VIL/CP/19-20/239
18th October 2019

Shri Sunil Kumar Singhal,
Advisor (Broadband and Policy Analysis)
Telecom Regulatory Authority of India
New Delhi - 110002

Subject : **Vodafone Idea's Response on Consultation Paper on Review of Interconnect Usage Charge dated 18th September 2019 ("Consultation Paper")**

Dear Sir,

We, Vodafone Idea Limited (VIL), herewith furnish our response to the Consultation Paper, where comments have been invited about implementation of zero termination charge.

The consultation on this issue is very crucial for industry and consumers, considering that zero termination charge commencement date was fixed as 1.1.2020 under the Telecommunication Interconnection Usage Charges (Thirteenth Amendment) Regulations, 2017 ("IUC Regulation of 2017") based on certain projections and assumptions. We submit that the prevailing situation is far different from the projections and premises made in 2017 by the Authority. We note that the Authority has acknowledged the same in the Consultation Paper.

We respectfully submit that as the comments in the Consultation Paper have been invited only with respect to implementation of zero termination charge from 1.1.2020 and as it is acknowledged in the Consultation Paper that some stakeholders have challenged the IUC Regulation of 2017 in the Hon'ble High Court of Bombay and the matter is sub-judice, our response to the Consultation is limited to this specific issue on which the comments have been invited in the Consultation Paper and is without prejudice to our pending challenges to the IUC Regulation of 2015 and IUC Regulation of 2017.

We hope that our response will merit your kind consideration.

Thanking you,

Yours sincerely,

For **Vodafone Idea Limited**

P. Balaji
Chief Regulatory and External Affairs Officer

Enclosure: As above

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Response to Consultation Paper on Review of Interconnect Usage Charge dated 18 September 2019 ("Consultation Paper")

Q.1 Is there a need to revise the applicable date for Bill And Keep (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.

Yes, there is a need to revise the applicable date for zero termination charge. We submit that the prevailing situation is far different from the projections and premises made in 2017 by the Authority which formed basis of zero termination charge with effect from 1.1.2020.

In this context the Authority's premises and projections as set forth in the Explanatory Memorandum (EM) to the IUC Regulation of 2017 to support the BAK regime i.e. zero mobile termination charge are mentioned hereunder:

- "As data for demand (*sic*) has been increasing, the *share of voice will keep on reducing and there would be hardly any cost to carry voice traffic, including terminating traffic*." [Paragraph 48 of the EM];
- Moving towards BAK will encourage adoption of latest technologies and the deployment of IP-based telecom networks. [Paragraph 46 of the EM];
- "It has been observed that reducing termination rates has benefitted consumers and enhanced competition. Going the full distance i.e. reducing terminating rates to zero by introduction of the BAK regime would help in immediately realizing these benefits. "It *[BAK] will also reduce the inter-operator off-net traffic imbalance*, and thus could help in convergence to an equilibrium situation." [Paragraph 50 of the EM];
- "*Moving to BAK method will result in elimination of price differential between on-net and off-net calls and will reduce overall tariffs for customers*." [Paragraph 54 of the EM]
- "In fact, BAK will be a catalyst for traffic symmetry." [Paragraph 59 of the EM];
- "*Voice calls, in future, will be provided using IP - based technology ....*". [Paragraph 40 of the EM];
- "*After 2 years, majority of the calls will be terminating on the packet based technology in which voice will be like an application.*" [Paragraph 65 of the EM].

We submit that these projections are at a huge variance with and contrary to the actual position. Some key facts, in this respect, are as follows:

1. **VIL has extensive coverage of 4GVoLTE network-**

   The population coverage on VIL's network for 4G VoLTE is well over 72%, covering around 900 million Indians. VIL has increased its coverage from less than 50% as of September 2018. Other operators also continue to expand the 4G VoLTE presence. The extent of VIL's VoLTE coverage is shown below:

	Mar-19	**Jun-19**
No. of sites	2,10,032	2,32,900
No. of District Head Quarters covered	592	634
No. of cities and towns covered	7359	7934

2. **Despite extensive 4G VoLTE rollout, voice calls continue to be predominantly on CS (circuit switched) voice network-**

   Despite large 4G VoLTE coverage, at industry level 90% of the total industry minutes (excluding Jio) are carried on 2G/3G network as of June 30, 2019.
   In VIL network, **71**% of total mobile voice traffic is on 2G while 24% is on 3G network as of September 30, 2019. Even in major cities like Delhi and Mumbai the voice traffic is pre-dominantly on 2G/3G.

   Refer *Annexure 1* for details of technology wise voice traffic for VIL and industry players.

   Thus, with voice being predominantly on 2G/3G networks the underlying assumptions in the EM to the IUC Regulation 2017 that majority of voice calls will on IP Networks and will be terminating on the packet based technology in which voice will be like an application have not materialised. The present actual situation of only 10% calls being on VoLTE shows is just the opposite of the assumption made.

3. **Majority of subscribers in India are on 2G/3G technology-**

Even after considering that 100% of subscribers of new green-field operator (i.e. Jio) are on 4G VoLTE, 56% of overall subscribers are on 2G/3G networks.
If Jio's base is excluded, the % of 2G/3G subscriber base for rest of industry is 78.4%.
Refer *Annexure 2* for details.

4. **Majority of VIL's subscriber base is on 2G/3G network –**

78 % of VIL's subscriber base is on 2G/3G despite 4G VoLTE being offered extensively by VIL and competition. VIL's 2G/3G network is, therefore extensive, with voice being major component of the traffic.

The overall 4G handset penetration on VIL stands at around 43%. Further, even amongst those having 4G handsets, the 4G VoLTE handsets which are capable of voice calls on IP are only a subset. On overall basis, it is estimated that the number of users with 4G VoLTE handsets will be around 17-18% of total subscribers in VIL network.

VIL traditionally has very extensive rural reach. It has about 200mn rural subscriber base (as per TRAI reported numbers) which is far higher than any other industry player. This is one more factor for VIL to have a mix of 2G, 3G and 4G technologies as majority of rural base is in need of connectivity first at affordable price both for devices and services. Many of the subscribers in the low income are able to use these services as even today many prefer to buy 2G handsets or use refurbished 2G devices. According to Industry Association ICEA, even today 8 to 10 million 2G feature phones per month are purchased by Indian consumers.

Hence, VIL's 2G/3G networks carry huge amount of incoming off-net traffic, where a significant cost is incurred for call termination.

Refer to *Annexure 3* for VIL's urban- rural subscribers and its comparison with the industry.

Thus 2G/3G voice services are being actively availed by subscribers despite VoLTE being made available on all 4G sites. This choice is made by consumer. This also shows that factors like consumer behaviour, service choice, device eco-system/pricing/ affordability etc. are playing a pivotal role in consumer choice regarding migration to new technologies or continuing on existing technologies and the IUC regulation has to take this into consideration.

5. **Overall voice traffic on wireless networks has increased in India-**

The voice traffic has increased by 58% between QE Sept'17 and QE June'19 despite subscriber numbers remaining almost same. Minutes of Usage per subscriber increased from 437 minutes/month to 701 minutes/month. Refer *Annexure 4* for the increase in Voice Traffic.

Even on our network the minutes of usage per subscriber has increase from ~ 450 minutes in Sep'17 to 690 in June'19. Given that the VoLTE minutes share is only 5% in June'19, there has been an increase in voice traffic on existing 2G & 3G networks of VIL in such period.

Thus, the facts of voice traffic increasing substantially after IUC Regulations of 2017 show that the actual position is contrary to the assumption in EM to IUC Regulation of 2017 that '*as data for demand (sic) has been increasing, the share of voice will keep on reducing and there would be hardly any cost to carry voice traffic, including terminating traffic*'
This is an important reason to determine that termination rates based on cost must continue.

6. **BSNL Subscriber base continues to grow despite running only 2G/3G network-**

This reflects that many subscribers are yet unwilling to migrate to 4G network despite network choice being available to customers.

Since one operator does not have 4GVoLTE, it shows that eco-system for 4GVoLTE does not exist to the extent of assumptions in the EM to the IUC Regulations of 2017.

7. **Multiple technologies (2G/3G/4G) will co-exist for some years-**

GSMA studies show that number of 2G/3G connections in India will be around 50% by the end of 2019, 40% by the end of 2020 and 30% by the end of 2022. Further, as only one operator is fully on VOLTE / 4G, this will mean that all such 2G/3G customers will be on other operators' networks which will therefore have a much higher share in industry of non-4G subscribers and traffic.

Given the above needs, a major part of the spectrum bought in the auctions in 900MHz, 1800MHz and 2100MHz, which is liberalised, continues to be utilised in 2G and 3G technologies as majority of customers are continuing with 2G/3G handsets.

8. **Slowdown in growth of 4G devices**

Though overall 4G subscribers (mainly users of 4G data, many of who do not use VoLTE) in India are at present 45% of total wireless subscriptions it can be derived from Figure 4 of the Consultation Paper that the growth rate is decreasing in recent quarters. The details are given below:

	Sep'17	Dec'17	Mar'18	Jun'18	Sep'18	Dec'18	Mar'19	Jun'19
Total subs (Mn)	1183.04	1167.44	1183.41	1146.49	1169.29	1176	1161.8	1165.46
4G subs (Mn)	196.9	238.34	287.81	351.98	387.38	436.12	478.44	517.5
Quarterly Growth rate of 4G subs (%)		**21%**	**21%**	**22%**	**10%**	**13%**	**10%**	**8%**

This kind of trend for 4G subscriber growth shows that it will take some years for 4G subscriptions to reach to level of assumptions made by TRAI in 2017.

On this basis, it can be seen that 2G and 3G networks are still significant in terms of customers need for voice services. Further, since 4G VoLTE uptake is much slower than overall 4G devices, the corresponding milestone for voice on 4G VoLTE will be much later.

9. We reiterate that voice on 2G/3G is pre-dominant despite substantial coverage of 4G VoLTE networks. The corresponding uptake of voice on 4G VoLTE is slow due to

various factors as mentioned above and choice of service and technology by subscriber has no co-relation with the termination rate. A summary of VoLTE status as of 30.06.2019 for VIL is given below:

4G VoLTE Status of VIL Network	
Population Coverage of VoLTE	69%; at present well over 72%
Towers supporting VoLTE e-NodeB	70%
DHQs covered with VoLTE	Almost 100%
Towns/cities covered with VoLTE	95% of total network coverage

4G VoLTE subscribers and Usage		
Particulars	In Mn	%
Total VIL subscribers	320	100%
Subscribers with 4G devices	144	45%
Subscribers with VoLTE capability	55	17-18%
Actual voice traffic on VoLTE		5%

10. Traffic Asymmetry and Need for MTC

We would here like to submit that Mobile Termination Charge (MTC) is part of IUC and is a cost based charge for use of the terminating operator's network and it can never be zero. There will always be a cost of terminating a call, which is to be determined by the Authority as part of its function under the TRAI Act for fixing the terms and conditions of interconnectivity (including the commercial terms).

There is no country in the world which has a regulation mandated BAK in a CPP regime and that should be true for India also. Wherever BAK exists, it is based on mutual agreement between operators if they so decide given the symmetry in their traffic. The MTC rates prevailing in some developed markets and some developing large markets are given in Annexure 5.

Therefore, Bill & Keep (BAK) is neither a factor for reducing the inter-operator off-net traffic imbalance nor a catalyst for traffic symmetry. Also one of the objectives articulated by TRAI as *"in elimination of price differential between on-net and off-net calls"* has already been achieved because of competitive factors and for more than a year we have had no tariff plans which offer different pricing for off-net and on-net calls.

11. Traffic imbalance has actually increased in absolute terms despite lowering of Termination Charges.

It's important to mention here that for VIL issue of imbalance in traffic is still very high at 60:40 as of Jun'19, though there has been a marginal decline from 63:37 as of Sep'17. More importantly the absolute imbalance in minutes for VIL has increased from 67 bn minutes in QE Sep'17 (i.e. last quarter preceding reduction of IUC to 6p) to 80 bn minutes in QE Jun'19, which is the exact opposite of the assumption made by TRAI while deciding that BAK should be implemented from 1.1.2020.

For the Quarter (Minutes in bn)	Sep'16	Sep'17	June'18	June'19
Incoming Off Net Calls	96	157	241	233
Outgoing Off Net Calls	73	90	126	152
Difference	23	67	115	80
Incoming Off Net Calls	57%	63%	66%	60%
Outgoing Off Net Calls	43%	37%	34%	40%

The primary reason for the traffic imbalance is due to Reliance Jio, which contributes close to 86% of traffic imbalance (Out of Total Difference of 80bn minutes, 69bn minutes are due to Reliance Jio as shown in the table below). The imbalance in minutes in case of Reliance Jio has again increased from 64 bn minutes in QE Sep'17 to 69 bn in QE Jun'19. This is despite the fact that Reliance Jio is now similar to VIL in subscriber and revenue terms. In percentage terms there is still a large traffic imbalance with Jio's outgoing calls being 2 times the reciprocal incoming calls from VIL.

For the Qtr. (Bn Minutes)	Sep'16	Sep'17	June'18	June'19
Incoming Off Net Calls from Jio	2	73	122	134
Outgoing Off Net Calls to Jio	0	9	30	65
Difference	2	64	92	69
Incoming Off Net Calls from Jio	92%	89%	80%	67%
Outgoing Off Net Calls to Jio	8%	11%	20%	33%

The trend seen above is to the contrary to the assumptions in the EM to IUC Regulation of 2017 that BAK will also reduce the inter-operator off-net traffic imbalance and will be a catalyst for traffic symmetry.

As mentioned earlier, in our view there is no such co-relation. Further, there are factors like coverage, subscriber choice, service quality etc. which determine inter-operator traffic flow.

It is clear from the above table that VIL's network capacities continue to get impacted due to heavy voice traffic based on free voice services pushed by Jio on VIL's network. The impact of unilateral ringing time duration reduction at originating end by Jio is seen in last few quarters. We submit that such reduction should not be considered as reduction as it is arising due to abnormal factors.

We agree with the statement in Para 1.7 of the Consultation Paper, where it has been stated by Authority that the analysis of data collated by Authority indicates that while the adoption of new technologies by service providers and customers is progressing, a large number of customers are still served by circuit switched networks for handling of voice calls. On the issue of imbalance in the inter-operator off-net traffic we agree with Authority that the imbalance exists. We submit that the imbalance of industry with RJio is substantial and the issue is therefore relevant.

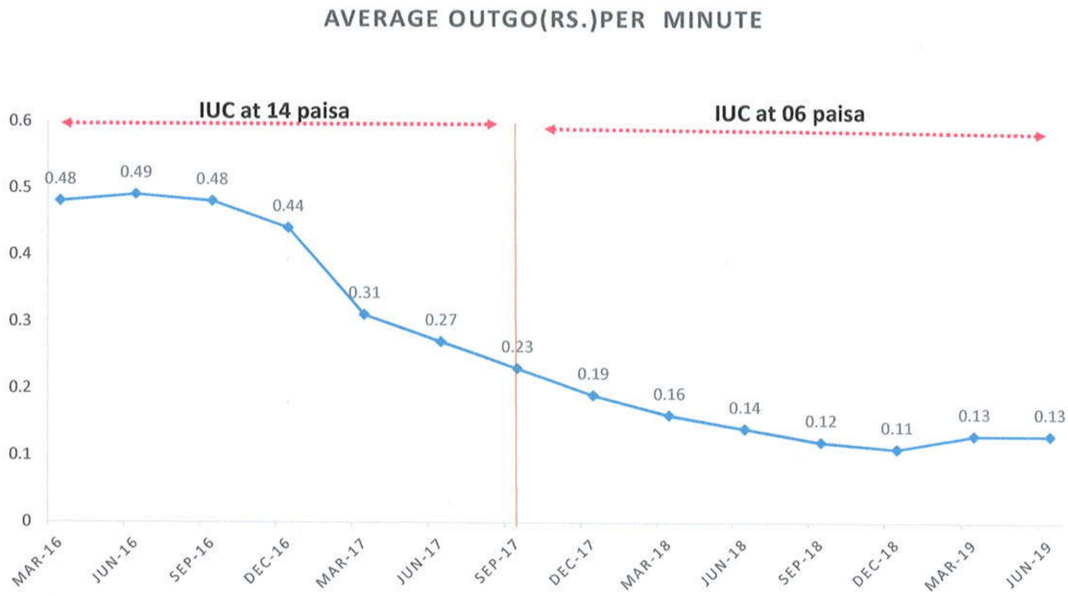
12. The assumptions of TRAI with respect to the 'mandated' BAK in IUC Regulation of 2017 are contrary to current situation-

a. The new operator voluntarily introduced free services i.e. no charge at all for service in September 2016 and continue to offer Voice as free, even after it started charging for services in Mar'17, while the IUC rate was 14p per minute. Thus, customer tariff have no co-relation with termination charge. At the same time we submit that voluntarily providing voice free does not mean that MTC as such is not relevant. When retail rate is zero, for the purpose of acquiring market share etc., and is, therefore, below the wholesale rate (IUC rate), it is all more important to allow operators to have their respective cost recovery for termination by fixing MTC at the correct cost. Moving to a mandated BAK will mean that costs attached to carry such large volumes of voice traffic are not getting recognised causing significant losses to the operators who are supporting the connectivity to a large customer base who still chose to remain on 2G/3G network. Denying due cost recovery, has resulted in financial stress to industry and adversely impacted the stakeholders, including subscribers.

b. TRAI in Para 2.12. of the present consultation has stated as follows and given a chart starting from September 2017:

"The introduction of new regime for termination charges has brought about changes in the tariff plans of the service providers. One of the very significant developments has been the introduction of flat rate charging by the service providers in different plans. This has given ample options to the subscribers in choosing the tariff plans. Further, the average outgo per minute, which was at ₹ 0.23 per minute, at the end of September 2017, has come down to ₹ 0.13 per minute, at the end of March 2019"

We respectfully state that such trend of reduction in outgo rate had no co-relation with termination charge but was only related to tariffs in the market. The said trend started from September 2016 when new operator introduced free service. We request you to refer to Figure below showing information for the period prior to September 2017 and which shows that such trend started in September 2016 and continued due to competition where new operator voluntarily did not respect any IUC compliant principles and other operators were left with no choice when such principle was not considered despite repeated requests.



(Source: TRAI PMR Report)

The above Figure also shows that drop in Average Outgo was far more prior to September 2017 (a reduction of 25 paise per minute from 48 paise to 23 paise for industry in 12 months; for VIL it was ~ 22 paise), compared to the reduction post the new IUC regulation announcement (10 paise per minute for industry in 21 months; for VIL it was about ~ 12 paise). Hence, it is clear that the reduction has been a result of non-compliant free voice services by new entrant and not the result of IUC rate reduction. We would like to reiterate that IUC at an industry level is a zero sum game as the cost of one operator is revenue for the other. It has absolutely no bearing on the consumer pricing. It only provides a fair cost recovery to each operator for the use of its infrastructure by the other operator, so that no operator is forced to subsidize the cost of other operators.

13. As mentioned earlier, there are many critical factors depending on consumer choice that have resulted in continuation of 2G/3G technologies in predominant manner for voice. We respectfully submit that when the fundamental assumption that all traffic will move to IP by 1.1.2020 does not hold good then any corresponding ancillary assumption relating to BAK cannot hold good.

Parameters that should be adopted to decide the alternate date for zero termination charge:

In view of the above, we respectfully submit that the assumptions made in EM regarding introduction zero termination charge from 1.1.2020 are at huge variance with and contrary to the actual position on the ground. Therefore, there is a need to extend the applicable date and zero termination charge should not be applicable from 1.1.2020. This will be necessary to ensure a fair compensation to the call terminating operator to cover its costs, which are a result of consumer choice.

Following parameters should be considered for the alternate date for zero termination charge:

a. Need of continuation of CS Voice (2G/3G) networks and the period for which these services / networks are required. Given that all operators except BSNL have provided VoLTE coverage on almost all their sites, this need will be dependent on consumer's choice of devices;
b. Technology wise call volume handled w.r.t to off-net traffic and if the premise is that cost of terminating a call on 4GVoLTE networks is nominal then there should be IUC for incoming off net calls terminating only on CS networks as long as such incoming CS off net calls terminating on an operator's network are substantial (say exceeds 2% of total incoming off net voice minutes terminating on its network);
c. **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**
d. **Fair cost compensation for termination of call to terminating operator in case of traffic asymmetry. This fair compensation should be based on fair cost based on technology(ies) in terminating network.**

To summarize, we submit that :

i. **The incumbent operators, who offer all technologies, are supporting a large number of customers across 22 circles that are currently having 2G and 3G handsets with voice as their primary need.**

ii. **The choice of technology is with the consumers and they have complete choice available, including number portability across TSPs (whether pure 4G or Hybrid networks).**
iii. **The consumers are migrating to 4G technologies but it will take time to come to a situation where the adoption of 4G technologies by consumers reaches to a stage that 2G and 3G networks can be closed or are no more relevant.**
iv. **Even after extensive 4G VoLTE rollouts, there is a huge demand of 2G devices (8 to 10 million being sold every month). Further, VoLTE devices and traffic is much lower in comparison.**
v. **Even where customers have 4G VoLTE devices, often they choose to not activate VoLTE feature for voice calls. Hence, such factors are beyond the control of operators and are purely consumer's choice.**
vi. **The GSMA study also indicates that a large chunk of the customer (30%) will continue to use 2G / 3G till 2022.**

Thus, a large base of consumers in India use voice only as a service and they are using/buying 2G/3G devices by choice and they have underlying assumption that they will continue to get services on these devices. Therefore, the consumer behaviour and demand is the reason for the continuing substantial use of CS networks for voice.

Question 2: Any other issue related with the domestic wireless termination charges

1. We respectfully submit that as the comments in the Consultation Paper have been invited only with respect to implementation of zero termination charge from 1.1.2020 and as it is acknowledged in the Consultation Paper that some stakeholders have challenged the IUC Regulation of 2017 in the Hon'ble High Court of Bombay and the matter is sub-judice, our response to the Consultation is limited to this specific issue on which the comments have been invited in the Consultation Paper.

   Accordingly, this response is without prejudice to our contentions in the pending challenges to the IUC Regulation of 2015 and IUC Regulation of 2017 in Writ Petition No. 10985 of 2015 and Writ Petition No. 10986of 2015 before the Hon'ble Delhi High Court; Writ Petition No. 19676 & 19677 of 2015 before the Hon'ble Gujarat High Court; and Writ Petition No. 11413 of 2017, Writ Petition No. 2636 of 2017 before the Hon'ble

Bombay High Court and without prejudice to responses filed separately by Idea Cellular Limited and Vodafone India Limited to the respective consultation papers of 19.11.2014 and 5.8.2016, which responses included submissions like MTC rate of 6 paise per minute is well below our cost of termination and sharing of the workings of 6 paise per minute.

This submission is without prejudice to our pending challenges to the Regulations.

2. The present Consultation Paper was issued by the Authority on 18 September 2019 and Authority as of now is seeking comments from stakeholders. However, the new operator has issued a Press Release on 9 October 2019 titled " Step towards reversing enacted Regulation on IUC compels Jio to recover termination charge of 6 paise / minute for mobile voice calls to other operators AND recovery through IUC Top-Up Vouchers ; Recovery of Termination Charge only until the IUC Charge is made zero".

Since, this step has been taken during the Consultation Process, we will like to submit as follows:

a) The timing of such announcement by new operator is in a way confirming that the ground reality is contrary to the assumptions regarding IP traffic in the IUC Regulation of 2017;
b) If the new operator has not charged for voice for last 3 years, there was no the hurry to do it now when the consultation is on. Its contention that the exercise of review will lead to uncertainty is without basis as it ignores the grounds given in EM to IUC Regulation of 2017 for review since there were some assumptions and projections given in that EM for future. Hence, this action right in the middle of a consultation process in line with the regulation appears only to create a distraction during the consultation process.
d) Sometime ago, Reliance Jio voluntarily reduced Ringing Time Duration at originating end. Apart from many consumer impacting issues and quality of service issues, it resulted in change in traffic pattern of inter-operator calls. Due to this, lesser calls were being answered when made from that said operator's end to other networks. Further, since the ringing time duration was reduced, there was call back from the subscriber of other network to the customer of the said operator, who had originally attempted to call. Thus the imbalance in traffic reduced due to this intentional and abnormal reconfiguration, which will reverse once normal ringing duration will be restored.

d) A similar kind of step has been taken now by the said operator, where with customer IUC charge of 6P for Offnet-Outgoing calls, the number of Off-Net outgoing calls will decrease temporarily and it will reflect in a temporary reduction in traffic imbalance. However, as this customer charge is only linked to IUC, this will go away if the IUC were to be reduced and the traffic imbalance will increase to its old levels soon.

e) We request Authority that any artificially induced / temporary variation in traffic pattern due to such abnormal factors must be ignored for the purpose of this consultation as these are driven by the intention to show reduction in imbalance and are not in normal course.

f) There are various incorrect statements and wrong allegations made in its Press Release, including in respect of tariffs etc.

g) The choice of service and service provider is with the subscribers and with this framework existing along with number porting, all such allegations, which are in any case wrong, are arbitrary and without any basis.

Annexure 1

2G, 3G and 4G Voice traffic on VIL mobile network

VIL	Technology	Apr'19		Sep'19	
		Voice Traffic (K.Erlg)during Network Busy Hour	Ratio of 2G, 3G, 4G voice traffic	Voice Traffic (K.Erlg)during Network Busy Hour	Ratio of 2G, 3G, 4G voice traffic
	2G	10256	74%	9077	71%
	3G	3082	22%	3003	24%
	4G	508	4%	671	5%
	Total	**13846**	**100%**	**12751**	**100%**

Industry Voice (MOUs in billion)

Industry MOUs (in billion)	**QE June 2019**	**2G/3G**	**Total MoUs on 2G/3G**
VIL	676	95%	642
RJIO (Source; Financial results)	786	0%	0
Airtel (Source; Financial results)	737	82%	604
BSNL /Others	252	100%	252
Total industry MOUs (source : TRAI)	**2,451**		**1498**
% of industry MOUs 2G/3G			**61%**
% of industry MOUs 2G/3G (excluding RJIO)			**90%**

Note: *Airtel's 2G/3G MoUs assumed based on TRAI's Consultation Paper

**BSNL assumed 100% on 2G/3G and is a Balancing Figure

Annexure 2

Majority of Subscribers in India on 2G/3G

	VIL			Airtel			Jio		
Mobile Services	**Mar'18**	**Mar'19**	**Jun'19**	**Mar'18**	**Mar'19**	**Jun'19**	**Mar'18**	**Mar'19**	**Jun'19**
Sub base (in Mn)	434	395	383	304	325	320	187	307	331
4G Data Customer (Mn)	48	81	85	48	87	95	187	307	331
Number of 2G subs (in Mn)	334	285	273	221	213	201	0	0	0
Number of 3G subs (in Mn)	52	30	26	36	25	24	0	0	0
% 2G subs	**77%**	**72%**	**71%**	**73%**	**65%**	**63%**	**0%**	**0%**	**0%**
% of 3G subs	**12%**	**7%**	**7%**	**12%**	**8%**	**7%**	**0%**	**0%**	**0%**
% of 4G subs	**11%**	**20%**	**22%**	**16%**	**27%**	**30%**	**100%**	**100%**	**100%**

Total Subbase Pan India (incl. BSNL/MTNL) as of June 2019 (Mn)	1165
Less 4G subs of RJIO	331
Less 4G subs of VIL	85
less 4G subs of Airtel	95
Balance i.e 2G/3G subs of Industry (in Mn)	654
% of 2G/3G subs of industry	56.13%
% of 2G/3G subs of industry excluding Jio	**78.42%**

Source: Subbase report published by TRAI/ Financial results published by other TSPs

Annexure 3

VIL- Major Player in Rural Areas

Vodafone Idea				
Mobile Services	**Mar'17**	**Mar'18**	**Mar'19**	**Jun'19**
Subscriber base(in Mn)	404	434	395	383
Rural subbase	212	235	207	199
% of Rural subbase	52%	54%	52%	52%

Airtel				
Mobile Services	**Mar'17**	**Mar'18**	**Mar'19**	**Jun'19**
Subscriber base(in Mn)	274	304	325	320
Rural subbase	137	157	149	143
% of Rural subbase	50%	52%	46%	45%

RJIO				
Mobile Services	**Mar'17**	**Mar'18**	**Mar'19**	**Jun'19**
Subscriber base(in Mn)	109	187	307	331
Rural subbase	26	50	116	128
% of Rural subbase	24%	27%	38%	39%

Source: Subscriber base published by TRAI

Annexure 4

Overall Voice Traffic Increasing

	QE March 2017	QE June 2017	QE Sep 2017	QE Dec 2017	QE March 2018	QE June 2018	QE Sep 2018	QE Dec 2018	QE Mar 2019	QE June 2019
Traffic(MOU) (minutes of use/ subscriber/ month)	405	428	437	495	583	608	627	667	692	701
Industry subbase (in Mn)	1170	1187	1183	1167	1183	1146	1169	1176	1162	1165
Total MOUs (in billion) - industry	**1422**	**1524**	**1551**	**1734**	**2070**	**2091**	**2199**	**2353**	**2412**	**2451**

Source: TRAI Quarterly Performance Indicator Report

Annexure 5

Domestic IUC Rates in some Countries

IUC rates in some of the Developing Countries

S.no.	Country	IUC Rate (Paise / Minute)
1	China	40
2	Brazil	44
3	Indonesia	77

Source : GSMA

IUC rates in some of the Developed Countries

S.no.	Country	IUC Rate (Paise / Minute)
1	Germany	75
2	France	58
3	United Kingdom	41
4	South Korea	69

Source : GSMA