

**THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (FIFTEENTH
AMENDMENT) REGULATIONS, 2019
(10 of 2019)**

**TELECOM REGULATORY AUTHORITY OF INDIA
NOTIFICATION
New Delhi, the 17th December, 2019**

File No. 6-14/2019-BB&PA --- In exercise of the powers conferred upon it under section 36, read with sub-clauses (ii), (iii) and (iv) of clause (b) of sub-section (1) of section 11, of the Telecom Regulatory Authority of India Act, 1997 (24 of 1997), the Telecom Regulatory Authority of India hereby makes the following regulations further to amend the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003), namely:-

<p>1. (1) These regulations may be called the Telecommunication Interconnection Usage Charges (Fifteenth Amendment) Regulations, 2019 (10 of 2019).</p>
<p>(2) They shall come into force from the date of their publication in the Official Gazette.</p>
<p>2. In the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003), in the Schedule I, under column "Termination Charge", for the words and figures -</p> <p>"(a) Re. 0.06 (paise six only) per minute with effect from the 1st October, 2017 to the 31st December, 2019; and</p> <p>(b) 0 (Zero) with effect from the 1st January, 2020", the words and figures -</p> <p>"(a) Re. 0.06 (paise six only) per minute with effect from the 1st October, 2017 to the 31st December, 2020; and</p> <p>(b) 0 (Zero) with effect from the 1st January, 2021" -</p> <p>shall be substituted.</p>

(S.K. Gupta)
Secretary

Note 1. The principal regulations were published vide F.No. 409-5/2003-FN dated 29.10.2003 (4 of 2003) and subsequently amended vide notifications Nos. --

- (i) 409-5/2003-FN dated 25.11.2003 (5 of 2003) (First Amendment);
- (ii) 409-5/2003-FN dated 12.12.2003 (6 of 2003) (Second Amendment);
- (iii) 409-5/2003-FN dated 31.12.2003 (7 of 2003) (Third Amendment);

- (iv) 409-8/2004-FN dated 06.01.2005 (1 of 2005) (Fourth Amendment);
- (v) 409-8/2004-FN dated 11.04.2005 (7 of 2005) (Fifth Amendment), which has been set aside by Hon'ble TDSAT vide its Order dated the 21.09.2005 in appeal No. 7 of 2005;
- (vi) 409-5/2005-FN dated 23.02.2006 (1 of 2006) (Sixth Amendment);
- (vii) 409-5-2005-FN dated 10.03.2006 (2 of 2006) (Seventh Amendment);
- (viii) 409-2-2007-FN dated 21.03.2007 (2 of 2007) (Eighth Amendment);
- (ix) 409-22/2007-FN dated 27.03.2008 (2 of 2008) (Ninth Amendment);
- (x) 409-12/2008-FN dated 09.03.2009 (2 of 2009) (Tenth Amendment);
- (xi) 409-8/2014-NSL-1 dated 23.02.2015 (1 of 2015) (Eleventh Amendment);
- (xii) 409-8/2014-NSL-1 dated 24.02.2015 (2 of 2015) (Twelfth Amendment);
- (xiii) 10-8/2016-BB&PA dated 19.09.2017 (5 of 2017) (Thirteenth Amendment);
- (xiv) 10-8/2016-BB&PA dated 12.01.2018 (2 of 2018) (Fourteenth Amendment);

Note 2. The Explanatory Memorandum explains the objects and reasons of “the Telecommunication Interconnection Usage Charges (Fifteenth Amendment) Regulations, 2019 (10 of 2019)”.

**Explanatory Memorandum to the “The Telecommunication Interconnection Usage
Charges
(Fifteenth Amendment) Regulations, 2019”**

A. Interconnection

1. Interconnection is extremely important from customers as well as service providers perspective. It allows the customers, services, and networks of one service provider to access the customers, services, and networks of other service providers. For effective competition and orderly growth of the telecom sector, it is essential that customers, services, and networks of one service provider are able to access the customers, services, and networks of other service providers optimally.
2. In a broader sense, the term Interconnection deals with the commercial and technical arrangements under which Telecom Service Providers (TSPs) connect their equipment, networks and services to enable their customers to have access to the customers, services and networks of other TSPs. Interconnection is one of the foundations of viable competition which in turn is the main driver for orderly growth and innovation in the telecommunications sector.

B. Regimes for retail charging of telecommunication services

3. For retail charging of telecommunication services, there are predominantly two regimes as outlined below:
 - (i) Receiving Party Pays (RPP) Regime: Under RPP regime, the called party also pays for the call.
 - (ii) Calling Party Pays (CPP) Regime: Under CPP regime, the calling party pays to his/her service provider for the call, while the called party does not have to pay for the call.
4. In CPP regime, either of the following two regimes can be used for wholesale settlement between TSPs:
 - (i) Calling-Party-Network-Pays (CPNP) regime: Under CPNP regime, at wholesale level, the originating subscriber’s TSP pays termination charges to the terminating subscriber TSP; and
 - (ii) Bill-and-Keep (BAK) regime: Under BAK regime, TSPs do not have to pay termination charges to each other i.e. zero termination charge.

C. Interconnection Usage charges (IUC)

5. Interconnection Usage charges (IUC) plays vital role in enabling an optimal Interconnection. It refers to the wholesale charges payable by a TSP to another TSP for origination, termination, transiting, and carrying the calls. Various components of IUC viz. termination, carriage, transit, and origination charges are briefly described below:

(1) Termination Charges

6. Termination charges are the wholesale charges payable by the service provider of an originating subscriber to the service provider in whose network the call terminates. In the calling-party-pays (CPP) regime, generally, as per the retail tariff, the calling subscriber pays for a call to his service provider, and the calling subscriber's service provider pays termination charge, if any, on wholesale basis to the called subscriber's service provider to cover the interconnection/ network usage cost.

(2) Carriage Charges

7. Access Service providers in India can offer their services within the authorized Licensed Service Area (LSA), also known as Circle. As per the License conditions, the inter-circle traffic is routed through a National Long-Distance Operator (NLDO). The charges to be paid by an Access Service provider to the NLDO, to cover the cost of carrying the inter-circle calls, are called carriage charges.

(3) Transit Charges

8. When two telecom networks are not directly connected, an intermediate network is used to transit the calls to the terminating network. Such an intermediate network is known as a transit network, and the wholesale charges payable to the transit network to cover the interconnection/ network usage costs are called transit charges.

(4) Origination Charges

9. Generally, the calling subscriber pays call charges to its own service provider as per the applicable tariff. From the amount so collected, the originating subscriber's service provider pays termination charges to the called party's service provider and carriage (in case of an inter-circle call)/ transit charges to the NLDO/ transit service provider. The balance amount retained by the calling subscriber's service provider, which covers the cost of originating the call, is known as origination charges. In India, origination charges have not been regulated and hence are under forbearance.

D. Evolution of IUC Framework for domestic termination charges in India

10. Initially in India, when Department of Telecommunications (DoT) was the sole provider of telecommunication services, revenue sharing between TSPs was not required. Subsequently, when the telecom market was opened for licensees, more

than one service providers could have got involved in completion of a call. It paved the way for revenue share regime, wherein a methodology was required to be prescribed to share the revenue derived from telecommunication services among the TSPs. Therefore, a revenue share regime was put in place by the Telecom Regulatory Authority of India (TRAI) vide “The Telecommunication Interconnection (Charges on Revenue Sharing) Regulation 1999”. Through these regulations, revenue sharing arrangements for calls originated from a mobile service provider’s network terminating in a basic service provider’s network were specified. Revenue sharing arrangements were also prescribed between access service providers (both mobile and fixed) and long distance/international long-distance service providers for carrying long distance/international long-distance calls. At that time, mobile subscribers were required to pay for receiving calls also i.e. RPP regime was in place for mobile services.

11. The foundation for the CPP regime was laid by the Authority through “the Telecommunication Interconnection Usage Charges (IUC) Regulation, 2003 (1 of 2003)” dated 24.01.2003. This regulation became effective from 01.05.2003. It is widely believed that the CPP regime played a crucial role in the orderly growth of the telecom services sector in the country. As per this Regulation, the IUC were based on the type of network in which the call originated or terminated, and the distance travelled by a call from one end to another end. However, during its implementation, various concerns with respect to this IUC regime such as sustainability of this regime over time, consistency among the different Schedules of the IUC Regulation dated 24.01.2003 etc. were raised by service providers. For further improving and streamlining the IUC regime, the Authority issued a revised IUC Regulation on 29.10.2003 superseding the earlier Regulation dated 24.01.2003. This Regulation became effective from 01.02.2004. At present, this Regulation is the principal IUC Regulation. Through this Regulation, *inter-alia*, a uniform termination charge of Re. 0.30 per minute was prescribed irrespective of distance for all types of calls viz. fixed-line, wireless in local loop, and full mobility. The carriage charges remained distance based.
12. Subsequently, after review of IUC in 2008, an amendment to the principal IUC Regulation was notified on 9th March 2009. This amendment became effective on 1st April 2009. Through this amendment, the termination charge for local and national long-distance voice calls to fixed line and mobile networks was revised downwards from the erstwhile charge of Re.0.30 per minute to Re.0.20 per minute.

13. Some TSPs challenged the above referred amendment to the principal IUC Regulation dated 9th March 2009, before the Hon'ble Telecom Dispute Settlement and Appellate Tribunal (TDSAT). In this matter, after detailed hearing, Hon'ble TDSAT passed its judgment on 29.09.2010 and directed the Authority to consider determining the IUC afresh, based on its observations and directions. The Authority filed an appeal before the Hon'ble Supreme Court challenging the Hon'ble TDSAT's judgment dated 29.09.2010 on various legal and technical grounds including inter-alia, the principal legal issue of whether the validity of TRAI's Regulation framed in exercise of powers conferred under section 36 of the TRAI Act can be challenged before the Hon'ble TDSAT under section 14 of the TRAI Act, 1997. The Authority also prayed the Hon'ble Supreme Court to allow the appeal and set aside the judgment dated 29.09.2010 passed by Hon'ble TDSAT.
14. Hon'ble Supreme Court vide its order dated 29.07.2011, in the above referred appeal, directed the Authority to file the computation of the IUC with the inclusion of capital cost and without inclusion of the capital cost. Accordingly, the Authority filed a report dated 29.10.2011 in the Hon'ble Supreme Court. Subsequently, the Hon'ble Supreme Court in civil appeal no. 5253 of 2010 and other connected matters, vide its order dated 06.12.2013, held that the Hon'ble TDSAT does not have jurisdiction to entertain the challenge to the regulations framed by the Authority in exercise of powers conferred under section 36 of the TRAI Act.
15. Since neither Hon'ble TDSAT nor Hon'ble Supreme Court had stayed the amendment dated 9th March 2009 to the principal IUC Regulation, the changes to the IUC regime put into effect by the Authority through this amendment remained in force.
16. After following a due consultation process, the Authority issued "the Telecommunication Interconnection Usage Charges (Eleventh Amendment) Regulations, 2015 dated 23.02.2015", through which, the termination charges w.e.f. 01.03.2015 were prescribed as below:

**Table 1.1: Termination Charges prescribed through
the Telecommunication Interconnection Usage Charges
(Eleventh Amendment) Regulations, 2015**

Type of call	Type of traffic	Termination charge in Re.
Local and national long-distance call	Wireless to wireless	0.14 per minute
	Wireless to wireline	0 (Zero)
	Wireline to wireline	0 (Zero)
	Wireline to wireless	0 (Zero)
International call	International incoming call to wireless and wireline	0.53 per minute

* Wireless means full mobility, limited mobility and fixed wireless access services.

E. Prevailing IUC Regulation

17. Subsequent to the above amendments, the Authority issued “the Telecommunication Interconnection Usage Charges (Thirteenth Amendment) Regulations, 2017” dated 19.09.2017, through which, for wireless to wireless local and national long-distance call termination charges, following IUC scheme was notified:

- a. Re.0.06 (Paise six only) per minute w.e.f. the 01.10.2017 to the 31.12.2019; and
- b. 0 (zero) with effect from the 01.01.2020.

18. The Authority from time to time reviewed the domestic termination charges after considering the various cost based or cost oriented estimation methods like Fully Allocated Cost (FAC), Long Run Incremental Cost (LRIC)+, LRIC, pure LRIC etc. These methods have been explained in the corresponding Explanatory Memorandums (EMs). After the last review, the domestic termination charge of six paise per minute was arrived at using the pure LRIC methodology.

F. Need for present review

19. While arriving at the above mentioned conclusions, in the EM annexed to “the Telecommunication Interconnection Usage Charges (Thirteenth Amendment) Regulations 2017” dated 19.09.2017, the Authority noted that it shall keep a close watch on the developments in the sector, particularly with respect to the adoption of new technologies and their impact on termination costs. In the said EM, it was also noted that the Authority, if it deems it necessary, may revisit the afore-

mentioned scheme for termination charge applicable on wireless to wireless calls after one year from the date of implementation of the Regulations.

20. Consequently, the Authority was closely monitoring the adoption of new technologies and imbalance in the off-net traffic between the operators over a period of last two years. From time-to-time, during the last two years, data related to inter-operator off-net traffic and technology-wise call volume handled were collected from the operators. The analysis of these data indicated that while the service providers and consumers were adopting the packet-switching based new technologies, many customers were still served by circuit switched networks for handling of voice calls. Further, although the imbalance in the inter-operator off-net traffic was reducing over a period, it still existed.
21. Keeping in view the above facts, the Authority issued a Consultation Paper (CP) on review of IUC dated 18.09.2019 to seek the views of stakeholders on the review of the date of applicability of BAK regime i.e. zero termination charges in respect of wireless to wireless domestic (local and national long-distance) calls.

G. Consultation Process

22. The Authority issued the CP on “Review of Interconnection Usage charges on 18.09.2019” to seek the views of stakeholders on review of the applicable date for BAK regime i.e. zero mobile termination charges from 01.01.2020. Stakeholders were asked to submit written comments by 18.10.2019 and counter-comments by 01.11.2019. Subsequently, an Open House Discussion (OHD) with stakeholders was also held on 15.11.2019 at New Delhi, wherein approximately 120 persons, representing various stakeholders, participated.
23. Comments and counter comments were received from TSPs, industry associations and other stakeholders, including companies, organizations, firms, and individuals. The comments and counter comments received from the stakeholders till last date for counter comments were placed on the TRAI’s website – www.trai.gov.in. The comments and counter comments received till date on this issue have been considered by the Authority before reaching to the conclusion.

H. Analysis of the comments on the issues raised in the CP and views of the Authority

24. In the CP dated 18.09.2019, the Authority had sought the views of stakeholders on the following issues related to IUC:

- (i) Is there a need to revise the applicable date for BAK regime i.e. zero mobile termination charge from 01.01.2020? If yes, then what parameters should be adopted to decide the alternate date? Give your suggestions with justification.
 - (ii) Any other issue related with the domestic wireless termination charges.
25. Before examining the issue at hand, it is pertinent to mention here that, while formulating regulatory framework for telecom services in the country, the Authority is guided by the following twin objectives, viz.
- (i) **protect the interests of service providers and consumers** - by way of ensuring transparency in decision making through open consultation process, promoting level playing field and fair competition among service providers, adequate choice and affordable services to consumers, and ensuring effective interconnection between service providers; and
 - (ii) **promote and ensure orderly growth of the telecom sector** - by promoting efficiency in operations and adoption of emerging technologies within the framework of a technology neutral policy.
26. Further, it is also pertinent to mention here that, since 2003, when the IUC regime was first put in place in the country, generally the cost-oriented methodologies have been followed by the Authority for determining the domestic call termination charges.
27. During the consultation process, the views of the industry as well as other stakeholders were sharply divided on this issue. While majority of the TSPs and some other stakeholders including consumers/ consumer organizations have favored deferment of the applicable date i.e. 01.01.2020 for BAK regime i.e. zero termination charge for domestic wireless to wireless calls, some TSPs and majority of other stakeholders including consumers/ consumer organizations have opposed deferment of the applicable date for BAK regime.
28. Summary of the issues raised by the stakeholders during the consultation process and their analysis is presented below:

Arguments of the stakeholders in favour of deferment of the applicable date for BAK regime

29. The service providers, in favour of deferment of the applicable date for BAK regime have primarily argued that despite making huge investments in rollout of the VoLTE enabled 4G networks which include refarming of spectrum in 900 and 2100 MHz bands, VoLTE traffic constitute a very small portion of total voice traffic due to the slow adoption of 4G technology by consumers in India. As per them,

this is because many customers continuing to use non-VoLTE handsets, as these handsets are much more affordable. These stakeholders have argued that the share of 2G capable devices continues to be the largest in their networks and makes a significant quantum of their customer base.

30. According to these stakeholders, in India, shift of voice from circuit switched to packet switched (VoLTE) technology would still take considerable amount of time, and it would entirely depend on the migration of customers to VoLTE enabled 4G handsets. Lack of adequate digital and financial literacy of consumers also contribute to the customers slow migration to 4G. They have also argued that migration to 4G is also limited by 4G dual SIM (4G+2G) handsets.
31. According to these stakeholders, deployment of any technology by service providers is a function of adoption of that technology by subscribers. In support of their argument, they have stated that, even today, in the Indian mobile device market, approximately 30 million 2G/ 3G phones are being bought by poor and low-income customers every quarter. Further, the continuous growth in BSNL - an operator who is not a significant player in 4G services market - subscribers is another indicator that there is a demand for 2G/ 3G services. According to them, as per GSMA study, approximately 30% customers will continue to use 2G/3G connections in India till 2022. They argue that, it is not justified to shutoff 2G-3G networks in haste. In their view, every customer has a choice to be on any handset and with any technology.
32. These stakeholders have also argued that though the imbalance between incoming and outgoing off-net traffic in percentage terms has declined, it still exists significantly in absolute terms. They have argued that some reduction in traffic imbalance is due to gaming of ringer timer by a particular TSP. According to them, the imbalance of traffic occurs due to different customers profiles, tariff plans, differential tariffs for on-net/ off-net calls etc. In their view, since all customers of the 4G only operator continue to have unlimited voice, they tend to call more as compared to customers on pay-per-use tariff plans which leads to asymmetry.
33. Another argument given by these stakeholders is that there is always a cost associated while terminating a call irrespective of IP or non-IP network as in both the cases, cost of power, rental for the tower, spectrum etc. is involved. They also claim that the cost of completing a call is much higher than 6 paise/ min.
34. These stakeholders have also argued that there is no country in the world which has a regulation mandated BAK in CPP regime and that should be true for India

also. Wherever BAK exists, it is based on mutual agreement between the operators if they so decide, given the symmetry in their traffic.

35. According to these stakeholders, BAK is neither a factor for reducing the inter-operator off-net traffic imbalance nor a catalyst for traffic symmetry. In a market where subscriber has complete choice including mobile number portability, the allegation that traffic asymmetry is due to tariff differentials and disproportionate adoption of 4G technology by incumbent operators is not correct.
36. In view of these service providers, IUC is the compensation of the actual cost incurred by an operator in carrying/termination of a call in its network. This cost neither changes nor has any co-relation with the tariff charged by originating operator. In support of this argument they have cited that the new operator voluntarily introduced free voice services when IUC (Mobile Termination Charge - MTC) rate was 14 paise per minute. In their view, the continuous reduction in per minute voice call cost is due to market forces, and accordingly, the rate of decline of per minute call cost to consumers was more before reduction in MTC rate than after the reduction in MTC rate, in 2017. According to them, IUC is right of every TSP as it facilitates the TSP to recover somewhat the cost of termination of calls in its network. It is not a source of profit for them.
37. Some service providers have recommended that IUC should be based on actual costs of individual service providers and such costs should also include HR costs also.
38. In view of the above-mentioned arguments, as per these stakeholders, the assumptions/ expectation of the Authority before migration to BAK regime are still far from being realized and therefore there is a need to revise the applicable date for zero termination charges. Further, they have also requested that any artificially induced/ temporary variation in traffic pattern due to charging of off-net outgoing calls must be ignored for the purpose of this consultation.
39. According to another stakeholder, claiming to represent consumers, pushing consumers to switch to 4G technology defeats the main purpose of regulation, i.e., the consumers' right to choose. Different categories of consumers may want to use phones for different purposes, and it is important to provide options at affordable costs. As per this stakeholder, all service providers should have a pure voice plan @ Rs 25 to 50 for unlimited calls. There are still many subscribers having phones which are not 4G capable. According to this stakeholder, rural coverage of 4G network is not adequate and the networks in rural areas are primarily backed by revenue generated from incoming calls.

Parameters that should be adopted to decide the alternate date for implementation of BAK regime:

40. While some service providers have demanded for deferment of implementation of BAK regime indefinitely, a service provider has demanded for deferment by at least three years. As per another stakeholder, BAK should be implemented only when TSPs agree unanimously.
41. Another service provider in favour of deferment of the applicable date for BAK regime has argued that need of continuation of Circuit Switched Voice (2G/3G) networks and the period for which these services / networks are required could be the basis to decide the date for implementation of BAK regime. This need will be dependent on consumer's choice of devices.
42. In view of this TSP, if the premise is that cost of terminating a call on 4G VoLTE networks is nominal then there should be IUC for incoming off-net calls terminating only on Circuit Switched (CS) networks till such incoming CS off-net calls are substantial (say exceeds 2% of total incoming off-net voice minutes terminating on its network).
43. Another parameter suggested by a TSP is symmetry in bilateral traffic (in range of +/- 2%) for a consistent period (say a quarter) in normal course, not considering abnormal events like Ringing Time Duration reduction at originating end, IUC Charge from subscribers for Off-net Calls etc; and fair cost compensation for termination of call to terminating operator in case of traffic asymmetry.
44. According to other stakeholders, claiming to represent consumers, the date when the BAK regime should be introduced is when 80% or any other high level of market penetration of the Subscribers in the country have switched to 4G. This stakeholder believe that this milestone should be achieved by the end of 2020.

Arguments of the stakeholders against deferment of the applicable date for BAK regime:

45. According to few stakeholders, the CP issued by the Authority for review of IUC (MTC) is not only wholly arbitrary, bad in law, unwarranted, and anti-poor, but also adversely impacts credibility of the Authority and investor confidence. In view of these stakeholders, any change or deferment of implementation date of BAK will amount to regulatory unpredictability adversely. Such a change would violate the doctrine of legitimate expectations and, the Authority would be estopped from prescribing such a change in view of the principles of promissory estoppel.

46. According to these stakeholders, the CP should have also discussed the revised termination charges which may be payable w.e.f. 1.1.2020, if such a course adopted. As per their estimates, due to changes in traffic mix and increased traffic volume, termination charges could vary from approximately 1 to 4 paise per minute.
47. According to few stakeholders, any deferment of implementation of BAK will end the free voice regime and likely to increase tariffs which is against consumer interest. As per these stakeholders, BAK is the culmination of years of analysis and review. In support of their argument, they have cited some extracts from the report submitted by the Authority in Hon'ble Supreme Court in 2011 wherein the Authority anticipated that BAK may be introduced from 2014 as by that time traffic symmetry is likely to be achieved.
48. As per the analysis of these stakeholders, global trends fully support lower termination rates leading to BAK. In their view, the Authority's reasoning to move to BAK from 1.1.2020 is based on sound and balanced considerations.
49. The stakeholders, who are against deferment of the applicable date for BAK regime have argued that flat rate tariffs have been introduced, more and more subscribers are using broadband data, and both voice and data usage has increased manifold. As per them, all these aspects seem to indicate that the BAK regime must be implemented from 1.1.2020. They have also argued that any delay would only stifle the evolution to superior and more efficient technologies, and delay India's achievement of Broadband for All.
50. As per this category of stakeholders, BAK benefits all stakeholders, including consumers and operators. According to these stakeholders, it allows modernization of networks by encouraging incumbent operators to adopt latest network technologies, and once BAK is implemented, all operators will move to latest technologies as fast as possible because of inherent cost benefits.
51. These stakeholders argue that, the regulatory framework should help expedite the move to more modern and superior technologies. Continuation of IUC will be an incentive to TSPs to continue 2G or 3G technology, which is ultimately detrimental for the Indian customers and in turn hinders roll out of 4G technology. According to them, cost based IUC allows incumbent operators to recover part of their operational costs from competitors in the form of termination charges.
52. These stakeholders have also argued that incumbent operators have already recovered the cost of legacy deployed infrastructure. Further, the difference in the

cost of carrying the voice over 2G/3G network and VoLTE network has become negligible. These operators are using 2G technology for voice as the first option wilfully and deliberately to receive termination charges with intent of undue enrichment by receiving windfall gains arising therefrom.

53. According to these stakeholders, incumbent operators, by deliberately refusing to end their 2G services and upgrade to 4G networks, are exploiting their 2G customers by charging them high and extortionate rates for voice calls, and keeping the doors shut for their entry into digital society. As per these stakeholders, a deep analysis of incumbent operators' data indicates a lack of enough effort to move all the subscribers to new technologies and flat rate tariffs.
54. In view of these stakeholders, the moment incumbent telcos upgrade their network to 4G technology, the consumers will switch over to 4G capable smartphones. If the incumbent operators are sluggish in upgrading their networks to 4G technology, then the consumers cannot be penalized for their sluggishness. To reinforce their arguments, they have cited the Digital Communication Commission (DCC) decision to adopt 4G technologies for all future procurements by USOF. According to them, everyone, whether in rural areas or urban/city area, poor or rich or middleclass family, wants to use data, whether for communications with their family or using government services. A small fraction of users on specific devices (dual SIM or otherwise) should not drive IUC policy.
55. In support of their contentions against deferring the implementation date for BAK regime, they have argued that when TRAI decided to put fixed line network under BAK regime for fixed to fixed (F2F), fixed to mobile (F2M), and mobile to fixed (M2F) calls, the only consideration was that BSNL/MTNL (major fixed line operators) had already recovered their costs of their legacy networks. There was no consideration of traffic imbalance or even payment of OPEX for terminating off-net calls into fixed line networks.
56. In view of these stakeholders, there should not be a regulatory precondition that unless traffic exactly matches, the BAK regime cannot be implemented. If such a precondition is stipulated, then BAK will always have to be deferred with the entry of a new telco. They submit that the parameters such as tariff differentials, subscriber base, average call duration etc. and their impact on traffic asymmetry should also be considered.
57. As per these stakeholders, TRAI in its regulation of September 19, 2017 had listed out the reasons for traffic asymmetry as levying of MTC and retail tariff and had said that the BAK regime is must to remove this asymmetry.

58. According to a TSP, the traffic asymmetry has rapidly decreased in last few quarters and currently stands at around 60:40 in comparison to 90:10 a couple of years ago and as it is rapidly moving towards symmetry, the Authority should go with its convictions and implement BAK as scheduled. Perfect traffic symmetry is a statistical impossibility in a competitive market. In continuation, through series of letters, this TSP has informed the Authority that the traffic imbalance has now been reversed and presently, the said TSP has more off-net incoming traffic in comparison to off-net outgoing traffic at aggregate level.
59. As per this TSP, the traffic in the networks is symmetric, if the missed calls are factored in the calculation along-with the higher average holding time of consequent off-net outgoing calls by its subscribers. On the other hand, if these missed call givers were given an opportunity of free calling at as less as Rs. 49 per month instead of charging Rs. 23 per month for receiving calls only, the traffic symmetry would have been achieved much prior to 1st January 2020.
60. This TSP has also argued that the incumbent operators are fraudulently masquerading wireline numbers as mobile numbers to skew traffic asymmetry and in turn earn IUC in violation of license conditions and regulations. In its separate submissions, the details of mobile numbers which are allegedly being used by contact centres have been provided.
61. As per these stakeholders, if current termination charges are maintained, India will achieve the unfortunate distinction of having the highest retail tariff to MTC ratio in history, across the world. The ratio of IUC for mobile termination relative to retail price in India is approximately 46% as compared to 13% in Germany and Japan, 11% in France, less than 10% in UK and 1% in China.

(2) Any other issue related with the domestic wireless termination charges.

62. Some of the stakeholders, who are in favour of deferring the applicable date of BAK have said that domestic MTC should be revised at regular interval of one year or more. It should never be made zero unless there is a level playing field among all TSPs in terms of technologies and costs.
63. Any new date to implement BAK should only be considered after studying the data flow/ call flow & imbalances thereof. Rather than measuring originated and terminated minutes, a better parameter of measurement would be the number of packets generated and received.
64. One of the stakeholders, who is not in favour of deferring the applicable date of BAK has said that the Authority, in its Counter Affidavit filed before Hon'ble High

Court of Bombay in the matter of Bharti Airtel Ltd. v. TRAI, WP(L) No. 2700 of 2017 has stated that while computing the termination charges of Re 0.06/minute, it considered 86% of off-net incoming Voice MOUs terminating on 2G networks, 13% on 3G networks and only 1% of the off-net incoming Voice MOUs terminating on 4G networks. Now, about 40 to 45% of the off-net incoming voice MOUs are terminating on 4G networks. The average Indian consumer is now using considerably more 4G for voice than when the IUC prices were determined.

65. The reduction in mobile termination rates is a global trend, for the countries where BAK is not already adopted. Non-implementation of BAK should not imply the continuation of the current termination charges of 6 paise/minute, determined in 2017 (based on 2016 data). Thus, the cost factors will change considerably and there is a need to update the IUC cost modelling exercise, should TRAI decide to postpone the BAK regime. The wholesale termination rates in India need to be reduced significantly in order to be consistent with the retails tariffs to align it with the trends in the worldwide market.

Analysis of the issue and views of the Authority

66. It is undisputed that next generation of wireless communication systems and technologies are more efficient in comparison to systems and technologies of previous generations. Once the operator's rollout/ upgrade to the next generation technologies networks and consumers adopt the same in a significant manner, the cost of processing/ handling of per unit calls/ data also reduces over a period of time. In this era of convergence, where common network could be utilised to deliver voice, video, and data communications, economy of scale and economy of scope plays a significant role in competitive pricing of the products. The degree of exploitation of these advantages in a telecom market depends upon multiple factors which include enabling policy and regulatory environment, upgradation of networks by service providers and adoption of next generation technologies by consumers.
67. The National Digital Communications Policy (NDCP), 2018 seeks to unlock the transformative power of digital communications networks - to achieve the goal of digital empowerment and improved well-being of the people of India. The vision of NDCCP-2018 is *"to fulfil the information and communication needs of citizens and enterprises through the establishment of a ubiquitous, resilient, secure, accessible and affordable Digital Communications Infrastructure and Services; and in the process, support India's transition to a digitally empowered economy and society"*. Further, the access services as well as spectrum licenses are technology neutral and enable the deployment of latest technologies by licensees. Licenses are

available on the tap for new entrants. The network rollout strategies have been left to individual operator. Such progressive policies of the Government have resulted into the rapid growth of the telecommunication sector during the last two decades.

68. The regulatory framework notified by the Authority for telecom services promote level playing field and fair competition among service providers, which in turn facilitate efficiency of operations. By ensuring the effective interconnection between service providers entering the market at different points of time, the Authority seek to promote the adoption of emerging technologies within the framework of a technology neutral policy. Forbearance of tariff for most retail telecom products and services provide ample opportunities to service providers to design their tariff plans according to the need of consumers. Subscriber can choose any tariff plan offered by its own operator, or any other competing operator by using the facility of Mobile Number Portability (MNP) without changing its mobile number. All these measures taken by the Authority in a transparent manner have resulted in the adequate choice and affordable telecommunication services to consumers.
69. Telecom is a dynamically changing sector where any future assessment is always subject to actual developments in the market. The very purpose of the sectoral regulator is to closely observe the activities happening in the sector such as technological developments, level of competition in the market, changing consumer preferences etc, and intervene, if necessary, in consultation with stakeholders. Accordingly, the present consultation with stakeholders, being done in a transparent manner, cannot be termed illegal or be presumed to adversely impact the investor's confidence. On the contrary, review of the regulations from time to time, as per the emerging market situations, is a necessary and progressive action; and the same would increase the confidence of investors in the system. The Authority is of the view that such an exercise is necessary to ensure orderly and sustainable growth of the sector. Further, the principal regulation itself provides for review of the framework at any point of time.
70. It is pertinent to mention here that presently 5 TSPs, which include 3 private and 2 PSU TSPs, are providing the wireless access services in India. Out of these 5 TSPs, one is 4G only network operator, two private TSPs operate a mix of 2G, 3G and 4G networks, and the remaining 2 PSU TSPs have predominantly 2G and 3G networks only. At the end of September 2019, out of approximately 1174 Million mobile subscribers, 557 Million are 4G data subscriber and the remaining i.e. 617

Million subscribers are still using 2G/ 3G services. While reviewing the IUC, it is necessary to balance the interests of both of these subscriber segments.

71. As per the information made available by the service providers, the three private TSPs have already rolled out the VoLTE enabled 4G networks extensively and have plans to further expand their 4G network coverage. Recently, the Government has decided to assign the 4G spectrum to public sector TSPs also. Accordingly, it appears that, soon all wireless access service providers would offer 4G services to the customers across India. A graph depicting the operator wise number of eNode-Bs (4G BTSs) deployment is given in Figure-1 below. This graph indicates that the coverage/ capacity of 4G networks is continuously increasing. Further, it is relevant to note here that a major TSP has declared that in near future, it would close its 3G network operations across India. These developments on supply side would certainly provide impetus to adoption of 4G technology by customers.

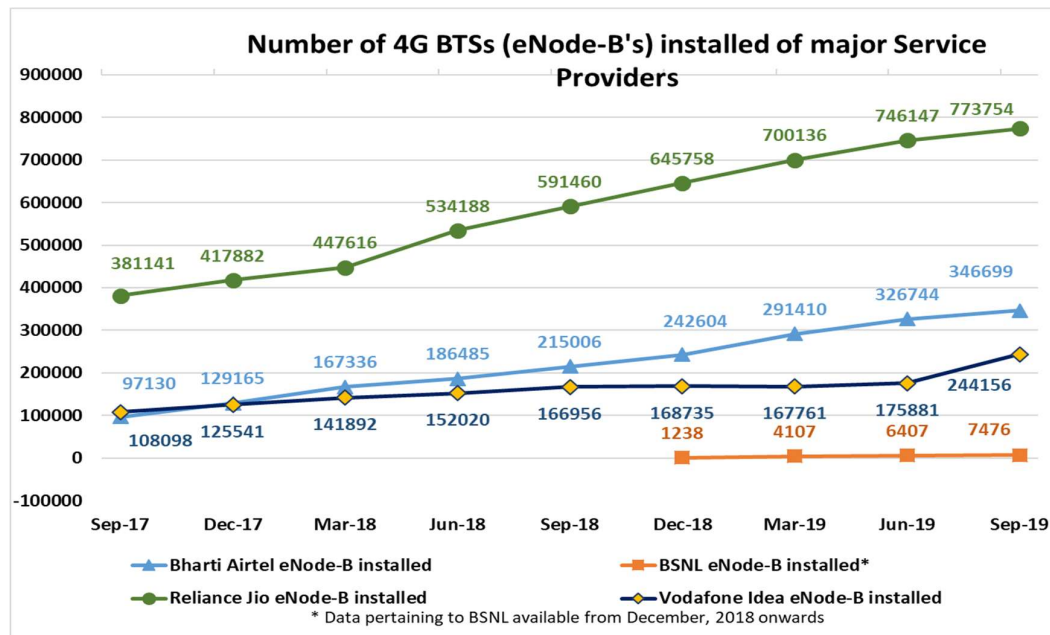


Figure -1

Source: As reported to TRAI by TSPs

72. Demand side assessment can be made based on pattern of subscription declared by service providers in recent past and trends in sale of mobile devices in the market. Further, the increasing dependency of consumers on online services such as e-Governance, tele-education, net banking, e-Commerce etc. would also drive the demand for 4G services.

73. A close look at the technological developments in the devices market indicate that while many telecom services consumers are progressively moving towards

adoption of 4G capable devices, which include smartphones as well as feature phones, quite a few are still preferring the 2G/ 3G capable mobile devices. Some of this could be due to non-availability of 4G network coverage in certain areas, privacy concerns, and issues relating to affordability of the 4G capable devices. Now, since feature phones also support 4G technology, the other reasons such as battery life, comfort of use, form factor etc. for preferring 2G/ 3G mobile devices may no longer remain relevant. This is likely to further enhance the adoption rate of 4G technology by customers who prefer feature phones. According to India Cellular & Electronics Association (ICEA), the ratio between sale of 4G and 2G/3G devices in the Indian market during the financial year 2018-19 was 2:1 approximately. As per trend analysis of the recent years, the share of 4G capable devices in total sales of devices in the Indian market is continuously increasing. Further, it is pertinent to note here that now it is almost three years after the adoption of 4G technology by consumers in significant manner. Generally, many consumers change their mobile phones every 2-3 years while the economic life of these devices is 5 - 6 years. This reality has developed the formal as well as informal market for second hand/ refurbished mobile phones and that in-turn is enhancing the affordability of 4G mobile phones to wider set of customers. In view of all these developments, it appears that, in near future, the adoption of 4G capable devices by consumers for voice calls would be much faster in comparison to the recent past.

74. In terms of subscriptions, while the number of wireless subscribers has remained practically static during the last two years, the share of the 4G data subscribers has continuously increased. At the end of September 2019, number of 4G data subscribers increased to 556.8 Million. Depending upon the type of mobile phone they use, out of these 556.8 Million subscribers, many can receive the voice call over packet switched networks (VoLTE). As per Nokia MBit Index Report 2019¹, at the end of calendar year 2018, in India, of the total LTE capable device base, 83% devices were VoLTE capable. This number of VoLTE capable devices may vary from operator to operator due to network compatibility issues.
75. While the incumbent service providers have argued that the share of VoLTE calls in their networks is substantially less because of second slot effect i.e. the second SIM slot in most of the 4G capable smartphones being 2G only and their SIMs get inserted into second SIM slot, the 4G only operator has countered this argument of incumbent operators and stated that only 3.8% of such mobile devices (4G+2G configuration) are registered in their network. According to the 4G only operator

¹ http://bestmediainfo.in/mailler/nl/nl/Nokia_MBiT_2019_FINAL.pdf

such a smaller number of customers can't have significant effect on VoLTE traffic of its competing service providers. Since the claims of two opposing stakeholders regarding dual SIM handset configurations are varying widely, the Authority decided to check the device market statistics from ICEA, which is quite active in this domain. ICEA has reported that the share of such devices (4G+2G configuration) was approximately 40% in the sales of 2018-19. It appears that the gap between the percentage of voice traffic terminating using VoLTE technology and the percentage of 4G devices registered in the networks of incumbent operators may be due to compatibility issues. Further, the share of 4G+2G configuration devices is reducing very fast. Therefore, it appears that with the increase in share of 4G+4G configuration devices, improvement in networks compatibility with VoLTE enabled 4G devices registered in the respective networks, and adoption of single SIMs by consumers due to flat-rate tariffs and further improvement in 4G networks coverage/ quality, this issue may not be relevant after some time.

76. Some of the TSPs have argued that adoption of 4G services by customers is reducing over time, and accordingly they have requested for indefinite deferment for implementation of BAK, at this point of time. In this regard, a graph depicting subscription - total wireless subscribers and 4G data subscribers - trend over a period of last two years is given in Figure -2. This graph indicates that the share of 4G data subscribers in total wireless subscribers has grown almost linearly. On an average, during the last eight calendar quarters, approximately 45 Million subscribers have adopted 4G technology in each quarter. The argument of some stakeholders that lately adoption of 4G technology by customers is slowing down is far from truth. On the contrary, it is expected to gather further pace as now more affordable 4G devices are available in the market, PSU operators would start offering 4G services across India in significant way, the network coverage of the existing 4G operators would increase further, and dependency of the consumers on online services is increasing rapidly.

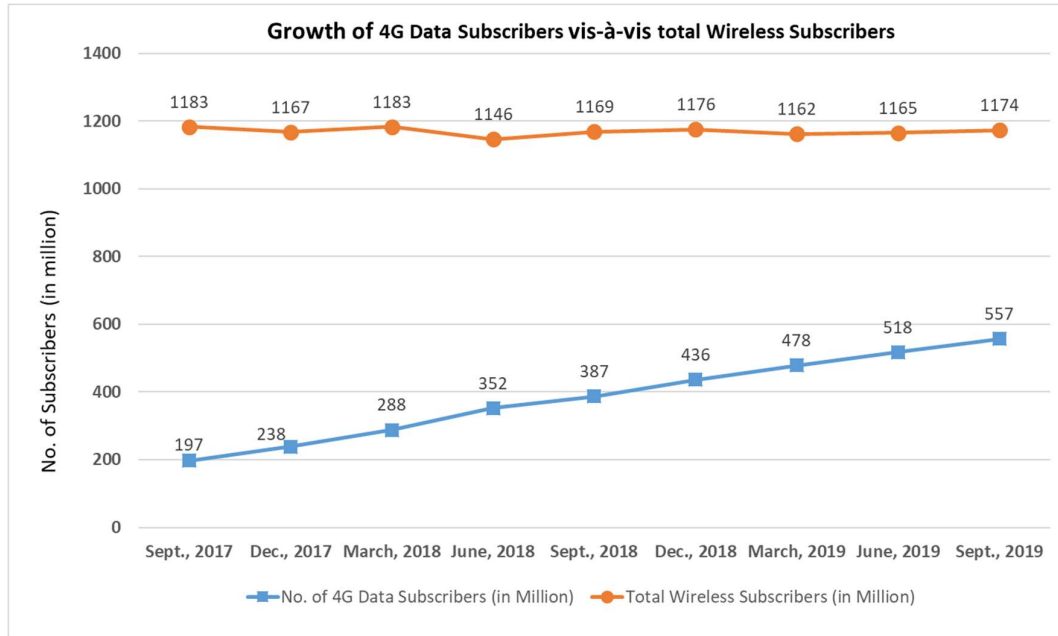


Figure - 2

Source: As reported to TRAI by TSPs

77. In support of their arguments that the date of implementation of BAK should not be deferred, few TSPs have argued that the incumbent operators have already recovered the cost of legacy deployed infrastructure and therefore they do not incur additional cost for terminating the off-net incoming calls. In this regard, it is important to note that the telecom networks require continuous investments to operate and maintain them. Further, this argument is not tenable as the IUC charges derived using pure LRIC consider various economic principles. As per these economic principles, this argument does not hold good.
78. In support of their respective viewpoints, while incumbent service providers have argued that deployment of any technology by service providers is a function of adoption of that technology by subscribers, the 4G only TSP is of the view that incumbent operators are not making sufficient efforts to upgrade their customers to latest technology for their own benefits. According to the 4G only TSP, the incumbent operators are exploiting these 2G-3G customers by offering very high rates of tariff and encouraging them to give missed calls to increase traffic asymmetry in their favour. Further, as per the said TSP, the incumbents are enriching themselves by receiving IUC due to such artificially induced traffic asymmetry. While denying these claims, the incumbent operators have argued that since consumers are free to choose their tariff plans and operator, no one can force consumers to choose a specific tariff plan or technology. While refuting the missed calls arguments of the 4G only TSP, the incumbent operators have

argued that, on the contrary, 4G only TSP attempted to influence the off-net traffic pattern by reducing the ringing time for its outgoing calls.

79. In Indian mobile telecom market, the consumers are free to choose any tariff plan offered by their service providers and they can change their service provider without changing their mobile number. The competing service providers are free to market their offerings and consumers can choose what is useful and advantageous to them. This is reinforced by the fact that during the last one year alone approximately 5 Crore subscribers have used the facility of MNP to change their operators. This indicates that consumers are freely changing their operators, if their existing operator is not able to meet their expectations. Otherwise also, when the consumers are fully empowered to choose any operator and any tariff plan of that operator, there is no reason to believe that the consumers would continue with a tariff plan which is not economical to them. or operator which is not able to meet their need. As far as issue relating to missed calls being used to induce traffic asymmetry is concerned, it may not be a realistic assumption as, in India, lots of technology platforms have got developed which use the missed calls for the purpose of registering consumer preferences.
80. Since, the mobile phones are not forward compatible i.e. 2G/ 3G phones can't work in 4G networks, the transition of consumers from previous generation technologies i.e. 2G/ 3G to next generation technology i.e. 4G is gradual during initial years, and therefore the networks of multiple generation technologies are required to coexist to serve different segments of consumers. The projections of GSMA that approximately 30% mobile subscribers would continue to use 2G/3G services till 2022 may no longer be valid as now the Government has decided to allocate 4G spectrum to PSU operators also. Now since 557 Million i.e. approximately 47% subscribers have already adopted 4G technology, its adoption rate is likely to increase further as the eco-system for 4G technology has matured, critical mass is achieved, ease of use has improved, awareness through the word of mouth about the usefulness of 4G technology is increasing, and it has become affordable for masses. Similar kind of trend was experienced in the past also after the improved affordability and maturity of eco-system of mobile devices and services. Accordingly, the trends in the subscription as well as device market, and expansion plans of operators for 4G networks, coupled with past experience, indicate that by the end of next calendar year i.e. 2020 majority of subscribers would adopt the 4G technology.
81. The arguments of some stakeholders relating to higher MTC to estimated retail tariff ratio i.e. 6:13 in India in comparison to many other large economies may not

be relevant here as each market is different and governed under different sets of regulations. In India, historically, this ratio has remained at similar levels. For example, just before revision of the MTC in 2017, this ratio was 14:27, and in 2014, this ratio was 20:51.

82. Further, the retail tariff figures indicated here are estimated in TRAI using the following function:

Average Outgo per Outgoing Minute for usage from HSA (Home Service Area) = (Rental revenue + revenue from outgoing calls from HSA) / No. of outgoing minutes from HSA

The output of this function depends on the information made available by service providers. It depends on individual service provider that how it divides the monthly charges received under a bundled plan among different services, which are part of that bundled plan. Therefore, presently, the figures used here for retail tariff are indicative and not actual as these are calculated with certain assumptions. Those assumptions may not be fully relevant for this purpose especially when approximately 40-50% subscribers have subscribed to flat rate unlimited calling bundled plans, and in such cases, it cannot be said with some certainty as to what percentage of the monthly charges of a bundled tariff plan can be ascribed to voice, data, message or other Value Added Services (VAS) respectively.

83. Contentions of some of the stakeholders that any deferment in the date of implementation of BAK would delay the technological progress in the country is now not tenable. By ensuring the congestion free interconnection among competing networks in time, the Authority has facilitated effective competition amongst service providers. The effective competition in the market is necessitating the upgradation of existing networks. Further, since the provisioning of services using later technology networks is always economical, to remain competitive in the prevalent market structure in India, each service provider is necessarily under compulsion to upgrade its network. This is reflected in the 4G BTSs statistics, which demonstrate that the upgradation of networks is happening continuously. Even then, if any TSP does not upgrade its network and services according to the demand of consumers, the latter would not take much time to switch to another operator. This is evident from the fact that the market share of different TSPs in terms of subscribers is continuously changing, and in last one year only, approximately 5 Crore subscribers have availed of the MNP facility. So, consumers are freely choosing and switching their TSPs as per their need and paying capacity.

84. It is important to note here that with the increasing consumption of data by subscribers, swiftly, the share of data revenue is increasing, and the share of voice revenue is decreasing in the gross revenue of TSPs. Further, in case of mobile access service providers, net IUC revenue from off-net calls constitutes less than 5% of their gross revenue. Now, such small percentage of revenue earned from IUC cannot act as a decisive factor for not upgrading the legacy networks. Similarly, the avoidable costs considered for calculating the MTC rate, as per the pure LRIC methodology, are a very small fraction of total operating expenditure of an operator. As far as the proportion of IUC costs in total operating expenditure of an operator is concerned, in CPP regime, originating operator has flexibility to recover the same from its subscribers. In a separate communication to the Authority, in a different context, the 4G only operator *inter-alia* communicated that, it is its commercial decision whether or not to recover the termination charges from the subscribers or the surplus recovered from its tariffs. So, most of the revenue as well as expenses of any operator are related to its own subscribers. Therefore, it is in the interest of any service provider to discontinue legacy networks, as the cost of serving per customer keeps increasing with the decrease in number of customers being served using that network. This is clearly visible from the decision of one TSP, wherein it has decided to close its 3G networks soon. Should any operator incentivise customers to choose a particular service or technology is a purely business decision, and therefore, it is the considered view of the Authority that this should be left to TSPs at this stage.
85. In respect of closing of legacy networks, in a recently released report of ITU on 'Digital Infrastructure Policy and Regulation in Asia-Pacific Region²', it has been *inter-alia* observed that decisions by Mobile Network Operators (MNOs) to close legacy networks is driven by a number of reasons, including the higher spectral efficiency of 4G/LTE, and being able to use the freed-up frequencies to increase (i) wireless broadband coverage (eg like LTE900) and (ii) bandwidth speeds through carrier aggregation. According to ITU, 4G/LTE networks also offer significantly higher network efficiency and lower network capex and opex compared with either 2G or 3G networks. While there are some examples in Asia of regulator mandated/managed technology switch-offs, in the majority of country markets it is up to MNO to make a decision as to when to switch off legacy networks subject to coverage and other requirements. In view of ITU, consistent

² https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/SiteAssets/Pages/Events/2019/RRITP2019/ASP/ITU_2019_Digital_Infrastructure_5Sep2019FNL.pdf

with having technology neutral IMT spectrum allocations, the decision to switch off 2G and 3G services should be a commercial one best left to the MNOs.

86. Since in India, the Licensor as well as the Authority have followed the technology neutral approach till now and most of the IMT spectrum allocation are liberalised, the Authority is of the view that, at this stage, it should be left to the market forces to decide the pace of upgradation of networks and closing of legacy networks. Since it is the choice of operators to decide the pace of upgradation of their networks, their demand for IUC for off-net calls terminating on circuit switched networks only is not tenable.
87. The contentions of some of the stakeholders that any deferment of date of implementation of BAK would end the free voice regime and likely to increase tariff are far from reality as nothing comes free, and decisions relating to tariff in a competitive market depend on multiple factors. In a separate communication to the Authority, in the different context, the 4G only operator *inter-alia* communicated that, as a commercial decision, it is absorbing the termination charges cost from the surplus generated by its data-based tariffs. In fact, even before the decision on review of implementation date of BAK, most of the service providers have revised their tariff upwardly. This particular instance itself indicates that the decisions relating to change in tariff may not have causal relationship with rate of IUC. Since the Authority is ensuring the level playing field and effective competition in the market, discovery of optimal level of tariffs for mobile services would be a function of market forces.
88. In favour of implementation of BAK from 1.1.2020, emphasis has been placed on the report submitted by the Authority in Hon'ble Supreme Court in 2011. The entire context must be appreciated in order to avoid arriving at incorrect conclusions. In fact, in the above cited report, it was emphasized by the Authority that BAK with all its advantages can be best introduced in an environment where traffic flow is symmetric or close to symmetric. The Authority, even at that point of time, felt that it will take another 2 years (from date of submission of that report) for asymmetries in traffic flows to converge to some form of equilibrium between new and old operators, especially with an enabling termination charges regime with termination charges set at lower levels than at present. After submission of that report, the MTC rates have been downwardly revised twice in last five years.
89. As far as traffic asymmetry is concerned, it is reducing but not close to symmetric amongst private service providers. Further, the traffic asymmetry in case of PSU operators is comparatively large. The same is clearly visible from the graph shown below in Figure-3.

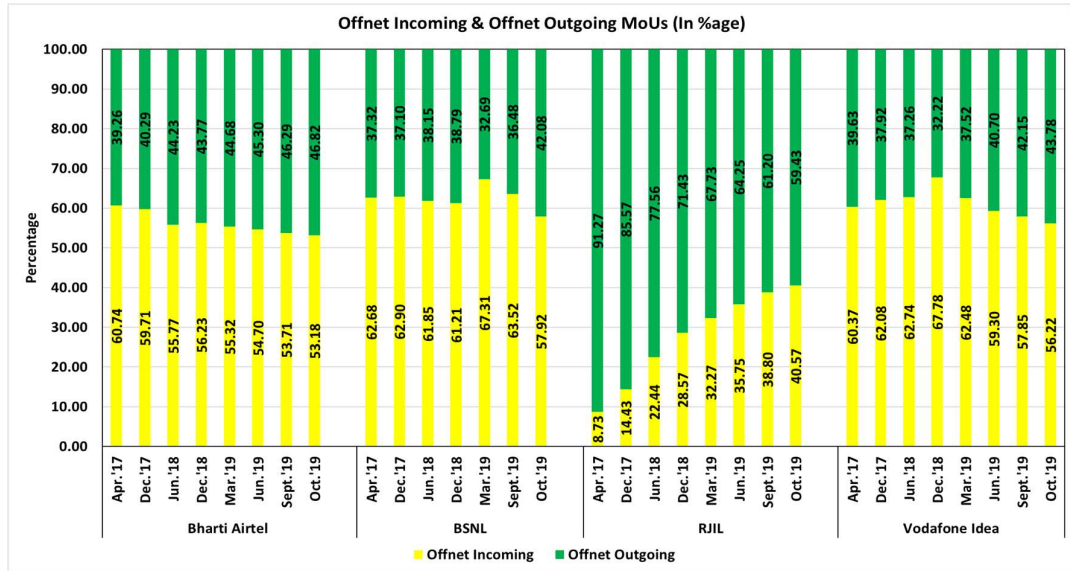


Figure-3

Source: As reported to TRAI by TSPs

90. The contentions relating to missed calls, ring duration and masquerading wireline numbers as mobile numbers to skew traffic pattern are orthogonal to the present issue under consultation and are being examined by the concerned authorities and would be addressed independently.
91. While the incumbent operators have argued in favour of deferment of date of implementation of BAK, the 4G only TSP and other consumer organisations/ consumers have strongly argued in favour of implementation of BAK from already notified date i.e. 1.1.2020. Many consumer organisations/ consumers, while requesting for implementation of BAK from already notified date i.e. 1.1.2020, have submitted almost identical requests reflecting their apprehensions regarding the increase in call rates.
92. While it could be true that implementation of BAK has its own benefits in the long run and large number of those benefits have already been enunciated in the EM annexed to the IUC Regulations, 2017, keeping in view the present adoption of 4G technologies for voice communication by consumers and asymmetries in traffic, at this point of time, it may not be advisable to implement BAK from already notified date i.e. 1.1.2020. Implementation of BAK from 1.1.2020, with present inadequate adoption of 4G technologies by consumers and asymmetries in traffic, may affect level playing field amongst service providers and in turn the effective competition in the market. In such capital-intensive sector, which has long gestation period and where entry of new service providers in the short run is

difficult, maintaining effective competition amongst service provider is necessary for ensuring the affordable services to consumers.

93. Further, approximately 50% subscribers, who are still using 2G/ 3G technology and most of them enrolled in pay-per-use plans, are by and large at bottom of the pyramid. Such subscribers typically, according to their need, have more incoming and less outgoing calls. Implementing BAK at this point of time may adversely affect such large number of subscribers. In order to ensure affordable services to such subscribers and provide them enough opportunity to upgrade their mobile devices, at this stage, in considered view of the Authority, it is necessary that the MTC continue for some more time.
94. The apprehensions of the customers expressed through their comments may not always be valid as most of them may not be fully conversant with functioning of telecom market where level playing field and effective competition amongst operators is most important to ensure affordability of services. Further, if the traffic asymmetries become negligible during the calendar year 2020, as indicated by one TSP, then this deferment in date of implementation of BAK may not have any meaningful impact on any service provider as the net IUC charges, which are product of net aggregated call durations and MTC rate, would become insignificant.
95. Based on the latest developments in the market, expected 4G network expansion by private operators, rollout of 4G network by PSU operators in significant manner, trends of consumer preferences, increasing affordability of 4G capable mobile devices, availability of 4G feature phones, and increasing call volume, it is expected that by the end of 2020 majority of subscribers would adopt 4G services, Thereafter, most of the off-net terminating voice call traffic would be routed through the VoLTE enabled packet switched networks; and consequently, the call termination rate calculated using pure LRIC methodology would reduce.
96. Further, reduction in traffic asymmetry is another important consideration for implementation of BAK. However, keeping in view the past experience, traffic symmetry alone is not enough as it would keep changing with time and other market developments like changes in technology, retail tariff, growth of individual operator, demographics of individual operators' consumers etc. The contention of a TSP that BAK may be considered only when traffic symmetry is within range of +/- 2% is not tenable as in multi-operator market, such perfect symmetry for considerable period is almost impossible.

97. Therefore, by the end of 2020, when the lower net aggregated call duration due to reduced levels of traffic asymmetry among TSPs would be multiplied with the significantly reduced cost of call termination due to increased use of VoLTE, the resultant net proceeds from IUC may become negligible. In such situation, it may be economically inefficient for operators to measure traffic flows, keep accounting of that, bill each other, and then settle the same. In other words, the cost of IUC billing and accounting may be more than the net proceeds from IUC. Further, in such scenario, it becomes irrelevant that whether any other country has regulation mandated BAK in a CPP regime or not.
98. Keeping in view the above, along with the interests of consumers, and to ensure orderly and sustainable growth of telecom sector, the Authority is of the considered view that the date for implementation of BAK be deferred by 12 months to make it applicable from 1.1.2021.
99. Some of the stakeholders have argued that in case of deferment of date of implementation of BAK, the existing MTC rate i.e. 6 paise per minute be also reviewed. Their argument is that share of 4G VoLTE traffic has increased over a period of last 2-3 years and correspondingly the weighted sum of costs of termination in different technology networks will also reduce. According to these stakeholders, the revised cost of voice call termination per minute may have come down to anywhere between 1 to 4 paise approximately. The incumbent private operators have claimed that cost of terminating a call is much higher than 6 paise/ minute. The PSU operators have requested to decide based on actual costs of individual service providers.
100. The Authority has considered the above mentioned arguments of the stakeholders, expected adoption of 4G services by subscribers before implementation of BAK with effect from 1.1.2021, the levels of traffic asymmetry among TSPs, and past practices relating to revision in rates of MTC. MTC rate review is a complex exercise which generally takes approximately 8-9 months from the start of data collection relating to network, traffic, and costs. Further, it has been noted that, in India, such reviews were generally considered in about three years. Since, now the BAK is to be implemented from 1.1.2021, the period between this date and 1.10.2017 (i.e. date from which the present MTC rate is in force) would be three years three months only. So, the Authority is of the considered view that it may not be meaningful to start such exhaustive and complex exercise for limited remaining period before implementation of BAK for wireless to wireless domestic calls from 1.1.2021.