

To
The Secretary,
Telecom Regulatory Authority of India,
Mahanagar Doorsanchar Bhawan,
Jawaharlal Nehru Marg (Old Minto Road),
New Delhi: 110 002

Subject: Comments on Consultation Paper on "Access Facilitation Charges and Co-location Charges at Cable Landing Stations"

The consultation paper on "Access Facilitation Charges and Co-location Charges at Cable Landing Stations" issued by TRAI on 22nd March, 2012 is most timely and has come at a time when although the international bandwidths prices have come down considerably, the effect of the same is not reflected in the final price to the service providers as the Access Facilitation Charges and Co-location Charges at Cable Landing Stations continue to be very high at the rates earlier approved by TRAI. This has further implications on the prices offered to the end consumer for bandwidth and broadband.

2. The Authority had clearly recognized the fact that the access to the CLS falls under "bottleneck" category and hence there is need to regulate the charges payable for these facilities till the level of competition is such that there is no need to regulate and control the prices. With this intent, TRAI issued 'International Telecommunication Access to Essential facilities at Cable Landing Stations Regulation, 2007' which mandated the owner of cable landing station (OCLS) to provide access to any eligible Indian International Telecommunication Entity on fair and non-discriminatory terms and conditions. For this, OCLS is required to submit a "Cable Landing Station Reference Interconnect Offer (CLS RIO)" to TRAI, in a specified format, containing the terms and conditions of access and co-location facilities including landing facilities for sub-marine cables at its cable landing stations and publish the said CLS-RIO after the due approval of TRAI.

3. The "International Telecommunication Access to Essential facilities at Cable Landing Stations Regulation, 2007" is in place since 2007 and there is a need to look in to the conditions/ situations which forced TRAI to bring in this regulation and whether those conditions/situations still persist. The moot questions to be answered are;

- Whether access to the CLS is still to be considered as "bottleneck" facility?
- Whether the resources of CLS are still controlled by a few operators and, if so, is there a situation where these operators enjoy "Significant Market Power" and hence can scuttle the completion?
- Is the higher AFC giving undue benefit to some operators who own these CLS resources vis-a-vis others who do not?

4. The AFC and CLC, approved by TRAI, are in place since almost four years during which the prices of international bandwidth have come down drastically. If we

see the cost of bandwidth to the service provider, there are two components namely cost of IPLC and the cost of interconnection at CLS consisting of AFC and CLC. If we see the decline in bandwidth charges vis-a-vis the AFC, it would be amply clear that these charges have remained constant and are now around 56% of the bandwidth charges while these were about 12% in the year 2008. This clearly demonstrates that CLS Access Charges are acting as a "bottleneck" for reduction in overall prices of International Bandwidth. The following table clearly demonstrates this fact and confirms these observations:

Access Charges as % of Bandwidth Charges:

Charges/Annum	2008	2009	2010	2011	2012
STM-16 BW Charges/Annum	60,017,946	41,664,000	14,880,000	12,780,000	12,570,000
AFC Lease Charges/Annum	2,993,648	2,993,648	2,993,648	2,993,648	2,993,648
AFC O&M Charges/Annum	4,072,848	4,072,848	4,072,848	4,072,848	4,072,848
STM-16 CLS Access Charges/Annum	7,066,496	7,066,496	7,066,496	7,066,496	7,066,496
Access Charges as % of BW Charges	11.77%	16.96%	47.49%	55.29%	56.22%

5. The CLS resources are presently being controlled by four operators namely M/s Tata, M/s Bharti, M/s Reliance and M/s BSNL. However, if we analyze the operator wise ownership of CLSs and Submarine Cables, the following picture emerges:

Ownership of CLS and Submarine Cables:

Name of the Operator	CLS Ownership		Cable Ownership in India	
	No of CLSs owned	% Ownership	No of Cables	% Ownership
BSNL	1	6.67%	1	7.14%
Reliance Communications Ltd	2	13.33%	2	14.29%
Bharti Airtel Ltd	4	26.67%	4	28.57%
Tata Communications Ltd	8	53.33%	7	50.00%
Total	15	100.00%	14	100.00%

Operator wise LIT and Activated Capacity:

Name of the Operator	LIT Capacity		Total Activated Capacity	
	(In Gbps)	% Ownership	(In Gbps)	% Ownership
BSNL	20.00	0.33%	10.00	0.90%
Reliance Communications Ltd	110.00	1.83%	54.06	4.87%
Bharti Airtel Ltd	2940.00	48.85%	413.10	37.23%
Tata Communications Ltd	2948.50	48.99%	632.50	57.00%
Total	6009	100.00%	1110	100.00%

As can be seen, only two operators control about 80% of the Submarine Cable and CLS resources. When we analyze the LIT/Activated Bandwidth Capacity on the Submarine Cables terminating in India, this fact gets further ratified that two operators control

about 95% of the Activated Bandwidth Capacity and hence have "Significant Market Power" to influence the bandwidth pricing.

6. Since only two operators control majority of the CLSs/Submarine Cables/Activated Bandwidth Capacity, it appears to be a clear case of "Vertical Price Squeeze" as both these players are providers of Internet, Broadband and Wireless/Wire line data services and control the International Bandwidth which is an essential input to the retail product pricing. This price squeeze has an effect similar to a refusal to supply an essential facility. This can turn out to be a major issue in proliferation of internet and broadband services as operators, not having access or access at higher price, can be out priced by the operators having cheaper access to these resources which can distort competition in the market and disturb the level playing field.

7. It is pertinent to mention here that since majority of the Internet Servers are still hosted outside India due to more reliable and robust Internet Data Centre infrastructure, the growth of Internet and Broadband will push the demand of International Bandwidth exponentially. Further, Internet Data Centre infrastructure in India will take a long time to reach to the desired level. In such a scenario, AFC and CLC become most critical for fair and just competition in retail pricing and need to be carefully regulated by TRAI.

8. It is also to be seen that most of the Submarine Cables have foreign carriers as consortium partners who also own bandwidths on these cables and can offer this to Indian operators. However, since the AFC are very high and form a large % of the bandwidth price, these carriers are not able to compete with the Indian OCLS, who out price these carriers and as a result this bandwidth capacity with foreign carriers cannot be leveraged to bring down the international bandwidth prices.

9. Subject to the above observations/submissions, the response to the questions raised by TRAI in the consultation paper is submitted below:

Q1: Which of the following method of regulating Access Facilitation Charges and Co-location charges (AFC & CLC) should be used in India?

- (a) The prevalent method i.e. submission of AFC & CLC by owner of the cable landing station (OCLS) and approval by the TRAI after scrutiny**
- (b) Submission of AFC & CLC by OCLS and approval by TRAI after consultation with other stakeholders**
- (c) Fixing of cost based AFC & CLC by TRAI**
- (d) Left for mutual negotiation between OCLS and the Indian International Telecommunication Entity (ITE)**
- (e) Any other method, please elaborate in detail.**

A1: The present arrangement, as specified in (a), of submission of AFC and CLC by owner of the CLS and approval by the TRAI after scrutiny has served its purpose in the

last four years. This is because of the fact that International BW prices were falling drastically and hence the impact of higher AFC and CLC was not visible and felt by the service providers. However, since access charges are now a significant part of the BW charges and % fall in BW charges will be only incremental, the prevalent method may not yield the desired results and may not be effective in regulating the AFC and CLC.

The method, as specified in (b), of submission of AFC and CLC by OCLS and approval by the TRAI after due consultation with the stakeholders is not preferable as the same is likely to be time consuming and would require frequent consultations and would add to the cost of regulation and delay such review of access charges for CLS.

The method of fixing of AFC and CLC by TRAI is more appropriate in the present situation where these charges need a stronger and continuous regulation till such time the competition takes care of these charges and the BW prices along with AFC and CLC align themselves with the international prices. For this purpose, the Authority can prescribe the filing of the requisite data by the OCLS on quarterly basis and review these charges on Annual/Bi-annual basis.

Q 2: In case AFC & CLC are regulated using method (a) or method (b) above, is there a need to issue guidelines containing algorithm and network elements to be considered for calculating AFC & CLC to the OCLSs? If yes, what should be these guidelines?

A2: Subject to our submissions in A.1, if TRAI decides to regulate the AFC and CLC using method (a) or (b), there is definite need to prescribe an algorithm and a set of network elements so that the price determination for AFC and CLC is transparent, coherent and does not give any undue advantage to specific OCLS. Since CLSs have come over different periods and cater to different capacities of bandwidth, TRAI has to ensure equivalence of costs in such a way that these variations are neutralized to the maximum extent. To this effect, the following points can be considered to be included as a part of specific guidelines:

- (a) Specific network elements which only would be considered for determination of AFC and CLC (Should exclude those elements which are capitalized under C&MA or are reimbursed by the consortiums)
- (b) Specify ROCE/WACC (Pre-tax), Depreciation rate and life of various network elements to be considered
- (c) Apportionment of cost of certain elements like DXC towards Access Charges
- (d) Specify some parameters related to passive infrastructure like space, power etc. so that there is parity amongst different CLSs
- (e) Specific % as Manpower, Management, Setup and Miscellaneous costs

Q 3: In case, AFC & CLC are regulated using method (a), (b) or (c) above, please suggest the value of pre-tax WACC, method of depreciation and useful life of each network element? Please provide justification in support of your answer.

A3: The pre-tax WACC can be derived from the 10 years G-Sec yield of Govt. of India bonds which is around 8.5% at present and the risk premium for equity @ 5 to 5.5%. Based on this, a pre-tax WACC rate of around 14% can be taken for the purpose of determination of AFC and CLC. It is also to be mentioned here that Authority, in many of its earlier consultations, has taken pre-tax WACC @ 14-15%.

However, TRAI, in its recent determination of IUC has allowed ROCE @ 15% for the purpose of calculations of termination charges. It has been stated that ROCE has distinct advantage over WACC in terms of uniformity across companies vis a vis different WACC for different companies, agnostic to different capital structures, incentivizes the cost efficient companies and used by other sector regulators. As such, ROCE @ 15% can be used to arrive at the AFC and CLC.

The life of the network equipments like DXC, Transmission Equipments etc. is generally taken as 12 year where as the life of the Submarine Cable is taken as 15 years. In addition, other passive assets like space and other infrastructure have much higher life period. Hence the Depreciation @ 10% with Straight Line Method may be most appropriate for calculation of AFC and CLC. The same has also been used for recent determination of IUC by the Authority.

Q 4: Which cost heads/ network elements should be included/ excluded while calculating Access Facilitation and Co-location charges? Please enumerate the items with specific reasons.

A4: The Authority has already recognized the fact that OCLS should determine the Access Facilitation and Co-location charges on the basis of cost oriented principles taking into account the costs involved in access facilitation, operation and maintenance, cancellation and in provisioning of co-location facilities including co-location space. In order to apply this principle transparently, it is important to identify those network elements which are directly attributable to AFC and CLC.

It is matter of common knowledge that costs of all the equipments up to the bandwidth handover point at CLS is included in the overall project cost of the Submarine Cable and is reimbursed by the consortium to the OCLS. Hence these costs shall be excluded from the costs attributable to AFC.

(i) Access facilitation at CLS:

The network elements whose costs should be included are;

- Ducts (if any)
- DXC for interconnecting with the backhaul links
- Optical Distribution Frame (ODF) and
- Cost of space and other passive infrastructure directly attributable for Access Facilitation and Co-location.

(ii) Access facilitation at Alternate Co-location:

The network elements whose costs should be included for Alternate Co-location are;

- DWDM Transmission Equipment
- Optical Fiber Cable for connecting to the Alternate Site
- DXC for interconnecting with the backhaul links
- Optical Distribution Frame (ODF) and
- Cost of space and other passive infrastructure at Alternate site directly attributable for Access Facilitation and Co-location.

(iii) Access facilitation at Virtual Co-location:

The network elements whose costs should be included for Virtual Co-location are;

- Duct and Cabling for In-building connectivity
- Optical Fiber Cable for connecting Manhole to CLS
- Optical Distribution Frame (ODF), Miscellaneous Equipment

Here, it is pertinent to mention that all network equipments deployed for Access Facilitation are available globally at almost the same international pricing. In spite of this, the AFC filed by OCLs with TRAI are many times higher than what they are in other countries. This fact has already been recognized by TRAI in its consultation. This clearly demonstrates that fixation of AFC and CLC needs stricter control and regulation by the Authority. It should be the endeavor by TRAI to fix cost based tariffs in line with international trends.

Q5: What should be periodicity of revision of AFC & CLC? Support your view with reasons.

A5: The Access Facilitation and Co-location charges were approved by TRAI in 2007-2008 and no further review has taken place for those charges. The capacity utilization of the submarine cable is the key criterion for determination of AFC and O&M charges. With the proliferation of data and broadband services, the requirement of International Bandwidth is likely to grow exponentially and hence the capacity utilization levels will increase. As the International BW prices fall further, the AFC will become a major part of the total cost of the BW charges and hence need a stricter regulation to maintain a fair competition level and affordable retail pricing. Hence it is suggested that an Annual/Bi-annual review of these charges by the Authority is required to be prescribed to maintain pricing trends in line with the global prices for such facilities.

Q 6: In case, cost based AFC & CLC are fixed by TRAI, which costing methodology should be applied to determine these charges? Please support your view with a fully developed cost model along with methodology, calculation sheets and justification thereof.

A6: It is amply clear that the prevailing AFC are very high not only from the standpoint of international pricing for such facilities but also because of the fact that they constitute about 55% of the bandwidth charges. If we see this aspect from the investment perspective, the amount invested on a CLS may be only a small fraction of the investments made in submarine cable. In view of this it is not understood how AFC can be a significant portion of the bandwidth cost.

The Fully Allocated Cost (FAC) is a top-down costing approach and consists of the total cost of providing a service being the sum of the direct costs plus a proportional share of other indirect costs which can be solely attributed to such services. The identification of such direct and indirect costs is of paramount importance for arriving at the transparent pricing. Since the CLS facilities are used by the OCLS as well as other service providers, it would not be possible to prescribe any cost recovery consisting of Fixed as well as Variable elements. It would be prudent to recover these charges as only variable cost by converting the fixed element in to variable one. This has the following advantages:

- Because the model is based on historical costing, the data is available from the statutory accounting systems of the service provider.
- Since the cost calculations are directly obtained from information contained in the accounting statements, they are verifiable and auditable.

The Long Run Incremental Cost (LRIC), on the other hand, is a bottoms-up approach and is based on a hypothetical model with certain design principles. Such an arrangement, though takes in to account the costs on incremental basis, requires fairly good estimation of capacities and demands to arrive at the transparent pricing. Such a pricing may be difficult to arrive at due to the following reasons:

- The CLSs have come in to existence at different periods with variable capacities and hence there does not seem to be equivalence on this account.
- CLS locations vary from major metropolitan areas to even smaller towns and hence the passive infrastructure pricing may not be comparable.
- Demand forecasts for BW are at large variance amongst service providers and it is difficult to arrive at the consensus demand for the purpose of developing a hypothetical model.

However, despite the differences found in the LRIC methods, there exist some common features. Interconnection prices are generally lower under LRIC compared with other cost-based methods, including FAC as well as most non-cost-based approaches. LRIC methods provide just enough compensation for the incumbent to provide the necessary inputs to the entrant, including a fair return on common costs. There are cases, however, where interconnection prices can be lower than costs; e.g., when positive network externalities exist, such that lower interconnection prices are offset by higher in-network revenues. Another example occurs when tariffs are highly unbalanced, such that interconnection prices reflect the subsidized retail prices.

In the instant case, in our opinion, it would be prudent to go for FAC model for determination of the AFC and CLC by taking an approach wherein OPEX as well as CAPEX, as relevant to the Access Facilitation and Co-location, should be recovered on per link basis. The link bandwidth will depend upon the minimum capacity interface which can be activated on a particular Submarine Cable.

Further, since for delivering sub-rate bandwidths, multiplexing/de-multiplexing equipment is required to be deployed, the charges should be categorized in to *Basic charges* and *Add-on* charges. The *Basic charges* will cater for the standard bandwidth which can be activated on a submarine cable and the *Add-on* cost should be for the lower BWs over and above the *Basic charges*.

While determining these charges, the following assumptions and methodology can be adopted:

A. Assumptions:

1. The cost to be allocated for calculations of the AFC and CLC should be directly attributable to these and any costs, which are either reimbursed by the consortium or taken care of in the C&MA, should be deducted from this. It is pertinent to mention here that consortiums reimburse the T-Segment charges (Terrestrial segment charges) to the OCLS and this cost should be deducted from the OPEX arrived at for determination of the O&M charges. In addition, any S-Segment charges reimbursed by the consortium like S-segment O&M charges, should also be taken care of while determining the O&M charges.
2. If the WACC is used for determination of the charges, a WACC @ 14-15% can be taken for the purpose of calculations. However, it is prudent to use ROCE @ 15% which is likely to give better and acceptable calculation compared to WACC.

B. Methodology:

I. Access Facilitation Charge:

1. The AFC should be calculated taking in to consideration the following:
 - (a) Capital Cost (CAPEX) which is directly attributable to the Access Facilitation. This could include various network elements which are solely required for the access facilitation.
 - (b) Transmission Link cost, if the same is required for the purpose of Alternate Co-location
 - (c) One time Set-up costs, Management costs, Manpower costs for commissioning the facility etc.
 - (d) The number of STM links which can be attributed to such costs.

- (e) Cost of multiplexing/de-multiplexing equipment for arriving at the Add-on charges.
2. The CAPEX, so arrived at, should be used for determining the Depreciation @ 10% with SLM and also the ROCE @ 15%. The charges of Depreciation and ROCE should be combined to arrive at the AFC. The IRU charges can be determined based on the multiplying factor of 3 as in the case of International BW on IRU.
 3. The allowance for License Fee should be given while calculating these charges.
 4. The OPEX charges should be arrived at taking in to consideration the AMC charges with respect to only the equipment directly attributable for access facilitation. In addition, the cost of space and infrastructure for the purpose can be added to this cost. Any other indirect Overhead charges can be incorporated in to overall OPEX charges. However, Segment-T/Segment-S charges, reimbursed by consortium, should be deducted from the overall OPEX charges.

II. Co-location Charges:

1. The Co-location charges should include the space rental which can be allocated to the Co-location only, power consumption, Air-conditioning cost, Security charges, Manpower cost etc.
2. It is to be seen that these charges should be prescribed on per rack basis rather than on bandwidth capacity activated.

III. Suggested Framework:

1. The present framework envisages OCLS to file a CLS-RIO for the specific CLS and the same is approved by TRAI before it can be published by OCLS. It means that different CLSs have different AFC and CLC approved by TRAI. This framework basically assumes that the OCLS has carried out the due diligence for the costs which are attributable for such facilities. However, since CLS is still a "bottleneck facility" a stronger monitoring and control on the AFC and CLC is required by the TRAI.
2. It does not make sense that there are multiple rates for a similar facility across various CLSs when the same needs to be approved by TRAI. It would be prudent that the present arrangement is modified so that the fixation of AFC and CLC should be done by TRAI after all the required data is made available by the OCLS to the TRAI. Since the costs involved could be different in different cases, TRAI has to take a comprehensive view of the charges and

prescribe these charges independent of the CLS so that there is rationality and parity in these charges and no CLS gets a preferential treatment. Such an arrangement would be fair and transparent and would result in healthy competition in the international bandwidth segment.

3. As per our submissions in para 5 above, it is very clear that two operators enjoy "Significant Market Power" wherein they control almost 95% of the international bandwidth activated and terminated at various CLSs and a situation of "Vertical Price Squeeze" exists. In such a scenario, TRAI can fix up the AFC and CLC based on the inputs given by OCLSs and such prescribed charges can be a "Ceiling" and OCLS can offer rates lower than those prescribed charges so as to increase their capacity utilization of international bandwidth.

IV. BSNL Cost Model:

Based on the assumptions in A above and **Annexure-I**, sample calculations have been made for determining the AFC, O&M and CLC which are enclosed as **Annexure-II**. The charges arrived at are as below:

Item	Unit	Charge/Annum (In Rs)
Access Facilitation Charges/Annum	Per STM-1	4646
O&M Charges/Annum	Per STM-1	5523
Co-location Charges/Annum	Per Rack	764000

Q 7: Whether Access Facilitation charges and O&M charges should be dependent on capacity (i.e. STM-1, STM-4 or STM-16) activated? Support your view with reasons.

A7: From the CLS-RIO filed by various OCLS, it is evident that the AFC and O&M charges are purely based on the capacity of link and are directly multiplied by the multiplier of the bandwidth. This looks ridiculous as the variation in costs involved in provisioning of Access and O&M for STM-4 or STM-16 or STM-64 may be only incremental w.r.t. the Access and O&M of STM-1. Hence the AFC and O&M charges should not be dependent on the capacity and TRAI should not allow OCLS to levy AFC on capacity dependent basis.

It is pertinent to mention here that each Submarine Cable has minimum capacity interface which can be activated. For most of the new cables, this capacity is STM-16 or STM-64 which means that this is the minimum capacity a service provider has to get activated. This clearly means that for accessing bandwidth of STM-1 or STM-4, there would be a need to use multiplexing/de-multiplexing equipment and hence the cost should be incrementally more for lower bandwidths than for higher bandwidths which only can be activated on Submarine Cables.

It is submitted that the cost should depend only on the number of cables landed and the number of links backhauled. As far as the cost relating to multiplexing/de-multiplexing is concerned, this should be determined based on the cost attributable for such equipment and the same can be levied as an Add-on cost over and above the Base Charges fixed for standard capacity supported on a submarine cable at CLS.

Q 8: If Access Facilitation charges and O&M charges are fixed on the basis of capacity activated;

(a) Should the charges be linearly proportionate to the capacity activated;

or

(b) Should the interface capacity as provided by the submarine cable system at the cable landing station be charged as a base charge while higher or lower bandwidth be charged as the base charge plus charges for multiplexing/ de-multiplexing?

A8: As already stated in our reply to Q.7, there is no rationale for fixing charges based on the capacity activated. Depending upon the interface for minimum capacity which can be activated on a particular Submarine Cable, the base charges can be fixed applying the cost based principle and for sub-rates lower than the standard capacity, Add-on charges can be prescribed taking in to consideration the cost attributable to network elements utilized for multiplexing/de-multiplexing. This would bring more transparency in AFC & O&M charges and would also encourage operators to activate higher capacities to bring down their cost of bandwidth.

Q 9: Whether there is a need to fix Access Facilitation charges for all types of submarine cables? If no, which kind of submarine cables may be exempted and why?

A9: It is true that a private cable terminated on a CLS has only bandwidth owned by a single service provider and the control of bandwidth as well as the CLS vests with it. As such, regulating these CLSs would not matter much as this single seller will make all efforts to sell its bandwidth and hence would keep the AFC low to take advantage of the market dynamics. If we see the AFC and CLC for two such CLS namely Bharat Lanka Cable CLS at Tuticorin and CLS of M/s Reliance, the charges prescribed are lower than the consortium CLS.

However, the AFC are a significant part of the bandwidth cost and hence impact the overall cost of providing the services. Although a Submarine Cable can be a privately owned one but since CLSs are to be seen as "bottleneck facility", there is no justification for exempting a privately owned cable. Hence AFC and CLC should be fixed for all CLSs irrespective of their ownership.

In order to promote further competition to reduce charges for such "bottleneck facility", it is suggested that the charges prescribed by TRAI be made as ceiling and the OCLS

should be left free to offer rates lower than this ceiling. This would force operators to concentrate more on selling international bandwidth and less on undue higher AFC.

Q 10: Is there a need to introduce any new provision or to modify/delete any of the clauses of the 'International Telecommunication Access to Essential Facilities at Cable Landing Stations Regulation 2007', in order to facilitate access to essential facilities at cable landing station?

A10: As already stated in our reply to Q.1, if TRAI decides to fix the AFC and CLC on its own, there would not be any need for publishing any AFC and CLC charges by OCLS. Though present CLS-RIO is quite comprehensive and has been in place for last four years, the following issue warrants immediate attention of TRAI and needs to be included in the CLS-RIO:

In the existing CLS-RIO, there is no clause which protects the interests of the Indian ILDO as a non-landing party owning bandwidth in the consortium cables landing in India. In such situations, where one of the Indian ILDO is a non-landing party in a consortium cable landing in India and has the right to activate its share of bandwidth on the said cable system, the non-landing party is also treated at par with other operator(s) who are buying the bandwidth on the said cable system and hence have also to pay the AFC and CLC as access seeker for accessing the bandwidth. Such an arrangement is discriminatory as it gives undue advantage to the CLS owner in India for that cable system. The CLS owner can load the cost of equipment for accessing the bandwidth by the access seeker on to the non-landing party. This would result in higher cost to the non-landing party for activating its bandwidth although it should pay only for the Co-location Charges and not for the Access Facilitation Charges.

It is submitted that in such a situation, there should be a provision included in the CLS-RIO, which protects the commercial interests of the non-landing party in the consortium cable, by prescribing a clause to this effect that the non-landing party has only to pay the Co-location Charges for activating its bandwidth. This issue was brought to the notice of TRAI vide this office letter no:4-11/2007-RegIn./914 dated 16th August, 2011(**Annexure-III**) in response to TRAI's request for information on access facilitation and co-location charges for cable alnding station vide their letter no: 416-3/2010-I&FN dated 22nd June, 2011 .

Details and Assumptions used in Calculations

For CAPEX

- i) Configuration of DXC used in calculation is:
 - STM-64 = 16 ports,
 - STM-16 = 32 ports,
 - 10G = 2 ports,
 - 1G = 128 ports,
 - STM-1 = 256 ports
- ii) Equipped number of ports, in terms of STM-1s, in DXC are taken as half the total capacity of DXC considering that half the capacity will be used for input and remaining half for the output.
- iii) The ports dedicated for access facilitation in DXC in Equipment Room and Co-location Room are assumed to be 50% of the equipped number of ports.
- iv) Cost of SDH Analyser is taken as Rs. 10,00,000 as per PO placed by CNP Cell and ODF cost is taken as Rs. 6,000 for 72 fibres as per discussion from field units.
- v) Approximate 500 patch-cords are considered taking into consideration the configuration of DXC with each costing about Rs. 250.
- vi) For Manpower, cost is determined assuming that it take 2 engineers for 2 months and support staff of 4 for 2 months, each costing Rs. 1 lakh/month and Rs. 50,000/month respectively.
- vii) Miscellaneous cost is assumed to be Rs. 1,00,000.
- viii) Project Management cost is assumed to be 10% of total CAPEX cost.
- ix) Pre-tax WACC is taken as 15%.
- x) Revenue sharing rate is taken as 6%.

For OPEX

- i) AMC cost of equipment and transmission link is assumed to be 10% of total equipment cost.
- ii) Cost of space and support infrastructure for equipment is considered to be Rs. 7,00,000/- considering charges for sharing building space per annum per bay as Rs. 36,000 in 2006 with 10% increase every year till 2012 and miscellaneous

infrastructure charges per annum per bay as Rs. 2,00,000/ in 2006 with 10% increase every year till 2012.

- iii) Cost of manpower at CLS based on actual manning (dedicated and shared) is assumed to be 3 persons with salary of Rs. 50000/- per month per person.
- iv) Overhead charges are assumed to be 15% of Total Opex.
- v) License Fee is taken as 6%.

Co-location charges

- i) Power cost per rack per annum and rental per rack per annum is taken same as for OPEX.
- ii) OMC is assumed to be 10% of power cost (miscellaneous infrastructure charges).
- iii) Manpower cost is assumed to be covered under manpower cost in OPEX.
- iv) Security service charges are included in the item number (i) above.
- v) Depreciation for rack is taken as Rs. 0 as rack is assumed to be provided by Access Seeker.

Annexure-II

Calculations for Access Facilitation Charges and Co-location Charges at CLS Location			
A	Access Facilitation Charges on IRU basis/ Annual Lease basis		
a.	CAPEX components		(INR)
(1)	Total cost of DXC	a	5,400,000
(2)	Equipped number of ports in DXC	b	1,400
(3)	Ports dedicated for access facilitation in DXC	c	700
(4)	Apportioned cost for access facilitation = Line item 1* item 3 / item 2	$d=a*c/b$	2,700,000
(5)	Apportioned cost of DXC at co-location space (A% dedicated for Access Facilitation)	e	2,700,000
(6)	Apportioned cost of ODF/Test equipment (A% dedicated for access Facilitation)	f	1,200,000
(7)	Total equipment cost = line item 4 + item 5 + item 6	$g=d+e+f$	6,600,000
(8)	Transmission link cost (Cost of duct, fiber and services)	h	200,000
(9)	Manpower cost for planning, installation, testing & commissioning (Cost of engineers and support staff)	i	800,000
(10)	Miscellaneous cost (cost of cable, tools, hardware, materials)	j	100,000
(11)	One time set-up cost = line item 9 + item 10	$k=i+j$	900,000
(12)	Apportioned one-time set-up cost = line item 11*item 3/ item 2	$l=k*c/b$	450,000
(13)	Total CAPEX cost = line item 7 + item 8 + item 12	$m=g+h+l$	7,250,000
(14)	Project Management Cost	n	725,000
(15)	Total cost including Project management cost = line item 13 + item 14	$o=m+n$	7,975,000
(16)	Cost including pre-tax WACC @B% = line item 13*(1+B%)	$p=o*(1+B\%)$	9,171,250
(17)	Total number of STM-1s	q	700
(18)	Cost per STM-1 = line item 16/ item 17	$r=p/q$	13,102
(19)	Revenue sharing rate	s%	6.00%
(20)	Price with revenue sharing per STM-1 = line item 18/ (1-line item 19)	$t=r/(1-s\%)$	13,938
(21)	Access Facilitation Charges per STM-I on IRU basis	$u=t$	13,938
(22)	Access Facilitation Charges on leased basis (1/3 of IRU price)	$v=u/3$	4,646
(b)	OPEX Components		
(23)	AMC cost of equipment and transmission Link	w	660,000
(24)	Cost of space and support infrastructure for equipment	x	700,000
(25)	Cost of manpower at CLS based on actual manning (dedicated and shared)	y	1,800,000
(26)	Total opex (direct) = Line item 23 + item 24 + item 25	$z=w+x+y$	3,160,000
(27)	Overhead charges = C% of line item 26	$aa= z *C\%$	474,000
(28)	Total = line item 26 + item 27	$ab=z+aa$	3,634,000
(29)	License fee	ac%	6%
(30)	Total =line item 28/ (1-ac%)	$ad= ab/(1-ac\%)$	3,865,957
(31)	Annual O&M Charges per STM-1	$ae=ad/q$	5,523

B.	Co-location Charges		
1	Power cost (basic) per rack per annum	a	640,000
2	O&M (AMC for AC, fire-fighting equipment, UPS, infra related items etc.) per rack per annum	b	64,000
3	Rental (space occupied) per rack per annum	c	60,000
4	Manpower (to assist in installation & fault repair etc.) per rack per annum	d	0
5	Security Service Charges per rack per annum	e	0
6	Depreciation per rack per annum	f	0
7	Co-location charges per rack per annum = line item 1 + item 2+item3+item 4+item 5+item 6	g=a+b+c+d+e+f	764,000