

## TRAI releases its 5G spectrum recommendations

### Wanting For More...

TRAI released its much awaited recommendations for auction of 5G spectrum, slated to be conducted in CY22, to facilitate the rollout of 5G mobile services in India. Below are the key highlights:

- TRAI has offered spectrum across all bands: 600MHz to 3,300MHz-3,670MHz, and mmWave spectrum.
- It has cut the reserve price of spectrum by ~40% across bands for a 20-year license, including key 5G bands (3,300-3,670MHz and 700MHz). Adjusting for the 1.5x increase in the reserve price of spectrum for a 30-year license, the price drop is hardly 3-10%.
- It has remained silent on the key bone of contention – payment terms (upfront payment, moratorium period, and tenure).
- A pan-India 50MHz of 3,300-3,670MHz, or 5MHz of 700MHz, spectrum may require an outlay of INR238b, or INR295b, and entail an upfront investment of INR60b, or INR70b, assuming 25% upfront payment, with annual EMI payments of ~INR15b over 16 years.
- Bharti/RJio's strong FCF of over INR200b/INR250b and the former's uncalled right issue of INR160b is sufficient to meet its investments in 5G spectrum. But the risk of higher capex toward 5G does increase with the lack of a sharp fall in pricing.

### Spectrum galore

TRAI has recommended all available spectrum be put to auction in existing (700MHz, 800MHz, 900MHz, 1,800MHz, 2,100MHz, 2,300MHz, and 2,500MHz) and new bands (600MHz, 3300-3670MHz, and mmWave or 24.25-28.5GHz). It has recommended that a total of 6,358MHz of paired spectrum (excluding mmWave spectrum) be put up for auction. In line with DoT's recent relief package, it has recommended providing a five-year spectrum roadmap, with an annual schedule, so that telcos can plan their long-term spectrum requirements.

### The reserve price for a 30-year license period sees a nominal reduction

TRAI has cut the reserve price across bands by ~40% for a 20-year license period, with the 700MHz and 3300-3600MHz – the two key 5G bands – seeing a 40% and 36% price cut v/s their respective previous reserve prices. It has suggested a 1.5x rise in the reserve price of spectrum for a 30-year license, implying an effective cut of a mere 3-10% in the reserve price from earlier levels, but with a 10-year increase in the license period. The industry has been aggressively pitching for a drastic 80-90% cut in spectrum prices to proactively participate in 5G investments, unlike previous auctions.

**Ease in spectrum conditions, but no clarity on payment terms**

TRAI has vouched for pro-industry terms to improve investments by recommending: a) ease in the minimum rollout condition to 90% by the second year instead of the first year, b) ease in the surrender of spectrum, with miniscule fees, after 10 years, and c) lower the block size of 10MHz/5MHz for spectrum in the 3300-3670MHz/700MHz band. It suggests easy payment options for telcos, including part payment with flexibility during the moratorium period, but has stopped short of recommending the ratio of upfront amount, moratorium period, and tenure for balance EMI, which remains the most critical factor in determining the annual hit on a company's cash flow. Previously, sub-GHz spectrum attracted an upfront payment of 25%, 1,800MHz 33%, and the rest of the higher bands 50%.

**Satellite and enterprise players can seek spectrum**

Satellite-based internet service providers too can use the frequency range of 27.5-28.5GHz on a coexistence basis, along with 5G terrestrial players. However, they can do so only in remote locations on a case-to-case basis where there is less likelihood of 5G services. Similarly, telcos can provide a private network as a service to an enterprise to promote better 5G use cases.

**What is in store for telcos?**

Historically, in a spectrum scarce era, with a large number of telcos scouting for limited spectrum, we have often seen players over-spending on auctions in a bid to reserve good quality spectrum to create an edge in network quality and customer experience. But now with merely three players in the market and only two of them looking for serious investments, there seems to be no hurry to invest at a high price. Yet, our past experience underscores the risk of heavy investments to match the competition. A pan-India 50MHz of 3,300-3,670MHz, or 5MHz of 700MHz, spectrum may require an outlay of INR238b, or INR295b, and entail an upfront investment of INR60b, or INR70b, assuming 25% upfront payment, with annual EMI payments of ~INR15b over 16 years.

**Strong cash flow for telcos and pricing power may ease the burden**

Strong FCF of over INR200b/INR250b for Bharti/RJio and the former's uncalled right issue of INR160b is sufficient to meet its investments in 5G spectrum, without an increase in debt. But the risk of higher capex toward 5G does increase with the lack of a sharp fall in pricing.

### Other key takeaways from TRAI's recommendation

- **Reserve price of spectrum to be priced at 1.5x for a 30-year license period:** The regulator recommends that the reserve price of spectrum for a 30-year license period should be 1.5x that of a 20-year license period for the respective band.
- To provide flexibility to TSPs, it has recommended a block size of 10MHz for the 3,300-3,670MHz band and 50MHz for 24.25-28.5GHz. Spectrum is to be assigned in a contiguous manner.
- **Harmonization of the band:** It has asked DoT to carry out a harmonization exercise in the 800MHz, 900MHz, and 1,800MHz band immediately after conducting the auction. It has set a timeframe of not more than six months from the date of the conclusion of the auction for completion of this exercise.
- **Payment options | Option I:** A full or part upfront payment, with a moratorium for the proportionate number of years, and the balance amount payable in equal annual installments over the remaining period, duly protecting the net present value. **Option II:** Payment of the bid amount in 30 equal annual installments, duly protecting the net present value.
- For the development of 5G use cases and applications in different verticals, it suggests creation of a 5G-dedicated Inter-Ministerial Working Group (IMWG), under the Chairmanship of Member (Technology), DoT to establish a special dedicated digital cell that will formulate the use of digital technologies like 5G, IoT, M2M, AI etc. and develop relevant and affordable use cases involving startups, entrepreneurs, application providers, etc.
- The 526-612MHz frequency range should not be put up for auction in the forthcoming auction as: a) the ecosystem for this band is yet to be developed and the global telecom body – 3GPP – too is yet to define its plan for this band, b) the Ministry of Information and Broadcasting (MIB) is using it extensively across India for TV transmitters.
- **mmWave spectrum – 27.5-28.5GHz:** As mmWave spectrum is going to be utilized for capacity requirements, its deployment is unlikely to be ubiquitous, rather it is more likely to consist of hotspots or urban micro cells. Therefore, the frequency range of 27.5-28.5GHz should be used for IMT as well as Satellite Earth Station Gateway (earth-to-space) on a coexistence basis.
- The Satellite Earth Station Gateway should be permitted to be established in the frequency range of 27.5-28.5GHz at uninhabited or remote locations on a case-to-case basis, where there is less likelihood of 5G IMT services to come up.
- Access service providers can provide a private network as a service to an enterprise by using network resources (such as through network slicing) over its PLMN public network.
- TRAI said the Centre is considering the assignment of spectrum to BSNL and MTNL for 5G services.

## Variation in the reserve prices for various bands

**Exhibit 1: Pricing and quantity for the 700MHz band – a 10% implied cut**

LSA - 700MHz band	Reserve price for the Mar'21 auction (INR m) per MHz	Reserve price for the Apr'22 auction (INR m) per MHz (for 20 years)	Change (%) in the reserve price/MHz (for 20 years)	Reserve price for the Apr'22 auction (INR m) per MHz (for 30 years)	Change (%) in the reserve price/MHz (for 30 years)	The amount needed for the block of 5MHz (INR m)	Quantity of spectrum available (MHz)
Delhi	9150	5090	-44%	7635	-17%	38175	30
Mumbai	11220	4700	-58%	7050	-37%	35250	30
Kolkata	3470	1730	-50%	2595	-25%	12975	30
Andhra Pradesh	5570	3180	-43%	4770	-14%	23850	30
Gujarat	5460	2820	-48%	4230	-23%	21150	30
Karnataka	2190	2200	0%	3300	51%	16500	30
Maharashtra	7290	3590	-51%	5385	-26%	26925	30
Tamil Nadu	1990	2530	27%	3795	91%	18975	30
Haryana	1130	710	-37%	1065	-6%	5325	30
Kerala	1900	1100	-42%	1650	-13%	8250	30
Madhya Pradesh	1900	1560	-18%	2340	23%	11700	30
Punjab	1770	1120	-37%	1680	-5%	8400	30
Rajasthan	2110	1460	-31%	2190	4%	10950	30
UP (East)	3050	1710	-44%	2565	-16%	12825	30
UP (West)	2300	1540	-33%	2310	0%	11550	30
West Bengal	1050	1020	-3%	1530	46%	7650	30
Assam	920	570	-38%	855	-7%	4275	30
Bihar	1750	1450	-17%	2175	24%	10875	30
Himachal Pradesh	370	260	-30%	390	5%	1950	30
J&K	300	160	-47%	240	-20%	1200	30
North East	250	150	-40%	225	-10%	1125	30
Odisha	540	620	15%	930	72%	4650	30
<b>Total</b>	<b>65680</b>	<b>39270</b>	<b>-40%</b>	<b>58905</b>	<b>-10%</b>	<b>294525</b>	<b>660</b>

**Exhibit 2: Pricing and quantity in the 3,300-3,670MHz band – a 3% implied cut**

LSA – 3,300-3,670 MHz band	Reserve price for the Mar'21 auction (INR m) per MHz	Reserve price for the Apr'22 auction (INR m) per MHz (for 20 years)	Change (%) in the reserve price/MHz (for 20 years)	Reserve price for the Apr'22 auction (INR m) per MHz (for 30 years)	Change (%) in the reserve price/MHz (for 30 years)	The amount needed for the block of 50MHz (INR m)	Quantity of spectrum available (MHz)
Delhi	686	400	-42%	600	-13%	30000	370
Mumbai	841	350	-58%	525	-38%	26250	370
Kolkata	260	150	-42%	225	-13%	11250	370
Andhra Pradesh	418	260	-38%	390	-7%	19500	370
Gujarat	409	230	-44%	345	-16%	17250	370
Karnataka	164	180	10%	270	64%	13500	370
Ma h arashtra	547	290	-47%	435	-20%	21750	370
Tamil Nadu	149	210	41%	315	111%	15750	370
Haryana	85	60	-29%	90	6%	4500	370
Kerala	143	90	-37%	135	-5%	6750	370
Madhya Pradesh	143	130	-9%	195	37%	9750	370
Punjab	132	90	-32%	135	2%	6750	370
Rajasthan	158	110	-30%	165	4%	8250	370
UP (East)	229	140	-39%	210	-8%	10500	370
UP (West)	173	130	-25%	195	13%	9750	370
West Bengal	79	90	14%	135	71%	6750	370
Assam	69	50	-27%	75	9%	3750	370
Bihar	131	120	-9%	180	37%	9000	370
HimachalPra desh	28	20	-27%	30	9%	1500	370
J&K	22	10	-55%	15	-33%	750	370
North East	19	10	-47%	15	-21%	750	370
Odisha	41	50	23%	75	85%	3750	370
<b>Total</b>	<b>4926</b>	<b>3170</b>	<b>-36%</b>	<b>4755</b>	<b>-3%</b>	<b>237750</b>	<b>8140</b>

**Exhibit 3: Pricing and quantity in the 800MHz band – a 14% increase in price**

LSA - 800MHz band	Reserve price for the Mar'21 auction (INR m per MHz)	Reserve price for the Apr'22 auction (INR m per MHz (for 20 years))	Change (%) in the reserve price/MHz (for 20 years)	Reserve price for the Apr'22 auction (INR m per MHz (for 30 years))	Change (%) in the reserve price/MHz (for 30 years)	The amount needed for the block of 1.25MHz (INR m)	Quantity of spectrum available (MHz)
Delhi	6400	4790	-25%	7185	12%	8981	3.75
Mumbai	7270	1530	-79%	2295	-68%	2869	2.50
Kolkata	1600	4680	193%	7020	339%	8775	2.50
Andhra Pradesh	3900	2920	-25%	4380	12%	5475	7.50
Gujarat	3850	2620	-32%	3930	2%	4913	1.25
Karnataka	1920	1980	3%	2970	55%	3713	3.75
Maharashtra	5100	3380	-34%	5070	-1%	6338	2.50
Tamil Nadu	1740	2250	29%	3375	94%	4219	3.75
Haryana	570	620	9%	930	63%	1163	1.25
Kerala	1570	1030	-34%	1545	-2%	1931	3.75
Madhya Pradesh	1430	1360	-5%	2040	43%	2550	2.50
Punjab	1570	1010	-36%	1515	-4%	1894	5.00
Rajasthan	2660	1420	-47%	2130	-20%	2663	2.50
UP (East)	2510	1600	-36%	2400	-4%	3000	7.50
UP (West)	1610	1330	-17%	1995	24%	2494	2.50
West Bengal	740	890	20%	1335	80%	1669	2.50
Assam	640	500	-22%	750	17%	938	2.50
Bihar	1360	1260	-7%	1890	39%	2363	7.50
Himachal Pradesh	240	220	-8%	330	38%	413	5.00
J&K	150	140	-7%	210	40%	263	2.50
North East	150	130	-13%	195	30%	244	2.50
Odisha	470	540	15%	810	72%	1013	6.25
<b>Total</b>	<b>47450</b>	<b>36200</b>	<b>-24%</b>	<b>54300</b>	<b>14%</b>	<b>67875</b>	<b>81.25</b>

**Exhibit 4: Pricing and quantity in the 2,100MHz band – a 34% implied cut**

LSA – 2,100MHz band	Reserve price for the Mar'21 auction (INR m) per MHz	Reserve price for the Apr'22 auction (INR m) per MHz (for 20 years)	Change (%) in the reserve price/MHz (for 20 years)	Reserve price for the Apr'22 auction (INR m) per MHz (for 30 years)	Change (%) in the reserve price/MHz (for 30 years)	The amount needed for the block of 5MHz (INR m)	Quantity of spectrum available (MHz)
Delhi	6350	2240	-65%	3360	-47%	16800	15.00
Mumbai	5280	1960	-63%	2940	-44%	14700	10.00
Kolkata	1150	800	-30%	1200	4%	6000	10.00
Andhra Pradesh	1850	1420	-23%	2130	15%	10650	15.00
Gujarat	1810	1250	-31%	1875	4%	9375	10.00
Karnataka	910	1000	10%	1500	65%	7500	10.00
Maharashtra	3910	1580	-60%	2370	-39%	11850	5.00
Tamil Nadu	3940	NA	NA	NA	NA	NA	0.00
Haryana	630	340	-46%	510	-19%	2550	5.00
Kerala	2030	480	-76%	720	-65%	3600	5.00
Madhya Pradesh	680	730	7%	1095	61%	5475	10.00
Punjab	1040	510	-51%	765	-26%	3825	5.00
UP (East)	1260	NA	NA	NA	NA	NA	0.00
UP (West)	760	720	-5%	1080	42%	5400	10.00
West Bengal	350	370	6%	555	59%	2775	5.00
Assam	300	240	-20%	360	20%	1800	5.00
Bihar	990	680	-31%	1020	3%	5100	5.00
Himachal Pradesh	120	120	0%	180	50%	900	15.00
J&K	130	80	-38%	120	-8%	600	5.00
North East	60	50	-17%	75	25%	375	5.00
Odisha	440	290	-34%	435	-1%	2175	10.00
<b>Total</b>	<b>33990</b>	<b>14860</b>	<b>-56%</b>	<b>22290</b>	<b>-34%</b>	<b>111450</b>	<b>160.00</b>

**Exhibit 5: Pricing and quantity in the 2,300MHz band – a 31% implied cut**

LSA – 2,300MHz band	Reserve price for the Mar'21 auction (INR m) per MHz	Reserve price for the Apr'22 auction (INR m) per MHz (for 20 years)	Change (%) in the reserve price/MHz (for 20 years)	Reserve price for the Apr'22 auction (INR m) per MHz (for 30 years)	Change (%) in the reserve price/MHz (for 30 years)	The amount needed for the block of 10MHz (INR m)	Quantity of spectrum available (MHz)
Delhi	164	104	-37%	156	-5%	1560	10
Mumbai	167	103	-38%	154.5	-7%	1545	10
Kolkata	38	32	-16%	48	26%	480	10
Andhra Pradesh	78	59	-24%	88.5	13%	885	10
Gujarat	70	NA	NA	NA	NA	NA	0
Karnataka	112	64	-43%	96	-14%	960	10
Maharashtra	72	NA	NA	NA	NA	NA	0
Tamil Nadu	151	81	-46%	121.5	-20%	1215	10
Haryana	8	NA	NA	NA	NA	NA	0
Kerala	20	NA	NA	NA	NA	NA	0
Madhya Pradesh	9	NA	NA	NA	NA	NA	0
Punjab	21	NA	NA	NA	NA	NA	0
Rajasthan	6	NA	NA	NA	NA	NA	0
UP (East)	9	NA	NA	NA	NA	NA	0
UP (West)	12	NA	NA	NA	NA	NA	0
West Bengal	6	NA	NA	NA	NA	NA	0
Assam	2	NA	NA	NA	NA	NA	0
Bihar	7	NA	NA	NA	NA	NA	0
Himachal Pradesh	1	NA	NA	NA	NA	NA	0
J&K	1	NA	NA	NA	NA	NA	0
North East	1	NA	NA	NA	NA	NA	0
Odisha	5	NA	NA	NA	NA	NA	0
<b>Total</b>	<b>960</b>	<b>443</b>	<b>-54%</b>	<b>664.5</b>	<b>-31%</b>	<b>6645</b>	<b>60</b>

**Exhibit 6: Pricing and quantity in the 2,500MHz band – a 12% implied cut**

LSA – 2,500MHz band	Reserve price for the Mar'21 auction (INR m) per MHz	Reserve price for the Apr'22 auction (INR m) per MHz (for 20 years)	Change (%) in the reserve price/MHz (for 20 years)	Reserve price for the Apr'22 auction (INR m) per MHz (for 30 years)	Change (%) in the reserve price/MHz (for 30 years)	The amount needed for the block of 10MHz (INR m)	Quantity of spectrum available (MHz)
Delhi	1640	860	-48%	1290	-21%	12900	20
Mumbai	1670	810	-51%	1215	-27%	12150	20
Kolkata	380	280	-26%	420	11%	4200	20
Andhra Pradesh	780	510	-35%	765	-2%	7650	30
Gujarat	450	440	-2%	660	47%	6600	10
Karnataka	980	470	-52%	705	-28%	7050	40
Maharashtra	660	530	-20%	795	20%	7950	10
Tamil Nadu	1320	580	-56%	870	-34%	8700	40
Punjab	240	140	-42%	210	-13%	2100	10
Bihar	70	150	114%	225	221%	2250	10
Himachal Pradesh	10	30	200%	45	350%	450	10
J&K	10	20	100%	30	200%	300	10
<b>Total</b>	<b>8210</b>	<b>4820</b>	<b>-41%</b>	<b>7230</b>	<b>-12%</b>	<b>72300</b>	<b>230</b>



Explanation of Investment Rating	
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BUY	>=15%
SELL	< - 10%
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Registered Office Address: Motilal Oswal Tower, Rahimtullah Sayani Road, Opposite Parel ST Depot, Prabhadevi, Mumbai-400025; Tel No.: 022 71934200/ 022-71934263; Website [www.motilaloswal.com](http://www.motilaloswal.com). CIN no.: L67190MH2005PLC153397. Correspondence Office Address: Palm Spring Centre, 2nd Floor, Palm Court Complex, New Link Road, Malad(West), Mumbai- 400 064. Tel No: 022 7188 1000.

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