The Hashemite Kingdom of Jordan

TELECOMMUNICATIONS REGULATORY COMMISSION

REGULATORY DECISION
ON
THE PRINCIPLES TO BE USED IN THE CONSTRUCTION OF TSLRIC+ MODELS FOR THE COSTS OF INTERCONNECTION SERVICES

Board of Commissioners Decision No (**17-5**/2009) issued on 27 September 2009

Purpose of this Regulatory Decision

Following the public consultation on the construction of TSLRIC+ models for the assessment of costs of interconnection services that was conducted during June and July 2009, and subsequent comments received from interested parties, the TRC hereby issues this Regulatory Decision, which sets out the principles that will be used by the TRC in the construction of TSLRIC+ models for setting the rates of interconnection services.

Table of contents

1 Introduction

The Telecommunications Regulatory Commission (TRC) has foreshadowed since 2005 its intent to move to a new cost basis for setting the rates for interconnection services. This cost basis is referred to as "Total Service Long-Run Incremental Cost Plus" (TSLRIC+). TSLRIC+ represents international best practice in setting interconnection rates.

The TRC has now made the Decision to move ahead with developing TSLRIC+ models for the costs of interconnection services. This document describes the development process for the models, the principles to be used in their construction and the considerations to be addressed by the TRC in using the model results for setting interconnection rates.

Before reaching this Decision, the TRC held a public consultation on the issues raised in the construction of TSLRIC+ models. On 11 June 2009, the TRC published a consultation document[1] and held an industry workshop to begin the consultation period. Responses, due by 11 July 2009, were received from:

- Jordan Telecom Company ("Orange Fixed");
- Petra Jordan Mobile Telecommunication Company ("Orange Mobile");
- Umniah Mobile Company ("Umniah");
- Jordan Mobile Telephone Services Company ("Zain").

These responses were published on the TRC website and the industry was invited to comment on them. Further responses, due by 3 August 2009, were received from:

- Umniah Mobile Company;
- Zain Jordan.

The TRC has carefully considered all these responses in making its Decision.

The TRC reserves the right to revise elements of this Regulatory Decision if circumstances change.

This Regulatory Decision is issued pursuant to the Telecommunications Law, which empowers the TRC to regulate interconnection and the relevant rates and charges in the following terms:

> **Article 6, paragraph j)** (partial quotation):
> To regulate access to telecommunications networks and conditions of interconnection therewith in accordance with instructions to be issued by the Commission for this purpose, approve the interconnection agreements referred to in Paragraph (e) of Article 29 of this Law, and to ensure that these agreements do not violate those instructions …
>
> **Article 12, paragraph a), section 7)**:
> To establish the bases for determining rates and charges for Telecommunication Services offered to Beneficiaries by Licensees, in line with the state of competition in offering of services and service levels, and to monitor the compliance of Licensees as may be necessary.
>
> **Article 12, paragraph a), section 8)**:
> To set the rates and charges of Telecommunication Services offered to Beneficiaries in the absence or weakness of competition due to dominance.

[1] Telecommunications Regulatory Commission, "Notice Requesting Comments on the Construction of TSLRIC+ Models for the Costs of Interconnection Services", 11 June 2009; published on TRC website.

In supporting its powers, the TRC has issued Interconnection Instructions,[2] which contain the following provisions:

> **267** (partial quotation). The methodology for determining cost based rates shall be contained in detail in a separate document published by the TRC. The implementation of this methodology shall be subject to a separate consultation.
>
> **268.** All Licensees' Interconnection charges shall be cost based rates that are transparent, reasonable, having regard to economic feasibility, and sufficiently unbundled so that the interconnecting party does not pay for Network components or facilities that it does not require for the service to be provided, it being understood that no unreasonable and unrecoverable costs will be imposed on the Licensee in connection with any unbundling.
>
> **269** (partial quotation). It is TRC's policy to move to a charging system based on Long Run Incremental Costs. … The TRC also intends to develop a neutral cost model for the purpose of assessing the Licensees' Interconnection cost calculations.
>
> **272.** Licensees shall undertake a full analysis of their costs of providing Interconnection Services.
>
> **273.** Licensees shall cooperate with the TRC in any service costing exercise that the TRC may decide to undertake.

The TRC has also issued Instructions[3] for the adoption of LRIC methods, which contain the following provisions:

> **4.1.** The costing methodology to be utilized by the TRC to determine interconnection costs of licensed operators is Total Service Long Run Incremental Cost "Plus" (TSLRIC+).
>
> **5.1b.** All Licensees providing interconnection must offer a capacity-based interconnection tariff and a usage-based tariff based on its TSLRIC+.
>
> **6.1a.** The TRC will formally adopt a reference interconnection cost model for use by all licensees to establish costs that shall be applied in setting rates for interconnection between Licensees.
>
> 1. The reference interconnection model will be developed according to principles known as "Total Service Long Run Incremental Cost Plus (TSLRIC+)".
>
> 2. The reference interconnection model will include variants for fixed and mobile networks.
>
> **6.1b.** The particular details of the structure of the reference interconnection model, including model structure and logic and input value computation will be determined by the TRC in the course of detailed consultation and discussion with concerned parties.

[2] Telecommunications Regulatory Commission, "Interconnection Instructions", 5 January 2005 (TRC Board Decision No. 2-1/2005).

[3] Telecommunications Regulatory Commission, "Instructions on Adoption of Long Run Incremental Cost Methods & Interconnection Rate Structure", 14 June 2005.

2 TSLRIC+ Model Development

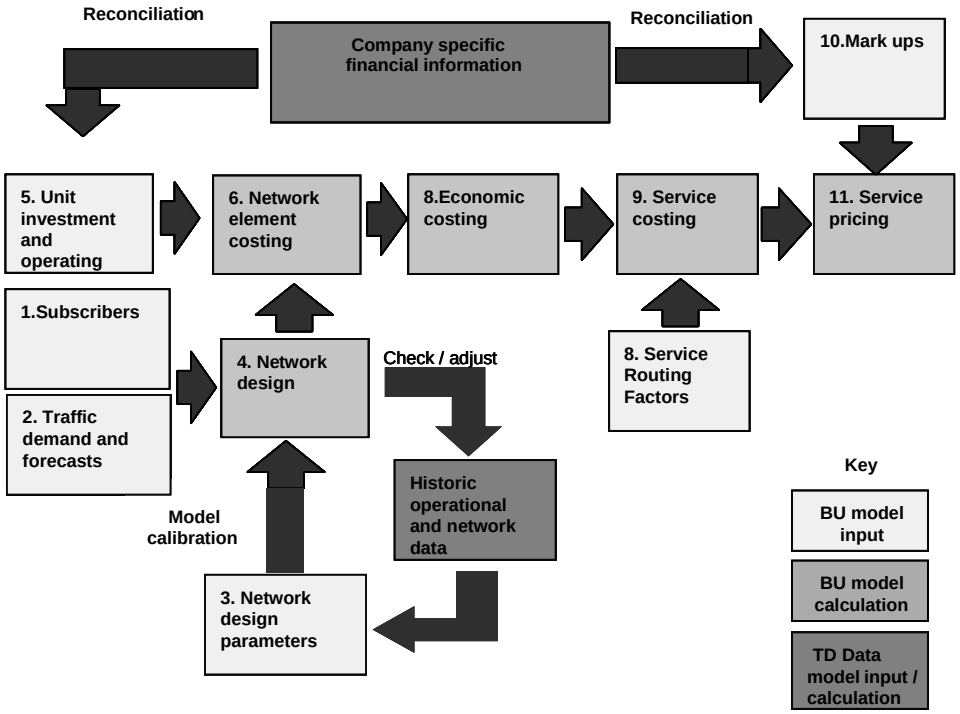
2.1 Models to be produced

The TRC will develop the following TSLRIC+ models:

- A Hybrid TSLRIC+ fixed model, reconciled/calibrated with top-down data from Orange Fixed, i.e. a hybrid model for Orange Fixed's network;
- A Hybrid[4] TSLRIC+ model of a hypothetical efficient fixed network operator in Jordan;
- Hybrid TSLRIC+ models for Orange, Umniah, Zain and Xpress, reconciled and calibrated with top-down data from each operator, i.e. hybrid models for each of the actual mobile network operators in Jordan;[5]
- A Hybrid[4] TSLRIC+ model of a hypothetical efficient mobile network operator in Jordan.

An overview of the hybrid modelling approach is set out in the following figure.

Figure 1: Overview of Hybrid Modelling Approach



Source: Ovum

[4] The hypothetical efficient models will not be reconciled and calibrated at a total level with any financial or operational data of a specific Jordanian operator, given that the hypothetical efficient operator does not actually exist. However, the model will still be hybrid in that the operational and financial inputs that are used in the model will be influenced by operator-specific data and will not model a level of operational or financial efficiency that could not be achieved within the real-world constraints that Jordanian operators face.

[5] Operator-specific hybrid models can only be built for operators that provide appropriate data about their network and costs to the TRC. If an operator does not provide such data, the TRC will rely on the efficient-operator model instead.

The hybrid models will be created through reconciliation and calibration of bottom-up models with top-down data that the TRC will request licensees to provide (and, if necessary, with the latest FAC models, adjusted where appropriate to be consistent with LRIC principles). This analysis will include, but not be limited to:

- Subscriber and traffic volumes;
- Asset numbers;
- Gross replacement costs of assets (after revaluing book values for current cost accounting);
- Operational expenditure;
- Fixed and common costs.

The TRC intends to work closely with the industry in constructing the models. The operators are being asked to provide data (see next section) and will be kept informed of progress. The TRC will maintain ownership and control of the models, but each operator-specific model will be disclosed to the relevant operator. Any model data that comes from a source other than the operator concerned may be omitted (if it would compromise confidentiality). It is important, therefore, that operators share their data with the TRC.

The efficient-operator models will be published on the TRC website but with all confidential information omitted. This will permit all operators to see how the interconnection costs have been calculated.

2.2 Data requests to operators

The TRC will also issue data requests (with an accompanying manual) to all operators with a view to collecting the necessary data. The data requests encompass both bottom-up and top-down data.

The data provided by the operators will be used to establish charges for interconnection services, including the following services:

- Traffic conveyance services:
    - Fixed and mobile termination services usage based (cost per minute);
    - Fixed and mobile termination services capacity based (cost per unit of capacity in peak hour);
    - Fixed and mobile transit services usage based (cost per minute);
    - Fixed and mobile transit services capacity based (cost per unit of capacity in peak hour);
    - Fixed and mobile origination services usage based (cost per minute);
    - Fixed and mobile origination services capacity based (cost per unit of capacity in peak hour);
    - Number translation traffic origination services usage based (cost per minute);
    - Number translation traffic origination services capacity based (cost per unit of capacity in peak hour);
- International gateway access services: Usage and capacity based;
- Transport services:
    - Transport capacities for the implementation of Interconnection;
    - Leased lines used by licensees between their own premises;

    - International circuits;
- Operator services:
    - Operator assistance;
    - Emergency services;
    - Directory enquiries;
- Bitstream unbundling service;
- Billing & collection services;
- Collocation & infrastructure sharing.

3 TSLRIC+ Modelling Principles

3.1 Conceptual network design

All the models will be based on a "scorched node" design. That is, the existing locations of switching nodes will be used as the basis for determining the locations of switches. This is a practical choice that corresponds to a realistic efficiency standard for operators in Jordan.

Node locations and numbers will be assumed to reflect the current network design but equipment in each location will reflect the Modern Equivalent Asset (MEA) for the equipment at that location. This approach may not give the optimum efficient network design – which may have fewer (or more) node locations or altered site locations, but it acknowledges that the history of the service provider has some influence on forward-looking cost structures.

Transmission network design will be optimised in the hybrid model to reflect the MEA design.

3.2 Network technology choices

3.2.1 Fixed network technology

The fixed network models will be based on the current deployments of Orange Fixed (currently the major fixed network provider). For voice services, the efficient-operator model will use PSTN voice technology, that is, circuit switching, with a two-level switching hierarchy. The TRC believes it is too early to treat packet voice (VoIP) separately from PSTN voice. For data services, the efficient-operator model will use IP technology for the MEAs.

The model of Orange Fixed will use the MEAs of the switching and transmission technologies actually deployed in the Orange Fixed network.

WiMAX and IP operators will be treated as equivalent to Orange Fixed for calculating terminating and originating interconnection tariffs, for the following reasons:

- Their licences are categorised as fixed broadband providers; therefore it makes sense that they are regulated as fixed network providers.
- Their costs may be expected to be as low as, if not lower than, the fixed network operator. This is because the service is only provided in selected local (city) areas so that coverage and capacity can be provided through a small number of sites.
- The costs of terminating or originating voice traffic will be reduced because the majority of their business is likely to be in broadband data services. For most WiMAX and IP operators, voice is a marginal business, offered so as to attract customers, but occupying a very small proportion of the available bandwidth.
- WiMAX or IP technologies cannot themselves provide the modern equivalent asset base for fixed voice services, both because Orange Fixed does not have access to a WiMAX frequency band and because the existing Orange Fixed network does not use this technology.

3.2.2 Mobile network technology and spectrum assignment

Ideally, the efficient-operator mobile model should be based on the least-cost MEA technology that is currently available and widely deployed. At present, 2G and 2.5G mobile technologies are deployed in Jordan. Following the recent application process, a 3G licence has been awarded to Orange and it is to be expected that 3G services will be available within 6 months. However, it will be a few years before 3G services are widely deployed and used in Jordan.

The TRC will therefore use 2G and 2.5G technology in its efficient-operator mobile model but will make provision for 3G technology and services in the model, so that the model can be adapted to 3G over the next 5 years if it becomes necessary to do so.

There are, however, differences in spectrum allocations in Jordan that may induce differences in the cost of network deployment. The efficient-operator mobile model will, therefore, have two variants: one for modelling a 900MHz only operator; and another for modelling an 1800MHz only operator. The TRC will use these variants to assess the cost differences for an efficient mobile operator.

The models for individual mobile operators will use the actual spectrum assignments for these operators.

3.3 Network dimensioning

3.3.1 Demand forecasts

Information required to model demand in the fixed core network shall be provided by Orange Fixed. Demand must be specified for all relevant services including, but not limited to:

- PSTN traffic;
- leased lines;
- other services provided to end customers via the operator's network.

For the mobile models, equivalent information on mobile services shall be provided by the mobile operators.

All operators will be asked for forecasts of their service demands for a 5 year period. The TRC will then use these forecasts and its own assessments of market and service growth to calculate forecasts of traffic volumes for the next 5 years. These forecasts will be used in the fixed and mobile models. The interconnecting traffic between fixed and mobile networks will be consistent in both models.

For the efficient-operator mobile model, it will be assumed that the operator has one-third market share. This should lead to an efficient scale for the operator and reflects a realistic assessment of the mobile market in Jordan.

3.3.2 Network design

Once the end-user demand has been estimated, the model will calculate the scale of network that is required to handle this demand. The network dimensioning will:

- Allow for network resilience and spare capacity;
- Allow for quality of service and grade of service;
- Apply busy-hour parameters to calculate traffic in the busy hour(s).

The model will assign traffic to nodes and links and will dimension network equipment using MEA capacities. Routing factor tables will be used in this assignment.

The efficient-operator models will use best-practice design parameters assessed from operator inputs and benchmarks from international best practice.

The individual operator models will use actual design parameters, if they are provided by the operators and are reasonable. Best-practice data will be used for missing or unreasonable values. The asset numbers calculated by the models will be reconciled with actual deployed equipment volumes, where possible, to ensure that the models are based on achievable efficiencies.

3.4 Economic factors

3.4.1 Weighted Average Cost of Capital

The TRC will determine Weighted Average Cost of Capital (WACC) values for each operator and for efficient operators to be used in the models in another Decision.

3.4.2 Depreciation method

The models will use the tilted annuity depreciation method.

3.5 Asset parameters

3.5.1 Asset values

The models will use MEA values for each asset item. Based on operator inputs, the TRC will develop MEA values for all relevant assets. The TRC will make use of international benchmarks where necessary.

3.5.2 Asset price trends

For the operator-specific models the TRC will use operator data, subject to reasonableness checks. For the efficient-operator models, the TRC will develop asset price trends using operator-supplied data and international benchmarks.

3.5.3 Asset lives

For the operator-specific models, the TRC will use the economic lives supplied by the operators, subject to reasonableness checks. For the efficient-operator models, the TRC will develop economic lives based on operator inputs and international benchmarks.

3.5.4 Capitalised installation

For the operator-specific models, the TRC will use installation costs supplied by operators, subject to reasonableness checks.

For the efficient-operator models, the TRC will use operator data cross-checked against international benchmarks. Any discrepancies will be discussed and reconciled with the operators. The TRC will take into account landed prices in Jordan, where they are available.

3.5.5 Operational costs

Operational costs are those associated with maintaining the network and providing service to customers. There are two categories of operational costs. The first is directly associated with equipment items. These costs will be modelled as a percentage of equipment capital costs.

The second category is indirect operational costs, those that are required for the network to function. They may include power, accommodation and general maintenance. These will be estimated as a mark-up on direct costs. However, where possible, operational costs will be modelled directly.

For the operator-specific models, the direct and indirect operational costs will be calculated from specific operator inputs and then reconciled against the total operational costs reported in top-down data.

For the efficient-operator models, the total operational costs as a proportion of total costs will be cross-checked against international benchmarks.

3.6 License and spectrum fees

For mobile operators, license and spectrum fees are a significant cost. According to the "Frequency Use and Planning Policy"[6] issued by the TRC, licensees of radio spectrum in Jordan are subject to two types of spectrum charges:

- Initial fees, paid at the time of the issuance of the licence, for acquiring the licence and acquiring the right to use a certain band of the radio spectrum;
- Annual fees for use of the assigned spectrum.

Accordingly, the TRC will treat license and spectrum fees as follows.

3.6.1 Initial fees

Initial fees will be amortised over the period of the licence and allocated to the different services using the traffic for each service as a cost driver.

For the operator-specific mobile models, the actual initial fee paid by the operator will be used.

For the efficient-operator mobile model, a weighted average of the actual and projected fees paid by operators per MHz of spectrum will be used to determine the initial fee.

3.6.2 Annual spectrum fees

Annual spectrum fees form part of the annual operating expenditure of each mobile operator. They will be treated as a network common cost and allocated to the different services using network traffic as a cost driver.

The TRC will use the formulas specified in the "Spectrum Tariff Formulas and Schedules" document[7] to calculate future annual spectrum fees based on expected spectrum usage. For the efficient-operator mobile model, the formulas will be used along with the dimensioned spectrum usage requirements in the relevant spectrum band.

3.7 Mark-ups on TSLRIC

TSLRIC+ includes the appropriate share of common costs (including overhead costs) that may be reasonably attributed to the provision of the services in question.

The operator-specific models will use equi-proportionate mark-up (EPMU) from data supplied by the operators to calculate a mark-up to recover common costs.

For the efficient-operator models, the mark-up for common costs will be set in line with the mark-ups used in the operator-specific models and will be cross-checked with international benchmarks.

[6] Telecommunications Regulatory Commission, "Frequency Use and Planning Policy", Issued Pursuant to Board of Commissioners Decision No. 4-19/2008, 3 September 2008.

[7] Telecommunications Regulatory Commission, Radio Spectrum Management Department, "Spectrum Tariff Formulas and Schedules", 4 February 2008. Available at: http://www.trc.gov.jo/images/stories/pdf/Spectrum%20tariff_English%20Version_04022008.pdf .

4 Implementing LRIC-based Interconnection Tariffs

The TSLRIC+ models will establish costs for a range of interconnection and related services, and the TRC will use the models to set tariffs for regulated interconnection services. This chapter sets out the further considerations the TRC will take into account when setting interconnection tariffs from model outputs. This should not be considered an exhaustive list: the TRC may also consider other factors that are relevant at the time of each Regulatory Decision.

4.1 Time horizon

The TRC will set LRIC-based tariffs over a 5-year period. The hybrid models will be constructed with a corresponding 5-year time horizon. After 3 years, the TRC plans to undertake a review of the LRIC models and, if necessary, will work with the industry to update the LRIC models. More generally, the TRC will monitor market conditions and, if justified by changes in market conditions, may update the forecasts and key assumptions in the LRIC models to provide a further check on interconnection tariffs.

4.2 Glide paths

Glide paths provide a means of phasing in the introduction of LRIC without significant disruption to the existing market players.

The TRC may use a glide-path implementation of LRIC-based interconnection tariffs if there is a significant gap between the LRIC-based tariffs and the current FAC-based tariffs. A glide path, if used, will extend for no more than 3 years.

4.3 Ancillary interconnection services

The calculation of LRIC-based tariffs for some interconnection services depends more heavily on top-down data (e.g. access costs in the fixed network models) than on bottom-up calculations. The following interconnection services fall into this category:

- Operator services:
  - Operator assistance;
  - Emergency services;
  - Directory enquiries;
- Bitstream unbundling service (fixed network only);
- Billing & collection services;
- Collocation & infrastructure sharing.

For these services, the first-year tariff for each service will be derived from the hybrid model, with the calculation largely dependent on the operator-supplied top-down data. Bottom-up analysis will be used to inform the extent to which the first-year price should be adjusted to take into account the difference between the incremental cost calculation and the fully allocated cost calculation. For the second and subsequent years, the first-year price will be adjusted using the price trends calculated in the efficient-operator model for the traffic conveyance services.

4.4 Externalities

Externalities are benefits (or costs) that are not taken into account by users when deciding whether to subscribe to, call or use a telecommunication service. In line with international best practice, the TRC will not include an externality in termination rates in Jordan.

4.5 Symmetry and asymmetry

Asymmetry occurs where a regulator sets different interconnection tariffs for the same service provided by different operators.

For fixed network services, the TRC will determine one set of interconnection tariffs.

For mobile network services, the TRC notes that, while it continues to prefer symmetry, there may still be significant cost differences between mobile operators based on exogenous factors such as the time since a licence was awarded and spectrum assignments. The TRC will therefore assess the scale of these differences in the final calculated interconnection costs. Unless there are significant differences in cost, the TRC will set symmetric tariffs.

4.6 Revenue sharing

The TRC will not include the revenue-sharing levy in setting interconnection tariffs.