Suruhanjaya Komunikasi dan Multimedia Malaysia
Malaysian Communications and Multimedia Commission

A REPORT ON A PUBLIC INQUIRY

Access Pricing

30 November 2005

This Public Inquiry Report was prepared in fulfilment of Section 65 of the Communications and Multimedia Act 1998.

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ABBREVIATIONS AND GLOSSARY

Access Agreement	An agreement entered into between Operators whereby the Access Provider provides access to an Access Seeker in accordance with the terms contained in such an agreement and which is to be registered with the MCMC in accordance with the CMA.
Access Forum	A forum designated under section 152 of the CMA.
Access List	The list of facilities and services determined by the MCMC under Chapter 3 of Part VI of the CMA, in respect of which the Standard Access Obligations apply.
Access Provider	A network facilities provider who owns or provides Facilities and/or a network service provider who provides Services, listed in the ALD, and includes a holder of a registered licence under section 278 of the CMA.
Access Seeker	A network facilities provider, a network service provider, an applications service provider, or a content applications service provider and includes a holder of a registered licence under section 278 of the CMA, who makes a written request for access to Facilities or Services listed on the ALD.
ALD	Commission Determination on Access List, Determination No. 1 of 2005
ALD 2001	Commission Determination on Access List, Determination No. 1 of 2001
ANE	Access to Network Elements
ATM	Asynchronous Transfer Mode
BRAS	Broadband Remote Access Servers

CCA	Current Cost Accounting
CMA	Communications and Multimedia Act 1998 / Act 588
DNTS	Domestic Network Transmission Service
DTS	Digital Tandem Switch
EMH	Efficient Market Hypothesis
EPMU	Equi-Proportional Mark-Up
FCC	Federal Communications Commission of the United States
FDC	Fully Distributed Cost
GLC	Government Linked Company
HCA	Historical Cost Accounting
IACOS	Internet Access Call Origination Service
LRIC	Long Run Incremental Cost
LTBE	Long-Term Benefit of the End Users
LTIE	Long-Term Interests of the End Users
MCMC	Malaysian Communications and Multimedia Commission
MCP	Minimum Coverage Presence
MNP	Mobile number portability
MS (Access)	Commission Determination on Mandatory Standard on Access, Determination No. 2 of 2003
MSC	Mobile Switching Centre

MSA	Commission Determination on Mandatory Standard on Access, Determination No. 2 of 2005
MVNO	Mobile virtual network operator
National Policy Objectives (NPOs)	The national policy objectives for Malaysia's communications and multimedia industry, as set out in section 3 of the CMA.
NERA	National Economic Research Associates
OLNO	Other Licensed Network Operator
Operator	A network facilities provider, a network service provider, an applications service provider or a content applications service provider (as the context requires) who is an Access Provider or an Access Seeker (as the context requires).
PC Paper on ANE	Public Consultation Paper on Effective Competition in the Access Network, MCMC, 23 July 2003
PC Report for ANE	A Report On Public Consultation On Effective Competition In The Access Network, MCMC, 18 November 2003
PI Access List Paper	Public Inquiry Paper, Review and Expansion of Access List Determination, MCMC, 8 February 2005
PI Access List Report	Public Inquiry Report, Review and Expansion of Access List Determination, MCMC, 27 May 2005
PI Access Pricing Paper	Public Inquiry Paper Access Pricing, MCMC, 2 September 2005
PI Access Pricing Report	This Public Inquiry Report
POI	Point of Interconnection
PSTN	Public Switched Telephone Network

Public Inquiry (PI)	This public inquiry conducted pursuant to Chapter 3 of Part V of the CMA.
Standard access obligations (SAOs)	The obligation to provide access to network facilities or network services included on the Access List on reasonable terms and conditions in accordance with section 149 of the CMA.
Time 1	Government set targets to improve cellular coverage and quality of service by October 2004.
Time 2	Government set targets to improve cellular coverage and quality of service by December 2005 and December 2006.
TSLRIC	Total Service Long-Run Incremental Cost
VoIP	Voice Over Internet Protocol
WACC	Weighted Average Cost of Capital

SUMMARY OF THE MCMC FINAL VIEWS ON ACCESS PRICING

In this PI, the MCMC has undertaken a detailed assessment of the appropriateness and the practical implementation of cost-based access pricing for the 23 facilities/services included in the ALD.

The PI Access Pricing Paper sets out the MCMC's preliminary views on the above issues and invited comments in response to several questions. Having considered the submissions received in response to the PI Access Pricing Paper, the following table summarises the MCMC's preliminary views and final views.

Table 1: Summary of the MCMC's final views on whether maximum prices should be mandated

Facility / Service	MCMC Preliminary View	MCMC Final View
Fixed Network Origination Service	Yes	Yes
Equal Access (PSTN) Service	Yes	Yes
Fixed Network Termination Service		
• PSTN	Yes	Yes
• VoIP	Yes	No
Mobile Network Origination Service	Yes	Yes
Mobile Network Termination Service	Yes	Yes
Interconnect Link Service	Yes	Yes
Private Circuit Completion Service	Yes	Yes
Domestic Network Transmission Service	Yes	Yes
Internet Access Call Origination Service	Yes	No
3G-2G Domestic Inter-Operator Roaming Service	Yes	No
Inter-Operator Mobile Number Portability Support Services	No	No
Infrastructure Sharing	No	No
Domestic connectivity to international services	Refer to position on DNTS and Network Co-location	Refer to position on DNTS and Network Co-location

Facility / Service	MCMC Preliminary View	MCMC Final View
Network Co-Location Service	Yes	No
Network Signalling Service	Yes	No
Full Access Service	Yes	No
Line Sharing Service	Yes	No
Bitstream Services	Yes	Yes
Sub-loop Service	Yes	No
DSL Resale Service	Yes	No
Internet Interconnection Service	No	No
Broadcasting Transmission Service	Yes	Yes
Digital Terrestrial Multiplexing Service	No	No

Yes - set access prices; No - freely negotiate access prices

In addition to Table 1 above, the MCMC has classified its final views into three broad categories as follows:

(a) the services for which prices should be mandated and the methodology on which prices will be set;

(b) the services for which the prices will not be mandated, but indicative prices will be published for reference; and

(c) the services for which the prices will not be mandated and no indicative prices will be published.

The tables below set out the three broad categories:

Table 2: Services for which prices should be mandated and the methodology

Facility/Service	Methodology
Fixed Network Origination Service (PSTN voice only)	LRIC
Fixed Network Termination Service (PSTN voice only)	LRIC
Equal Access (PSTN) Service	LRIC
Mobile Network Origination Service (voice only)	LRIC
Mobile Network Termination Service (voice only)	LRIC
Domestic Network Transmission Service	Gradual approach from commercial to LRIC
Private Circuit Completion Service	Gradual approach from commercial to LRIC
Interconnect Link Service	Gradual approach from commercial to LRIC
Domestic Connectivity to International Service	Refer to position on DNTS and Network Co-location
Broadcasting Transmission Service	Gradual approach from commercial to LRIC
Bitstream Services	Gradual approach from commercial to LRIC

Table 3: Services for which indicative prices will be published and the methodology

Facility/Service	Methodology
Full Access Service	LRIC
Sub-loop Service	LRIC
Mobile Network Termination Service (SMS only)	LRIC
Internet Interconnection Service	LRIC
Network Co-location Service	LRIC
Network Signalling Service	LRIC
3G-2G Domestic Inter-Operator Roaming Service (voice and SMS)	LRIC

Table 4: Services for which no indicative prices will be published

Facility/Service	Methodology
VOIP origination	Commercial
VOIP termination	Commercial
Internet access call origination	Commercial
Mobile MMS termination	Commercial
Infrastructure Sharing	Commercial
Line Sharing Service	Commercial
Digital Terrestrial Broadcasting Multiplexing Service	To be decided when service is available

Facility/Service	Methodology
Inter-Operator Mobile Number Portability Support Services	To be decided when service is available
Digital Subscriber Line Resale	Retail minus

The prices set out in this PI Access Pricing Report for the facilities and services on the ALD will take effect from 1 January to 31 December of the respective years, starting from 1 January 2006.

1. INTRODUCTION

1.1. Public Inquiry Process

In its PI Access Pricing Paper, for each facility/service in the ALD the MCMC detailed the principles followed in determining whether access pricing regulation is warranted and, if this is the case, the principles followed in setting access prices. The PI Access Pricing Paper also presented the MCMC's preliminary views regarding proposed access price levels for several facilities/services in the ALD. These proposals have been put forth taking into account the results of a costing study based on principles of LRIC for facilities and services on the ALD. For this purpose, the MCMC engaged NERA.

In most cases, the PI Access Pricing Paper set out the MCMC's preliminary views, inviting comments as to whether access prices should be consistent with those views. In some cases the MCMC noted that, at the time of publication of the PI Access Pricing Paper, it did not possess sufficient information to reach a preliminary view. Accordingly, the MCMC asked stakeholders for more information before finalising its views on access pricing issues.

1.2. The MCMC's legislative obligations

Section 61(1)(d) of the CMA requires the PI period to last a minimum of 45 days, within which public submissions are invited. In consideration of the wide-ranging and critical nature of this PI, the MCMC provided stakeholders with almost two months to provide their comments in response to the PI Access Pricing Paper. The closing date for the PI period was **31 October 2005**.

The MCMC issues this PI Access Pricing Report in compliance with Section 65 of the CMA. In particular, Section 65(2) of the CMA requires the MCMC to publish a report within 30 days of the conclusion of a PI, while Section 65(3) stipulates that no material of a confidential nature should be included in the report.

1.3. Consultation Process

The MCMC has adopted a transparent consultative approach throughout the costing study and during this PI, including:

(a) establishment of an industry Taskforce (the Taskforce) to cooperate with the MCMC and its independent consultant, NERA, in carrying out the costing study. The Taskforce comprises Telekom Malaysia Berhad (Telekom), Maxis Communications Berhad (Maxis), DiGi Telecommunications Sdn. Bhd. (DiGi), Celcom Malaysia Berhad

(Celcom), TIME dotCom Bhd. (TIME), REDtone Telecommunications Sdn. Bhd. (REDtone), NasionCom Sdn. Bhd. (NasionCom), Jaring Communications Sdn. Bhd. (Jaring), TMNet Sdn. Bhd. (TMNet), Sistem Televisyen Malaysia Berhad (TV3), Natseven TV Sdn. Bhd. (NTV7) and Malaysian Association of Commercial Radio Operators (MACRO);

(b) a number of meetings were held to promote and maintain interactive exchange of information between the MCMC and the members of the Taskforce to:

(i) explain the data request templates;

(ii) clarify the information that was submitted by the members of the Taskforce; and

(iii) agree on the key assumptions to be adopted in the mobile and IP models.

(c) several briefing sessions were held to explain the objectives and scope of the costing study as well to brief the industry Taskforce of how the costing models work;

(d) several model viewing sessions were held from 19 July to 3 August, before the PI, followed by a second round of viewing from 5 to 6 September 2005:

(i) to enable the stakeholder to understand the costing model;

(ii) with NERA's presence to ensure that the stakeholders were able to discuss and seek clarifications; and

(iii) to provide feedback on the costing models;

(e) the costing models were revised several times to take into account the feedback received from the stakeholders;

(f) publication of the PI Access Pricing Paper on **2 September 2005** and a request for comments, including publicity in relation to the same in the media and on the MCMC website;

(g) a public hearing was held on 3 October 2005 to enable the public to clarify the specific items contained in the PI Access Pricing Paper;

(h) further model viewing sessions of the revised costing models and meetings were held during the PI period on 4 and 5 October 2005; and

(i) additionally, an open communication channel was maintained at all times between the stakeholders, the MCMC and NERA in relation to all issues pertaining to the study.

1.4. Submissions Received

At the close of the public consultation period at 12.00 noon on 31 October 2005, the MCMC received written submissions from the following parties:

Table 1.1: List of Submissions Received

No.	Submitting Party	Documents
1	Celcom Malaysia Berhad (Celcom)	1 Submission (26 pages)
2	DiGi Telecommunications Sdn. Bhd. (DiGi)	1 Submission (32 pages) — confidential
3	Fiberail Sdn. Bhd. (Fiberail)	1 Submission (13 pages)
4	First Principles Sdn. Bhd. (First Principles)	1 Submission (31 pages)
5	Jaring Communications Sdn. Bhd. (Jaring)	1 Submission (16 pages)
6	Maxis Communications Berhad (Maxis)	1 Submission (42 pages)
7	NasionCom Sdn. Bhd. (NasionCom)	1 Submission (53 pages)
8	REDtone Telecommunications Sdn. Bhd. (REDtone)	1 Submission (38 pages)
9	Sistem Televisyen Malaysia Berhad (TV3)	1 Submission (2 pages)
10	System Knowledge Concepts Pty. Ltd (SKC) on behalf of Celcom	1 Submission (42 pages)

No.	Submitting Party	Documents
11	Telekom Malaysia Berhad (Telekom)	Main Submission (6+43 pages) Annex A (28 pages) — confidential Annex B (16 pages) — confidential Annex C (7 pages) — confidential Annex D (30 pages) Annex E (15 pages)
12	TIME dotCom Bhd. (TIME)	1 Submission (47 pages)
13	TMNet Sdn. Bhd. (TMNet)	1 Submission (7 pages)

2. STRUCTURE OF THE REPORT

The remainder of this PI Access Pricing Report is structured as follows. The intention is to broadly follow the structure of the PI Access Pricing Paper in order to provide a consistent context for the MCMC's specific questions for comment. The specific 45 numbered questions in the PI Access Pricing Paper are sequentially duplicated in each chapter, to enable the MCMC to systematically detail its final views on the submissions that are relevant to each issue:

Chapter 1: INTRODUCTION

Chapter 2: STRUCTURE OF THE REPORT

Chapter 3: PRINCIPLES IN SETTING ACCESS PRICES

Chapter 4: TSLRIC FOR FACILITIES/SERVICES OVER FIXED NETWORKS

Chapter 5: TSLRIC FOR FACILITIES/SERVICES OVER IP NETWORKS

Chapter 6: TSLRIC FOR FACILITIES/SERVICES OVER MOBILE NETWORKS

Chapter 7: TSLRIC FOR FACILITIES/SERVICES FOR BROADCASTING NETWORKS

Chapter 8: TSLRIC FOR OTHER ACCESS LIST FACILITIES/SERVICES

Chapter 9: ADDITIONAL ISSUES

The MCMC has given due consideration to all issues raised in the submissions received.

The MCMC thanks interested parties for their participation in this consultative process and for providing their written submissions.

3. PRINCIPLES IN SETTING ACCESS PRICES

The PI illustrated the general principles the MCMC envisages following in deciding whether to introduce access pricing regulation and in setting access pricing.

3.1. General Comments

3.1.1. Comments Received

First Principles submitted that it is imperative that the MCMC develop and apply clear, robust and justifiable principles based on the CMA and that First Principles believed that this had not been done in the PI Access Pricing Paper. In its submission, First Principles identified three principles as being the applicable principles that should be carefully and clearly considered and applied by the MCMC.

Firstly, the objective of the proposed regulatory price setting should be to promote and support the NPOs and, when interpreting the NPOs, the preference is to be given to one which promotes all ten NPOs, not just one and that the promotion of the NPO or the establishment of a regulatory framework that supports the NPO must be done for the industry.

Secondly, the MCMC should base its proposed regulatory action on the basis of LTBE and not LTIE since LTBE is one of the NPOs prescribed in the CMA. LTIE, according to First Principles, is a concept fundamentally different from LTBE and that LTIE is a concept specifically prescribed by the Australian Trade Practices Act. The same point on the appropriateness of LTIE had been raised by Telekom.

Thirdly, in essence, sections 197 to 201 of the CMA is the only basis for any rate regulatory intervention (including the setting of access prices) and the only two grounds for regulatory intervention are (a) the existence of good cause and (b) the evidence of public interest. If sections 197 to 201 of the CMA are not applicable, then the MCMC is "acting on a frolic of its own and beyond the powers provided to it under the Act".

3.1.2. The MCMC's final views

Promotion and support of the NPOs

The MCMC agrees with First Principles that in performing its statutory function under the CMA, the MCMC is guided by the ten NPOs set out in section 3(2) of the CMA. The

MCMC believes that moving to a system where access prices are either determined in a competitive market or are set on the basis of efficiently incurred costs supports most, if not all, of the NPOs. Correct pricing of access services will benefit the development of the Malaysian communications industry by providing the appropriate signals for investment and new entry into the market place. It will also lead to a more efficient allocation of resources. Furthermore, it will promote sustainable competition, rather than short term competition based on arbitrage opportunities. Increased competition lowers the barriers to market entry which should in turn provide consumers with greater choice and lower prices.

As such, the MCMC maintains that it had considered the regulatory options on access pricing with a view to promote the NPO and rejects the assertion that its approach promotes only one NPO.

The use of "LTIE test"

The MCMC has already set out its justification for using the LTIE test in the PI Access List Report. To reiterate some of the main points, the MCMC would like to emphasise that the LTIE test involves a best practice approach to access regulation. As part of the process of looking at the impact on end users, the LTIE test identifies whether regulation is necessary to promote competition, whether it will facilitate any to any connectivity, and what it means for infrastructure investment. This is done using both qualitative and available quantitative information. At the same time, the long term costs of regulation are weighed against the benefits.

First Principles has argued that an LTBE test should be used rather than an LTIE test. In its view such a test should cover actual and potential subscribers, the long-term should be interpreted as the period over which the full effects of the regulatory action will be felt, and the benefits considered should be both commercial and non-commercial.

In implementing the LTIE, the MCMC takes into account both future and existing end users. Moreover, at each stage at which it has been applied, it has made reference to Malaysia specific factors.

The MCMC believes that the way it has the LTIE test in Malaysia covers the points that First Principles has made. Effectively the MCMC has applied an LTBE test as defined by

First Principles. The MCMC does not therefore see any need to change its present practice.

Basis for access rate regulatory intervention

The MCMC notes the points submitted by First Principles. Part VIII of the CMA contains various provisions on consumer protection, including quality of service, required applications services, resolution of consumer disputes, rate regulation and universal service provision. Specifically, section 199 provides that the Minister may on the recommendation of the Commission, intervene freely or frequently in determining and setting the rates for competitive facilities and services provided by a provider for good cause, or as the public interest may require.

On the other hand, Part VI of the CMA contains provisions on economic regulation, including licensing, general competition practices and access to services.

Standard access obligations under section 149(1) apply to network facilities providers and network service providers in respect of the facilities and services listed on the access list. The access providers are required to provide access to such facilities and services on reasonable terms and conditions, which in the MCMC's view, include the prices.

The CMA envisages that the access forum addresses the terms and conditions for access agreements, which, in the MCMC's view, may include the prices at which the facilities and services are provided by the access providers.

Specifically, section 153(2) of the CMA provides for the access code to be developed by the Access Forum to provide model terms and conditions for compliance with the standard access obligation. Section 153(3) lists a non-exhaustive list of matters that the access code may address.

The division of the parts in the CMA suggests that access pricing should be covered under Part VI of the CMA while other types of pricing may be considered separately under Part VIII of the CMA, if appropriate.

Hence, the MCMC's views are that there appears no reason based on the reading of the CMA that the pricing of facilities and services on the access list cannot be addressed specifically under the Chapter 3 of Part VI of the CMA.

3.2. Statement on Access Pricing Principles

Question 1: The MCMC seeks comments on the need to develop a document such as the Statement on Access Pricing Principles for the determination of access prices and the content of such a document.

3.2.1. Comments received

All submissions expressed the view that such a statement would be very useful as a means of ensuring that the industry is fully informed about policy guidelines and it shares a common understanding of the relevant concepts.

Fiberail was of the opinion that the statement must be clear and the basis and approach for the application of any pricing principles must be transparent and fair.

First Principles' submission argued that the statement should set out the scope and meaning of the statutory provisions for intervening to set rates under section 200 of the CMA.

Maxis proposed that the earlier Statement on Access Pricing Principles is still relevant and can be used as a basis for a new statement.

NasionCom and REDtone are of the view that the statement should set out the Commission's regulatory objectives, explaining/clarifying how the principles are consistent with the objectives.

Telekom expressed the view that the objectives of transparency, fairness, healthy competition and industry self regulation as contained in the CMA will be achieved if the statement is a definition of the ground rules for the industry.

TIME suggested that the Statement on Access Pricing Principles should cover, at a minimum, the following items:

(a) Entry barriers and efficient competition;

(b) Application of cumulative criteria;

(c) Application of other pricing mechanism (i.e. retail minus, retail benchmarking); and

(d) Ex-ante or ex-post regulatory methods and instances of appropriate application of such regulatory measures.

Some respondents (Celcom, Fiberail, Telekom, and TMNet) also expressed concerns about the possibility that the principles included in the statement might lead to over-regulation of the industry.

3.2.2. The MCMC's final views

The MCMC notes the wide consensus in the industry about the need for a Statement on Access Pricing Principles and the proposed content of such a statement. Taking cognisance of industry views, the MCMC intends to develop such a statement as soon as practicable.

3.3. Criteria for regulatory intervention

The ALD identifies 23 access facilities/services, the provision of which is subject to standard access obligations. The PI Access Pricing Paper proposed two criteria to determine whether or not a facility/service in the ALD warrants the MCMC's intervention in the form of access pricing regulation. The two criteria are:

(a) presence of high barriers to entry, and

(b) absence of a trend toward effective competition.

Question 2: The MCMC seeks comments on the proposed criteria for regulatory intervention on access pricing and whether there are any other criteria that should be considered.

3.3.1. Comments received

Celcom, Fiberail, Telekom and TMNet expressed the view that commercial negotiations should take precedence in determining access prices. In addition, Celcom and Telekom argued that the MCMC's proposed criteria should be replaced with the following:

(a) Intervention should occur only in the event of the failure of commercial negotiation and only in relation to established bottleneck services that are essential for competition in downstream markets and unlikely to be priced efficiently in the absence of competition;

(b) Innovative new services should not be subjected to cost-based pricing, unless an economic cost-benefit analysis demonstrates a significant net positive benefit; and

(c) Regulation of access prices should not produce an inefficient allocation of resources.

Fiberail's submission stated that its business is focused purely on providing wholesale facilities and services and, if those services are subjected to cost-based access prices, its business viability will be greatly affected as there is no scope for it to recoup the resulting reduction in revenues from retail services.

DiGi concurred with the MCMC's proposal.

First Principles recommended that other factors should be considered by the MCMC prior to setting access prices including the promotion and support of the National Policy Objectives (NPO), the Long Term Benefit of the End User (LTBE) and good cause or public interest.

Jaring commented that regulatory intervention is a lagging process, particularly in a fast moving industry. As time is a critical factor for effective competition, Jaring believes that a more proactive stance should be taken by the MCMC.

Maxis agreed with the two criteria proposed by the MCMC. However, a sharper distinction should be made between the services that are genuinely "bottleneck" in nature and those for which the establishment of alternative facilities is only a matter of time and investment. In addition, Maxis also proposed an additional criterion, namely that the benefits of regulation should be demonstrated to exceed costs.

NasionCom, REDtone and TIME agreed with the MCMC's proposal, while urging that the proposed approach is not the "only method of analysis". However, these parties did not clearly identify and discuss any specific additional criteria to determine when access pricing regulation is needed.

3.3.2. The MCMC's final views

The MCMC notes the issue raised by Celcom, Fiberail, Telekom and TMNet that commercial negotiations should take precedence in deciding access prices. The MCMC broadly concurs in principle with the parties' statement regarding innovative services, as demonstrated in practice by the fact that the PI Access Pricing Paper's preliminary views favour light-handed or no regulation at all of such services. Finally, making the MCMC intervention in access pricing conditional on the failure of commercial negotiations might be strategically used by access providers who control essential facilities to gain/protect an unfair first-mover advantage which, in a fast-moving industry such as communications, might be quite difficult to catch up. On this point, the MCMC tends to agree with the importance of timeliness of policy intervention, thus rejecting the position of Celcom, Fiberail, Telekom and TMNet.

In conclusion, the MCMC stresses that the position of Celcom, Maxis, and Telekom implies that LRIC-based prices would hardly ever be justified, being necessarily limited to a subset of well-established bottleneck facilities/services where commercial negotiations failed. This implication has been rejected by many Malaysian operators and has not been endorsed in other major countries.

The MCMC would like to clarify that its guiding principle in implementing access pricing is to set charges at a level ensuring fair remuneration of efficiently incurred costs causally linked to access provision, including a contribution to common costs and a fair return on investments bearing in mind the risks involved. The MCMC wishes to dispel the fears of those operators, among them Fiberail, that appear to have misinterpreted the MCMC's stance (especially as regard the implementation of LRIC methodology) as leading to cost under-recovery.

The MCMC observes that the distinction put forth by Maxis corresponds to the distinction between access markets which tend towards effective competition and access markets which do not.

While the MCMC observes that operators are free to sign commercially negotiated agreements, in circumstances where barriers to entry are high and when there is no effective competition in the markets, access seekers may be denied recourse to fair and reasonable access prices.

In conclusion, the MCMC confirms its preliminary view that the scope of access pricing regulation should encompass all markets where barriers of entry are high and there is no trend toward effective competition.

3.4. Use of LRIC methodology in the Malaysian context

Question 3: The MCMC seeks comments on its views regarding the suitability of LRIC methodology in the Malaysian context.

3.4.1. Comments received

Fiberail commented that, for LRIC methodology to be applied successfully, all cost elements and scenarios must be clearly identified and considered. LRIC modelling may overlook the actual scenario in terms of network rollout and the depreciation method may not represent the change in the real economic value of the assets. As an alternative, Fiberail suggested the use of FDC when there are uncertainties relating to the costing of network elements. LRIC is not suitable where the access provider provides facilities purely at the wholesale level.

DiGi was of the view that LRIC is the most equitable and accurate method which can be deployed. However, DiGi was concerned about the validity of the costing of some fixed services especially leased lines prices.

Jaring agreed that a LRIC model is suitable for mature infrastructure but is uncertain as to whether it would be applicable for IP or wireless/mobile services.

NasionCom, REDtone, and TIME stated that a bottom-up and forward looking methodology based on sound economic costing concepts will, when properly applied to an existing fixed line network with high legacy sunk costs and embedded inefficiencies, address the network stakeholders' interest and more importantly the LTIE. They were concerned that the estimation of costs should be based on sound assumptions and the use of valid and accurate data.

Telekom argued that LRIC would be unsuitable for Malaysia, due to the inability of the averaged set of assumptions to reflect the diverse circumstances, the inability of the model to reflect differences in cost over time and geographic areas and the reality of fixed service substitution by mobile services. Telekom dismissed a national LRIC approach for Malaysia, especially where the access provider is constrained in optimising investment and where penetration rates are low, as in the case of fixed network.

Celcom disagreed with the use of LRIC methodology in Malaysia because of the difficulty in identifying appropriate assumptions and scenarios for unique Malaysian circumstances and the unrealistic level of efficiency assumed for a developing country. For example,

NERA's modelling had not taken into consideration the significant control that certain operators have over international inbound terminating minutes.

TMNet strongly believed that LRIC methodology is not suitable in the Malaysian context due to the uncertainty, subjectivity, complexity and scope for opportunism inherent in a LRIC approach. Consequently, TMNet proposed that LRIC should either be modified to reflect more closely the real-world attributes of networks or reconsidered in favour or alternatives approach.

Maxis argued that growing demand for communications services in Malaysia means that operators are required to make large investments to meet future demand, which would not be efficient if demand remained at current levels. Maxis urged that the LRIC-model should use forecasts of year-end demand to dimension and estimate the costs of the hypothetical network, while year-average demand volumes should be used (in the denominator) to determine unit costs.

SKC remarked that the widely varying coverage choices in the Malaysian mobile industry make modified scorched node LRIC methodology inappropriate in Malaysia because any hypothetical network configuration will differ greatly for at least one of the mobile operators.

3.4.2. The MCMC's final views

In deriving LRIC for different services, the MCMC has considered different model runs to explore the impact of different assumptions regarding factors such as operator efficiency levels and whether WACC rates are computed based on Bursa Malaysia Berhad's data or on data relating to a wider set of markets. It has also carried out several sensitivity analyses to corroborate its final views regarding the model configuration that best represents the Malaysian context.

The modellers, in estimating network capital costs and corresponding operating costs, have allowed such values to differ for GLCs taking into consideration obligations that such companies may be required to fulfil. Similarly, contrary to what Telekom asserts, the forward-looking nature of the modelling exercise allows the impact of, among other things, expected network element price trends and traffic volume changes to be taken into account.

As pointed out by Telekom, the 2005 LRIC modelling exercise produced only geographically averaged results (i.e. a single access charge for each service/facility that relates to the whole of Malaysia). There is nothing in principle that prevents LRIC from being modelled on a geographically de-averaged basis and this often happens,

particularly in the case of exchange lines. However, it requires geographically de-averaged input data to be available. In any event, the reason why geographically averaged results have been produced is that the MCMC believes that these are the appropriate ones to use for setting access prices. The MCMC's justification for its position can be found in Section 3.6.5.2, which deals with answers to question 9.

Since provision costs do not vary significantly with the origin of traffic directed towards a specific network, the MCMC does not accept the relevance of the remark made by Celcom that the MCMC has not taken into consideration the significant control that certain operators have over international terminating traffic.

The MCMC agrees with Maxis that, particularly in a fast growing market, network capacity has to be dimensioned so as to accommodate future growth. However, there is no need to implement the change that Maxis has suggested because the models used already allow for additional capacity in respect of growth, with the amount of such capacity depending on the rate of growth and the investment lead time.

Fiberail's remark about the unsuitability of LRIC modelling for the case of an operator active only at the wholesale level appears to be based on the unjustified assumption that LRIC will, overall, prevent such an operator from recovering all its fairly-incurred costs. The MCMC reiterates that this is not the case. If one were to accept Fiberail's characterization of LRIC methodology, one would conclude that, for the LRIC approach to be sustainable in the long-run, it would be necessary for there to be cross subsidisation from retail services, and hence that it was only applicable to vertically-integrated firms. This is not the case: an operator providing only wholesale services whose prices are set at LRIC (according to the way the MCMC intends to implement it) will see all its costs attributed to one or the other of its services (the incremental ones will follow direct causality links and the common fixed costs will be allocated), leading to a set of LRIC based prices that covers all efficiently incurred costs.

The MCMC would like to clarify that its guiding principle in implementing access pricing also applies to wholesale services provided by Fiberail. The costing of services includes not only remuneration of efficiently incurred costs causally linked to access provision, including a contribution to common costs but also a fair return on investments.

The MCMC observes that LRIC models can accommodate different penetration levels and, as a consequence, it should be expected that LRIC estimates for the Malaysian context might substantially differ from more developed countries.

The MCMC acknowledges that, as compared to the previous LRIC costing exercise, the scope of facilities/services to be modelled has dramatically increased, which made

collection of accurate data a more time and resource-consuming task. However, the MCMC reiterates that the Taskforce was purposely formed to overcome any data limitations in the Malaysian industry and the level of sophistication in record-keeping achieved by some Malaysian companies should allow the main hurdles in data collection to be overcome.

Since no compelling reasons to discard LRIC methodology in the Malaysian context have emerged since the previous LRIC-based access pricing proceedings (the success of which has been remarked on by DiGi in its submission), the MCMC concludes that the LRIC approach is a suitable methodology in the Malaysian context.

3.5. Criteria for adopting LRIC costing methodology

Question 4: The MCMC seeks comments on the following:

(a) criteria for adopting LRIC pricing for well established and bottleneck facilities/services; and

(b) Whether there are other criteria that the MCMC should consider when applying LRIC.

3.5.1. Comments received

Celcom, Fiberail, Maxis, NasionCom, REDtone, Telekom, TIME, and TMNet agreed with the conclusion that LRIC-based pricing is appropriate for well-established and bottleneck facilities/services. However, NasionCom, REDtone and TIME noted that LRIC is one among several methodologies and proposed that the MCMC exercise caution and prudence in applying the LRIC methodology to any services other than fixed line services.

Celcom and Telekom suggested that, if the MCMC is to apply LRIC pricing, then the following criteria should apply:

(a) any benchmarks applied in the calculation of LRIC should not be based on those of a developed country with close to maximum penetration but on benchmarks appropriate for the Malaysian communications sector;

(b) access providers must have full freedom to invest efficiently; and

(c) an appropriate mark-up is applied to take account of joint and common costs.

Celcom and Telekom also suggested defining a "*well established*" service as one that had been offered in the market for a period of at least five years.

Telekom suggested that LRIC is justified where commercial negotiations have failed. In addition Telekom proposed the use of LTBE instead of LTIE as LTBE includes the potential end users.

First Principles agreed to the use of the two criteria proposed by the MCMC as a starting point. However, they asserted that the criteria are by no means comprehensive. Accordingly, they proposed that the MCMC should identify what measures amount to "good cause" or to what "the public interest may require", or are in the "LTBE", and consider whether regulatory intervention promotes and supports the NPO for the industry.

Jaring agreed that LRIC modelling is suitable for established services but is uncertain of its appropriateness for new innovative services such as VoIP/broadband wireless services. Consequently, for such services, the MCMC may need to explore LRIC in the context of a cost model that has been adopted for Next Generation services.

Maxis highlighted that insufficient attention appears to have been granted to whether regulation is proportionate in cost benefit terms. Maxis suggested that the MCMC should apply the principle of proportionate regulation in situations where there are concerns with regard to level of the competition but the facility in question does not satisfy the well established bottleneck criteria. In such circumstances, Maxis proposed that commercial negotiations or light handed regulation be applied. For non established and bottleneck services Maxis proposed an alternative approach to LRIC, such as retail-minus, as this approach encourages efficient, welfare enhancing entry, whilst encouraging entrants to build their own facilities. Maxis argued that if non-bottleneck facilities were to be regulated on a cost basis, access seekers would prefer to access the competitor's facilities on cost oriented terms than to develop their own competing facilities.

3.5.2. The MCMC's final views

The MCMC has already answered respondents' comments regarding LTBE in Section 3.1.1 above. In addition, the MCMC has provided reasons in Section 3.3.2 above on why it does not believe that access pricing intervention should be invoked only after the failure of commercial negotiations for services.

The MCMC notes that some respondents (in particular, NasionCom, REDtone, and TIME) have claimed that the MCMC has not considered any other form of access pricing

regulation, and have indicated three alternative approaches the MCMC should have pursued: retail benchmarking, retail minus and global price caps. The MCMC rejects the claim that it has not considered any other approaches to set access prices.

The MCMC notes that one of the alternative approaches suggested, i.e. global price cap, is only relevant when considering the regulation of a specific operator that is vertically integrated (i.e. operates both in retail and wholesale markets). This is clearly not the case here, as the MCMC is considering access regulation to discipline all access seeker-access provider relationships, regardless of the identity and degree of vertical integration of the parties involved. As such, the parties' proposal is manifestly irrelevant. As for 'retail benchmarking', the MCMC found it quite hard to interpret the parties' position, since the term has not been commonly used when dealing with wholesale regulation. Based on the descriptions offered by the parties, the MCMC has assumed that what was referred to as 'retail benchmarking' is in fact 'yardstick competition'. If this interpretation is correct, the MCMC observes that for many facilities/services in the access list, it is exactly the absence of any competition of any kind (yardstick or otherwise) that makes LRIC pricing necessary.

Finally, 'retail minus' (also supported by Maxis) is an approach that loses much of its appeal if the retail prices are not close to the level that would prevail in an effectively competitive market. As a result, the MCMC believes that this approach may not be an appropriate as a general solution to access pricing but can be considered on a case by case basis.

The MCMC also wishes to comment on the proposal put forth by some respondents to rely on international benchmarks to set wholesale access prices. Regulation by benchmarks has been adopted in the very early stages of industry liberalization (where lack of reliable data and uncertainties about future development make LRIC hard to implement) and/or in regions where there are several comparable countries to use to implement the approach (this is the case for Europe, where there are many countries who are bound by commonly agreed principles of policy intervention in the communications industry). The Malaysian industry cannot be characterized as being in the very early stages of market liberalization: indeed, the first successful LRIC modelling exercise was carried out almost four years ago. The special characteristics of the Malaysian industry make a pure benchmark approach questionable. Many respondents have agreed with this position in their answer to Question 3. The MCMC remains unconvinced that a benchmark approach is consistent with the goals of the CMA, as it risks imposing on the Malaysian industry conditions that are not fully consistent with Malaysian needs. This would happen if the MCMC were to accept respondents' proposals to use benchmarks based on countries as diverse as Sweden, Portugal, Sweden, Kenya, India etc. These appear to have been chosen to produce the desired level of access

prices with little, if any, objective or sound basis for the selection, i.e. access seekers preferred countries with low access prices whereas access providers preferred countries with high access prices. The MCMC has engaged the industry, especially through the Taskforce, to arrive at regulation that fully reflects Malaysian industry needs and characteristics. The MCMC rejects any piecemeal rebuttal of that approach in the absence of any strong justification based on appropriate principles.

The MCMC welcomes constructive industry suggestions, including the proposal regarding the practical implementation of the "well-established" service criterion, which is currently being considered for inclusion in the statement on access pricing principles (see question 1).

As for the comments offered which call for:

- the use of mark-ups on LRIC charges;
- the modelling of Malaysia-specific conditions, including special constraints on free-market procurement decisions; and
- refraining from regulation of innovative services,

the MCMC remarks that these principles have been endorsed by the MCMC in the PI Access Pricing Paper; hence there is full agreement between the MCMC and the industry.

Given the feedback from the industry summarized above, the MCMC concludes that, in principle, LRIC-based pricing is warranted for well-established, bottleneck facilities/services.

As for the proposal put forth by Celcom and Telekom to consider a service "well-established" if it has been on the market for at least five years, the MCMC's position is to refrain from using simplistic and mechanical rules for two reasons. First, differences in technological trends greatly affect whether a given facility/service can be considered mature, calling for a case-by-case analysis. Second, in other jurisdictions where this issue has been considered, for instance the European Union, the rule of thumb used in a case-by-case analysis is "no more than three years", in recognition of the rapid innovation that characterizes the communications industry.

Finally, in response to Maxis' concerns about the proportionality of regulation, the MCMC points out that in the PI Access Pricing Paper, the MCMC had considered various approaches to determining the appropriate methodology to determine prices for different services. It is clear therefore that the assessment by the MCMC (including decisions on access prices, LRIC-based or otherwise) is informed by the principle of proportionality.

3.6. Practical implementation of LRIC costing model

The PI described the major modelling assumption adopted in implementing the LRIC approach, asking for industry's views.

3.6.1. Choice of increment to be considered

Question 5: The MCMC seeks comments on the total facilities/services being the increment to be considered in determining LRIC.

3.6.1.1. Comments received

Celcom and Telekom agreed that it is essential to choose an appropriate increment. Both operators further commented that while the increment considered in determining LRIC may include the whole volume of the service, a marginal increase or any other measure of volume, the application of LRIC in the Malaysian context was questionable, given the various challenges faced in the effort to achieve economies of scale.

Jaring submitted that due to the incremental nature of the cost structure, companies who operate purely at the network service level (and not at the network facilities level) will always have a disadvantage compared to operators who operate at both levels. Consequently, Jaring was of the view that the total services considered may also need to be segregated to give greater clarity on the transfer of costs between network facilities provider and network service provider and as between network service provider and application service provider.

Maxis, NasionCom, REDtone and TIME broadly supported the view that total facilities/services should be the increment to be considered in determining LRIC. Such an approach is consistent with that of other jurisdictions and is fair in terms of providing a level playing field.

However, Maxis was not convinced that the current costing model for the mobile network reflected the increment correctly or satisfactorily. Maxis argued that mobile LRIC costing models in other countries (particularly Sweden and the United Kingdom) makes a distinction between at least 2 separate cost drivers, i.e. traffic and coverage. Maxis further pointed out that, in relation to coverage, the costing model in those jurisdictions had estimated a minimum coverage presence (MCP), with the predefined level of coverage, characteristics of the radio spectrum and geographical features (e.g. terrain)

being included in the model. Maxis also commented that in the case of fixed network, the cost of the access network is customer sensitive (and not traffic sensitive), whereas the cost of MCP is not sensitive to the number of customers or volume of traffic and therefore would be reasonable to consider MCP as a common cost to be recovered across all mobile services.

TMNet was of the opinion that LRIC should not be applied to new services, as incumbent operators would have a high propensity not to invest in new technologies as a result of lower access prices resulting from the use of LRIC methodology.

3.6.1.2. The MCMC's final views

The MCMC notes that Celcom and Telekom have not expressed any specific view regarding the question asked, and they have simply re-stated their dissatisfaction with the implementation of a LRIC approach in Malaysia, without providing any additional reason as compared to those offered in response to question 3. As a consequence, the MCMC refers to Section 3.4.2 for its reply to such a position.

The MCMC concurs with Jaring that the presence of vertically-integrated operators makes LRIC modelling more complex. However, the MCMC observes that the added complexity has more to do with the complexity in isolating and allocating common costs than with the specific question asked.

Maxis questioned the results of the LRIC model but did not contribute any view in response to the actual question posed. Notwithstanding this, the MCMC would like to state here that, contrary to what Maxis asserts, the LRIC model does use coverage and traffic as separate cost drivers and that it also treats the costs of minimum coverage presence as a common fixed cost. It therefore does not suffer from the defects that Maxis is suggesting.

Meanwhile, TMNet's view that access prices of innovative services should not be regulated based at LRIC approach is in accordance with the principle the MCMC enunciated in its PI Access Pricing Paper.

Taking these different points into account, the MCMC concludes that the costing exercise should adopt the Total Service Long Run Incremental Cost (TSLRIC) approach.

3.6.2. Scorched node versus scorched earth approach

TSLRIC methodology requires the design of a hypothetical efficient network to meet predicted demand. In doing so, when the network designer can pick the number and

location of nodes with a view to minimizing the associated costs, the model is said to have been built using a scorched earth approach. A scorched-node approach takes the number and location of nodes of existing networks as a given, and then uses best available technologies to equip and connect them. In a modified scorched node approach, the model starts from the existing network configuration and modifies it by changing the number and/or nature of some nodes in order to achieve a more efficiently configured and sized network from a forward-looking point of view.

Question 6: The MCMC seeks comments on its preliminary view that TSLRIC calculation should be based on a "scorched node" approach for fixed and broadcasting access facilities/services on a "modified scorched node" approach as far as mobile access facilities/services are concerned.

3.6.2.1. Comments received

Celcom indicated its disagreement with the use of modified scorched node modelling, particularly the way that economies of scale were captured in the model. Celcom indicated that, by using such an approach, smaller market share operators who choose not to invest in coverage would have their coverage fully financed through interconnection rates. Celcom indicated that, while smaller operators need not necessarily have higher costs, bigger operators do suffer from "diseconomies of scale" that are primarily attributable to the choice of providing service in rural areas with a generally less affluent population. This results in higher unit costs.

First Principles endorsed the use of the "scorched node" approach to all LRIC modelling exercises, although it stressed that any forward looking costing model based on available best in use technology and modern equivalent assets exposes the investor to large risks associated with technological change.

Maxis agreed that the scorched node approach is appropriate for fixed and broadcasting services. Maxis expressed its preference for a similar scorched node approach to be used in the case of mobile networks, in order to encourage investment efficiency. Maxis further suggested that in the case of a mobile network, the equivalent approach would fix the locations of core network (switching elements) and allow all the other network elements including the number of sites and BTSs to vary as required to meet the coverage and demand requirements.

NasionCom, REDtone, and TIME concurred with the MCMC about implementing a "scorched node" approach in modelling fixed network access facilities/services. They

saw it as a more practical and fair approach than scorched earth in that it does not penalise operators for limitations when the network was implemented and is less theoretical in nature. However, these three operators were of the view that LRIC modelling is inappropriate for mobile services under any approach.

SKC argued that any scorched node approach, modified or not, must incorporate 'local market conditions' if they relate to the geographical disparity of network roll-out that exists between each of the mobile operators. Ignoring these conditions will result in significant cost causing factors not being captured in the costing model. SKC also stated that, in the Malaysian context, the modified scorched node approach must allow for the volume of network components, for example the numbers of base stations and base station sites, to vary with network size and that it should also reflect the differing level of geographical coverage as a consequence of the Time 1 and Time 2 roll-out phases. SKC also expressed their concerns on the use of a modified scorched node approach based on a single standardised model. Firstly the model is based on a "standard" coverage level demanded by the market whereas the growth of mobile telephony since the early 1990s suggested that a "standard" coverage model does not exist. Secondly, the model topology is the same regardless of the size of operator serving the market even though, in fact, the three mobile operators have considerable differences in their geographical coverage. Thirdly, traffic growth was assumed to be uniform throughout the network, as the network and market are no longer in the start up stage. However, SKC was of the view that the growth of voice and data traffic in the suburban and rural areas brought about by the Time 2 targets cannot be assumed to be the same as the growth of traffic in urban areas. Fourthly, the approach of geographically averaging the traffic for Time 2 and urban roll-outs will result in an overestimation of modelled costs in urban areas (where actual costs are lower) and an underestimation of modelled costs in suburban and rural areas (where actual costs are higher).

Telekom concurred with the MCMC on the implementation of a "scorched node" approach in modelling fixed network access facilities/services. Telekom agreed that a modified "scorched node" approach should be adopted in the case of a mobile network to correctly dimension the number of nodes in the model to match true network size. Telekom, however, observed during its viewing of the mobile network model that, while the market share function did vary the number of switches and transport capacity in line with traffic volume, the number of base stations and base station sites did not vary with "market share" but rather, remained at a fixed level.

TMNet and Jaring expressed their concern with the use of the scorched node approach in that there may be a risk of including in the costing model the costs of inefficient choices made by the operators.

3.6.2.2. The MCMC's final views

The MCMC welcomes the broad consensus in the industry about the fact that the "scorched node" methodology proposed for modelling LRIC in the fixed network is indeed the best approach. The MCMC has taken note of the concerns expressed by some respondents about the actual implementation of the approach. In order to prevent unreasonable or arbitrary assumptions from entering the LRIC model and affecting its results, the MCMC has taken all the steps within its mandate to involve the industry in building and revising the model to ensure that it fully captures the long-run efficient operation of the established fixed communication network in Malaysia.

The MCMC's conclusion is thus to confirm its preliminary view about the adoption of a "scorched node" approach for the LRIC modelling of fixed network facilities and services. This conclusion is consistent with the approach followed in the previous LRIC exercise. Moreover, in the absence of any indication to the contrary from respondents, the MCMC concludes that a "scorched node" approach is the most pragmatic solution for LRIC modelling of fixed networks.

As for mobile networks, the MCMC takes notice of the fact that many respondents support the adoption of a "scorched node" approach to better capture operator-specific characteristics.

The MCMC confirms that the initial mobile model developed for the costing study did use a 'standard' coverage assumption. This modelling approach was adopted on the basis that, in order to compete in the long term, operators all have to offer a similar coverage. The standard coverage chosen was that of the larger operators. The results from this model show unit costs varying substantially with traffic levels (market shares).

The MCMC agrees with Maxis and SKC that the number of BTSs varies with traffic, and NERA's revised model predicts variations in numbers of BTSs as of the volume of traffic changes. Furthermore, the MCMC notes that confidential operator declarations of BTSs reveal that coverage is correlated with traffic, and NERA's model takes this relationship into account. The model does not therefore use a 'standard' coverage approach in deriving the prices in this report.

SKC also suggested that the model should take account of the different geographic circumstances of each operator. The MCMC observes that selection of geographic coverage is a commercial decision by each operator (excluding Time 2). Accordingly, the MCMC does not accept that choices of geographic coverage made by operators should be specifically accommodated in a series of operator-specific models.

The MCMC is of the opinion that if Time 2 is mandated by factors external to operators, then it may be regarded as an unavoidable cost, and should be included in the LRIC cost estimates. Accordingly, the MCMC has published prices which reflect the increases in cost if Time 2 costs are recovered in part from interconnection. (The MCMC has separately asked for comments in the PI Access Pricing Paper how Time 2 costs should be recovered.)

SKC go on to say that traffic growth will not be the same in different regions, and that geographic averaging will therefore result in incorrect estimation of costs. However, SKC offered no data to support its position. The MCMC does not believe that geographic averaging of traffic growth will cause any serious under or over estimation of costs.

The MCMC's final conclusion on whether LRIC modelling of mobile network should differ or not from the approach followed in the previous access pricing proceedings has taken into account the views expressed in answer to question 31. As a consequence, the MCMC's reasoning for adopting a "modified scorched node" approach in the case of the mobile cost model is discussed in Section 6.

3.6.3. Network component-based approach to LRIC calculation

Question 7: The MCMC seeks comments on its preliminary view that TSLRIC calculation should be based on a network component based approach.

3.6.3.1. Comments received

First Principles urged the MCMC to consider alternative pricing approaches in lieu of LRIC.

Jaring, NasionCom, Maxis, REDtone, TMNet and TIME endorsed the MCMC's preliminary view. Jaring however submitted that there should be a verification process regarding the capacity that each network component can handle. Maxis commented that greater transparency is necessary to ensure the completeness of the network components included in the model and the correctness of the routing factors used. Maxis further argued that the routing factors should be made available for comment as they will impact the final cost figures. TMNet added that the TSLRIC calculation should be consistent with the principle of cost causation but should also identify the costs that will be incurred in the future and provide a defined additional increment of a given service.

Celcom and Telekom agreed with the use of a TSLRIC calculation based on network components for mature, standard network architectures and services, such as PSTN and mobile. Celcom, however, expressed the view that the network component-based approach is unsuitable for new and developing network/services where equipment prices are unstable and vary among vendors.

Telekom observed that the LRIC models presented in the PI for some of the ALD services in fact were not based on the network component-based approach. In particular, in the case of Access Network Element (ANE) Bitstream services, Telekom pointed out that many of the network components required to provide the service (e.g. ATM switching and multiplexing, IP routing and BRAS function) were not modelled and did not exist as inputs to the ANE model.

3.6.3.2. The MCMC's final views

First Principles' claim that the MCMC did not consider any other alternative approach to access pricing has been already dealt with in Section 3.5.2.

Regarding Jaring's concern, the MCMC reiterates that LRIC modelling was based on prudent estimates of the capacity each network component can handle in the busiest period, which have been derived firstly from the Taskforce submissions and secondly from industry evidence from around the world.

The MCMC concurs with Celcom's remark that, as far as innovative services are concerned, the network-component based approach produces LRIC estimates which should be considered only as indicative, and not a basis for access pricing policy.

As for Telekom's point, it was the MCMC's intention to calculate a Bitstream access charge that did not include all the elements listed in Telekom's comment. The MCMC's rationale was to focus only on those network elements for which the cost of duplication is likely to be prohibitive for new entrants. In practice this means those network components between end-user premises and the closest point to the end-users to which an entrant can viably connect its IP network. Taking this into account, the positions of Telekom and the MCMC do not appear to contradict one another. The prices of the elements listed by Telekom are not subject to regulation; the access seeker will either have to self-provide or procure them on a commercial basis or from the access provider of the Bitstream service itself.

In conclusion, given the broad consensus in the industry on the issue, the MCMC confirms its preliminary view about the adoption of a network component-based approach to LRIC calculation.

3.6.4. Treatment of shared, common and indirect costs

Question 8: The MCMC seeks comments on its preliminary view regarding the treatment of shared fixed costs, common fixed costs and indirect costs.

3.6.4.1. Comments received

Celcom and Telekom agreed that the approach adopted by the MCMC appeared to be appropriate and consistent with the data which had been provided by the industry. Telekom also agreed that there was insufficient information on price elasticities to perform a meaningful study of Ramsey pricing.

Fiberail submitted that fixed shared and common costs and indirect costs must be included when estimating access prices in order to ensure adequate cost recovery. Also the unique position of the location of their network and nature of business as per their response to Question 2 should be taken into consideration. If these factors were not taken into consideration, businesses such as Fiberail would be left to subsidise the access seeker for their use of Fiberail's facilities/service without an opportunity to recoup on common costs via retail services.

First Principles expressed no view on the matter but asked that clarification be provided on the term "uniform". First Principles indicated that the term "uniform" mark ups does not necessarily mean that they are equal to one another ("equi-proportionate").

Jaring did not indicate its agreement or disagreement with the MCMC's preliminary view but argued that the international best practice figures applied by the MCMC should be shared with operators to give them comfort that the figures are based on efficient operating practice and governance.

Maxis had no disagreement with the MCMC's view on the treatment of shared fixed costs, common fixed costs and indirect costs. Maxis however expressed its concern that the level of common (fixed) costs in relation to the total costs in the model for mobile networks appears to exceed the 3% - 5% level typically found in other mobile models. Maxis suggested that this may be attributed to the fact that all mobile site related costs were treated as common costs, which did not reflect the reality of planning and building a mobile network.

While acknowledging that a Ramsey pricing approach may be complex and potentially controversial, NasionCom, REDtone, and TIME disagreed with the MCMC's rejection of such an approach on the grounds of its complexity and suggested that there are now more sophisticated econometric studies yielding estimates of elasticities that are within a range that regulators may accept as a reasonable basis for decisions.

3.6.4.2. The MCMC's final views

The MCMC acknowledges that, in principle, allocation of indirect, shared and common costs via Ramsey pricing has desirable properties in terms of short-term allocative efficiency.

However, the MCMC reiterates that implementation of Ramsey pricing requires access to detailed information on the determinants of demand. Even in developed countries where sophisticated record-keeping is available among the operators, regulators have opted for the more practical EPMU approach. For instance, mobile termination rates in the United Kingdom, which have been included in every benchmark presented by respondents (including those supporting the implementation of Ramsey Pricing) have been calculated applying an EPMU. Indeed, no respondent was able to indicate any instance in the communications industry where a Ramsey approach had been used to allocate common costs.

In conclusion, in order to allow recovery of indirect, shared and common fixed costs, the MCMC confirms that it will retain the approach of marking-up LRIC estimates using the EPMU methodology.

3.6.5. Geographically averaged access prices

Question 9: The MCMC seeks comments on its preliminary view that TSLRIC rates should be geographically averaged.

3.6.5.1. Comments received

Celcom and Telekom argued that the geographical averaging applied in the calculation of TSLRIC rates for all facilities/services is not appropriate when the provision of some facilities/services such as network co-location is highly location-dependent. Telekom made the point that the issues considered by the MCMC in the discussion on the Infrastructure Sharing service in the PI Access Pricing Paper (i.e. individual site costs) should also be considered for all potentially location dependent services. Both Celcom

and Telekom urged that the decision whether to impose geographically averaged access prices should be reviewed on a service by service basis. Telekom also indicated that commercial negotiation allows service providers to offer prices that are specific to locations (de-averaged), demand and time of day.

Celcom's consultant, SKC, answered this question by arguing that the MCMC should implement a scorched node approach to LRIC modelling to capture precisely differences in access costs due to existing operators' differing decisions regarding network coverage.

Fiberail, NasionCom, REDtone, and TIME observed that the cost of facilities might differ from one geographic area to another and indicated that there may be a need to examine the issues associated with averaging the costs as averaging may not be directly practicable. These three operators urged the MCMC to consider using a weighting system, in addition to the averaging method, as a way of providing a cross check on the numbers.

Fiberail and First Principles remarked that, before imposing geographically averaged access prices, it is necessary to determine their impact on investment decisions. First Principles argued that the approach may adversely affect the development of facilities and infrastructure in underserved areas or areas where demand is less intense, thus exacerbating the Digital divide problem in the country.

Fiberail further argued that, if geographically averaged prices are applied, satisfactory assumptions must be used.

Jaring and Maxis concurred with the MCMC's preliminary position. The latter operator suggested that the rate should be set at a ceiling, allowing access seekers and access providers to negotiate geographically differentiated access prices.

3.6.5.2. The MCMC's final views

The MCMC concurs with those respondents that argued that the decision about imposing geographic averaged or de-averaged access prices should in principle be taken on a service-by-service basis. However, the MCMC confirms that, at this stage in the industry's development, it is not generally practical to build reliable TSLIRC models which can accommodate geographic differences and to implement geographic-specific access prices. While confirming its preliminary view, the MCMC states that it has looked into the opportunity/practicality of a geographic de-averaged approach for each service where this differentiation was applicable.

3.6.6. Depreciation Methodology

Question 10: The MCMC seeks comments on its preliminary view to use tilted straight line depreciation method.

3.6.6.1. Comments received

All respondents broadly agreed that tilted straight-line method is the most practical approach to approximating economic depreciation.

Celcom was also of the view that there should be clear principles on how the tilt is determined, i.e. it should not be arbitrarily determined.

Fiberail and TMNet submitted that the tilt should be set to allow early recovery of capital costs due to price changes and unexpected obsolescence.

NasionCom, REDtone, and TIME further pointed out that adequate consideration must be given to how changes in asset prices are determined and that the process of obtaining the information must be independent of operators. NasionCom further added that the Malaysian Accounting Standards Board had begun adopting new International Financial Reporting Standards (IFRS) which put more emphasis on the fair value of assets employed.

Telekom made the point that the calculated annual costs of equipment and hence services are very sensitive to the parameters used to derive depreciation. It noted that it had not been able to determine from the models that it had viewed how information on different types of equipments (for example prices derived from contracts between operators and their network component suppliers and asset lives) had been combined to determine depreciation profiles. It also expressed doubts about whether it was appropriate to average such information.

DiGi suggested that the MCMC might wish to consider the application of operator-specific depreciation profiles. DiGi observed that this approach had led the regulator in the United Kingdom to set different termination rates for 900/1800 MHz networks and 1800 MHZ networks.

3.6.6.2. The MCMC's final views

The methodology employed to compute depreciation profiles has been shared with the Taskforce members during the 2005 costing exercise. The calculation has used information provided by different operators to arrive at representative equipment price changes and asset lives and hence representative depreciation profiles. The MCMC believes that this approach is superior to focussing on operator-specific depreciation profiles, since it prevents unrealistically high or low equipment price changes and asset lives from distorting the costs derived from the LRIC model.

In conclusion, taking into account the unanimous consensus about the proposal to continue employing the depreciation methodology used in the previous costing exercise, the MCMC confirms its preliminary view.

4. TSLRIC FOR FACILITIES/SERVICES OVER FIXED NETWORKS

4.1. Cost of capital

Question 11: The MCMC seeks comments on the WACC for fixed network and whether the parameters used to compute it are reasonable in the Malaysian context.

4.1.1. Comments received

Jaring agreed with the MCMC's preliminary view.

NasionCom, REDtone and Time argued that the computation of the WACC partly depends on the assumptions, which should be made known so that the derivation of the WACC can be better understood. These include the underlying data used to obtain the value of beta and also the rationale for the assumption of a 24% gearing ratio and whether this is reflective of the industry average or the capital structure of one of the operators. They also commented that a WACC of 11.15% seemed reasonable but wanted the MCMC to explain how it was derived.

Maxis argued that the value of beta will differ significantly between fixed and mobile businesses. Maxis believed that the fixed network beta should be significantly less than 1 for the following reasons:

(a) A greater proportion of revenues is regulated, which will ensure more stable rates of return in the long-run;

(b) Generally, the fixed network is more established and mature and regulation of it is better understood than mobile regulation. This reduces the perception of risk by investors that returns will be affected by changes in the regulatory environment;

(c) Lower level of competition reduces the commercial risk of the fixed network; and

(d) Demand for fixed network services is more stable and less unpredictable.

Telekom argued that, based on the assumptions and calculations stated in the PI Access Pricing Paper, the figure for WACC should be 10.33% rather than 11.15%. Telekom also

suggested that the MCMC should consider a higher WACC of 12.55% based on Bloomberg parameters, analyst reports and Telekom's records. The numbers underlying this calculation were as follows:

(a) Risk-free interest of 4.24%;

(b) Beta of 1.36;

(c) Risk Premium of 8.05%

(d) Market rate of return of 12.29%;

(e) Cost of Equity of 15.19%;

(f) Ratio of Debt to Equity of 24.4%; and

(g) Cost of Debt of 6.1% and tax rate of 28%

TMNet commented that the values of the components used in deriving the rate of return for WACC of 11.15% are subjective and the rates should be reviewed periodically. It suggested that, in the current situation, a higher WACC is required to recoup costs and also to provide incentives to reinvest in quality and advance technology to support future requirements.

4.1.2. The MCMC's final views

The MCMC notes that most respondents broadly agreed with its proposal.

The MCMC wishes to offer the following clarifications. The WACC estimate was derived by NERA based on a consistent and objective methodology. The final WACC estimate relies on Bloomberg data as reported on 26 June 2005.

In calculating the risk free rate, Telekom's cost of debt and gearing, NERA relied on current market evidence. The 24% gearing ratio, to which NasionCom, REDtone and Time refer, is Telekom's gearing ratio and not an industry average. According to the Efficient Market Hypothesis (EMH), which is widely accepted by academics and practitioners, current 'spot rates' reflect all available information. NERA figures for the risk free rate, Telekom's cost of debt and gearing are all based on current market information as reported by Bloomberg on 26 June 2005. Regarding the equity risk premium, NERA relied on the seminal source "Millennium Book II, 101 years of investment returns" produced by LBS / ABN AMRO in 2001. This derives an Equity Risk

Premia (ERP) for each of Australia, Belgium, Canada, Denmark, France, Germany, Ireland, Italy, Japan, Netherlands, Spain, Sweden, Switzerland, UK and USA. The estimates are generally based on 101 years of data and suggest an average ERP across all countries of 6.7%. Regarding the beta estimate, NERA relied on direct market evidence using a domestic share price index, as well as an international Asia Pacific share price index.

From an investors' point of view, the cost of capital should be estimated with reference to the financial market that best represents their investment opportunity set. The most common starting point is the domestic market, but increasingly this should be extended to cover a larger economic region, i.e. Asia Pacific. NERA therefore calculated a beta estimate based on the Kuala Lumpur Composite Index, as well as one based on the Dow Jones STOXX ASIA Pacific 600 (a well-diversified international index comprising the 600 quoted companies in the Asia Pacific region). NERA's asset beta estimate of 0.69 was then derived as the average of these two estimates.

In relation to Telekom's comments on the 11.15% WACC used by the MCMC, the MCMC noted that the parameters used by Telekom to compute the proposed WACC were not the parameters used by the MCMC, hence the difference in the final figures reached.

Regarding Maxis' response, the MCMC notes that the fixed network beta is below 1. This figure has been determined using publicly available market information that takes account of the factors listed by Maxis, to the extent that they correspond to reality (which is not the case for the alleged stability of traffic on fixed networks, which has been declining in recent years).

4.2. Model options

Recognizing that the assessment of efficiently incurred operating expenses is quite a complex task, the MCMC decided to run the LRIC model under three different assumptions for the calculation of operating expenses:

- **Option 1**: operating costs based on information provided by the Taskforce;
- **Option 2**: operating costs calculated as the simple average of the values under Option 1 and corresponding values in the USA reported by the Federal Communication Commission (FCC);
- **Option 3**: operating costs set equal to the values used to derive TSLRIC in the 2001 LRIC models developed by the MCMC.

The MCMC expressed a preliminary preference for adopting Option 1 since it should more closely reflect the Malaysian context.

Question 12: The MCMC seeks comments on its preliminary view to adopt Option 1 as the basis for setting access prices.

4.2.1. Comments received

Celcom supported the MCMC's preliminary view that Option 1 should be adopted as it uses data from fixed operators in Malaysia.

DiGi supported the MCMC's preference for Option 1 and noted that the MCMC's estimates of costs associated with fixed termination had risen since the last costing exercise was completed in 2001. DiGi wanted the MCMC to explain the justification for assuming an overall increase in cost bearing in mind that the figure used is mainly "derived from a single operator in a monopsonistic environment."

DiGi also expressed some concerns about the increase in access prices, which contrasts with what has happened in the rest of the world, where most rates have remained static or declined fractionally since 2001. In addition, DiGi commented that the MCMC's proposed price changes will push termination rates significantly above the average for a group of European and Asian countries, especially so in the case of single and double tandem prices. DiGi therefore suggested that the MCMC revisit the operating cost figures used for the fixed network.

Jaring noted that the cost of switching elements was almost double as compared to the cost in the previous study in 2001. Jaring suspected that there may be some duplication of deployment that has caused the increase, which runs counter to the industry trend. Jaring believes that it is due to inefficiency which needs to be investigated. Jaring disagreed with adopting Option 1 and is inclined to move towards Option 2 or 3.

NasionCom, REDtone and TIME noted that the Taskforce had very limited resources to verify the data and strongly supported the use of a benchmarking exercise to ensure that:

(a) the estimates are not overstated by the operators;

(b) there are adequate checks and balances that ensure the accuracy of the LRIC calculation;

(c) the results from the Taskforce are consistent with those in the retail market.

In the absence of the above, NasionCom proposed that the MCMC adopt Option 2 to derive the proposed access prices.

Maxis opposed adopting Option 1 and argued that the use of Option 2 would be more appropriate. Maxis asserted that Option 1 would be contrary with the principles of LRIC, which is intended to compensate an operator for the costs of reasonably efficient operation. Whilst recognising that the FCC data come from efficient operators with a long-standing history, Maxis also noted that operating costs in one country may not be reflective of those in another. However, the significant differences in productivity are often offset by differences in labour costs. The practice of compensating an operator for its actual level of costs rather than its reasonably efficient costs would produce little incentive to improve efficiency over time. In supporting Option 2, Maxis suggested that the MCMC consider developing 'incentive compatible' interconnect pricing principles, by which it means a mechanism which will ensure that the incentives faced by the regulated entity are compatible with the welfare of customers, industry and the economy. Maxis suggested two ways to develop incentive compatible pricing principles: i) the regulator could introduce a price cap taking into account the general index of prices and expected annual efficiency gain for a period of time; and ii) it could commit to compensate the operator for the estimated costs of reasonably efficient operation rather than the actual costs.

Telekom argued that there is no justification for regarding Options 2 or 3 as representing the realistic costs of Malaysian operators in 2005. Although it agreed with the adoption of Option 1, it considered that the key costs used in the LRIC model were underestimates of actual costs. Telekom indicated that the values used in the model were not the operating costs provided by them and assumed that they were an average of costs of fixed operators in Malaysia. However, operating costs in Malaysia varied from relatively low values for small efficient operators up to fairly high values for Telekom, which provided a national service. Hence, in Telekom's view, the numbers used in the model are an underestimate of true costs. As the model is a scorched node representation of Telekom's fixed network, services should be costed with the appropriate operating costs as supplied by Telekom.

The most significant departures from Telekom's costs occurred in the case of trenching and overhead lines. Telekom requested that the MCMC revisit the operating costs as it suspected that the there were errors associated with averaging or the use of undeclared benchmarks.

The operators also queried whether increased costs had been declared by the Taskforce, and how the cost data had been verified as part of the modelling process.

4.2.2. The MCMC's final views

The MCMC observes that the access price increases that Maxis considered to be unexpected can be explained by the reduction in traffic volumes in the fixed network.

The MCMC remains sceptical that benchmarks can be effectively used to set access prices for the Malaysian industry since there is a lack of suitable basis for comparison whose prices are reasonable proxies of cost-oriented rates. Evidence of this is provided by the reliance of respondents on mainly European data when providing benchmarks.

The assertion by Maxis that Option 2 represents efficient operating costs in Malaysia more accurately than Option 1 because differences in productivity between Malaysia and the USA are approximately offset by counterbalancing differences in labour costs has not been substantiated with any evidence.

Contrary to what Telekom argues, there is also no reason why, because a scorched node methodology had been used, this requires the actual costs of Telekom to be used in the model. The use of scorched node still requires that equipment is correctly dimensioned and operated efficiently.

The MCMC has employed operating factors provided by other fixed operators in Malaysia to refine its estimate of the level of efficiency achievable by Telekom. Any discrepancy between Telekom's own declared operating cost factors and those used in the model cannot be interpreted as an under-estimation of the actual value of costs; rather it represents the efficiency level that ought to be achievable by a company running a very similar network.

The MCMC would like to reiterate that NERA undertook validation checks of the data and would also like to clarify how this process was carried out. Firstly, the data was checked to see that it fell within the ranges expected. Many of the equipments and processes used in operating a network are similar across countries, and NERA was able to draw on its knowledge of costs elsewhere to assess the validity of the cost data. Where the data fell outside the ranges expected, NERA queried the sources for the data. This resulted in either data revision or continued use of the data if the operator had been able to substantiate it. Secondly, data for one company was compared with data submitted by other Licensees. Where the differences in value were substantial, NERA queried the sources for the data, resulting in revision or substantiation. There were very few instances (none of which affected every part of the model) in which the justification for a

submitted data item were not accepted – in these instances NERA substituted either a value from another operator or, as a last resort, a value from another jurisdiction. As a result of this process, NERA was satisfied that the data was realistic. The MCMC maintains that the data validation process remains practical in the circumstances and confirms its preliminary view that Option 1 should be adopted as the basis for setting access prices for all fixed network services.

4.3. Fixed Network Origination/Termination Services

Question 13: The MCMC seeks comments on its preliminary view as to whether a LRIC approach should be adopted and option 1 is the most appropriate model run for setting access prices for fixed origination/termination services.

4.3.1. Comments received

Celcom agreed that TSLRIC is the appropriate methodology for setting prices for well established fixed network services such as origination and termination. However, Celcom doubted the forecast change in prices of fixed origination/termination services and the TSLRIC calculation for fixed SMS termination costs, which appeared unrealistic.

DiGi agreed with the adoption of LRIC. However, it is essential that the cost data employed is credible. DiGi argued that, where there is substantial variation in the input costs provided, either between operators or as compared with 2001, the MCMC needs to be aware as to whether such variation is justified and whether the cost estimates derived from the model are appropriate. DiGi also proposed that the MCMC conduct careful analysis of the pattern of investment which will result from higher access prices.

First Principles suggested the use of alternative access pricing mechanisms such as a "retail minus" approach.

Jaring did not have a position on the MCMC's preliminary views but commented on the use of the LRIC model, which assumed that capital equipment will be used to full capacity and that there will not be changes in technologies and standards. This may not be appropriate for IP and wireless. Furthermore, there is no mechanism to verify the efficiency of the model by considering utilisation of capacity by an efficient operator. Therefore, Jaring was of the view that the MCMC should not adopt the prices shown in the PI Access Pricing Paper as it runs the risk of condoning inefficient rates which will not be in the interest of the end user.

Maxis was of the opinion that the adoption of LRIC for setting fixed origination/termination prices is the most appropriate approach. As the services are well established bottleneck services pricing cannot be left to the market. However, Maxis reemphasized that Option 2 would be more appropriate than Option 1. Maxis was concerned about the SMS termination rates reported in Table 25 of the PI Access Pricing Paper, which appeared to be 100 times higher than the highest mobile SMS termination rate. Maxis observed that, as termination of SMS on fixed networks is not a well-established service and the volume of traffic is relatively low, LRIC costing is not appropriate for such services.

NasionCom, TIME and REDtone noted that the accuracy of LRIC is dependent on the data inputs rather than the methodology. Therefore the information obtained from the operators must be checked against external benchmarks to determine the accuracy and validity of the data submitted. In the absence of appropriate benchmarking, Option 2 should be used as a basis for setting access prices for fixed origination/termination services.

In addition, TIME highlighted that the retail prices for fixed network services which are regulated by the Rate Rules are currently being reviewed. Consequently, TIME proposed that any revision of the access prices should result in an appropriate revision of the Rate Rules to ensure that the margins of fixed network operators are not eroded.

Although Telekom agreed that the approach proposed is the most appropriate methodology for setting access prices, it disagreed with the forecast downward trend in the prices of fixed origination/termination services (Table 4.2 of the PI Access Pricing Paper) and the TSLRIC calculation of fixed SMS termination costs (Table 4.3 of the PI Access Pricing Paper). Telekom argued that these figures do not take into account Malaysian demand trends, which are heavily influenced by fixed-to-mobile substitution.

4.3.2. The MCMC's final views

Regarding voice call origination/termination services on the fixed network, most operators agreed with the MCMC that voice call origination and termination are well-established bottleneck services for which LRIC-based access prices are still needed.

Given that the PI process did not reveal any new factors that contradict the MCMC's preliminary view about these services being well-established and having bottleneck characteristics, the MCMC concludes that they still warrant LRIC-based access pricing.

The MCMC does not agree with the views of the industry regarding the new LRIC charges, which some deemed to be too low while others considered the charges to be too high.

The MCMC noted TIME's comments and will take it into consideration when the rates in the Rate Rules are reviewed.

The MCMC can confirm these are LRIC estimates of costs in the Malaysian context. In 2001, in the absence of any evidence of unavoidable costs, the MCMC employed operating cost assumptions provided by the efficient members of the Taskforce. The MCMC accepts that there are unavoidable costs incurred by operators, and since these costs cannot be avoided no matter how innovative the operators are, these costs represent efficiently incurred costs which should be taken into account in the LRIC methodology. Accordingly, the MCMC has selected the model run which reflects Taskforce operating costs. This model run gave rise to the fixed origination and termination rates in Table 4.1 of the PI Access Pricing Paper.

Running the model to reflect Taskforce operating costs now produces fixed origination and termination charges which are around 0.3% lower than the rates published in the PI paper. This change in LRIC cost estimates arises not because of any change in the LRIC modelling of origination and termination *direct costs*, but because the share of *common costs* borne by the origination and termination services has reduced very slightly. As a result of remodelling of the access network to address operators' concerns about 'fill factors' (described in sections 4.5.2 and 4.6.2), the costs of the Access Network have risen. Common costs, which in this case can be thought of as a constant 'pool', are allocated to each service using an equi-proportional mark-up. Consequently, the (now more expensive) access network bears (and is allocated in the model) a higher proportion of common costs than it did before, and the share of common costs borne by all other services reduces very slightly. The revised rates are shown in the tables, and will be seen to differ slightly from the rates published in the PI paper.

The MCMC acknowledges that trends for PSTN traffic originated/terminated on fixed networks are going to be influenced by industry-wide developments (among which are mobile take-up and VoIP use) which might reduce volumes carried. However, this need not be the case if the decline in fixed penetration ceases. Indeed, the MCMC cannot rule out the possibility that the new voice interconnection prices may result in increased fixed-line penetration.

A guiding principle for MCMC is that unavoidable costs should be recovered, while inefficient or sub-optimal choices should not be rewarded. Access prices should not be inflated if operator choices have led, perhaps, to excessive traffic loss. Estimates of

access prices for fixed network services will be affected by assumptions about expected traffic levels. The model can be run either accepting Telekom's prediction of traffic decline, or with adjustment of its prediction. Before making a decision about which model run to use for access pricing, the MCMC must consider what the likely development of traffic will be.

Faced with traffic decline, operators have three obvious choices. One choice is to do nothing, and let the traffic continue to decline. A second choice is to contest the traffic, by providing compelling propositions to businesses and consumers for fixed line calling. A third choice is to grow the traffic, or at least, grow the sources of traffic, by installing more lines and fulfilling presently unmet demands.

An example of the potential for new lines to create new traffic is dial-up internet. There is a possibility that a proportion of the existing customer base that uses dial up service may choose to move to broadband. If this is the case for existing lines, a decline in dial up internet traffic may occur. However, if new lines are installed, a proportion of these may make dial-up internet calls. This will in turn result in an increase in traffic.

Aside from line and traffic growth, traffic decline may also be contested by offering better value calling packages than are offered by competing operators.

The MCMC does not accept that the rate of traffic decline predicted by Telekom is either correct, or unavoidable. For this reason, the MCMC will continue to assume that traffic declines in 2006 in line with Telekom's expectations but remains constant during the subsequent two years. This assumption reflects the reasonable expectation that increased line penetration, following implementation of a formal access deficit scheme, will introduce new traffic, and also provides an incentive to contest the traffic decline.

Taking all the above considerations into account, MCMC concludes that has the access prices for fixed network origination and termination services (voice calls only) which originates and terminates on PSTN network should be mandated. The prices should be on a 24 hour weighted averaged basis determined based on LRIC.

The new maximum prices will be as follows:

Table 4.1: Fixed Origination

	Sen per minute		
	2006	**2007**	**2008**
Local	2.95	2.63	2.52
Single Tandem	6.61	6.17	6.07
Double Tandem	10.41	9.85	9.77
Double Tandem with Submarine cable	24.82	24.71	25.09

Table 4.2: Fixed Termination

	Sen per minute		
	2006	**2007**	**2008**
Local	2.95	2.63	2.52
Single Tandem	6.61	6.17	6.07
Double Tandem	10.41	9.85	9.77
Double Tandem with Submarine cable	24.82	24.71	25.09

Regarding SMS termination, the MCMC would like to clarify that the figures quoted in Table 4.3 of the PI Access Pricing Paper had been mislabelled as Sen per SMS message instead of hundredths of a Sen per SMS message.

MCMC's final view is that the access price for fixed network (PSTN) SMS termination service should not be mandated for the time being. The consultation process provided evidence that the service is still quite new, which affects the precision with which LRIC forecasts can be made given the uncertainties surrounding demand for the service over the next few years. The MCMC will, however, monitor industry developments to prevent any unfair, discriminatory access arrangements.

4.4. Equal Access (PSTN) Service

Question 14: The MCMC seeks comments on its preliminary view as to whether the LRIC approach should be adopted and option 1 is the most appropriate model run for setting access prices for Equal Access (PSTN) service.

4.4.1. Comments received

Celcom and Telekom supported the MCMC's preliminary view that, as Equal Access (PSTN) Service is an established PSTN service, TSLRIC is the appropriate methodology to use for costing purposes. However, Telekom also stated that the Equal Access service should be removed from the ALD because given the growth of VoIP services, there is no longer a bottleneck issue that needs to be addressed. Analysis also showed that both operators and consumers have little interest in taking up the Equal Access service.

DiGi strongly opposed the proposed increase in access prices, requesting that justification be provided for the basis of the calculation.

First Principles argued that the service should be subject to competition rules rather than ex-ante regulation.

In disagreeing with the MCMC's preliminary view, Jaring suggested that access pricing should be set on the basis of operating costs that are between those supplied by the Taskforce and the FCC-based efficiency estimates (i.e. Option 2), and should be determined taking advantage of benchmark information.

NasionCom, REDtone, Maxis and TIME agreed with the MCMC's preliminary view on LRIC based access prices. However, they should be based on operating costs corresponding to Option 2. In addition, Maxis cited that the LRIC approach is appropriate on the basis that the assets in question are unlikely to be replicated in the medium term.

TIME remarked that it is unacceptable for the Equal Access price to be more or less equivalent to the access price for fixed network termination service, given that the customer base and traffic are significantly lower. TIME also suggested that the requirement to have a dedicated POI should be ended as equal access is already a failure. Take up had been minimal because the cost of establishing a dedicated POI is

very high. Furthermore, voice calls provided by ASPs are cheaper. TIME suggested that flexibility should be allowed to operators to choose whether they would provide the service or not. The pricing of Equal Access service should, in TIME's opinion, be based on Option 2.

4.4.2. The MCMC's final views

The MCMC disagrees with Telekom's view that the emergence of VoIP means that Equal Access is no longer a bottleneck service. If this were the case, the conclusion would have to be extended to Fixed Origination as well, since the two services differ only because the former is accessed via a short prefix code. This appears to contradict Telekom's position in answering question 13, where it argued that Fixed Origination prices should be derived using LRIC, which implicitly assumes that Fixed Origination is a bottleneck service.

Competition rules per se are not sufficient to deal with the market failure that is associated with bottleneck services. Consequently, the MCMC does not accept First Principles' position.

Although many operators concur that Equal Access requires LRIC-based access pricing, they are dissatisfied with the access prices proposed (Option 1) because they represent an increase as compared to current levels, and, as a consequence, support the use of Option 2 or other pricing approaches (e.g. the use of operating cost benchmarks suggested by Jaring).

The MCMC remarks that the increase in the rates as compared to the 2001 costing exercise can be fully explained by the lower traffic volumes, the higher fixed WACC as estimated using publicly available data and established techniques, and operating cost factors that takes into account of Telekom's GLC obligations. As a consequence, the MCMC's view is not to accept the position of those access seekers who support the implementation of Option 2.

The MCMC reiterates that benchmarking is not well suited to producing a good proxy of LRIC based prices, given the lack of a sizeable set of suitable comparator countries where prices are set at or close to LRIC.

The MCMC has taken note of non-price issues that might adversely affect service take-up. As for pricing issues, the MCMC confirms its views that this is a well-established bottleneck service, which warrants LRIC-based access prices.

MCMC concludes that has the access prices for Equal Access (PSTN) Services (voice calls only) should be mandated. The prices should be on a 24 hour weighted averaged basis determined based on LRIC.

The maximum prices will be as follows:

Table 4.3: Fixed Equal Access

	Sen per minute		
	2006	**2007**	**2008**
Local	2.95	2.63	2.52
Single Tandem	6.61	6.17	6.07
Double Tandem	10.41	9.85	9.77
Double Tandem with Submarine cable	24.82	24.71	25.09

4.5. Interconnect Link Service

Question 15: The MCMC seeks comments on its preliminary views as to whether access prices should be in an intermediate position between LRIC and FDC for the Interconnect Link service.

4.5.1. Comments received

Celcom disagreed with the MCMC's preliminary view. Instead, it supported the use of FDC for setting prices, with some components that allow for the fact that costs will vary by site and location.

Fiberail commented that the LRIC price calculated by the MCMC is based on the cost per km of a copper pair used in 64kbit/s Private Circuit Completion Service. This calculation includes allocating the costs of trenching across a large number of customers and is therefore inappropriate for Interconnect Link service costing. This approach underestimates other costs such as civil works, rights of way and cable maintenance costs. Therefore, Fiberail was of the opinion that either FDC or an intermediate position between LRIC and FDC should be adopted.

First Principles argued that the service should be subject to competition rules rather than ex-ante regulation.

Jaring expressed its preference for LRIC-based access charges.

Maxis agreed that LRIC is not an appropriate choice for the Interconnect Link services because these are facilities that can be competitively provided. Maxis believes that barriers to entry are low and Interconnect Link service should be provided on commercial terms, while recognising the importance of the location of the facilities, as rural and remote areas experience different competitive conditions as compared to other major commercial areas. Maxis cautioned that, if there is any regulation of these services, it should only be for a period not exceeding one year and recommended that the price should be based on FDC although there is very little economic rationale for the use of FDC as a basis of access prices. In general, it believes that a retail-minus approach is recommended for pricing where analysis of the competition and entry conditions indicates LRIC to be inappropriate. However, it recognised that this would be inapplicable here because there is no retail service. An alternative recommended by Maxis was to cap the price at the stand-alone cost of providing the service.

NasionCom and REDtone suggested implementing LRIC charges based on the Option 2 model run.

Telekom pointed out that the cost numbers published in the PI Access Pricing Paper were well below costs for most of the links in Telekom's network. LRIC modelling of this service requires a large number of assumptions about cost drivers to allocate infrastructure costs to fibres or copper pairs in a cable, which tend to make the whole estimation quite arbitrary. The calculated TSLRIC price is highly sensitive to changes in the philosophy or rules for this allocation. Moreover, Telekom observes that geographical differences in the provision of this service are quite large; hence geographical averaging should be avoided. For these reasons, Telekom disagreed with the MCMC's preliminary position and suggested that access prices should be set on the basis of commercial pricing encompassing other aspects of the service such as ordering, performance level, service restoration and method of service activation.

TIME expressed the view that, in the absence of an FDC based price and guidelines for the implementation of a glide path, a LRIC based price would be preferable.

4.5.2. The MCMC's final views

The MCMC recognizes that LRIC modelling of the Interconnect Link Service relies on a set of cost-driver rules that need to be correctly identified and specified. Regarding such rules, the MCMC welcomes the feedback received during the PI period, which allowed the LRIC modelling to be improved; especially as far as fill factors are concerned.

The MCMC notes that the cost data employed in the models included civil works costs and cable maintenance costs.

In the MCMC's view, right of way costs are specific to certain routes. In the case that these render some networks more expensive to build or operate than other networks, customers would be expected to buy service from the cheaper networks. Thus, in a competitive market, a network operator would not be able to recover right of way costs if these increased his prices, and the correct treatment is to exclude such costs.

The MCMC is of the view that the access prices for Interconnect Link services should not be set on a geographically de-averaged basis. To derive Interconnect Link cost-based prices that varied on a case by case basis would be a very complex task, the costs of which would far outweigh the benefits. Equally, it would be inappropriate to allow the setting of prices to be determined by the market, given that the market is not fully competitive.

The MCMC concludes that the Interconnect Link Service should be mandated. The MCMC is of the view that a gradual approach should be adopted over a 3 year period to facilitate the implementation of LRIC prices. The 2006 price is estimated based on current prices. The 2008 price is based on LRIC. The 2007 price has been calculated as an intermediate point between the 2006 and 2008 prices. The prices for Interconnect Link Service are applicable for in span interconnection. For fully managed Interconnect Link, reference should be made to DNTS prices.

The maximum prices will be as follows:

Table 4.4: Interconnect Link

	RM per year per km		
	2006	**2007**	**2008**
Link employing a fibre cable	850	907	932
Link employing a copper cable	654	703	722

4.6. Private Circuit Completion Service

Question 16: The MCMC seeks comments on its preliminary views that access prices should be based on LRIC for analogue PCCS and gravitate towards FDC for digital PCCS.

4.6.1. Comments received

Celcom's view was that FDC-based access charges should be adopted for both analogue and digital PCCS.

First Principles argued that the service should be subject to competition rules rather than ex-ante regulation.

Jaring's view is that LRIC-based charges should be used for both analogue and digital PCCS and it does not agree to the use of glide path costing for digital PCCS, as this is a well-established and matured service.

Maxis advocated LRIC-based charges for both analogue and digital PCCS on the basis that they are well-established services and have enduring bottleneck characteristics.

NasionCom and REDtone agreed with the MCMC's preliminary position.

TIME rejected the MCMC's preliminary position citing the fact that Telekom has significant market control over the facilities and claiming that the MCMC has not provided any rationale to differentiate the costing methods. It did not, however, indicate any preference for alternative access pricing approaches.

Telekom asked for clarification regarding which charges in Table 4.9 of the PI Access Pricing Paper are those associated with analogue service. It commented that the LRIC charges in Table 4.9 of the PI Access Pricing Paper are, in its opinion, derived from an incorrect set of assumptions, without expressing any view about the proposed differential treatment of analogue and digital PCCS service. Telekom suggested that access charges must be set on the basis of commercial pricing developed in conjunction with Telekom's wholesale division.

Telekom also raised a number of detailed points about the way that PCCS costs were calculated in NERA's model. In particular, it argued that: i) installation costs were not sufficient to cover the costs of labour and testing; ii) annual port costs did not allow for actual system fill factors and efficiencies; iii) the costs of annual tail segments did not allow for the necessary fill factors; iv) the validity of NERA's approach to estimating the cost of trunk segments may be questionable when it is applied to high bit rate circuits (155 Mb/s); and v) the assumptions about capacity gradients were inappropriate.

4.6.2. The MCMC's final views

The comments from Telekom enabled the LRIC model to be adapted to capture more precisely the labour-related installation costs, the impact of fill factors that are more realistic in the Malaysian context, and capacity and distance cost gradients.

The installation costs was adjusted to account for longer system commissioning and testing times, while the original model assumption that efficient operators install pre-built, pre-configured and (to a certain extent) pre-tested racks was retained.

Fill factors were adjusted in the model to allow for unused capacity in the access network. The effective or usable capacity limits for all the switching and transmission systems were already taken account using Malaysian utilisation ratios provided by the Taskforce.

Capacity distance gradients in the cost model were adjusted by separately treating distance sensitive and bandwidth sensitive costs in the algorithm deriving overall service costs. Without altering the cost function, the output was repackaged to resemble the bandwidth and distance proportions currently used in the market.

NERA rechecked the model for higher bandwidth cost derivation, and was satisfied that its results were consistent with the underlying cost structures.

The MCMC notes that many of the concerns expressed by respondents regarding this service were related to LRIC modelling results which, in the MCMC's opinion, have now been addressed.

The MCMC concludes that the PCCS should be mandated. The MCMC is of the view that a gradual approach should be adopted over a 3 year period to facilitate the implementation of LRIC prices. The 2006 price is estimated based on current prices. The 2008 price is based on LRIC. The 2007 price has been calculated as an intermediate point between the 2006 and 2008 prices.

The maximum prices will be as follows:

Table 4.5: Private Circuit Completion (2 Mbps and lower)

	RM		
	2006	**2007**	**2008**
64 kbps			
One-off Installation charge	1,025	854	683
Annual port cost (per end)	4,252	3,543	2,835
Annual tail segment cost (per km)	4,235	3,529	2,823
0 km	613	511	408
Above 0, to 5 km	908	756	605
Above 5, to 10 km	2,421	2,017	1,614
Above 10 to 20 km	4,690	3,908	3,127
Above 20, to 30 km	7,715	6,430	5,144
Above 30, to 40 km	10,741	8,951	7,161
Above 40, to 50 km	13,767	11,472	9,178
Above 50, to 60 km	16,792	13,994	11,195
Additional per km > 60km	103	86	69
2 Mbits			
One-off Installation charge	4,000	2,342	683
Annual port cost (per end)	4,690	3,908	3,127
Annual tail segment cost (per km)	4,235	3,529	2,823
0 km	26,400	14,282	2,165
Above 0, to 5 km	48,870	26,439	4,008
Above 5, to 10 km	61,560	36,124	10,687
Above 10 to 20 km	76,680	48,693	20,706
Above 20, to 30 km	91,800	62,933	34,065
Above 30, to 40 km	106,920	77,172	47,424
Above 40, to 50 km	122,040	91,411	60,783
Above 50, to 60 km	137,160	105,651	74,142
Additional per km > 60km	390	422	454

Table 4.6: Private Circuit Completion (34 Mbps and 155Mbps)

RM

	2006	2007	2008
34 Mbits			
One-off Installation charge	20,000	11,025	2,050
Annual port cost (per end)	25,844	21,536	17,229
Annual tail segment cost (per km)	8,469	7,058	5,646
0 km	205,733	106,580	7,427
Above 0, to 5 km	334,898	173,494	12,089
Above 5, to 10 km	353,255	192,747	32,238
Above 10 to 20 km	354,610	208,536	62,461
Above 20, to 30 km	364,311	233,535	102,759
Above 30, to 40 km	365,072	254,064	143,057
Above 40, to 50 km	373,894	278,624	183,354
Above 50, to 60 km	405,823	314,737	223,652
Additional per km > 60km	1,500	1,435	1,370
155 Mbits			
One-off Installation charge	20,000	11,025	2,050
Annual port cost (per end)	64,624	53,853	43,083
Annual tail segment cost (per km)	8,469	7,058	5,646
0 km	235,124	122,257	9,390
Above 0, to 5 km	818,666	425,680	32,695
Above 5, to 10 km	862,345	474,765	87,186
Above 10 to 20 km	905,212	537,067	168,922
Above 20, to 30 km	927,010	602,457	277,904
Above 30, to 40 km	933,690	660,288	386,886
Above 40, to 50 km	964,891	730,380	495,868
Above 50, to 60 km	1,093,050	848,950	604,851
Additional per km > 60km	4,200	3,952	3,704

4.7. Domestic Network Transmission Service

Question 17: The MCMC seeks comments on its preliminary views that access pricing should fall between LRIC and FDC for the Domestic Network Transmission Service.

4.7.1. Comments received

Celcom's view is that the MCMC cannot rely on the TSLRIC costs calculated for DNTS and should adopt FDC-based access charges.

DiGi stated that setting access prices that approximate to FDC is not appropriate in circumstances where a LRIC computation already leads to a dramatically increased number, substantiated by trends in investment and competitive behaviour. Furthermore, DiGi pointed out that the LRIC output was exceptionally high for all transmission technologies compared to the 2001 cost model and that it is unclear why costs have escalated at a higher rate than traffic volume. DiGi requested therefore that the MCMC should re-examine its approach to DNTS and clarify its intentions towards the services concerned.

First Principles argued that the service should be subject to competition rules rather than ex-ante regulation.

Fiberail is of the opinion that access prices for DNTS should be based on FDC or an intermediate position between LRIC and FDC but definitely not LRIC. Fiberail also suggested setting access charges using international benchmarks to check the reasonableness of the calculations employed in the study.

Jaring, NasionCom, REDtone, and TIME urged the MCMC to apply LRIC-based charges. TIME's preference for this approach was also motivated by the fact that FDC charges were not made known and no guidelines for the implementation of the proposed pricing was offered.

Maxis agreed with the MCMC's preliminary view as far as Peninsular Malaysia is concerned. As for the submarine section and East Malaysia, Maxis argued that greater market concentration in those areas calls for LRIC-based access charges.

Telekom questioned the LRIC charges in Table 4.10 of the PI Access Pricing Paper which, in their opinion, are derived from an incorrect set of assumptions/methodologies. Telekom suggested that access charges must be based on the commercial pricing developed by Telekom in conjunction with the MCMC.

4.7.2. The MCMC's final views

The feedback received during the PI period allowed the LRIC model to be improved to capture more precisely the capacity cost gradient.

The MCMC concludes that DNTS should be mandated. The MCMC is of the view that a gradual approach should be adopted over a 3 year period to facilitate the implementation of LRIC prices. The 2006 price is estimated based on current prices. The 2008 price is based on LRIC. The 2007 price has been calculated as an intermediate point between the 2006 and 2008 prices.

The maximum prices will be as follows:

Table 4.7: Domestic Network Transmission

	RM		
	2006	**2007**	**2008**
64 kbps			
0 km	613	511	408
Above 0, to 5 km	908	756	605
Above 5, to 10 km	2,421	2,017	1,614
Above 10 to 20 km	4,690	3,908	3,127
Above 20, to 30 km	7,715	6,430	5,144
Above 30, to 40 km	10,741	8,951	7,161
Above 40, to 50 km	13,767	11,472	9,178
Above 50, to 60 km	16,792	13,994	11,195
Additional per km > 60km	103	86	69
2 Mbits			
0 km	26,400	14,282	2,165
Above 0, to 5 km	48,870	26,439	4,008
Above 5, to 10 km	61,560	36,124	10,687
Above 10 to 20 km	76,680	48,693	20,706
Above 20, to 30 km	91,800	62,933	34,065
Above 30, to 40 km	106,920	77,172	47,424
Above 40, to 50 km	122,040	91,411	60,783
Above 50, to 60 km	137,160	105,651	74,142
Additional per km > 60km	390	422	454
34 Mbits			
0 km	205,733	106,580	7,427
Above 0, to 5 km	334,898	173,494	12,089
Above 5, to 10 km	353,255	192,747	32,238
Above 10 to 20 km	354,610	208,536	62,461
Above 20, to 30 km	364,311	233,535	102,759
Above 30, to 40 km	365,072	254,064	143,057
Above 40, to 50 km	373,894	278,624	183,354
Above 50, to 60 km	405,823	314,737	223,652
Additional per km > 60km	1,500	1,435	1,370
155 Mbits			
0 km	235,124	122,257	9,390
Above 0, to 5 km	818,666	425,680	32,695
Above 5, to 10 km	862,345	474,765	87,186
Above 10 to 20 km	905,212	537,067	168,922
Above 20, to 30 km	927,010	602,457	277,904
Above 30, to 40 km	933,690	660,288	386,886
Above 40, to 50 km	964,891	730,380	495,868
Above 50, to 60 km	1,093,050	848,950	604,851
Additional per km > 60km	4,200	3,952	3,704

4.8. Internet Access Call Origination Service

Question 18: The MCMC seeks comments on its preliminary views about LRIC being the most appropriate approach for the pricing of the Internet Access Call Origination Service.

4.8.1. Comments received

Celcom's view is that the LRIC estimates as calculated are indicative only and should not be used for setting access charges. However, it did not elaborate on an alternative pricing approach.

Jaring, Maxis, NasionCom and REDtone supported the MCMC's preliminary view about LRIC pricing being the most appropriate pricing approach.

TIME rejected the MCMC's proposal as, in its opinion, the proposed access price is too high given that IACOS traffic is carried on the normal fixed network. It states that, except in respect of the holding time, IACOS is no different from voice PSTN calls. It is of the view that the cost to provide IACOS should be less than, if not equivalent to, that of Fixed Network Termination services, i.e. the LRIC charge for IACOS should not exceed the corresponding LRIC charge for fixed network voice call origination.

Telekom generally agreed with the MCMC's proposed access pricing approach. However, Telekom expressed some doubts about the failure to include DLS switching costs, speculating that this is an attempt to model the costs of an Other Licensed Network Operator (OLNO). In its view, this renders the TSLRIC service price invalid as the per minute cost used is based on a scorched node representation of Telekom's network. This results in the calculated cost being indicative only, as Telekom expects the OLNO costs to be lower than its own actual costs.

TM Net concurred with the LRIC model result, but pointed out that the LRIC-based cost is well above the regulated retail price (1.5 sen per minute).

4.8.2. The MCMC's final views

The comments received during the PI period led to the revision of the LRIC model, which now does not include the use of network components involving the DTS level in the fixed

network node hierarchy. However, it does now include DLS switching costs, which, as correctly observed by Telekom, were not included in the original calculation.

The resulting LRIC cost is still a long way above the regulated retail dial-up rates (for which the 1.5 sen/min price represents only the traffic-sensitive portion of a multi-part tariff). As a consequence, mandating a LRIC price for the service would not be likely to have any material impact on demand for the service and therefore, the MCMC concludes that the price for IACOS should not be mandated for the time being.

4.9. Domestic Connectivity to International Services

Question 19: The MCMC seeks comments on its preliminary views as to the proposed approach to cost DCIS.

4.9.1. Comments received

Celcom agreed with the MCMC's preliminary proposal to set DCIS charges equal to DNTS charges, but suggested that charges be purely FDC-based with an allowance for site specific costs. This is preferable to using intermediate values between FDC and LRIC charges, as this might not result in a realistic price.

DiGi had strong reservations about the basis for the cost estimates and level of supporting analysis behind the recommendations about the LRIC-based charges for DCIS.

First Principles argued that there are enough access service providers in this market to ensure effective competition, hence regulation is unnecessary.

Maxis and Jaring concurred with the MCMC's preliminary position.

NasionCom, REDtone, and TIME had no objections to the MCMC's preliminary view.

Telekom agreed with the MCMC's preliminary position, but reiterated its doubts about the reliance of pricing this service on the basis of LRIC calculations for DNTS and co-location services. Telekom's conclusion, based on studying the DNTS and co-location TSLRIC calculations, is that in both cases the MCMC should choose a wholesale commercial pricing approach with an allowance for site specific costs, and recommended that this approach also be adopted for DCIS.

4.9.2. The MCMC's final views

The concerns about modelling issues about DNTS LRIC charges, which the MCMC proposed to use to determine DCIS charges, have already been addressed in Section 4.7.2.

The MCMC is of the view that Celcom's claim that the proposed pricing approach would not lead to realistic prices is not substantiated by evidence. The MCMC reiterates that the pricing approach has been chosen because the service, while well-established, is not a complete bottleneck as it can be duplicated under certain circumstances.

The DCIS service consists of DNTS and network co-location service. The MCMC's view regarding the pricing of DCIS can therefore be found in Section 4.7.2 and Section 4.10.2.

4.10. Network Co-Location Service

Question 20: The MCMC seeks comments on its conclusion about geographically averaged LRIC being the most appropriate cost base for the pricing of Network Co-Location Service.

4.10.1. Comments received

Celcom stated that co-location services should not be priced using a geographically averaged LRIC approach, but should instead be commercially negotiated on a site by site basis.

Fiberail stated that the use of geographically-averaged access charges may be inappropriate, and proposed instead that the MCMC consider such criteria as urban or rural location, type of building structure, type of facilities provided, etc.

First Principles argued that the service should be subject to competition rules rather than ex-ante regulation.

Jaring concurred with the MCMC's preliminary position.

Maxis was also of the view that co-location services should be offered at freely negotiated terms instead of using a geographically averaged LRIC approach. In the event that regulation is imposed, Maxis urged that rates be based on a site-by-site

pricing approach, as geographically averaged pricing does not reflect variations in the cost of land on which the network premises are sited. Also, Maxis stated that, as LRIC is forward looking, it has to take into account any appreciation of land values rather than the historical acquisition costs. Thus, LRIC costs would need to be calculated separately for each access location in order to obtain costs that are fair to both the access provider and the access seeker.

NasionCom, REDtone, and TIME criticized the implementation of geographically averaged prices as, in their view, such an approach is simplistic and inflexible. Instead, they suggested that weights be assigned for the different geographical locations or a combination of both approaches be used to determine cost.

Telekom disagreed with the MCMC's preliminary view as, in its opinion, the modelling of LRIC charges using only selective building types and the averaging approach would result in Telekom not being fully compensated for costs at many sites. Telekom suggested instead that co-location access prices be commercially negotiated on a site-by-site basis as per the approach the MCMC is recommending for Infrastructure Sharing service.

4.10.2. The MCMC's final views

The MCMC acknowledges the industry concerns about the fact that geographically averaged rates may not best serve the CMA's objectives.

One way to address the concern would be for the industry to contribute reliable, detailed information to allow computation of a simplified location gradient (for instance, urban/sub-urban/rural areas) which can be applied to the geographically averaged rates reported in Table 4.12 of the PI Access Pricing Paper. However, since land prices are constantly changing, there would be practical difficulties in maintaining a valid set of prices.

Maxis' suggestion that location-specific costs should be calculated taking into account appreciation in the value of land is not only likely to be unworkable in practice (it would require a massive data collection, verification and manipulation effort) but it would also risk allowing access providers to take strategic advantage of price trends in the real estate sector (instead of moving network equipment located in high-price property areas in order to reduce costs, the incumbent may hold on to it because it would increase the access seekers' costs). The MCMC therefore does not agree with such an approach.

Finally, the MCMC observes that NasionCom, REDtone and TIME simply suggest a methodology (weighted average) to compute geographically averaged access charges rather than expressing an opinion in response to the MCMC's question.

Reflecting these considerations, the MCMC concludes that site costs should be left to commercial negotiation but indicative prices for the other components of network co-location based on LRIC should be published for use as reference.

The maximum prices for the other components of network co-location service will be as follows:

Table 4.8: Network Co-Location

	RM		
	2006	**2007**	**2008**
Switch site cost (per square metre)			
Physical	<--	unpublished	-->
Virtual	<--	unpublished	-->
Cage and Other Equipment			
2 metre jumper cable	9.46	9.84	10.13
Cage	2,287	2,210	2,110
Automated OLO personnel access	480	462	441
Building specific access (eg, 250 metres)	9,028	9,717	9,974
Virtual co-location connection			
Fibre in-span Interconnection	850	907	932
Copper in-span Interconnection	654	703	722

4.11. Full Access Service

Question 21: The MCMC seeks comments on its preliminary views about LRIC being the most appropriate base of access pricing for the Full Access service.

4.11.1. Comments received

First Principles argued that the service should be subject to competition rules rather than ex-ante regulation.

Jaring, Maxis, NasionCom, REDtone, and TIME supported use of LRIC to set Full Access charges.

Telekom disagreed with some of the figures and methodology used in the derivation of LRIC charges for Full Access service. However, Telekom did not comment on whether the approach proposed by the MCMC (LRIC pricing) is in general correct, or whether other forms of access regulation are more appropriate in the Malaysian context. Celcom's position is broadly similar to Telekom's.

4.11.2. The MCMC's final views

The MCMC used the feedback received during the PI period to revise the LRIC model results. The new numbers are presented below, together with clarifications regarding the structure of charges (recurring and non-recurring).

The up front implementation relates to the cost incurred by Telekom in establishing an Operational Support System (OSS) for ANE/Bitstream services. This comprises space and wiring databases, line condition data retrieval, and a work-instruction system. This cost had previously been described as a one-off cost for Telekom, but in practice can be recovered as a levy on each customer line implementation that makes use of the database. Assuming 50% of lines require use to be made of the OSS, the cost is RM8.54 per customer.

Non-recurring charges for Installation/Adaptation of Physical Space are quoted on a per-installation/adaptation basis.

No data was made available by operators for the transaction activities and costs for the implementation of the various forms of ANE. NERA therefore had to draw on experience of activities and man-hours in other developed countries, and had applied Malaysian man-power costs (which had been provided by the Taskforce). During the model viewing period some operators expressed the view that the costs derived using this assumption looked to be rather high. Following this, the installation, transfer and disconnection charges were re-examined. The metrics which had been used were primarily based on manual tasks undertaken in the absence of a fully automated operational support system. With a fully automated support system, complete with space, wiring and frame configurations, and access to line length and condition records, the manpower activities in preparation for installation, transfer, or disconnection can be reduced to no more than 1 man hour. The manpower input for the physical wiring activities remains unchanged in the model.

Given that no respondent explicitly expressed any reservation about the MCMC's preliminary views about access pricing principles, the MCMC concludes that LRIC-based access prices are the appropriate form of regulation for this well-established bottleneck service.

To ensure effective and sustainable implementation of the ANE services, the MCMC had determined that the implementation of ANE will be carried out in phases. For the time being, the effective date for the implementation Full Access Service has not been determined but may be decided in the near future. Based on the above, the MCMC concludes that the access price for Full Access service should not be mandated but indicative prices based on LRIC will be published.

The maximum prices for Full Access Service will be as follows:

Table 4.9: Full access service

	RM		
	2006	**2007**	**2008**
Up-front implementation cost (per line)	8.55	9.04	9.08
Line rental (on-going service rental)	52.34	54.96	55.17
Installation (initial charge per line)			
- ISDN	275	275	255
- PSTN	187	187	121
- ADSL	191	191	125
Transfer (initial charge per line)			
- ISDN	295	295	255
- PSTN	199	199	141
- ADSL	191	191	125
Disconnection (termination charge per line)			
- ISDN	100	100	60
- PSTN	92	92	40
- ADSL	116	116	90
Bandwidth Rental (recurring charge)			
Nx64kbs	per DNTS	per DNTS	per DNTS
Nx2mbps	per DNTS	per DNTS	per DNTS
Monthly Space Rental (recurring charge)			
- Distant	use co-location service		
- Virtual	use co-location service		
- Physical	use co-location service		
Installation/Adaptation of Space (initial charge per site)			
- Distant	0	0	0
- Virtual	0	0	0
- Physical	14,000	14,000	14,000
Tie-Cables (recurring charge)			
- Internal	2.41	2.50	2.58
- External	9.98	10.35	10.66
Backhaul Transmission (recurring charge)	commercial	commercial	commercial

4.12. Line Sharing Service

Question 22: The MCMC seeks comments on its preliminary views that access pricing for the Line Sharing Service should not be based on LRIC.

4.12.1. Comments received

Celcom and Jaring concurred with the MCMC's preliminary position.

First Principles argued that the service should be subject to competition rules rather than ex-ante regulation.

Maxis, NasionCom, REDtone, and TIME strongly disagreed with the Commission's view that LRIC should not be used for the Line Sharing Service. All of them cited bottleneck characteristics in support of the use of LRIC to set Line Sharing charges. Concerns highlighted by the Commission on whether the access provider can recoup its costs were, according to some respondents, overstated and should not be included as a factor in determining the method of calculating costs. Furthermore, Maxis was of the opinion that this is a separate issue that can be dealt with via an appropriate mechanism for sharing common costs between the high-frequency and low-frequency elements of the line.

Telekom reiterated its comments in respect of Full Access Service about the implementation of the LRIC methodology, while expressing its agreement with the MCMC's preliminary view that access charges for Line Sharing Service should not be LRIC-based.

4.12.2. The MCMC's final views

The PI feedback which led to revision of LRIC model estimates for Full Access service also affected LRIC estimates for Line Sharing non-recurring charges. Similarly to what has been done for Full Access services, non-recurring charges are now reported on a per-line basis, with the exception of non-recurring charges for Installation/Adaptation of Physical Space which are quoted on a per-installation/adaptation basis.

The MCMC would like to clarify that the very small 1 Sen/month recurring rental charge reported in the PI Access Pricing Paper reflected power costs. However, given that this

is so small, it was decided not to include it in the revised charges. Consistent with the implementation of the LRIC approach, which identifies the incremental costs of Line Sharing Service assuming that the costs to deploy and maintain the copper line have already being incurred, the only truly incremental recurring cost for the provision of this service is the cost of space rented by the Access Seeker.

The MCMC observes that in countries where retail PSTN line rental prices exceed Full Access wholesale LRIC charges it has been argued that there should be no recurring charge for Line Sharing Service. Given that this is not the case in Malaysia (the comparison between LRIC-based Full Access charges and retail PSTN line rental prices has shown a revenue shortfall in Malaysia), the MCMC rejects the approach proposed by Maxis, NasionCom, REDtone and TIME.

The MCMC recognises the concerns of the respondents who argued that Line Sharing Services has bottleneck characteristics and is, at least technologically, well-established. The MCMC however reiterates that a pure LRIC-based approach would crowd out other ANE wholesale offerings and might result in socially undesirable by-pass for cream-skimming purposes (especially taking into account VoIP technology), which would reduce resources for proper maintenance and deployment of network facilities.

The MCMC is of the view that a LRIC approach cannot usefully address the policy question that needs to be solved to introduce economically appropriate access prices. For a start, LRIC methodology cannot contribute much to the allocation of loop costs, which are common to both the high-frequency and low-frequency parts of the copper wires. Secondly, even if this were possible, problems would remain given that total loop costs are, on average, well above retail PSTN rental line prices.

Similar to Full Access Service, the effective date for the implementation of Line Sharing Service has not been determined but may be decided in the near future. The MCMC concludes that access prices for Line Sharing Service should not be mandated and indicative prices will not be published.

4.13. Bitstream Services

Question 23: The MCMC seeks comments on its preliminary views about glide path being the most appropriate access pricing for the Bitstream Services.

4.13.1. Comments received

In Celcom's and Telekom's opinion, there are methodological problems in the derivation of LRIC charges for this service. Specifically, it stated that to produce a robust model for calculation of the Bitstream services, forecasts of the take-up rate of such a service must be developed (based on access seeker costs and their expected numbers). Also, the costs of specific network elements required to support the service should be modelled and additional operating costs in supporting the service should be identified. However, Telekom did not comment on whether the approach proposed by the MCMC (LRIC pricing) was in general correct, or whether other forms of access regulation would be more appropriate in the Malaysian context.

First Principles argued that the service should be subject to competition rules rather than ex-ante regulation.

Jaring broadly supported LRIC-based access pricing, arguing that there is no need for a glide path.

Maxis' opinion differed from the MCMC's preliminary position in that it believed that pricing should be based on LRIC. The facilities on which Bitstream Services are run are generally mature and well established and DSL technology is proven, well understood, cheaply implemented and well established. In the initial phase, due to uncertainty over demand and higher costs, incumbent operators providing DSL services generally price their retail DSL services below cost before volumes grow to a level at which costs approximate to their long-run level. Unless adjusted, cost based pricing in this instance will often be too high to allow competitive entry. To deal with the uncertainty in demand within the principles of cost orientation, Maxis proposes two options: i) pricing the service on the basis of the NPV of cost over the entire life-time of the service and ii) introduce a price ceiling which is the lower of LRIC and retail-minus.

NasionCom, REDtone, and TIME rejected the MCMC's preliminary position and supported use of LRIC to set prices for Bitstream services because the service is provided over facilities having bottleneck characteristics.

4.13.2. The MCMC's final views

As with the Full Access and Line Sharing LRIC results, Bitstream non-recurring charges were revised to account for the issues discussed above in section 4.11.2. The MCMC notes that all price calculations require estimates of volume to be made before any cost which is common to more than one customer can be apportioned, and the Bitstream service does not differ in this respect. The MCMC adopted cautious estimates of the take-up, and assumed that the service would not be provided unless there were likely to be enough customers at each exchange site to ensure both cost recovery and affordable prices for users. Also, reflecting the fact that the service is not well established and that it is important that the necessary investment is made so as not to hold back the development of broadband services, for which it is a key input, the MCMC also does not believe that LRIC based prices should be introduced immediately and that there should be a glide path towards them. The MCMC believes that these last two points address the concerns raised by Telekom.

Reflecting these points, the MCMC concludes that the prices for Bitstream services should be mandated. The MCMC is of the view that a gradual approach should be adopted over a 3 year period to facilitate the implementation of LRIC prices in 2008. The 2006 price is estimated based on current prices. The 2008 price is based on LRIC. The 2007 price has been calculated as an intermediate point between the 2006 and 2008 prices.

The maximum prices will be as follows:

Table 4.10: Bitstream

	RM		
	2006	**2007**	**2008**
Up-front implementation cost (per line)	8.55	9.04	9.08
Line rental (on-going service rental)	38.00	18.02	17.20
Installation (initial charge per line)			
- ISDN	50	153	255
- PSTN	50	86	121
- ADSL	50	88	125
Transfer (initial charge per line)			
- ISDN	0	0	0
- PSTN	0	0	0
- ADSL	0	0	0
Disconnection (termination charge per line)			
- ISDN	0	0	0
- PSTN	0	0	0
- ADSL	0	0	0
Bandwidth Rental (recurring charge)			
Nx64kbs	per DNTS	per DNTS	per DNTS
Nx2mbps	per DNTS	per DNTS	per DNTS
Monthly Space Rental (recurring charge)			
- Distant		use co-location service	
- Virtual		use co-location service	
- Physical		use co-location service	
Installation/Adaptation of Space (initial charge per site)			
- Distant	0	0	0
- Virtual	0	0	0
- Physical	14,000	14,000	14,000
Tie-Cables (recurring charge)			
- Internal	0.00	0.00	0.00
- External	0.00	0.00	0.00
Backhaul Transmission (recurring charge)	commercial	commercial	commercial

4.14. Sub-loop Service

Question 24: The MCMC seeks comments on its preliminary views about LRIC being the most appropriate for access pricing of the Sub-loop service.

4.14.1. Comments received

Celcom advised the MCMC not to implement a LRIC approach to the pricing of ANE services.

First Principles argued that the service should be subject to competition rules rather than ex-ante regulation.

Jaring, NasionCom, REDtone, and TIME also concurred with the MCMC on the use of LRIC to set Sub-loop charges.

Maxis supported use of LRIC to set Sub-loop charges on the basis that it is a well established facility and a bottleneck service.

Telekom stressed the fact that Sub-Loop access charges are identical to Full Access charges despite the fact that these two services differ significantly. Thus it is against implementing a LRIC-based approach to the pricing of ANE services.

4.14.2. The MCMC's final views

First Principles did not draw on any features of the sub-loop service to explain its view that the service should not be regulated ex-ante, whereas other respondents expressed concern about bottleneck characteristics and supported LRIC pricing.

Similarly to the LRIC results for Full Access and Bitstream services, Sub-loop non-recurring charges were revised to account for the issues discussed in Section 4.11.2.

Telekom was unable to provide much of the data needed for modelling ANE, and NERA has used Malaysian equipment costs coupled with activity transaction times from other jurisdictions, priced at Malaysian labour rates. Telekom was unable to provide data for differences in cost or activity for full loop and sub loop. As a result, the MCMC has

decided that, in the absence of information to the contrary, sub loop costs should be based on full loop costs.

For the reasons discussed in Section 4.11.2, the MCMC confirms its preliminary views regarding LRIC being the most appropriate costing approach for this service.

Similar to Full Access and Line Sharing Services, the effective date for the implementation of Sub-loop Service has not been determined but may be decided in the near future. The MCMC concludes that access prices for this service should not be mandated but indicative prices based on LRIC will be published.

Table 4.11: Sub-loop access

	RM		
	2006	**2007**	**2008**
Up-front implementation cost (per line)	8.55	9.04	9.08
Line rental (on-going service rental)	52.34	54.96	55.17
Installation (initial charge per line)			
- ISDN	275	275	255
- PSTN	187	187	121
- ADSL	191	191	125
Transfer (initial charge per line)			
- ISDN	295	295	255
- PSTN	199	199	141
- ADSL	191	191	125
Disconnection (termination charge per line)			
- ISDN	100	100	60
- PSTN	92	92	40
- ADSL	116	116	90
Bandwidth Rental (recurring charge)			
Nx64kbs	per DNTS	per DNTS	per DNTS
Nx2mbps	per DNTS	per DNTS	per DNTS
Monthly Space Rental (recurring charge)			
- Distant	use co-location service		
- Virtual	use co-location service		
- Physical	use co-location service		
Installation/Adaptation of Space (initial charge per site)			
- Distant	0	0	0
- Virtual	0	0	0
- Physical	14,000	14,000	14,000
Tie-Cables (recurring charge)			
- Internal	2.41	2.50	2.58
- External	9.98	10.35	10.66
Backhaul Transmission (recurring charge)	commercial	commercial	commercial

4.15. Digital Subscriber Line Resale Service

Question 25: The MCMC seeks comments on its preliminary views as to the proposed approach to compute access pricing for DSLR service, i.e. by applying an uplift to the monthly line rental of Bitstream services. In addition, the MCMC would also like to seek views as to whether the proposed uplift of 1.5% to 3% is reasonable.

4.15.1. Comments received

First Principles argued that the service should be subject to competition rules rather than ex-ante regulation.

Jaring contested the need for a mark-up, advocating that the price for this service should be the same as the LRIC-based price set for Bitstream service.

Maxis believed that the proposed uplift was reasonable but suggested that the uplift rates proposed by the MCMC be based on a LRIC-based Bitstream access charge.

Telekom disagreed with the MCMC's preliminary view, proposing that in place of using an uplift factor, a retail-minus approach should be taken. Telekom also stated that the uplift factor range was unreasonable, unfair to the local loop provider and unlikely to cover actual costs.

TM Net found the MCMC's proposed approach acceptable, although it disagreed with the proposed range for the uplift to be applied to Bitstream access charges because it believed it to be too low to allow cost-recovery with a reasonable profit margin.

4.15.2. The MCMC's final views

First Principles did not draw on any features of the DSL resale service to explain its view that the service should be subject to competition rules.

The MCMC considers that any resale service imposes some product management costs on the supplier, and that therefore a price based exclusively on the underlying technical service may not enable complete cost recovery.

The MCMC recognizes that applying an uplift to a wholesale access service to derive the price of a resale service might not be the most practical solution to appropriate access

pricing. For this reason, the MCMC modifies it preliminary position, and concludes that access charges for this service should be based on a retail-minus approach. For this purpose, the MCMC has estimated, from the data provided by operators, that the minus factor should be equal to 37%.

The MCMC concludes that the price for DSL Resale Service should be left to commercial negotiations.

5. TSLRIC FOR FACILITIES/SERVICES OVER IP NETWORKS

5.1. Model Description and Run Options

Question 26: The MCMC seeks views on the use of WACC for fixed network in the model run option of IP network LRIC modelling?

5.1.1. Comments received

Celcom, Jaring, NasionCom, REDtone, Telekom and TIME supported the use of the WACC employed in fixed network LRIC modelling for modelling of IP services at this point in time.

Maxis expressed a view that IP based services should not be regulated on the grounds that there is currently too much uncertainty surrounding the types of services that will be demanded. Maxis indicated that it had not provided any answers specifically to Question 26 as it believed that, until the service was more clearly defined and the competition dynamics were better understood, effective regulation of IP based services would not be possible.

NasionCom, REDtone and TIME indicated that, save for the concerns raised in their response to Question 11, they did not have any objections to the approach of using the WACC for fixed network in the costing model for IP network.

TM Net agreed that the WACC for the fixed network should be used for the IP network modelling but with an additional premium to take into account factors such as high technology obsolescence risk, short payback time requirement and the risk of traffic volumes not being consistent with the payback period. TMNet further submitted that the values of the components used in arriving at the rate of 11.5% were subjective and should vary from operator to operator. TMNet was of the view that, at present, a higher

WACC is required to enable operators to recoup costs and to provide incentives for reinvestment.

5.1.2. The MCMC's final views

The MCMC notes that respondents generally agreed with using WACC for the fixed network when modelling IP costs.

The MCMC notes the general concern expressed by Maxis in respect of regulation of IP services. The MCMC general position, which is to refrain from regulating IP access charges, is explained in section 5.4.2 below.

The MCMC finds the opinion submitted by TM Net not without merit; however, it notes that, in the absence of a reliable alternative measure to the fixed network WACC, this latter figure represents the most practical solution. MCMC does not believe that there is any reliable way of measuring the additional premium that might be applied to the fixed network WACC in order to cover the greater uncertainty and risk associated with IP services.

Given that the MCMC is proposing to leave the setting of IP access prices to the market, the problem of identifying an appropriate value of WACC is not one that has to be solved immediately. Once more information about the development and take up of IP services becomes available, it should become easier to derive an appropriate value of WACC. This could then be used to calculate access prices should the market based approach to access price setting advocated by the MCMC need to be replaced by a more interventionist one.

5.2. VoIP Fixed Network Origination/Termination Service

Question 27: The MCMC seeks comments on whether there should be one price for fixed voice termination or different prices for termination on IP and on PSTN. If there should be only one price what should the basis for access pricing be?

5.2.1. Comments received

Celcom and Telekom submitted that PSTN and the current VoIP termination costs are not directly comparable and that they should not be priced as if they were the same service.

Telekom argued that, in terms of setting per minute prices for fixed voice termination, the TSLRIC approach can only be used for the PSTN, where costs are known and can be reliably attributed to services. Telekom submitted that, unlike PSTN, there is little information on the true costs of delivering PSTN quality dialled voice calling service on an IP or NGN network and thus it is unclear at present what asset base should be used to set a cost based per minute termination price. Moreover most costs of terminating VoIP calls are borne by the calling party in terms of ongoing broadband access and traffic charges. Telekom submitted that PSTN and current VoIP termination costs are not directly comparable and should not be viewed as the same service.

DiGi stated that, as a matter of principle, termination rates on PSTN and VOIP should differ, reflecting the difference in the underlying technologies. Given the innovative nature of the latter networks, DiGi recommended that the MCMC should, for the time being, refrain from regulating VoIP termination, limiting its role to monitoring developments.

First Principles submitted that the service should be subject to competition rules rather than ex-ante regulation.

Jaring expressed the view that, in line with the technology-neutral approach, there should be one price set for voice termination (as an application), irrespective of whether the termination is based on IP or switched networks. Jaring further expressed the view that there may, however, be a need to have differing rates for termination, depending on technology and media used (e.g. mobile, wireless).

Jaring commented that the model proposed does not reflect the new method of governance and licensing structure, in that it appears to have been derived from traditional model which looks at PSTN services and IP based services as separate services. The pricing reflected in the PI Access Pricing Paper did not take into account the infrastructure costs and had assumed the costs of termination lies only in the soft switch infrastructure with no delineation between voice termination on the net (i.e. with subscribers already connected on IP) and termination off the net (i.e. conveyance with IP but offloading via traditional based infrastructure). Jaring pointed out that modelling approach taken was not consistent for PSTN termination/origination services when compared with VoIP termination/origination services. For the former, the costs of conveyance and transmission of the voice application had been taken into account whereas the same costs were not reflected for VoIP. Jaring argued that the costs of ISDN and leased circuits should be included in the costing model for VoIP origination and termination services.

Maxis recommended that the MCMC refrain from setting VOIP termination charges as the market is insufficiently understood for such IP services to be accurately defined or costed. At this juncture, Maxis was of the view that the LRIC methodology may or may not be applicable depending on whether the service is considered as a substitute for the current PSTN service or if the service in question involves termination on a VoIP application running over an IP connection where it is unlikely that the metered charges will be applicable.

NasionCom and REDtone argued that there were omissions in the costing of VoIP Fixed Network Origination/Termination services. Both operators indicated that REDtone's internal review suggested the price for termination on IP and on PSTN should be approximately RM 0.475 per minute.

TIME argued that there is no reason to question the view that termination rates should reflect the underlying costs and, as there is a difference between IP and PSTN in terms of network design and costs, this must be reflected in different access prices.

TM Net believes that there is a clear difference between call termination and toll bypass. TMNet also expressed the view that there should not be one price for fixed voice termination and IP termination as there are various differences inherent in PSTN and IP network. It was also argued that the pricing of VoIP services, which are new services, should be based on commercial arrangements and that a number of issues need to be addressed and require further deliberation. TMNet further commented that there is an inconsistency in the regulatory approach in that VoIP was not in the ALD and the MSA.

5.2.2. The MCMC's final views

With respect to TMNet's submissions, the MCMC wishes to reiterate that with the expansion of the ALD 2001 the fixed network origination and termination services have been expressed in a technologically neutral manner in the ALD, hence include origination and termination services delivered over network based on IP.

With very few exceptions, the industry argued that the cost structures of PSTN and VOIP networks imply different LRIC origination/termination costs.

The submissions received that there is no general consensus within the industry of an acceptable network architecture for VoIP leading to disagreement with TSLRIC results. The cost modelling exercise showed that the innovative nature of VoIP service makes results very sensitive to assumptions about the service take-up, the service architectures and the uncertain technological developments which are going to happen in the very short run. In these circumstances, different modellers can come up with quite different

LRIC estimates which reflect different views about the direction that the industry will ultimately take while any given modeller will need to update its prior beliefs quite often to account of unanticipated developments. In many respects this is similar to Telekom's view that the asset base that might be used for costing is uncertain.

The MCMC recognizes that market forces are the best means to achieve an effectively competitive VoIP industry, which will provide alternatives to traditional PSTN-based solutions. Furthermore, because of the absence of a consensus regarding the architecture and asset assumptions required for costing VOIP access services, the MCMC considers that it is not possible to determine a reliable access price.

The MCMC therefore concludes that VOIP origination and termination prices should be set through commercial negotiations.

5.3. Internet Interconnection Service

Question 28: The MCMC seeks comments as to whether IIS should be fully funded by user subscriptions. If not, how should the costs of IIS be apportioned between users and other ISPs?

5.3.1. Comments received

Celcom and Telekom stated that access pricing regulation is inappropriate for Internet Interconnection Services (IIS).

Celcom, Telekom and TMNet argued that, in the case of popular websites, the content providers are charged by the ISPs for the bandwidth used by their customers. The content providers in turn recover the bandwidth costs from the subscription charges paid by the customers for the use of the sites and consequently interconnection charging between ISP's is not required.

Maxis, Jaring and TIME agreed with the MCMC's preliminary views that IIS should be fully funded by user subscriptions. Maxis expressed the view that there is also a need to ensure that access providers make available sufficient peering capacity and that the IIS is a well established bottleneck service similar to voice termination. Maxis and TIME were of the view that traffic from Malaysian networks to IP addresses within Malaysia should be exchanged through local peering relationships in order to prevent the outflow of traffic and funds to foreign operators. Maxis and TIME expressed the view that there is a need to ensure that the peering charges are not excessive.

NasionCom and REDtone believed that the costs should be apportioned between ISP's and users. Both operators argued that, if IIS is required to be fully funded by subscribers, it is likely that this will place obstacles in the way of the government's objective of steering the country towards the Knowledge Economy and is likely to widen the digital divide. Both operators suggested that the MCMC should look into the possibility of having a tiered approach to charging users, consisting of a standard package (which would address the broad general government policy) and a premium service for which users can be charged more.

5.3.2. The MCMC's final views

The MCMC has registered the comments summarized above, and taken them into account in shaping its final views about regulation of IP services in general, and IIS in particular. Such final views are presented in detail in Section 5.4.2.

5.4. Way forward for IP Access Services

Question 29: The MCMC seeks comments on its preliminary views about the way forward on access pricing for IP services.

5.4.1. Comments received

Celcom, Telekom, and TM Net supported the MCMC's preliminary view that IP services should not be regulated at this stage. Celcom further argued that, at present, it is not appropriate to base IP access prices on TSLRIC. Telekom also indicated that the modelling conducted on the IP based services showed the difficulty in identifying and costing appropriate assets in modern IP networks.

Jaring submitted that, as the traditional telecommunication transmission service is relied upon by service providers, the costs of these services may need some level of transparency. Jaring suggested that access pricing may need to be delineated initially and managed separately.

Maxis' view was that IIS should be regulated on a peering basis while IP transit services should remain unregulated as they are not a bottleneck service.

TIME disagreed with the MCMC's preliminary position, advocating access pricing regulation for IIS based on the rationale that the incumbent has significant influence over the market.

TIME, NasionCom and REDtone said that there was an apparent anomaly in the tabulated assessment of the DSLR service, i.e. the application of a "phantom criterion" in the table on page 65 of the PI Access Pricing Paper.

5.4.2. The MCMC's final views

The MCMC apologises for the inclusion of the table on page 65 of the PI Access Pricing Paper and notes a clear inference from its title that its presence reflects a typesetting error.

The MCMC notes Jaring's concern about transmission prices, and believes that LRIC pricing approach of transmission facilities for all operators will fulfil all reasonable needs and expectations.

All respondents' submissions have acknowledged the innovative nature of IP wholesale access services in the ALD. Application of the MCMC's principles to access pricing regulation indicates that these services should remain unregulated, at least for the time being. In confirming this conclusion, the MCMC notes that some respondents have expressed concerns about potentially exclusionary peering arrangements in the Malaysian IP industry.

The MCMC will apply ex-post rather than ex-ante regulation to IP services. In doing so, it will investigate any abuse in this area and monitor future developments among Malaysian IP networks. At the same time, the MCMC notes that the very structure of IP networks makes it likely that anticompetitive behaviour by a domestic access provider will be constrained by the existence of regional/global first-tier IP networks.

The MCMC concludes that an indicative price will be published for the service. This is set at zero as set out in the table below, reflecting the fact that the costs are fully recovered via subscriptions.

Table 5.1: Internet Interconnection

	Per Mbps		
	2006	**2007**	**2008**
Internet Peering fees	0.00	0.00	0.00

6. TSLRIC FOR FACILITIES/SERVICES OVER MOBILE NETWORKS

6.1. Revised mobile LRIC model results

The MCMC has revised its LRIC cost estimates for mobile origination and termination.

The mobile LRIC model results published in the PI Access Pricing Paper were based on data provided by the operators, who had declared BTS quantities ranging from around 2,400 to around 10,200. Not all the operators had been able to identify the quantities of BTSs they required for minimum coverage network, or the extra BTSs needed to handle traffic.

Comments received during the PI period (including those supplied at the model's public viewings) allowed NERA to identify the source of the problem, which was an incorrect number of BTSs to provide coverage. Additional data provided by the operators allowed NERA to address it.

An overstatement of the number of BTSs required will lead to an overstatement of costs, not only because the total costs associated with BTSs will be too high, but also because there is a "knock on" impact on the required amount of backhaul transmission from BTSs to BSCs, and onwards to MSCs, as well as an overstatement of BSC and MSC port quantities. The consequence of an overstatement in BTSs is that mobile network costs, even for a minimum traffic level, will be overestimated, and will appear to suggest the existence of greater economies of scale than would otherwise be the case.

Based on further data from the operators regarding call volumes and numbers of BTSs deployed, NERA re-examined the model and adjusted the model's derivation of the number of BTSs required for coverage, and for coverage and traffic. The result is that substantially fewer BTSs are predicted in the revised model, and that the BTS predictions are consistent with the BTS quantities re-stated by operators during the PI.

In conclusion, the final revised prices reported in this section are fully reflective of the comments that have been received during the PI, and answer the majority of the comments regarding mobile LRIC that respondents have submitted, which are summarized and addressed in the remaining sections of this chapter.

6.2. Network Configuration

Question 30: The MCMC seeks comments on its preliminary view that LRIC cost estimates for mobile origination/termination should be based on 2G-only network configuration.

6.2.1. Comments received

Celcom, Maxis and Telekom agreed with the MCMC's preliminary position that TSLRIC cost estimates should be based on a 2G only network configuration due to the uncertainty surrounding the demand, cost, service and modelling parameters associated with 3G networks.

Maxis is, however, concerned that the 3G cost elements that are currently providing service (both voice and data) have not been included as inputs in the model. Such elements have not been replaced with the 'equivalent 2G' infrastructure elements required to meet total coverage and demand requirements now and on a forward looking basis.

NasionCom, REDtone, and TIME stated that they "do not agree with the application of a LRIC methodology to mobile" per se. These operators are of the view that LRIC was originally developed for application to the fixed line networks of incumbent operators, which are mature and based on stable and predictable technology with established usage patterns. In contrast, they are of the view that the mobile networks in Malaysia were deployed relatively (recently) in a competitive environment. If the mobile network investments are still in the process of being sunk rather than being recovered, there is very little margin for modelling errors. In addition, the LRIC modelling assumes that all capital invested today will be used over the entire economic life of the new investment and that prices for capital inputs will decrease markedly over time. They questioned whether the latter assumption will hold true in the current mobile industry environment.

Jaring expressed some reservation about the use of LRIC methodology for calculating access prices in mobile networks. However, if a LRIC approach is adopted, Jaring argued that there may also be a need to know the cost of conveying voice traffic over a 3G network.

First Principles suggested that mobile LRIC modelling should be based on an EDGE network configuration and not on 2G, as it is likely that 2G will be phased out over time.

6.2.2. The MCMC's final views

The MCMC notes how the two largest mobile operators and the largest fixed network operator agreed with the MCMC's preliminary view, while the third mobile operator did not express any specific views on this issue.

The MCMC observes that the approach proposed has been adopted in many countries, since it captures efficient costs of existing operators using well-established 2G technology and, at the same time, provides them with incentives to migrate their services to more innovative platforms only to the extent they can deliver cost savings in the provision of traditional (voice and SMS) services — possibly because of economies of scope in the joint provision of traditional and innovative (broadband) mobile services to the end-user.

The MCMC believes that the provision of EDGE does not alter the 2G cost function since EDGE is a time-slot based modulation alternative which does not increase call capacity because the modulation scheme cannot support 2G traffic without reverting to 2G modulation schemes. Inclusion of 3G expenses in the LRIC calculation might distort incentives to efficient migration from one platform (2G) to the other (3G), and introduce in the market undesirable cross-subsidization. Moreover, 3G networks are still quite new and innovative, making LRIC modelling results less reliable as a basis for forward-looking policy.

In conclusion, while taking notice of the suggestions put forward in the submissions, the MCMC confirms its preliminary view that mobile origination/termination should be based on 2G only network configuration.

6.3. Spectrum Allocation and Economies of Scale

Question 31: The MCMC seeks comments on if and how access pricing for mobile origination/termination should take into account cost differences due to differences in spectrum allocation and economies of scale.

6.3.1. Comments received

Celcom maintained that differences in spectrum endowments are the result of free-market decisions and hence they should not be brought up as an issue in access pricing. As for the effects of economies of scale, Celcom believes that some very important points such as differences in customer profiles have been omitted.

DiGi argued that it is essentially an 1800 MHz spectrum network operator as the 2 MHz of 900 MHz that has been made available to it is insufficient to produce the specific advantages associated with dual band spectrum. The propagation and coverage characteristics of an 1800 MHz network require, on average, 3.5 times the level of capital and operating expenditure. DiGi pointed out that this assessment is supported by other publicly available studies. DiGi also contends that the deployment of a 1800 MHz network substantially restricts the degree to which DiGi can benefit from infrastructure sharing. The adverse characteristics are becoming even more pronounced as the network is built out into the rural areas of Time 2. As a result, DiGi suggested that the MCMC analyses the cost differences between predominantly 1800 MHz and 900 MHz networks. In its view, a LRIC model cannot fulfil the function for which it was designed and is being employed, unless it differentiates between the costs needed to build and maintain the two types of network.

DiGi submitted that there were no convincing impediments to accepting that the differences in the market share should be allowed to be reflected in the cost modelling for setting termination rates. DiGi believes that the proposal would more accurately align the MCMC's theory with practice. Mobile operators have been judged "dominant" in terminating on their networks, and therefore they should logically be considered separate markets. Modelling of that market should take into consideration the costs, size and scope of that individual market; acknowledging that these factors will inevitably differ between the termination markets of each operator.

Maxis argued that if the MCMC takes differences in spectrum allocation into consideration, this should be on the basis of the adequacy of spectrum available to each mobile operator and the costs paid to acquire or use the spectrum. In particular, both commercial acquisition of spectrum and arrangements for sharing spectrum between mobile operators should be taken into account. Maxis is concerned that, if network costs were calculated on the assumption of a pure 1800 MHz operator, it would not represent the situation in Malaysia where the 1800 MHz operator has currently been allocated some 900 MHz spectrum and is in the process of getting access to more. Given access to 900 MHz spectrum, such operators can be expected to configure their networks in an optimal manner.

Maxis argued that to be consistent with the principle of forward-looking costs, the cost of spectrum should be included in the cost base. The market value of spectrum can be established using prices commercially agreed via negotiation between new entrants and existing operators.

Maxis' view on economies of scale differences is that they should not be considered when determining LRIC based mobile access prices. According to Maxis, setting prices differently for different operator would:

(a) Contravene the principles of LRIC, whereby costs should be determined according to the forward-looking costs incurred by a reasonably efficient operator;

(b) Reduce the incentives for operators to compete and grow as success in the market-place would be penalised by regulation;

(c) Result in under recovery of mobile costs for the larger operators, which will lead to stifled innovation as well as deterioration of service quality to end users;

(d) Introduce inappropriate regulatory burdens as the market share figures on which costs are calculated are changing rapidly; and

(e) Introduce confusion for end-users as the cost of calling mobile phones would vary according to the network of the receiving party. This problem will worsen when mobile number portability is implemented as it would no longer be possible for operators to distinguish between networks on the basis of their number ranges;

Maxis also stressed that there is no economic justification to "level the playing field" as the mobile market is mature and all three existing mobile operators entered the market at around the same time. The differences in market shares are due to commercial decisions and therefore should not be used as a proxy for economies of scale.

Maxis also put forward the view that the cost model appears substantially to overstate the degree of economies of scale in a mobile network. Maxis referred to a publication by Ofcom, UK, where it was recognised that the most important cost elements in the mobile networks, namely the radio access network exhibits constant return to scale. The sources of economies of scale are common costs, which comprise only 3 to 5% of total cost. However, the proposed prices in the PI Access Pricing Paper estimate the costs of an operator with 20% and 33% market share as respectively being 75% and 15% higher than those proposed for an operator with 40% market share. Because of this, Maxis believes that the model developed by NERA may have made some major errors in calculation, particularly in assuming that the number of base stations in the model is constant with respect to the traffic volume carried on the mobile network. This clearly contravenes the well understood engineering realities of mobile networks.

In addition, Maxis analysed the differentiated termination rates in the European Union (EU) and concluded that the differentiation mainly emanates from the regulatory

framework in EU in where only the larger operators are subjected to regulation. Maxis concluded that they are not aware of any situations in which EU regulators have explicitly differentiated rates on the basis of differences in economies of scale.

SKC pointed out that, based on Competition Commission's assessment in the UK, scale economies in mobile networks arise only when an increase in traffic results in improved utilisation of minimum capacity deployment. As such, when an operator has captured between 20 and 25 per cent of current total market volume there are only very limited remaining economies of scale. Considering this, it is likely that economies of scale are only present in cells located in suburban and rural areas where traffic levels, as a consequence of being very low, are insufficient to utilise the available (minimum) capacity. In addition, SKC also referred to Ofcom's conclusion that scale economies can only exist in some parts of a mobile network such as backhaul network, network management system, core or backbone network and site acquisition. It is evident, therefore, that there are few sources of economies of scale in mobile networks. What scale economies that do exist are as a consequence of lumpiness (or modularity) in the short-run deployment of capacity. In the long-run the underlying function for capacity costs at base station sites, (which account for around one half of network costs) displays constant returns to scale.

In terms of spectrum allocation, SKC is of the view that the NERA model should take into account the use of fragmented spectrum bands, as each mobile operator has 2 x 25 MHz of 1800 spectrum and at least 2 x 2 MHz of 900 MHz EGSM spectrum. This gives each operator the ability to use a combination of 1800 MHz and 900 MHz to maximise coverage and capacity.

Though SKC is mindful that access price differences across mobile network origination and termination charges can arise due to scale economies or differences in spectrum allocation, neither is evident in the mobile telecommunications market in Malaysia. Therefore, access prices should not differ across operators.

Telekom does not believe that there is a need to differentiate interconnect prices in Malaysia on the basis of spectrum allocation as it is not aware of spectrum shortages that would force operators to make inefficient network investment decisions.

In terms of economies of scale, Telekom pointed out the there are flaws in the network scaling function of the mobile model, causing it to calculate the costs of a highly inefficient mobile industry, in which all operators provide full duplicated network coverage of the country. This has the following implications:

- Operators are modelled as having many thousands more network nodes than they would have in a commercially driven operation;

- Small market shares cause very high per minute costs as network coverage is assumed to be nationwide;

- Small changes in market share cause large changes in calculated LRIC costs especially for small absolute market shares;

- New operators would need to begin operation with full nationwide coverage for these LRIC prices to apply;

Telekom acknowledges that small operators may have slightly higher per minute costs than large operators due to unavoidable fixed costs. However, this can be more than compensated for by savings in operational expenses through serving very limited areas.

NasionCom, REDtone, and TIME noted that a tiered pricing structure must be implemented with caution as it will be difficult to implement and manage. In addition, networks are dynamic and change from time to time. This is the case with economies of scale and traffic levels. This proposal may make it necessary for the administration of the system to be responsive to the changes in the market situation to ensure that prices are relevant and that operators are not unfairly prejudiced.

First Principles is of the opinion that a different price setting mechanism may enable these issues to be better handled, particularly when considering the market structure in Malaysia where economies of scale may not necessarily be high on the agenda.

6.3.2. The MCMC's final views

The revised LRIC results reported in Section 6.1 shows that, similar to what happens in other countries, economies of scale are relatively limited in the Malaysian industry once an operator reaches a sufficient market share. Given the observed recent trend toward higher concentration in the Malaysian mobile industry (since the previous costing exercise the number of operators has dropped from five to three), all existing operators can be safely assumed to have exceeded that minimum efficient scale above which economies of scale play a lesser role.

The MCMC acknowledges that spectrum differences have led regulators in other countries to set different access prices (namely termination rates) between 900/1800 MHz operators on one hand and 1800 MHz-only or mostly-1800 MHz operators on the other. Given that operators falling in this latter category have usually entered the

market at a later stage than the former group and thus have smaller market share, differences in access prices resulting from the use of different spectrum may appear to be associated with differences in market share.

In Malaysia, while differences in spectrum endowments exist, all active operators have access to a combination of 900 MHz and 1800 MHz. The MCMC agrees that the spectrum endowments are generous, and not a practical constraint in most areas of the country. Moreover, the MCMC observes that, to a great extent, differences in spectrum endowments in the Malaysian mobile industry came about because of free market forces (consolidation), as opposed to exogenous sequencing of licensing choices, which occurred in countries implementing asymmetric mobile access prices. The MCMC also stresses the fact that, in such countries, regulated termination charges are required to converge to a common value in the short to medium term. Finally, the MCMC notes that the specific characteristics of the Malaysian territory (with extensive presence of trees and hills impeding line of sight footprints) make the cost advantages associated with 900 MHz frequencies (larger maximum cell radius in obstacle-free coverage areas) less of a critical factor than elsewhere.

The above discussion highlights that the pre-requisites for asymmetric access pricing appear to be absent from the Malaysian mobile industry. The industry has enjoyed a great deal of success under symmetric access pricing regulation, with companies choosing different development paths (in terms of expansion of coverage, spectrum and market share) in response to market challenges and opportunities rather than regulator-introduced asymmetric incentives.

In conclusion, the MCMC's final view is to adopt a single rate based on a hypothetical equal distribution of market shares among active firms, and building a LRIC model which represents a hypothetical network whose characteristic are those characterizing the average mobile operator in Malaysia.

6.4. Cost of Capital

Question 32: The MCMC seek comments on the WACC for mobile operators and whether the parameters used to compute it are reasonable in the Malaysian context.

6.4.1. Comments received

Celcom stated that "a more authoritative authority on WACC be sought". Celcom viewed WACC as a function of risk and return for the industry which in turn will be determined by the country's economic outlook, country risk, etc. Celcom cautioned that, if the MCMC intervenes to create a level playing field, it may run the risk of destroying investors' confidence.

DiGi noted the WACC of 12.24% proposed by the MCMC and confirmed that this is sufficient to reflect an estimation of its cost of capital. DiGi also noted that, for the purposes of the model, the MCMC has utilised an inflation adjusted figure for WACC. DiGi has no preference for the utilisation of real or nominal figures for WACC in the model provided the choice is consistent with all other inputs into the model.

Jaring found the proposed WACC acceptable.

Maxis maintained that the mobile WACC had been underestimated, in particular because of unrealistically low parameter estimates for beta and the risk-free rate. In support of this argument, Maxis submitted research conducted into the key WACC components both within Malaysia and other countries such as Hungary, Sweden, UK and Sri Lanka. Maxis suggested that the WACC study should be conducted as a study in its own right in order to arrive at a more reliable WACC estimate. Maxis believes that the beta value should be a value in the range of 1 to 1.1 for the following reasons: the highly capital intensive nature of the business, high level of demand uncertainty, high level of technology risk and high level of regulatory risk. Maxis considered that a more appropriate value for the risk-free rate should be 3.93-4%. Maxis believed that the value for the market return stated in the PI Access Pricing Paper fails to correctly reflect the returns demanded by investors which international investment banks estimate to be within the range of 11.2–12.3%. As for the other parameters employed, Maxis found their values to be correctly estimated. Overall, in Maxis' opinion, the pre-tax nominal mobile WACC falls in the range of 15.3 to 16.2%.

NasionCom, REDtone, and TIME stated that their views on this matter are similar to those expressed in response to question 11: they agree about the overall WACC employed, but request clarification concerning the way the gearing ratio (10% for the mobile WACC) was derived.

Telekom asked the MCMC to refer to its answer to question 11 (on WACC for LRIC modelling of fixed network access facilities/services).

6.4.2. The MCMC's final views

The MCMC observes that most non-mobile operators broadly concurred with the proposed mobile WACC.

The MCMC wishes to clarify that NERA's WACC estimate for mobile is based on recent market evidence relevant to the Malaysian market. NERA's mobile beta estimate is based on current market evidence using the Kuala Lumpur Composite Index, as well as the Dow Jones STOXX ASIA Pacific 600. The sources for the risk-free rate and equity premium are the same as those employed for the fixed network WACC.

One respondent questioned the reliability of the proposed WACC and its components by comparing to them to corresponding figures in other countries. As for the comparison of overall WACC figures, the MCMC observes that the figures reported did not indicate the year in which the WACC figures were calculated. The MCMC notes that the time of calculation is of central importance. In many countries the business risk of mobile technology has decreased substantially over time, due to the fact that mobile technology has matured over the years. The MCMC also notes that some of the countries considered (e.g. Jamaica, Sri Lanka, and Tanzania) face much higher sovereign and business risks than Malaysia, which is reflected in the higher cost of capital.

As for beta benchmarking, the MCMC would like to state that beta estimates reported by regulatory precedent are relevant for the corresponding market in which the regulated operator pursues its business. The MCMC and NERA refrained from blindly adopting these estimates from other regions and countries where business risks might differ and investors might have different attitudes to taking on risk. Moreover, past regulatory precedent on WACC decisions might no longer be relevant for current projections of the cost of capital. In particular, in the mobile industry we observe now substantially lower risks than, for example, during the time of the bursting of the technology bubble in 2003 (the reported beta refers to this year). Therefore, the use of outdated benchmark beta values in estimating the beta for Malaysian operators is, in the MCMC's view, not a robust methodology.

In conclusion, the MCMC confirms its preliminary views that the parameters used to compute the WACC for mobile operators are reasonable in the Malaysian context.

6.5. Mobile Network Origination Service

Question 33: The MCMC seeks comments on its preliminary conclusion about FDC being the most appropriate cost basis for Mobile Network Origination service.

6.5.1. Comments received

Maxis agrees with the MCMC's view that the mobile origination service only requires regulation until the introduction of MNP and that it is appropriate to apply a lighter form of price regulation in the interim. However, Maxis believes that retail-minus pricing is the most appropriate basis for interim pricing for this service.

Celcom stated that FDC may not be the most appropriate cost base for mobile origination services, and asked for more information about how the MCMC will choose to implement FDC.

DiGi believes that there is currently effective competition in the market for originating mobile calls. However, since the MCMC envisages removing mobile origination from ALD upon implementation of Mobile Number Portability (MNP), and since there already exists fair competition, mobile origination should be removed from regulatory constraints.

Telekom expressed the view that it is unsure of how far MNP will ensure effective competition in the mobile call origination market. Even if MNP does ensure competition, it will take some time to put MNP in place and for removal of mobile network origination from the Access List. In the meantime, access service prices should be based on LRIC until MNP is fully operational in Malaysia. When MNP has been implemented, the service should no longer being regulated.

NasionCom, REDtone, and TIME disagree with the application of FDC methodology to mobile. In addition, TIME expressed strong disagreement on inclusion of Time 1 and Time 2 costs in the LRIC calculation for the following reasons:

- Coverage expansion under Time 1 and Time 2 is a social obligation for the mobile operators and is not profit motivated;

- Time 2 has not been incurred and therefore to include the cost in the proposed access prices will not be in the LTIE.

TIME is also of the opinion that access prices based on market share are impractical as they raise the following operational issues:

- Basis of determining the market share; is it by number of subscribers, operators' respective revenue or operators' respective use of minutes of use?

- Who is to determine the market shares? It should be an organization that is independent and possesses the competence and resources to validate the market share;

- Frequency of validation of the market share;

- There will be configuration changes required on the operations and support systems such as billing and verification process.

Jaring disagreed with the MCMC's preliminary position, and supported use of LRIC methodology.

First Principles advised the MCMC to consider other pricing approaches.

6.5.2. The MCMC's final views

The MCMC maintains that the introduction of MNP will push the wholesale market for mobile originating services toward increased competition. While the MCMC envisages introducing MNP regulation based on international best practice through the support of the industry, the MCMC will need to monitor its implementation and assess its final impact on effective competition once MNP procedures are in place. Until that happens, market conditions (reflected in concentration and profitability indexes) indicate that mobile network origination service will be regulated in a similar manner as the mobile network termination service. As such, the MCMC is of the view that LRIC should be measured based on an operator with a 33% market share and will include Time 2 costs in 2008.

The MCMC confirms its preliminary view that MMS and data termination will be left to commercial negotiation.

In light of these considerations and the submissions it has received, the MCMC concludes that the price for Mobile Network Origination service (voice only) should be mandated. The prices should be on a 24 hour weighted averaged basis determined based on LRIC.

The new maximum prices will be as follows:

Table 6.1: Mobile Call Origination

	Sen per minute		
	2006	**2007**	**2008**
Local	7.74	7.89	8.04
National	8.56	8.71	8.86
National with submarine cable	28.05	28.05	28.09

6.6. Mobile Network Termination Service

Question 34: The MCMC seeks comments on its preliminary views about LRIC being the most appropriate cost basis for the Mobile Network Termination service.

6.6.1. Comments received

Celcom argued that pure LRIC charges do not allow for full cost recovery. Although the scorched node approach appears to address this problem, the market share component is highly unreliable and suspect.

Whilst Maxis agrees that LRIC is the appropriate basis for setting termination interconnect fees. However, Maxis believes that the mobile LRIC model produced for the MCMC has under-estimated costs by a significant margin. Maxis has submitted benchmarks of a large range of different countries which indicate that the proposed rates by the MCMC (even including Time 2 costs) are amongst the lowest in the world. Maxis urges the MCMC to set the final mobile termination rates based on the full costs of the Time 2 coverage requirements as this is a requirement that is mandated for all three mobile operators and is not funded through the USP.

DiGi is of the view that assessing regulated prices according to cost is logically correct and enjoys wide international precedence. DiGi also noted that the MCMC differentiates its termination rates according with and without the network roll-out costs associated

with Time 2. DiGi argues that Time 2 should be included in the termination rates for the following reasons:

- Time 2 is mandated by the Commission and it is not a naturally commercial proposition.
- The capex increases required by the Mobile Network Operators (MNOs) to fulfill Time 2 have not fallen equally across all MNOs since some operators originally owned a more extensive network
- DiGi's 2 MHz of EGSM is not sufficient to achieve 100% coverage for Time 2 cell planning based on GSM 900. DiGi must, in consequence, continue to pay a premium for developing 1800 MHz network.
- Although infrastructure sharing is an efficient means of reducing costs for Time 2, DiGi's capacity to benefit from sharing is inhibited by virtue of the more limited attenuation characteristics of its 1800 MHz network standard.

DiGi also maintains that Time 2 costs are a dominating component of their current investments. If the MCMC does not take Time 2 cost into consideration, it will mean that the LRIC model does not accurately reflect the incremental costs of termination provision. Secondly, the mobile operators will not be able to recoup this mandated investment via termination rates. If the MCMC does not include Time 2 cost in the termination charges, then the MCMC should make an unequivocal commitment to allow MNOs to recoup their costs from the USP Fund.

DiGi submitted its view that the inclusion of Time 2 will result in an increase in mobile termination rates and this may seem to run contrary to the developments in other markets which are for mobile termination rates to decline over time. However, DiGi argued that the mobile termination rates for Malaysia are low in the first place and to demonstrate this point it provided data on mobile termination rates in other countries.

First Principles advised to consider other pricing approaches.

Telekom agrees with the principal of utilising TSLRIC for mobile termination pricing. However Telekom objected to the way it had been implemented in the model, particularly the treatment of Time 1 and Time 2 network coverage scenarios, market share scaling and some of the model inputs. Telekom also pointed out that there were operational issues associated with having differentiated termination rates

NasionCom, REDtone and TIME disagreed with the MCMC's preliminary view. TIME also stated that it is strongly against inclusion of Time 2 costs in the LRIC calculation, and any differentiated access pricing in the mobile industry.

Jaring suggested comparing the MCMC's LRIC model results with estimates obtained through alternative approaches to assess their reliability.

SKC commented that in general, cost-based pricing methodologies like LRIC or TSLRIC should not be applied where network duplication or widespread competition is evident. This is the case in the mobile industry in Malaysia. Mobile markets in Malaysia are dynamic evolving markets as evidenced by the near completion of Time 1 and the commencement of Time 2 network roll-outs and the continued growth and evolution of 2G networks into 3G networks. These mobile operators incur a high degree of risk arising from the accumulation of substantial sunk costs before demand emerges, and uncertainty as to the development of future demand.

6.6.2. The MCMC's final views

Mobile network termination service is a bottleneck facility. If prices for this service are out of line with costs, the repercussions are going to be felt not only in terms of distorted market outcomes in the mobile industry, but in the communications industry as a whole, via distorted decisions by consumers about whether to subscribe to or use mobile services.

The revised model has allowed the MCMC to measure LRIC for mobile termination more precisely; these estimates appear consistent with retail prices and the overall profitability of the mobile industry.

Although several respondents questioned the inclusion of Time 2 costs in the termination rate, respondents did not generally suggest alternative funding schemes, other than a compensation fund. Such a fund would require receipts from somewhere, and these would in all likelihood come from calls to and from mobile networks. If so, the effect would be similar to including Time 2 costs when calculating LRIC.

Reflecting these and earlier considerations, the MCMC is of the view that LRIC should be measured assuming an operator with a 33% market share and include Time 2 costs in 2008.

The MCMC believes that Time 2 costs should only be recovered once incurred. The MCMC considers that inclusion of Time 2 costs in the determination of LRIC charges would be justified only if there were no other alternative, better ways to funding such expenses. As this appears to be the case, the MCMC concludes that the price for Mobile Network Termination Service (voice only) should be mandated. The MCMC also concludes that an indicative price for Mobile Network Termination Service (SMS only) will

be published. Both sets of prices will be on a 24 hour weighted averaged basis determined based on LRIC.

The new maximum prices will be as follows:

Table 6.2: Mobile Call Termination

	Sen per minute		
	2006	**2007**	**2008**
Local	8.05	8.18	8.32
National	8.86	9.00	9.13
National with submarine cable	28.34	28.32	28.34

Table 6.3: SMS Termination

	Sen per message		
	2006	**2007**	**2008**
SMS	0.22	0.22	0.27

6.7. 3G-2G Domestic Inter-Operator Roaming Service

Question 35: The MCMC seeks comments on its preliminary views about FDC being the most appropriate cost basis for access pricing of 3G-2G Domestic Inter-Operator Roaming service.

6.7.1. Comments received

Celcom and Telekom disagreed with the MCMC's preliminary views. Both operators recommended that the MCMC allows access prices for 3G-2G roaming services to be commercially negotiated during the initial development of this service. Commercial negotiations will be likely to involve volume based pricing, billing, operational interfaces and a range of other practical issues which may not be captured by a simple FDC per minute cost.

DiGi expressed no view as to the applicability of FDC as opposed to LRIC in this instance. However, DiGi disagreed with the MCMC's proposal to regulate the access price for this service as they were of the view that it is not a bottleneck service and that all operators are likely to have the option of an alternative partner. Nonetheless, it agreed that the market for roaming presents a high barrier to entry but believed that it will move towards competition following the precedent set by new operators in other markets, e.g.

Hutchison in the UK. Furthermore, DiGi argued that this service is an excellent example of where the MCMC could refrain from regulation in order to allow the development of efficiency driven commercial arrangements. This reflects the fact that the market is open to competition, there are no dominant operators in the provisioning of roaming and the varied and complex nature of the requirements for roaming services make the price of service not readily reducible to a single value.

Jaring urged the MCMC to be consistent in its choice of the approach to calculate access prices in the mobile industry.

First Principles argued that the service should be subject to competition rules rather than ex-ante regulation.

Maxis believes that cost-based access price regulation of 3G-2G inter operator roaming service is not necessary at this stage because it is not a bottleneck service and there are no high or permanent barriers to entry for the provision of this service. In addition, there is not yet any evidence that the market is failing to provide this service at competitive rates. In addition, Maxis recommended that the MCMC establish criteria to determine the existence of market failure before prescribing any regulatory intervention on the access prices for this service.

NasionCom and REDtone reiterated their disagreement with the implementation of LRIC-based access prices in the mobile industry.

TIME stated it was unable to provide any feedback on the question because of insufficient information about FDC rates or glide path guidelines.

6.7.2. The MCMC's final views

MCMC notes that respondents have not suggested there is any technological barrier to 3G operators roaming on one or more 2G networks. In practice, a 3G operator could access roaming services on the networks of any of the existing operators – in this respect there is no supply bottleneck, and therefore leaving the arrangements to competition is an option.

Taking notice of the widespread preference in the industry for commercial negotiations rather than mandated prices, for the time being the MCMC concludes that it is appropriate to limit its intervention to publishing indicative prices. The prices will be on a 24 hour weighted averaged basis determined based on LRIC.

The maximum prices will be as follows:

Table 6.4: 3G Roaming on 2G Origination

	Sen per minute		
	2006	**2007**	**2008**
Local	8.34	8.49	8.64
National	9.16	9.31	9.46
National with submarine cable	28.65	28.65	28.69

Table 6.5: 3G Roaming on 2G Termination

	Sen per minute		
	2006	**2007**	**2008**
Local	8.65	8.78	8.92
National	9.46	9.60	9.73
National with submarine cable	28.94	28.92	28.94

7. TSLRIC FOR FACILITIES/SERVICES FOR BROADCASTING NETWORKS

7.1. Broadcasting Transmission Service

Question 36: The MCMC seeks comments on its preliminary conclusions about refraining from regulatory intervention for Broadcasting Transmission Service.

7.1.1. Comments received

Celcom and First Principles agreed with the MCMC's preliminary position. In addition, First Principles proposed that competition rules should be applied rather than ex ante regulation.

Telekom agreed with the MCMC's preliminary conclusion based on the argument that the provision of broadcasting services includes other value add and specialised/customised components which are not part of the ALD and it is a technically complex business with high investment risk. It would be difficult to separately provision only the transmission components for this service. In addition, the imposition of regulation would limit innovation in the business.

TV3 was of the opinion that the access price for this service should be regulated, preferably through the benchmarking of current industry practices in Malaysia instead of comparisons with more advanced countries such as the USA or the UK. TV3 remarked that the proposed LRIC charges in Table 7.1 of the PI Access Pricing Paper exceed by far the commercially agreed rates. Consequently, TV3 suggested that the MCMC reconsider the proposed costing model. Moreover, TV3 urged the MCMC to look into the current practice of imposing antiquated compression choices (leading to the use of E3 lines instead of E1 lines), thus obviating the benefit that can be derived from more advanced, superior compression technology.

7.1.2. The MCMC's final views

The MCMC would like to clarify that the MCMC's preliminary view in Section 7.1.2 of the PI Access Pricing Paper was to regulate the access price for the broadcasting transmission service based on LRIC. Nonetheless, question 36 does not reflect the MCMC preliminary view. Despite the inconsistency, the MCMC notes that the submissions received provided clear view as to whether they agreed or disagreed with regulating the access price for this service.

TV3 was of the opinion that this service should be regulated, however, preferred benchmarking of current industry practices in Malaysia rather than the proposed LRIC prices which are well above the current price. Revisions made to the LRIC modelling of DNTS services as reported in Section 4.7 has resulted in substantially reduced cost estimates for DNTS.

Based on the submissions received, there is no evidence to refute that there is high barriers to entry and that there is no trend towards competition in the short-term for this service.

The MCMC notes Telekom's view that regulatory intervention should not be applied for this service as it is technically complex with high investment risk. Furthermore, price regulation will limit innovation in the business. The MCMC's view is that technical complexity alone would not support a position against price regulation.

Given the characteristics of the service which is associated with DNTS which is a bottleneck service the MCMC confirms its view that there is a need for access pricing regulation be applied to this service.

The MCMC is minded to mandate the access prices for Broadcasting Transmission Service. The prices will be made up of the prices for codecs and the mandated prices for the DNTS based on LRIC.

The maximum prices will be as follows:

Table 7.1: Broadcasting Transmission

	RM per year		
	2006	**2007**	**2008**
E1 link	as per DNTS (List 7) service		
E3 link	as per DNTS (List 7) service		
Single codec	23,145	23,145	23,145
2 codecs	46,290	46,290	46,290

7.2. Digital Terrestrial Broadcasting Multiplexing Services

Question 37: The MCMC seeks comments on its preliminary conclusions not to undertake costing for Digital Terrestrial Broadcasting Multiplexing Services.

7.2.1. Comments received

First Principles commented that the service should be subjected to competition rules rather than ex-ante regulation.

Both Telekom and Celcom concurred with the MCMC's preliminary position, on the grounds that this is a new service.

TV3 concurred with the MCMC's preliminary position, stating that it is still premature to comment on the cost structure for this service.

7.2.2. The MCMC's final views

Respondents' answers confirm the MCMC's conclusion that there should be no access pricing regulation as this industry is still in its infancy stage. The MCMC will reassess its positions once the service is available.

The MCMC concludes that the access prices for Digital Terrestrial Broadcasting Multiplexing services will not be indicated for the time being until the service becomes available.

8. TSLRIC FOR OTHER ACCESS LIST FACILITIES/SERVICES

8.1. Infrastructure Sharing

Question 38: The MCMC seeks comments on its preliminary conclusions about refraining from regulatory intervention for Infrastructure Sharing.

8.1.1. Comments received

Celcom, DiGi, Fiberail, First Principles, Maxis, and Telekom agreed with the MCMC's preliminary position and recommended that agreements should be based on commercial negotiations. In addition, First Principles proposed that competition rules be applied rather than ex ante regulation.

DiGi recognised that the current commercial arrangements are subject to complex commercial considerations, where there are cases of bartered swaps for infrastructure. DiGi highlighted that the process of sharing infrastructure is a dynamic and complex process.

Fiberail suggested that prices should also be based on commercial negotiations reflecting geographical location and types of utility requirements.

Jaring expressed their view that the MCMC's intervention may not be required in the case of incumbents but is necessary for new entrants. Jaring suggested that the pricing principles should be governed by the MCMC.

NasionCom, REDtone, and TIME urged the MCMC to recognize the fact that infrastructure sharing is a bottleneck facility and is an asset which operators use as a competitive advantage in terms of network coverage. Hence, they do not agree with the MCMC's reliance on market forces. Tower owners who are also competing in the communications market can use the commercial negotiations as a way to frustrate the sharing of infrastructure. They also highlighted that at present much infrastructure sharing occurs through swapping. Therefore new entrants with very limited infrastructure to "trade" are likely to be at a disadvantage. Thus, they proposed that the MCMC takes a strong approach to ensure that the policy is implemented in a fair and orderly manner.

Maxis was of the view that, in the event any pricing intervention is required, it should be handled on a case-by-case basis, as the cost elements involved are specific to the

location at which the infrastructure sharing service is being provided and vary greatly in value from location to location.

8.1.2. The MCMC's final views

The MCMC notes that the majority of the submissions agreed with the MCMC's preliminary view to refrain from intervening in the setting of access prices for infrastructure sharing service. It is also recognised that the process may be dynamic and complex as part of the cost is location dependent. It is not therefore proposed that prices should be published. Based on the submissions received it appears that there are existing commercial agreements which can be relied upon.

The MCMC is mindful of the concerns that the tower owners who are also competing in the communications market may demand high prices to frustrate commercial negotiations with competing access seekers. However, the MCMC will deal with such problems ex-post on a case-by-case basis.

The MCMC concludes that no indicative prices for Infrastructure Sharing Service will be published.

8.2. Network Signalling Service

Question 39: The MCMC seeks comments on its preliminary conclusions about refraining from regulatory intervention for Network Signalling Service.

8.2.1. Comments received

Celcom, First Principles and Telekom agreed with the MCMC's preliminary position. In addition, Celcom pointed out that CCS7 is part of the requirement to provide interconnection and that it is not a stand alone service where costs of provision include testing, verification and monitoring.

Maxis agreed with the MCMC's preliminary views as there is no evidence of market failure for the provision of this service. Maxis proposed that the MCMC consider whether the service being provided by the Access Provider is well established or innovative rather than whether the Access Seeker will be using it as an input into a well established or innovative service.

NasionCom, REDtone, and TIME urged the MCMC to play an active role regarding this service in order to ensure prices are not prohibitively high. Access prices should be set close to cost and be affordable to stimulate the introduction of value-added services.

Jaring brought to the MCMC's attention the fact that new entrants are currently experiencing difficulties in gaining interconnection because there is no regulatory intervention. Jaring is of the opinion that there are three to four big operators enjoying the service. New entrants with forward looking technology cannot gain access from these operators due to the barriers that are in place.

8.2.2. The MCMC's final views

The MCMC recognises that this service is fundamental to interconnection and that access issues were present in cases of network transit. The mandating of this service under the ALD which came into force on 1 July 2005 was envisaged to remove barriers to gaining access and is likely to facilitate competition in other relevant markets.

Network signalling service is a bottleneck service, which is used mainly for the provisioning of value added services. The MCMC agrees with Maxis that the fact that user services are innovative is not itself a criterion for refraining from intervention. However, it is not clear to the MCMC that the pricing of network signalling service, as opposed to access to it, is an issue at present. Hence, the MCMC will refrain from mandating the pricing of this service at this juncture. We have taken into consideration NasionCom, REDtone, and TIME's suggestion for the MCMC to play a proactive role in ensuring that prices are not prohibitively high and, reflecting this, the MCMC concludes that indicative prices for this service based on LRIC will be published.

The maximum prices will be as follows:

Table 8.1: Network Signalling

	RM per year		
	2006	**2007**	**2008**
Network Signalling (ingress or egress)	3,693	3,550	3,387
Network Signalling (ingress and egress)	7,385	7,100	6,773

9. ADDITIONAL ISSUES

9.1. Fixed-To-Mobile Substitution

Question 40: The MCMC seeks comments on its views regarding the need for differentiated access pricing between fixed and mobile networks where underlying costs still call for asymmetrical cost-oriented charges.

9.1.1. Comments received

Celcom was of the opinion that it would not be in the long term interest of the end user to accelerate fixed-to-mobile substitution and it noted that the low fixed penetration rate in Malaysia is alarming. Celcom urged the MCMC not to take any steps which could further accelerate the fixed to mobile substitution process bearing in mind that it would cause a substantial wastage of the fixed infrastructure.

DiGi expressed views that mobile is not a substitute service and that it cannot be claimed that the two services operate in a similar market. The facility to connect and receive calls at locations which had not been predetermined is a qualitatively different service to fixed line telephony. Furthermore, a comparison of the relatively static functionality of fixed telephony compared to the exponentially developing functionality of mobile telephony indicates that these two markets will continue to diverge in the medium term.

First Principles did not think that price differentiation is warranted between mobile and fixed because in Malaysia the prices of voice calls over the PSTN are set by regulation. As PSTN subscribers are falling, voice traffic over the PSTN is not growing as compared to mobile voice traffic. PSTN is becoming a mere conduit for broadband services using xDSL and home-based voice services are being provided by new entrants. Therefore, for it to be taken up for xDSL services, unbundling of the local loop and Bitstream services, these services should have lower access prices while the reduction could be compensated by higher call termination revenue without jeopardising the fixed price set for local calls.

Jaring commented that, due to the difference in cost and in the underlying cost elements in mobile and fixed networks, the cost may be asymmetrical but the difference may be

narrowing. Jaring suggested that asymmetric cost orientated regulation may be required for the management of the transition from traditional to IP based services.

Maxis concurred with the MCMC regarding the need for cost-orientation of fixed and mobile termination in order to ensure that the market receives the correct price signals and that separate LRIC models for fixed and mobile networks are justified. Maxis also observed that cost differences between mobile and fixed networks are still substantial. The cost difference arises from providing the mobility aspect of the service and therefore should be compensated. Assigning a common access pricing across fixed and mobile services will either over-compensate the fixed operators or under-compensate the mobile operators hence symmetric access prices are uncalled for. Neither situation is in the long term interest of end users. Maxis also highlighted the end users' choice to use mobile services instead of fixed services in spite of the higher retail costs. Therefore it is in the long term interest of end users if the wholesale access prices also continue to reflect the distinction in costs between mobile and fixed services.

NasionCom, REDtone, and TIME noted that the critical issue is to use the most appropriate access pricing approach when deriving cost-based access prices in the fixed and mobile networks. NasionCom, REDtone, and TIME remarked that the access prices may be symmetrical (perhaps due to the traffic patterns) but that does not justify the need to have the same access pricing between mobile and fixed networks. They agreed with the MCMC's preliminary views that symmetrical access prices would not only violate the cost based principle but also have the potential to create a distortion in the market which goes against the long term interest of end users principle.

Telekom argued that the difference in rates obtained from the costing models is an artificial result of inappropriate assumptions and therefore cannot constitute conclusive evidence of a large gap. The unrealistic assumptions made were that the level of fixed traffic will remain constant over the next two years and that for Time 2 will mean all three mobile operators having full duplicated coverage costs and hence that capacity is over-provisioned. If traffic assumptions in the fixed model were amended to reflect declining trends, then the fixed termination rate would increase; similarly, if the mobile model were to be amended to reflect commercial provisioning then the mobile termination rate would decrease, thus justifying implementation of symmetric access pricing.

Telekom also cited a few studies and experiences in other jurisdictions, both in developed and developing countries, to support its argument that there is strong evidence that there is a relatively strong substitution effect from fixed to mobile telephony. According to Telekom's findings, fixed network penetration rates in most countries are growing slowly or have begun to decline. In addition, fixed traffic volumes

have been declining relative to mobile. This means that the costs of terminating calls on the fixed network are rising relative to those for terminating on the mobile network.

9.1.2. The MCMC's final views

The MCMC takes note that the majority of respondents endorsed the MCMC's preliminary views that symmetric termination rates should not be imposed unless costs are symmetric. The MCMC welcomes the wide consensus in the industry about the need for correct, cost-based price signals for bottleneck services (such as termination, on any type of switched network).

The feedback received during the PI period led the MCMC to revise the mobile LRIC model calculation (see Section 6.1). The revised mobile access prices confirm Telekom's expectations that the gap between mobile and fixed LRIC-based access prices is narrowing.

The MCMC concurs with First Principles' views that voice calls over PSTN has been declining as compared to mobile and there is a need to address this issue as a means to encourage broadband penetration. However, the MCMC recognises that there are various ways in which broadband penetration can be encouraged. One possible option that the MCMC may consider is through the implementation of the access deficit. The MCMC proposes to undertake a separate study to assess whether there is a need to implement access deficit in Malaysia and will consider First Principles' suggestion within the scope of the study.

In conclusion, the MCMC's final view is not to impose symmetric termination prices per se, but to accommodate any trend to convergence evidenced by LRIC cost modelling.

9.2. Efficient Costs in the Malaysian Context

Question 41: The MCMC seeks comments and reasons whether unavoidable cost should be taken into consideration in estimating cost.

Question 42: The MCMC seeks data on unavoidable costs, in the Malaysian context, if any.

9.2.1. Comments received

Fiberail supported inclusion of unavoidable costs when estimating costs because flexibility should be allowed in making commercial decisions on procurement, staffing and site utilisation. Related costs of such nature still lie in the existing infrastructure and in future procurement processes. Fiberail listed several unavoidable costs, namely: licensing costs, USP payments, wayleave charges, and consultancy and risk management costs.

Celcom and Telekom were of the view that unavoidable costs are nevertheless incurred and thus the access provider should receive some form of recovery should it be required to incur costs that a normal commercial enterprise would never incur. By definition, LRIC based costing cannot achieve it but FDC could. In addition Celcom highlighted the cost of relocating sites which are not demand related and rationalisation costs as some of the unavoidable costs. Telekom also expressed the view that an access provider should receive some form of compensation for the costs that a well-managed network would not incur, but which cannot be avoided. Telekom listed a variety of such unavoidable costs that it faces:

a) provision and maintenance of service to net loss-making (non-USP) areas and customers with no financial compensation via a universal service or access deficit fund;

b) provision of world-class facilities in Multimedia Super Corridor areas with heavy investment requirements with the requirement that subsidised pricing be offered;

c) annual deployment of existing infrastructure;

d) network build to support the National Broadband Plan in areas where take up and penetration is low;

e) the requirement to engage in the USP scheme with only one-third compensation of the cost;

f) the obligation to provide extremely high quality of service, involving a commitment to significant levels of capital and operational expenditure to ensure compliance; and

g) the obligation to maintain legacy services such as telex, telegram.

Telekom also noted that it incurs unavoidable costs due to the constraints on its procurement decisions that affect its ability to achieve economies of scale in purchasing decisions but instead cause it to incur unavoidable additional costs due to national obligations.

DiGi maintained that unavoidable costs should not be included in the cost model unless they could be quantified and agreed upon. DiGi cited that some respondents may consider Time 2 costs as unavoidable.

Maxis was of the opinion that any costs that are truly unavoidable for both fixed and mobile operators should be taken into account in line with LRIC principles. Nonetheless, care should be taken to understand the cause of unavoidable costs and to make sure that their existence is not used to cover inefficient practices. Maxis reckoned that Time 2 mandated coverage is a significant unavoidable cost for all the mobile operators.

NasionCom, REDtone, and TIME believe that there is a distinction between unavoidable costs that are related to the support of the network infrastructure and those which are incurred in the normal course of doing business. However, they explicitly stated that "unavoidable costs should not be used as an excuse to recover expenses that are incurred for the latter nor should it be used to inflate the costs disproportionately". They support the recovery of unavoidable costs that are directly related to network elements.

9.2.2. The MCMC's final views

The MCMC concurs with the general principle stated by NasionCom, REDtone and TIME that extreme caution should be exercised in judging whether a cost an operator claims to be unavoidable is truly so, or represents instead an inefficiently incurred expense which would burden access seekers via higher access charges.

The MCMC's position is that some extra costs (which are clearly apparent and quantifiable with sufficient precision, two criteria correctly identified by DiGi) are truly unavoidable, and should be recovered in a fair and non-discriminatory way through access charges.

As for Time 2 expenses, some respondents have claimed that these fall into the unavoidable cost category, and hence need to be recovered through a surcharge on interconnection rates. The MCMC remarks that it is uncertain how much of the expenses to increase coverage are indeed not commercially viable because they will not generate enough revenues. Regardless of that, the MCMC notes that mobile operators are not burdened by any constraint regarding their retail pricing; hence establishment of a fund akin to a universal service fund is uncalled for. For this reason, the MCMC concludes that it is appropriate that mobile access prices should be marked up to cover Time 2 costs when these are incurred (the MCMC deems it fair that recovery should start in 2008). In this way, the users who benefit from Time 2 roll-out (mobile callers or callers to mobile) will pay for the costs.

9.3. Access Deficit

As a result of social policy and the desire to encourage the expansion of network penetration, the retail price of line rentals has been held below the associated costs. The resulting loss, or access deficit, has traditionally been financed by Telekom raising the prices of long-distance and international calls. However, industry liberalization means that keeping long-distance and international call prices above costs becomes increasingly untenable. New entrants will be able to undercut Telekom's prices for these types of call and hence the current source of funding the access deficit will be eroded over time.

Reflecting this concern, the PI Access Pricing Paper sought the industry's views regarding the option of financing the deficit through interconnection rates.

Question 43: The MCMC seeks comments on the link between access pricing and access deficit, and how to manage such relationship with a view to achieving the LTIE.

9.3.1. Comments received

Celcom maintained that any access deficit should be recovered via a mark-up on interconnection fees. Celcom also supported this approach for the recovery of Time 2 expenses.

Jaring expressed the view that there needs to be detailed evaluation and audit of access deficits before the MCMC can allow them to be recovered through industry-wide contributions.

Maxis recalled that the World Trade Organization states the principle that access deficits should not be recovered through levies on interconnection charges. Maxis suggested that the most appropriate method to address the access deficit is to allow the fixed operators to rebalance their line rental fees over time in line with their basic access costs. As an interim solution, a possible alternative to recover any access deficit could be through a specific Local Access Funding (LAF) charge which is chargeable only on Equal Access calls.

NasionCom, REDtone, and TIME are wholly against any system of access deficit funding because, although theoretically justified, it is hard to implement and open to abuse. It was also argued that access deficit can be used as a competitive tool by the PSTN service providers by artificially distorting prices.

Telekom stated that access deficit could be caused by price regulation and business strategy. For instance, the imposition of price controls on line charges as a means of combating potential anti-competitive behaviour or in the context of universal service provision. Telekom also stressed that increased competition in the communications industry makes access deficits no longer sustainable in the long run through cross-subsidization from Telekom's more remunerative services. In particular, it stated the following concerns:

(a) Lack of incentive to maintain lines for loss-making customers and for future network expansion;

(b) Inefficiencies, as the access provider's reduced competitiveness reduces incentives for competitors to improve efficiency, and distortion of the build/buy decision; and

(c) Further price distortions as the access provider seeks to cover the loss from other sources.

Telekom noted that reduction/elimination of the Malaysian access deficit through an increase of retail charges for access lines is not a practicable solution, as it would lead to many end-users disconnecting from the PSTN altogether. The preferred solution, according to Telekom, is the establishment of an access deficit fund, financed via a special levy (akin to a sales tax) on selected retail communications services (as practiced in most other countries where an access deficit exists). Alternatively, Telekom argued

that an access deficit could be recovered via a 4 sen surcharge on interconnection rates, or as a rebate on USP contributions. In the absence of any funding, an access deficit brings adverse consequences, not only for the access provider but for the industry, economy and society in general. Compared with its submission in 2002, Telekom is confident that there is sufficient evidence and data to support its case regarding access deficit this time around and requested further discussion with the MCMC on the definition of access deficit and feedback on the approach to be taken.

9.3.2. MCMC's final views

Telekom has provided evidence that the costs of its access network are not covered by line rental charges, and some cross subsidy is used from call revenues to recover the costs of the access network. NERA's cost model suggests that the annualised wholesale cost of Telekom's access network is around RM56 per month, more than the consumer rental charge of RM25 per month. The calculation of the access deficit is complex, needing to take account of the retail costs associated with lines.

The reason that Telekom's line rental charges do not cover costs lies in the social policy that telephone service should be accessible to all segments of Malaysian society, including those on low incomes.

The existence of the deficit limits Telekom's opportunity to compete, the ability of access seekers to compete, and the policy choices open to the MCMC to promote industry development. For example, Telekom may not be able to lower call prices to compete with other operators while call prices must remain high to fund the access network. As a result, is not fully able to capture the network externalities associated with adding high-cost subscribers to its network, because the calls made to and from these subscribers are appropriated by other operators (fixed and mobile). This leads to below-optimal fixed network penetration, denying society the full social and economic benefits that the industry could deliver.

The MCMC considers that access to telephone service for all citizens and businesses is an important objective, and wishes to remove the difficulties and distortions that the access deficit is causing. The MCMC proposes to consult on the treatment of any Access Deficit early in the coming year. The consultation may embrace, but not be limited to, questions of:

(a) What is the definition of the Access Deficit?

(b) What method should be used to quantify the Access deficit?

(c) What benefits and problems does the Access Deficit give rise to?

(d) How might the Access Deficit be funded?

(e) How might any access fund be implemented?

(f) How would efficient access and flexible supply be encouraged?

The MCMC's initial view is that the Access Deficit should be objectively quantified and recovered through competitively neutral levies on all operators (fixed and mobile) benefiting from universal access to fixed PSTN networks.

9.4. Time-Of-Day Price Differentiation

Question 44: The MCMC seeks comments on its preliminary views regarding time-of-day price differentiation for regulated access charges.

9.4.1. Comments received

Celcom stated that the MCMC's proposed approach is over-complicated and costly to implement. Celcom expressed its preference for "no regulation so that the parties are free to negotiate mutually beneficial outcomes and make adjustments as market conditions change."

DiGi advised the MCMC not to modify its current approach as "variable intra-day charging is highly complex and would be difficult to implement". DiGi urged the MCMC to leave this issue for future review.

First Principles agreed with the MCMC's preliminary views, stating further that the use of a 24-hour average provides the least cumbersome approach for pricing, and reduces transactional costs.

Maxis agreed that the regulated access charges should be set on the basis of 24-hour weighted averages. However, this should be regarded as a ceiling price that the access provider is obliged to offer, and the access seeker and access provider should be able to determine other time of day arrangements based on the access seeker's traffic profile without the need for the MCMC to intervene.

NasionCom, REDtone, and TIME agreed with the MCMC's preliminary view for time-of-day price differentiation for regulated access charges as they believe that it is more flexible and beneficial to the overall development of the market. They also stated that this pricing differentiation will enable operators to manage costs more effectively and offer better retail packages. This will contribute positively to the LTIE policy.

Telekom expressed the view that the proposed approach is over-complicated and administratively difficult, further stating that it would be difficult to predict traffic flows with sufficient accuracy to avoid making changes throughout the year. There is also uncertainty surrounding the assessment of compliance and whether there will be any penalties levied should the final amount recovered be more than the implied weighted average amount, or avenues for compensation if there is a shortfall. Thus, Telekom reiterates its preference for regulation of peak access charges only, leaving parties to freely negotiate off-peak charges.

9.4.2. MCMC's final views

The MCMC's final position is consistent with the majority of the industry views: operators should be free to differentiate between peak and off-peak charges, while not exceeding a price ceiling expressed as a weighted average of peak and off-peak access charges. LRIC modelling can dimension an efficient network based on the usually non-contentious assumption about peak-load volumes that have to be carried. Time-of day price differentiation allows society to take advantage of operators' adjusting prices to approximate optimal peak-load pricing. Such prices, which have the effect of reducing variations in traffic levels during the day, will lead to reduced demand at peak times and hence reduced network costs. In supporting charges that vary by time of day, the MCMC is confirming its current policy, which is consistent with what is implemented in the majority of jurisdictions around the world.

9.5. Access Price Ceiling Versus Fixed-Price Charge

Question 45: The MCMC seeks comments on which form of access price regulation, if any price ceilings or fixed-price charge, is the most appropriate for each of the access facilities/services and the reasons behind such views

9.5.1. Comments received

DiGi's view is that a price ceiling is the most appropriate method to implement access pricing regulation as it is simple to implement and observe, and it retains the option for

prices to fall below the mandated level if competitive pressures evolve sufficiently. The case where DiGi believes an exception should be applied is where cross-subsidisation may exist.

Fiberail expressed its preference for fixed-price access prices as, if access pricing is regulated by price ceilings, the access provider may be expected or coerced into lowering the price further resulting in undesirable outcomes, i.e. lower service quality. Furthermore, in its opinion, if price ceilings are contemplated as a form of access price regulation then it defeats the purpose of access price regulation because price ceilings are best handled by market demand.

First Principles expressed its preference for fixed access prices as the access providers largely charge for the service at the price ceilings, making it unlikely that there would be any price competition in the provision of access amongst access providers.

Jaring simply stated that, regardless of the alternative choices, the access price should not be higher than the retail price (minus any sales commission).

Maxis stated that price ceilings are the most appropriate method to implement access pricing regulation. It further elaborated that the access seeker and access provider should be able to determine other pricing arrangements below the regulated price, so long as the regulated price is always available to the access seeker with no restrictions if they wish to select this option.

NasionCom, REDtone, and TIME noted that if access prices are set reasonably close to cost, the choice of the method of implementation (fixed price or price ceiling) becomes less relevant.

Telekom prefers price ceilings to fixed price charges as it offers the flexibility to offer volume-based discounts and other discounts based on various criteria. However, in its opinion, the costs produced by LRIC offer no scope in Malaysian conditions to serve as a price ceiling.

9.5.2. MCMC's final views

The MCMC notes that LRIC models are built so that the network can meet the expected busiest-period demand while ensuring good service quality. Unit charges are then derived dividing total cost by total volume supplied (on a yearly basis), thus abstracting from the distribution of such volume across days/hours.

Optimal peak-load pricing would require that the access provider charges relatively low prices in off-peak periods (close to variable cost), while recovering most fixed costs (on top of variable costs) during relatively high peak-load periods. Peak and off-peak demand depends endogenously, at least to some extent, on the pricing decision of the supplier — who is better informed about demand than the regulator. As a consequence, it is a standard practice that the regulator leaves the decision about time-of-day differentiation to the regulated operator, provided the latter charges non-discriminatory prices to all access seekers (and itself if vertically integrated) that do not exceed the daily average LRIC as predicted by the model. This has also been the MCMC's position so far.

Given that only one operator (and one consultancy) expressed views that contradict the current regulatory policy, which has not been challenged as being counterproductive from a welfare point of view, the MCMC's final view is to set access prices in the form of access ceilings.

9.6. Implementation

The prices set out in this PI Access Pricing Report for the facilities and services on the ALD will take effect from 1 January to 31 December of the respective years, starting from 1 January 2006.