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VZ - Verizon Communications Inc at Wells Fargo Tech Summit

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PRESENTATION

Unidentified Participant

Please welcome John Shrewsberry, Senior EVP and Chief Financial Officer of Wells Fargo & Company.

John Shrewsberry - Wells Fargo & Company - Senior EVP & CFO

[Welcome and introduction.]

Unidentified Participant

Please welcome Ronan Dunne, EVP and President of Verizon Wireless; and Jennifer Fritzsche, Wells Fargo Telecommunication Services Analyst.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

What a nice introduction. Thank you so much, it's such an honor to start the conference with Ronan Dunne. As John said, President of Verizon Wireless, I know, Ronan, you have strict orders to talk about your safe harbor, so.

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

So before we start, if I can just draw everyone's attention to safe harbor statement, there isn't one behind us, but it is available on the website in the event that I inadvertently make forward-looking statements.

QUESTIONS AND ANSWERS

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

So with that, Ronan, as I mentioned, you are President of Wireless now, you'll be head of Consumer, still overseeing about 85% of Verizon's Wireless business. And maybe if we can just start, because you're coming off a very strong third quarter results and wireless service revenue and ARPA, known as average revenue per account, has been inflecting upward in recent quarters. Could you discuss the growth drivers here because it is somewhat counterintuitive given the competitiveness of the environment right now.

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

Sure. I think for a lot of people, the question was that how do carriers grow in an unlimited world. And we introduced Unlimited in early 2017, right at the end of 2016. And we really set out a plan which was to really engage customers with the category. And what we recognized was the demand



for the service wasn't the question, it's how do we create more choice and opportunity. So we're very focused on that pretty clear personalization, delivering a 1 to 1 experience for customers. So we started in February of 2017, introduced an Unlimited plan. Since then, we've built out a range of choice within that. We've introduced it in the business segment, we've introduced it in the prepaid as well as postpaid segment, and we've introduced a range of offers, unlimited offers, inside the consumer postpaid segment. And essentially what we're doing is we're creating the opportunity. We're recognizing with customers that one size doesn't fit all, and that they like to use their phones differently, they like to have different experiences, and therefore, what we've done is we've built 3 real drivers. First thing is more customers who are coming to us are taking unlimited plans. That's the first thing. The second thing that those customers that we have already are increasingly moving to our unlimited plans. And the third thing is all of our customers are more engaged with the category, and therefore, are using more of our services, and that's reflected in more lines per account, so those are the 3 key drivers. That, coupled with the fact that we are growing our net adds in the marketplace and our customers are the most loyal in the industry.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

Have you seen them go deeper? I went to my 11-year-old daughter too last night, she got a phone and we're all on unlimited. Are you noticing that the family plans that you have are getting deeper within the family?

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

Yes, they are. And we have a range of offers as we said. And it really depends on what the customer wants. So we have go beyond and above. And some of our customers who are traveling a lot like the fact that travel passes are included. Some of our customers wants to use high definition. So what we found is that originally the customers were saying, well, what my -- what the parents want, what the children want isn't necessarily the same. The beauty of the mix-and-match is, in a single-family account, with all the benefits of that, 4 lines for \$40 each, you can have the plan that matches the particular use case. And generally what all carriers are saying as much as the U.S., I would say pretty much across the world is data usage is growing, 40% per annum. Pretty much, give or take a few points, it's pretty much the same all across the globe. And within that, video is the single biggest component of data growth. So what we're trying to make sure is that customers, wherever they are in that cycle, can engage whether it's in social media, whether it's in video, and that has helped us to increase the loyalty inside the family accounts as well.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

And your churn has stayed impressively low throughout this. Would you characterize this also as a churn reducer? Or is -- it's so low to begin with, is that hard to say?

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

I think it's really important for a business like mine. My first responsibility is to the customers I have today. It's not simply a focus. Of course, I want to attract new customers so they can get the benefit of the world's best 4G network, and in due course, the world's best 5G network. But the focus is on our existing customers. So personalizing the service, enhancing the experience, so we've introduced the Verizon Up loyalty program, which is increasingly engaging our customers and showing that they're recognized everywhere and then rewarded through the Up program. That have helped us to have world-class churn and metrics.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

On 5G, we are at a tech conference, and while it's still early days, I can't help but notice the pin on your left lapel here, 5G. Can you talk -- you officially launched the fixed wireless service in 4 cities on October 1. Can you talk about the initial customer feedback from the launch in these markets? Or is it still too early? You've put out a 30 million home eventual target. And how long do you think it could take for Verizon to reach that footprint? There's a lot of heavy lifting in it.



Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

Yes, so great question. So let me break it into a couple of parts. So just to remind people, we introduced 4 markets, what we call our initial commercial launch. And those are operating on a preglobal standards version called TF, technology forum, which was something that Verizon itself was intimately involved in the development of, as we look to accelerate the development of the 5G standard. What we're now doing is, from here on in, we'll be delivering 5G and our new radio, so the global standard, and I'll come back to that. So the idea in these first 4 markets is we will not build anymore markets with TF, it was intentional, these first 4 commercial markets. And the event there is to build our knowledge and understanding not in a tech sense, but in a real-life user case. So what are we seeing out there? So probably the most interesting thing I've seen so far is 50% of the customers who've joined us are non-Verizon customers. So the plan is set up, this initial 3-month special offer, but the plan is set up basically that the prime component this is your residential broadband connectivity and then you have choices with regards to content and video on top. But it's priced in such a way that it's \$70 a month for non-Verizon subscribers and it's \$50 a month for Verizon subscribers. So interesting, 50-50 Verizon and non-Verizon. So that's, I think, a very positive stat. Second thing we're seeing is the experience. When we first launched Fios, it took us 11 hours to do the first install, now it's down to a couple of hours. What we're seeing is as we go into the field, we're learning and actually the time it takes to do an install drops every single week, so really good experience. The mix of those people who want, where they want to locate inside the home, initially what we said is it's all professional install, but the plan will be, as we roll out, and I'll come back to that 30 million target, is that we -- it would be substantially self installed. So the tools, for example, to give to a customer so that they can walk around inside their home and identify the best possible site for their CPE were also improving. So we're getting some really, really good experience. We're also seeing that actually most of our customers, the vast majority are seeing significantly higher speeds than the minimum speeds that we suggested, so we indicated that they should expect to see 300 MB speeds and actually most of our customers are seeing probably double that. So really, really good. And then the reliability of 5G, a joke last night at dinner allegedly 5G millimeter wave doesn't go through rain, doesn't go through leaves and needs a direct line of sight. Well, the answer to each of those is no, no and no, because it works beautifully in all of those situations. And what we're seeing is that we've many examples of people who have very clearly no direct line of sight and are seeing 900 MB speeds in their homes. Since we've installed them, we've had rain, we've had leaves on trees. And again, so we're getting real-life practical experience, and I have to say customers not just meeting their expectations, but pretty much, in every case, exceeding their expectations. So what we're going to do is take that and roll it into what we call our full commercial launch. And this is where it's really important to understand is, we're rolling out a 5G mobility network, really building one network. But the way we're building it, which is building on the way we've been building our 4G network is we work with a strategy which basically says our network structure is based on 3 key elements: density, features in the network and spectrum. So for the last 3 or 4 years, we've been building a dense network, particularly in urban areas. As a result of that, we're able to upgrade that network with our 5G small cell nodes in many instances, actually fully deployed, we will have less nodes in the street than we have today. So we're building a mobility network that will give us an additional addressable market of residential and our estimate is that will allow us outside our ILEC footprint in the northeast to have an addressable market of approximately 30 million homes. As we roll out, we'll get better insight to see whether there's an opportunity to upgrade that estimate, but for the moment, 30 million homes is the target.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

Got it. And have you publicly said what penetration you hope to get from those?

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

No. So look, people have used the example of Fios and what the experience was there. You know what, I'll be the first to recognize that it depends on what we're competing with. The customers who are joining us today are coming from a range of different service providers. I joked to somebody yesterday, high-speed Internet, the only thing about it is it isn't high speed. So we have an opportunity to replace for a lot of people a service which is at a much lower speed. So that's a clear opportunity. The second thing we're doing is we're giving people choice. Bring your own content or we'll offer you a content deal. We're using YouTube TV and the initial commercial launch, and we will provide choices to customers going forward. So a lot of the experience we're seeing in Fios as well is that people want to either cord shave or cord cut, so we're going to get people more flexibility that way. So that creates a different set of opportunities. We're actually leaning into changing customer behaviors there.



Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

And again, realizing it's a small number, still early, the 50% I think you said of the new customers that were not Verizon wireless customers. Any idea where they are coming from? Or the feedback as to why they're leaving be it the cable or the other telco incumbent?

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

So I think speed is a factor for some. The flexibility to shape down a bundle and still get a compelling price. Sometimes some of our competitor cable offerings is the core broadband offering is actually quite highly priced and then the deal gets better the more things you take, and that will be the other way around because I'm not going to build another content-heavy business.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

And should we expect as this goes more mainstream? You have 115 million postpaid wireless customers that the cross-selling opportunity when you have probably with AT&T the highest demographic wireless customers. It's fair to assume we should -- as a Verizon Wireless customer, I should expect to hear from you about other things.

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

I think it's exactly that. There's a synergy at the customer level, there's a synergy at the network level, that's to say we're building a single network, we're building on the strategy, our One Fiber strategy that many of you will be familiar with what we've announced, that we rolled out around fiber in 50 major cities across the U.S. and what that's doing is creating an opportunity for us to be technology-led, but bearer agnostic. We're creating solutions for customers whether they be business customers or consumers. They have a choice of high quality, high-speed ubiquitous connectivity and the truth is they want to buy that service, we work out what's the best way to deliver that. It could be wired, it could be wireless. And that's one of the logics of our announcements of our Verizon 2.0 structure is that by orienting our go-to-market around the customer, then what we can do is bring best-in-class tools to the customer group rather than to be selling from 2 different technology staff.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

And one thing I've written a lot about is in 5G, the wireless/wireline lines get very blurred, it sounds like your -- you would -- that Verizon same mentality.

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

Completely agree. Honestly, for a consumer, I don't believe in 3 or 4 years time, people will buy a wireless or a wireline product, they will buy a home solution, they'll buy a mobility solution or most likely they'll buy a single connectivity solution which will provide for both.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

Great. We're coming off some skills from a great announcement yesterday that Samsung 5G handset, can you tell us a little bit about that?

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

Yes, sure. So look, really exciting announcement. As you all know, seeding a market, priming the pump is really important, so the first thing we did was we went to the technology forum and we drove the standards development. So as a result, the adoption of 5G is probably 18, 24 months further ahead than it might otherwise have been. Second thing we did was we got out into the trials, real customer trials quickly to prove the fact that there was a new addressable market in residential where people weren't sure and proving the case for millimeter wave. Now what we want



to do is create the conditions in which adoption can be encouraged. So in the 4G world, you'll recall a number of the early devices where clunky devices that were really a case of I can prove that a device works as opposed to a device that anyone would aspire to own. It's easier working with Samsung on this is that we can bring an iconic Samsung high-end device to the marketplace, and we've now confirmed as of yesterday morning that ourselves and Samsung will bring that to market in the first half of 2019, and that will be a great opportunity for our customers to get a great 5G experience, but also to get all of the benefit of the amazing 4G network that we have because they're actually getting a device that will give them the best of what's out there rather than, oh, by the way, it uses the new technology, but don't worry about the other stuff. So that's what's really exciting about this, and this is ahead of the curve.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

And just sticking with the device, where we've seen an elongation of the device replacement cycle. Do you think that will continue? And that begs the question, just given what we just talked about with the 5G device, how do you incentivize people to upgrade to that?

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

Great question. It's important to understand why is the upgrade cycle elongating, and it's really driven by 2 or 3 distinct factors. The first is the separation of the cost of hardware from the services, gives more transparency to the customer about what they're paying and actually increases choice for customers because at the end of a 24-month contract, you have the choice of dropping your bill by \$30 a month and not sending that money to Seoul or California and still get the great service from Verizon, or, which is also an interesting thing, you can choose to be more engaged with the category. So one of the reasons why our number of lines per account is growing is because people are bringing more connected devices. And so what we're also seeing is a cycle in upgrading where traditionally there was one device and one upgrade cycle, now it's a multi-device environment and actually there's a multi-device cycle. So for some customers, it is, you know what, my handset gets renewed every 2 to 3 years, and in between, I take a tablet. The first wave of tablets were largely WiFi-enabled and not cellular tablets, now increasingly they're cellular. The tablet category itself is not growing significantly, but those that are cellular-enabled within the category is and adoption within our base is also continuing to grow. And then other connected devices like smart watches and other things. So those 2 are a factor. And I think the other thing, it's fair to say is that the race of innovation in handsets has started to plateau. And so the opportunity for 5G is that we have a lot of customers who are excited about the category, who are very engaged in the category now across multiple devices and there's an opportunity to get a high-end device rather than get into the new technology actually with a lower end or a very narrow use case device. So I think the fact that we've had an extended cycle of upgrade provides us an opportunity, and I think bringing a high-end Samsung device and those of you may recall, but we've already announced the fact that the Motorola z3 that's in the market can also be upgraded to 5G by putting the 5G moto mod on that device as well. So we'll have 2 high-end devices in the first half of the year for customers. So I think that may well stimulate some upgrading in the market.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

Is your view that once that change happens, when the train is out the station, EIP came, it gave a lot more control to the carriers on their own destiny you weren't kind of dancing with the devile manufacturers, no names mentioned?

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

You might say that right.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

But I mean, is that -- would you -- that's a positive trend for the industry?



Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

Look, at the end of the day, is we provide a service that is critically enabled by the quality of devices that are out there for people to enjoy the experience. And one of the things, I would say, is that irrespective of whether or not it's in the best interest of a, another device manufacturer, I've invested in the last 3 years, \$30 billion in the wireless network. So this \$30 billion of innovation and enhancement and experience that somebody in a 3-year-old device may not be enjoying. So I'm also invested in ensuring that all of my customers get the best possible experience on Verizon. So I naturally want to upgrade. I still have some 3G devices in the network, I want to make sure that those consumers get the chance. And that's where one of the things that we've done which maybe as different from some others is ways to pay. So we have a prepay business which is essentially a way to pay as opposed to it's a cut down version in some respect of Verizon. So we have more flexibility for our customers to try and enjoy easier ways for them to step up into the more current devices. And what we're seeing is our smartphone adoption within our prepaid base is also very strong as people are starting to come up the technology curve there as well.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

And that also would -- leads to my next question, we're -- in the industry, we have seen a real growth in the pickup of postpaid growth categories. Not certainly Verizon's done very well, but as have your periods kind of turned positive, the trend maybe was a slightly negative this quarter. But what do you attribute to this to? I mean, is there a prepay migration to postpay? Where do you -- where are all these people coming from?

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

I think there's probably 3 drivers. The net addressable market is still growing. Whether that's the slightly earlier adoption within families, whether our safe devices where parents can control usage patterns and other things that allow people to adopt a little earlier, the great value that's available on family plans. I think there is pre- to post-migration, probably a little less for us because we've taken a different approach in prepay to some others. And I think there's enhanced category participation where you have had people who nominally have the device, but it was a glove box emergency device and now it's becoming part of. What's interesting and it may not be the biggest driver in the market, but adoption in the older age categories of people who are more engaged with the category, very often driven by family connections, whether it be using video calling or other things to stay in touch with children or grandchildren, what we're seeing is there's an increased adoption where there might have been basic phone emergency use only, actually more active use in that category. So I think all of those are helping to stimulate the category overall.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

And you've catered to that, call it 55 and above segment. Have you noticed that segment appeal to the price plans that you've offered?

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

Yes. So we have a strong installed base there and it's fair to say that what we've seen is highly competitive markets that we have at the moment, what's attended -- we've seen more obvious is targeted offerings into specific segments, whether it be military, whether it be 55-plus, whether it be others. And that's certainly something that is a combination of both the way those groups are using the services these days, but also it helps us to ensure that in an overall family environment, that's the big difference that I experienced between my experience in Europe and here is almost everybody's on a single line plan in Europe, there are no family plans. So that opportunity to stimulate within the family ecosystem is a really attractive opportunity and a driver of loyalty.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

And how about your other offers like Hum or [inaudible], is that part of the plan to layer on additional services for that family?



Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

Yes. And what I think we see in both 4G, and I'll talk about some specifics in 4G, but as we move into 5G, I think there's a connectivity play there, there's a new addressable market in residential. But it's absolutely a significant opportunity for us to play in the value created above the core connectivity layer with mobile edge computing and the like. So in the 4G world in consumer, it's products like hum, it's enhanced capabilities like safe WiFi, it's family plans, that was sort of things that are helping our customers to get more out of the services they're using today. But also basic things like our total mobile protection plan, you now have \$1,500 device in your pocket. My first car cost less than that. So there's a number of those things there because people are engaged with the category, really don't want to be out, it gives them the opportunity to get same-day replacement, et cetera. And then at cloud, even for ourselves, there's a lot of cloud providers out there, but cloud is a growing service for us. And then inside both B2B and consumer, I think we'll see a further acceleration in the IoT space coming through from the adoption of 5G, where we're able to scale the number of devices supported per square mile of network and also significantly improve battery life, which will allow more connects in an IoT space which used to be put into industrial situations where they need to be a long life. So I think what you'll see is you'll see continued growth in the core connectivity service revenues inside Verizon. You'll see an increase in our addressable market as we enter into new markets like residential, and then you will see an increase and a growth opportunity in the value above the core connectivity layer as people continue to get more engaged, and we offer more personalized solutions, even something simple like offering Apple Music. We're seeing new customers joining, 20% of those customers are taking up the Apple Music offer, yet we all know there's a lot of people out there already have a music subs

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

And you want to get in a little bit into cost, I know you're not math, but the cost of 5G. So the general view is they're going to have to add a lot of fiber, fiber is expensive, their capital expenditure they're going to have to go up, that's just the general view. But if we look at just the fixed wireless piece, if you compare that to Fios, which I know you weren't at Fios when that — what's happening, but it seems to me, am I right in saying that the math, a very large part of that cost was the 200 feet or so from the home and the installed person to get in the home. So if you were to disclose like the cost per home, now that you're removing that piece and doing it via wireless, the cost is significantly less, correct? Or...

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

Yes. I think there's 2 key things to think about here. It almost start right at the center. So in a Fios environment, you're deploying fiber for a single use case. We're deploying fiber for multiple use cases, so we're deploying fiber in urban areas to support our Verizon Enterprise Solutions business, our wireless business group. We also have the opportunity to provide small and medium business solutions outside of our ILEC footprint, both wireline and wireless, where traditionally we haven't. And then we have residential. So we already have multiple opportunities to pay off the investment in the fiber. Then when you get to the specifics of, okay, so I've made a decision, I'm going to run fiber-to-the-node anyway, so that's part of my mobility play, that gives me a lower cost per bit and a massive increase in capacity in a market that is growing at 40% per annum demand. So the good news is I can scale capacity at a more cost-effective rate than I could in the past. That's a good thing on anybody's economics. But now that I'm there with that node in the street, part of the other opportunities I have, and exactly as you say, in the initial ICL, it's a professional install. But we would expect that the majority of installs over time will be self install. So we will avoid a significant piece of the cost. And what I would say is in the Fios model, that last 200 feet or so is a significant component of the cost. So the opportunity for us to substitute that last piece and give a similar sort of gigabit experience in the home, clearly, from an economics point of view, is attractive. From a network transformation, over time, even in the ILEC footprint, we have the opportunity then to give the customer choice to say I'm going to take out copper, and I have 2 solutions available, I can either offer fiber or I can offer a 5G wireless solution. So again, increases choice. And the other thing I would say is it's not my aspiration to turn up in the home and just do what the other guys do and say, by the way, I've an alternative connectivity provider, by the way, it's really fast. We've an opportunity to transform a home and really, really bring the connected home to that next level. Much talked about but not really seen. So that idea of ubiquitous connectivity in the home, and most of you know that the real last century piece of tech you have in your home is WiFi. It's the slowest damn thing in your home. And so what we want to do is we want to give you the choice to get rid of all of that and have wall-to-wall high-speed connectivity that allows you the choice of where I'm going to locate stuff, it's too far away from the ethernet port, I can't have my desk there, all those things. That can give us an opportunity to sit in the layer above as well in the consumer space in the home, so it's not just -- it's only a substitute for an existing cable provider.



Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

And I know the content model is evolving with some of your competitors, but your view is I can choose what I want. You're not going to point the huge package on me.

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

Yes. I think you might have had comments from my former colleague, John Stratton, on this platform last year about this. I'm not going to redeploy a high-cost content model. What we're seeing increasingly is customer behavior is moving towards newer skinny bundles. Yes, we have to give them choice, and we will provide them with choice but we want to have a flexible model where the cost of your connectivity is absolutely transparent, where, in the wireless model, we're not going to rent you a set-top box at \$12 a month from here to infinity. There's quite a few things that would change the economics for a customer, as well as a better service. But then they have choice about what type of content they want to use. And over time, the number of customers who will want to take a fat bundle, we believe, will reduce. I recognize today that I may need to offer some bundled content to customers who are already using a similar service, but over time, the proportion of those customers will reduce, I think, all the forecasts suggest that. So my addressable market, and therefore, my opportunity of penetration in those market will increase over time as well.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

And so also I wanted, on the infrastructure side, you guys have talked for a very long time about Edge computing, and it's kind of now becoming in vogue, but it seems like Nicki and her team has been working on it 3 to 4 years ago, I mean, where -- is that a key part of this to be able to do all these? You have to have those infrastructure investments.

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

Yes, so the first thing to say is for the residential broadband opportunity, it's not critically dependent on Edge computing because actually the compute power is in the devices that are in the home. But since we started doing virtualization, C-RAN hubs in the network, the way we've done our densification, we've been creating the infrastructure and the grid structure that enables us to move quickly in an edge computing model. So we have the opportunity with thousands of locations well distributed around our network, where we've actually created space in those through virtualization, where we have the opportunity to deploy what are effectively unique data centers. And the opportunity is the -- as the 5G rollout happens and particularly as the upgrades to the standards from Release 15, which is due shortly and then 16 and 17, we will have a situation where the -- not just the over-the-air, but the whole return latency from the air through and back will be potentially significantly a lower latency than a wired fiber connection all the way because the compute has been moved to the Edge, and that's where we win back as well as faster over-the-air interface the fact that we can take milliseconds ahead of the compute layer because you're not running 1,000 miles back and forth, but you may be running less than 100 miles back and forth.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

I mean, I've heard some other companies talk about 5G and not even mentioned the word low latency. I mean, is that critical in your view of 5G?

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

Yes, the one thing many people in the room will be intimately familiar with 5G, but the thing to think about in the 5G world that's different from 4G is because of the scale and the capacity associated in our millimeter wave, we're talking about 1,000 megahertz of spectrum in the 28 and 39 GB versus like 120 MB of spectrum as our kind of general allocation in our low- and mid-band. What that allows you to do is slice up the currencies within 5G. So if a customer needs latency but doesn't need a particular bandwidth or high high-peak speeds, so it might be an alarming network that needs a rapid, rapid response, but it's very less payload. You can deliver that service. If somebody wants massive capacity but is not sensitive



to latency, you can deliver that. So by disaggregating the components of the 5G network, what you can do is you can get an awful lot more out of it unit for unit and provide the spoke services that meet the specific use case need. When a customer of ours decides that they're interested in their personal finances and I team up with Yahoo! Finance which has a bigger active portal of active users who are involved in personal finance than anything other than Bloomberg. And so I take that, I take the low latency, I put a dealing service and I allow them to deal on a mobile 5G network with low latency faster than their broker in Wall Street. That's not a bad proposition, you know. A gamer who has 3 layers in his game that his games provider has built that are only accessible to people with ultralow latency on their networks. That's an interesting proposition. So that idea of taking the various currencies of 5G and allocating them to specific use cases that meet customers' needs, I think, will be the way you'll see a lot of the 5G use cases evolve. Using one or more of the currencies but not necessarily all of them.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

You mentioned spectrum, and I've called this a "get out of the way" question, I always give Verizon, realizing there is a millimeter wave auction going on, so you can't really speak -- I know you can't speak to that. But there is this perception from some investors that Verizon is short on spectrum. What say you?

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

Well, first thing to say is the suggestion is we were short on spectrum was the reason why we wouldn't do Unlimited. Actually, our network performance is better today than it was 2 years ago. The number of independent awards, whether they be crowd-sourced awards or whether they be industry-recognized awards, actually improving. So the reality is I'm only using just about 50% of my low- and mid-band spectrum for 4G LTE today, and my network is getting better, though it's growing 40% per annum in capacity, and that is a combination of spectrum, features and densification. So I think the thing that a lot of people miss is that they think it's the spectrum is the only solution. The truth is we have a nice mix of spectrum, every piece of spectrum I hold today when Release 17 comes and the new standards will be 5G spectrum, so every single piece of it that I have today, including the new millimeter wave which is specifically for 5G, all of it will be available to me in 5G. Like any carrier on the planet, if there's spectrum for sale, I'll show up and pay attention because I'm doing a build versus buy calculation all the time. But I'm very comfortable with both our strategy from a network point of view and the businesses opportunity with the assets I hold today.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

So on the worry list of your team, spectrum is not -- I mean, you always, it's not top?

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

No. There's a lot more choices out there than people realize, and some of the spectrum that people debate about is a function of whether or not they're long or short somebody else's stock, that's really not a worry for me.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

My last question and then we can turn it over to the audience. I believe, there's a microphone, yes? Okay. Fiber, there is the other question I get all the time is, again, fiber takes a lot of money, time, municipalities, regulations to get it done quickly. Matt has publicly said it's always a build versus buy scenario. But I've also heard you say no one else is building what you -- no one else has what you're building. How important is future proofing your network versus speed of market maybe some who can provide it today?



Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

I think there's always a balance in that. We've — where it's been appropriate. In Chicago with WOW! and others we've made choices to acquire. But generally, our view is what's in the ground doesn't meet our needs. I mean, it's public record. We have commitments out there for 12.5 million route miles of fiber. We're building 1,700 strands in a sheet, not 80 strands with 4 square front strands that might be lit up, 1,700 strands. We're building the network for today and the future. The fact that you asked me a question which I didn't answer about is my CapEx going to go way up — would assume that I'm building a 5G network on top of a 4G network. We started building a strategy for 5G 4 years ago. It was the — in the context of that, that we made decisions on earlier spectrum auctions. We looked at densification, we looked at future set, so we're building not just for today but for the long term and that allows us to have sustainable economic benefit from the approach that we're taking. Where it's necessary, will we partner with others? Will we go and look for short-term solutions? We may, well, but our overarching strategy is we will own our fiber.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

We can take -- Monica, we have two microphones. So if there's questions, we have 3 minutes for questions, if there's any. I certainly have more so. Just wait for the microphone. Thank you.

Unidentified Analyst

I know some of your competitors or a competitor offers some free service on WiFi on planes. Do you guys do that? And then the second question, do you have any interest in that area because it looks like most of the companies that provide that are not in great financial shape, and I just didn't know if that was an area that you guys have any interest in? I know AT&T announced they were going to get into it a number of years ago and then they scrapped it, so I just didn't know where to start.

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

Look, the international traveler or the domestic traveler is an interesting opportunity for any carrier. We enhanced the availability in our -- beyond offering by introducing travel passes included so that customers have the opportunity of international roaming as part of their deal. What I would say is our strategy particularly around satellite communication in planes, it's always something that we look at. We've looked at it a few times and if the economics were right and our customers wanted it, it's certainly something we would look at. But it's not what I would describe as a foundational strategy.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

I could just ask one, we've attended the AT&T Analyst Day and there was a lot of talk on FirstNet and public safety. That is a core market for Verizon. I just -- as AT&T wins that contracts, how is Verizon thinking about customer base?

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

Yes. So again, important to remind people, there's a couple of components about this band 16, the spectrum that was available to AT&T in that, we have similar spectrum already available to us on the nationwide basis. I have — I think over the last count, somewhere between 400,000 and 450,000 square miles of coverage, more than my next nearest competitor, and we show up every single day for those customers. Very, very important segment for us. It's one that we invest heavily in, and we make sure that the capabilities and features that we have on offer for first responders and for public safety that are available to them today rather than the ones that will be built over the next few years, we are already there. And just to remind people, there's a low, every state signs up for a program, there is no requirement for you to put any of your services on that program. It's an entirely commercial decision for every user at the end of the day, irrespective of whether their state has opted in or not.



Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

And you have a dedicated sales force?

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

We absolutely do. We have a significant market share in that space, and we've a very strong reputation. And look, we will continue to invest whether it be segregated core, whether it be interoperability, whether it be priority in emergency situations. It has been a bedrock of our commitment to our communities and will continue to be.

Jennifer Fritzsche - Wells Fargo Securities, LLC, Research Division - MD and Senior Analyst

I think that's underestimated. So thanks for taking that. All right, Ronan, thank you so much. So it's great. Thank you, everyone. I've -- do have an announcement, sorry, track session to begin down stairs in the Olympic Silver, Gold and Bronze rooms and one-on-one meetings will take place in the suites throughout the courtyard. There's staff and maps available to assist and then we'll all meet back here in the ballroom for lunch at noon. So thank you, again.

Ronan Dunne - Verizon Communications Inc. - Executive VP & Group President of Verizon Wireless

Thank you.

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