

# **Review of Local Access Charge**

## **A Consultation Paper by the Telecommunications Authority**

**31 December 2009**

### **EXECUTIVE SUMMARY**

#### **Introduction**

S.1 Local Access Charge (“LAC”) is the interconnection charge payable to the local network operators by external telecommunications service (“ETS”) providers for the conveyance of ETS traffic to and from the end users of the local network operators. The Telecommunications Authority (“TA”) first introduced the LAC regime when the ETS market was liberalised in 1999.

S.2 Under the current regulatory regime, the LAC levied by fixed network operators (“FNOs”) is regulated but that for mobile network operators (“MNOs”) is not. The existing level of LAC payable to the incumbent FNO, i.e. PCCW-HKT Telephone Limited and Hong Kong Telecommunications (HKT) Limited, was prescribed by a determination made by the TA in December 1998 and was subsequently adjusted downward in June 2001. LAC levied by other FNOs is subject to commercial negotiation, but the industry has been adopting the level determined by the TA as a benchmark.

#### **Problems and challenges of the existing LAC regime**

S.3 When the LAC regulatory regime was formulated in 1998/1999, it aimed to provide a fair compensation to the FNOs for use of their local network facilities by ETS operators and to encourage the FNOs to roll out their networks so as to enhance competition in local fixed service market. Since then, the telecommunications market has undergone significant changes in respect of technological advancements, market developments and changes in the regulatory environment. These changes raise questions as to whether the existing LAC regime is still relevant, proportionate and conducive to the sustainable development of the industry and the consumer welfare. Problems and challenges of existing LAC regime include:

- Whether asymmetric regulation of LAC on FNOs and MNOs remains appropriate under the fixed mobile converging environment?

- Whether the LAC regime should be applied to Voice over Internet Protocol (“VoIP”) traffic?
- Whether the LAC regime continues to be relevant for the current and the next generation network environment?
- Whether LAC should be regulated for the incumbent only?
- Whether a more predictable LAC scheme for the MNOs is necessary after deregulation of fixed mobile interconnection charge in April 2009?
- Whether the existing costing methodology is outdated?
- Whether the universal service contribution scheme should continue to take into account the over-compensation paid to the incumbent FNO under the LAC regime, which has been the arrangement over the last decade?
- Whether there is a more effective solution to combat illegal bypass?
- Whether the recent developments in international settlement should be considered?
- Whether there is a room for deregulation?

### **Options for development of LAC**

S.4 In the light of the technological, market and regulatory developments in the telecommunications market and the problems of the existing LAC regime identified, the TA considers it timely to conduct a full review of the LAC regime. Based on consideration of the initial views provided by the industry and having reviewed the latest market environment, the TA has identified the following four options for possible development of the existing LAC regime:

- Option 1: Maintain *status quo*
- Option 2: Maintain the obligation to pay LAC and align regulation on the FNOs and MNOs
- Option 3: Maintain the obligation to pay LAC and deregulate the level of LAC
- Option 4: Deregulate fully the LAC regime

#### *Option 1: Maintain status quo*

S.5 Option 1 is to keep the current LAC regime unchanged. However, if this option is adopted, the problems associated with the existing LAC regime will remain unaddressed. The TA considers that this option is not the optimal

option unless it is proven that any change to the existing LAC regime will result in negative consequences that are demonstrably worse than maintaining the *status quo*.

*Option 2: Maintain the obligation to pay LAC and align regulation on the FNOs and the MNOs*

S.6 Under Option 2, the existing obligation of the ETS operators to pay LAC to the FNOs will be maintained while similar obligation to pay LAC to the MNOs will be imposed on the ETS operators. The level of LAC determined by the TA will be averaged out on a macro basis for the whole industry instead of for individual local network operator.

S.7 If Option 2 is pursued, the TA will consider how the LAC should be set, including whether the levels of LAC for the originating and terminating ETS traffic should be different, whether the levels of LAC payable to the FNOs and MNOs should be unified, whether the LAC should be applied to the VoIP traffic, the settlement mechanism, and the costing methodology.

S.8 For implementation of Option 2, the TA will make a new determination on the level of LAC payable to the FNOs and the MNOs, the parties required to pay and settle the LAC and the parties entitled to receive the LAC. The TA will set a transition period in order to allow sufficient time for operators to adjust their business plans for adaptation to the new regime.

*Option 3: Maintain the obligation to pay LAC and deregulate the level of LAC*

S.9 Under Option 3, only the obligation of the ETS operators to pay LAC to both the FNOs and the MNOs is regulated but the level of LAC is subject to commercial agreement among the connecting parties. The TA will issue regulatory guidance including the charging principles of the LAC to facilitate commercial negotiations between operators. In order to facilitate market negotiations on the level of LAC, three sub-options are proposed:

- (a) *Option 3A* – The ETS operators and the originating/terminating network operators negotiate and agree the level of LAC. The ETS operators pay the LAC directly to the originating/terminating network operators.
- (b) *Option 3B* – The hosting operators and the originating/terminating

network operators negotiate and agree the level of LAC. The ETS operators pay the LAC directly to the originating/terminating network operators.

- (c) *Option 3C* – The hosting operators and the originating/terminating network operators negotiate and agree the level of LAC on a wholesale basis. The hosting operators pay the LAC directly to the originating/terminating network operators on a wholesale basis. The hosting operators recover the LAC from the ETS operators under separate commercial arrangement.

S.10 If Option 3 is implemented, the TA will set a transition period in order to allow sufficient time for operators to negotiate a new commercial arrangement of the LAC applicable to their ETS traffic and adjust their business plans for adaptation to the new regime. The TA would like to stress that such commercial negotiations should not jeopardize the normal flow of ETS traffic across networks or the existing any-to-any (“A2A”) connectivity requirement which allows customers to access the ETS of their choice.

#### *Option 4: Deregulate fully the LAC regime*

S.11 Option 4 is to fully de-regulate the LAC regime. Under this option, the TA will not issue regulatory guidance on interconnection charge for the ETS traffic. Whether such charge should be paid and the level will be purely the result of commercial negotiations between operators.

S.12 If Option 4 is pursued, the TA will further consult the industry regarding the implementation and transitional arrangements. Same as for Option 3, the TA stresses that A2A connectivity for access to ETS should be safeguarded under this Option.

#### **Invitation of Views and Comments**

S.13. The TA invites views and comments on the issues and questions raised in this consultation paper. All submissions should be made in writing and should reach OFTA, preferably in electronic form, on or before **6 March 2010**. Submission should be addressed to:

Office of the Telecommunications Authority  
29/F Wu Chung House  
213 Queen's Road East  
Wanchai, Hong Kong  
[Attention: Senior Telecommunications Engineer (R31)]  
Fax: 2803 5112  
E-mail: lacreview@ofta.gov.hk

Comments may also be sent by fax to 2803 5112 or by email to lacreview@ofta.gov.hk.

### **Way forward**

S.14 The TA is open to any one of the four options, or other options that may be proposed by the industry, that should be pursued for the future LAC regime. He will consider whether a particular option will adequately address the problems identified with the existing LAC regime, ensure that consumer interests be safeguarded, be consistent with the telecommunications policy objectives of the Government and the regulatory principles propounded by the TA, and be able to cope with the future technological and market developments. Taking into account the views received from the consultation, the TA will decide whether additional issues need to be further consulted with the industry before finalising any changes to the existing LAC regime.

## INTRODUCTION

1. Local Access Charge<sup>1</sup> (“LAC”) is the interconnection charge payable to the local network operators by providers of external telecommunications services (“ETS”)<sup>2</sup>. The Telecommunications Authority (“TA”) introduced the LAC regime when the ETS market was liberalised in January 1999. LAC levied by the local fixed network operators (“FNOs”) is regulated by the TA. The level of LAC for the incumbent FNO<sup>3</sup>, PCCW-HKT Telephone Limited and Hong Kong Telecommunications (HKT) Limited (hereafter collectively referred to “PCCW”), was first set by the TA in a determination entitled “*Telecommunication Ordinance (CAP 106): Determination under Section 36A regarding the Implementation of Local Access Charge and Modified Delivery Fee Arrangement*” issued on 30 December 1998<sup>4</sup> (“1998 LAC Determination”). For other FNOs, the levels of LAC are set by themselves but they generally take the TA’s determined level as the benchmark. Throughout the years, the TA has conducted a number of reviews on the charge level and costing methodology for the LAC for the fixed networks but the overall regime has not changed significantly since its implementation. As regards the LAC levied by the local mobile network operators (“MNOs”), the TA has never regulated it. Whether the ETS operators have to pay LAC to MNOs and the level of such charges are subject to commercial agreement.

2. Since the liberalisation of the ETS market in 1999, there have been significant changes in the market and regulatory environments, including both the local and the external markets. As the LAC regime has been put in place for over 10 years, the TA considers it timely to conduct a comprehensive review in order that the regime may keep abreast of the latest technological and market developments.

3. This consultation paper sets out the preliminary views of the TA on the possible options for the development of an updated, efficient, effective and sustainable LAC regime. For the avoidance of doubt, all the views expressed in this consultation paper are for the purpose of discussion and consultation only. Nothing in this consultation paper represents or constitutes any decision

---

<sup>1</sup> Unless otherwise stated, reference to the term “LAC” includes reference to “local access charge” and “local access charge (transit)”. The definition for the latter is given in footnote 10.

<sup>2</sup> This includes the ETS provided by both the facility-based network operators and service-based operators.

<sup>3</sup> The then Hong Kong Telephone Company Limited was granted a fixed telecommunication network services (“FTNS”) licence in June 1995. The licence was converted to a fixed carrier licence in January 2005 and it is now jointly held by PCCW-HKT Telephone Limited and Hong Kong Telecommunications (HKT) Limited.

<sup>4</sup> <http://www.ofta.gov.hk/en/ta-determine/de981230.pdf>.

made by the TA and the consultation contemplated by this consultation paper is without prejudice to the exercise of the TA's power under the Telecommunications Ordinance (Cap. 106) (the "Ordinance") or any subsidiary legislation.

## **BACKGROUND**

### **The Existing ETS Market Situation**

4. The ETS market can be divided into the downstream and upstream markets. In the downstream market, i.e. the ETS retail market, the traditional circuit-switched International Direct Dial ("IDD") type service with competitive service packages offered by hundreds of licensed market players is readily available for end customers to choose from. In addition to the traditional IDD type services, end customers have a choice of other alternatives for communications with persons in locations outside Hong Kong, including notably the Voice over Internet Protocol ("VoIP") service.

5. The upstream market concerns the arrangement where the ETS operators, especially those service-based operators providing ETS, have to acquire the hosting and interconnection services from the FNOs and MNOs.

#### *Hosting Service*

6. The service-based ETS operators are required to seek hosting service from a hosting operator. Prior to the implementation of the unified carrier licensing regime on 1 August 2008, only local FNOs could be hosting network operators as they were the only entities which were permitted to provide local telecommunications services between fixed points, including transit services. With the launch of Unified Carrier Licences ("UCLs"), MNOs may be authorized to provide transit or local fixed services under UCLs and they can therefore also act as hosting operators in competition with the FNOs.

#### *Interconnection Service*

7. To handle an ETS call originated from or terminated at a customer directly connected to the network of a local FNO or MNO, the service-based ETS operators may acquire the necessary interconnection service direct from the relevant FNOs/MNOs. Alternatively, they may interconnect indirectly

with the FNOs/MNOs through their hosting operator, who will provide such service in a wholesale manner. The latter is by far the more popular arrangement. As explained in paragraph 1, the current LAC regime only governs the interconnection charges that the ETS operators have to pay to the FNOs for handling traditional circuit-switched IDD type services. It does not apply to the MNOs, nor does it apply to other substitutes of traditional circuit-switched IDD type services<sup>5</sup> in the downstream market.

### **Previous Reviews of LAC**

8. Since its introduction in 1999, the TA has undertaken several reviews on the LAC regime. In the 2001 review, the TA decided to maintain the then existing LAC regime but the level of the LAC was reduced. In 2003, another review was conducted and the TA subsequently decided in 2004 that the cost of the local loop should be removed from LAC over a transition period of three years. This decision was reflected in a determination made by the TA on 4 May 2004. Nevertheless, the determination was eventually not implemented due to a legal challenge brought by PCCW. As a result, the revised level of LAC determined in 2001 and applicable to PCCW has been maintained until now.

9. With the advent of Internet Protocol (“IP”) technology in voice communications, the issue of whether or not LAC should apply to ETS traffic conveyance on IP-based networks (i.e. VoIP services) was brought up in the course of consultation and introduction of regulation of VoIP services in 2005 and 2006. In the Statements on “*Regulation of Internet Protocol (IP) Telephony*” (“*VoIP Statement*”)<sup>6</sup> and “*Services-Based Operator Licence*” (“*SBO Statement*”)<sup>7</sup>, the TA, in response to suggestion that LAC should also be applied on external traffic conveyed on the IP networks, held the view that there were not yet any practicable and cost-efficient solutions for checking the IP addresses of the IP telephony traffic to establish whether or not the concerned traffic was external (see paragraph 51 of the *VoIP Statement*). The TA considered that pending the identification of such solutions, a more realistic and practical approach that would not restrict users’ benefits was that the IP traffic communicated between local telephone numbers, despite that one of the ends might be located outside Hong Kong, should be treated as local traffic (see paragraph 10 of the *SBO Statement*). The TA indicated that he would consider further views from the industry on this matter when further reviews of

---

<sup>5</sup> Which are not covered by the 1998 LAC Determination

<sup>6</sup> The statement was published on 20 June 2005 (<http://www.ofta.gov.hk/en/tas/ftn/tas20050620.pdf>).

<sup>7</sup> The statement was published on 6 January 2006 (<http://www.ofta.gov.hk/en/tas/ftn/tas20060106.pdf>).



LAC regime were initiated in future.

10. In the fixed mobile convergence (“FMC”) review exercise in 2006<sup>8</sup>, the TA proposed in the Second Consultation Paper on “*Deregulation for Fixed-Mobile Convergence*”, among others, deregulation of LAC for the fixed networks to eliminate the asymmetric regulation on the FNOs and MNOs. That is, instead of being pro-actively determined by the TA, the level of LAC for any network should be primarily determined by commercial agreements among the market players. The TA would only use his regulatory power under section 36A of the Ordinance as a last resort if interconnecting parties fail to reach agreement on the interconnection charge. Nonetheless this proposal was not implemented.

11. In the FMC review exercise conducted in 2006 and 2007, the TA was concerned that with insufficient competitive restraints on the fixed LAC, premature deregulation could create uncertainty and significant transaction costs due to the need to conduct multiple bilateral negotiations. The TA recognized that interconnection between carriers and service providers should be distinguished from the interconnection between carriers. In the former case, there are a large number of interconnecting parties, both facility-based and service-based. Most of the service-based operators have relatively fewer resources for commercial negotiations as compared with facility-based operators. Unlike interconnection between facility-based operators (e.g. between FNOs and MNOs) in which case the need for interconnection tends to be mutual, facility-based operators in general have little incentive to interconnect with the service-based operators when the interconnection is to enable the latter to compete with the former for customers. The extent of bargaining power in a negotiation for interconnection between a facility-based operator and a service-based operator is therefore quite different from that between facility-based operators. Based on these considerations, the TA decided in his Statement on “*De-regulation for Fixed Mobile Convergence*” (“*FMC Statement*”) dated 27 April 2007<sup>9</sup> that it would be prudent to observe the impact of de-regulation of fixed mobile interconnection charge (“FMIC”) on the LAC market before making any further changes on the LAC regime.

---

<sup>8</sup> See paragraphs 78 to 83 of the Second Consultation Paper on Deregulation for Fixed-Mobile Convergence issued on 14 July 2006 (<http://www.ofta.gov.hk/en/report-paper-guide/paper/consultation/20060714.pdf>).

<sup>9</sup> <http://www.ofta.gov.hk/en/tas/others/ta20070427.pdf>.

## **The Existing LAC Regulation**

12. The existing LAC regulation is implemented for FNOs at two levels (a) the obligation to pay LAC and (b) the level of LAC.

### **FNOs as Originating/Terminating Carriers**

13. Under the existing regime, the ETS operators are obliged to pay LAC to the local FNOs for delivering ETS traffic originating from or terminating at the FNOs' customers. As explained in paragraph 6, a service-based ETS operator is required to seek hosting service from a hosting operator. Furthermore, as explained in paragraph 7, it is more likely than not that the hosting operator also provides interconnection service in a wholesale manner to the ETS operator so that the latter may interconnect indirectly with other local FNOs and MNOs. With this arrangement, for calls that originate from or terminate at the hosting network, the ETS operator has to pay a LAC to the hosting operator. For calls that originate from or terminate at another local fixed network, the ETS operator has to pay a LAC(transit)<sup>10</sup> and a transit charge<sup>11</sup> to the hosting operator which in turn pays the LAC(transit) to the other local FNO.

14. The levels of LAC and LAC(transit) payable to PCCW were prescribed in the *1998 LAC Determination* and subsequently revised in 2001, and the currently effective levels are summarised in Table 1. For the other local FNOs, they are free to set the level of LAC though most of them would use the level of the incumbent as the benchmark. Transit charge payable to the hosting operators is not determined by the TA, but as observed from the market place, it is basically set at a level which represents the difference between LAC and LAC(transit). According to the latest information available to the TA, the net LAC related revenue collected by FNOs is estimated to exceed HK\$150 million per year<sup>12</sup>.

---

<sup>10</sup> According to the *1998 LAC Determination*, "local access charge (transit)" means the payment to the operator of a local fixed network to which the call originating party or the called party is directly connected for the delivery of the relevant traffic in the outgoing or incoming direction over Category A routes, or over Category B routes not delivered through the external gateway operated under the FTNS Licence held by HKT FTNS, to or from an external gateway or external telecommunication service where the external gateway or external telecommunication service is directly connected to another local fixed network interconnected with the local fixed network to which the call originating party or called party is connected. The local access charge (transit) is net of any payment for Universal Service Contribution.

<sup>11</sup> According to the *1998 LAC Determination*, "transit charge" is a charge for the provision of transmission services between local fixed networks published under the relevant licence conditions under the FTNS Licence of the local fixed network operator providing the service.

<sup>12</sup> According to information provided by FNOs, the net LAC related revenue (including LAC, LAC(transit) and transit charge) collected by FNOs (net of LAC related expenditure to other operators)

Table 1: Effective LAC and LAC(transit) payable to PCCW since 2001

	<b>Existing levels of LAC/LAC(transit)</b> <i>(cents per minute)</i>
<b>Outgoing Direct – LAC</b>	12.1
<b>Outgoing Transit – LAC(transit)</b>	10.6
<b>Incoming Direct – LAC</b>	12.6
<b>Incoming Transit – LAC(transit)</b>	10.6

MNOs as Originating/Terminating Carriers

15. For the ETS traffic originating from and terminating at MNOs, whether a charge is required to be paid to the MNOs, and the level of the charge, if any, have always been subject to commercial agreement only. As observed from the market place, the MNOs in general were not able to collect LAC and LAC(transit) when the Mobile Party’s Network Pays (“MPNP”) guidance for FMIC was in force<sup>13</sup>.

16. The existing regulation of LAC is summarised in Table 2 and depicted in Figures 1 and 2.

Table 2: Existing regulation of LAC

<i>Originating/Terminating Party</i>	<i>To PCCW</i>	<i>To Other FNOs</i>	<i>To MNOs</i>
<b>Obligation for ETS operators to pay LAC</b>	Regulated	Regulated	Commercial Arrangement
<b>Level of LAC paid</b>	Regulated	Commercial Arrangement	Commercial Arrangement

---

and gross LAC related revenue (not including LAC related expenditure) in the first half of 2009 were HK\$ 76 million and HK\$161 million respectively, and the full year figures are projected to be HK\$152 million and 322 million respectively.

<sup>13</sup> As explained in paragraph 116 of the *FMC Statement*, the MNOs were not able to levy LAC under the regulated asymmetric MPNP arrangement. For external calls originating from, or terminating at, a mobile network, there were two alternative routes – direct interconnection between the ETS operator and the MNO concerned, or routing the traffic through a FNO as “transit” network. However, under the regulated MPNP arrangement, it was financially unattractive for ETS providers to arrange direct interconnection with MNOs. This was because FNOs were able to charge a low level of LAC for such transit traffic, which was in effect subsidised by the FMIC received from MNOs. As a result, MNOs found it difficult to levy a mobile LAC before April 2009.

Figure 1: Existing regulation of LAC - ETS operators connect with originating/terminating FNOs indirectly via a hosting operator

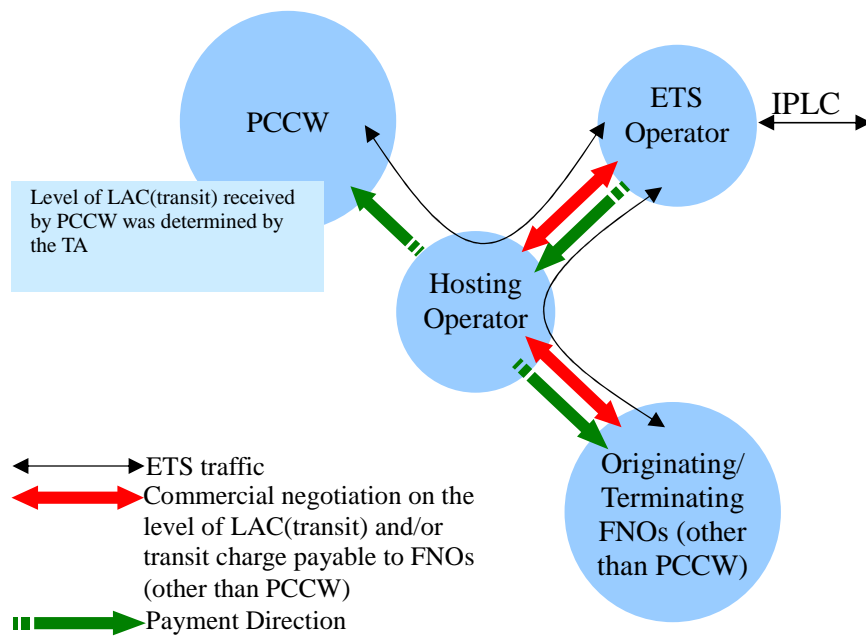
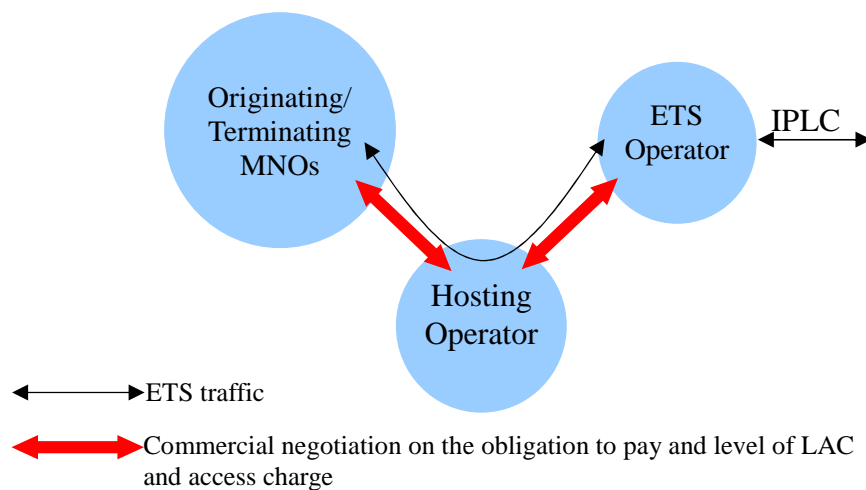


Figure 2: Existing regulation of LAC - ETS operators connect with originating/terminating MNOs indirectly via a hosting operator



## PROBLEMS OF EXISTING LAC REGIME

17. The current LAC regime was established in January 1999 when the external services market had just been liberalised, and the external facilities market had yet to wait for another 12 months before it was liberalised. The local fixed telecommunications market had then only been liberalised for just three and a half years and a competitive landscape had yet to take shape.

Today, with the LAC regime introduced for over a decade, both the local and the external markets in Hong Kong have undergone significant changes. For instance, the telecommunications market including the local fixed market was fully liberalised in 2003; the prices of the ETS and mobile services have dropped steadily and substantially; broadband, multimedia and data services have become major revenue streams for the FNOs other than traditional voice telephony services; the VoIP and mobile broadband services have emerged and been gaining popularity, the UCL regime commenced in August 2008 and the de-regulation of FMIC took effect on 27 April 2009. These technology, market and regulatory developments raise questions on whether the existing LAC regime is still relevant, proportionate and conducive to the sustainable development of the industry and the consumer welfare. A list of problems in the existing LAC regime is summarised in paragraphs 18 to 19 below.

#### Problems Arising from New Technological Developments

18. The problems and challenges for the LAC regime arising from the development of new technologies include:-

- (a) *Whether asymmetric regulation of LAC on FNOs and MNOs remains appropriate under the FMC environment* – In the *FMC Statement*, the asymmetric regulation of LAC was identified as one of the areas not conducive to FMC environment. However, as explained in paragraphs 10 and 11, it was decided that the review on the LAC regime should be deferred until there was more clarity on the impact of deregulation of FMIC on the LAC market after April 2009. With the commencement of the UCL regime in August 2008, carriers are permitted to operate fixed, mobile or converged networks and services under a single licence. The development of converged services is gaining momentum and the boundary between the fixed and mobile networks/services will be increasingly blurred. Any asymmetric regulation between the fixed and mobile services might be unsustainable.
- (b) *Whether LAC should be applied to VoIP traffic* – The LAC regime was developed in the context of traditional circuit switched networks. As elaborated in the *VoIP and SBO Statements*, whether it can be applied to IP communications in a practical and effective manner, and if so how, is a subject that requires further study. Apart from the question of employing practicable and cost-efficient

solutions for checking the IP addresses of the IP telephony traffic to establish whether the concerned traffic is local or external, the need for establishing a compensation mechanism for IP networks, which the regulator has not found a need to intervene so far, is a fundamental question that has to be addressed.

- (c) *Whether the LAC regime continues to be relevant in the next generation network (“NGN”) environment* - In the foreseeable future, as both fixed and mobile networks migrate to IP-based NGN platforms, multiple services are supported by a single network platform where voice and non-voice traffic are mixed and carried over IP packets. The difficulty of identifying external voice traffic carried over IP packets as pointed out in the *VoIP and SBO Statements* demonstrates that the sustainability of the existing LAC regime in the IP-based communication world has to be critically examined. In the process of migration to NGN, the fundamental question is whether maintaining the legacy regulation is appropriate and conducive to technology and market developments.

#### Problems Arising from Changing Market and Regulatory Environments

19. The market and regulatory environments have substantially changed since 1999 when LAC was first introduced. The problems and challenges for the LAC regime arising from the changes include:

- (a) *Whether LAC should be regulated for the incumbent only* – When LAC was introduced, PCCW was the incumbent FNO operating 98% of the local fixed lines<sup>14</sup>. There was ample justification at that time for the TA to impose LAC regulation solely on the incumbent with the level of its LAC set by the TA. However, considering that the local fixed market was fully liberalised in 2003 and facility-based competition has become more effective (with 85% of households now covered by a second fixed network), it is appropriate and opportune to revisit whether the legacy LAC regulation should continue to apply to one operator only, or should it be applied across the board (if it is to be maintained) to all relevant operators, or the regulation should be totally withdrawn.

---

<sup>14</sup> See paragraph 28 of the TA Statement on “*Local Access Charge and Modified Delivery Fee Arrangements*” dated 25 November 1998 (<http://www.ofta.gov.hk/en/tas/interconnect/lacstate.pdf>).

- (b) *Whether a more predictable LAC scheme for the MNOs is necessary after deregulation of FMIC* – After the withdrawal of the regulatory guidance in favour of the MPNP arrangement on FMIC in April 2009, the MNOs have been engaging in negotiations on new interconnection agreements with the FNOs and the negotiations include both local and external calls. During the course of these negotiations, the MNOs published their own FMIC tariffs as a standard offer for their interconnection service provided to the interconnecting FNOs. These FMIC tariffs included interconnection charges on external calls passed between fixed and mobile networks. These new interconnection charges for external calls raised serious concerns of the ETS operators. These concerns included whether the new charges would be eventually passed on to them by the FNOs hosting the ETS operators, the level and reasonableness of the new charges, and the resulting adverse impact on the ETS business. In lieu of the existing unregulated approach, there is a question whether a regulated LAC scheme for delivery of external calls to/from mobile networks will create a more predictable and stable business environment for them. To address these concerns, the TA has undertaken to consult the public and the industry about the future LAC regime<sup>15</sup>. He has indicated that he will re-examine the current regime to ascertain whether any kind of regulatory asymmetry in the regime is still appropriate today and whether the arrangement and level of interconnection charges are reasonable.
- (c) *Whether the existing costing methodology is outdated* – The costing methodology of LAC as designed in 1998 include both traffic sensitive<sup>16</sup> and non-traffic sensitive costs<sup>17</sup>. The existing costing methodology was designed in such a way as to compensate the FNOs for the conveyance of ETS traffic (in particular by the traffic sensitive costs) and to encourage the new FNOs to roll out their own self-built networks (in particular by inclusion of the cost of local loop as part of the non-traffic sensitive costs). In view of the significant change in the market environment, the TA already recognized five years ago in his statement entitled “*Review of the Principles and Costing Methodology of the Local Access Charge*” published on 27 February 2004 (“*2004 LAC Statement*”) that the justification for

---

<sup>15</sup> The article “*Problems about Network Interconnection Charge*” dated 22 May 2009 by the Director-General of Telecommunications ([http://www.ofta.gov.hk/en/dg\\_article/20090522.pdf](http://www.ofta.gov.hk/en/dg_article/20090522.pdf)).

<sup>16</sup> Include switching & transmission and number portability cost

<sup>17</sup> Include local loop and administrative cost

including the cost of the local loop as a non-traffic sensitive cost component in the calculation of LAC was not valid. Maintaining the existing LAC regime would imply the continuation of cross-subsidisation of the local market for the roll out of the local network by the external market, which is not appropriate when both markets have been fully liberalised years ago. Moreover, the costs used for the existing LAC model are based on those of the incumbent FNO. As explained further in paragraph 48 below, the costs of the incumbent FNO can no longer be taken for granted as the most efficient network operator today. If the LAC regulation is to be set across the board for all relevant operators (see paragraph (a) above), it is imperative for the TA to devise a new model using a new costing methodology.

- (d) *Whether the over-compensation of the incumbent FNO should continue* – The cost of capital adopted in the existing costing methodology for LAC is another issue that warrants a review. As an investment incentive for new FNOs to roll out their self-built networks, the cost of capital in the 1999 LAC costing model was set at the industry average, which was higher than that of PCCW. The over-compensation to PCCW because of the higher cost of capital deployed in the LAC model was off-set by reducing the amount of universal service contribution (“USC”) payable to PCCW as the universal service provider, and thus the share of USC payable by the ETS operators. Since both LAC and USC were paid by the ETS operators to PCCW, the arrangement was considered a fair and reasonable arrangement. After a review carried out in 2007, the funding arrangement for USC has been changed from one based on ETS traffic minutes to that based on telephone numbers. Although the over-compensation of LAC to PCCW may still be deducted from the USC payable to PCCW, this over-compensation comes from the LAC payment made by the ETS operators. If the existing LAC regime is discontinued or replaced by a new regime, there may be implications on the over-compensation arrangement vis-à-vis the USC.
- (e) *Whether there is a more effective solution to combat illegal bypass* – As the existing regulated rate of LAC for external traffic was set at a level much higher than the rate of local interconnection charge (“LIC”) for local fixed-to-fixed traffic, there are incentives to avoid



or evade the payment of LAC by unlicensed ETS operation or by disguising the external traffic as local traffic by licensed ETS operators. Such activities are termed as “illegal bypass” and constitute a breach of the Ordinance and / or licence conditions. Illegal bypass activities have persisted throughout the years despite that the industry and the Office of Telecommunications Authority (“OFTA”) have expended considerable time and resources to clamp down unlicensed telecommunications service providers and illegal bypass activities<sup>18</sup>. If a replacement regime that can combat illegal bypass activities more effectively can be identified, then these operational and regulatory costs can be saved.

- (f) *Whether developments in international settlement should be considered* – In past consultations, there was feedback from the industry that the termination charges imposed by carriers in other administrations for terminating a call originated from Hong Kong should be taken into account in determining the level of LAC in Hong Kong. In response, the TA gave the view that LAC was a cost-based interconnection charge and a lower LAC for the local networks, though affecting the balance of payment in the external trade of Hong Kong, could imply lower costs for traffic in and out of Hong Kong thus reinforcing Hong Kong’s position as a telecommunications hub<sup>19</sup>. There are however new developments in the international settlement arrangements recently about the entitlement of the developing countries to impose a surcharge on the termination of international traffic originated by developed countries. Such a surcharge is termed as “network externality” premium<sup>20</sup>. The impact of the payment of network externality premiums on the telecommunications industry in Hong Kong, and in particular on the cost structure of ETS operators and in turn the costing methodology of LAC, has yet to be seen and ascertained<sup>21</sup>.

---

<sup>18</sup> From 2005 to 2009, 27 cases were confirmed to have engaged in illegal bypass activities and the licensees concerned were imposed with financial penalties by the TA.

<sup>19</sup> See paragraphs 63 to 66 in the Statement on “*Review of the Principles and Costing Methodology of the Local Access Charge*” issued by the TA on 27 February 2004 (<http://www.ofta.gov.hk/en/tas/interconnect/ta20040227.pdf>).

<sup>20</sup> The International Telecommunication Union (“ITU”) is leading the international efforts to develop the draft ITU-T recommendations D.156 and the relevant resolutions related to the payment of network externality premiums. However, due to strong resistance from some of the member countries, it may take some more years for actual implementation and collection of premium by developing countries.

<sup>21</sup> It is noted that the majority of the outgoing traffic from Hong Kong to developing countries is destined for the Mainland. Accordingly, if Hong Kong operators can maintain the current settlement rate with operators in the Mainland, the impact of the future adoption of network externality premiums should be minimal. It is anticipated that the ETS operators will not be exposed to a sudden upsurge of international settlement costs as a result of any changes in the international settlement arrangements.

- (g) *Whether there is room for deregulation* – Consistent with the market-driven policy of the Government, the TA has promoted competition in the telecommunications market, removed regulatory entry barriers/restrictions and minimised regulatory intervention wherever possible in order to let the market forces serve the public interest. The continued maintenance of LAC regulation (which was designed a decade ago under a vastly different market environment) was an intervention to the market, and the TA has always been open to considering whether and when regulation as an inferior surrogate to market force should be withdrawn.

In paragraph 133 of the *FMC Statement*, the TA considered that consumer interest would be promoted by a competitive environment in which service-based operators were able to conclude interconnection agreements with the facility-based operators and enter the market with the minimum of uncertainty and delay. The success or failure of service-based operators should be decided by the market on the basis of the prices and quality of their services and their efficiency instead of whether they would be able to conclude interconnection agreements with the facility-based operators. The TA maintains the same view today.

With the FMIC guidance withdrawn on 27 April 2009, almost all MNOs have converted their Mobile Carrier Licences (“MCLs”) into UCLs, and there is no regulatory barrier for the MNOs to compete with the FNOs in the LAC market by seeking direct or indirect connection with the ETS operators or providing hosting service in competition with the FNOs. As a result, the competitive restraint exerted by the MNOs on the FNOs in the setting of LAC for the ETS operators should have become more effective. This may be one supporting reason for scaling back regulation and allowing market force to take over in the settlement of ETS interconnection charges.

However, as given in paragraph 19(b) above, the deregulation of the FMIC on 27 April 2009 has taken an unexpected course of event that has unsettled the ETS operators and raised their concerns. Against this background, it is debatable whether the industry is ready for a market-oriented approach.

---

However, the TA will keep in view the situation.

## OPTIONS FOR THE DEVELOPMENT OF LAC REGIME

### Four Possible Options

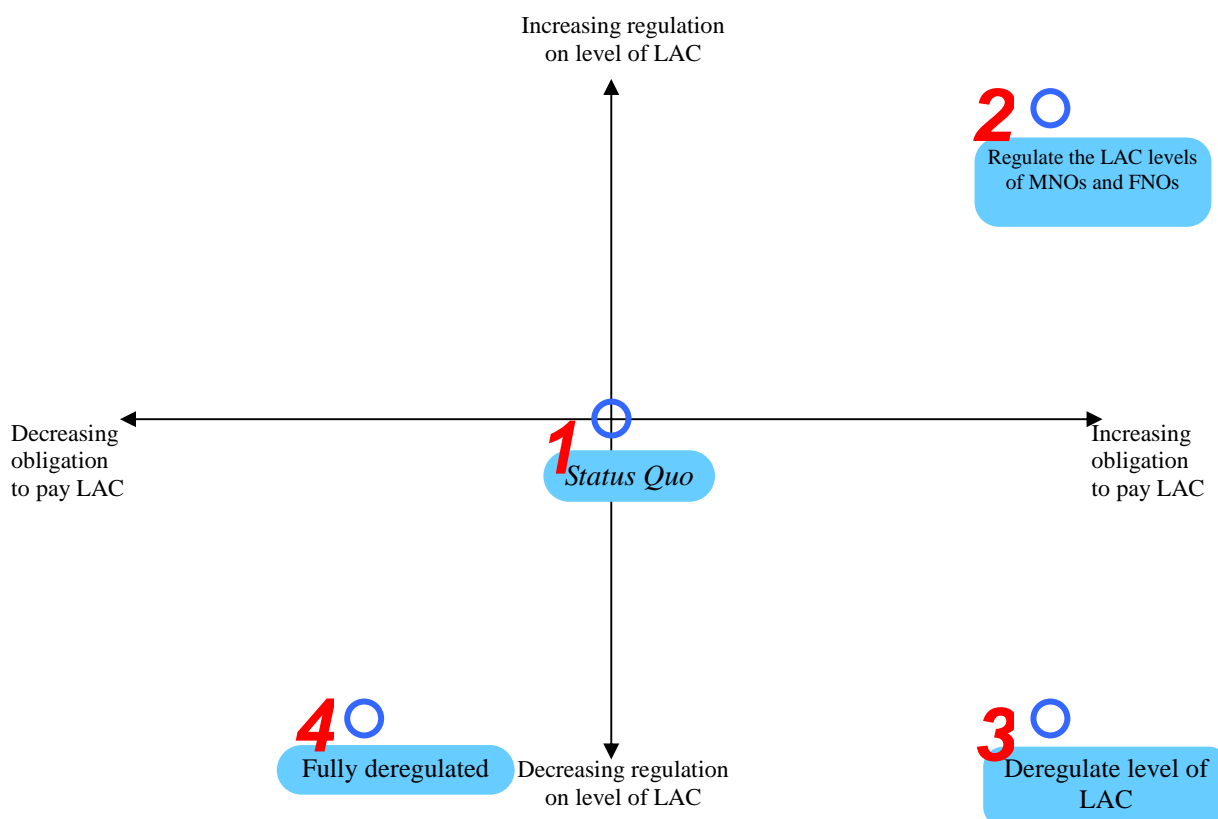
20. In the light of the technological, market and regulatory developments in the telecommunications market over the past decade and the problems of the existing LAC regime identified in the preceding paragraphs, the TA considers it timely to conduct a full review on the LAC regime. Based on consideration of the initial views provided by the industry after the deregulation of FMIC in April 2009 and having reviewed the latest market situation, the TA has for the purpose of this consultation paper identified the following four possible options for the future LAC regime:

- Option 1: Maintain *status quo*
- Option 2: Maintain the obligation to pay LAC and align regulation on FNOs and MNOs
- Option 3: Maintain the obligation to pay LAC and deregulate the level of LAC
- Option 4: Deregulate the LAC regime

21. These options are discussed in details in the following paragraphs 23 to 77. The options reflect varying degree of regulation on the two dimensions in respect of the obligation to pay and the level of LAC. An illustration of the options in respect of the two dimensions is given in Figure 3.

22. While the TA has given his preliminary views on the four options identified in this consultation paper, he is open to any one of these options, or indeed other options that may be proposed by the industry, that should be pursued for the future LAC regime.

Figure 3: Possible options for the way forward of LAC regulatory regime



**Option 1: Maintain Status Quo**

23. The first option is to maintain the *status quo*. In other words, the obligation to pay LAC and the level of LAC which should be paid are the same as the existing arrangement described in paragraphs 12 to 16.

24. One argument for the maintenance of *status quo* is that the existing LAC regime has been in place for over 10 years and there is no need to make abrupt changes to the present regime unless it is clearly unsustainable. As explained in paragraph 11, the TA decided in April 2007 that it would be prudent to observe the impact of deregulation of FMIC on LAC before deciding on the way forward of LAC. As the FMIC deregulation has only taken place in April 2009, it may be necessary to observe the exact impact on the concerned markets (including the retail ETS, the wholesale ETS interconnection and hosting business) for a longer period of time in order to ascertain whether the market really does work.

25. Nevertheless, maintaining the *status quo* means that the problems and issues in the existing LAC regime identified in paragraphs 18 and 19 above would remain unaddressed. The TA is doubtful whether this option would be sustainable in the long run.

### Potential Impact

26. If the *status quo* is maintained, the problems associated with the existing regime will be left unresolved. The only up side that can be identified is that the USC scheme will continue to benefit from the over-compensation coming from the current LAC regime (paragraph 19(d) refers). There will also be no immediate impact on the existing market players in terms of LAC revenue and expenditure.

### Possible Implementation

27. The TA is of the preliminary view that Option 1 is not the optimal option unless it is proven that any change to the existing LAC regime will have significantly negative consequences and is demonstrably worse than maintaining the *status quo*. If this option is adopted, no immediate action needs to be taken. However, the TA would need to monitor the market environment and take necessary regulatory action as soon as there is sufficient evidence that requires him to act.

*Question 1: Do you think that there are justifications to maintain the existing LAC regime including the obligation to pay, the level of LAC and the asymmetric regulation on FNOs and MNOs (Option 1)? If so, please state your justifications.*

### **Option 2: Maintain the Obligation to Pay LAC and Align the Regulation on FNOs and MNOs**

28. This option is to maintain LAC regulation for the fixed networks while similar regulation will be symmetrically applied to the mobile networks. The ETS operators will be required to pay LAC to both FNOs and MNOs at such level(s) as determined by the TA. Under this option, the TA will make a fresh determination(s) of the LAC for both FNOs and MNOs taking into account the reasonable relevant current costs. The level of LAC determined by the TA will be averaged out on a macro basis for the whole industry instead of for individual local network operator. Table 3 summarises the proposed

regulatory arrangement for Option 2.

Table 3: Proposed Regulatory Arrangement for Option 2

<i>Originating/Terminating Party</i>	<i>To PCCW</i>	<i>To Other FNOs</i>	<i>To MNOs</i>
Obligation for ETS operators to pay LAC	Regulated	Regulated	<b><i>Regulated</i></b>
Level of LAC paid	Regulated	<b><i>Regulated</i></b>	<b><i>Regulated</i></b>

29. The merits for alignment of regulation on both FNOs and MNOs in Option 2 are:

- (a) It will create a symmetric regime for both FNOs and MNOs and a regime that is conducive to the FMC environment;
- (b) In making new determination(s) on the level of LAC applicable to fixed networks and mobile networks, the TA may take into account the reasonable relevant current costs applicable to the most efficient network and set a unified charge that is applicable to all FNOs and another charge for MNOs. Whether the charges for the FNOs and the MNOs should be unified will be further discussed in paragraphs 38 to 40 below;
- (c) The TA may take the opportunity to clarify the regulatory requirements for ETS traffic delivered over the IP networks; and
- (d) Since both the obligation of paying LAC (who to pay and whom to be paid) and the level of LAC payable are set in unambiguous terms by the TA, the scheme is simple, transparent and predictable. Some industry players, in particular the small and medium enterprises, may prefer this option to the other options as this would provide them with business certainty and help reduce the transaction costs that may otherwise arise in the ensuing commercial negotiations.

30. On the other hand, Option 2 has the following demerits:

- (a) Payment of LAC for the MNOs will now fall under regulation. This means more regulatory intervention;
- (b) The problem of illegal bypass will remain<sup>22</sup>; and

<sup>22</sup> If the level of LAC remains to be higher than local interconnection charge

- (c) Setting the costing methodology and the level of LAC by the regulator may preclude more innovative and timely bilateral commercial solutions between operators, such as alternative interconnection arrangement based on say a capacity-dependent approach that may respond to the fast-developing market quickly. The regulatory process can be time-consuming and not sufficiently responsive to the rapid development of the market and new technology, such as NGN.

31. If this option is pursued, the following issues in relation to how the LAC for the fixed and mobile networks should be set by the TA need to be considered:

- (a) Direction of the ETS calls under regulation – Whether regulation on originating and terminating ETS calls should be different?
- (b) Charging level for the FNOs and MNOs – Whether the level of LAC for the FNOs and MNOs should be aligned or different?
- (c) Settlement mechanism – Who will pay, who will collect and whom will be paid?
- (d) LAC for VoIP calls – Whether LAC should be applied to VoIP calls?
- (e) Costing methodology – What charging principles should be adopted?

Whether Regulation on Originating and Terminating ETS Calls Should be Different?

32. At present, the ETS operators are obliged to pay LAC for the ETS traffic both originating from and terminating at the local FNOs. There are arguments that LAC should only be applied to an external call terminated in Hong Kong, whereas an external call originating from Hong Kong to other external locations should not be subject to LAC. The rationale behind such arguments is that other administrations have adopted such practices. Therefore, for Option 2, the first major issue that needs to be addressed is whether the regulation should be different for originating and terminating ETS calls.

33. Nevertheless, a closer look at the regulatory regimes of some other

economies (such as the UK, Australia and Singapore) reveals that the international telecommunications services providers in these economies also have to pay call originating charges to the network operators for international calls made by end-customers directly connected to the concerned network operators. In other words, the equivalent of originating and terminating LAC also applies in these economies thus providing compensation to the facility-based network operators for delivering the ETS traffic.

34. In Hong Kong, the traffic sensitive costs of call origination from the fixed line users to other fixed line users are recovered by the subscription fee of the call originating party. The costs of call origination by the fixed line users to telecommunications service providers such as ETS and other value added service (“VAS”) providers have so far been recovered by the originating FNOs from the service providers (either directly or through a transit FNO) in terms of interconnection charge, i.e. the LAC and VAS interconnection charge<sup>23</sup> respectively. Unless the regulation is fundamentally changed such that traffic sensitive costs for originating calls to ETS and VAS providers should be treated no differently from originating calls to the normal fixed line users, it would create a regulatory lacuna if the TA removes the regulation for originating LAC alone.

35. Another similar suggestion from some industry players is that the terminating LAC should be set at a level higher than that of the originating LAC. The rationale for this suggestion is that Hong Kong has more outgoing traffic to other countries, and when our LAC is cost-based but the terminating charges of other economies are not, domestic operators and consumers may end up subsidising the overseas economies with a “net settlement deficit”. As such, it appears justifiable to set and maintain a high level of terminating LAC which is comparable to the terminating charges levied by the foreign operators. If the level of terminating LAC is thus set higher than the existing cost-based level, and assuming that the overall LAC compensation to the local network operators remains unchanged, there will be room for a lower level of originating LAC which is paid by the domestic ETS operators and in turn by the local consumers. In fact, some industry parties take the view that terminating LAC will be translated into termination charges which will be settled by the foreign operators and thus a higher level will not affect the local

---

<sup>23</sup> In accordance with the last review of the VAS interconnection charge set out in the Statement on “Charges for Interconnection between Public Mobile Radiotelephone Services (PMRS), Personal Communications Services (PCS) and Value Added Services (VAS) and the Public Switched Telephone Network (PSTN) operated by PCCW-HKT Telephone Limited” issued by the TA on 12 November 2004, the TA has asked PCCW, the incumbent FNO, to maintain the interconnection charge for VAS at a level of 2 cents per minute and this level has been maintained by PCCW since then.



operators and consumers. It is argued that a higher terminating LAC and lower originating LAC would not only cause no harm to Hong Kong, but it would in fact enhance the bargaining power of local operators in their commercial negotiations with foreign carriers on the international settlement.

36. The TA views the above arguments with caution. Even if originating LAC should be removed or its level is set lower than that of terminating LAC, one potential problem is that the sizeable difference of interconnection charges between the originating and terminating ETS calls may invite arbitrage activities and the terminating LAC will be bypassed either in legitimate or illegitimate form<sup>24</sup>. In the end, the local network operators may suffer financial loss as a result of these arbitrage activities, as compared with the existing relatively balanced level of originating and terminating LAC.

37. In response to the concerns about unbalanced international settlement because of our lower terminating LAC when compared with the terminating charges levied by other countries, the TA gave his view in paragraph 66 of the *2004 LAC Statement*. The TA considered that the balance of payment in the operation of ETS should not be viewed in isolation. The ETS is just one service among many goods and services imported and exported by Hong Kong. Such external trade as well as other payments under the capital and financial account (e.g. incoming and outgoing investments) in aggregate constitutes Hong Kong's overall balance of payment. Hong Kong has over the past years been making net outpayment in the ETS, and that apparently has not caused particular concerns (outpayment to a foreign country is for the purchase of the terminating service supplied by the country which is similar in nature to the import of other foreign goods or services), as Hong Kong would be earning inpayments through other trades and foreign investments. As mentioned in paragraph 19(f), the TA will continue to monitor the issue of network externalities premiums and will take the appropriate action if the need arises.

---

<sup>24</sup> Bypassing the terminating LAC in a "legitimate" form refers to a scenario that operators may change terminating calls to originating calls by call-back services, so that the amount of terminating LAC levied on ETS operators will decrease substantially. On the other hand, "illegitimate bypass" can also occur when operators disguise external terminating calls as local terminating calls so as to evade the LAC. Under the existing regime, the latter is a breach of licence conditions of relevant licences but the detection of such activities is difficult.

## Whether the Level of LAC for FNOs and MNOs should be Aligned or Different?

38. The second major issue to be considered under Option 2 is whether the level of LAC should be set differently for fixed and mobile networks, or whether a single level of LAC should apply to all local networks irrespective of whether they are fixed or mobile.

39. If LAC should be a cost-based interconnection charge, the level of LAC should be set in accordance with the relevant costs of fixed and mobile networks. For the sake of fairness and equity, it is reasonable that the same costing methodology for LAC should be applied to the fixed and mobile networks. If the relevant costs for conveyance of the ETS traffic are similar for the fixed and mobile networks, then a similar level of LAC for the fixed and mobile networks may be justified.

40. In fact, as the technology for providing fixed and mobile services starts to converge under the NGN environment, one may expect that the traffic sensitive costs for the provision of fixed and mobile services (those costs related to switching and transmission), apart from the local loop or the equivalent of radio link, should be similar on a forward-looking basis<sup>25</sup>. A unified LAC for both FNOs and MNOs may be conducive to the development of the FMC environment, easy for the industry to follow and reduce the scope for arbitrage between the LAC for fixed networks (“fixed LAC”) and LAC for mobile networks (“mobile LAC”) than if otherwise they are set at a different level.

## Settlement Mechanism – Who will pay, who will collect and whom will be paid?

41. At present, a hosting FNO is responsible for payment of LAC(transit) to another FNO for all ETS traffic flowing between the hosting FNO and the other FNO, while an ETS operator should separately pay LAC(transit) and transit charge to its hosting FNO. Such an arrangement makes settlement of LAC possible because the ETS operator and the originating/terminating FNO have no direct physical interconnection and no commercial relationship, while both parties have separate interconnection and commercial relationship with the hosting FNO of the ETS operator. The hosting FNO thus buys the ETS

---

<sup>25</sup> Similar view was given by the UK regulator Ofcom in its recent consultation paper on “Wholesale Mobile Voice Call Termination” of 20 May 2009 (see paragraph 6.141.2 of that consultation paper).

interconnection service from another FNO and under the existing regime at a wholesale price which follows the benchmark of LAC(transit) determined by the TA. The hosting FNO then resells the interconnection service to an ETS operator it hosts, and the hosting service could be priced on a bundled basis including line rental charge of interconnection links, deposit, LAC(transit) (paid to the originating/terminating FNO) and transit charge levied by the hosting FNO (which is unregulated). This settlement mechanism has basically worked reasonably well over the years for the fixed LAC. While the TA does not see any overriding considerations why this should not be maintained if Option 2 is adopted (for fixed LAC and / or mobile LAC), he is open-minded on this.

### Whether LAC Should be Applied to VoIP Calls?

42. During the past consultation exercises, some respondents took the view that the purpose of introducing LAC was to compensate the costs for local FNOs to convey the ETS traffic. Therefore, they considered it justified that on technology-neutral ground all types of the ETS traffic, no matter IP-based or circuit-switched-based, should be subject to LAC. While he was sceptical about the practicability of metering IP traffic to differentiate between the local and external calls (please see paragraph 9 above), the TA did not hold a conclusive view on whether it was appropriate to apply the LAC regime developed for circuit-switched networks to IP networks. Therefore, if the TA decides to adopt Option 2 and make a fresh determination of the LAC, he will consider clarifying the scope of the ETS subject to LAC in respect of VoIP traffic taking into account the feedback to this consultation and whether there exist practical and cost-effective technical solutions in identifying external traffic conveyed on IP networks.

### What Charging Principles Should be Adopted?

43. In making a determination of interconnection charges, the TA is required under section 36A(3B) the Ordinance to adopt a fair and reasonable costing method. If Option 2 is adopted, the TA proposes to align the regulation for fixed and mobile networks by applying the same costing methodology to both fixed and mobile networks. An updated costing methodology will be used to take into account the relevant costs under the latest market and technology environment.

## *The Cost of the Local Loop*

44. Paragraph 19(c) above gives the historical background and rationale for including the cost of local loop in the existing LAC methodology. In the *2004 LAC Statement*<sup>26</sup>, the TA considered that the original rationale for including the cost of local loop in the cost methodology of LAC was no longer valid. The tariff re-balancing exercise was completed in January 2001. With the subsequent implementation of the *ex post* tariff regulation for the incumbent FNO since January 2005, all FNOs are free to set their retail prices, which means that no restriction is imposed on FNOs for them to recover their costs of provision of telephone services direct from their customers. Further, an FNO can be a net payer or receiver of LAC depending on the volume of ETS traffic originated and terminated at the FNO's network and the volume of traffic delivered by the FNO to end customers of other FNOs and MNOs. Whether the FNOs decide to roll out their network facilities primarily depends on factors such as demand and competition for various services provided by the FNOs and macro-economic environment. The TA considered that the LAC should no longer be a significant investment incentive for rollout of local fixed networks and the cost of local loop should be excluded from the calculation of LAC.

45. The above considerations are even more valid today. Compared with the late 1990's, new entrants in the local fixed service market have made considerable progress in their network rollout. According to the latest statistics, over 85% of households in Hong Kong have a choice of at least one alternative customer access network ("CAN"), in addition to that of the incumbent. The incentive for network rollout does not come from LAC, but rather from customer demand for advanced high-capacity communications and competition for market share among operators. The Government actively promotes facility-based competition policy, as is evidenced by its decision in July 2004 to phase out mandatory Type II interconnection completely by July 2008. The question which the TA really needs to ask is whether the local loop element in the LAC model has already become obsolescent in the face of the highly competitive market and the advent of new technologies and services.

46. In the existing costing methodology of LAC, the local loop element is a traffic insensitive cost. The calculation of the local loop cost is based on copper cables which were until the last decade the predominant technology

---

<sup>26</sup> The *2004 LAC Statement* was quashed by the Court on the ground that the TA cannot make a determination solely for PCCW because of its presumed dominance.

employed for the CAN used for providing fixed services. In recent years, the incumbent and other FNOs have increasingly deployed optical fibres for their new or upgraded self-built CANs. Costing based on copper-based technology is therefore no longer suitable. Even if it is the Government policy to encourage the FNOs to continue to roll out advanced broadband networks by retaining a local loop element as a traffic insensitive cost in the LAC calculation, that element has to be based on the modern fibre-based technology.

47. If it is considered that there should be no subsidisation between the external market and local market, it would be appropriate to remove the local loop element from the LAC model. However, if the technology employed for implementation of the CAN is such that some dedicated resources in the CAN is used for delivering the ETS traffic, a traffic sensitive cost representing the consumption of these resources should be counted in the calculation of LAC.

#### *Industry Costs in lieu of Incumbent's Costs*

48. If the determined LAC is to be applied on an industry level as proposed, the costs of the incumbent FNO are no longer appropriate as a proxy for the costs of fixed network in delivering ETS. In accordance with the principle set out in the TA Statement entitled "*Interconnection and Related Competition Issues Statement No. 7 (Third Revision) 'Carrier-to-Carrier Charging Principles' (for Fixed Carrier Interconnections)*"<sup>27</sup> issued on 3 April 2009 ("*2009 Statement No. 7*"), the TA will calculate the industry average costs based on the costs of all network operators and make reference to the most efficient network operator in order to encourage efficiency of network provisioning.

#### *Proposed Charging principles*

49. The TA will specify the detailed costing methodology when he makes a section 36A determination in accordance with the established procedure. Based on the existing charging principles adopted for the existing LAC model and the more recent charging principles that he has adopted when making determinations for other interconnection charges, and for the purpose of stimulating discussion and inviting comments in this consultation exercise, the TA may consider to deploy the following charging principles when he makes a fresh determination of LAC if it is ultimately decided that Option 2 should be adopted:

---

<sup>27</sup> <http://www.ofta.gov.hk/en/tas/interconnect/ta20090403stat.pdf>.

- (a) The long run average incremental cost (“LRAIC”) model as adopted for the existing costing methodology for LAC should continue to be used;
- (b) Current or replacement cost will be used as the costing standard but the TA will consider applying a cap based on the historical cost standard on all or part of the cost components in the LRAIC, particularly those cost components related to land and buildings<sup>28</sup>;
- (c) The cost of the most efficient network operator should be made reference to wherever appropriate in order to encourage operators to become more efficient in providing interconnection services;
- (d) The costs of LAC to be recovered by local network operators should primarily be based on traffic sensitive costs only, such as switching and transmission cost, cost of number portability and any traffic sensitive element in the CAN;
- (e) Other non-traffic insensitive costs, such as administrative cost, should be included only if they are demonstrated to be attributable to interconnection; and
- (f) A cost of capital will be applied to compensate the risk of business investment. The cost of capital should be based on industry average for the FNOs and MNOs.

### Potential Impact

50. If Option 2 is adopted, there will be impact on the existing LAC revenue and expenditure of various operators. Depending on the new level of LAC set by the TA, the FNOs may receive less LAC revenue<sup>29</sup> while the MNOs may receive new or additional revenue from LAC. The ETS operators may pay less LAC to the FNOs but they will have to pay LAC to the MNOs. The net effect on individual ETS operators depends on the distribution of their ETS traffic to and from FNOs and MNOs.

---

<sup>28</sup> As explained in 2009 Statement No. 7, this is to balance considerations of economic efficiency and fair compensation when determining the interconnection charges.

<sup>29</sup> Assuming cost of local loop is to be removed from the LAC. In addition, according to the review carried out in 2003 / 2004, cost level of switching and transmission cost, number portability and administration cost had reduced since the review in 2001. Assuming the situation still holds now, a revision of cost of local FNOs will probably result in a lower LAC.

51. Under Option 2, some ETS operators may bear a higher cost while for the others, the cost for provision of ETS may be lower. There may be some impact on the retail prices of ETS, but this is constrained by the vibrant competition in the ETS market and the presence of various alternative solutions for communications between Hong Kong and other economies. As such, the potential impact on end users of ETS as a whole should not be significant.

52. Another potential impact if this option (or indeed any option other than Option 1) is chosen is the need to adjust the level of USC. As explained in paragraph 19(d), under the current LAC regime, over-compensation of LAC was used to reduce the USC. If any option other than Option 1 is chosen, the “over-compensation” scheme has to be discontinued. This means that the USC would no longer be reduced by this over-compensation and as a result the net USC will rise. Since 2005, the net USC has been maintained at zero level because of this arrangement. Assuming that the gross USC remains at the same level as for 1 July 2007 to 30 June 2008 and the LAC over-compensation scheme is withdrawn, licensees holding telephone numbers allocated by the TA will be subject to an annual USC at around \$1 per number<sup>30</sup> under the new USC funding arrangement, which has started implementation from 1 May 2009.

### Possible Implementation

53. The TA is open to whether Option 2 should be pursued for development of the LAC regime. If Option 2 should be adopted, he would like to receive input from the industry regarding the above major issues identified with this option. Subject to the feedback received from this consultation, the scope of this new determination may cover:

- (a) the level of LAC for originating ETS calls or terminating ETS calls or both;
- (b) one set of LAC for delivery of the ETS calls over fixed and mobile networks or two separate sets of LAC for fixed and mobile networks; and
- (c) the parties required to pay and settle the LAC and the parties entitled to receive the LAC.

---

<sup>30</sup>During 1 July 2007 to 30 June 2008, gross USC level was HK\$33.5 million. As at 3 November 2009, the number of allocated telephone numbers was 33.2 million.

54. Considering the impact on various stakeholders if this option is to be adopted, the TA proposes that a transition period should be introduced in order to allow sufficient time for operators to adjust their business plan for adaptation to the regulatory change. If the determination mentioned above should be made, the new LAC level may take effect at the end of the transition period during which:

- (a) the existing level of LAC for fixed networks will be adjusted by phases towards the new level of LAC, i.e. a glide path approach will be adopted for the adjustment; and
- (b) the regulated level of LAC for mobile networks will also be implemented by a similar glide path arrangement. In other words, the regulated mobile LAC may take effect by phases towards the full determined value at the end of the transition period.

55. The actual length of the transition period, if adopted, will be set by the TA in consideration of the actual and potential impact on the operators, the length of transition periods proposed or set by the TA for similar regulatory change before, the ability of operators to adapt to the change, or other relevant factors. The TA tentatively proposes that the length of transition period would be two years and he would like to invite views of the industry on this if he should decide to make the determination as mentioned in paragraph 53.

*Question 2: What are your views on extending the existing LAC regulation for fixed networks to mobile networks (Option 2)?*

*Question 3: Do you think that the regulation of LAC on originating and terminating calls could be different? Is it reasonable and practical to regulate only terminating LAC?*

*Question 4: Do you support a unified LAC or two separate levels of LAC for fixed and mobile networks? What are the justifications?*

*Question 5: What type of VoIP calls should be subject to LAC? Please elaborate the detailed arrangement for metering if necessary.*

*Question 6: What charging principles should be adopted for setting of LAC if a fresh determination should be made by the TA under Option 2?*



*Question 7: What should be the transitional arrangement for implementation of Option 2? If a transition period should be set, what should be the length of the period?*

**Option 3: Maintain the Obligation to Pay LAC and Deregulate the Level of LAC**

56. This option is similar to Option 2 in that both FNOs and MNOs will have an equal right to collect LAC for the ETS traffic, but the level of charges will be subject to commercial agreements rather than regulation by the TA. To facilitate commercial negotiations among operators, the TA will issue a set of charging principles as regulatory guidance for the payment direction and setting of cost-based LAC by the FNOs and MNOs. The regulatory arrangement as summarised in Table 4 below will be symmetrically applied to the FNOs and the MNOs. Under this option which is a kind of semi-deregulation, the fixed LAC will be less regulated but the mobile LAC, which has never been regulated, will be more regulated.

Table 4: Regulatory Framework of Option 3

<i>Originating/Terminating Party</i>	<i>To PCCW</i>	<i>To Other FNOs</i>	<i>To MNOs</i>
Obligation for ETS operators to pay LAC	Regulated	Regulated	<b><i>Regulated</i></b>
Level of LAC paid	<b><i>Commercial Agreement</i></b>	Commercial Agreement	Commercial Agreement

57. Since the deregulation of the FMIC on 27 April 2009, the regulatory asymmetry<sup>31</sup> which has hitherto prevented the MNOs from competing with the FNOs for direct interconnection with the ETS operators has been removed. Moreover, as explained in paragraph 6 above, with the implementation of the UCL regime, the MNOs may also compete with the FNOs as hosting operators (provided that their licences are suitably amended<sup>32</sup>) for the ETS operators. Under Option 3, if the level of LAC for fixed networks increases after the semi-deregulation and as a result the retail price of ETS provided over the fixed networks rises, end customers will have the incentive and the choice to switch to other substitutes, including the ETS provided over the mobile networks.

58. The market may better address some of the problems inherent in the

<sup>31</sup> Please refer to footnote no. 13.

<sup>32</sup> Currently, nearly all MNOs have converted their MCLs to UCLs. Subject to the approval by the TA for the authorization to provide transit service or fixed services in general, they will be permitted to be hosting operators for ETS (and thus providing wholesale interconnection service).

existing LAC regime, such as the illegal bypass activities. If the LAC level is left to the market force, the industry may come up with innovative settlement and charging mechanisms that incur less implementation cost and better protect the legitimate interests of individual market players. For example, the hosting operator and the ETS operator may agree to adopt a “capacity-based” interconnection charging mechanism with the originating/terminating local network operator whereby the charges will be based for a pre-defined amount of network resources for delivery of traffic for that ETS operator irrespective of the actual volume of ETS traffic being delivered.

59. The market can also be more responsive to the rapid development of technology. Like other existing interconnection charges, the current LAC methodology has been designed in the context of legacy circuit-switched network where each telephone call incurs dedicated network resources which can be clearly identified and accounted for. However, with both the fixed and mobile networks steadily migrating to IP-based NGN platforms in the near future, voice and non-voice traffic will become mixed in the IP packet ocean. The difficulty of identifying external traffic carried over IP packets as pointed out in the *VoIP* and *SBO Statements* demonstrates that the suitability of the existing LAC regime in an IP-based communication world has to be critically examined. In the process of migration to the NGN, maintaining the legacy regulation may no longer be appropriate and conducive to technology and market developments. With Option 3, the TA will lay down a minimum set of guiding principles which are technology neutral and flexible enough for the market players to negotiate the suitable mode of interconnection and compensation based on their choice of technology and commercial arrangements.

60. The semi-deregulation approach under Option 3 appears to have the following merits:

- (a) It will create a symmetric regime for both FNOs and MNOs and such regime will be conducive under the FMC environment;
- (b) A set of charging principles set by the TA will give the necessary regulatory guidance on reasonable relevant costs attributable to interconnection which can be applied for all FNOs and MNOs;
- (c) It is consistent with the market-driven policy and gives more flexibility for operators to negotiate the LAC level based on mutual

commercial interests and at such pricing level and structure which more appropriately reflect the cost and business interests of individual operator;

- (d) The market may come up with innovative solutions that may better address the problems associated with the existing regime, such as illegal bypass activities; and
- (e) The market solution may be more responsive to changes in technology and market environment.

61. On the other hand, deregulation will inevitably bring less certainty than regulation, at least in the short term. Given the large number of ETS operators in the market, the negotiations among the ETS operators and the local FNOs and MNOs on the new level(s) of LAC may incur substantial transaction costs and the negotiation processes may also be time-consuming.

62. If the semi-deregulation is to be pursued, the TA considers that there may be a number of sub-options to facilitate the commercial negotiation and settlement of LAC among the interconnecting parties, namely:

- (a) *Option 3A* – The ETS operators and the originating/terminating network operators negotiate the level of the LAC. The ETS operators pay the LAC directly to the originating/terminating network operators.
- (b) *Option 3B* – The hosting operators and the originating/terminating network operators negotiate the level of the LAC. The ETS operators pay the LAC directly to the originating/terminating network operators.
- (c) *Option 3C* – The hosting operators and the originating/terminating network operators negotiate the level of the LAC on a wholesale basis. The hosting operators pay the LAC directly to the originating/terminating network operators on a wholesale basis, and in turn recover the LAC from the ETS operators by separate commercial arrangement.

The arrangement and pros and cons of these three sub-options are discussed in more detail in Appendix A.

### Potential Impact

63. One prime concern for the deregulation under this option is the possibility of a rise in the level of LAC, resulting in increased costs to the ETS operators which may then pass on the increased costs to end customers. However, the TA expects that there should be effective competitive restraint on the level of LAC payable by the ETS operators as long as there is sufficient competition in the downstream market (i.e. retail ETS) and in the upstream market (i.e. hosting and interconnection services) respectively.

64. The retail ETS market is highly competitive with a large number of facility-based and service-based operators. Furthermore, there are competing substitutes to the traditional ETS (such as IP telephony service) which allow customers to communicate with persons outside Hong Kong without having to rely on the PSTN. The existence of vibrant competition in the market should provide adequate safeguards to end customers.

65. Like other existing interconnection charges which are unregulated and set by the market (such as the FMIC and SBO interconnection charge), any interconnecting party may request the TA to make a determination on the terms and conditions of interconnection under section 36A of the Ordinance. This provides a last-resort regulatory remedy if the interconnecting parties fail to reach commercial agreements on the LAC level.

66. As the obligation for ETS operators to pay LAC to the FNOs will be aligned with that of the MNOs, the problems of asymmetric regulation will be removed. Any potential problem associated with arbitraging the mobile LAC and the fixed LAC will also be absent. As the level of LAC is to be set by the market, the asymmetric regulation of charge on incumbent FNO will also be solved. Besides, while the TA will issue regulatory guidance laying down a set of charging principles, the ultimate charges are to be agreed between market players on commercial basis taking into account the latest market situations. This arrangement should be more responsive to market changes than a regulated solution. The impact of Option 3 on the level of USC is similar to Option 2.

### Possible Implementation

67. If Option 3 should be adopted, the TA would give regulatory guidance to facilitate commercial negotiation and settlement of LAC among the

interconnecting parties, including:

- (a) A set of charging principles for LAC in respect of the ETS traffic passing between two interconnecting parties. The charging principles would be similar to those proposed under Option 2 in paragraph 49 which would be applied by the TA if he should make a determination on the level of LAC; and
- (b) The settlement model, i.e. who pays LAC and to which party. The settlement model could be based on one of the sub-options identified in paragraph 62.

68. Similar to Option 2, the TA proposes that a transition period should be introduced in order to allow sufficient time for both FNOs and MNOs to negotiate a new commercial arrangement of LAC applicable to their ETS traffic and adjust their business plans for adaptation to the regulatory change. Similar to Option 2, the transition period is tentatively proposed to be two years. The transitional arrangement is proposed as follows:

- (a) the *1998 LAC Determination* will be amended by inserting a sunset clause so that it will cease to be effective at the end of the transition period. During the transition period, the existing regulatory regime will be maintained but operators may agree commercially on the interconnection arrangements applicable during this period; and
- (b) at the end of the transition period, the new regulatory guidance will take effect and any regulation on the level of LAC will be removed.

69. The TA wishes to stress that while the concerned operators will have to negotiate commercially the level of LAC if this option is adopted, such negotiations should not jeopardize the normal flow of ETS traffic across networks or the existing any-to-any (“A2A”) connectivity requirement which allows customers to access the ETS of their choice. The TA would exercise his powers under the Ordinance to ensure compliance with the Ordinance and secure interconnection under the relevant licence conditions, including the enforcement of A2A connectivity between the concerned networks and ETS if a failure to interconnect, due to the absence of commercial agreements, would raise public interest concern.

*Question 8: What are your views on deregulating the level of LAC for fixed*

*networks and issuing a set of regulatory guidance applicable to both fixed and mobile networks (Option 3)? Do you think there is sufficient market competition to restrain the level of LAC imposed by the FNOs and MNOs respectively?*

*Question 9: Which one of the above sub-options of Option 3 do you consider as the most practical one for operators to conduct commercial negotiation and settlement of LAC? Is there any other practical arrangement to do so?*

*Question 10: What should be the transitional arrangement for implementation of Option 3? If a transition period should be set, what should be the length of the period?*

#### **Option 4: Deregulate the LAC Regime**

70. Option 4 goes one step further than Option 3. This represents a full deregulation of the LAC regime, i.e. whether interconnecting parties are required to pay LAC for the ETS traffic, which parties to pay and the level of charges are left entirely to the market to sort out. The TA will issue no regulatory guidance for the ETS related interconnection charge. The regulatory arrangement for Option 4 is summarised in Table 8.

Table 8: Regulatory Framework of Option 4

<i>Originating / Terminating Party</i>	<i>To PCCW</i>	<i>To Other FNOs</i>	<i>To MNOs</i>
Obligation for ETS operators to pay LAC	<b><i>Commercial Agreement</i></b>	<b><i>Commercial Agreement</i></b>	Commercial Agreement
Level of LAC paid	<b><i>Commercial Agreement</i></b>	Commercial Agreement	Commercial Agreement

71. Full deregulation would be justified if the market is able to settle the ETS related interconnection charge efficiently and expediently. This option allows any of the settlement arrangements described in Appendix A, or other innovative solutions, to be adopted among the interconnecting parties on a voluntary basis. For example, given that the delivery of external calls over the local networks consumes essentially the same network resources as the delivery of local calls and thus the costs incurred should be similar, interconnecting network operators may negotiate interconnection arrangements for both local and external calls on a bundled basis. The hosting operator can then resell the interconnection service direct to the ETS and other service-based operators that it hosts. This solution may be a simpler and more efficient one

than a service-specific interconnection charge regime prescribed by regulation. With the migration of their service platforms to the NGN in the near future, voice telephony service will only be one kind of services carried by the NGN. Voice-centric interconnection charging scheme may become obsolete. Based on actual cost-benefit considerations, operators may give up the usage-based interconnection charging scheme (which requires costly billing and metering equipment and complicated settlement procedures) in favour of a capacity-based interconnection or perhaps a bill-and-keep type arrangement. The withdrawal of regulatory intervention may hasten the development of a more cost-effective market solution for interconnection charge in the NGN environment.

72. Like Option 3, full deregulation may have the following merits:

- (a) it will create a symmetric regime for both FNOs and MNOs and such regime will be conducive under the FMC environment;
- (b) it is consistent with the market-driven policy and gives more flexibility for operators to negotiate LAC based on mutual commercial interests and at such pricing level and structure which more appropriately reflect the cost and business interests of individual operator;
- (c) since interconnection charge for the ETS calls is a matter of commercial arrangement, there will be no issue for illegal bypass of LAC; and
- (d) a full market solution would give maximum flexibility for the industry to settle interconnection charge issues in a timely manner in response to changes in technology and market environment than if a regulatory solution is prescribed.

73. However, the demerits of this option are also obvious:

- (a) there will be a drastic change to the existing LAC regime and it may create a high level of uncertainty for the interconnection arrangement for the ETS; and
- (b) though this approach gives extensive flexibility to market players on deciding how the interconnection charge should be settled, in the

absence of any regulatory guidance, it is also possible that the negotiations required among the operators for the replacement interconnection arrangement would be very time consuming and costly given the large number of operators involved in the market (including all FNOs, MNOs and ETS operators).

### Potential Impact

74. Without any regulatory guidance or intervention, it may take a long time for the market players (including the FNOs, the MNOs and many ETS operators) to agree on a commonly accepted model for settlement of the ETS related interconnection charge. Absent commercial agreement and given the mandatory any-to-any connectivity requirement, the local network operators may not be able to recoup their costs of delivering the ETS traffic and this will lessen commercial incentives to maintain a good quality of service by local network operators for access to ETS. It is uncertain whether the level of LAC will rise substantially from the present regulated level. As the local network operators are also providing the down-stream ETS to their own network customers in competition with non-affiliated service-based operators, the TA may have to be vigilant to prevent any margin squeezing behaviour.

75. If Option 4 is adopted, there will also be impact on the level of USC as elaborated in paragraph 52 above. As illegal bypass of regulated LAC will no longer be an issue when the regulation is completely withdrawn, the concerned regulatory cost for this option is the lowest.

### Possible Implementation

76. The TA is open to this option if there is sufficient support from the industry and stakeholders and there are technological and market developments that justify a complete withdrawal of regulation on the ETS related interconnection charges. If it is decided that this option should be pursued, the TA will further consult the industry regarding the implementation and transitional arrangements.

77. Same as for Option 3 (see paragraph 69), the TA wishes to stress that if Option 4 is adopted and commercial negotiations need to take place between operators on the replacement arrangement for LAC, A2A connectivity for access to ETS should be safeguarded and the TA would not hesitate to use his powers under the Ordinance to ensure that this important regulatory principle



would continue to be upheld in the light of public interest.

*Question 11: Do you think that a full deregulation of the LAC regime (Option 4) is a viable option?*

*Question 12: If Option 4 is adopted, what should be the implementation and transitional arrangements?*

## **WAY FORWARD**

78. In taking the decision on the way forward, the TA will take into consideration the views and comments received in this consultation exercise on the various options. He will consider whether a particular option will adequately address the problems identified with the existing LAC regime, be consistent with the telecommunications policy objectives of the Government and the regulatory principles propounded by the TA, and be able to cope with the future technological and market developments. While the LAC is a wholesale interconnection charge which are to be settled among the interconnecting operators, the TA is also mindful of the possible impact that any change in the regulatory regime may have on end customers. Therefore, in evaluating a particular option for the future regime, he would safeguard consumer interest and ensure that consumer welfare will be optimized. If necessary, the TA will decide whether additional issues need to be further consulted with the industry before finalising any changes to the existing LAC regime.

*Question 13: What are other viable options for development of the LAC regime? What would be the appropriate implementation and transitional arrangements for these options?*

*Question 14: What are other issues that need to be addressed in relation to LAC?*

## **INVITATION FOR COMMENTS**

79. The TA invites views and comments from the industry on the issues and questions raised in this consultation paper. All views and comments should be made in writing and should reach OFTA, preferably in electronic

form, on or before **6 March 2010**. The TA reserves the right to publish all views and comments as well as the identity of the source. Accordingly, any part of a submission that is considered commercially confidential should be clearly marked. Submission should be addressed to:

Office of the Telecommunications Authority  
29/F Wu Chung House  
213 Queen's Road East  
Wanchai, Hong Kong  
[Attention: Senior Telecommunications Engineer (R31)]  
Fax: 2803 5112  
E-mail: [lacreview@ofta.gov.hk](mailto:lacreview@ofta.gov.hk)

Comments may also be sent by fax to 2803 5112 or by email to [lacreview@ofta.gov.hk](mailto:lacreview@ofta.gov.hk).

Office of the Telecommunications Authority  
31 December 2009

**Sub-Options for Option 3  
Maintain the Obligation to Pay LAC and Deregulate the Level of LAC**

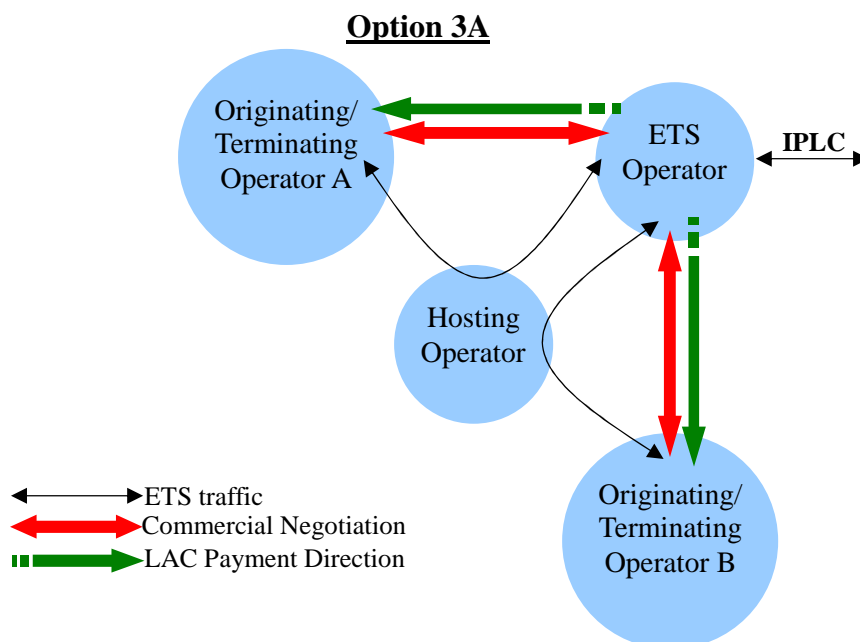
Option 3A

A.1 This sub-option allows the ETS operators to negotiate and reach commercial agreements with each of the FNOs and MNOs on the level of LAC for the ETS traffic. The ETS operators will settle LAC directly with the originating/terminating network operators. The hosting operator plays the role of providing transit service for routing of the ETS traffic between an ETS operator and an originating/terminating network operator. It may also provide traffic metering service to facilitate settlement of LAC between the two parties, but it is not involved in the collection or payment of LAC. Any charge imposed by the hosting operator on the originating/terminating network operator and the ETS operator for the services provided by the hosting operator is subject to the commercial agreement among the interconnecting parties. The negotiation and payment of LAC under Option 3A are illustrated in Table A1 and Figure A1.

Table A1: Payment of LAC and commercial negotiating parties under Option 3A

<i>Who pay LAC?</i>	The ETS Operators
<i>Who negotiate?</i>	The ETS Operators and the Originating/Terminating Network Operators
<i>Who collect?</i>	The Originating/Terminating Network Operators The Hosting Operator will collect LAC due to the ETS traffic that originates from or terminates on its own network

Figure A1 – Illustration of negotiation and payment of LAC under Option 3A



A.2 Allowing the ETS operators to have direct commercial relationships with each of the originating/terminating FNOs and MNOs may be a reasonable arrangement since the concerned negotiations take place between the parties who actually pay and receive LAC. Hosting operators will bear less collection burden and commercial risk because they act purely as providers of transit service to the originating/terminating network operators and the ETS operators, compared with their role as a collection agent under the present arrangement (see paragraphs 6 to 7 and for details).

A.3 However, as the TA pointed out in the *FMC Statement*, commercial negotiation direct between the ETS operators and local network operators involves multiple bilateral negotiations and the transaction cost is high. Given the lack of choice for the ETS operators to route an ETS call to/from the network of an FNO or MNO in order to provide service to an end customer directly connected to that network, the ETS operators will have little bargaining power against the FNO or MNO.

Option 3B

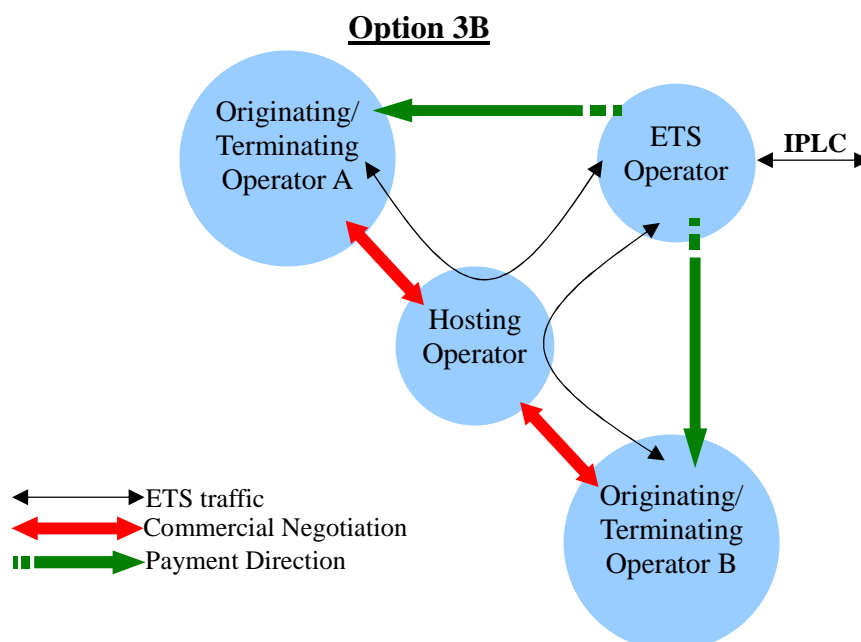
A.4 With this sub-option, commercial negotiations on LAC will be carried out among the hosting operators and their interconnected network operators for the ETS traffic flowing between them, including the ETS traffic generated by the hosted ETS operators and that generated by the hosting operators

themselves. The agreed charge will be applicable to all ETS operators hosted by the same hosting operator and the ETS operators are responsible for settlement of the LAC payable direct with the originating/terminating FNOs and MNOs. As in Option 3A, the hosting operators may subject to commercial agreement charge the originating/terminating network operators and the ETS operators for the provision of transit and/or traffic metering services. The negotiation and payment of LAC under Option 3B are illustrated in Table A2 and Figure A2.

Table A2: Payment of LAC and commercial negotiating parties under Option 3B

<i>Who pay LAC?</i>	The ETS Operators
<i>Who negotiate?</i>	The Hosting Operators and the Originating/Terminating Network Operators
<i>Who collect?</i>	The Originating/Terminating Network Operators The Hosting Operator will collect LAC due to the ETS traffic that originates from or terminates at its own network

Figure A2 – Illustration of negotiation and payment of LAC under Option 3B



A.5 Option 3B overcomes the problem of complex and costly multiple bilateral commercial negotiations among the ETS operators and originating/terminating network operators, which are inherent in Option 3A as the number of negotiations is limited to the number of interconnection relationships among the facility-based network operators in Hong Kong.

Furthermore, the hosting operators will negotiate on behalf of the ETS operators which they host with the originating/terminating network operators on a carrier-to-carrier basis, and this would alleviate the problem of lack of bargaining power of small ETS operators in commercial negotiations with the facility-based network operators. Same as for Option 3A, the hosting operators will bear less burden and commercial risk when compared with the present LAC regime, since they no longer need to be responsible for settlement of the LAC on behalf of the ETS operators which they host with their interconnecting network operators.

A.6 The main drawback of this sub-option is that as the hosting operators are not responsible for settlement of the LAC themselves, they may not have the necessary incentive to negotiate the best price on behalf of the ETS operators. Unlike the Option 3A, the ETS operators have no role to play in the negotiation and they have no choice but to take the price agreed between their hosting operator and the other FNOs and MNOs.

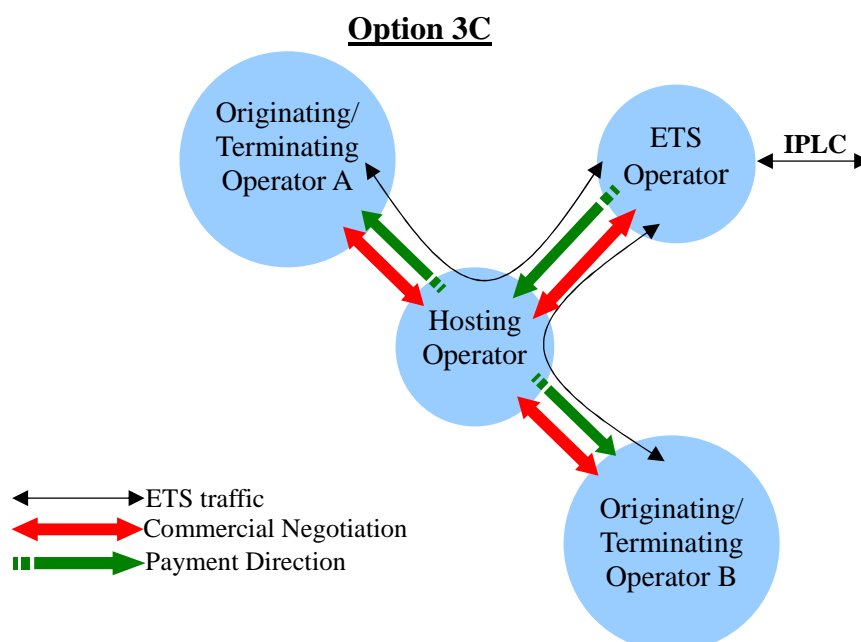
### Option 3C

A.7 This sub-option is similar to Option 3B in that commercial negotiations on LAC will be carried out among the hosting operators and their interconnecting network operators for the ETS traffic flowing between them, including the ETS traffic generated by the hosted ETS operators and that generated by the hosting operators themselves. The salient difference is that the agreed charge will be paid by a hosting operator for all ETS traffic flowing between its network and another local network, while the hosting operator is free to recover the LAC from its hosted ETS operator at whatever price or at whatever terms and conditions that the two parties may commercially agree. In other words, as far as the delivery of ETS traffic is concerned, the hosting operator buys an interconnection service on a wholesale basis from other local network operators and resells it on a retail basis to the ETS operators. There will then be two sets of negotiation, namely the hosting operator with the originating/terminating network operator and the hosting operator with the ETS operator. The negotiation and payment of LAC under Option 3B are illustrated in Table A3 and Figure A3.

Table A3: Payment of LAC and commercial negotiating parties under Option 3C

<i>Who pay LAC?</i>	- The ETS Operators (to the Hosting Operators) - The Hosting Operators (to the Originating / Terminating Network Operators)
<i>Who negotiate?</i>	- The Hosting Operators and the Originating/Terminating Network Operators - The ETS Operators and the Hosting Operators
<i>Who collect?</i>	- The Hosting Operators (from the ETS Operators) - The Originating / Terminating Network Operators (from the Hosting Operators)

Figure A3 – Illustration of negotiation and payment of LAC under Option 3C



A.8 Option 3C is similar to the settlement model of the existing LAC regime for fixed networks where indirect mode of interconnection is involved (see paragraph 41 for details). It differs from the existing settlement in that the wholesale price of LAC(transit) paid by the hosting operator is subject to commercial negotiation between the two interconnecting network operators, instead of following a benchmark based on the rate determined by the TA for the incumbent FNO. The retail price of LAC(transit) paid by the ETS operator to the hosting operator is no longer set by the TA equal to the wholesale LAC(transit) but may instead be negotiated between the hosting operator and the ETS operator.

A.9 Option 3C is akin to the mechanism which is adopted for settling

interconnection charge for the SBOs in respect of IP telephony traffic<sup>33</sup>. At present, the hosting FNO of an SBO is responsible for commercial negotiation and settlement of interconnection charge with another FNO, and recovery of relevant charges by the hosting FNO from the SBO is subject to separate commercial arrangement between these two parties. Adopting Option 3C will therefore have the benefit of aligning the arrangements for the LAC regime and the interconnection charging regime governing SBOs in respect of IP telephony traffic.

A.10 Option 3C has the merits of Option 3B as mentioned in paragraph A.5. Like Option 3A, it allows the parties paying the LAC (the hosting operator) and receiving the LAC (the originating/terminating network operator) to negotiate direct. Given that the negotiation takes place on a carrier-to-carrier basis, there are both incentive and potential for achieving a lower interconnection charge than the existing determined rate. Given that the ETS traffic could flow in either directions and there are other types of traffic between the interconnecting carriers, Option 3C may open the way for more innovative approach of settlement of the ETS related interconnection charge (such as by settlement of imbalanced traffic only or on a bundled basis with other interconnection charges).

A.11 In addition, as the hosting operator is free to set the retail LAC at a different level from the wholesale LAC, this may give them more flexibility for pricing hosting service and therefore provide more incentive for network operators to offer competitive hosting services. As long as there is sufficient competition in the hosting market, market force should be effective in keeping the level of retail LAC paid by the ETS operators at a reasonable level.

---

<sup>33</sup> See paragraph 16 of the TA Statement on *Services-Based Operator Licence* at <http://www.ofta.gov.hk/en/tas/ftn/tas20060106.pdf>.