



Liberia Telecommunications Authority

Building #D-168, Congotown Back Road
Monrovia, Liberia



LTA-ORDER-0013-12-14-16

Determination of Markets Relevant for Ex Ante Regulation

PURSUANT TO PART VII SECTION 27 OF THE TELECOMMUNICATIONS ACT 2007 (the Act), THE LIBERIA TELECOMMUNICATIONS AUTHORITY (LTA) HEREBY ISSUES AND PUBLISHES THIS ORDER DEFINING THE TELECOMMUNICATIONS MARKETS IN LIBERIA THAT ARE RELEVANT FOR EX ANTE REGULATION.

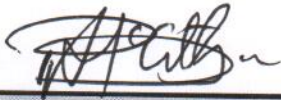
1. For the reasons set out in the Annex to this Order, the LTA has identified the retail telecommunications markets that are relevant for ex ante regulations as (1) Mobile Voice/SMS Access and Call Service; (2) Mobile Data and Internet Access; and (3) Fixed Data and Internet Access.
2. For the reasons set out in the Annex to this Order, the LTA has identified the wholesale telecommunications markets that are relevant for ex ante regulation as (1) Call Termination; (2) Local Fiber Access; (3) Dedicated Fiber Transport; and (4) Fiber Optic International Connectivity.
3. The LTA shall, pursuant to Part VII Section 27 of the Act, monitor developments in these markets to review the state of competition in order to determine if any licensee holds a position of Significant Market Power (SMP). Such a review may conclude with a designation of dominance and the imposition of appropriate remedies.
4. This Order is published without prejudice to the powers of the LTA as enshrined in the Act and the outcomes of any and all previous or subsequent consultations, investigations, and other regulatory processes or measures carried out pursuant to such powers, all or any of which may result in the application of different terms and/or findings than those of this Order, including the determination and definition of new markets and the designation of SMP.

SMP.

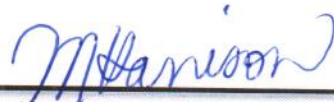
THIS ORDER SHALL TAKE IMMEDIATE EFFECT UPON PUBLICATION; IT SHALL HAVE THE SAME LEGAL FORCE AS A RULE OF THE LTA AND SHALL REMAIN IN FULL FORCE AND EFFECT UNTIL OTHERWISE ORDERED BY THE LTA OR PURSUANT TO LEGAL PROCESS.

ISSUED THIS 14th DAY OF December A.D. 2016 IN THE TOWNSHIP OF CONGOTOWN, REPUBLIC OF LIBERIA.

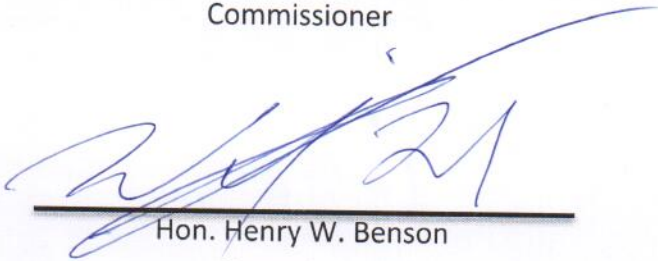
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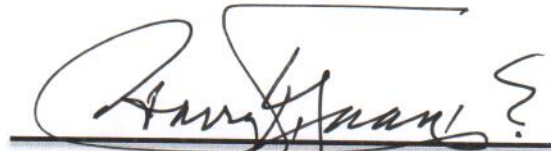
Hon. B. Anthony McCritty, Sr.
Commissioner



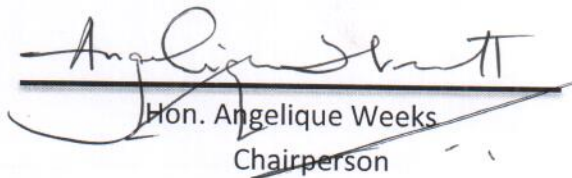
Hon. Maria G. Harrison
Commissioner



Hon. Henry W. Benson
Commissioner



Hon. Harry T. Yuan, Sr.
Commissioner



Hon. Angelique Weeks
Chairperson

LIBERIA TELECOMMUNICATIONS AUTHORITY

ANNEX TO

LTA-ORDER-0013-12-14-16

DEFINING RELEVANT MARKETS

FOR EX ANTE REGULATION

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ACRONYMS

ACE	Africa Coast to Europe
ADSL	Asymmetric Digital Subscriber Line
ACT	Telecommunications Act 2007
CCL	Cable Consortium of Liberia
CDMA	Code Division Multiple Access
FTC	Federal Trade Commission
FTTH, FTTC, FTTP	Fiber to the Home, Cabinet, Premises
GSM	Global System for Mobile
HHI	Herfindahl-Hirschman Index
ISP	Internet Service Provider
LTA	Liberian Telecommunication Authority
MNO	Mobile Network Operator
OTT	Over the Top
SMP	Significant Market Power
SMS	Short Message Service
SSNIP	Small but Significant Non-transitory Increase on Price
STM1	Synchronous Transport Module Level-1
VOIP	Voice over Internet protocol
VSAT	Very small aperture terminal
WiMAX	Worldwide Interoperability for Microwave Access

Liberia Telecommunications Authority

ANNEX TO

LTA-ORDER-0013-12-14-16

DEFINING MARKETS THAT ARE RELEVANT FOR EX ANTE REGULATION

1. PURPOSE

1.1 The purpose of this Annex is to summarize the rationale underpinning the Liberia Telecommunications Authority's (LTA) determination that certain telecommunications markets are susceptible to ex ante regulations. The Annex provides an analytical framework and methodology for defining the boundaries of relevant markets, and summarizes the process of public consultation that preceded the LTA's final determination.

2. INTRODUCTION & BACKGROUND

- 2.1 In pursuit of the Liberia Telecommunications Authority's (LTA) function to maximize the welfare of all citizens, the LTA systematically studies, observes and analyses the telecommunications market, including the market segments, in order to gauge the state of competition.
- 2.2 Existence of fair competition in telecommunications markets is a necessary condition for sustainable economic development and enhanced social welfare of the people. Anti-competitive practices by dominant players may marginalize the benefits of economic efficiency inherent in competitive markets. Abuse of market power diminishes opportunities for dynamic efficiency leading to worsening consumer welfare.
- 2.3 In recognition of this fact, and in furtherance of its duties and functions under the Telecommunications Act 2007 ("the Act"), and specifically as regards Part VII Article 27 (1) (h) of the Act, which mandates the LTA to "undertake market reviews from time to time to evaluate market conditions and the state of competition in those markets", the LTA, in September 2015, undertook a review of the telecommunications industry in Liberia with the objective of identifying and defining markets relevant for regulation and assessing the state of competition in each market segment.
- 2.4 The LTA completed its review with the designation of three (3) retail and four (4) wholesale markets to be relevant for ex ante regulation.

3. ANALYTICAL FRAMEWORK

3.1. Approach to Define Relevant Markets

- 3.1.1 The relevant market for a good or service includes all goods or services that are considered to be close substitutes. These goods or services can therefore be deemed to compete directly with each other, and that the potential demand- or supply-side substitution between them will constrain their prices.
- 3.1.2 The focus for the delineation of relevant markets is therefore based on those goods or services that are close substitutes from the buyer's perspective (i.e., demand-side substitution), and those suppliers who produce, or could easily switch to produce, those goods or services (i.e., supply-side substitution).
- 3.1.3 The LTA follows a well-established method called the **hypothetical monopolist test** to define relevant markets. This method also known as a **SSNIP (small but significant non-transitory increase in price)** test follows an iterative process. First, LTA starts with a narrow group of products or services (say X and Y) that are deemed close substitutes. Then the following question is posed: if there were one supplier (i.e., the hypothetical monopolist) of X and Y, would the hypothetical monopolist be able to increase prices (of X and Y) by a small but significant amount and maintain it over a certain period? If the response to this question is negative, it is because a sufficient amount of customers would switch to an alternative product (say, Z) not included in the group formed by X and Y. This switch would lower the profits of the hypothetical monopolist forcing it to reduce the price of X and Y to its original level. Therefore, product Z, not included in the initial group of services, can be said to be a close substitute for X and Y and therefore within the same market. The SSNIP test is repeated again adding other services or products to the initial group until a set of services is found such that the hypothetical monopolist would be able to maintain the price increase over an extended period of time (typically one or two years) with profits. That set of products or services would constitute the relevant product market.
- 3.1.4 In the application of the SSNIP test the price increase generally refers to a 10-percent price increase holding the terms of sale of the products outside the candidate market constant.
- 3.1.5 It is important to note that a hypothetical monopolist would always lose some customers as a result of a small but significant non transitory increase in prices. The real question as to whether X and Y constitute a relevant product market is whether the customers' response (switching to Z) is of such magnitude that it renders the price increase unprofitable. If the response of customers switching to Z is significant,

then X, Y, and Z should belong to the same product market. If it isn't (the hypothetical monopolist is able to sustain the price increase) then X and Y constitute a relevant product market.

- 3.1.6 When applying the hypothetical monopolist test, the LTA will first assess demand-side substitution to come up with a group of services as the relevant product market. This process is discussed in the next section. Demand-side substitution analysis usually carries most of the weight in the definition of a relevant product market. LTA will also consider supply-side substitution effects to assess how quickly other suppliers can switch production to the relevant product without incurring significant costs or delays.

3.2 **Assessing Demand-Side Substitution**

- 3.2.1 When assessing demand-side substitution the LTA may consider the historic trend and likely future adoption of services that will serve as close substitutes. Rather than focusing on the technology to supply these services, the LTA's focus will be on the functionality and characteristics of the products to assess how likely it is that consumers will view them as close substitutes. The focus will be on the consumer's perception of whether these services are close substitutes or not. Important characteristics such as differences in download/upload speeds, differences on download capacity limits, functionality and pricing will be considered.
- 3.2.2 Historic trends on prices and price correlations between alternative services that are deemed close substitutes can shed light on the relative closeness of these services when delimiting the boundaries of the product market. It is important to note that important price differences may exist between products that belong to the same market. Price differences could exist because of perceived difference in product quality. They could also exist when one brand conveys a certain meaning valued by certain consumers, for example, status.

3.3 **Assessing Supply-Side Substitution**

- 3.3.1 Supply-side substitution exists when a supplier can easily switch from supplying service X to supplying service Y without incurring significant costs and within a reasonable short period of time in response to a small but permanent increase in the relative price of Y. Under these circumstances the additional supply that can be put into the market would constrain pricing of products that are close substitutes.
- 3.3.2 If a product has been included within the relevant product market as a result of evidence of demand-side substitution, then evidence of supply-side substitution towards this product is not necessary.
- 3.3.3 In analyzing supply-side substitution the focus will be on existing suppliers and their ability to rapidly switch production to alternative products as a response to a relative

price increase in those alternative products. The focus will not be on the barriers to entry of potential competitors as it would typically take potential competitors more than one or two years to enter the market.

3.3.4 Supply-side substitution is unlikely to pose a constraint on the pricing of a hypothetical monopolist when it involves significant changes to existing assets, substantial additional investments, or strategic decisions involving long implementation delays.

3.4 Relevant Geographic Markets

3.4.1 Conceptually, the definition of geographic markets involves an assessment of the extent to which competitive conditions are appreciably different across geographic areas.

3.4.2 Assessing relevant product substitution in a geographic area requires assessing the degree to which consumers can readily switch from their supplier of the relevant product to other suppliers in other geographic areas. In practice, the network coverage area, or the licensed area, will be considered as the relevant geographic dimension of the product market. However, if competitive conditions vary widely from one area to another, a different definition may be considered for the relevant geographic market.

3.5 Other Considerations

3.5.1 Retail and wholesale markets

3.5.1.1 In telecommunications, retail and wholesale markets have different meanings than those commonly used in other industries. Retail services refer to services sold to final consumers regardless of whether these are individuals, businesses or government. Wholesale services are those sold to other licensed service providers who use these as inputs in their provision of retail services.

3.5.1.2 The definition of relevant product markets needs to differentiate between retail and wholesale markets, sometimes referred to as downstream (retail) and upstream (wholesale) markets.

3.5.1.3 To define markets susceptible to ex ante regulations, the analysis will start with the retail markets and then move onto the wholesale markets. The retail market analysis will shed light on the demand and supply-side substitution effects prevailing in those markets. This in turn will shed light on the nature of the demand and supply-side substitution effects in wholesale markets, because the demand for wholesale products is driven by the underlying demand for retail products.

3.5.2 Bundled products

3.5.2.1 When defining the relevant product markets it will be taken into consideration that telecommunications services are commonly provided in a bundle. For example retail mobile service is usually composed of a bundle of services including, but not limited

to, the ability to place and receive calls nationally and internationally, and the ability to send and receive text and voice messages. Accordingly, the market definition will reflect the fact that products are often sold in a bundle.

3.5.3 Over-the-top services

3.5.3.1 Also to be considered are the demand and supply-side substitution effects posed by over-the-top (OTT) services. With the increased availability of broadband (mobile and fixed), OTT services have become a powerful competitive force to traditional retail services. For example, Voice over Internet Protocol (VOIP) applications are regularly used by consumers to bypass the international call services of the fixed and mobile operators.

3.5.4 Chains of substitution

3.5.4.1 When analyzing demand-side substitution a set of products may sometimes appear too distant to be included in the same market if the product characteristics and the prices differ substantially. Suppose there are three different fixed-wireless Internet access products with varying download speeds with higher prices for higher speeds; for example, (a) product X has a download speed of 256 kbps; (b) product Y has a speed of 1 Mbps; and (c) product Z has a speed of 6 Mbps. Analyzing demand-side substitution between products X and Z may lead one to conclude that these products are too different to belong to the same market. However, starting the analysis with X only as a narrow tentative market, one may conclude that a SSNIP on X would not be profitable. This is because a non-trivial number of consumers who would be willing to put up with a slower speed at a lower price of X would switch to Y if the price difference between X and Y is reduced. Thus, one may rightly conclude that X and Y must belong to the same market. Now one may ask whether the product market should be expanded to include Z. A SSNIP on X and Y may trigger a non-trivial number of Y consumers (who care about speed) to switch to Z (given the increase on the price of Y). Then, one may rightly conclude that Y and Z must belong to the same market, and by extension X, Y and Z must belong to the same relevant market.

4. ANALYSIS & FINDINGS

4.1 Retail Market Definition

4.1.1 Based on the review of the Liberia telecommunications sector and the products and services offered by major network operators (MNOs) and internet service providers (ISPs) a list of retail telecommunications products were identified to be considered as candidate relevant product markets:

4.1.1.1 **Fixed voice access and call service:** this includes services provided by fixed-wireless technologies (e.g., GSM, WiMAX, and VSAT) by the MNOs and the ISPs, and a fiber-based service. It includes the ability to call and receive calls from fixed locations. It

includes the ability to place and receive calls to and from anywhere within Liberia and abroad.

4.1.1.2 Mobile voice/SMS access and call service: These services are provided by the MNOs. It includes the ability to place and receive calls to and from anywhere within Liberia and abroad. Similarly it includes the ability to send or receive text messages to and from anywhere in Liberia and abroad. Unlike fixed services, users of this product place or receive calls/SMS while travelling within the coverage area of the wireless network.

4.1.1.3 Fixed data and Internet access: These services are provided by a combination of fiber and various fixed-wireless access technologies by the MNOs and ISPs. Subscribers use this service to access data and the Internet at fixed locations usually via a computer terminal and a router or modem.

4.1.1.4 Mobile data and Internet access: These services are provided by the MNOs. Subscribers use this service to access data and the Internet anywhere within the coverage area of the wireless network. Subscribers typically use a smartphone or tablet to access data and the Internet.

4.1.1.5 Leased lines/circuits for businesses and organizations: These are typically customized solutions via fiber and wireless access to large private or international organizations and government.

4.2 Relevant Retail Markets

4.2.1 To determine whether the candidate markets in Section 4.1 are relevant for ex ante regulation, the following criteria were applied:

4.2.2 **Size of relevant market must be significant:** Niche markets that are relatively small are not worth defining for the purpose of imposing ex ante regulations. For example, it would be questionable to define a relevant market for products used by a very small fraction of the population, or that in terms of revenue size represents a very small fraction of telecommunications retail services in Liberia.

4.2.3 **Market concentration:** The extent of market concentration is important; moderate or highly concentrated markets may be candidates to be relevant markets.

4.2.4 **Markets have large and non-transitory barriers to entry or expansion:** Markets with large barriers to entry or expansion in conjunction with the other two criteria above should be candidates for being considered relevant markets.

4.2.5 The candidate market for fixed voice access and call service was eliminated as a relevant market because the overall size of this market is insignificant with only a few hundred customers in Liberia. Second, the market does not seem concentrated enough to be singled out for being susceptible to ex ante regulations.

4.2.6 The candidate market for leased lines/circuits was also eliminated as a relevant market because of its small size and lack of concentration.

- 4.2.7 The candidate market for mobile voice/SMS access and call service is considered a relevant market because of its large size in terms of subscribers, high market concentration, and high and non-transitory structural, legal and regulatory barriers to entry.
- 4.2.8 The candidate market for mobile data and internet access is considered to be relevant for ex ante regulation because of its relatively large size in terms of subscribers, it is highly concentrated, and exhibits high, non-transitory barriers to entry.
- 4.2.9 The candidate market for fixed data and internet access is also considered relevant for ex ante regulation because of its large size, high concentration and high barriers to entry.
- 4.2.10 The three retail markets found to be susceptible to ex ante regulation are (a) **the market for mobile voice/SMS access and call service** (b) **the market for mobile data and internet access** (c) **the market for fixed data and internet access**.

4.3 Relevant Wholesale Markets

- 4.3.1 Wholesale services in telecommunications are those services sold to other licensees who use these as inputs in the provision of retail services. Retail markets are defined before wholesale markets because wholesale products are derived from the underlying demand for retail products, so an analysis of the competitive conditions in the wholesale market depends on those in the retail market.
- 4.3.2 Considering the retail markets identified in Section 4.2, the supply chains and associated access technologies for those markets were assessed to determine candidate wholesale markets susceptible to ex ante regulation. The following eight wholesale markets were identified to be candidates for further analysis:
1. Call termination
 2. Local Radio Access
 3. Local Fiber Access
 4. Dedicated Microwave/VSAT Transport
 5. Dedicated Fiber Transport
 6. International Capacity – Satellite
 7. International Capacity – Fiber Optic Submarine Cable
 8. International Capacity – Cross-border Microwave

- 1.2.3 For ease of analysis, the eight candidate markets in Section 4.2.2 are grouped under the headings Call Termination, Local Access (including both Radio and Fixed Access), Dedicated Transport (including Microwave/VSAT and Fiber Transport) and International Capacity (including both Fiber Optic Submarine Cable and Cross-Border Microwave).
- 1.2.4 Following analysis using the SSNIP test and the three susceptibility criteria of size of market, concentration and high barriers to entry, the candidate wholesale market for Call Termination is considered to be relevant for ex ante regulation.
- 1.2.5 Analysis indicates that the candidate wholesale market for Local Radio Access fails at least one of the three criteria and is therefore not relevant for regulation at this time; while the candidate wholesale market for Local Fiber Access passes the three criteria and is considered relevant for regulation.
- 1.2.6 In order to transfer large amounts of traffic between aggregation points – towers, switches, etc. – from access networks to core networks or within core networks, service providers require dedicated high-bandwidth transmission capacity. In Liberia, there are basically three forms of dedicated transport (a) point-to-point microwave (b) satellite and (c) fiber optic cable. When subjected to the three susceptibility criteria, it's found that the microwave and satellite markets fail at least one of the three criteria of the Three Criteria Test. Because three network operators currently self-supply dedicated satellite and microwave transport and could relatively easily supply third parties, we believe there is effective competition in the market, i.e., it is not concentrated. However, for dedicated fiber transport, the three criteria are passed. Constructing a fiber network is costly and time-consuming so barriers to entry are high. Effective competition will be unlikely in the foreseeable future. The wholesale market for Dedicated Fiber Transport is therefore considered to be relevant for regulation.
- 1.2.7 The market for wholesale International Fiber Optic Capacity passes the three criteria test and is considered relevant for ex ante regulation, especially given that this service is offered by only one provider in Liberia.
- 1.2.8 The four wholesale markets found to be relevant for ex ante regulation are (a) the wholesale market for call termination (b) the wholesale market for Local Fiber Access (c) the wholesale market for Dedicated Fiber Transport, and (d) the wholesale market for international fiber optic connectivity.

2. CONSULTATION PROCESS

- 5.1 In accordance with its Consultation Guidelines, the LTA convened with stakeholders at two industry workshops held on October 30, 2015, and on March 1, 2016. At these workshops, the LTA discussed with and sought input from industry stakeholders on the following:

1. The methodology to be applied by the LTA in defining telecommunications wholesale and retail markets.
2. The methodology and approach to be applied by the LTA in assessing competition in relevant markets, and determining operators with SMP.
3. The regulatory obligations and remedies the LTA proposed to impose on operators found to be dominant in particular markets.

5.2 On June 2, 2016, the LTA published for further public consultation, the following document as an outcome of its market review and industry workshops: (a) **Consultation Document on the Definition of Relevant Telecommunications Markets** defining and designating certain retail and wholesale telecommunications markets to be susceptible to ex-ante regulation.

5.3 Telecommunications service providers, and the public at large, were requested to provide written comments and inputs on the methodology, approach and findings of the market review process. No feedback was received by the LTA as at the June 24, 2016, deadline for the receipt of written responses.

5.4 The table below summarizes the comments and issues raised by stakeholders at the two industry workshops and the response of the LTA.

Ref. Text/Issue	Existing Text	Comment/Requested Revision	Revised Text	Party making comment/input
3.7.3.1 Competition Guidelines	3.7.3.1. The LTA will also consider the demand and supply-side substitution effects posed by over-the-top (OTT) services. With the increased availability of broadband (mobile and fixed), OTT services have become a powerful competitive force to traditional retail services. For example, Voice over Internet Protocol (VOIP) applications are regularly used by consumers to bypass the international call services of the fixed and mobile operators.	OTT services are presented here as a very minor part of the sector. OTT services are an increasingly important part of the sector and should be presented as a stand-alone market.	None	Lonestar/MTN
LTA Response		Reviews of the telecommunications market structure and assessment of competition is an on-going process. The comment reinforces the LTA's intent, as indicated in the existing text of the Guidelines, to consider, in subsequent market studies, the characteristics of OTT services to determine whether or not those services should be designated as a relevant market(s). No revision is therefore required to the Guidelines.		
Competition		Taking into consideration	None	Lonestar/MTN

Guidelines		a new market being introduced by a player, what will be the time frame given for the LTA to come in and determine whether the player in this new market should be considered as a dominant market player?		
LTA Response		The LTA is mandated to regularly scan the telecommunications environment to prevent/rectify/remediate anti-competitive practices. The Competition Guidelines provide a best practice approach to define markets and determine the existence of SMP. Should a stakeholder believe anti-competitive practices are occurring in existing or new markets, it is the obligation of that stakeholder to report same to the LTA. The time constraints for these processes are indicated in the draft Competition Guidelines and Regulations. No changes are required for the draft Guidelines.		
Competition Regulations		The LTA should have a form for a complainant to use in reporting/filing a complaint against another party, instead of the complainant quoting the entire content of this document. Then after, the complainant can file a formal complaint in a letter with all supporting documents to the LTA.	None	MoPT
LTA Response		The LTA may consider this and other means of easing the reporting/filing process, but until these other procedures are approved, the LTA determines that no revisions are needed to the Regulations as currently drafted.		
4.9 (2) Competition Regulations	The Authority may impose a sanction against a party for instances of a material breach of these regulations and other misconduct in the course of a proceeding, which shall include: (1) Failure to comply with an applicable rule or order issued by the Authority in the proceeding; (2) Advancing a misleading or frivolous argument or request for relief;	An argument can only be proven to be frivolous when there is a counter argument to prove it to be wrong. Paragraph 4.9 (2) should be deleted.	None	MoPT
LTA Response		The LTA is obligated to provide explanations and justifications for all of its decisions and actions, including a determination that an argument is frivolous or misleading. Should a Party disagree with an LTA decision in this regard, Section 4.13 provides for appeal and		

		judicial review. No revision to 4.9(2) is therefore required.		
Competition Guidelines		What yardstick is used to determine dominance?	None	Lonestar/MTN
LTA Response		Section 4 of the draft Competition Guidelines provides, particularly in 4.1.4, the criteria, among others, the LTA will consider in assessing whether a service provider has SMP and is therefore dominant in a market.		
Consumer interest in interconnection tariff		Is the current interconnection tariff approved by the LTA, taking into consideration the outcry by new consumers? Is there hope that a new tariff on connectivity will drop in the future?	None	NATELCO
LTA Response		The current interconnection tariff was approved by the LTA in 2009 based on a modified LRIC model. The LTA in 2016 updated the LRIC model and intends to issue approved new lower tariffs.		

3. CONCLUSIONS

3.1 Following its 2015 review of the Liberia telecommunications market, the LTA finds the following retail markets to be susceptible to ex ante regulations:

1. The market for Mobile Voice/SMS and Call Service
2. The market for Mobile Data and Internet Access
3. The market for Fixed Data and Internet Access

3.2 Following its 2015 review of the Liberia telecommunications market, the LTA finds the following wholesale markets to be susceptible to ex ante regulations:

1. The market for Call Termination
2. The market for Local Fiber Access
3. The market for Dedicated Fiber Transport, and
4. The market for International Fiber Optic Connectivity