminated by Customer (a) as a result of Comcast's failure to provision Service within the intervals specified in Section 4.2.5 of this Tariff or (b) as a result of Comcast's material and uncured breach of the Agreement.

D. Portability

Customer may terminate an existing On-Net Service ("Existing Service") and turn up a replacement On-Net Service (i.e., having different termination points on Comcast's network) ("Replacement Service") without incurring Termination Charges with respect to the Existing Service, provided that (a) the Replacement Service must have a Service Term equal to or longer than the remaining Service Term of the Existing Service; (b) the Replacement Service must have monthly recurring charges equal to or greater than the monthly recurring charges for the Existing Service; (c) Customer submits a Sales Order to Comcast for the Replacement Service within ninety (90) days after termination of the Existing Service and that order is accepted by Comcast; (d) Customer reimburses Comcast for any and all installation charges that were waived with respect to the Existing Service; and (e) Customer pays the actual costs incurred by Comcast in installing and provisioning the Replacement Service.

E. Upgrades

Customer may upgrade the speed or capacity of an Existing Service without incurring Termination Charges, provided that (a) the upgraded Service ("Upgraded Service") must assume the remaining Service Term of the Existing Service; (b) the Upgraded Service must have the same points of termination on Comcast's network as the Existing Service; (c) Customer submits a Sales Order to Comcast for the Upgraded Service and that order is accepted by Comcast; (d) Customer pays Comcast's applicable nonrecurring charges for the upgrade; and (e) Customer agrees to pay the applicable monthly recurring charges for the Upgraded Service commencing with the upgrade. Upgrades to Off-Net Services are subject to the applicable third party service provider rules and availability. Comcast has no obligation to upgrade Customer's Off-Net Service.

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**4.2. ETHERNET TRANSPORT SERVICES (CONT'D)**

**4.2.9. ADDITIONAL INFORMATION**

As necessary for the interconnection of the Service with services provided by others, Comcast may request (as applicable), and Customer will provide to Comcast, circuit facility assignment information, firm order commitment information, and design layout records necessary to enable Comcast to make the necessary cross-connection between the Service and Customer's other service provider(s). Comcast may charge Customer nonrecurring and monthly recurring cross-connect charges to make such connections.

**4.2.10. ETHERNET NETWORK SERVICE (ENS) SERVICE DESCRIPTION**

ENS enables customers to connect physically distributed locations across a Metropolitan Area Network (MAN) as if they are on the same Local Area Network (LAN). The service provides Virtual Local Area Network (VLAN) transparency enabling customers to implement their own VLANs without any coordination with Comcast. ENS offers three Classes of Service (CoS): Basic, Priority, and Premium. CoS options enable customers to select the CoS that best meets their applications' performance requirements. The service is offered with 10/100 Mbps, 1Gbps or 10 Gbps Ethernet User-to-Network Interfaces (UNI) and is available in increments starting at 1Mbps. ENS Service is not available over a Comcast HFC Network.



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### **4. SPECIAL ACCESS SERVICE**

#### **4.2. ETHERNET TRANSPORT SERVICES (CONT'D)**

##### **4.2.11. ETHERNET PRIVATE LINE (EPL) SERVICE DESCRIPTION**

EPL service enables customers to connect their Customer Premises Equipment (CPE) using a lower cost Ethernet interface. EPL service enables customers to use any VLANs or Ethernet control protocol across the service without coordination with Comcast. EPL service provides one Ethernet Virtual Connection (EVC) between two customer locations. EPL offers three Classes of Service (CoS): Basic, Priority, and Premium. CoS options enable customers to select the CoS that best meets their applications' performance requirements. EPL service is offered with 10/100Mbps, 1 Gbps or 10 Gbps Ethernet User-to-Network Interfaces (UNI) and is available in speed increments starting at 1Mbps. ENS Service is only available with Basic CoS when delivered over a Comcast HFC Network.

##### **4.2.12. ETHERNET VIRTUAL PRIVATE LINE (EVPL) SERVICE DESCRIPTION**

EVPL service provides an Ethernet Virtual Connection (EVC) between two customer locations similar to Ethernet Private Line service but supports the added flexibility to multiplex multiple services (EVCs) on a single UNI at a customer's hub or aggregation site. The service multiplexing capability is not available at sites served by the Comcast HFC Network. EVPL offers three Classes of Service (CoS): Basic, Priority, and Premium. CoS options enable customers to select the CoS that best meets their applications' performance requirements. The service is offered with 10/100Mbps, 1Gbps or 10 Gbps Ethernet User-to-Network Interfaces (UNI) and is available in speed increments starting at 1Mbps. ENS Service is only available with Basic CoS when delivered over a Comcast HFC Network.

##### **4.2.13. OFF-NET SERVICE LIMITATIONS**

The above categories of Service are available as Off-Net Services, with the following limitations:

- Only available with Basic CoS;
- 10Gbps Ethernet UNIs are not available with Off-Net Services;
- Service multiplexing capability is not available on Off-Net EVPL UNIs;
- When ordering 10/100Mbps Off-Net Ethernet UNIs, speed increments may only be ordered in increments of 10 Mbps, up to a maximum size of 90Mbps; when ordering 1 Gbps Off-Net Ethernet UNIs, speed increments may only be ordered in increments of 100Mbps, up to a maximum size of 900Mbps.

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### 4. SPECIAL ACCESS SERVICE

#### 4.2. ETHERNET TRANSPORT SERVICES (CONT'D)

##### 4.2.14. TECHNICAL SPECIFICATIONS AND PERFORMANCE STANDARDS FOR SERVICES

###### A. User-to-Network Interface

This Service provides the bidirectional, full duplex transmission of Ethernet frames using a standard IEEE 802.3 Ethernet interface. . Figure 1 provides a list of available UNI physical interfaces and their available Committed Information Rate (CIR) bandwidth increments and Committed Burst Sizes (CBS). CIR increments of less than 10 Mbps are not available in conjunction with Off-Net Services.

UNI Speed	UNI Physical Interface	CIR Increments	CBS (bytes)
10 Mbps	10BaseT	1 Mbps	25,000
100 Mbps	100BaseT	10 Mbps	250,000
1 Gbps	1000BaseT or 1000BaseSX	100 Mbps	2,500,000
10 Gbps	10GBase-SR or 10GBase-LR	1000 Mbps	25,000,000

Figure 1: Available UNI interface types and CBS values for different CIR Increments

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**4.2. ETHERNET TRANSPORT SERVICES (CONT'D)**

**4.2.14. TECHNICAL SPECIFICATIONS AND PERFORMANCE STANDARDS FOR SERVICES (CONT'D)**

**B. Class of Service Option**

Except as indicated below, On-Net Service offers three different classes of service. The CoS options allow for differentiated service performance levels for different types of network traffic. It is used to prioritize customer mission-critical traffic from lesser priority traffic in the network. The customer must specify a CIR for each CoS to indicate how much bandwidth should be assigned to each CoS. Figure 2 lists the service performance objectives for each CoS associated with On-Net) (for distances within 250 network miles) and Off-Net Services. The Basic CoS is the only CoS available for Off-Net Services and On-Net Services delivered via the HFC Network.

Performance Objective	Class of Service (CoS)		
	Premium	Priority	Basic
<b>On-Net Services ( ≤ 250 miles )</b>			
Latency (one way)	< 12ms	< 23ms	< 45ms
Jitter (one way)	< 2ms	< 23ms	< 45ms
Packet Loss (one way)	< 0.001%	< 0.01%	< 1%
Availability (On-Net Services delivered via a non-HFC Network)	> 99.99%	> 99.99%	> 99.99%
Availability (On-Net Services delivered via HFC Network)	Not Applicable	> 99.99%	> 99.99%
<b>Off-Net Services</b>			
Availability	Not Applicable	Not Applicable	> 99.95%

**Figure 2: CoS Performance Objectives**

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**4.2. ETHERNET TRANSPORT SERVICES (CONT'D)**

**4.2.14. TECHNICAL SPECIFICATIONS AND PERFORMANCE STANDARDS FOR SERVICES (CONT'D)**

**C. CoS Identification and Marking**

Customer must mark all packets using 802.1p CoS values as specified in Figure 2 to ensure the service will provide the intended CoS performance objectives specified in Figure 2 above.

<b>CoS</b>	<b>802.1p</b>
Premium	5
Priority	2-3
Basic	0-1

**FIGURE 3: COS MARKING**

**D. Traffic Management**

Comcast's network traffic-policing policies restrict traffic flows to the subscribed CIR for each service class. If the customer-transmitted bandwidth rate for any CoS exceeds the subscription rate (CIR) and Committed Burst Size (CBS), Comcast will discard the non-conformant packets. For packets marked with a non-conformant CoS marking, the service will transmit them using the Basic service class without altering the customer's CoS markings. Traffic management policies associated with Off-Net Services will conform to the policies enforced by the third-party service provider.

**E. Maximum Frame Size**

The service supports a Maximum Transmission Unit (MTU) packet size of 1600 bytes to support untagged or 802.1Q tagged packet sizes. Jumbo Frame sizes can be supported on an Individual Case Basis (ICB).

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### 4. SPECIAL ACCESS SERVICE

#### 4.2. ETHERNET TRANSPORT SERVICES (CONT'D)

##### 4.2.15. SERVICE LEVEL AGREEMENT (SLA)

Comcast's liability for any Service Interruption (individually or collectively, "Liability"), shall be limited to the amounts set forth in the tables below. For the purposes of calculating credit for any such Liability, the Liability period begins when the Customer reports to Company an interruption in the portion of the Service to Comcast, provided that the Liability is reported by Customer during the duration of the Liability and a trouble ticket is opened. The Liability shall be deemed resolved upon closing of the same trouble ticket or the termination of the interruption, if sooner, less any time Comcast is awaiting additional information or premises testing from the Customer. In no event shall the total amount of credit issued to Customer's account on a per-month basis exceed 50% of the total monthly recurring charge ("MRC") associated with the impacted portion of the Service set forth in the Sales Order. Service Interruptions will not be aggregated for purposes of determining credit allowances. To qualify, Customer must request the Credit from Comcast within thirty (30) days of the interruption. Customer will not be entitled to any additional credits for Service Interruptions. Comcast shall not be liable for any Liability caused by force majeure events, Planned Service Interruptions or Customer actions, omission or equipment.

TABLE 1: SLA for On-Net Services provided over a Comcast fiber-optic Network

LENGTH OF SERVICE INTERRUPTION:	AMOUNT OF CREDIT:
Less than 4 minutes	None
At least 4 minutes but less than 4 hours	5% of Total MRC
At least 4 hours but less than 8 hours	10% of Total MRC
At least 8 hours but less than 12 hours	20% of Total MRC
At least 12 hours but less than 16 hours	30% of Total MRC
At least 16 hours but less than 24 hours	40% of Total MRC
At least 24 hours or greater	50% of Total MRC

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**4.2. ETHERNET TRANSPORT SERVICES (CONT'D)**

**4.2.15. SERVICE LEVEL AGREEMENT (SLA) (CONT'D)**

**TABLE 2: SLA FOR ON-NET SERVICES PROVIDED OVER THE HFC NETWORK**

<b>LENGTH OF SERVICE INTERRUPTION:</b>	<b>AMOUNT OF CREDIT:</b>
Less than 40 minutes	None
At least 40 minutes but less than 4 hours	5% of Total MRC
At least 4 hours but less than 8 hours	10% of Total MRC
At least 8 hours but less than 12 hours	20% of Total MRC
At least 12 hours but less than 16 hours	30% of Total MRC
At least 16 hours but less than 24 hours	40% of Total MRC
At least 24 hours or greater	50% of Total MRC

**TABLE 3: SLA FOR OFF-NET SERVICES**

<b>LENGTH OF SERVICE INTERRUPTION:</b>	<b>AMOUNT OF CREDIT:</b>
Less than 20 minutes	None
At least 20 minutes but less than 4 hours	5% of Total MRC
At least 4 hours but less than 8 hours	10% of Total MRC
At least 8 hours but less than 12 hours	20% of Total MRC
At least 12 hours but less than 16 hours	30% of Total MRC
At least 16 hours but less than 24 hours	40% of Total MRC
At least 24 hours or greater	50% of Total MRC

THE TOTAL CREDIT ALLOWANCE PER MONTH IS CAPPED AT 50% OF THAT MONTH'S MRC FOR THE INTERRUPTED PORTIONS OF SERVICE. SEPARATELY OCCURRING SERVICE INTERRUPTIONS ARE NOT AGGREGATED FOR THE PURPOSES OF DETERMINING CREDIT ALLOWANCES.

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**4. SPECIAL ACCESS SERVICE**

**4.2. ETHERNET TRANSPORT SERVICES (CONT'D)**

**4.2.16. NETWORK MONITORING**

Comcast monitors On-Net Service on a 24x7x365 basis.

**4.2.17. TECHNICAL SUPPORT AND MAINTENANCE**

Comcast provides a toll-free trouble reporting telephone number to the Enterprise Technical Support (ETS) Center that operates on a 24x7x365 basis. Comcast provides technical support for service-related inquiries. Technical support will not offer consulting or advice on issues relating to CPE or other equipment not provided by Comcast.

**A. Escalation**

Reported troubles are escalated within the Comcast Business Services Network Operations Center (BNOc) to meet the response/restoration interval described below (Response and Restoration Standards). Service issues are escalated within the Comcast BNOc as follows: to a Supervisor at the end of the applicable time interval plus one (1) hour; to a Manager at the end of the applicable time interval plus two (2) hours, and to a Director at the end of the applicable time interval plus four (4) hours.

**B. Maintenance**

Comcast's standard maintenance window for On-Net Services is Sunday to Saturday from 12:00am to 6:00am local time. Scheduled maintenance for On-Net Services is performed during the maintenance window and will be coordinated between Comcast and the Customer. Comcast provides a minimum forty-eight (48) hours notice for On-Net Service impacting planned maintenance. Emergency maintenance is performed as needed without advance notice to Customer. Maintenance for Off-Net Services shall be performed in accordance with the applicable third party service provider rules. Therefore, Off-Net Service may be performed without advance notice to Customer.

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### 4. SPECIAL ACCESS SERVICE

#### 4.2. ETHERNET TRANSPORT SERVICES (CONT'D)

##### 4.2.18. COMCAST EQUIPMENT

Comcast provides certain Comcast Equipment for provisioning its services and the delivery of the UNI, which will reside on the Customer-side of the Demarcation Point. Comcast will retain ownership and management responsibility for this Comcast Equipment. This Comcast Equipment must only be used for delivering Services. Customers are required to shape their egress traffic to the Committed Information Rate ("CIR") identified in the Sales Order. Comcast will be excused from paying Service Level Agreement (SLA) credits if the Service Interruption is the result of Customer's failure to shape their traffic to the contracted CIR or utilizing Comcast Equipment for non-Comcast provided services

##### 4.2.19. RESPONSE AND RESTORATION STANDARDS

Comcast has the following response and restoration objectives:

CATEGORY	TIME INTERVAL	MEASUREMENT	REMEDIES
<i>Mean Time to Respond</i> Telephonically to Call	15 minutes	Averaged Over A Month	Escalation (see above)
<i>Mean Time to Restore</i> On-Net Comcast Equipment	4 hours	Averaged Over A Month	Escalation (see above)
<i>Mean Time to Restore</i> Off-Net Equipment	6 hours	Averaged Over A Month	Escalation (see above)
<i>Mean Time to Restore</i> On-Net Services	6 hours	Averaged Over A Month	Escalation (see above)
<i>Mean Time to Restore</i> Off-Net Services	9 hours	Averaged Over A Month	Escalation (see above)

Customer shall bear any expense incurred, e.g., dispatch/labor costs, where a Service Interruption is found to be the fault of Customer, its end users, agents, representatives or third-party suppliers.



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#### **4.2. ETHERNET TRANSPORT SERVICES (CONT'D)**

##### **4.2.20. EMERGENCY BLOCKING**

The parties agree that if either party hereto, in its reasonable sole discretion, determines that an emergency action is necessary to protect its own network, the party may, after engaging in reasonable and good faith efforts to notify the other party of the need to block, block any transmission path over its network by the other party where transmissions do not meet material standard industry requirements. The parties further agree that none of their respective obligations to one another under the Agreement will be affected by any such blockage except that the party affected by such blockage will be relieved of all obligations to make payments for charges relating to the circuit(s) which is so blocked and that no party will have any obligation to the other party for any claim, judgment or liability resulting from such blockage.

##### **4.2.21. REMEDY PROCESSES**

All claims and rights arising under this Service Level Agreement must be exercised by Customer in writing within thirty (30) days of the event that gave rise to the claim or right. The Customer must submit the following information to the Customer's Comcast account representative with any and all claims for credit allowances: (a) Organization name; (b) Customer account number; and (c) basis of credit allowance claim (including date and time, if applicable). Comcast will acknowledge and review all claims promptly and will inform the Customer by electronic mail or other correspondence whether a credit allowance will be issued or the claim rejected, with the reasons specified for the rejection.

##### **4.2.22. EXCEPTIONS TO CREDIT ALLOWANCES**

A Service Interruption shall not qualify for the remedies set forth herein if such Service Interruption is related to, associated with, or caused by: scheduled maintenance events; Customer actions or inactions; Customer-provided power or equipment; any third party not contracted through Comcast, including, without limitation, Customer's users, third-party network providers, any power, equipment or services provided by third parties; or an event of force majeure as defined in the Agreement.

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**4.2. ETHERNET TRANSPORT SERVICES (CONT'D)**

**4.2.23. OTHER LIMITATIONS**

The remedies set forth in the Service Level Agreement shall be Customer's sole and exclusive remedies for any Service Interruption, outage, unavailability, delay, or other degradation, or any Comcast failure to meet the service objectives.

**4.2.24. RATES AND CHARGES**

Comcast may enter into term agreements with prices that may vary subject to the availability of promotional offers and/or the Customer's choice of term, bandwidth, and associated Special Construction or related charges. Special Construction charges shall be applied on an individual case basis as set forth in Section 4.2.4. The minimum term for these Services is **twelve (12) months**.

Customer networks are configured by designing a combination of Ports and Bandwidth / Class of Service (CoS) at each location, as shown below. Total bandwidth at a site may not exceed the port limit.

- ENS – One Port and Bandwidth (up to three CoS) at each location.
- EPL – One Port at each location and Bandwidth (up to three CoS) between each location.
- EVPL – One Port at each location and Bandwidth (up to three CoS) between locations. Bandwidth from multiple locations may be multiplexed on a single Port at a Customer's hub or aggregation site.

**A. Port Charges**

A Port Charge applies in addition to Bandwidth charges.

<b>PORT SPEED</b>	<b>PORT CHARGE PER MONTH</b>
10/100 Mbps	\$195.00
Gig E	\$845.00

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**4.2. ETHERNET TRANSPORT SERVICES (CONT'D)**

**4.2.24. RATES AND CHARGES (CONT'D)**

**B. Ethernet Network Service (ENS)**

BANDWIDTH	MAXIMUM RATES			
	EVC (BASIC CoS)	EVC (PRIORITY CoS)	EVC (PREMIUM CoS)	NRC
2	\$155.00	\$165.00	\$170.00	\$500.00
4	\$285.00	\$300.00	\$320.00	\$500.00
6	\$415.00	\$435.00	\$460.00	\$500.00
10	\$675.00	\$715.00	\$740.00	\$1,000.00
20	\$780.00	\$845.00	\$935.00	\$1,000.00
30	\$870.00	\$960.00	\$1,055.00	\$1,000.00
40	\$975.00	\$1,065.00	\$1,170.00	\$1,000.00
50	\$1,065.00	\$1,170.00	\$1,285.00	\$1,000.00
100	\$1,560.00	\$1,705.00	\$1,885.00	\$2,000.00
200	\$1,675.00	\$1,885.00	\$2,120.00	\$2,000.00
300	\$1,795.00	\$2,055.00	\$2,365.00	\$2,000.00
400	\$1,910.00	\$2,235.00	\$2,600.00	\$2,000.00
500	\$2,030.00	\$2,405.00	\$2,845.00	\$2,000.00
1000	\$2,615.00	\$3,290.00	\$4,045.00	\$2,000.00

Issued: April 21, 2016

**ACCESS SERVICE**

**4. SPECIAL ACCESS SERVICE**

**4.2. ETHERNET TRANSPORT SERVICES (CONT'D)**

**4.2.24. RATES AND CHARGES (CONT'D)**

C. Ethernet Private Line (EPL)

BANDWIDTH	MAXIMUM RATES			
	EVC (BASIC CoS)	EVC (PRIORITY CoS)	EVC (PREMIUM CoS)	NRC
2	\$105.00	\$130.00	\$145.00	\$500.00
4	\$220.00	\$245.00	\$285.00	\$500.00
6	\$325.00	\$375.00	\$430.00	\$500.00
10	\$545.00	\$625.00	\$730.00	\$1,000.00
20	\$625.00	\$730.00	\$830.00	\$1,000.00
30	\$715.00	\$820.00	\$935.00	\$1,000.00
40	\$795.00	\$910.00	\$1,055.00	\$1,000.00
50	\$870.00	\$1,000.00	\$1,155.00	\$1,000.00
100	\$1,285.00	\$1,480.00	\$1,705.00	\$2,000.00
200	\$1,480.00	\$1,600.00	\$1,845.00	\$2,000.00
300	\$1,600.00	\$1,730.00	\$1,990.00	\$2,000.00
400	\$1,715.00	\$1,845.00	\$2,130.00	\$2,000.00
500	\$1,835.00	\$1,975.00	\$2,275.00	\$2,000.00
1000	\$2,420.00	\$2,600.00	\$3,005.00	\$2,000.00

Issued: December 23, 2019

**ACCESS SERVICE**

**4. SPECIAL ACCESS SERVICE**

**4.2. ETHERNET TRANSPORT SERVICES (CONT'D)**

**4.2.24. RATES AND CHARGES (CONT'D)**

D. Ethernet Virtual Private Line (EVPL)

BANDWIDTH	MAXIMUM RATES			
	EVC (BASIC CoS)	EVC (PRIORITY CoS)	EVC (PREMIUM CoS)	NRC
2	\$260.00	\$285.00	\$310.00	\$500.00
4	\$535.00	\$570.00	\$625.00	\$500.00
6	\$795.00	\$860.00	\$935.00	\$500.00
10	\$1,315.00	\$1,445.00	\$1,560.00	\$1,000.00
20	\$1,430.00	\$1,510.00	\$1,585.00	\$1,000.00
30	\$1,545.00	\$1,625.00	\$1,715.00	\$1,000.00
40	\$1,665.00	\$1,755.00	\$1,845.00	\$1,000.00
50	\$1,780.00	\$1,870.00	\$1,965.00	\$1,000.00
100	\$2,365.00	\$2,485.00	\$2,615.00	\$2,000.00
200	\$2,470.00	\$2,600.00	\$2,755.00	\$2,000.00
300	\$2,575.00	\$2,715.00	\$2,885.00	\$2,000.00
400	\$2,680.00	\$2,835.00	\$3,030.00	\$2,000.00
500	\$2,780.00	\$2,950.00	\$3,160.00	\$2,000.00
1000	\$3,300.00	\$3,535.00	\$3,850.00	\$2,000.00

E. Equipment Fee

EQUIPMENT FEE PER MONTH
\$34.95 (I)

Issued: March 25, 2019

Effective: March 26, 2019

## **ACCESS SERVICE**

### **4. SPECIAL ACCESS SERVICE**

#### **4.3. BUSINESS WAVELENGTH SERVICES**

Comcast's Business Wavelength Services will be provided in accordance with the service descriptions, technical specifications, and performance standards set forth in this Section 4.3 of this Tariff. If any of the definitions or regulations contained in this Section 4.3 conflict with those elsewhere in this Tariff, those contained in this Section 4.3 shall prevail.

##### **4.2.1. DEFINITIONS**

Definitions for this Service are set forth in Section 4.1.1.

##### **4.3.2. PROVISIONING ENTITY**

Service shall be provided by Comcast Business Communications, LLC or its applicable affiliates and subsidiaries.

Comcast may provide Customer with Service and fiber maps during the term of the Agreement to further describe Service availability. Such maps are hereby deemed Comcast Confidential Information.

##### **4.3.3. REGULATORY APPROVAL; TRAFFIC MIX**

Comcast's pricing for Service may be subject to FCC, public service commission or other regulatory approval. Further, Customer represents that its use of Service hereunder will be jurisdictionally intrastate. If Customer's use of the Service now or at any time in the future is jurisdictionally interstate, Customer shall immediately notify Comcast of the same in writing. Further, Comcast reserves the right, in its reasonable sole discretion, to reclassify Customer's use of Service as jurisdictionally interstate or intrastate, as appropriate. Customer agrees to indemnify and hold Comcast harmless from any claims by third parties resulting from or arising out of Customer's failure to properly represent or certify the jurisdictional nature of its use of the Service(s).

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Effective: March 26, 2019

**ACCESS SERVICE**

**4. SPECIAL ACCESS SERVICE**

**4.3. BUSINESS WAVELENGTH SERVICES (CONT'D)**

**4.3.4. SPECIAL CONSTRUCTION**

All rates and charges quoted herein provide for the furnishing of facilities when suitable facilities are available or where the design or construction of the necessary facilities does not involve unusual costs. When, at the request of Customer, Comcast designs and/or constructs facilities that it would otherwise not construct, or the construction of such facilities involves a greater expense than would otherwise be incurred, Special Construction nonrecurring charges may apply.

Once Comcast accepts a Sales Order for Service, Comcast will invoice Customer for all special construction fee(s). Customer will pay such fee(s) within thirty (30) calendar days of the invoice date unless a payment schedule is specified in the applicable Service Order.

**4.3.5. PROVISIONING INTERVAL**

Following its acceptance of a Sales Order, Comcast shall notify Customer of the Estimated Availability Date applicable to that Sales Order. Comcast shall use commercially reasonable efforts to provision the Service on or before the Estimated Availability Date; provided, however, that Comcast's failure to provision by said date shall not constitute a breach of the Agreement.

**4.3.6. SERVICE COMMENCEMENT DATE**

Comcast shall inform Customer when Service is available and performing in accordance with the "Technical Specifications" set forth in Section 4.3.11 ("Availability Notification"). Charges for Service shall begin to accrue as of the Service Commencement Date. The Service Commencement Date shall be the earliest of: (A) the date on which Customer confirms receipt of and concurrence with the Availability Notification; (B) five (5) business days following the date of the Availability Notification, if Customer fails to notify Comcast that the Service does not comply materially with the Technical Specifications; or (C) the date on which Customer first uses the Service.

**4.3.7. MINIMUM SERVICE TERM**

The charges set forth or referenced in each Sales Order have been extended to Customer in reliance on the Service Term set forth therein. To the extent that a Service Term has not been expressly set forth in a Sales Order, the minimum Service Term for Services is thirty-six (36) months.

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**ACCESS SERVICE**

**5. SPECIAL ACCESS SERVICE**

**4.3. BUSINESS WAVELENGTH SERVICES (CONT'D)**

**4.3.8. TERMINATION CHARGES**

- A. In the event that Service is terminated prior to the Service Commencement Date, Customer shall pay Termination Charges equal to the costs and expenses incurred by Comcast in installing or preparing to install the Service plus twenty percent (20%).
- B. In the event that Service is terminated on or following the Service Commencement Date but prior to the end of the applicable Service Term, Customer shall pay Termination Charges equal to a percentage of the monthly recurring charges remaining for the unexpired portion of the then-current Service Term, calculated as follows:
  - 1. 100% of the monthly recurring charges with respect to months 1-12 of the Service Term; plus
  - 2. 80% of the monthly recurring charges with respect to months 13-24 of the Service Term; plus
  - 3. 65% of the monthly recurring charges with respect to months 25 through the end of the Service Term; plus
  - 4. 100% of any remaining, unpaid Special Construction Fees.
- C. Termination Charges shall be immediately due and payable upon cancellation or termination and shall be in addition to any and all accrued and unpaid charges for the Service rendered by Comcast through the date of cancellation or termination.
- D. Exclusions

If either party is in material breach of the Agreement, other than a breach of a payment obligation, and the breach continues un-remedied for thirty (30) days after written notice of default, the other party may terminate for cause any Sales Order or statement of work (SOW) materially affected by the breach. If Customer is in breach of a payment obligation (including failure to pay a required deposit) and fails to make payment in full within ten (10) days after receipt of written notice of default, Comcast may, at its option, terminate the Agreement, terminate the affected SOWs and/or Sales Orders, suspend Service under the affected SOWs and/or Sales Orders, and/or require a deposit, advance payment, or other satisfactory assurances in connection with any or all SOWs and/or Sales Orders as a condition of continuing to provide Service; except that Comcast will not take any such action as a result of Customer's non-payment of a charge subject to a timely billing dispute. Termination by either party of this Agreement, a SOW and/or Sales Order does not waive any other rights or remedies that it may have under this Agreement. The non-defaulting party shall be entitled to all available legal and equitable remedies for such breach.



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**ACCESS SERVICE**

**5. SPECIAL ACCESS SERVICE**

**4.3. BUSINESS WAVELENGTH SERVICES (CONT'D)**

**4.3.8. TERMINATION CHARGES (CONT'D)**

**E. Portability**

Customer may terminate an existing Service and turn up a replacement Service (i.e., having different termination points on Comcast's network) without incurring Termination Charges with respect to the existing Service, provided that (a) the replacement Service must have a Service Term equal to or greater than the remaining Service Term of the existing Service; (b) the replacement Service must have monthly recurring charges equal to or greater than the monthly recurring charges for the existing Service; (c) Customer submits a Sales Order to Comcast for the replacement Service within ninety (90) days after termination of the existing Service and that order is accepted by Comcast; (d) Customer reimburses Comcast for any and all installation charges that were waived with respect to the existing Service; and (e) Customer pays the actual costs incurred by Comcast in installing and provisioning the replacement Service.

**F. Upgrades and Features**

Customer may upgrade the speed of an existing Service or convert an unprotected existing Service to a protected existing Service (as further described in Section 4.3.10) without incurring Termination Charges, provided that (A) the upgraded Service must assume the remaining Service Term of the existing Service; (B) the upgraded Service must have the same points of termination on Comcast's network as the existing Service; (C) Customer submits a Sales Order to Comcast for the upgraded Service and that order is accepted by Comcast; (D) Customer pays Comcast's applicable nonrecurring charges, including but not limited to special construction fees, and right-of-entry fees, for the upgraded Service; and (E) Customer agrees to pay the applicable monthly recurring charges for the upgraded Service commencing with the Service Commencement Date for such upgraded Service.

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## **ACCESS SERVICE**

### **5. SPECIAL ACCESS SERVICE**

#### **4.3. BUSINESS WAVELENGTH SERVICES (CONT'D)**

##### **4.3.9. ADDITIONAL INFORMATION**

As necessary for the interconnection of the Service with services provided by others, Comcast may request (as applicable), and Customer will provide to Comcast, circuit facility assignment information, firm order commitment information, and design layout records necessary to enable Comcast to make the necessary cross-connection between the Service and Customer's other service provider(s). Comcast may charge Customer nonrecurring and monthly recurring charges to make such connections.

##### **4.3.10. BUSINESS WAVELENGTH SERVICES DESCRIPTION**

The Service is a point-to-point service delivered over a dense wave division multiplexing (DWDM) network as either an unprotected or protected circuit.

- A. Unprotected. A point-to-point non-diverse linear circuit along a single fiber route terminating on single Comcast-owned Network Terminating Equipment (NTE) at each circuit endpoint.
- B. Protected. A point-to-point circuit utilizing two diverse physical outside plant (OSP) fiber paths between the nearest point of divergence at each circuit endpoint. This circuit employs diverse line cards and dual power supplies on single chassis transport equipment, and diverse line cards or dual line interface ports terminating on a single customer interface port on single Comcast-owned NTE at each circuit endpoint. Only one Service path is active at a given time. Comcast provides protection switching at NTE between the diverse Service paths.

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## ACCESS SERVICE

### 5. SPECIAL ACCESS SERVICE

#### 4.3. BUSINESS WAVELENGTH SERVICES (CONT'D)

##### 4.3.11. TECHNICAL SPECIFICATIONS FOR SERVICES

###### A. Customer Interface

Table 1 shows the customer interfaces supported, by protocol, for the Service.

Protocol	Interface(s)
Ethernet – 10G LAN PHY	10GBase-LR
Ethernet – 10G WAN PHY	10GBase-LW
Ethernet – 100G	100GBASE-LR4
OTN – 10G	OTU2, OTU2e
OTN – 100G	OTU4

**Table 1: Wavelength Services Protocols and Customer Interfaces**

##### 4.3.12. SERVICE MONITORING, TECHNICAL SUPPORT AND MAINTENANCE

- A. Network Monitoring - Comcast monitors Services on a 24x7x365 basis.
- B. Technical Support - Comcast provides a toll-free trouble reporting telephone number to the Network Operations Center that operates on a 24x7x365 basis. Comcast provides technical support for service related inquiries. Technical support will not offer consulting or advice on issues relating to equipment not provided by Comcast.
- C. Maintenance - Comcast's standard maintenance window for Services is Sunday to Saturday from 12:00 am to 6:00 am local time. Scheduled maintenance for Services is performed during the maintenance window and will be coordinated between Comcast and the Customer. Comcast provides a minimum three (3) business days' notice for maintenance expected to impact service for <=50ms. Comcast provides a minimum of seven (7) business days' notice for maintenance expected to impact service for >50ms. Emergency maintenance is performed as needed without advance notice to Customer.

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**ACCESS SERVICE**

**6. SPECIAL ACCESS SERVICE**

**4.3. BUSINESS WAVELENGTH SERVICES (CONT'D)**

**4.3.13. INTRASTATE WAVELENGTH SERVICE LEVEL AGREEMENTS (SLA)**

Comcast's Intrastate Comcast Business Wavelength Services are backed by the following Service Level Agreement (SLA):

**A. Availability SLA**

Comcast's liability and Customer's sole remedy for Service Interruptions, and errors, omissions, interruptions, delays, outages, or defects in transmission or switching of any Services (individually or collectively, "Liability"), shall be limited to the amounts set forth in the tables below ("Availability Credit"). For the purposes of calculating credit for a Service Interruption, the length of Service Interruption begins when the Customer reports such Service Interruption and a trouble ticket is opened, and concludes upon the closing of the same trouble ticket or, if sooner, the termination of the Service Interruption, less any time Comcast is awaiting additional information or premises testing from the Customer. The length of Service Interruptions for separately occurring Service Interruptions will not be aggregated for purposes of determining Availability Credit allowances. For purposes of calculating the Service credit percentage in the following tables, only the MRC of the impacted wavelength circuit shall apply. To qualify, Customer must request the Availability Credit from Comcast within thirty (30) days of the beginning of the Service Interruption. Comcast shall not incur any Liability, including availability credit, for any failure of the Services caused by force majeure events, Planned Service Interruptions, Customer actions, omission or equipment, or any other items set forth in the "Exceptions to Credit Allowances" Section 4.3.14.B following.

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**ACCESS SERVICE**

**4. SPECIAL ACCESS SERVICE**

**4.3. BUSINESS WAVELENGTH SERVICES (CONT'D)**

**4.3.13. INTRASTATE WAVELENGTH SERVICE LEVEL AGREEMENTS (SLA) (CONT'D)**

**B. SLA for Unprotected and Protected Options**

**TABLE 1: SLA for Unprotected Option**

<b>Availability</b>	<b>Unavailable</b>	<b>Service Credit (Based on MRC of only the impacted wavelength circuit)</b>
>= 99.44%	Less than 4 hours	No Credit
98.89% - 99.43%	At least 4 hours but less than 8 hours	10% of the MRC
98.33% - 98.88%	At least 8 hours but less than 12 hours	25% of the MRC
Up to 98.32%	At least 12 hours or greater	50% of the MRC

**TABLE 2: SLA for Protected Option\***

<b>Availability</b>	<b>Unavailable</b>	<b>Service Credit (Based on MRC of only the impacted wavelength circuit)</b>
>= 99.99%	Less than 4 minutes 19 seconds	No Credit
99.86% - 99.98%	At least 4 minutes 20 seconds but less than 1 hour	10% of the MRC
98.61% - 99.85%	At least 1 hour but less than 10 hours	25% of the MRC
Up to 98.60%	At least 10 hours or greater	50% of the MRC

\*Availability Credits on protected circuits are only available when both diverse service paths sustain a Service Interruption and are simultaneously unavailable to the Customer for use.

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**ACCESS SERVICE**

**4. SPECIAL ACCESS SERVICE**

**4.3. BUSINESS WAVELENGTH SERVICES (CONT'D)**

**4.3.14. EXCEPTIONS AND TERMS APPLICABLE TO ALL SLAS**

**A. Remedy Processes**

All claims and rights arising under this Service Level Agreement must be exercised by Customer in writing within the time period set forth in Section 4.3.13.A., preceding. The Customer must submit the following information to the Customer's Comcast account representative with any and all claims for credit allowances: (a) Organization name; (b) Customer account number; and (c) basis of credit allowance claim (including date and time, if applicable). Comcast will acknowledge and review all claims promptly and will inform the Customer by electronic mail or other correspondence whether a credit allowance will be issued or the claim rejected, with the reasons specified for the rejection.

**B. Exceptions to Credit Allowances**

Comcast's failure to meet either of the SLAs set forth in 4.3.13 shall not qualify for the remedies set forth herein if such failure is related to, associated with, or caused by: Planned Service Interruptions or other scheduled maintenance events; Customer actions or inactions; Customer-provided power or equipment; any third party not contracted through Comcast, including, without limitation, Customer's users, third-party network providers, any power, equipment or services provided by third parties; or an event of force majeure as defined in the Agreement

**C. Other Limitations**

The total credit allowance per calendar month under Section 4.3.13 is capped at 50% of that month's MRC for the impacted portions of the Service. In addition, the remedies set forth in this Service Level Agreement shall be Customer's sole and exclusive remedies for any Service Interruption, outage, unavailability, delay, or other degradation, or any Comcast failure to meet the service objectives.

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**ACCESS SERVICE**

**4. SPECIAL ACCESS SERVICE**

**4.3. BUSINESS WAVELENGTH SERVICES (CONT'D)**

**4.3.15. RATES AND CHARGES**

Comcast may enter into term agreements with prices that may vary subject to the availability of promotional offers and/or the Customer's choice of term, bandwidth, and associated Special Construction or related charges. Special Construction charges shall be applied on an individual case basis as set forth in Section 4.3.4. The minimum term for these Services is thirty-six (36) months.

Port prices are per port. Two ports per circuit.

**Comcast Business Wavelength Services Pricing**

<b>Charge Type</b>	<b>Bandwidth</b>	<b>Protection</b>	<b>Term (months)</b>	<b>MRC</b>	<b>NRC</b>
Service	10G	Unprotected	36	\$7,000.00	\$0.00
Service	10G	Unprotected	60	\$6,300.00	\$0.00
Service	10G	Protected	36	\$14,000.00	\$0.00
Service	10G	Protected	60	\$12,600.00	\$0.00
Service	100G	Unprotected	36	\$15,000.00	\$0.00
Service	100G	Unprotected	60	\$13,500.00	\$0.00
Service	100G	Protected	36	\$30,000.00	\$0.00
Service	100G	Protected	60	\$27,000.00	\$0.00
Port	10G	N/A	36	\$500.00	\$0.00
Port	10G	N/A	60	\$400.00	\$0.00
Port	100G	N/A	36	\$1,000.00	\$0.00
Port	100G	N/A	60	\$800.00	\$0.00