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U.S. Wireless Tower Market Standing Tall Despite Headwinds

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Key Points:

- The U.S. tower industry is facing multiple crosscurrents that offer opportunities and threats.
- The forecasted growth in mobile data, expected deployment of fallow spectrum, and new wireless operators are fueling tower demand.
- Carrier consolidation and new market entrants are creating some uncertainty for the urban/suburban tower market. However, the rural market should see increased tower demand as operators expand their rural coverage footprints.
- Small cells and C-RAN (consolidated radio access network) will impact macro tower growth and negatively impact ground leases.
- Despite the headwinds facing the tower industry, there is reason to be optimistic that the underlying demand for data, and greenfield network builds, will offset the challenges facing the industry.

Introduction

Wireless operator margins are being pressured and cost management is under the microscope as the mobile market matures. As a result, the legacy tower business model with its annual escalators and amendment fees are becoming a problem for operators. The trends in data consumption aren't helping the situation as operators are forced to add network capacity to support new bandwidth-hogging applications. Companies like Verizon and AT&T are offsetting these challenges by adopting new technologies and trying to gain leverage with the incumbent tower companies in unprecedented ways.

This report digs deeper into these dynamics and explores how new market entrants and technologies will create both headwinds and opportunities for the tower industry.

EXHIBIT 1: North American Mobile Data Traffic

EB Per Month



Source: Cisco

Spectrum: 5G Drives Changes

5G promises to deliver a surge in data traffic, which is forcing operators to significantly increase their network capacity with new spectrum bands. (See Exhibit 1.) Given that this spectrum lies fallow, new antennas need to be deployed, which typically triggers a tower lease amendment.

CBRS (Citizens Broadband Radio Service)

The CBRS band (3.5GHz - 3.7GHz) is divided into licensed and unlicensed spectrum for LTE and 5G networks. There is 150MHz of spectrum available. Half of it has been earmarked for unlicensed use, so it is likely we'll see a proliferation of new network operators. For example, the cable operators are expected to deploy CBRS to reduce their MVNO (mobile virtual network operator) wholesale costs (more on that below).

Millimeter-wave

Due to its poor propagation characteristics, millimeter-wave spectrum is not as beneficial to the tower companies as mid-band spectrum. Instead, small cells are the preferred architecture.

Most of the legacy 3G/4G spectrum bands are at 2.3GHz and below, otherwise referred to as low-band spectrum. Low-band signals travel much farther than millimeter-wave signals. In suburban and rural areas, legacy macro towers may not be ideal for millimeter-wave deployments because there may be no need to add significant capacity within 500-1,000 feet of a tower. Instead, millimeter-wave spectrum is ideally deployed in

a rifle-shot approach where a large amount of capacity is needed in a small coverage area.

From a hardware perspective, small cells are the way to go. They are typically installed on street furniture (light poles, utility poles, traffic lights) versus a macro tower.

600MHz and 2.5GHz

T-Mobile has been deploying its 600MHz spectrum to fill in the numerous coverage holes in its network. There are many sites in T-Mobile's network that need low-band spectrum, so tower companies should see an increase in T-Mobile's site amendments and new site builds in rural America.

Sprint has underinvested in its network. To add capacity, the company has prioritized deploying its 2.5GHz massive MIMO equipment on macro cells. This, too, will increase tower amendments.

AT&T FirstNet

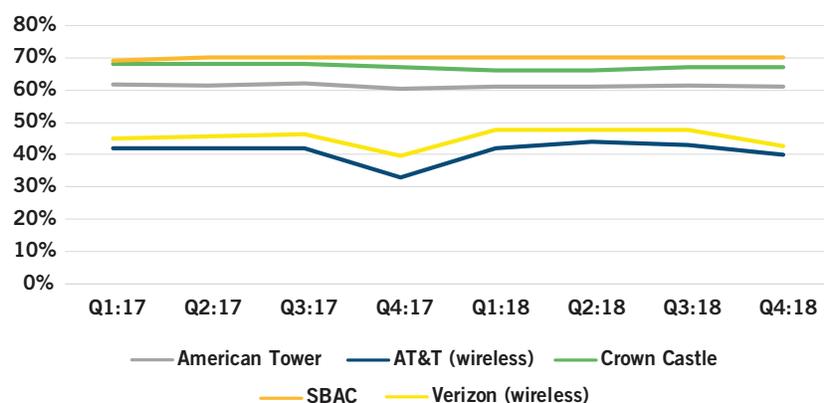
AT&T is in the midst of a significant network upgrade in support of FirstNet and network capacity expansion via its AWS (advanced wireless service) and WCS (wireless communications service) spectrum bands. As a part of the FirstNet award, AT&T received 20MHz of 700MHz spectrum that is being deployed throughout its network (ie. 80 percent of macro sites). In addition, AT&T's FirstNet build involves deploying new macro cells to address coverage holes in rural America.

New Operators: Dish, Charter, and Comcast

Dish Networks

Dish has accumulated a large amount of spectrum over the last several years, but has yet to deploy it for commercial use. Per FCC rules, Dish needs to provide signal coverage to 70 percent of the 176 markets its AWS spectrum is licensed to operate in by March 2020. The company risks losing the spectrum if it fails to meet this mandate. As a result, Dish has laid out its plans to build a narrowband IoT network, followed by a more robust 5G network build.

EXHIBIT 2: EBITDA Margins



AT&T and Verizon have had to slash operating expenditures to keep their EBITDA margins up while the tower companies have not been forced to make any such cuts.

Charter Communications and Comcast

Charter Communications and Comcast have both entered the wireless market using a MVNO business model. MVNOs sell wireless service under a private brand using a third-party network. The model has some inherent advantages, including time to market and low capital requirements. However, it lacks ownership economics, which puts pressure on service margins. One way to offset this is for MNVOs to build-out network coverage in areas where they have the highest levels of data traffic. This reduces wholesale data costs, which should reduce overall service costs.

Facing Headwinds

AT&T has been the most vocal critic of the current tower business model. Under this model, tower operators enjoy about 3 percent annual escalators and collect amendment fees when new equipment is added to the towers. This is creating heartburn for wireless operators given their stagnant revenues and the associated margin pressures they're facing. (*See Exhibit 2.*)

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In an unprecedented move, AT&T, Verizon, and Tillman Infrastructure announced a collaboration to build hundreds of cell towers. This kind of collaboration speaks to the carriers' desire to gain leverage with incumbents Crown Castle, American Tower, and SBA Communications. While a few hundred towers represent a small fraction of the total tower base, there is evidence suggesting these efforts are starting to bear fruit.

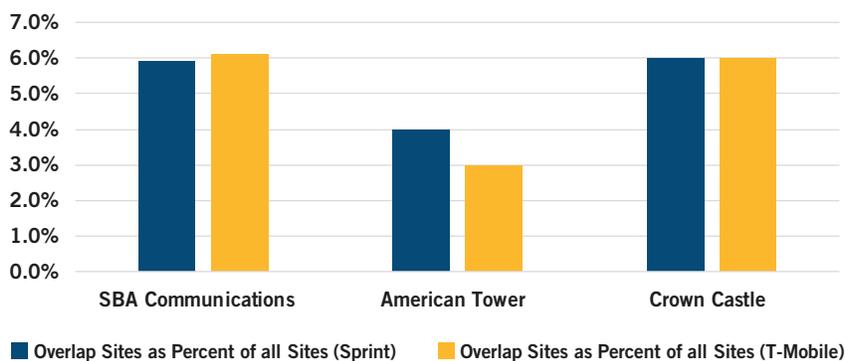
Last year, American Tower sent a letter to its contractors with an amendment to the master contractor agreement

that required contractors "...to not participate in the development of any new towers that are within a half mile of an existing ACT site. Given the circumstances, we believe this request is fair, reasonable and straightforward and we will not accept revisions to the amendment." Not surprising, American Tower's contractors pushed back as the request created significant conflicts with their other customers. Approximately two weeks after the amendment letters were reported, American Tower rescinded the request.

Lendlease Towers

In October 2017, Softbank (majority owner of Sprint) and Australian-based international property and infrastructure group Lendlease announced a joint venture dubbed Lendlease Towers. The joint venture started with an initial equity infusion of \$400 million with plans to acquire \$5 billion in U.S. telecom infrastructure equipment. Prior to forming the joint venture, Lendlease acquired Parallel Infrastructure and its 450 towers.

The significant investments planned by Lendlease Towers indicate its interest in becoming a meaningful player in the U.S. tower market. It is yet unclear how it will proceed beyond restructuring the existing 8,000 telecom sites, many of which are rooftop sites where the incumbent tower companies have less exposure. Nonetheless, Lendlease Towers is backed with significant capital and should be taken seriously.

EXHIBIT 3: Percentage of Revenue on Overlap Sites

Source: Steel in the air

Small Cells

Operators deploying 5G and millimeter-wave spectrum will need to adopt small cells, given the poor propagation characteristics of the spectrum. This could result in carriers eventually decommissioning some urban macro cells, if the cost to service an area via small cells proves to be cheaper. This, however, is a long way off. At a minimum, small cells will be a headwind for new macro cell growth.

The regulatory environment needs to be followed because one of the major bottlenecks in deploying small cells has been the site acquisition process. This involves applying for the right to install equipment on utility poles, traffic lights, etc., and negotiating lease rates with city/county

officials. The sheer number of cities and counties that carriers need to work with – and the fact that each city has unique processes and policies – has made gaining access to these sites a major issue. As a result, the FCC has stepped in and defined a nationwide process, with pricing, that all cities must follow. Not surprisingly, this isn't sitting well with a number of cities, and will likely end up being settled in court.

Sprint – T-Mobile merger

Sprint and T-Mobile management say that, if the merger is approved, the combined company will shutter 35,000 towers and build 10,000 new ones. The percent of towers where both Sprint and T-Mobile have cell sites with either Crown Castle, American Tower, or SBAC Communications is between 3 percent and about 6 percent, according to tower consultants Steel in the Air. (See Exhibit 3.)

The lion's share of tower additions should be in rural America. A closer look at Sprint and T-Mobile's rural coverage shows how they trail AT&T and Verizon. (See Exhibit 4.) NewCo, the combined Sprint–T-Mobile, has pledged to invest \$45 billion over the three years following the merger. Given their porous rural coverage, a disproportionate amount of capital should be deployed in rural America.

EXHIBIT 4: Estimated Rural Wireless Coverage in the U.S. by Service Provider

Form 477, Centroid Method, December 2016

| Provider | Number of Blocks | POPS in those Blocks | % Total Rural US POPs | Road Miles in those Blocks | % Total US Rural Road Miles |
|------------------|------------------|----------------------|-----------------------|----------------------------|-----------------------------|
| U.S. Total | 4,937,330 | 56,094,554 | 100.0% | 4,518,876 | 100.0% |
| AT&T | 4,507,660 | 54,201,991 | 96.6% | 3,929,354 | 87.0% |
| Sprint | 2,269,266 | 36,023,381 | 64.2% | 1,476,921 | 32.7% |
| T-Mobile | 3,370,160 | 44,544,057 | 79.4% | 2,679,681 | 59.3% |
| Verizon Wireless | 4,313,593 | 52,264,691 | 93.2% | 3,721,479 | 82.4% |

Source: FCC

Conclusion

The entry barriers in the U.S. tower market are high, which should blunt the impact disruptors like Tillman Infrastructure, Lendlease Towers, and Uniti Towers have on the incumbents. Given the underlying demand drivers for mobile data, and the fallow spectrum that will be deployed over the coming years, tower demand should remain robust for the foreseeable future.

The long-term growth prospects for new macro towers will skew towards rural America. There could also be some level of macro cell contraction in urban and suburban markets if the small cell model is adopted on a large scale. This is a ways off, however.

A prudent strategy for tower companies to insulate their domestic macro tower businesses would be to invest in small cells and fiber to hedge the long-term risk C-RAN and small cells represent. ■

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