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Thomas J. Navin
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October 30, 2013

Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, D.C. 20554

Re: Request for Confidential Treatment
Connect America Fund, High-Cost Universal Service Support
WC Docket Nos. 10-90, 05-337

Dear Ms. Dortch:

Puerto Rico Telephone Company, Inc. (“PRT”) in the attached letter hereby files certain information that is proprietary and highly confidential to PRT under the terms of the Second Protective Order and in the above-captioned dockets,¹ or confidential to CostQuest under the terms of the Third Supplemental Protective Order in WC Docket No. 10-90.² Accordingly, the attached letter indicates the confidential treatment to be afforded the submitted information as required by those Orders.

In accordance with those Orders, I have attached one copy of PRT’s Stamped Confidential and Stamped Highly Confidential documents, plus two copies addressed to Katie King in the Wireline Competition Bureau and two copies redacted for public inspection (the redacted copy is also being filed electronically in ECFS). One copy is being served on CostQuest’s counsel in accordance with the Third Supplemental Protective Order.

¹ *Connect America Fund, High-Cost Universal Service Support*, WC Docket Nos. 10-90, 05-337, Second Protective Order, 27 FCC Rcd 1494 (WCB 2012).

² *Connect America Fund, High-Cost Universal Service Support*, WC Docket Nos. 10-90, 05-337, Third Supplemental Protective Order, 27 FCC Rcd 15277 (WCB 2012).



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Please contact me with any questions

Best regards,
/s/ Thomas J. Navin
Thomas J. Navin

cc: Katie King
Margaret Avril Lawson



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Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.

Re: Written *Ex Parte* Communication
Connect America Fund, High-Cost Universal Service Support
WC Docket Nos. 10-90, 05-337

Dear Ms. Dortch:

Puerto Rico Telephone Company, Inc. (“PRT”), by its attorneys, hereby files this written *ex parte* presentation submitting for the record in this proceeding additional data and explanatory inputs to assist the Federal Communications Commission (“Commission”) in developing a cost model for Connect America Fund (“CAF”) funding that will accurately reflect the “unique circumstances” of service provision in insular areas and help to begin the process of realizing the laudable goals of the National Broadband Plan in those areas.

In the *2011 USF Transformation Order*, the Commission instructed the Wireline Competition Bureau (“Bureau”) to “consider the unique circumstances” of non-contiguous U.S. and insular areas “when adopting a cost model” for the Connect America Fund.¹ The Commission directed the Bureau to “consider whether the model ultimately adopted adequately accounts for the costs faced by carriers” in insular areas, and if the Bureau determines that the cost model “does not provide sufficient support to any of these areas,” to maintain existing support levels for those areas.² To satisfy this clear instruction from the Commission, the Bureau must ensure that a meaningful portion of the \$1.8 billion in Connect America Fund Phase II support is allocated to insular areas, including Puerto Rico, whether through the CAM or through maintained frozen support.

As explained in PRT’s recent Comments in this proceeding, the latest Illustrative Results published by the Bureau suggest that the current version of the Bureau’s Connect America Fund Cost Model (“CAM”) fails to account for the needs and challenges of insular areas, because support to many of these areas would be slashed to a level that would render the Commission’s broadband deployment goals

¹ *Connect America Fund*, WC Docket No. 10-90, Report and Order, 26 FCC Rcd 17663, ¶ 193 (2011) (“2011 USF Transformation Order”).

² *Id.*, ¶ 30.



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unattainable.³ In an effort to help the Bureau adjust its model to better reflect the unique circumstances of service provision in insular areas, insular service providers Alaska Communications Systems (“ACS”) and Hawaiian Telcom, Inc. (“HTI”) each have provided additional information to the Commission for incorporation in and modification of the CAM.⁴

The ACS and HTI filings have been well-received by other carriers that will be subject to the CAM. In the most recent revision of the CAM, the Commission attempted to make some changes to the model to reflect partially the inputs received from ACS.⁵ Although, as PRT previously explained, these modifications fall short of what is necessary to adequately account for the unique circumstances and operating conditions in the non-contiguous areas of the United States,⁶ the Bureau’s efforts demonstrate a recognition that insular areas are unique and that the model should accommodate these areas. Additionally, USTelecom recently filed letters in this docket supporting the use of the Alaska- and Hawaii-specific input values provided by ACS and HTI, respectively.⁷ USTelecom stated that “[t]he instant proceeding provides the Bureau the opportunity to ensure that the unique circumstances experienced by price cap insular carriers are addressed in the model in a fair and prudent fashion that provides equitable support,” and that “[a]dopting changes to the CAM tailored to each insular provider will most accurately provide the appropriate amount of support for such providers.”⁸

PRT agrees with USTelecom, ACS, and HTI that further revisions to the CAM are necessary if the model is to fairly and accurately support broadband network deployment in insular areas. Indeed, PRT has long been of this view, which is why in January of this year PRT provided to the Bureau its own forward-looking

³ See Comments of Puerto Rico Telephone Company, Inc. at 10-17, WC Docket No. 10-90 (filed Sep. 12, 2013) (“PRT CAM 3.2 Comments”).

⁴ See Written *Ex Parte* Communication of Alaska Communications Systems, WC Docket Nos. 10-90, 05-337 (filed July 9, 2013); Written *Ex Parte* Communication of Alaska Communications Systems, WC Docket Nos. 10-90, 05-337 (filed July 30, 2013); Written *Ex Parte* Communication of Hawaiian Telcom, Inc., WC Docket Nos. 10-90, 05-337 (filed Sep. 11, 2013).

⁵ *Wireline Competition Bureau Announces Availability of Version 3.2 of the Connect America Fund Phase II Cost Model, and Illustrative Results; Seeks Comment on Several Modifications for Non-contiguous Areas*, WC Docket No. 10-90, Public Notice, DA 13-1846 (rel. Aug. 29, 2013 WCB) (“Notice”).

⁶ See generally PRT CAM 3.2 Comments.

⁷ Written *Ex Parte* Communication of United States Telecom Association, WC Docket No. 10-90 (filed Oct. 17, 2013) (“USTelecom Oct. 17 *Ex Parte*”); Written *Ex Parte* Communication of United States Telecom Association, WC Docket No. 10-90 (filed Oct. 21, 2013) (“USTelecom Oct. 21 *Ex Parte*”).

⁸ USTelecom Oct. 17 *Ex Parte* at 1, 4; USTelecom Oct. 21 *Ex Parte* at 1, 3.



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Broadband Cost Model: Puerto Rico (“BCM_{PR}”), which used a complete set of Puerto Rico-specific inputs. To assist the Bureau toward meeting the Commission’s important broadband goals, PRT herein provides additional Puerto Rico-specific model inputs – consistent with those provided by ACS and HTI, which have been endorsed by USTelecom. Specifically, in the discussion that follows, PRT provides the following adjustments to the CAM 3.2 inputs:

- 1) Puerto Rico-specific plant mix values
- 2) Incorporate “hard rock” soil type for buried/underground placement costs
- 3) Increase CAPEX inputs by 10 percent to account for higher costs of insular service provision
- 4) Account for lower take rate in Puerto Rico
- 5) Adjust undersea cable costs to account for current market rates

Depending on the model parameters selected, these adjusted inputs result in funding levels ranging from \$23.57 million to \$71.86 million – a range more in keeping with the current annual frozen support received by PRT of \$36.8 million and with the results of PRT’s own BCM_{PR}. Because these results more accurately model the actual needs and challenges of network deployment in insular areas, should the Bureau move forward with applying a version of the CAM to Puerto Rico, it should incorporate in the model the data inputs contained in this filing.

Best regards,

/s/ Thomas J. Navin

Thomas J. Navin

Counsel to Puerto Rico Telephone Company, Inc.

ATTACHMENT 1

The Commission Should Base its CAM Calculations on Puerto-Rico Specific Inputs.

Version 3.2 of the Connect America Cost Model (“CAM”) shares the failings of its predecessors, and fails to comply with the clear delegation of authority from the Commission by not adequately considering the “unique circumstances” of network deployment in insular areas as required by the *2011 USF Transformation Order*.⁹ Puerto Rico Telephone Company, Inc. (“PRT”) currently receives approximately \$36.8 million of frozen high cost support intended to help support the cost of operating an existing communications network in an insular area. In an area like Puerto Rico, where much of the legacy infrastructure has undergone significant depreciation and is incapable of supporting the broadband speeds targeted by the CAF, it is intuitive that the forward-looking cost of constructing an entirely new network or conducting major upgrades to the existing network would at least be equal to if not significantly greater than continuing to operate the legacy network.¹⁰

Further, under the CAF Phase II regime all carriers will be required to make broadband available to 100 percent of the covered locations in five years regardless of the current subscribership rate or the state of the existing network. Therefore, one would expect a properly-configured CAM to provide support levels to PRT that are equal to or greater than the frozen high cost support level received by the company. On the contrary, however, the latest Illustrative Results published by the Bureau show model-determined support for Puerto Rico falling below the level currently received. The CAM 3.2 illustrative results would set total annual support for PRT at approximately \$3.68 million assuming a 9 percent Cost for Money and lower and upper benchmarks of \$55.40 and \$174.872 respectively – approximately a 90 percent decrease compared to the current annual frozen support received by PRT of \$36.8 million.¹¹ Especially in light of the Commission’s own data showing that Puerto Rico currently has one of the lowest broadband deployment rates in the nation,¹² such a decrease in support likely would make unachievable the Commission’s goal of substantially expanding broadband availability and adoption in the territory.

The Wireline Competition Bureau (“Bureau”) as required by the *2011 USF Transformation Order*, has requested that should carriers in insular areas, such as Puerto Rico, determine that the CAM inputs do not fully account for the unique circumstances faced by insular carriers, they should provide replacement inputs. Consistent with this request, PRT previously submitted its own forward-looking broadband cost model, the Broadband Cost

⁹ *Connect America Fund*, WC Docket No. 10-90, Report and Order, 26 FCC Rcd 17663, ¶ 193 (2011) (“*2011 USF Transformation Order*”).

¹⁰ The cost of a forward-looking network should be expected to exceed that of the legacy network also because in excess of 80% of the cost of the building a telecommunications network is associated with the specialized labor required. The cost of this specialized labor has risen over the twenty to thirty years since the majority of the legacy network’s outside plant facility and structures were built.

¹¹ See Federal Communications Commission, CAFII – CAM 3.2 – Report Version 4.0, Tab 3, available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-323216A1.xlsx (last visited Oct. 25, 2013) (“Illustrative Results”).

¹² See *Eighth Section 706 Report*, GN Docket No. 11-121, 27 FCC Rcd 10342, App. G (2012) (“*Eighth Section 706 Report*”).

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Model: Puerto Rico (“BCMPR”).¹³ The BCMPR contained a complete set of Puerto Rico-specific inputs that PRT believes reflects the actual costs of building and operating a broadband capable network in Puerto Rico. The cost inputs included in PRT’s model were based on actual current equipment vendor quotes and purchase orders, as well as current actual outside plant contractor contracts and operating costs. These data, by definition, incorporate the costs of building and operating a network in Puerto Rico and represent the most appropriate inputs for estimating costs in the Commonwealth.

The table below shows the support determined by the BCMPR under three different take rate assumptions, further separated by whether they incorporate data from the National Broadband Map, which PRT has argued against, to determine if a given census block is eligible to receive CAF II support.¹⁴ The CAM 3.2 assumes an 80 percent broadband take rate which, as other insular carriers have advocated, is inflated and unrealistic for insular areas given the extremely low broadband take rates in those areas.¹⁵ Assuming an 80 percent take rate nationwide is counterintuitive when it is well understood that availability and deployment rates – as well as socioeconomic and cultural factors – vary greatly among areas in the country. Commission data indicates the overall deployment rate of broadband at speeds equal to or greater than 3 Mbps/768 Kbps in Puerto Rico is 48.4 percent as compared to 94 percent nationwide.¹⁶ As a result, PRT estimated support using the BCMPR using three possible take rate assumptions – 80%, 70% and 60%. Based on the methodology described by the Bureau in the WCB Cost Model Virtual Workshop, PRT accounted for the various take rate assumptions by adjusting the lower support threshold.¹⁷

¹³ Letter from Tom Navin, Counsel to PRTC, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 1090 and 05-337 (filed Jan. 18, 2013) (“PRT BCMPR Filing”).

¹⁴ Based on rules adopted in the *2011 USF Transformation Order*, a census block is eligible for CAF II support if no unsubsidized competitor provides broadband at speeds in excess of 3Mbps/768Kbps. *2011 USF Transformation Order*, ¶ 103. The National Broadband Map data purportedly shows the support provided by unsubsidized competitors by census block. However, as PRT has demonstrated in other recent filings related to CAF I and CAF II, the data for Puerto Rico is not valid and significantly over represents broadband penetration in the Commonwealth. *See, e.g.*, Letter from Tom Navin, Counsel to Puerto Rico Telephone Co., Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 10-90 (filed Aug. 23, 2013); Letter from Mario R. Barrera, Chief Operating Officer, Puerto Rico Telephone Co., Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 10-90 (filed Aug. 20, 2013). For example, in its Comments, PRT pointed out that the National Broadband Map significantly overstates the availability of broadband, misrepresents broadband speeds, and is significantly at odds with the Commission’s own figures related to broadband deployment. *See* PRT CAM 3.2 Comments at 12-16.

¹⁵ *See, e.g.*, Comments of Alaska Communications Systems at 13, WC Docket No. 10-90 (filed Sep. 12, 2013); Reply Comments of Hawaiian Telcom at 3, WC Docket Nos. 10-90 (filed Sep. 19, 2013) (“This 80 percent take-rate assumption is far higher than what could reasonably be expected on average in non-contiguous areas . . .”).

¹⁶ *Eighth Section 706 Report*, App. G.

¹⁷ *See* “WCB Cost Model Workshop 2012, Support Thresholds” <http://www.fcc.gov/blog/wcb-cost-model-virtual-workshop-2012-support-thresholds> (May 17, 2013). The methodology described therein establishes the lower benchmark by multiplying the assumed take rate by an Average Revenue per Unit (ARPU). In Report 2.1 the ARPU used was equal to \$69.25 (Benchmark of \$55.40 / take rate of 80%). *See* Illustrative Results.

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BCMPR CAF II Support Determination						
	Benchmarks		NBM Eligibility Test - Yes		NBM Eligibility Test - No	
Take rate	Lower	Upper	Support	Locations	Support	Locations
80%	\$ 55.40	\$ 174.87	\$ 25,128,222	71,616	\$ 32,568,913	100,541
70%	\$ 48.48	\$ 167.95	\$ 30,719,848	92,978	\$ 41,118,797	138,461
60%	\$ 41.55	\$ 161.02	\$ 39,332,225	134,764	\$ 54,044,045	203,738

The results of the BCMPR estimate annual support ranging from \$25.7 million using an 80 percent take rate and the National Broadband Map data to determine eligibility to \$545.0million when a 60 percent take rate is used and the National Broadband Map is not used. These amounts would provide support for a number of customer locations ranging from just over 71,000 to just over 203,000.¹⁸ The BCMPR results show three things. First, a model that uses cost inputs appropriate for Puerto Rico generates significantly higher levels of support to a significantly higher number of locations compared to the CAM 3.2 using nationwide inputs. Second, reducing the take rate assumption to levels more in line with actual experience in the Puerto Rico market results in significantly higher levels of support and supported locations. Third, determining census block eligibility based on the National Broadband Map has a significant impact and care should be taken with the use of these data due to reliability concerns.

PRT is aware of the Bureau’s concern about using multiple models to determine CAF II support and understands its desire to account for the unique circumstances faced by the insular areas by adjusting inputs with the CAM 3.2 model. Unfortunately, as PRT and other insular carriers have commented, the proprietary nature of the model, specifically the lack of access to the CQLL and CQMM modules that estimate costs for the customer connection and middle mile segments of the network, have made it difficult to fully analyze and recommend modifications to the model on an input-by-input basis. Further, many of the inputs in the CAM are not set up in a manner that allows for state or company specific values.

Nevertheless, PRT agrees with Alaska Communications Systems (“ACS”) and Hawaiian Telcom, Inc. (“HTI”) that, at a minimum, the Commission should adjust a small number of general inputs to reflect territory-specific values in the CAM 3.2, like PRT did in the BCMPR.

Specifically, ACS proposed the following adjustments:¹⁹

- 1) Replace the national average plant mix percentages with state specific values.

¹⁸ Based on the CAM model there are in excess of 1.6 million customer locations in Puerto Rico. As a result, the BCMPR would support between 4.4 percent and 12.7 percent of total customer locations on the island. In contrast, The Illustrative results described above would provide federal support to just under 1 percent of the total customer locations in Puerto Rico.

¹⁹ See Written *Ex Parte* Communication of Alaska Communications Systems, WC Docket Nos. 10-90, 05-337 (filed July 9, 2013); Written *Ex Parte* Communication of Alaska Communications Systems, WC Docket Nos. 10-90, 05-337 (filed July 30, 2013) (“ACS July 30 *ex parte*”).

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- 2) Replace all buried/underground placement cost inputs in the CAM with the value for hard rock/soil terrain in all areas in Alaska to account for actual soil conditions.
- 3) Increase CAPEX inputs by 10% to reflect higher include and installation costs faced by carriers in Alaska.
- 4) Replace medium size company designation input for operating cost estimation to account for the fact that ACS is very close to the bottom end of the medium size company.
- 5) Adjust benchmark to account for lower take rate due to the existence of a subsidized competitor and very low penetration and availability rates in Alaska.
- 6) Extend CAF II period from five to ten years to reflect additional time needed to complete service area-wide buildouts and account for the lower deployment rates in the state.
- 7) Adjust Undersea Cable Costs included in the CAM to account for the necessity of building eight landing stations, adjusting the percentage of cable costs allocated to broadband and increasing the aggregate cost factor applied to undersea cable investment to bring it more in line with ACS' actual experience of operating an undersea cable system.

HTI recently filed a proposal that in many ways mirrors that of ACS.²⁰ In a September 11, 2013 letter, HTI proposed to:

- 1) Adjust the undersea cable costs to better reflect the current IRU costs faced by the company.
- 2) Use Hawaii-specific plant mix values.
- 3) Adopt the ACS hard rock adjustment to account for the volcanic origins of the Hawaiian Islands.
- 4) Increase the CAPEX input values to reflect Hawaii's higher costs due to relatively greater freight and inventory costs.

ACS and HTI have concluded that these general adjustments allow the CAM 3.2 to more accurately estimate network costs in their serving areas. The adjustments proposed by ACS and HTI have been endorsed, in part, by the Bureau, and also by the United States Telecom Association. The Bureau incorporated aspects of ACS's filing related to submarine cable costs and plant mix values in version 3.2 of the CAM and sought comment on using other non-

²⁰ See Written *Ex Parte* Communication of Hawaiian Telcom, Inc., WC Docket Nos. 10-90, 05-337 (filed Sep. 11, 2013) ("HTI *ex parte*").

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contiguous area-specific modifications.²¹ For its part, USTelecom’s recent letters support both the ACS and HTI modifications, and, moreover, strongly endorse tailoring the CAM inputs to each insular provider as a means to “most accurately provide the appropriate amount of support for such providers.”²²

In light of the strong support for this approach, and in the interest of moving this important process forward, PRT evaluated the feasibility of making similar discrete modifications to the CAM. PRT has found that by using similar adjustments to those proposed by ACS and HTI, estimated support provided by the CAM could be much more reflective of actual costs and market realities in Puerto Rico. Therefore, PRT suggests the Commission incorporate the following adjustments to the CAM 3.2 inputs:

- 1) Replace the national average plant mix percentages with Puerto Rico specific values. These data have already been supplied to the Bureau in PRT’s Comments on the CAM 3.2 Public Notice and a follow up *ex parte* filing.
- 2) Replace all buried/underground placement cost inputs in the CAM with the value for hard rock/soil terrain in all areas in Puerto Rico to account for actual soil conditions.
- 3) Increase CAPEX inputs by 10% to reflect higher costs faced by carriers in Puerto Rico.
- 4) Adjust benchmark to account for lower take rate due to the very low penetration and availability rates in Puerto Rico.
- 5) Adjust Undersea Cable Costs included in CAM to account for the current market rates for undersea cable IRUs available to PRT using the same bandwidth demand assumptions.

Running the CAM 3.2 with the adjusted inputs yields the following results:

²¹ Wireline Competition Bureau Announces Availability of Version 3.2 of the Connect America Fund Phase II Cost Model, and Illustrative Results; Seeks Comment on Several Modifications for Non-contiguous Areas, WC Docket No. 10-90, Public Notice, DA 13-1846 (rel. Aug. 29, 2013 WCB) (“CAM 3.2 Public Notice”).

²² Written *Ex Parte* Communication of United States Telecom Association at 4, WC Docket No. 10-90 (filed Oct. 17, 2013) (“USTelecom Oct. 17 *Ex Parte*”); Written *Ex Parte* Communication of United States Telecom Association at 3, WC Docket No. 10-90 (filed Oct. 21, 2013) (“USTelecom Oct. 21 *Ex Parte*”).

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FCC Illustrative CACM v3.2 Scenario 2.1
9% COM

ID	Parameters	Description	Funding	Locations	% Locations Funded
xx		CACM v3.2 Baseline 80 % Take Rate	\$ 3,685,361	15,617	xxx
Baseline	\$55.40/\$119.472 True True	CACM v3.2 Baseline	\$ 3,685,361	15,617	0.94%
Baseline	\$55.40/\$119.472 False False	CACM v3.2 Baseline	\$ 4,473,367	19,550	1.17%
PRT22	\$55.40/\$119.472 True True	CACM v3.2 Baseline w/ PRT Inputs ¹	\$ 23,570,197	100,180	6.00%
PRT22	\$55.40/\$119.472 False False	CACM v3.2 Baseline w/ PRT Inputs ¹ 70 % Take Rate	\$ 31,583,237	144,567	8.66%
Baseline	\$48.48/\$119.472 True True	CACM v3.2 Baseline	\$ 5,274,791	26,257	1.57%
Baseline	\$48.48/\$119.472 False False	CACM v3.2 Baseline	\$ 6,484,889	33,284	1.99%
PRT22	\$48.48/\$119.472 True True	CACM v3.2 Baseline w/ PRT Inputs ¹	\$ 33,428,903	154,003	9.22%
PRT22	\$48.48/\$119.472 False False	CACM v3.2 Baseline w/ PRT Inputs ¹ 60 % Take Rate	\$ 46,425,266	235,472	14.10%
Baseline	\$41.55/\$119.472 True True	CACM v3.2 Baseline	\$ 8,252,140	51,530	3.09%
Baseline	\$41.55/\$119.472 False False	CACM v3.2 Baseline	\$ 10,330,411	67,144	4.02%
PRT22	\$41.55/\$119.472 True True	CACM v3.2 Baseline w/ PRT Inputs ¹	\$ 49,238,689	247,703	14.83%
PRT22	\$41.55/\$119.472 False False	CACM v3.2 Baseline w/ PRT Inputs ¹	\$ 71,846,784	405,846	24.30%

Notes:

¹ ACF 9% + 10% CAPEX w/ Hard Rock and Undersea Adjustment + PRT Plant Mix

The CAM Should Include Puerto Rico-Specific Plant Mix Data

In its Public Notice seeking comment on version 3.2 of the CAM, the Bureau asked whether it should incorporate Puerto Rico-specific plant mix data in the next version of the model.²³ As PRT explained in its Comments on the Public Notice, the Commission should incorporate the plant mix values provided by PRT in the BCMPR. PRT demonstrated in its comments that incorporation of this modification alone would increase model-derived funding to the territory by 361 percent.²⁴ Subsequent to the filing of PRT’s Comments, and on request of the Bureau, PRT supplemented its filing with updated plant mix values. These plant mix values are reproduced below. PRT notes that the proposed plant mix has a high proportion of its outside plant placed in the underground category. This is because of the manner in which the CAM defines buried fiber cable. In the model, buried fiber cable is placed directly in the ground with no conduit or other structure.²⁵ In the case of PRT, and likely most other carriers, fiber cable is always provisioned inside a conduit that is placed in a trench when the buried cable is placed under a paved surface or plowed into the ground using special equipment when the cable is placed under dirt and/or grass.²⁶ In addition, the CAM model appears to assume that all placement will be made in areas with grass/dirt surfaces as it does not include any cost of breaking and restoring concrete or asphalt pavement or sidewalks. In a real-world setting, there will always be some percentage of cable placement that will require pavement breaking and restoration as the cable crossing under intersections or driveways or in areas where the right of way is paved. The table below shows the PRT model’s inputs for the distribution by type of placement based on estimates of the Company’s actual buried/underground cable placement.²⁷

<u>Cable Placement Distribution</u>	<u>Percent</u>	<u>Cost Per Ft</u>
Road Crossing	6%	[BEGIN HIGHLY CONFIDENTIAL]
Under Road (Asphalt/Concrete)	10%	
Under Road (Asphalt only)	36%	
Non-Backyard	48%	
Backyard	0%	
Weighted Average		[END HIGHLY CONFIDENTIAL]

The table shows that while 48 percent of the buried/underground placement does not require any pavement breaking and/or restoration (Non-Backyard), 52 percent of the time the cable is placed under a paved surface. Given that the networks are constructed, also as assumed

²³ CAM 3.2 Public Notice at 9.

²⁴ PRT CAM 3.2 Comments at 17.

²⁵ See Federal Communications Commission, “Connect America Cost Model Overview” at 17 (Sep. 12, 2013) available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-323344A1.pdf. (“September 12, 2013 Cost Model Overview”).

²⁶ See United States Department of Agriculture, Rural Utilities Service, Specifications and Drawings for Construction of Direct Buried Plant, RUS Bulletin 1753F-150 at 12, 20 (Sep. 30, 2010).

²⁷ See Attachment 2

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by the CAM, with cable routes following the road system it follows that there would frequently be a need to place cable under pavement. As the Attachment supporting this table shows, the excavation and restoration cost per foot of fiber is just under five times the excavation cost found in the CAM input file CAPEX V16. The difference appears to be due to the fact that the CAM model’s cost inputs do not account for these conditions.²⁸ The CAM’s underground excavation cost inputs, ranging up to \$20.73 per foot, capture more of the real world costs associated with burying fiber cable in Puerto Rico. As a result, PRTC has increased the percentage of underground placement to help account for these conditions.

		Dist & FDR			IOF		
State	Density	Aerial	Buried	Undgd	Aerial	Buried	Undgd
PR	Rural	43.00%	27.00%	30.00%	28.00%	55.00%	17.00%
PR	Suburban	29.00%	11.00%	60.00%	26.00%	53.00%	21.00%
PR	Urban	27.00%	10.00%	63.00%	25.00%	52.00%	23.00%

CAM Format		Dist			FDR			IOF		
State	Density	Aerial	Buried	Undgd	Aerial	Buried	Undgd	Aerial	Buried	Undgd
PR	Rural	43.0%	27.0%	30.0%	43.0%	27.0%	30.0%	28.0%	55.0%	17.0%
PR	Suburban	29.0%	11.0%	60.0%	29.0%	11.0%	60.0%	26.0%	53.0%	21.0%
PR	Urban	27.0%	10.0%	63.0%	27.0%	10.0%	63.0%	25.0%	52.0%	23.0%

The CAM Should Classify Puerto Rico Soil Types as Hard Rock

For Puerto Rico, the soil setting for excavation in the CAM should be set to hard rock. This change from the continental US version of the CAM is necessary because the soil make-up for Puerto Rico is uniquely different from that of the continental US. The island of Puerto Rico “is a volcanic and plutonic central mountain core with thick carbonate sequences to the north and south.”²⁹ In other words, the island of Puerto Rico is a product of volcanic eruptions. And, as a result of these eruptions, mountains make up most of Puerto Rico, with the Central Mountains spanning nearly the entire island from east to west.³⁰ Undoubtedly, these mountains, which cover such a large portion of the island, will require the hard rock setting of the CAM model.

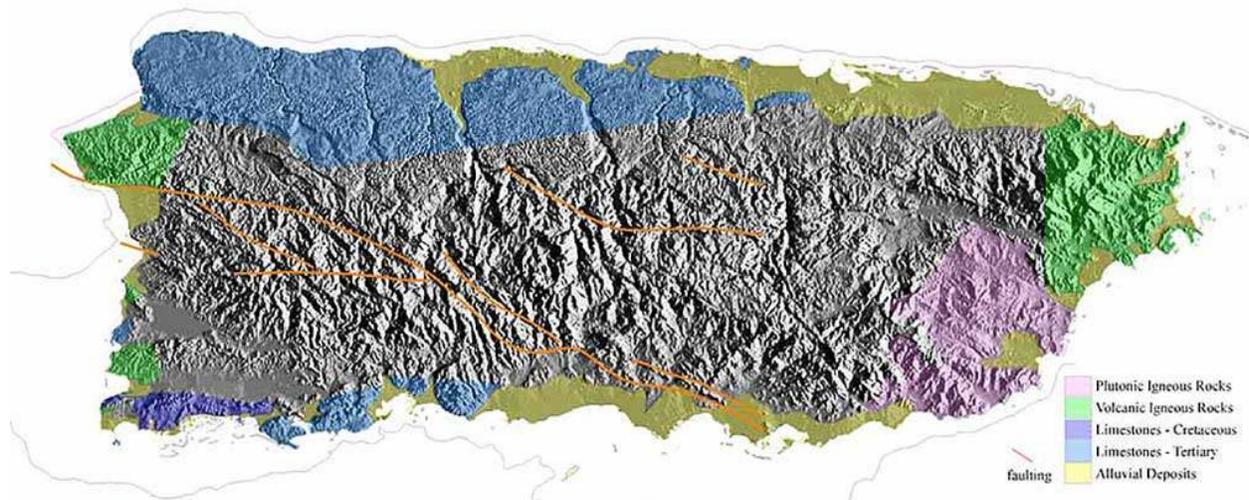
In addition to these mountains, Puerto Rico has a narrow coastal plain that occupies the territory between the mountains and the coast. The geologic composition of the non-mountainous areas of Puerto Rico is shown in the following map:³¹

²⁸ September 12, 2013 Cost Model Overview at 17-18.

²⁹ Morelock, Ramirez, and Barreto, “The World’s Coasts: Online – Puerto Rico” <http://geology.uprm.edu/Morelock/WCPRcoast.htm> (last visited Oct. 25, 2013).

³⁰ Sara Kirchheimer, “Major Landforms in Puerto Rico” USA TODAY, <http://traveltips.usatoday.com/major-landforms-puerto-rico-104764.html> (last visited Oct. 25, 2013).

³¹ Morelock, Ramirez, and Barreto, “The World’s Coasts: Online – Puerto Rico” <http://geology.uprm.edu/Morelock/WCPRcoast.htm> (last visited Oct. 25, 2013).



The map displays the five areas surrounding the mountains in Puerto Rico, which are Plutonic Igneous Rocks, Volcanic Igneous Rocks, Limestone – Cretaceous, Limestone – Tertiary and Alluvial Deposits. Each of these soil types justifies using the “hard rock” soil type setting in the CAM:

- Plutonic and volcanic igneous rocks are created from magma and lava, respectively. These volcanic leftovers are considered to be relatively strong rocks.³² As the above map shows, most of the east coast and part of the west coast of the island are covered in these igneous rocks. These rocks, which are volcanic in origin, would require the hard rock setting in the CAM model.
- Limestone is less resistant than most igneous rocks, but more resistant than most other sedimentary rocks.³³ In other words, limestone, while not as hard as the volcanic igneous rocks, is still harder than most other rocks. Limestone has traditionally been used as a building material because it is both hard and durable. Given these qualities, the soil setting in the CAM for limestone areas will necessarily be hard rock.
- The final component of the island is alluvial deposits. By definition, “[a]lluvium consists of silt, sand, clay, and gravel and often contains a good deal of organic matter.”³⁴ In Puerto Rico, these alluvial deposit areas produce the beaches that occur around the coast line. But, even in these coastal areas, the alluvial depositions are mixed with harder rocks. Specifically, “the north coast is low lying alluvial deposits (including beachrock and eolianites) or limestones. The other coastlines are limestones and alluvial deposits and also volcanic and plutonic igneous rocks.”³⁵

³² Andrew Alden, “About Igneous Rocks” ABOUT.COM, http://geology.about.com/cs/basics_roxmin/a/aa011804a.htm (last visited Oct. 25, 2013).

³³ “Limestone”, WIKIPEDIA.ORG, <http://en.wikipedia.org/wiki/Limestone> (last visited Oct. 25, 2013).

³⁴ “Alluvium” ENCYCLOPAEDIA BRITANNICA, <http://www.britannica.com/EBchecked/topic/16665/alluvium> (last visited Oct. 25, 2013).

³⁵ Morelock, Ramirez, and Barreto, “The World’s Coasts: Online – Puerto Rico” <http://geology.uprm.edu/Morelock/WCPRcoast.htm> (last visited Oct. 25, 2013).

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Even the beaches in Puerto Rico have large amounts of hard rock intermingled with them. As a result, construction on the coastal areas is generally confined to the areas with harder rocks with the beaches left for enjoyment. Thus, even in these alluvial deposit areas, the soil setting in the CAM will need to reflect the hard rock setting of the areas in which construction occurs.

Because virtually the entirety of the island of Puerto Rico has unusually hard soil, which complicates and raises the cost of network deployment, the CAM inputs should be adjusted to reflect the “hard rock” soil type.

CAPEX and OPEX Expenses are Higher in Puerto Rico Due to Shipping, Labor, and Inventory Costs

Both ACS and HTI proposed adjusting the capital construction inputs in the CAM 3.2 model to account for the higher costs faced in these areas. In a July 30, 2013 Ex Parte filing ACS requested that the CAM model be adjusted to incorporate “a 10 percent increase in the baseline capital expense figures to reflect the higher cost of obtaining broadband facilities and equipment and transporting them to Alaska.”³⁶ Similarly, in a September 11, 2013 filing HTI stated that broadband materials construction cost inputs were higher than those contained within the CAM because “HTI has a higher than average cost of shipping, and must maintain higher inventories due to longer shipping times to ensure that there is no delay in access to critical infrastructure goods.”³⁷ PRT faces the same issues as these other insular carriers and, as has been well documented in previous filings, other circumstances that lead to higher costs to install fiber plant in Puerto Rico than is reflected in the CAM 3.2.³⁸ Therefore, similar to the other insular carriers, the CAM CAPEX inputs for Puerto Rico should be increased by 10 percent. In doing so, pre-sharing outside plant construction costs increase by **[BEGIN TSPO CONFIDENTIAL] *** [END TSPO CONFIDENTIAL]** to **[BEGIN TSPO CONFIDENTIAL] *** [END TSPO CONFIDENTIAL]** percent using the methodology outlined in the Commission’s Connect America Cost Model Overview presentation.³⁹ Using the CAM 3.2 baseline plant mix results in a composite pre-sharing difference of **[BEGIN TSPO CONFIDENTIAL] *** [END TSPO CONFIDENTIAL]** percent.

³⁶ ACS July 30 *ex parte* at 3.

³⁷ HTI *ex parte* at 3.

³⁸ *See, generally*, PRT BCMPR Filing. An increase in capex costs to reflect the higher costs in Puerto Rico also may be accomplished by increasing the CAM Regional Adjustment Factor for Puerto Rico from .71 to 1.00. The model’s default value of .71, based on the inappropriate use of a construction cost index designed for buildings indicates that the model assumes costs in Puerto Rico are lower than the national average.

³⁹ *See* September 12, 2013 Cost Model Overview at 13-18.

Summary of Replication of FCC Analysis of CAM Construction Cost: PRT Baseline Inputs and PRT 10% Capex Adjusted Inputs*				
		3.2 Baseline	10% Capex Adj	Difference
Aerial	Pre-Sharing	\$ 7.20	\$ 7.95	10.34%
	Post Sharing	\$ 4.77	\$ 5.26	10.34%
Buried	Pre-Sharing	\$ 8.90	\$ 10.36	16.46%
	Post Sharing	\$ 7.33	\$ 8.52	16.29%
Underground	Pre-Sharing	\$ 28.38	\$ 34.19	20.50%
	Post Sharing	\$ 24.09	\$ 28.27	17.33%
Composite	Pre-Sharing	\$ 12.64	\$ 14.85	17.53%
	Post Sharing	\$ 10.27	\$ 11.93	16.12%

* Based on September 12, 2013 Cost Model Overview at 13-18 and CAM 3.2 Baseline plant mix

Even with this adjustment PRT believes that the CAM 3.2 model dramatically underestimates the excavation and placing costs faced by carriers in Puerto Rico. As introduced in the plant mix discussion above, the cost for buried cable does not include any material and labor costs associated with conduit, manholes, splice boxes or any other structure. As illustrated below, using data from outside plant construction contracts, the cost of excavation in Puerto Rico based on low bid contracts averages **[BEGIN HIGHLY CONFIDENTIAL]** ***** **[END HIGHLY CONFIDENTIAL]** per foot in the metro area.

<u>PRTC Outside Plant Excavation Cost⁴⁰</u>	<u>Percent</u>	<u>Zone 1 (Metro)</u>
Road Crossing	6%	[BEGIN HIGHLY CONFIDENTIAL]
Under Road (Asphalt/Concrete)	10%	
Under Road (Asphalt only)	36%	
Non-Backyard	48%	
Backyard	0%	
Weighted Average		[END HIGHLY CONFIDENTIAL]

In contrast, the tables below show that the CAM 3.2 model inputs for underground plant excavation are much lower. The source of the CAM 3.2 input values is listed in an earlier version of the “Structure Labor” tab of the capex input value as a “simple average” from the ABC coalition companies.⁴¹ The PRT table splits the costs out by type of location ranging from “road crossing” where pavement must be broken and removed, a trench must be dug across the

⁴⁰ Data from files WUT-P.xls and Bid Prices.tif, included with hand delivery of BCMPR model. See PRT BCMPR Filing.

⁴¹ See Capex V9FTTD.xls

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intersection, the trench backfilled and pavement replaced (sometimes repaved across an entire lane to meet transportation department requirements) to “non-backyard” where a trench is dug in a dirt/grass area adjacent to the road where no pavement (road, driveway or sidewalk) is disturbed. In light of the significant difference between PRT’s cost numbers and the CAM 3.2 assumed values – and given that the PRT numbers are based on an actual competitively bid contract open to all qualified contractors willing to work in Puerto Rico – the CAM inputs should be adapted to reflect the Puerto Rico-specific values.

Underground Excavation Summary Table - Trenching cost per foot: CAM 3.2 Default

	Terrain			
Density Group	NORMAL	SOFTROCK	HARDROCK	WATER
URBAN	[BEGIN TSPO CONFIDENTIAL]			
SUBURBAN				
RURAL				[END TSPO CONFIDENTIAL]

Buried Excavation Summary Table - Trenching cost per foot: CAM 3.2 Default

	Terrain			
Density Group	NORMAL	SOFTROCK	HARDROCK	WATER
URBAN	[BEGIN TSPO CONFIDENTIAL]			
SUBURBAN				
RURAL				[END TSPO CONFIDENTIAL]

The CAM Lower Support Threshold Should Be Adjusted to Account for the Low Take-Rate in Puerto Rico

Take rate represents the expected number of customer locations that will choose to subscribe to broadband service. An accurate take rate value is critical in this case because under the CAF Phase II requirements the forward-looking network will be assumed to be built out to all locations in the serving area, but not all locations will actually subscribe to the service. Since the model-determined support amount is based on the difference between cost and revenues (“the calculation of which,” USTelecom notes “necessarily relies on take rates”),⁴² the model must take into account that not all locations built will actually take the service. In the WCB Cost Model Virtual Workshop 2012 Support Thresholds, the WCB described a methodology wherein the lower support benchmark threshold – representing the net average revenue per user (“ARPU”) – is calculated as the ARPU multiplied by the expected take rate. Therefore there is a direct relationship between decrease in expected take rate and the lower support threshold.

The CAM 3.2 assumes a nationwide average take rate of 80 percent. As PRT previously has explained,⁴³ this high take rate is inappropriate for Puerto Rico, which neither currently has

⁴² USTelecom Oct. 17 *Ex Parte* at 3.

⁴³ See, e.g., PRT CAM 3.2 Comments at 12; White Paper of Puerto Rico Telephone Company, Inc. on Legal and Policy Issues With Applying the CACM to Insular Areas at 13-14, *attached* to Letter from Tom J. Navin,

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nor should be expected to have in the future broadband take rates approaching that level. As such, the CAM lower support threshold should be adjusted to account for the expected low take rate in Puerto Rico throughout the period modeled by the CAM.

There are numerous reasons why assuming that PRT can obtain 80 percent broadband take rates over the five year CAF II period is a misapplication of the model.

First, the current broadband network in Puerto Rico only has 20.8 percent of the connections in Puerto Rico with speeds greater than 3 Mbps and upload speeds greater than 0.200 Mbps.⁴⁴ This means that only 21 percent of the island currently has the ability to purchase broadband, not even taking into account whether those locations actually choose to do so. As mentioned above, in terms of the model, the take rate is used to calculate the number of subscribers from whom revenue may be expected to cover the cost of the building and operating the broadband network. If only 21 percent of the island locations have coverage, then the model investment cannot be spread over 80 percent of the locations on the island. To do so would mean that the model assumes subscribers who do not have broadband coverage yet are paying for it.

In fact, Puerto Rico's coverage rate of 21 percent is significantly lower than the national average of 47.6 percent.⁴⁵ According to the Commission's Internet Services Report, Puerto Rico has the lowest coverage rate of any state or territory reporting data. Similarly, the Eighth Broadband Progress Report calculates that for the United States as a whole, an average of 6 percent of the population is without access to fixed broadband meeting the speed benchmark. In contrast, 51 percent of the population in Puerto Rico lacks access to fixed broadband meeting the speed benchmark.⁴⁶ Because of these significant differences in coverage, an 80 percent take rate, which may be a valid assumption for the continental U.S., is not appropriate for Puerto Rico.

Second, even if all locations on the island are served by broadband, other factors make it unlikely that Puerto Rico will achieve the 80 percent take rate assumed by the current CAM. Socio-economic factors on the island limit the number of households with the income to afford broadband. According to the U.S. Census Bureau's American Community Survey of median household income, Puerto Rico has the lowest median household income in the nation.⁴⁷ The median income in Puerto Rico is just \$19,000 a year, less than half the median for the U.S. as a whole. This means that there are fewer households in Puerto Rico that have the disposable

(Continued . . .)

Counsel to PRT, to Chairwoman Mignon Clyburn, Commissioner Ajit Pai, Commissioner Jessica Rosenworcel, Federal Communications Commission, WC Docket Nos. 10-90, 05-337 (filed July 17, 2013).

⁴⁴ See Federal Communications Commission, Industry Analysis and Technology Division, Wireline Competition Bureau, *Internet Access Services: Status as of June 30, 2012*, Tbl. 18 (May 2013) available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-321076A1.pdf.

⁴⁵ *Id.*

⁴⁶ See *In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act*, GN Docket No. 11-121, Eighth Broadband Progress Report, App. C (2012).

⁴⁷ See Amanda Noss, U.S. Census Bureau, *American Community Survey Briefs – Household Income for States: 2010 and 2011*, <http://www.census.gov/prod/2012pubs/acsbr11-02.pdf> (Sep. 2012).

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income necessary to purchase broadband. Even with low income assistance programs available, anything approaching an 80 percent take rate is unlikely to be achieved.

Third, there are numerous locations in Puerto Rico that are unlikely to ever subscribe to broadband service. Rural businesses such as gas stations, small neighborhood markets, farms or other small business locations are unlikely to need broadband service. And, in the urban areas, where mobile telephony is extremely popular, many households will use their wireless service for the Internet rather than a traditional landline – even if they could otherwise afford wired broadband. Based on these factors it is not surprising that the broadband take rate in the Puerto Rico market is well below 50 percent and it will likely take many years beyond the five year period envisioned for CAF II for take rates in Puerto Rico to approach the 80 percent contemplated by the CAM 3.2 model. As such, the next version of the CAM should incorporate a lower support threshold for PRT to reflect the unique circumstances regarding take rate in Puerto Rico.

The CAM Should Account for the Actual Cost of IRUs on Undersea Cables for PRT

The Bureau's CAM 3.2 Public Notice acknowledges that for many insular carriers, it would be less expensive to obtain capacity on existing third party undersea cables through the purchase of indefeasible rights of use (“IRUs”) rather than constructing new cable systems.⁴⁸ In the case of PRT, the CAM correctly assumes that the Company will continue to purchase IRUs on existing cables, as well as those coming on-line in the near future. PRT agrees that for some insular carriers, including PRT, it is reasonable to assume that the Company will continue to purchase capacity on third party cables rather than to construct its own cable. Because Puerto Rico lies on the path of existing cables that have available capacity, it would be uneconomical for PRT to build its own cable system. Following this logic, the undersea cable cost component of the model should use the most cost effective method of obtaining the necessary undersea cable capacity, and it should reflect the market-based price of purchasing such capacity.

Curiously, while the CAM assumes that PRT will purchase capacity on third party cables, it estimates the associated costs based on a hypothetical build rather than the price of purchasing IRUs for the required capacity. This underscores the current model's inability to accurately represent any real world costs in insular areas when it relies on generalizations to simulate a hypothetical carrier. While forward-looking hypothetical cost estimation may generally be an appropriate mechanism for modeling, it makes no sense to use forward-looking costing for components of a model that the carrier has never built and is unlikely to build during the modeled period. Instead, the cost of undersea cable transport for those carriers that are expected to continue to purchase capacity from third party providers should be based on the market-determined price per Gbps—accounting for the increased demand expected due to the combined efforts of the Commission and carriers to increase broadband penetration and traffic in insular areas, as well as the world-wide upward trend in broadband usage. As such estimates are currently unavailable, the best currently available estimate of the cost of undersea cable transport for those carriers that will continue to purchase third party IRUs is the per Gbps price they currently pay. Importantly, it would be expected that the price per Gbps for IRUs to a portion of cable capacity should be somewhat less than the cost of constructing an entirely new cable.

⁴⁸ Notice at 4.

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However, as the BCMPR and the analysis below indicates, the price of the IRUs, maintenance and operating cost PRT currently pays corresponds to a per customer location passed monthly cost that is much higher than the \$0.72 cost per customer location estimated by the CAM. This significant and surprising disparity in estimates further suggests that there are fundamental flaws in using the same assumptions and inputs across all areas.

Based on the data contained in the Public Notice and the revised CAPEX V16 input file available on the CAM website, PRT was able to determine the difference between the undersea cable cost per subscriber location estimated by the CAM and by the BCMPR using the same set of assumptions. As reported in the Notice, the CAM version 3.2 estimated the undersea cable cost per subscriber location at \$0.72, assuming that 50 percent of the cost of the cable capacity was allocated to broadband.⁴⁹ However, using the actual costs PRTC incurs with undersea cable providers that it currently has purchased IRUs from, PRTC estimates a cost of \$3.40 per location.⁵⁰ PRTC's estimated undersea cable cost includes the cost of connecting PRT's Internet Core routers to the cable landing stations where the undersea cables serving Puerto Rico terminate, the cost of obtaining capacity on the undersea cables and the cost of the terrestrial transport and access to peering points located in Miami, Florida, the nearest Internet exchange points to Puerto Rico.

The per customer location cost of the off-island transport and access to the peering locations is developed using the current cost to PRT of the three 10 Gbps undersea cable systems the Company currently uses. The current cost to PRT is made up of three components:

- 1) The upfront indefeasible rights of use (“IRU”) costs allocated over the life of the agreement on a per Mbps basis;
- 2) The monthly IP usage charge on a per Mbps basis as specified in the IRU agreements, and;
- 3) The monthly operation and maintenance costs on a per Mbps basis as specified in the IRU agreements.

PRT's initial analysis assumed that 72 percent of the cost of the undersea cables was to be allocated to broadband. Adjusting this allocation to the CAM-assumed 50 percent reduces the per subscriber location allocation to \$2.36.⁵¹

PRT believes that it is appropriate to adjust the per customer location cost of the undersea cable to reflect PRT's actual cost of obtaining the necessary capacity. This would require increasing the per location cost by \$2.36/\$0.72 or 3.2778 times the cost currently estimated by CAM 3.2 for Puerto Rico. The Public Notice estimated the broadband allocated investment as \$72.9 million. The PRTC proposed adjustment would increase this investment by a factor of

⁴⁹ Notice at 7.

⁵⁰ These calculations are found in the BCMPR, Internet Access Summary Tab

⁵¹ The broadband allocation percentage of the undersea cable is a user defined input in the BCMPR and may be adjusted on the “Toggles and User Adjustable Inputs” Tab.

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3.2778 to \$236.6 million. The adjustment could be accomplished by multiplying cells D14, D15, C19, and C20 in the “undersea” table of the CAPEX v16.xlsx file by 3.2778.

If it is assumed, as the Bureau does, that PRT will continue to rely on existing cable capacity as opposed to constructing a wholly new and redundant undersea cable, it follows logically that PRT’s transmission costs are going to resemble its current costs for such capacity. As such, PRTC believes that it would be more appropriate to use a per location cost based on actual current IRU investment and maintenance costs. The adjustment proposed here by the Company does just that.

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ATTACHMENT 2

**[ATTACHMENT HIGHLY CONFIDENTIAL SUBJECT TO SECOND PROTECTIVE
ORDER IN WC DOCKET NOS. 05-337 AND 10-90]**