

**NATIONAL EXCHANGE CARRIER ASSOCIATION, INC.**  
**REVISIONS TO TARIFF F.C.C. NO. 5**  
**ETHERNET TRANSPORT SERVICE**  
**TRANSMITTAL NO. 1415**  
**DESCRIPTION AND JUSTIFICATION**

## **1. Introduction**

The National Exchange Carrier Association, Inc. (NECA) is modifying Tariff F.C.C. No. 5 to introduce three new Ethernet Transport Service (ETS) transport speeds operating at 2.5 Gbps, 5 Gbps and 10 Gbps. The introduction of the ETS 2.5 Gbps, 5 Gbps and 10 Gbps speed options is in response to increased demand for higher capacity ethernet service by network providers, anchor customers, and wireless service providers served by member companies.

## **2. Proposed Tariff Provisions**

This filing introduces three new ETS transport speed options operating at 2.5 Gbps, 5 Gbps and 10 Gbps which include the following ETS elements: Basic Ports; Channel Terminations (CTs); Intraswitch Ethernet Virtual Connections (EVCs); Interswitch EVCs; Extended EVCs and Interconnected EVCs. Provisions are also being introduced for optional ETS features including Port Protection, Real Time CoS/QoS, Near Real Time CoS, and DSL Access Service Connection Point (ASCP) Function. Revisions to A/SDSL Access Services are also being proposed to expand DSL Extended Transport for these new speed options.

Monthly and nonrecurring rates as specified in Section 17.4.8(C) and 17.4.9(F). All existing tariff provisions for the ETS rate elements specified in Section 16.3 and for the DSL Extended Transport rate element specified in Sections 8.1.5(D) and 8.2.5(D) of NECA Tariff F.C.C. No. 5 will apply for the new speed options. Special Access Rate Banding will apply to the appropriate ETS rate elements and DSL Rate Banding will apply to the DSL Extended Transport rate element for these new speeds.

Monthly stabilized rates for the three new ETS speeds are also being introduced in the ETS Fixed Rate Option Plan 3.

## **3. Proposed ETS 2.5 Gbps, 5 Gbps and 10 Gbps Rates and Charges**

The rates shown in the tables below reflect the uniform rate for each element. The uniform rate is the average TS pool rate. Most recurring tariff rates are study area specific banded rates, which are set closer to study area costs (see *2013 Annual Filing*, Volume 5, Section 3).<sup>1</sup> Non-banded rates are set at the uniform rate. The complete list of the proposed rates for each banded and non-banded element can be found in Sections 17.4.8(C) and 17.4.9(F) of the tariff.

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<sup>1</sup> See National Exchange Carrier Association, Inc., Transmittal No. 1389, filed June 17, 2013 (*2013 Annual Filing*).

**A) ETS Channel Terminations**

Rate banded monthly and nonrecurring charges apply to each ETS CT ordered. Different monthly rates apply to ETS CTs within 300 feet and ETS CTs greater than 300 feet from the ETS SWC.

<b>ETS Channel Terminations</b>			
<b>Capacity</b>	<b>2.5 Gbps</b>	<b>5 Gbps</b>	<b>10 Gbps</b>
Monthly ≤ 300 feet	\$ 820	\$ 1,245	\$ 1,700
Monthly > 300 feet	\$ 1,465	\$ 2,225	\$ 3,040
Nonrecurring	\$ 442	\$ 442	\$ 442

**B) ETS Basic Ports**

A rate banded monthly charge applies to each ETS Basic Port ordered. A nonrecurring charge applies to install each new ETS Basic Port.

<b>ETS Basic Ports</b>			
<b>Capacity</b>	<b>2.5 Gbps</b>	<b>5 Gbps</b>	<b>10 Gbps</b>
Monthly	\$ 875	\$ 1,330	\$ 1,820
Nonrecurring	\$ 388	\$ 388	\$ 388

**C) ETS Ethernet Virtual Connections**

A rate banded monthly charge applies to each ETS EVC ordered by the customer. An ETS Intraswitch EVC rate applies for each ETS EVC established between two ETS Basic Ports within the same SWC. An ETS Interswitch EVC rate applies to each ETS EVC established between ETS Ports located in different SWCs within the same operating territory. A nonrecurring charge applies to establish each new ETS EVC.

<b>ETS Ethernet Virtual Connections</b>			
<b>Capacity</b>	<b>2.5 Gbps</b>	<b>5 Gbps</b>	<b>10 Gbps</b>
Monthly Intraswitch	\$0	\$0	\$0
Nonrecurring Intraswitch	\$ 307		
Monthly Interswitch	\$ 5,850	\$ 8,890	\$ 12,160
Nonrecurring Interswitch	\$ 307		

**D) ETS Extended Ethernet Virtual Connections**

A rate banded monthly charge applies to each ETS E-EVC ordered by the customer. An ETS E-EVC is ordered between one telephone company’s ETS network and another telephone company’s Ethernet network located in an adjacent serving territory. A nonrecurring charge applies to establish each new ETS E-EVC.

<b>ETS Extended Ethernet Virtual Connections</b>			
<b>Capacity</b>	<b>2.5 Gbps</b>	<b>5 Gbps</b>	<b>10 Gbps</b>
E-EVC Monthly	\$ 3,660	\$ 5,560	\$ 7,600
E-EVC Nonrecurring	\$ 615		

**E) ETS Interconnected Ethernet Virtual Connections**

A monthly charge applies to each ETS I-EVC ordered by the customer. Different rates apply for ETS I-EVCs when the airline distance between the ETS SWCs serving the CDP is less than or equal to fifty miles and when it is between fifty-one and seventy-five miles. A nonrecurring charge applies to establish each new ETS I-EVC.

<b>ETS Interconnected Ethernet Virtual Connections</b>			
<b>Capacity</b>	<b>2.5 Gbps</b>	<b>5 Gbps</b>	<b>10 Gbps</b>
I-EVC 1-50 Miles Monthly	\$ 8,860	\$ 13,465	\$ 18,410
I-EVC 1-50 Nonrecurring	\$ 615		
I-EVC 51-75 Miles Monthly	\$ 10,460	\$ 15,890	\$ 21,730
I-EVC 51-75 Nonrecurring	\$ 615		

**F) DSL Access Service Connection Point and DSL Extended Transport Functions**

A nonrecurring charge applies per port to equip a new or existing ETS Basic Port with the DSL ASCP function. The DSL ASCP nonrecurring charge is applied at the same capacity as the associated ETS Basic Port.

<b>ETS Basic Ports – DSL ASCP Function</b>			
<b>ETS Basic Port Capacity</b>	<b>2.5 Gbps</b>	<b>5 Gbps</b>	<b>10 Gbp</b>
Nonrecurring	\$ 225	\$ 225	\$ 225

A rate banded monthly charge applies to each DSL Extended Transport path per mile based on the number of airline miles between the DSL Transport Hub SWC and the DSL ASCP SWC.

<b>DSL Extended Transport</b>			
	<b>2.5 Gbps</b>	<b>5 Gbps</b>	<b>10 Gbps</b>
Monthly Each Mile $\leq$ 25 miles	\$ 1,050	\$ 1,590	\$ 2,175
Monthly Each Mile over 25 miles	\$ 1,050	\$ 1,590	\$ 2,175

**G) ETS Port Protection Feature**

A monthly rate and a nonrecurring rate apply for the ETS Port Protection Feature at speeds of 2.5 Gbps to 10 Gbps based upon whether the CDP is located within 300 feet of the ETS SWC or more than 300 feet from the ETS SWC as shown in the table below:

<b>ETS Port Protection Feature – 2.5 Gbps to 10 Gbps</b>		
	<b>CT <math>\leq</math> 300 feet</b>	<b>CT &gt; 300 feet</b>
Monthly per Port	\$ 290	\$ 650
Nonrecurring per Port	\$ 560	\$ 560

**H) ETS Class of Service (CoS)**

The rate banded monthly rates for the ETS Real Time CoS/QoS and Near Real Time CoS features will apply to both Intraswitch EVCs and Interswitch EVCs at speeds of 2.5 Gbps to 10 Gbps as shown in the tables below:

<b>ETS CoS Level for Intraswitch 2.5 Gbps to 10 Gbps per Megabit</b>	<b>Near Real Time CoS</b>	<b>Real Time CoS/QoS</b>
Monthly	\$ .15	\$ .30
<b>ETS CoS Level for Interswitch 2.5 Gbps to 10 Gbps per Megabit</b>	<b>Near Real Time CoS</b>	<b>Real Time CoS/QoS</b>
Monthly	\$ .50	\$ 1.00

## 4. Revenue, Cost, and Demand Support

NECA estimated the revenue associated with the proposed ETS 2.5 Gbps, 5 Gbps, and 10 Gbps service options. NECA developed these estimates using a Rate Development Task Force (RDTF)<sup>2</sup> survey<sup>3</sup>, which asked companies for investments, cost data and new demand projections as well as demand expected to migrate from existing service(s) demand.

NECA used the RDTF survey to develop the monthly unit costs underlying the introduction of the ETS 2.5 Gbps, 5 Gbps, and 10 Gbps speed options using fiber-based technology. Based on data collected from the RDTF study, NECA adapted its existing ETS cost models to determine the investment cost for deploying ETS 2.5 Gbps, 5 Gbps, and 10 Gbps services and their optional features.

Exhibit 1 displays the investments and costs for the ETS Basic Ports developed from data received from the RDTF survey. Port charges recover Ethernet switching equipment costs. These costs include chassis, power supply, central processor, switch fabric, and ports to support 10 Gbps bandwidth. To calculate average port investment, NECA used the distribution of ports from the sample, and weighted each respondent's port investment levels by its business lines. NECA converted investment per port to a direct cost per port using the "Direct Cost Factor" described in the *2013 Annual Filing* (Volume 5, Exhibit 7, Workpaper 1).

Exhibit 2 displays the investments and costs for ETS CTs, developed from RDTF survey data. Fiber-based channel termination equipment includes SWC and customer premises' electrical-to-optical converters, fiber pairs, outside plant, and other premises equipment such as cabinet and power supply. Investments and costs are shown for channel terminations up to 300 feet and channel terminations having lengths greater than 300 feet. Loops up to 300 ft. will support ETS transmissions up to 10 Gbps using fiber transmission facilities at relatively low cost.

Exhibit 3 displays the unit investments and costs for the ETS EVCs, the ETS E-EVCs, and the ETS I-EVCs developed from data received from RDTF survey data.

Exhibit 4 displays the average monthly unit costs for the ETS Class of Service (CoS) optional feature, developed from data received from the RDTF survey. The investment for the ETS CoS feature on intra-switch EVCs includes software and hardware for a system to test and monitor EVC performance. Investment for ETS CoS on inter-switch EVCs is developed by applying Real Time and Near Real Time factors to the EVC investment to account for the extra bandwidth reserved to support the CoS level, and then adding the testing and monitoring cost.

Exhibit 5 displays the investments and monthly unit costs for the ETS Port Protection Optional Feature. The cost model covers two basic network elements in a standby configuration: a standby

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<sup>2</sup> The Rate Development Task Force is a group of selected participants in the NECA Traffic Sensitive (TS) and Common Line (CL) Pools. Other companies may participate as associates to the RDTF on an ad hoc basis. NECA uses the RDTF to develop cost characteristics representative of pooling companies and to facilitate the rate development process and provide supporting information for NECA tariff filings.

<sup>3</sup> 2014 ETS Investment and Demand Data Request.

Basic Port connecting the customer to the Ethernet network and associated CT for the facility between the customer premises and serving wire center during a network outage.

The sum of Basic Port and CT (within 300 feet) costs is for the 10 Gbps speed, the proposed highest speed in FCC Tariff No. 5. There is a single ETS Port Protection Function rate for the three proposed speeds, and this rate is above the unit cost. NECA converted investment per standby to a direct cost per port using the “Direct Cost Factor” described in the *2013 Annual Filing* (Volume 5, Section 3.B).

Exhibit 6 displays unit investments and costs for DSL Extended Transport between adjacent serving territories. The rates recover the costs for circuit equipment and interoffice facilities required to transport Ethernet traffic from the DSL Extended Transport Hub SWC to an ETS port in another SWC located in an adjacent telephone company’s serving territory. Extended transport costs are assumed to be twice the cost of an E-EVC supporting ETS traffic up to 10Gbps, scaled to a per mile basis.

Using an RDTF survey, NECA asked companies to project new demand and demand expected to migrate from current ETS speeds to the proposed new speed options. In Exhibits 7 through 9, based on data gathered from the survey, NECA estimated ETS revenue from the proposed ETS 2.5 Gbps, 5 Gbps, and 10 Gbps service options using uniform rates during the remaining three months of the current test period. Revenue was not projected for ETS I-EVC, CoS and DSL Extended Transport since there was no demand for these rate elements for the current test period. Exhibit 10 summarizes the overall impact of this filing on the NECA pool.

NECA anticipates demand for the new services will develop over time. At this time, NECA expects *de minimis* revenue and cost impacts for the remainder of the current tariff test period resulting from the proposed new ETS speed options and related Optional Features.

**MARCH 17, 2014 NECA ACCESS CHARGE FILING  
ETHERNET TRANSPORT SERVICE  
BASIC PORTS  
INVESTMENTS AND COSTS <sup>1</sup>**

**EXHIBIT 1**

LINE NO.	DESCRIPTION	AVERAGE INVESTMENT PER PORT ( A )	MONTHLY UNIT COST ( B ) = ( A * Line 4 ) / 12
<b>ETS Basic Ports</b>			
1	2.5 Gbps	\$4,686.40	\$60.42
2	5 Gbps	\$4,686.40	\$60.42
3	10 Gbps	\$4,686.40	\$60.42
4	<b>Direct Cost Factor <sup>2</sup></b>	<b>0.154720</b>	

<sup>1</sup> Based on 2014 RDTF ETS Investment Study. See National Exchange Carrier Association, Inc., Tariff F.C.C. No. 5, Transmittal No. 1302, filed March 8, 2011 and NECA Transmittal No. 1157, February 2, 2007, which introduced Ethernet Transport Service, describing how average investment was developed.

<sup>2</sup> 2013 Annual Filing, Volume 5 Exhibit 4 Workpaper 1

**MARCH 17, 2014 NECA ACCESS CHARGE FILING  
ETHERNET TRANSPORT SERVICE  
CHANNEL TERMINATION  
INVESTMENTS AND COSTS <sup>1</sup>**

**EXHIBIT 2**

LINE NO.	DESCRIPTION	EQUIPMENT INVESTMENT <sup>1</sup> ( A )	TRANSMISSION FACILITY INVESTMENT <sup>1</sup> ( B )	TOTAL INVESTMENT ( C ) = A + B	TOTAL MONTHLY UNIT COST ( D ) = ( C * Line 7 ) / 12
	<b><u>Channel Termination 300 Feet or Less</u></b>				
	<i>Bandwidth Capacity:</i>				
1	2.5 Gbps	\$9,633.43	\$85.33	\$9,718.76	\$125.31
2	5 Gbps	\$9,633.43	\$85.33	\$9,718.76	\$125.31
3	10 Gbps	\$9,633.43	\$85.33	\$9,718.76	\$125.31
	<b><u>Channel Termination greater than 300 Feet</u></b>				
	<i>Bandwidth Capacity:</i>				
4	2.5 Gbps	\$10,789.00	\$20,710.33	\$31,499.33	\$406.13
5	5 Gbps	\$10,789.00	\$20,710.33	\$31,499.33	\$406.13
6	10 Gbps	\$10,789.00	\$20,710.33	\$31,499.33	\$406.13
<b>7</b>	<b>Direct Cost Factor <sup>2</sup></b>	<b>0.154720</b>			

<sup>1</sup> Based on the 2014 RDTF Investment Study. See National Exchange Carrier Association, Inc., Tariff F.C.C. No. 5, Transmittal No. 1302, filed March 8, 2011.

<sup>2</sup> 2013 Annual Filing, Volume 5 Exhibit 4 Workpaper 1

**MARCH 17, 2014 NECA ACCESS CHARGE FILING  
 ETHERNET TRANSPORT SERVICE  
 ETHERNET VIRTUAL CONNECTIONS,  
 EXTENDED ETHERNET VIRTUAL CONNECTIONS AND INTERCONNECTED  
 ETHERNET VIRTUAL CONNECTIONS  
 INVESTMENTS AND COSTS <sup>1</sup>**

**EXHIBIT 3**

LINE NO.	DESCRIPTION (A)	UNIT INVESTMENT <sup>1</sup> (B)	MONTHLY UNIT COST (C) = (B * Line 9) / 12
<b>Ethernet Virtual Connection (EVC)</b>			
1	Unit Investment per Gbps <sup>2</sup>	\$16,070.29	
<i>Ethernet Virtual Connection with Capacity of:</i>			
2	2.5 Gbps	\$40,175.71	\$518.00
3	5 Gbps	\$80,351.43	\$1,036.00
4	10 Gbps	\$160,702.86	\$2,072.00
<b>Extended Ethernet Virtual Connection (E-EVC)</b>			
5	Unit Investment per Gbps <sup>3</sup>	\$9,642.17	
<i>Extended Ethernet Virtual Connection with Capacity of:</i>			
6	2.5 Gbps	\$24,105.43	\$310.80
7	5 Gbps	\$48,210.86	\$621.60
8	10 Gbps	\$96,421.71	\$1,243.20
9	<b>Direct Cost Factor <sup>4</sup></b>		<b>0.154720</b>

		Monthly Cost per Gbps <sup>5</sup>	Incidence for I-EVC
<b>Interconnected Ethernet Virtual Connection (I-EVC)</b>			
10	Ethernet Facility Investments (up to 50 miles)	\$450.34	60%
11	Leased Ethernet Facility (up to 50 miles)	\$1,223.50	40%
12	Ethernet over SONET Facility Investments (up to 50 miles)	\$1,947.76	0%
13	<b>I-EVC Transport Capacity Cost per Gbps (up to 50 miles) <sup>6</sup></b>	<b>\$759.60</b>	
14	Ethernet Facility Investments (50-75 miles)	\$1,223.50	60%
15	Leased Ethernet Facility (50-75 miles)	\$661.42	40%
16	Ethernet over SONET Facility Investments (50-75 miles)	\$2,013.98	0%
17	<b>I-EVC Transport Capacity Cost per Gbps (50-75 miles) <sup>6</sup></b>	<b>\$998.67</b>	

<sup>1</sup> Based on the 2014 RDTF Investment Study. See National Exchange Carrier Association, Inc., Tariff F.C.C. No. 5, Transmittal No. 1302, filed March 8, 2011.

<sup>2</sup> For Lines 2 through 4, Column B = Line 1 \* Capacity in Column A.

<sup>3</sup> Extended Ethernet Virtual Connection cost is assumed to be 60% of Ethernet Virtual Connection Cost. For Lines 6 through 8, Column B = Line 5 \* Capacity in Column A.

<sup>4</sup> 2013 Annual Filing, Volume 5 Exhibit 4 Workpaper 1.

<sup>5</sup> NECA Transmittal No. 1273, April 30, 2010, which introduced Interconnected Ethernet Transport Service, describes how investment was developed. NECA Transmittal No. 1327, Dec. 5, 2011, introduced the I-EVC for 50-75 miles. The transport capacity cost model was updated based on an RDTF ETS Data Request. For leased transport facilities, monthly lease costs are considered as "direct unit costs" in the calculation of monthly cost per Gbps. For all other invested facilities, the investment is divided by 12 and multiplied by the direct cost factor to estimate monthly unit costs per Gbps. The monthly transport capacity costs per Mbps are based on 10Gbps ETS I-EVC. The costs of the facilities associated with an ETS I-EVC are weighted by the demand for the ETS I-EVC bandwidth to develop a cost per Gbps per month. See 2013 Annual Filing, Volume 5 Exhibit 4 Workpaper 1 for the direct cost factor.

<sup>6</sup> The transport capacity cost per Gbps up to 50 miles in Line 13 is a weighted average of the values in Column A, Lines 10-12, using the values in Column B as the weights. The transport capacity cost per Gbps from 50 miles to 75 miles in Line 17 is a weighted average of the values in Column A, Lines 14-16, using the values in Column B as the weights. Incidence in Column B is based on information supplied by the RDTF members to reflect different deployment strategies.

**MARCH 17, 2014 NECA ACCESS CHARGE FILING  
ETHERNET TRANSPORT SERVICE  
CLASS OF SERVICE (CoS)  
INVESTMENTS AND COSTS <sup>1</sup>**

EXHIBIT 4

LINE NO.	DESCRIPTION (A)	UNIT INVESTMENT (B)	CoS MONTHLY UNIT COST PER Mbps (C)	SOURCE (D)
<b><u>Class of Service (CoS) over Intraswitch EVC</u></b>				
1	Unit Investment per Mbps <sup>1</sup>	\$4.23		
<i>CoS Unit Investment per Mbps by Priority Level:</i>				
2	<i>Near Real-Time (NRT) Priority</i>		\$0.05	Col B Line 1 * Line 7 / 12
3	<i>Real-Time (RT) Priority</i>		\$0.05	Col B Line 1 * Line 7 / 12
<b><u>Class of Service (CoS) over Interswitch EVC</u></b>				
4	Inter-Switch EVC Unit Investment per Mbps <sup>2</sup>	\$16.07		
<i>CoS Unit Investment per Mbps by Priority Level:</i>				
5	<i>Near Real-Time (NRT) Priority</i>		\$0.106	Col B Line 4 * Line 7 / 12 * (Line 8 - 1) + Line 2
6	<i>Real-Time (RT) Priority</i>		\$0.157	Col B Line 4 * Line 7 / 12 * (Line 9 - 1) + Line 3
7	Direct Cost Factor <sup>3</sup>			<b>0.154720</b>
8	Near Real-Time Incremental Cost Factor <sup>4</sup>			<b>1.247484</b>
9	Real-Time Incremental Cost Factor <sup>4</sup>			<b>1.494968</b>

<sup>1</sup> Based on 2014 RDTF Investment Study, the test and monitoring system was a common investment for CoS levels over intraswitch and interswitch EVCs. This common unit investment for the test and monitoring system was based on a lease cost model using a statewide service provider's test system. See National Exchange Carrier Association, Inc., Tariff F.C.C. No. 5, Transmittal No. 1302, filed March 8, 2011.

<sup>2</sup> Exhibit 3 Line 1, scaled to cost per 1Mbps.

<sup>3</sup> 2013 Annual Filing, Volume 5 Exhibit 4 Workpaper 1.

<sup>4</sup> Based on 2014 RDTF Investment Study, the factors were estimated to reflect incremental investment costs to account for the extra bandwidth reserved to support the CoS levels. See National Exchange Carrier Association, Inc., Tariff F.C.C. No. 5, Transmittal No. 1302, filed March 8, 2011.

**MARCH 17, 2014 NECA ACCESS CHARGE FILING  
ETHERNET TRANSPORT SERVICE  
ETS PORT PROTECTION  
INVESTMENTS AND COSTS**

**EXHIBIT 5**

LINE NO.	DESCRIPTION	AVERAGE INVESTMENT PER BASIC PORT ( A )	AVERAGE INVESTMENT PER CHANNEL TERMINATION ( B )	AVERAGE INVESTMENT PER PORT PROTECTION STANDBY CIRCUIT ( C ) = A + B	MONTHLY UNIT COST ( D ) = ( C * Line3 ) / 12
<b>ETS Port Protection</b>					
1	ETS Port Protection (300 feet or less) <sup>1</sup>	\$4,686.40	\$9,718.76	\$14,405.16	\$185.73
2	ETS Port Protection (greater than 300 feet) <sup>2</sup>	\$4,686.40	\$31,499.33	\$36,185.73	\$466.56
3	<b>Direct Cost Factor</b> <sup>3</sup>			<b>0.154720</b>	

<sup>1</sup> NECA Transmittal No. 1355 July 27, 2012, which introduced the Ethernet Transport Service (ETS) Port Protection Feature, an optional feature which establishes a standby capability that will be activated to restore service should a failure occur in a customer's ETS Basic Port and/or associated ETS Channel Termination (CT), describes how investment was developed. Investment amounts are displayed for 10 Gbps speed, which is the maximum speed NECA Tariff 5 offers. NECA estimated that unit investment cost for ETS Port Protection Feature is based on a standby circuit (i.e., a standby ETS Basic Port and associated CT). Unit investment for a standby circuit is a sum of unit investment costs of ETS 10Gbps Basic Port and 10 Gbps CT 300 feet or less. A standby circuit will be placed into service only when the active Port or CT fails.

<sup>2</sup> NECA Transmittal No. 1380, April 8, 2013, which introduced the Ethernet Transport Service (ETS) Port Protection optional feature to cover ETS Basic Ports with Channel Terminations (CTs) located greater than 300 feet from the ETS Serving Wire Center (SWC), describes how investment was developed. Investment amounts are displayed for 10 Gbps speed, which is the maximum speed NECA Tariff 5 offers. NECA estimated that unit investment cost for ETS Port Protection Feature is based on a standby circuit (i.e., a standby ETS Basic Port and associated CT). Unit investment for a standby circuit is a sum of unit investment costs of ETS 10Gbps Basic Port and 10 Gbps CT greater than 300 feet. A standby circuit will be placed into service only when the active Port or CT fails.

<sup>3</sup> From 2013 Annual Filing, Volume 5 Exhibit 4 Workpaper 1.

**MARCH 17, 2014 NECA ACCESS CHARGE FILING  
DSL EXTENDED TRANSPORT  
UNIT INVESTMENTS AND COSTS**

**EXHIBIT 6**

LINE NO.	ITEM (A)	UNIT INVESTMENT <sup>2</sup> (B)	MONTHLY UNIT COST (C) = (B * Line 5) / 12	DESCRIPTION and SOURCE (D)
	<b>Extended Transport with Ethernet Access Service:</b>			
1	Unit Investment per Gbps <sup>1</sup>	\$2,083.96		Exhibit 3 Line 1 * 2 / 9.3
2	2.5 Gbps	\$5,209.89	\$67.17	Column B = Line 1 * 2.5
3	5 Gbps	\$10,419.78	\$134.35	Column B = Line 2 * 5
4	10 Gbps	\$20,839.57	\$268.69	Column B = Line 3 * 10
5	<b>Direct Cost Factor<sup>3</sup></b>		<b>0.154720</b>	

<sup>1</sup> Cost is twice the cost of an Extended Ethernet Virtual Connection (Exhibit 3 Line 5), scaled to cost per mile (9.3 miles on average).

<sup>2</sup> Unit investment is from 2014 RDTF Investment Study.

<sup>3</sup> 2013 Annual Filing, Volume 5 Exhibit 4 Workpaper 1.

MARCH 17, 2014 NECA ACCESS CHARGE FILING  
 ETHERNET TRANSPORT SERVICE  
 BASIC PORTS  
 PROPOSED RATES AND REVENUE

EXHIBIT 7

LINE NO.	DESCRIPTION	MONTHLY DEMAND W/O DISCOUNT <sup>1</sup> ( A )	3 YEAR TERM DISCOUNT MONTHLY DEMAND (10% DISCOUNT) <sup>1</sup> ( B )	5 YEAR TERM DISCOUNT MONTHLY DEMAND (20% DISCOUNT) <sup>1</sup> ( C )	PROPOSED NON-DISCOUNTED UNIFORM RECURRING RATE ( D )	RECURRING REVENUE ( E ) = 3 months * ( A + B * .9 + C * .8 ) * D	NON-RECURRING DEMAND ( F )	PROPOSED NON-RECURRING RATE ( G )	NON-RECURRING REVENUE ( H = F * G )
<b>ETS Basic Ports</b>									
1	2.5 Gbps	0	0	0	\$875.00	\$0	0	\$388.00	\$0
2	5 Gbps	0	0	0	\$1,330.00	\$0	0	\$388.00	\$0
3	10 Gbps	0	0	14	\$1,820.00	\$61,152	14	\$388.00	\$5,432
5	Subtotals					\$61,152			\$5,432
6	Estimated Basic Port Recurring & Non-Recurring Annual Revenue for NECA Traffic Sensitive Pool <sup>2</sup>								\$66,584

<sup>1</sup> 2014 RDTF ETS Demand Data Request.

<sup>2</sup> Column E + Column H in Line 14.

MARCH 17, 2014 NECA ACCESS CHARGE FILING  
ETHERNET TRANSPORT SERVICE  
CHANNEL TERMINATION  
PROPOSED RATES AND REVENUE

EXHIBIT 8

LINE NO.	DESCRIPTION	AVERAGE MONTHLY DEMAND W/O DISCOUNT <sup>1</sup> ( A )	3 YEAR TERM DISCOUNT MONTHLY DEMAND (10% DISCOUNT) <sup>1</sup> ( B )	5 YEAR TERM DISCOUNT MONTHLY DEMAND (20% DISCOUNT) <sup>1</sup> ( C )	PROPOSED NON-DISCOUNTED UNIFORM RECURRING RATE ( D )	RECURRING REVENUE ( E ) = 3 months * ( A + B * .9 + C * .8 )	NON-RECURRING DEMAND ( F )	PROPOSED NON-RECURRING RATE ( G )	NON-RECURRING REVENUE ( H = F * G )
<b>Channel Termination 300 Feet or Less</b>									
<i>Bandwidth Capacity:</i>									
1	2.5 Gbps	0	0	0	\$820.00	\$0	0	\$442.00	\$0
2	5 Gbps	0	0	0	\$1,245.00	\$0	0	\$442.00	\$0
3	10 Gbps	0	0	10	\$1,700.00	\$40,800	10	\$442.00	\$4,420
<b>Channel Termination greater than 300 Feet</b>									
<i>Bandwidth Capacity:</i>									
1	2.5 Gbps	0	0	0	\$1,465.00	\$0	0	\$442.00	\$0
2	5 Gbps	0	0	0	\$2,225.00	\$0	0	\$442.00	\$0
3	10 Gbps	0	0	3	\$3,040.00	\$21,888	3	\$442.00	\$1,326
4	Subtotals					\$62,688			\$5,746
5	Total Channel Termination Recurring & Non-Recurring Revenue <sup>2</sup>								\$68,434

<sup>1</sup> 2014 RDTE ETS Demand Data Request.

<sup>2</sup> Column E + Column H in Line 21.

MARCH 17, 2014 NECA ACCESS CHARGE FILING  
 ETHERNET TRANSPORT SERVICE  
 ETHERNET VIRTUAL CONNECTIONS & EXTENDED ETHERNET VIRTUAL CONNECTIONS  
 PROPOSED RATES AND REVENUE

EXHIBIT 9

LINE NO.	DESCRIPTION	AVERAGE MONTHLY DEMAND W/O DISCOUNT <sup>1</sup> (A)	3 YEAR TERM DISCOUNT MONTHLY DEMAND (10% DISCOUNT) <sup>1</sup> (B)	5 YEAR TERM DISCOUNT MONTHLY DEMAND (20% DISCOUNT) <sup>1</sup> (C)	PROPOSED NON-DISCOUNTED UNIFORM RECURRING RATE (D)	RECURRING REVENUE (E) = 3 months * (A + B * .9 + C * .8) * D	NON-RECURRING DEMAND (F)	PROPOSED NON-RECURRING RATE (G)	NON-RECURRING REVENUE (H = F * G)
<b>Ethernet Virtual Connection (EVC)</b>									
<i>Intra-switch Ethernet Virtual Connection with Capacity of:</i>									
1	2.5 Gbps	0	0	0	\$0.00	\$0	0	\$307.00	\$0
2	5 Gbps	0	0	0	\$0.00	\$0	0	\$307.00	\$0
3	10 Gbps	0	0	1	\$0.00	\$0	1	\$307.00	\$307
<i>Inter-switch Ethernet Virtual Connection with Capacity of:</i>									
4	2.5 Gbps	0	0	0	\$5,850.00	\$0	0	\$307.00	\$0
5	5 Gbps	0	0	0	\$8,890.00	\$0	0	\$307.00	\$0
6	10 Gbps	0	0	3	\$12,160.00	\$87,552	3	\$307.00	\$921
<b>Extended Ethernet Virtual Connection (E-EVC)</b>									
<i>Extended Ethernet Virtual Connection with Capacity of:</i>									
7	2.5 Gbps	0	0	0	\$3,660.00	\$0	0	\$615.00	\$0
8	5 Gbps	0	0	0	\$5,560.00	\$0	0	\$615.00	\$0
9	10 Gbps	0	0	1	\$7,600.00	\$18,240	1	\$615.00	\$615
10	Subtotals					\$105,792			\$1,843
11	Total EVC and E-EVC Recurring & Non-Recurring Revenue <sup>2</sup>								\$107,635

<sup>1</sup> 2014 RDTF ETS Demand Data Request.

<sup>2</sup> Column E + Column H in Line 41.

**MARCH 17, 2014 NECA ACCESS CHARGE FILING  
SPECIAL ACCESS REVENUE SUMMARY  
TEST PERIOD: JULY 2, 2013 - JUNE 30, 2014**

**EXHIBIT 10**

<b>LINE</b>	<b>DESCRIPTION</b>	<b>AMOUNT</b>	<b>SOURCE</b>
1	Total ETS Basic Port Revenue	\$66,584	Exhibit 7
2	Total ETS Channel Termination Revenue	\$68,434	Exhibit 8
3	Total ETS EVC and Extended EVC Revenue	\$107,635	Exhibit 9
4	Total Proposed Revenue Change from the Proposed New ETS Speeds	\$242,653	Line 1 + Line 2 + Line 3
5	Projected Special Access Revenue in NECA 2013 Annual Filing	\$715,553,003	2013 Annual Filing: VOL 5 EX 9 WP 15 LINE 14
6	Revenue Impact for the remaining 3 months of the current test period	0.14%	LINE 4 / (LINE 5 x 3/12)