Counter Comments to TRAI Consultation Paper
Consultation Paper on Delivering Broadband Quickly: What do we need to do?
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1. What immediate measures are required to promote wireline technologies in access networks? What is the cost per line for various wireline technologies and how can this cost be minimized? Please reply separately for each technology.

As per TRAI, the wireless broadband subscription is 42.35 million as of January 31, 2014. **Wireless should be the preferred mode for delivery of broadband services**. Notwithstanding this submission, our comments on each of the wireline technologies are as follows:

- **CATV**: CATV penetration stands at 60% of the total households at the national level as of June 2013 and technologically has the potential to be leveraged for provision of broadband services. Operationally there are significant challenges. However, the upgradation of cable TV network, especially in rural areas requires significant cost. Affordability of cable modem and associated equipments will pose a major challenge for rural areas. The regulatory process for this will require that CATV operators should be incentivized to migrate to the unified licensing (UL) regime. The one-time fee for migrating to UL may be waived for rural CATV operators. If deemed possible, the annual license fee may also be waived for a period of two years. However, annual license fee, as a function of AGR, should be kept uniform at 8% thereafter. Additional investments will be required by the CATV operators in their network and end user equipment to enable broadband provision.

- **DSL:** Currently there are 6 million loops in rural areas and 23 million in urban areas which could potentially be used for Internet/Broadband. All the existing wireline local loops cannot be leveraged for provision of broadband services using DSL because of the poor quality of twisted wire pairs that have been previously installed for provision of voice services. Additionally, current penetration of such copper wires is limited and not growing. As per TRAI statistics dated May 31, 2014, the rural wireless teledensity is 41.34% whereas rural wireline teledensity (includes wireline and fixed wireless) is 20.84%. Going by the performance of DSL technologies, speed decrease drastically after a short distance (0.5 km) which is a major constraint. In addition, most of technologies

used for internet/broadband is wireless. Gram panchayat too do not have fixed line connectivity. Going by a cursory review done for 10 districts, it was observed that gram panchayats are adopting mobile connections rather than fixed landline connection.

- **OFC:** OFC at the access portion of the network is an expensive proposition. OFC is recommended based on cost consideration. New housing complexes are emerging in the form of societies. New building laws/regulation should mandate OFC in new building and smart cities that are to be constructed in future. The Government should mandate upcoming infrastructure to have duct space for fibre/ telecommunications cables. Also, they should come up with guideline to accommodate this in forthcoming infrastructure of roads, rail etc.

- **Broadband Over Powerline (BPL)**: Upgradation of BPL with current technology would require huge investments from scratch, which will be a tedious and time consuming option. Also, quality of current electricity supply is poor.

2. **What are the impediments to the deployment of wireless technologies in the access network? How can these deployments be made faster? Please reply separately for each technology.**

   Wireless should be the preferred mode for delivery of broadband services in India.
   Our response for wireless access is divided into two sections:
   1) Constraints on Spectrum Usage
   2) Technology specific issues

   Constraints on Spectrum Usage

   Following mentioned are the current governance issues with respect to spectrum and its allocation:

   - Lack of coordination between ministries: Currently, there is lack of coordination between different ministries with respect to spectrum requirement and allocation. For example, the DoT has been unable to allocate additional spectrum in the 2100 MHz band for 3G services because spectrum in that band is currently being held by the Defence Ministry. The DoT has been unable to refarm that spectrum due to its inability to provide an alternate media for the use by Defence.

   - No clear roadmap for future spectrum usage: The DoT has not been able to provide a clear roadmap for future spectrum auctions. In the absence of a clear roadmap, Telecom Service Providers are unable to take informed decisions during spectrum auctions as a

result of which they may either over bid, under bid or abstain from participating. This information asymmetry may also be a barrier for investors looking for low risk investments.

- Need for unlicensed bands: Unlicensed bands like the ISM band in 2.4GHz are essential for promoting innovation of new network technologies that allow for multiple devices to operate without interference, especially for personal area networks. There is a growing call for allowing the use of such unlicensed spectrum for purposes such as broadcasting radio and television stations, operating the local loop by telecom service providers etc. De-licensing bands may drastically bring down costs for access to the internet; and promote efficient use of spectrum.

- Shared Use and Trading of Spectrum: If allocation of spectrum in the primary market is inefficient, a secondary market with low transaction costs provides TSPs the opportunity to reorganize spectrum according to the most efficient use. Allocation in the primary market in India has been inefficient due to allocation of fragmented non-contiguous spectrum in small quantum spread across multiple bands, for technologies that are now obsolete. For all future spectrum allocations, India has liberalized spectrum and finalized a spectrum trading and sharing regime in the secondary market. However, all previous allocations are not part of this new regime creating inefficiencies that may be difficult to remove in the long run.

- Auction as means of allocation: Auction mechanism is a well established mechanism for allocation of access spectrum. However, administrative allocation is still followed for backhaul spectrum, for broadcasting spectrum and for captive spectrum

It is recommended that the WPC under MoCIT be dissolved; and a National Spectrum Committee under the PMO (or as an autonomous agency) be established to facilitate coordination between different ministries. Proposed structure will have the legitimacy when above mentioned governance issues are addressed.

Technology Specific Issues
The wireless technologies mentioned in the consultation paper are WiFi, WiMAX, Satellite and Mobile. Deployment of these technologies could pose following challenges:

- **WiFi:** The Cyber Café Rules of The Information Technology Act are currently proving to be a hurdle in the provision of WiFi Hotspots. These rules need be liberalized for reducing regulatory compliance costs for provision of WiFi Hotspots. Additionally, spectrum in the 5.8 GHz band for outdoor usage needs to be delicensed to enhance quality of service. Also, the penetration of laptops and smart phones plays a vital role.

- **WiMAX:** Initial deployment of WiMAX in India was done in 3.2 GHz band due to its capability and performance. However, this could not scale up due to non adoption of globally harmonized band (2.3 to 2.5 GHz) which led to high CAPEX.
- **Satellite:** Though an expensive option, Satellite is apt for uneven and hilly terrains.
- **Mobile/LTE-A:** Absence of ample amount of infrastructure in rural areas is one of the major impediments in the deployment of mobile.
- **Other Technologies**: Facebook and Google have new initiatives (using drones and balloons respectively) for provision of last-mile broadband services. These companies should be actively invited to India for pilot projects.

3. The recommendations of the Authority on Microwave backhaul have been recently released. Are there any other issues which need to be addressed to ensure availability of sufficient Microwave backhaul capacity for the growth of broadband in the country?

The issues related to Microwave backhaul have been discussed at length in the paper "Allocation and pricing of Microwave Access (MWA) and Microwave Backbone (MWB) RF carriers". Further deliberation on this subject is not required at this stage. However, we recommend that the backhaul should also be auctioned.

4. The pricing of Domestic Leased Circuits (DLC) have been reviewed in July 2014. Apart from pricing, are there any other issues which can improve availability of DLC?

The prescribed tariffs of DLC levied across the country are as per the distance *(in km)* and bandwidth. It would be prudent to have one more level of demarcation in the proposed structure as metro, urban and rural.

5. What are the specific reasons that ISPs are proactively not connecting with NIXI? What measures are required so that all ISPs are connected to the NIXI?

NIXI nodes at Software Technology Parks of India (STPIs) are situated far from commercial centers making it difficult for ISP's to reach. Rediff opines that NIXI nodes need to be relocated either at BSNL or MTNL exchanges. NIXI nodes must be interconnected and replicated across the country, to help the regional and local telcos and ISPs, buy transit cost-effectively.

At present, only ISP with valid ISP License can get connected to NIXI. Presently NIXI follows forced multilateral peering policy. Permitting content providers to directly connect with NIXI will be in violation of the interconnection rules. Also allowing content providers to connect to NIXI will have legal/security implications. They should be allowed to connect only if they fulfill the parameters in terms of licensing, security and other compliances at par

with other ISPs without violating the Articles of Association of the Company. Any entity with an ASN must be allowed to interconnect at NIXI. NIXI needs appropriate metrics to evaluate progress made and periodic reviews

6. **Would the hosting of content within the country help in reduction of the cost of broadband to a subscriber? If yes, what measures are required to encourage content service providers to host content in the data centre situated within India?**

Yes, it will definitely help in the reduction of the cost of broadband to subscriber. To this extent the hosting of content within the country should be encouraged. Economic incentive should be given for the local hosting through SEZs for low cost land and power. The cost of DLC must be brought down and be competitive vis-à-vis international leased lines.

There is need to rationalize intermediary liability and privacy regime which will encourage setting up of data centers in India.

7. **Are PSUs ideal choices for implementing the National Optical Fibre Network (NOFN) project?**

PSU are not effective as far as execution of projects is concerned. However, if private entity is to be involved then least cost bid, strict SLA and continuous monitoring should be observed. Transparency should be maintained and videos depicting the progress made may be uploaded on the website. Private parties have to be involved to unlock their potential. Currently BBNL has signed tripartite MOU regarding ROW. These could be handed over to the selected vendor.

8. **Should awarding of EPC turnkey contracts to private sector parties through International Competitive Bidding (ICB) be considered for the NOFN project?**

International Competitive Bidding (ICB) is a worldwide accepted model. As per World Bank, implementation of ICB in the case of the Philippines demonstrates that the advantages of ICB are outweighed by the administrative or financial burden involved. National Competitive Bidding (NCB) is less intensive than ICB. National bidding is suited to PPPs which are unlikely to be attractive to foreign firms.

9. **Are there any ways in which infrastructure development costs can be reduced? Is it possible to piggyback on the existing private sector access networks so as to minimize costs in reaching remote rural locations?**

Existing private sector access networks could be made available on a competitive basis. Community networks must be encouraged. We need government, community and private sector networks, both for redundancy and quick roll out.

10. **What can the private sector do to reduce delivery costs? Please provide specific examples.**

Authority should allow private sector players to share spectrum which would result in effective utilization of spectrum and accommodating more number of users.

11. **What are the major issues in obtaining right of way for laying optical fibre? What are the applicable charges/ constraints imposed by various bodies who grant permission of right of way? In your opinion what is the feasible solution?**

And

12. **Should the Government consider framing guidelines to mandate compulsory deployment of duct space for fibre/ telecommunications cables and space for telecommunication towers in all major physical infrastructure construction projects such as building or upgrading highways, inner-city metros, railways or sewer networks?**

The necessary permissions/approvals for land usage for the deployment of telecommunication equipment are cumbersome and slow due to multiple permissions required. There is need of guidelines at all levels across the central, state and local authorities. Such a measure would bring around significant time and cost efficiencies to make services affordable. Right of Way (RoW) guidelines should be so as to enable speedy acquisition of sites with minimum costs for the service provider.

The Government should mandate upcoming infrastructure to have duct space for fibre/ telecommunications cables. Also, they should come up with guideline to accommodate this in existing infrastructure.

13. **What are the impediments to the provision of Broadband by Cable operators? Please suggest measures (including policy changes) to be taken for promoting broadband through the cable network.**

CATV could be made a part of unified licensing regime. The fee may be waived off for initial period of one or two years.

14. What measures are required to reduce the cost and create a proper eco system for deployment of FTTH in the access network?

This is a viable option only for commercial areas. Clear policy framework and licensing conditions will help in sharing last mile infrastructure for e.g. permitting sharing of infrastructure among various TSPs created by IP-I, mandating of infrastructure sharing in locations of heritage, security and environmental importance. The ducts laid for the purpose may be shared by the TSPs as per rules laid down.

15. Are there any regulatory issues in providing internet facility through Wi-Fi Hotspots? What are the reasons that installation of Wi-Fi hotspots has not picked up in the country? What type of business model needs to be adopted to create more Wi-Fi hotspots?

Please refer Question 2.

16. What are other spectrum bands which can be unlicensed for usage of Wi-Fi technology or any other technology for provision of broadband?

700 MHz should be auctioned immediately as it has potential to cover large areas. 2100 MHz has potential to accommodate more broadband users. Hence, more spectrum in 2100 MHz should be put up for auction. 5.8 GHz for outdoor usage should be delicensed for Wi-Fi technology.

17. How much spectrum will be required in the immediate future and in the long term to meet the target of broadband penetration? What initiatives are required to make available the required spectrum?

No comments

18. Are there any other spectrum bands apart from the ones mentioned in Chapter-2 to be identified for provision of wireless broadband services?

No comments

19. What are the measures required to encourage Government agencies to surrender spectrum occupied by them in IMT bands?

Incentive pricing could be introduced to encourage economical and efficient use of spectrum.

20. What should be the time frame for auctioning the spectrum in 700 MHz band?

The auction of spectrum in 700 MHz band must be organized as soon as possible. The authority would require time for preparation and execution of auction. In the meanwhile, companies should start commence infrastructure set up wherever required.

21. Do you agree with the demand side issues discussed in Chapter 5 and Chapter 6? How these issues can be addressed? Please also indicate any other demand side issues which are not covered in the CP.

The issues mentioned in the paper are low consumer awareness and general education, digital literacy rate, and computer penetration. Korea provided extremely cheap computers to its citizen so that they would feel comfortable using PCs and drive adoption of broadband. Akash tablets, a government initiative provides low cost tablets and Internet connections to students. However, Akash tablet device lacks customer acceptability allegedly because it lacks quality and features that the costly tablets offer. Measures must be taken to refine these devices for sustainable development and provide content for faster adoption of smart phones. Initiatives such as Lokvani and Kiosk Centers must be aggressively promoted. Vernacular content must be available for wider reach. Applications that help in day to day activities such as agriculture, cattle farming and payment of bills should be promoted in local language.

22. Please give your comments on any related matter, not covered above.

It is recommended that the definition of broadband needs to be increased to 2 Mbps by 2015 in line with international norms and as envisioned by NTP 2012. Further, the metrics used by TRAI in its quarterly reports need to be updated to reflect this change.

Ons Net in Nuenen, a limited company in Netherlands is an example where subsidy amount of € 800 per subscription was pooled and given to the housing and broadband corporation. They in return provided free broadband access for a year. When paid services started, though adoption rate fell from 97% to 75%, they are considered high. Innovative solutions like this could be considered for promoting broadband through different technologies.