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The MOBILE NOW Act: An Important Step Forward

by

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Introduction and Summary

Washington D.C. appears poised to recognize the vital national interest in locating and re-allocating sufficient spectrum for wireless 5G use. Although 4G networks, or Long Term Evolution (LTE) systems, are only recently operational and growing, the wireless industry predicts that it will begin to deploy the next iteration of mobile networks as early as 2020. Although this timeframe is four years and two presidential elections away, it is none too soon for the reallocation process to begin in earnest, especially given the long lead time historically needed to accomplish such major reallocation efforts. Therefore, kudos to Senators John Thune and Bill Nelson, the Chairman and Ranking Member, respectively, of the Senate Commerce, Science, and Transportation Committee, for trying, on a bipartisan basis, to jumpstart the 5G spectrum pipeline with the MOBILE NOW Act, S. 2555, introduced on February 11, 2016.

More spectrum is needed for 5G, and relatively soon. The government is behind in its efforts to reallocate 500 MHz of spectrum for wireless broadband use that the Obama Administration first announced in 2010. The government needs to reallocate by 2019 an additional 350 MHz

of spectrum for high power dedicated mobile broadband use just to meet customer demand. A number of econometric studies have demonstrated the huge enhanced consumer welfare value associated with wireless services.

NTIA has indicated it will announce more spectrum finds for potential reallocation by the end of this calendar year. And the FCC is currently working on the previously announced incentive auction spectrum, as well as an inquiry into potential above 24MHz allocations. But these efforts are lagging consumer demands. They need a push, such as MOBILE NOW.

MOBILE NOW advances that effort. Its main provisions include: (1) a mandate that the Administration's wireless spectrum allocation goals be met by the end of 2020; (2) a feasibility study for reallocating six specified bands above 24 GHz by the end of 2017, (3) a feasibility study for commercial-government sharing of spectrum between 3.1 and 3.5 GHz and between 3.7 and 4.2 GHz; (3) provisions to speed deployment of communications infrastructure on federal property; and (4) an NTIA report making recommendations to Congress that would provide incentives to federal agencies to relinquish or share the spectrum they use.

Despite these laudable efforts, however, the Senate may be settling for a weaker solution than is desirable, perhaps because of demands either from the Administration or congressional Democrats. The legislation, hopefully through the amendment process, can be improved in at least the following respects: (1) by imposing a deadline on actual reallocation of millimeter wave spectrum, (2) by establishing effective incentives for government to vacate unneeded spectrum and ensuring the use of modern technology, and (3) by imposing a firm deadline for federal agencies to grant infrastructure access to government lands.

There is no question that MOBILE NOW is far better than last year's Spectrum Pipeline Act. Regardless, until final enactment incorporating any amendments, it is still too soon to say for sure that the MOBILE NOW Act will be a meaningful step forward.

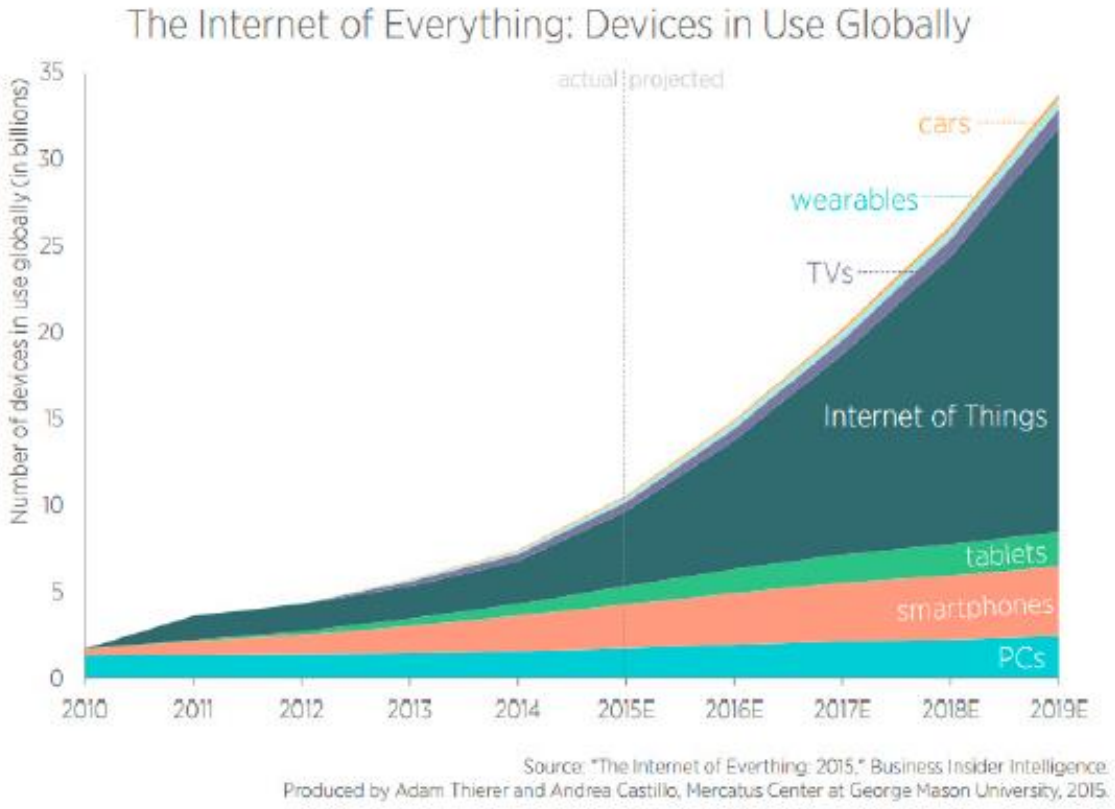
More Spectrum Is Needed

As Randolph May indicated in a FSF blog here, and I've indicated in my FSF *Perspectives* here, the government is behind in its efforts to reallocate 500 MHz of spectrum for wireless broadband use that the Administration first announced in 2010. A June 2015 Brattle Group report concluded that the government needs to reallocate by 2019 an additional 350 MHz of spectrum for high power dedicated mobile broadband use just to meet customer demand. The same report also shows that the FCC is lagging in accomplishing its own 2010 prediction that it needed to reallocate 300 MHz of spectrum for mobile broadband use by 2015.

As this lagging effort has been unfolding (or not unfolding), consumer demand for wireless broadband use has been exploding. Whereas the Internet of Things (IoT) was only a general concept as little as two years ago, it has blossomed into ever increasing interest by consumers and wireless providers in "everywhere" wireless connectivity, from vehicle operation and safety, to appliance and manufacturing process monitoring, to new medical devices, to wearables. For instance in 2015 the International Data Corporation estimated that wearable

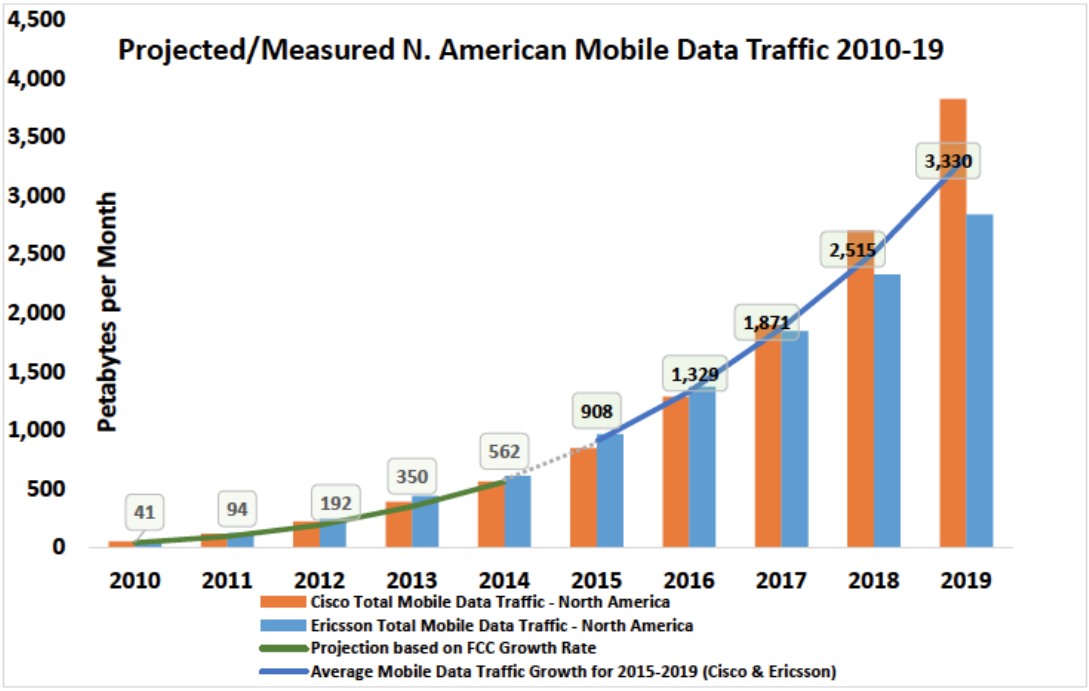
mobile devices are expected to grow from 76.1 million in 2015 to 173.4 million units by 2019. Video transmission is growing exponentially and the advent of connected automobiles is expected to skyrocket, particularly as "driverless" cars gain greater acceptance and deployment.

In Senate testimony delivered in February 2015 Adam Thierer estimated that up to 35 billion devices will be connected to the Internet by 2019, a large number of these through wireless services, at least in part.



Cisco's current estimate is even higher at 50 billion devices worldwide by 2020.

CTIA President Meredith Baker testified before the Senate in July 2015 that mobile data traffic grew 35-fold from 2009 to 2014, with an average consumer use of about 1.8 gigabits a month in 2015. Data traversing mobile networks is projected to be six times the 2014 amount. The explosive growth in wireless traffic is shown in the following chart.



Thomas K. Sawanobori & Dr. Robert Roche, CTIA, Mobile Data Demand: Growth Forecasts Met, at 7(June 22, 2015)

4G investment alone has totaled over $150 billion in private capital during the past five years. Given these facts, CTIA believes it is urgent that government start the process of finding and reallocating more spectrum for 5G services, not only to accommodate demand, but also to maintain the U.S.'s substantial lead in wireless deployment and innovation.

Mobile Spectrum Will Produce Enormous Consumer Welfare Benefits

A number of econometric studies have demonstrated the huge enhanced consumer welfare value associated with wireless services. In a May 2015 report, the Brattle Group estimated that every dollar spent on wireless contributes to $2.32 of total spending in the U.S. economy. Wireless added approximately $200 billion in GDP in 2013. For every one person employed in the wireless industry, an additional 6.5 people find employment. In another study, Recon Analytics reported in December 2015 that for every 100 MHz of spectrum allocated for wireless use, $3.1 billion is added to the GDP and over 100,000 jobs are added to the U.S. economy.

Impact of Additional Spectrum on the U.S. Economy
(monetary units in billions of US$)

	2011	2014	Difference	Impact of 10 MHz incremental spectrum in last 4 years
Spectrum	504 MHz	524 MHz	20 MHz	N/A
GDP (per year)	$146.2	$194.8	$48.6	$24.3
Total Wireless Employment	3.8 million	7.0 million	3.2 million	1.6 million
Combined Federal, State, Local and Sales Taxes	$16.7	$31.2	$14.4	$7.2
Wireless Service	$164.5	$187.8	$23.3	$11.7
Wireless Devices	$26.1	$64.6	$38.5	$19.3
Applications and Content	$8.7	$53.2	$44.5	$22.3

Source: Recon Analytics, 2015; differences may not sum to totals shown due to rounding

These raw economic impact figures do not even begin to reflect the exponential growth in innovation and technological advancement that mobile broadband creates. The Brattle Group report indicates that the "App Economy" itself has grown from nothing in 2007 to close to $20 billion in 2011, creating roughly 750,000 jobs. Wireless technologies have been projected to reduce healthcare costs $2-$6 billion, and the potential impact of mobile applications in the education field is as yet unmeasured.

Even these reports fail to quantify the difficult-to-quantify revolutionary value of changing the way we interact with and communicate with each other, or the way wireless improves the efficiency in our business and lives. No longer are we Americans chained to our homes and offices in order to communicate, but we can interact, take care of business, and find entertainment options, wherever we happen to be.

The Senate's MOBILE NOW Initiative

Recognizing the acknowledged social and economic value in meeting the demand for more wireless broadband services, Senator Thune (R-SD), Chairman, and Senator Nelson (D-FL), Ranking Minority Member, Senate Commerce, Science, and Transportation Committee, have recently introduced bipartisan legislation, the MOBILE NOW Act, S. 2555, introduced on February 11, 2016, that would:

- Mandate that at least 255 MHz of spectrum below 6 GHz be allocated for wireless mobile and fixed broadband use no later than December 31, 2020, in line with the Administration's 2010 500 MHz allocation goal;

- Require a feasibility study for reallocating six specified bands above 24 GHz by the end of 2017, and an FCC NPRM proposing reallocation of such bands where warranted within two years of enactment;

- Require government to conduct a feasibility study for commercial-government sharing of spectrum between 3.1 and 3.5 GHz and between 3.7 and 4.2 GHz;

- Facilitate speedy deployment of communications infrastructure on federal property;

- Require NTIA to report recommendations to Congress that would provide incentives to federal agencies to relinquish or share the spectrum they use;

- Require NTIA to study bidirectional sharing that would permit government to gain flexible access to commercial spectrum on a shared basis;

- Require the FCC to adopt rules permitting unlicensed mobile use of spectrum in guard bands.

I applaud Senators Thune and Nelson for their bipartisan efforts to speed up the process of spectrum reallocation usable for 5G. These efforts build on other Senate efforts to advance spectrum legislation, such as (1) Senator Marco Rubio's (R-FL) Wireless Innovation Act of 2015, which would require government to identify at least 200 MHz of spectrum below 5 GHz for reallocation to private use, or (2) a House proposal, H.R. 1641, which provides a one percent set aside of spectrum resources for spectrum efficiency research. Some of the MOBILE NOW provisions represent a needed improvement to the overly cautious approach of the 2015 Spectrum Pipeline Act adopted as part of the 2015 Omnibus Budget Bill, which I described here.

Although Senator Thune has been ready to introduce this bill for months, he slowed the process down specifically to include Democrat and Administration input, including, most recently, accommodations for Senator Nelson's national security concerns. The interest in bipartisan consensus may be necessary to advance legislation in today's divided government. Nonetheless, improvements are needed in the bill. Some major examples are as follows.

Millimeter Wave Spectrum. Despite MOBILE NOW's encouraging requirement that the Administration and the FCC initiate millimeter wave spectrum reallocation rules, the legislation does not actually mandate reallocation within any specific timeframe. Senator Thune describes these provisions as setting "targets" rather than forcing reallocation. Although the "target" approach may work, it may not because it depends too much on this and any future Administration's willingness to achieve a speedy and successful conclusion. A firm deadline when the FCC must hold the auction and award licenses would substantially advance availability of 5G spectrum.

Government Incentives. It has been reported that originally a MOBILE NOW draft provision would have permitted a government agency to share up to 25 percent of auction proceeds for spectrum it relinquished. Such a proposal, a modified incentive auction approach made by

FCC Commissioner Jessica Rosenworcel and which I evaluated favorably here, would be one way to give government real motivation to give up spectrum. MOBILE NOW's bidirectional sharing proposal may have some impact on convincing an agency to give up some of its spectrum, but I have my doubts given endemic government hand-wringing and potential operational problems of such an approach. In addition, an early draft of MOBILE NOW apparently mandated that NTIA assess whether agencies were utilizing up-to-date technology and assigning an economic opportunity cost to government spectrum. But that provision hit the cutting room floor as well. To be fair, the legislation does require the Administration to study and make recommendations to Congress regarding improving government incentives to relinquish spectrum. But since there are no actual mandated measurable achievements, I fear that any bold move will not occur on the incentive issue. Providing a more material incentive, such as allowing an agency to share in auction proceeds like the broadcaster incentive auction or assign opportunity cost values to government spectrum and using other good management techniques, would better encourage government to use spectrum efficiently.

Infrastructure process improvements. MOBILE NOW also apparently eliminated a firm 90-day deadline for federal agencies to grant applications seeking infrastructure access to government lands. Such a deadline would parallel existing FCC actions that enforce strict deadlines on local zoning authorities that review wireless infrastructure applications. It is regrettable that the federal government might receive favored treatment in accommodating wireless infrastructure applications over their local counterparts. Inserting a firm 90-day deadline would provide more certainty to applicants in attempting to expand wireless infrastructure.

Licensed v. unlicensed spectrum. Some parties have complained that MOBILE NOW short-changes unlicensed mobile use in favor of dedicated, licensed spectrum. MOBILE NOW's provision seeking more unlicensed use in guard band spectrum is apparently insufficient to satisfy these parties. There is no question that a careful balance needs to be achieved between licensed and unlicensed use. Both types of wireless spectrum are critical to meeting consumer and business demand for 5G. Only actual allocations and rules will create such a balance, however, and there is enough flexibility in the proposed Act to accommodate such a balance. So this critique should be listed in the wait-and-see category.

Regardless of the need for certain improvements that I have identified, the MOBILE NOW bill still reflects a bipartisan accomplishment that is a clear bright spot in congressional relations compared to the roadblocks experienced in the past. Since only the federal government has control over allocation and spectrum use decisions, achieving meaningful consensus may be the only way to produce substantial benefits for American consumers and businesses.

Other Government Actions to Date Are a Mixed Bag

The success of other Administration and FCC actions has been mixed at best, and MOBILE NOW does not really fix the problems.

NTIA. The National Telecommunications and Information Administration (NTIA) has stated that it will identify by the end of the year the rest of the spectrum needed to achieve the Administration's 500 GHz reallocation goal. Completion of this goal would be welcome. A dark cloud already hangs over this effort, which conflicts with previous NTIA remarks that the government has made "substantial progress" in meeting the Administration's 500 MHz goal.

Such claims don't jive with the facts. To date, the administration has actually only reallocated about 145 MHz of this 500 MHz for dedicated wireless broadband usage. Although the FCC has issued an order regarding 100 MHz associated with the 3.5 GHz band, that spectrum is too low power and licenses are of too short a duration to be reliably usable for the mobile broadband networks that most consumers need. And there continue to be significant carve-outs in certain geographic areas where government users will permanently be present and protected from interference, mostly along the U.S. coasts where a large amount of people live and work. In addition, NTIA lists as "in process" the incentive auction in the 600 MHz band, with between 42-144 MHz in total, which is not scheduled to begin until the end of the first quarter 2016. As indicated below, there is still much question about how successful this effort will be. So these latter two "in process" allocations are too questionable to list in the "substantial progress" column.

The MOBILE NOW Act's mandate that the Administration's 500 MHz plan be met by 2020 will hopefully put more teeth in actually achieving the Administration's plan.

Locating and reallocating appropriate spectrum should not be as difficult as government claims, although there is no doubt government agencies must make serious planning, technical upgrades, and operational adjustments during any reallocation process. Government spectrum users occupy a huge swath of high quality spectrum usable for commercial wireless services. Commissioner O'Rielly posits that government occupies 2417 MHz of usable spectrum, or nearly 70 percent. NTIA, on the other hand, argues that government has "dominant access" to only 32 percent of spectrum between 225-3700 MHz, and the higher figures are distortive because many government bands are already shared, including some with commercial users. Whichever view is correct, even NTIA has identified 1160 MHz of potentially reallocable (dedicated or shared) spectrum that is either under study for reallocation or available for potential future study, as identified in the following chart.

Table B-1 Federal, Non-Federal, and Shared Spectrum Bands Under				
Frequency Band	*Spectrum Made Available (megahertz*	*Spectrum Identified and In Process (megahertz)*	*Spectrum Under Study (megahertz*	*Spectrum for Potential Future Study*
WCS: 2305-2320 and 2345-2360 MHz	30			
H Block: 1915-1920 and 1995-2000 MHz	10			
AWS-4: 2000-2020 and 2180-2200 MHz	40			

AWS-3: 1695-1710, 1755-1780, and 2155-2180 MHz		65		
3550-3650 MHz		100		
Incentive Auction 512-		42-144		
Radiosondes 1675-1680			5	
2020-2025 MHz			5	
5350-5470 MHz			120	
5850-5925 MHz			75	
1300-1390 MHz				90
1680-1695 MHz				15
2700-2900 MHz				200
2900-3100 MHz				200
3100-3550 MHz				450
Totals	**80**	**207-309**	**205**	**955**

Regardless of the correct viewpoint, there is no question that government is less efficient at using its allocated spectrum because (1) institutionally it is more cautious about giving up what it has, (2) it is slower to modernize equipment, and (3) budgetary battles in Washington seriously hamper interest in expending funds to modernize spectrum usage.

Whether MOBILE NOW corrects these disincentives is still open to substantial doubt given that the Administration is only tasked with making recommendations to Congress for possible future action.

FCC. The Federal Communications Commission has been doing its part, although somewhat slowly, and creating its own problems in the process. The "incentive auction" process, where over-the-air broadcasters will relinquish their spectrum in exchange for part of the auction proceeds from wireless broadband bidders (targeted to achieve up to 126 MHz of spectrum), is well under way, with the actual auction slated to begin on March 29, 2016. The FCC reports that initial broadcaster interest is good. But until the actual auction occurs, no one knows how many broadcasters eventually will sell during the auction or drop out. Some have estimated the auction will only achieve closer to 85 MHz, far lower than the 120 MHz government has often cited as a possible spectrum yield. In addition, the final anticipated revenues are still in substantial doubt because the forward-looking portion of the auction is skewed in favor of everyone other than AT&T and Verizon and whether some spectrum is too encumbered nationwide to be very valuable is an unsettled question. Now that Sprint has announced it will not participate (as well as Google), the revenues from the spectrum set aside are even more in doubt.

The Commission recently adopted a Notice of Proposed Rulemaking in its Above-24 GHz proceeding seeking to reallocate so-called high band or millimeter wave spectrum for flexible use, including 5G. Some disagreements have marred the process. The NPRM fails to respond to Republican commissioners' complaints that too few spectrum bands are proposed for study.

The international community failed at the WARC to explore such spectrum bands as well. And the satellite industry has expressed some strong concerns about how reallocation efforts for certain spectrum will adversely affect satellite operations. Nevertheless, such disputes and discussions seem inevitable in a spectrum reallocation proceeding. I'm encouraged that the FCC is moving forward with this effort and appears committed to resolving the issues to achieve a positive outcome.

The MOBILE NOW Act contains provisions that should help to increase the amount of spectrum ultimately evaluated, but it does nothing to force this proceeding to a final conclusion.

Conclusion

It is encouraging that Washington officialdom has found some bipartisan consensus to advance reallocating spectrum for wireless mobile and fixed broadband use. The consensus, however, apparently has come at the expense of stronger measures that would complete reallocation efforts in a timely fashion and to give government effective incentives to vacate spectrum or improve efficiency. Notwithstanding this, if the consensus achieves the intended results, overall consumer and business interests would clearly be promoted through significant additional spectrum for flexible 5G use. So I congratulate Senators Thune and Nelson for the proposed MOBILE NOW Act, but I hope that some of the weaknesses can be corrected as the legislative process moves forward. Further improvements such as I have discussed would vastly increase consumer welfare and be the ticket that consumers need to ride the IoT train into the future.

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