



DLA Piper LLP (US)
500 Eighth Street, NW
Washington, DC 20004
www.dlapiper.com

Nancy Victory
nancy.victory@dlapiper.com
T 202.799.4216
F 202.799.5616

August 20, 2018
VIA ECFS

Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, DC 20554

REDACTED – FOR PUBLIC INSPECTION

**Re: Notification of Oral *Ex Parte* Presentation
Applications of T-Mobile US, Inc. and Sprint Corporation for Consent to Transfer Control
of Licenses and Authorizations; WT Docket No. 18-197**

Dear Ms. Dortch:

Pursuant to Section 1.1206(b) of the Commission's Rules, 47 C.F.R. § 1.1206(b), notice is hereby provided of an oral *ex parte* communication in the above-captioned docket. On August 16, 2018, Neville R. Ray, the Executive Vice President and Chief Technology Officer of T-Mobile US, Inc. ("T-Mobile"), and other representatives of T-Mobile and Sprint Corporation ("Sprint") and their controlling shareholders¹ (collectively, "Applicants") met with Erin McGrath, Legal Advisor, Wireless, Public Safety and International to Commissioner Michael O'Rielly, and Umair Javed, Legal Advisor, Wireless and International to Commissioner Jessica Rosenworcel, and in a separate meeting with the staff members of the FCC listed in Attachment A. During the meetings, the Applicants presented information in the deck appended hereto as Attachment B, which tracked the issues in Mr. Ray's declaration to the Public Interest Statement.²

In particular, Mr. Ray described that the proposed merger of T-Mobile and Sprint will enable New T-Mobile to build the first broad and deep nationwide 5G network that will deliver unprecedented coverage and capacity. He reviewed the variety of services and applications that could be supported by the combined company's 5G vision – and the associated benefits for U.S. consumers. However, he underscored that a robust, high capacity network is needed to bring this vision to reality. New T-Mobile will build such a network and extend it nationwide. The transaction will also make it possible for this

¹ These representatives were Kathleen Ham and Steve Sharkey of T-Mobile; Reinhard Wieck of Deutsche Telecom, Inc. ("DT"); Vonya McCann and Charles McKee of Sprint; Steven C. Sunshine, Skadden, Arps, Slate, Meagher & Flom LLP, and Regina M. Keeney, Lawler, Metzger, Keeney & Logan, LLC, who are counsel to Sprint; John Flynn, Jenner & Block LLP, who is counsel to SoftBank Group Corp.; and George Cary, Cleary Gottlieb Steen & Hamilton LLP, and Mike Senkowski and the undersigned, DLA Piper LLP, who are counsel to T-Mobile and DT; and Tom Dombrowsky, DLA Piper LLP, who is an engineering consultant to T-Mobile and DT.

² Declaration of Neville R. Ray, Executive Vice President and Chief Technology Officer, T-Mobile US, Inc., App. B to Description of Transaction, Public Interest Statement and Related Declarations, WT Docket No. 18-197 (June 18, 2018).



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network to be built rapidly – incentivizing more rapid and substantial investment in 5G devices by manufacturers and enabling the U.S. to be a first mover globally on 5G and reap the economic benefits of doing so.

Mr. Ray reviewed the historic trend of rapidly increasing capacity consumption by consumers. T-Mobile predicts this trend will continue into the future, underscoring the need for (and public benefits of) deployment of a broad and deep nationwide 5G network. The transaction will enable the combined company to deploy such a network – something neither standalone company could do on its own. In addition, the planned high speed, high capacity network will enable the company to compete directly with wired broadband – offering consumers both choice and cost savings.

Mr. Ray discussed that the New T-Mobile network plan is the result of three key ingredients – sites, spectrum, and spectrum efficient technology. The Applicants plan to keep a portion of the Sprint sites, densifying the merged network to boost capacity. The most significant increase in performance and capacity will result from the combining of the two companies' complementary spectrum portfolios. In addition to significantly increasing capacity, the combined spectrum holdings will enable rapid refarming of spectrum, permitting deployment of substantially more frequencies for 5G faster. And the faster deployment of more efficient 5G technology will itself contribute to better performance and increased capacity at lower cost – all of which is beneficial to customers.

Mr. Ray then described the impressive performance characteristics of the New T-Mobile network as presented in the attached slides, particularly in terms of throughput and coverage. By 2024, the New T-Mobile network will provide speeds of over 100 Mbps to over 292 million people and over 500 Mbps to almost 209 million people. Mr. Ray discussed these results on a national basis and also using West Brooklyn, NY as an example. Both nationally and locally, the contrast with the Applicants' standalone plans is stark.

Finally, Mr. Ray stated that the T-Mobile team had significant experience in implementing the kind of network transition that will be required after closing and that he expected a smooth customer migration. He explained that the same process used very successfully following the acquisition of MetroPCS would be used here to similar results. While the Sprint transition will involve more markets, the MetroPCS transaction involved some markets that were more challenging than those involved here, due to the large concentration of customers in certain MetroPCS markets (higher than Sprint's) and larger number of handsets that needed to be replaced.

This filing contains information that is "Highly Confidential" pursuant to the Protective Order filed in WT Docket No. 18-197. Accordingly, pursuant to the procedures set forth in the Protective Order, a copy of the filing is being provided to the Secretary's Office. In addition, two copies of the Highly Confidential Filing are being delivered to Kathy Harris, Wireless Telecommunications Bureau. A copy of the Redacted



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Highly Confidential Filing is being filed electronically through the Commission's Electronic Comment Filing System.

Please direct any questions regarding the foregoing to the undersigned.

Respectfully submitted,

DLA Piper LLP (US)

/s/ Nancy Victory

Nancy Victory
Partner

NV

cc: Erin McGrath
Umair Javed
Kathy Harris
Linda Ray
Kate Matraves
Jim Bird
David Krech
[Additional individuals listed in Attachment A]

FCC MEETING ATTENDEES

Donald Stockdale
David Lawrence
Catherine Matraves
Charles Mathias
Ronald Repasi
Michelle Ellison
Aalok Mehta
Aleks Yankelevich
Babette Boliek
David Krech
Erica Rosenberg
Eugene Kiselev
Garnet Hanly
Jim Bird
Joe Wyer
Joel Rabinovitz
Jon Henly
Judith Dempsey
Katherine LoPiccalo
Kathy Harris
Lindsay Tello
Matt Collins
Michael C. Smith
Monica DeLong
Morasha Younger
Murtaza T. Nasafi
Neil Dellar
Nick Copeland
Patrick Sun
Ramon Williams
Robert Pavlak
Sara Mechanic
Saurbh Chhabra
Stacy Ferraro
Steven Carpenter
Ziad N. Sleem

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ATTACHMENT B

PRESENTATION DECK

Proposed Merger of T-Mobile and Sprint

Presentation of New T-Mobile's Network to the Federal Communications Commission
Neville Ray, CTO, T-Mobile USA
August 16, 2018

Highly Compelling Combination



Merger will create only company with incentive and ability to build first broad and deep nationwide 5G network

- New T-Mobile will deliver unprecedented coverage and capacity
- New T-Mobile will bring revolutionary consumer experience with unmatched speed and latency
- New T-Mobile will accelerate significant industry-wide investment in 5G

Massive capacity increase and enhanced scale will increase consumer welfare

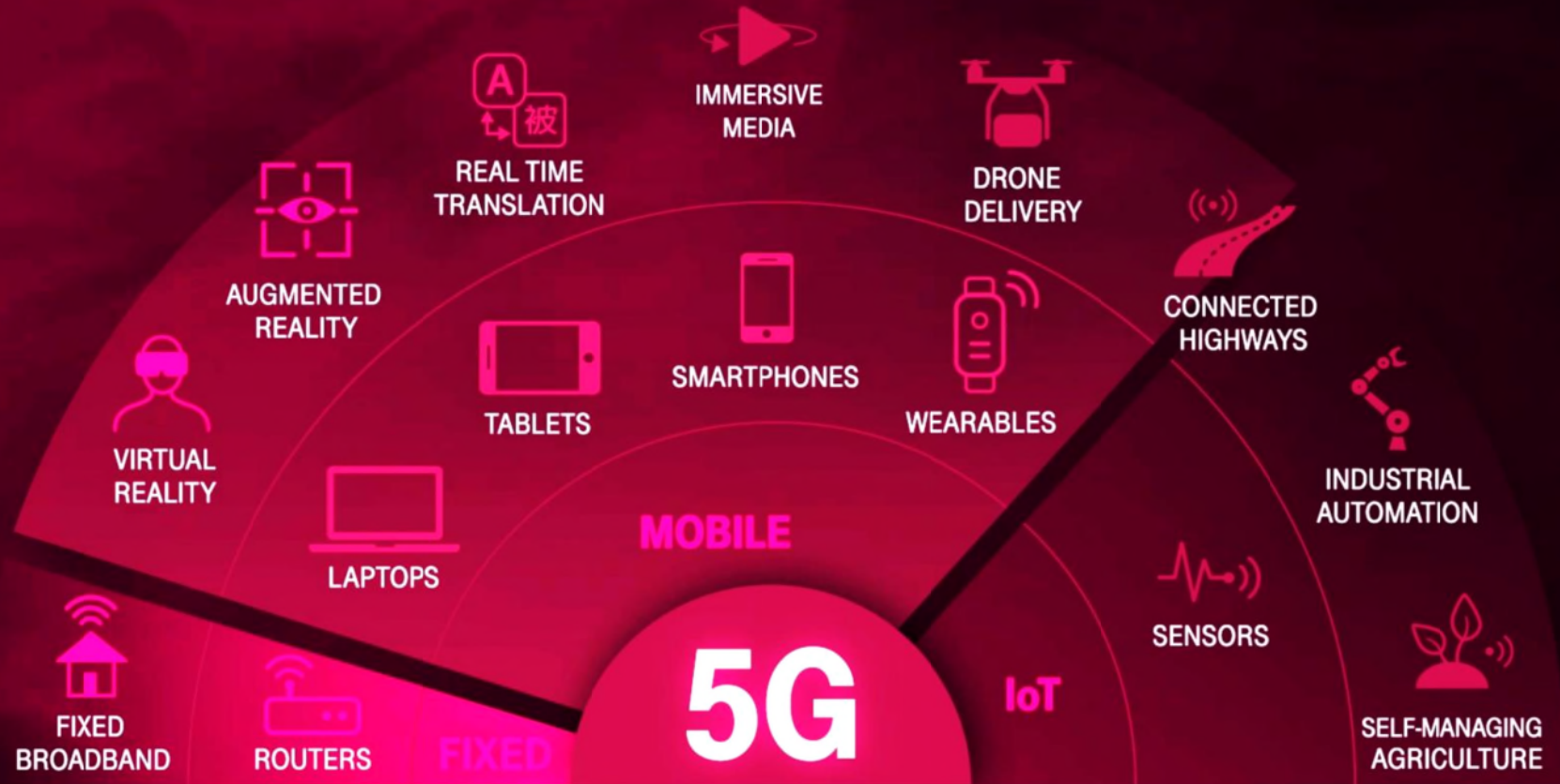
- Consumers will get more value for money, benefiting from revolutionary user experience
- Consumers will benefit from new competition and disruption through (1) expansion and improvement of existing services and (2) arrival of new, innovative services
- Businesses will reap benefits of accelerated U.S. move to 5G

This is the right time and the right team

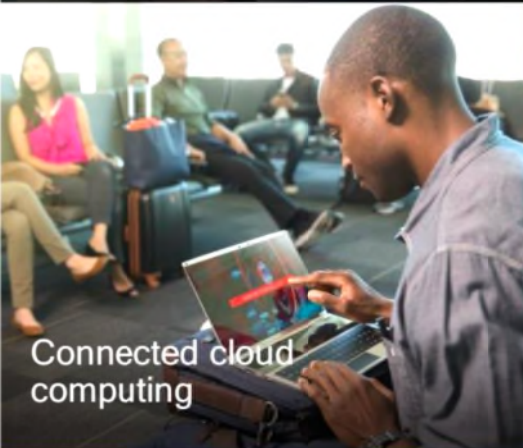
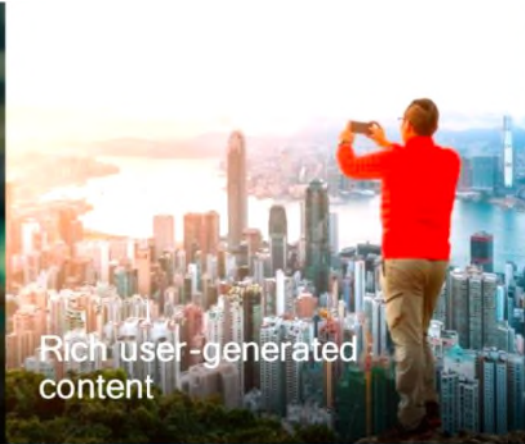
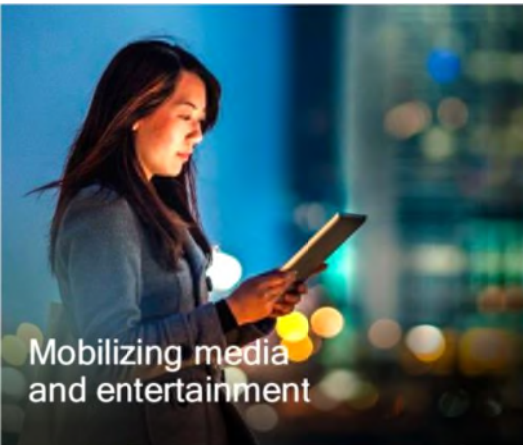
- Rapid industry convergence continues to increase demand for data and impact data usage patterns
- 5G economy is emerging quickly, with developers starting to test use cases
- MetroPCS integration completed with accelerated timeline providing invaluable experience for this transition

Why 5G?

New T-Mobile 5G Vision



Eco-system View of 5G



5G is essential for next generation mobile experiences

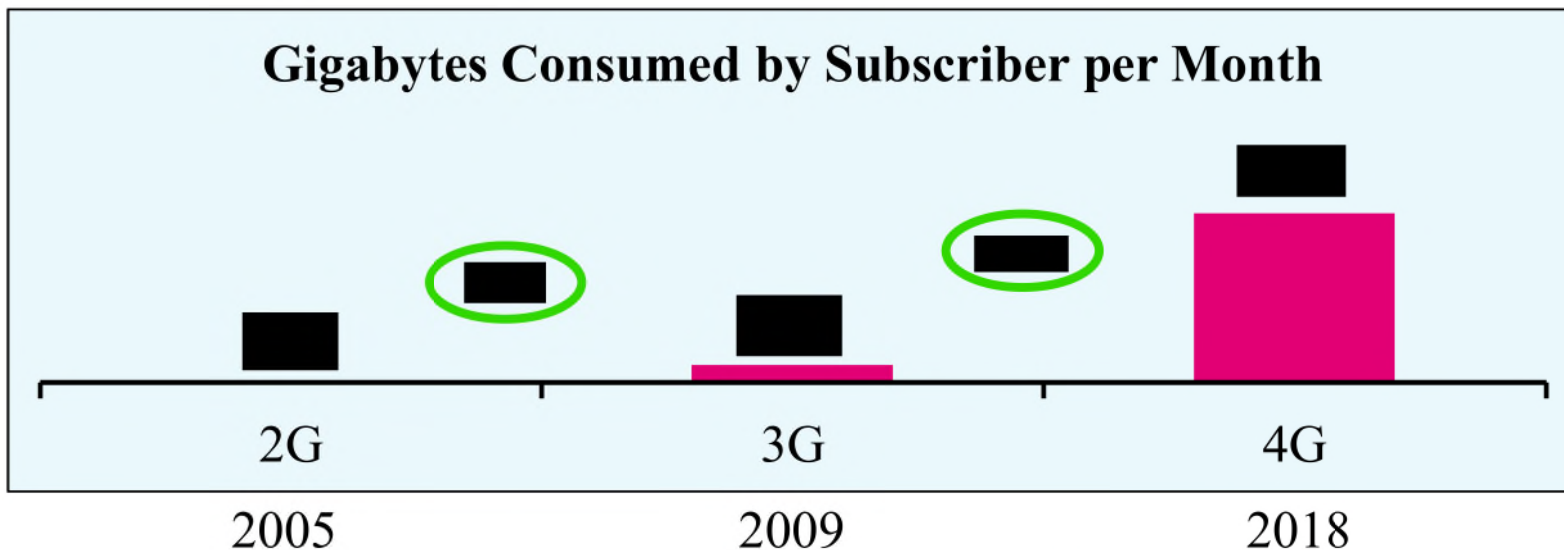
- Fiber-like data speeds
- Low latency for real-time interactivity
- More consistent performance
- Massive capacity for unlimited data

Source: Qualcomm 5G The Fabric for Society

History Shows that Traffic Accelerates with Generational Steps

Each generational transition in wireless technology (e.g., 3G to 4G) has led to a step-change increase in wireless data consumption

- Higher generational connection speeds
- Transition from data bucket plans to unlimited data plans
- Powerful processing in smartphones, equipped with higher resolution screens
- Increasingly abundant video content with increasing fidelity
- Users increasingly viewing content on their mobile devices

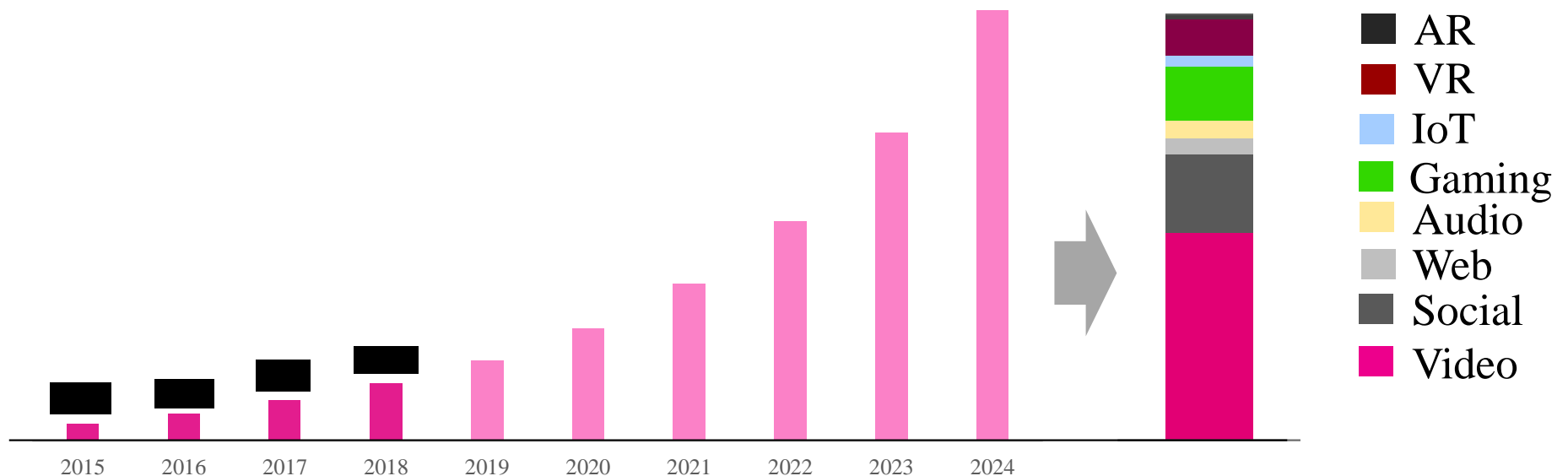


¹ Usage based on LTE post paid unlimited subscriber base

Our 5G Network Will Unlock Potential in Both Existing and Future Use Cases

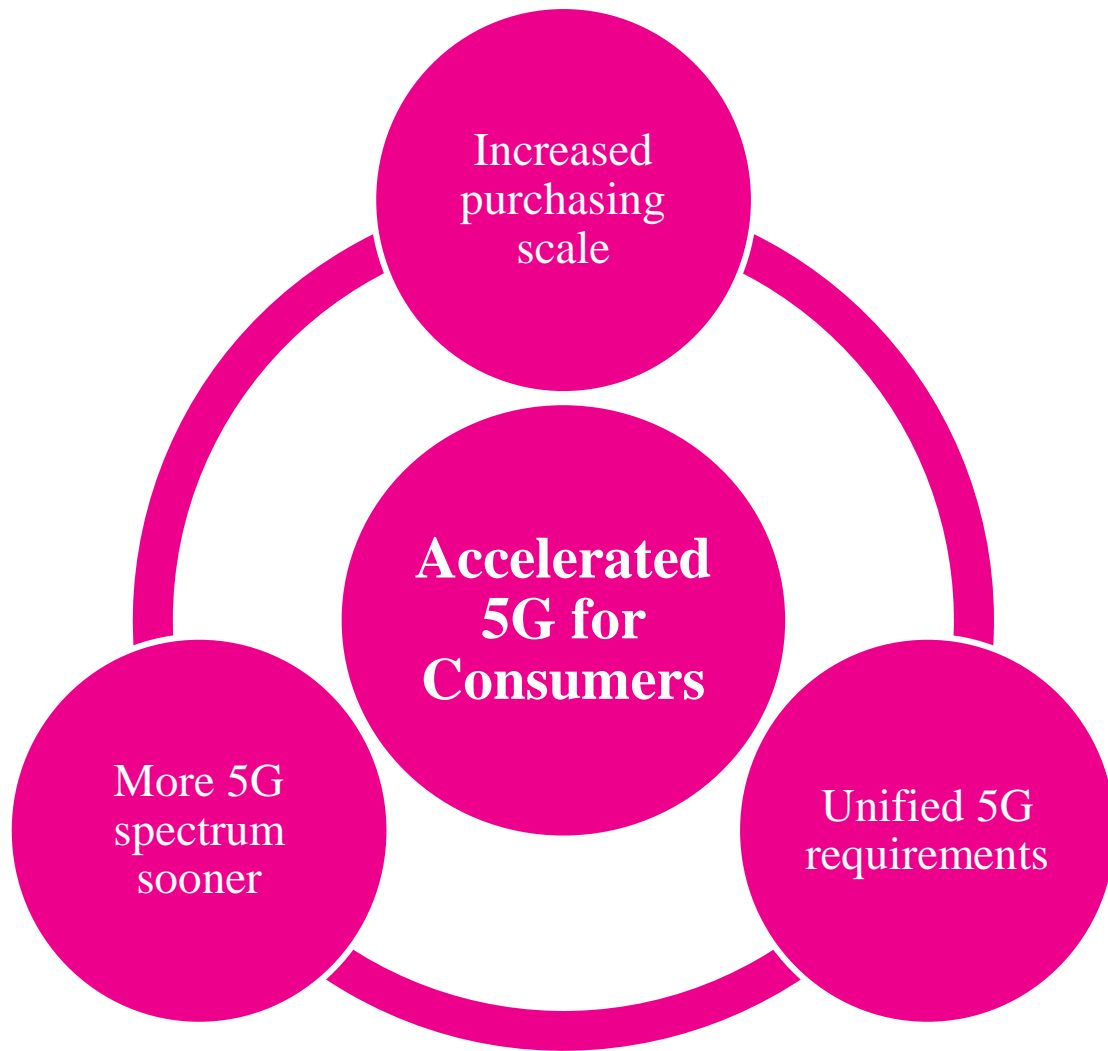
Continued surge in data consumption in 5G world will come from (1) richer user experience, (2) increased engagement time, and (3) additional methods of consumption

Usage per subscriber (GB/Month)



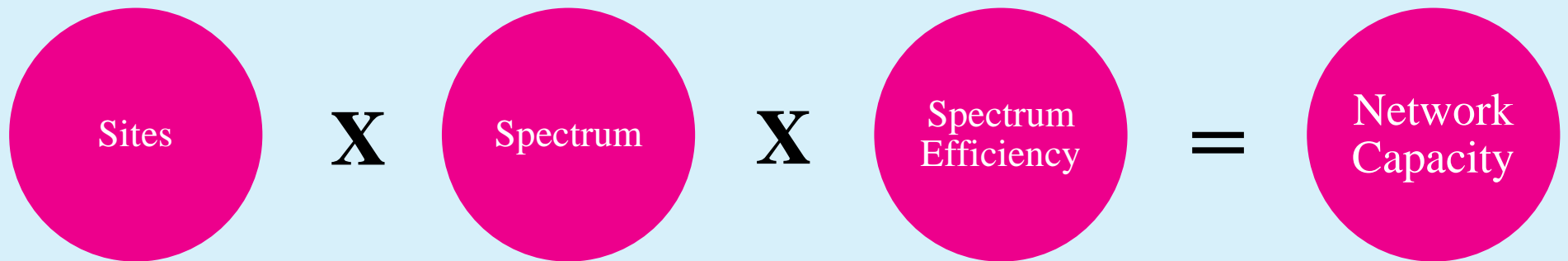
* 2015-2018 data represents blended usage based on all customers excluding M2M

New T-Mobile will Accelerate 5G Handsets to Benefit Consumers through Enablement of a Robust 5G Experience



- New T-Mobile drive behind consumer mobile 5G will bring focus to a currently fragmented industry
- New T-Mobile will have scale and incentive to convince chip and phone manufacturers to accelerate rollout of 5G capable devices because of improved value proposition
- 5G enabled devices are rolling out in less than a year

5G Network Capacity



Note: All results presented in this section reflect current plans, which will necessarily be refined and adjusted over time to accommodate consumer preferences; data are for 5G component of network only

New T-Mobile Network Plan: Three Key Ingredients

How New T-Mobile Will Meet Consumers' Skyrocketing Demand for Data

COMPLEMENTARY SITES

Combination of T-Mobile and Sprint networks will yield approximately [REDACTED] sites by 2024

COMPLEMENTARY SPECTRUM

Combination of Sprint's expansive 2.5 GHz spectrum with T-Mobile's nationwide 600 MHz spectrum will provide unparalleled breadth and depth to users

ENHANCED SPECTRAL EFFICIENCY

Accelerated move to 5G, spectrum carrier aggregation, and elimination of guard bands

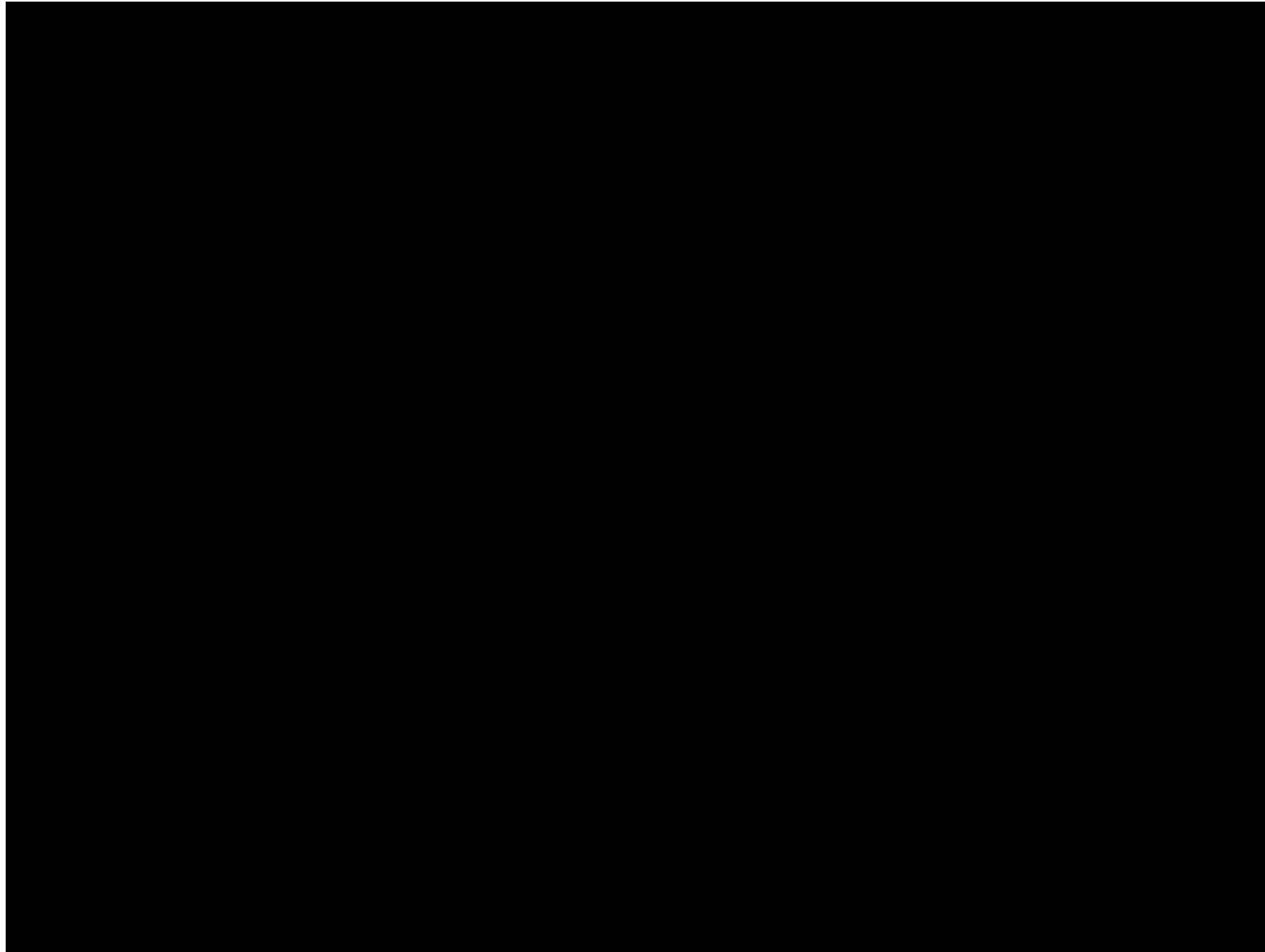
**BRING FIRST ROBUST,
NATIONWIDE 5G
NETWORK TO
CONSUMERS**

Highest capacity
mobile network in U.S.
history, providing
unmatched coverage,
capacity, speed, and
consistency of user
experience

Modeling Network Performance

- T-Mobile ordinary course of business model used since 2011/2012 to project future network congestion and determine network growth plans.
- Very strong historical track record – has proven to be highly accurate with actual results closely aligned with predicted results.
- Calculations are computed at a sector level, using traffic projections based on past data growth trends, to create a measure of LTE resource utilization and required action
- Model extended to incorporate 5G projections based on projected spectral efficiency enhancements (derived from simulations and analysis) in absence of actual 5G usage data

New T-Mobile 5G: More 5G Sites



+160%

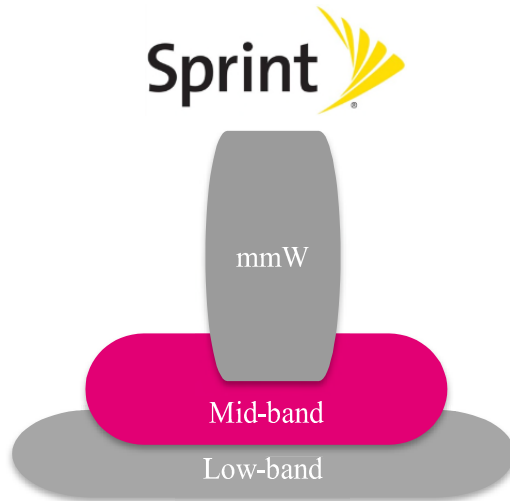
+233%

+70%

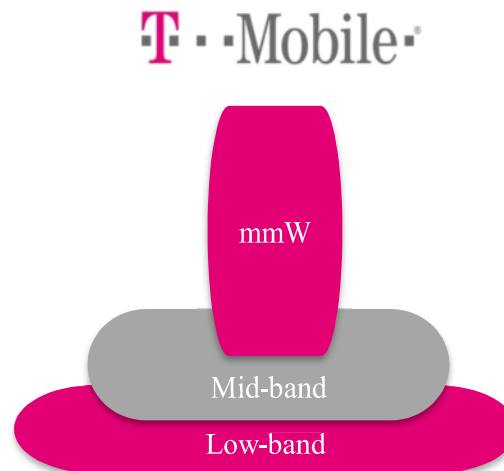
* Reflects deployment of 5G
radios ahead of spectrum
refarming

New T-Mobile 5G: Complementary Spectrum Portfolio

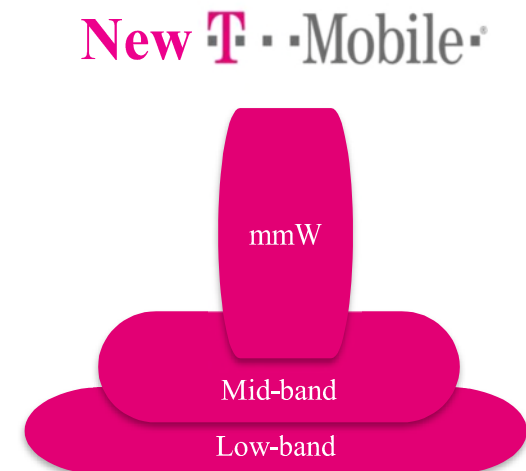
5G Spectrum Portfolios in 2020



- Plan to use 2.5 GHz for both 5G and LTE
- 2.5 GHz has very limited geographic coverage



- Utilize 600MHz low-band spectrum for wide area coverage and IoT, but lacks capacity
- Augment with mmWave spectrum for additional speed and capability limited to dense urban areas



- Creating a platform for unrivaled mobile 5G offering
- Best starting point for 5G with spectrum across all bands
- Addresses all aspects of 5G; enhanced mobile broadband, massive connectivity for IoT, and other applications

Refarming Boosts Available Spectrum for Further Growth

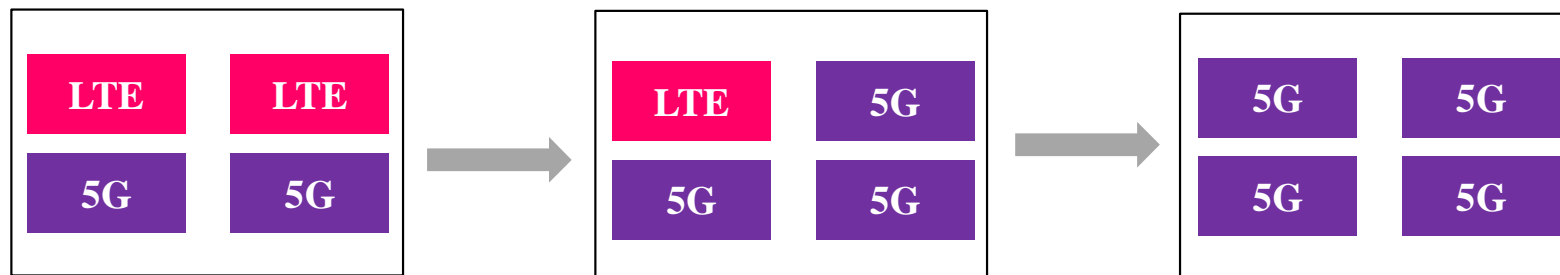
Freeing up frequency bands that have historically been allocated to a preceding technology (e.g., LTE) to accommodate a new technology (e.g., 5G)

Refarming decision depends on two critical factors

- New technology device penetration (i.e. ability to utilize the spectrum)
- Service continuity (e.g., ability to continue serving current LTE customers)

Refarming enables allocation of spectrum to more efficient technology and reduces costs

- New technology, e.g., 5G, has higher spectral efficiency than old technology, e.g., LTE, providing more capacity per MHz of spectrum



Re-farming over time

New T-Mobile Will Have a Unique Spectrum Portfolio

T-MOBILE 5G PLAN

- Deploy 5G on 600 MHz low-band spectrum and augment with mmWave for additional speed
- Impacts to consumer will be limited
- Mid-band use requires massive refarming

SPRINT 5G PLAN

- Deploy 5G on half of midband spectrum (remainder used for LTE network)
- Too costly to deploy 2.5 GHz spectrum broadly
- Will require massive refarming
- No realistic prospect of acquiring low-band for broad coverage

5G Spectral Efficiency Assumptions

Definition of Spectral Efficiency

- Spectral Efficiency is the number of bits of information transmitted in one cycle of radio frequency energy
- Spectral efficiency defines wireless system capacity
 - Greater spectral efficiency increases system capacity
- Average spectrum efficiency is defined as the aggregate throughput of all users in a cell normalized by the overall cell bandwidth, measured in bits/Hz/cell
- Spectral efficiency features perform differently in different frequency bands

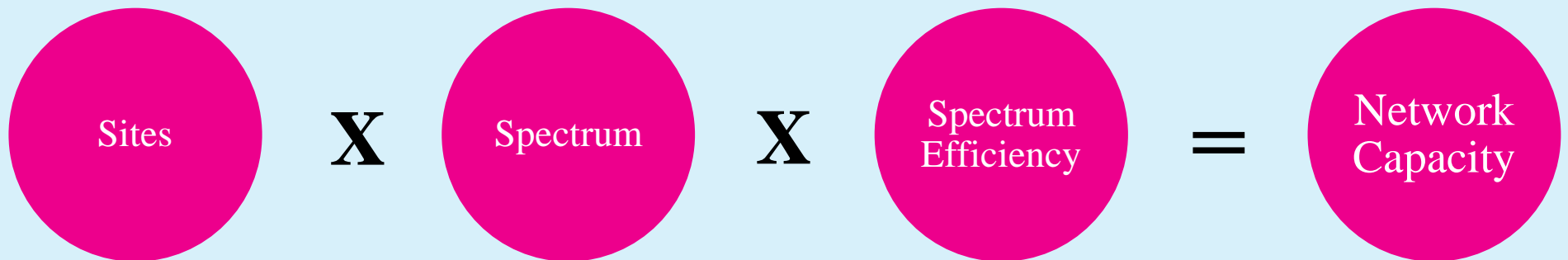
5G Spectral Efficiency

- 5G has higher spectral efficiency than LTE, resulting in higher capacity per unit of spectrum (Hz)
- Key 5G spectral efficiency enhancements include:
 - **Lean carrier:** optimized control signaling overhead
 - **Increased Occupied bandwidth:** uses more of the allocated spectrum block for traffic handling
 - **MIMO code book improvement:** better use of discrete “layers” for parallel communications
 - **Interference Coordination Features:** to mitigate degrading radio interference

Average Spectral Efficiency (bps/Cell)				Percentage Increase
Spectrum	Antennas	LTE	5G	
Low band	4x2 MIMO	2.1	2.5	19%
Mid band	4x4 MIMO	2.5	3.8	52%
mmWave	mMIMO	N/A	7 ¹	N/A

¹ mmWave sites assumed to have ~10% of coverage compared to low/mid band. Effective spectral efficiency for mmWave (for site capacity calculations) considered to be 0.7 bps/Hz average and 4.2 bps/Hz peak

5G Network Model Results



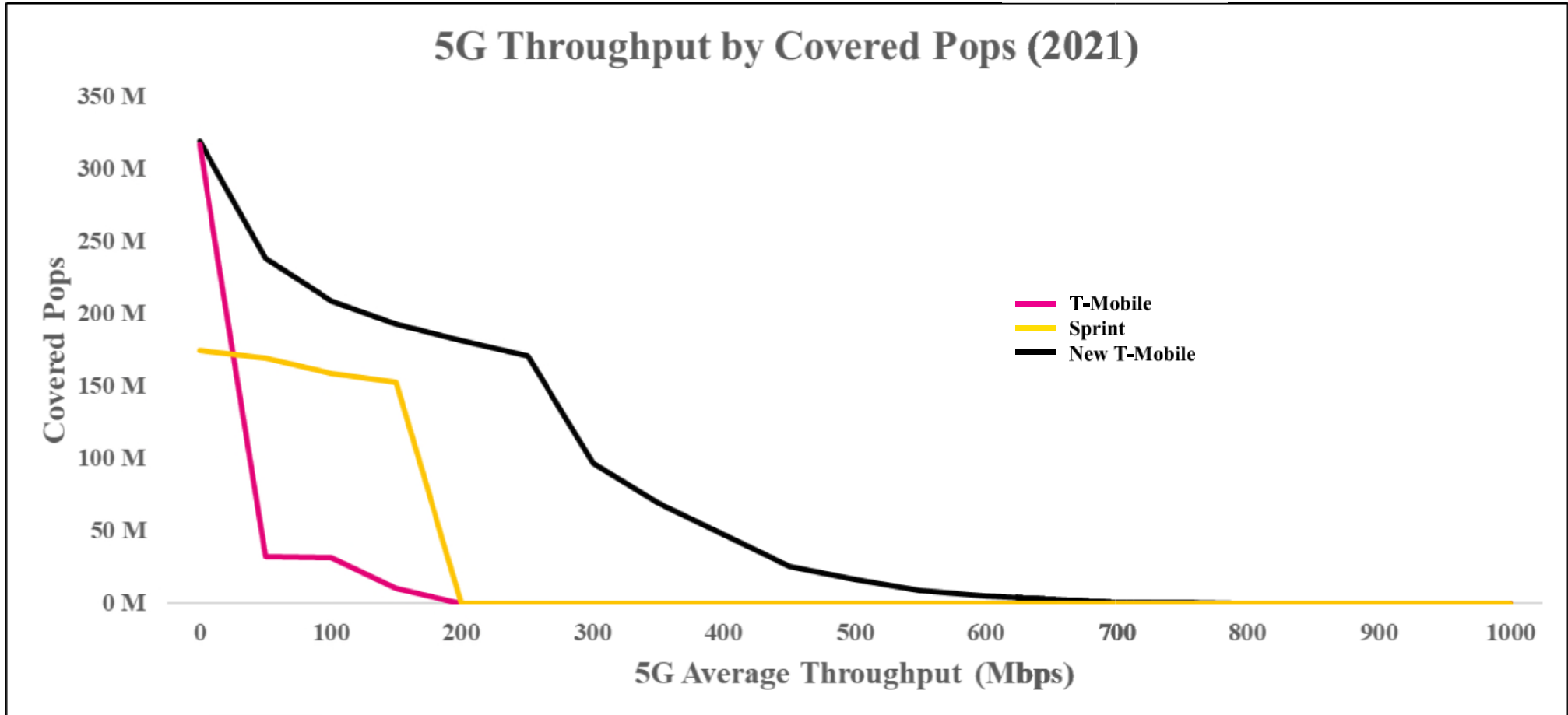
Note: All results presented in this section reflect current plans, which will necessarily be refined and adjusted over time to accommodate consumer preferences; data are for 5G component of network only

New T-Mobile Creates Massive 5G Capacity, Performance and Reach

By 2024, compared to the standalone networks, New T-Mobile will deliver

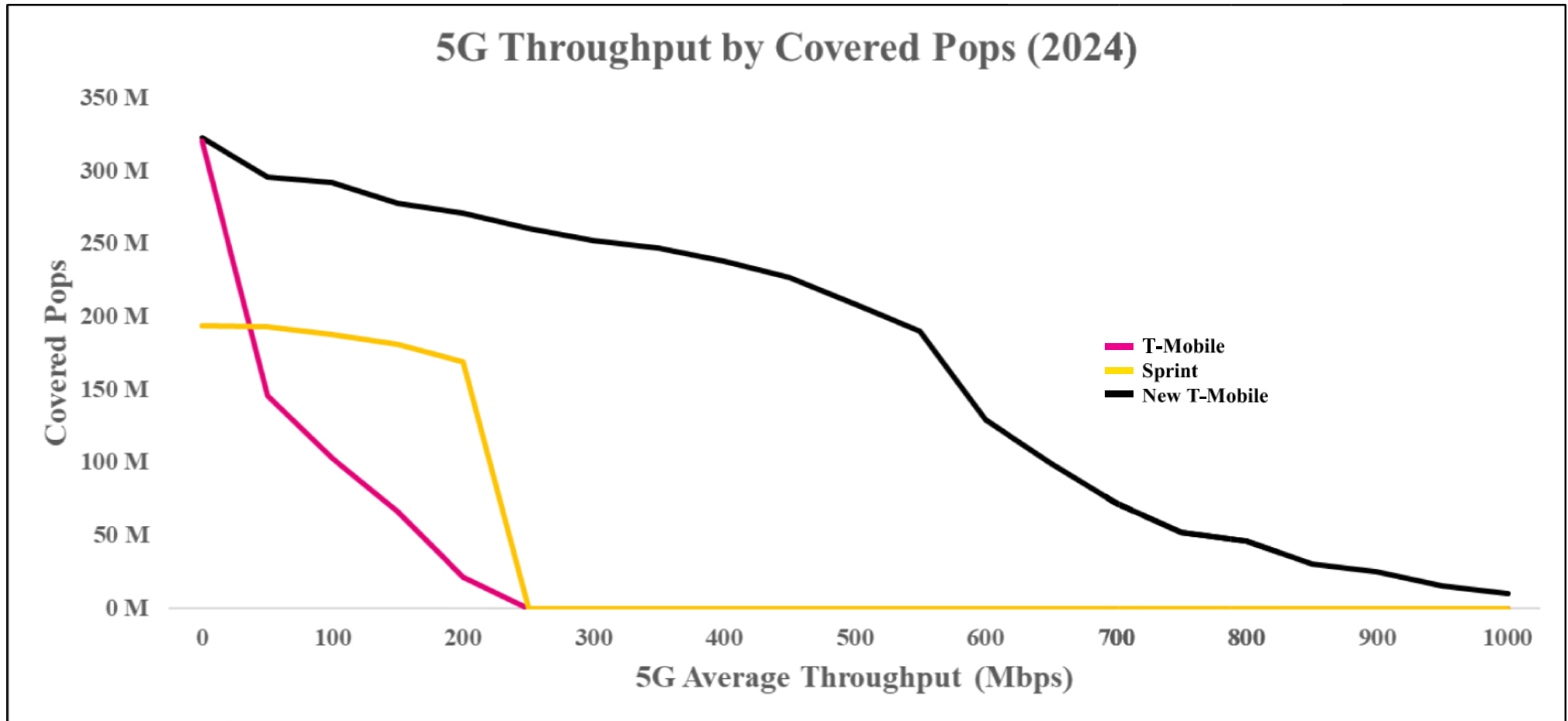
3x 5G Capacity (Exabytes)	<ul style="list-style-type: none">• 3x 5G capacity (Exabytes) compared to the summation of both standalone networks (total capacity with LTE included is likely closer to 2x by 2024)
3.9x to 5.8x Average Throughput (Mbps)	<ul style="list-style-type: none">• 3.9 to 5.8x average throughput (Mbps) compared to the standalone networks
1.5x to 5.8x Peak Throughput (Mbps)	<ul style="list-style-type: none">• 1.5 to 5.8x peak throughput (Mbps) compared to the standalone networks
1.6x to 2.8x US pops served at >100 Mbps	<ul style="list-style-type: none">• 1.6 to 2.8x US pops will be served by the New T-Mobile network at throughputs of 100 Mbps

5G Speed vs Pops Distribution – 2021



2021	T-Mobile	Sprint	New T-Mobile
Pops with > 100 Mbps	31.5 M	159.3 M	208.8 M
Pops with > 150 Mbps	10.8 M	153.1 M	193.4 M
Pops with > 300 Mbps			96.5 M
Pops with > 500 Mbps			16.2 M

5G Speed vs Pops Distribution – 2024



2024	T-Mobile	Sprint	New T-Mobile
Pops with > 100 Mbps	102.8 M	187.8 M	292.3 M
Pops with > 150 Mbps	66.6 M	181.4 M	278.1 M
Pops with > 300 Mbps			252.4 M
Pops with > 500 Mbps			208.7 M

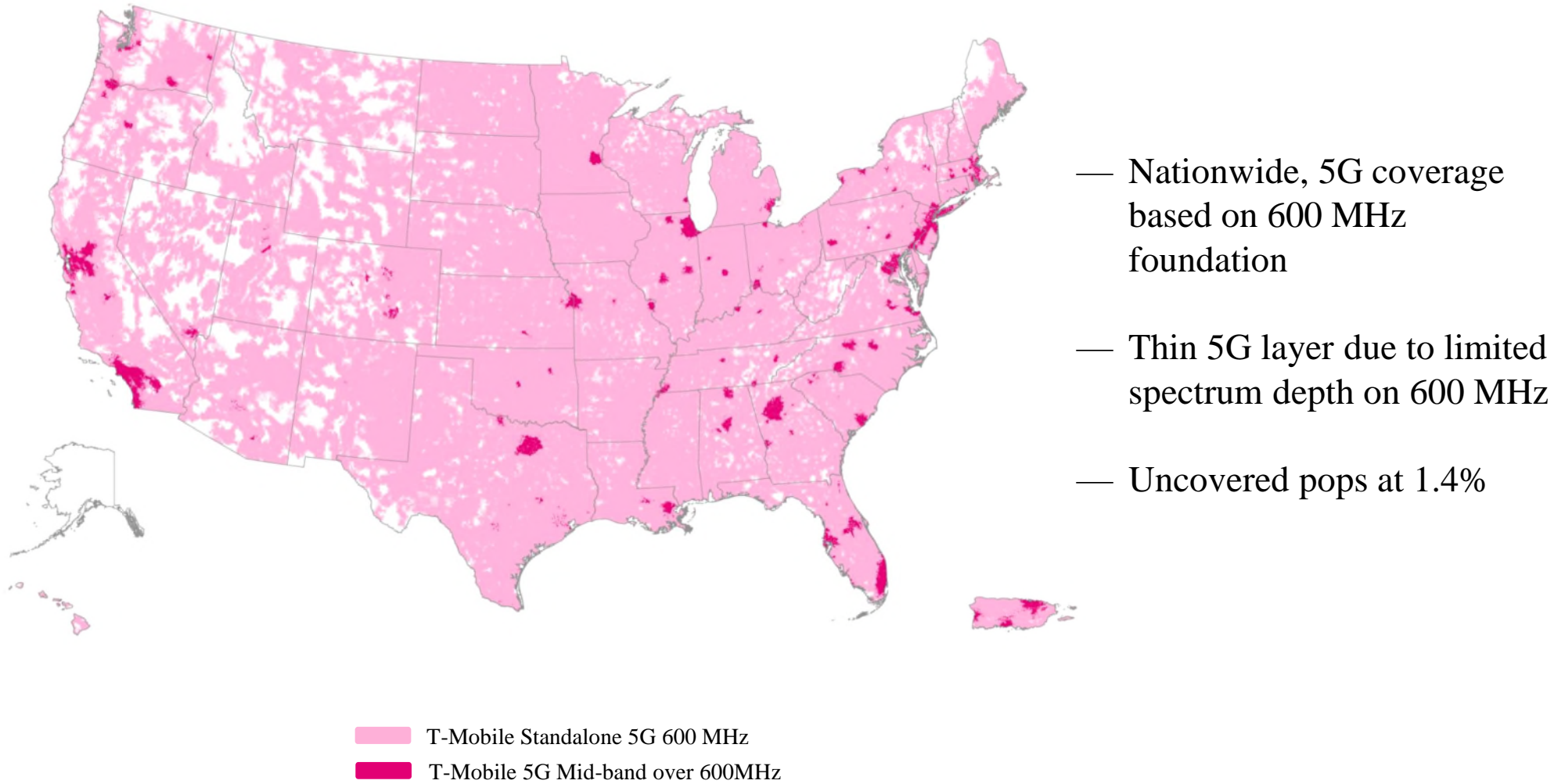
Network Coverage

Note: All results presented in this section reflect current plans, which will necessarily be refined and adjusted over time to accommodate consumer preferences; data are for 5G component of network only

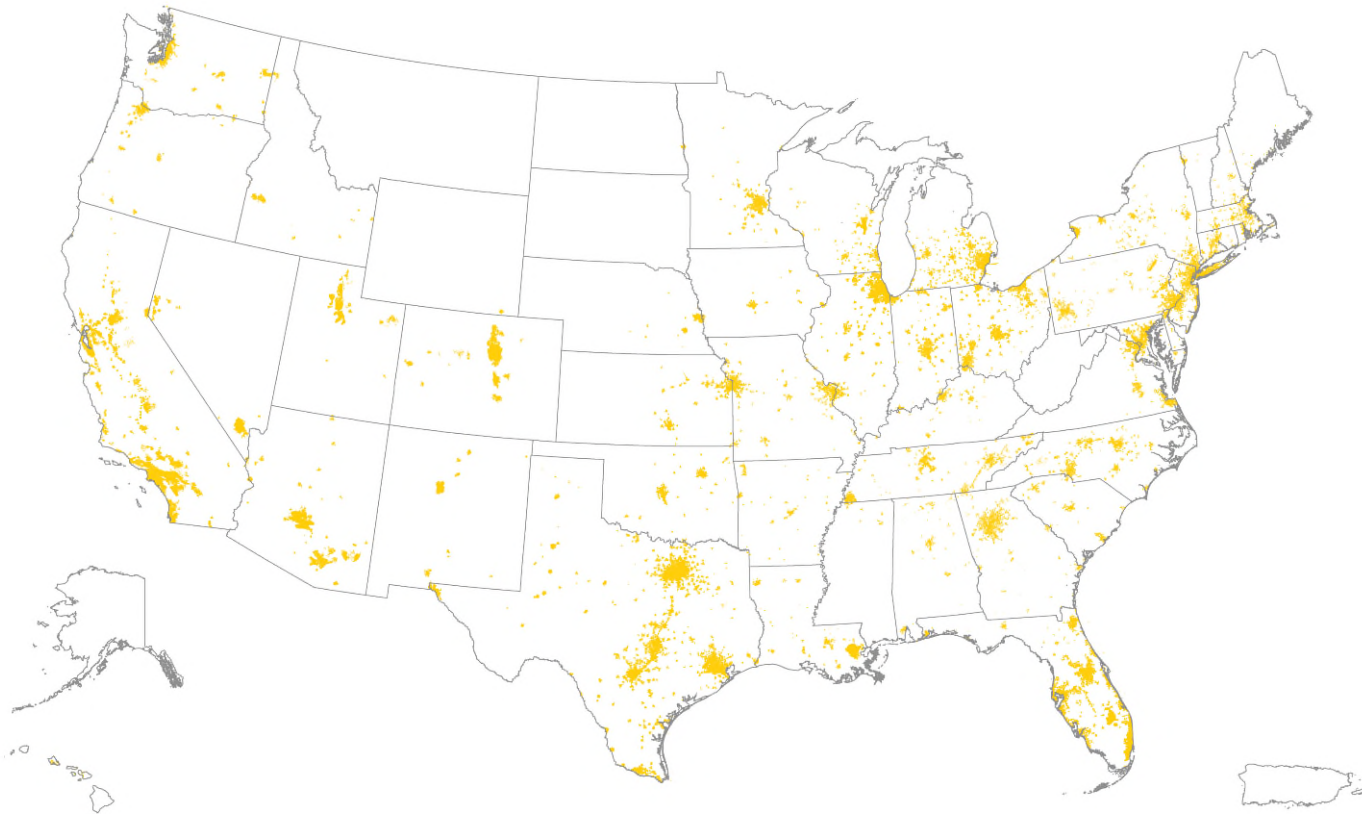
Deploying Spectrum More Broadly Will Lead To More 5G Coverage Reliability

		T-Mobile	Sprint	New T-Mobile
	Network Coverage Footprint	Covered Pops (Millions)	Covered Pops (Millions)	Covered Pops (Millions)
Year 2021	Mid-band (PCS & 2.5 GHz)	74.6 (77% uncovered)	174.7 (47% uncovered)	240.9 (26% uncovered)
	Low-band (600)	317.9 (2.9% uncovered)	0 (100% uncovered)	319.6 (2.4% uncovered)
Year 2024	Mid-band (PCS & 2.5 GHz)	173.2 (47% uncovered)	194.0 (41% uncovered)	282.2 (14% uncovered)
	Low-band (600)	323.0 (1.4% uncovered)	0 (100% uncovered)	324.1 (1.0% uncovered)


T-Mobile Standalone 2024 - 5G NR Network



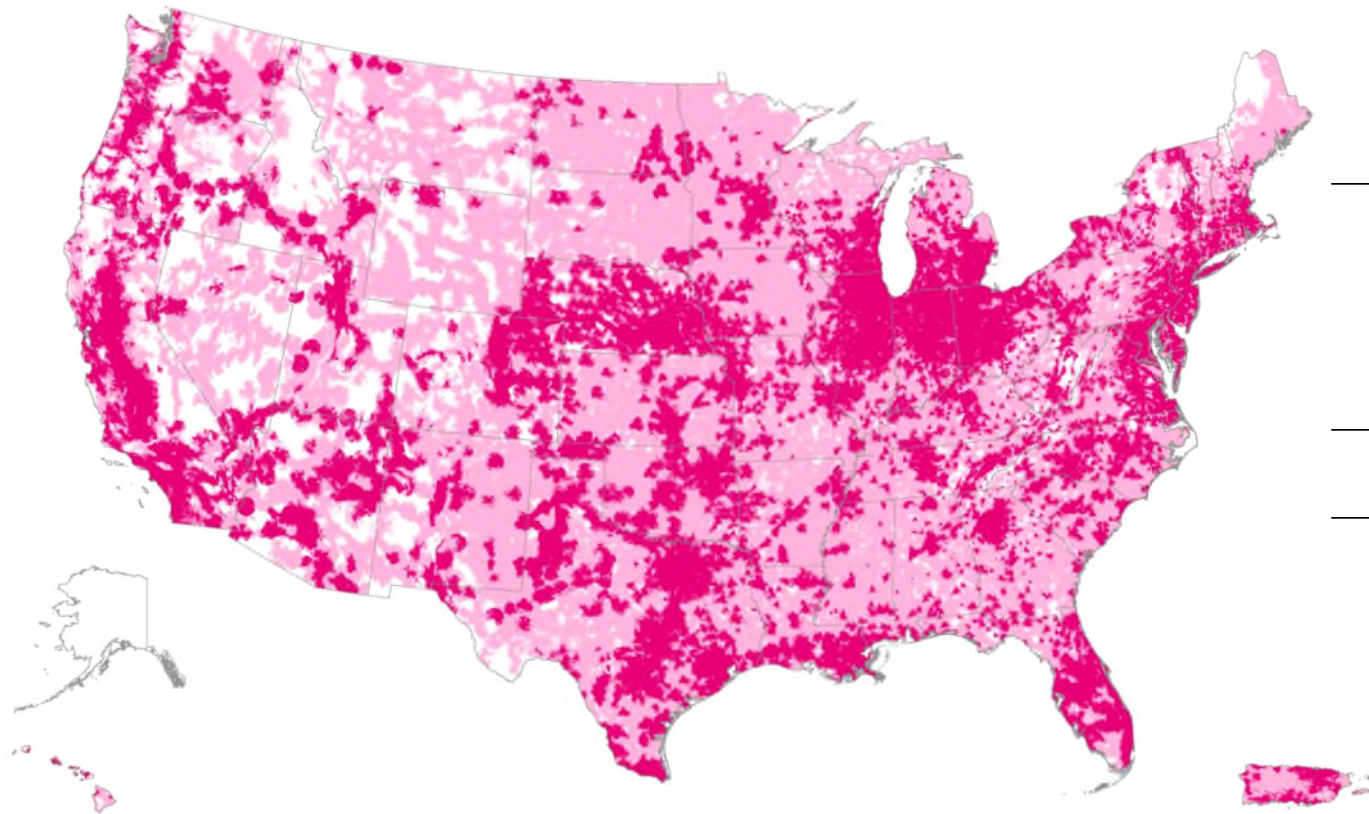
Sprint Standalone 2024 - 5G NR Network



- Constrained 5G coverage as a result of limited 2.5 GHz propagation characteristics
- Strong spectrum depth on 2.5 GHz where deployed
- Uncovered pops at 41%

 Sprint standalone 5G

New T-Mobile 2024 - 5G NR 600 MHz + Mid-band Network

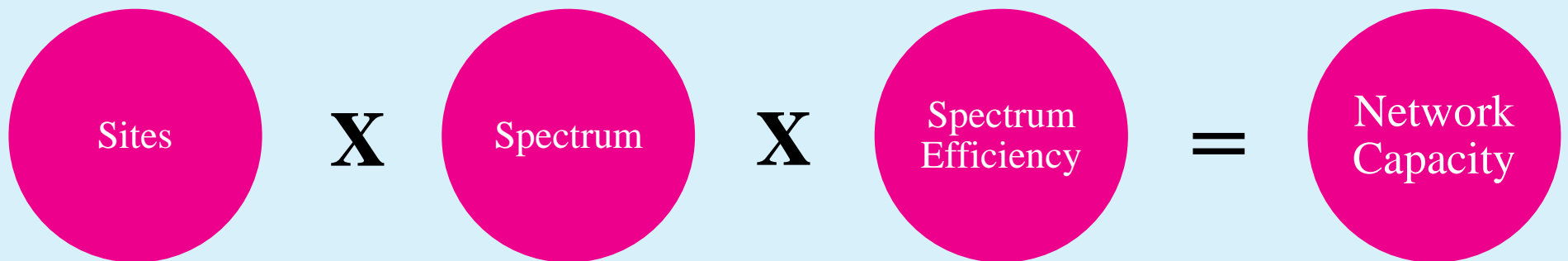


■ New T-Mobile 5G 600 MHz
■ New T-Mobile 5G Mid-band over 600MHz

- Strong nationwide 5G coverage as a result of the 600 MHz foundation
- Massive spectrum depth where needed most created by the combined portfolio of 600 MHz and mid-band
- Uncovered pops at 1%
- New T-Mobile Avg Signal Strength:
 - 1 dB better than T-Mobile standalone
 - 12 dB better than Sprint standalone

How New T-Mobile Will Expand Capacity

Test Case: West Brooklyn, NY



Note: All results presented in this section reflect current plans, which will necessarily be refined and adjusted over time to accommodate consumer preferences; data are for 5G component of network only

Case Study: New T-Mobile Capacity in West Brooklyn

T-Mobile Standalone : ■ Sites delivers ■ PB/month

- 600 MHz & PCS 5G NR deployed across all sectors
- Standalone offered sector capacities range from ■ TB to ■ TB per month
- Total Cluster Capacity : ■ PB/month

Sprint Standalone : ■ Sites delivers ■ PB/month

- 2.5 GHz 5G NR deployed across all sectors
- Standalone offered sector capacities range from ■ TB to ■ TB per month
- Total Cluster Capacity : ■ PB/Month

New T-Mobile : ■ Sites delivers ■ PB/month

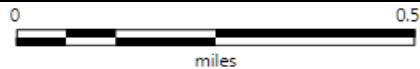
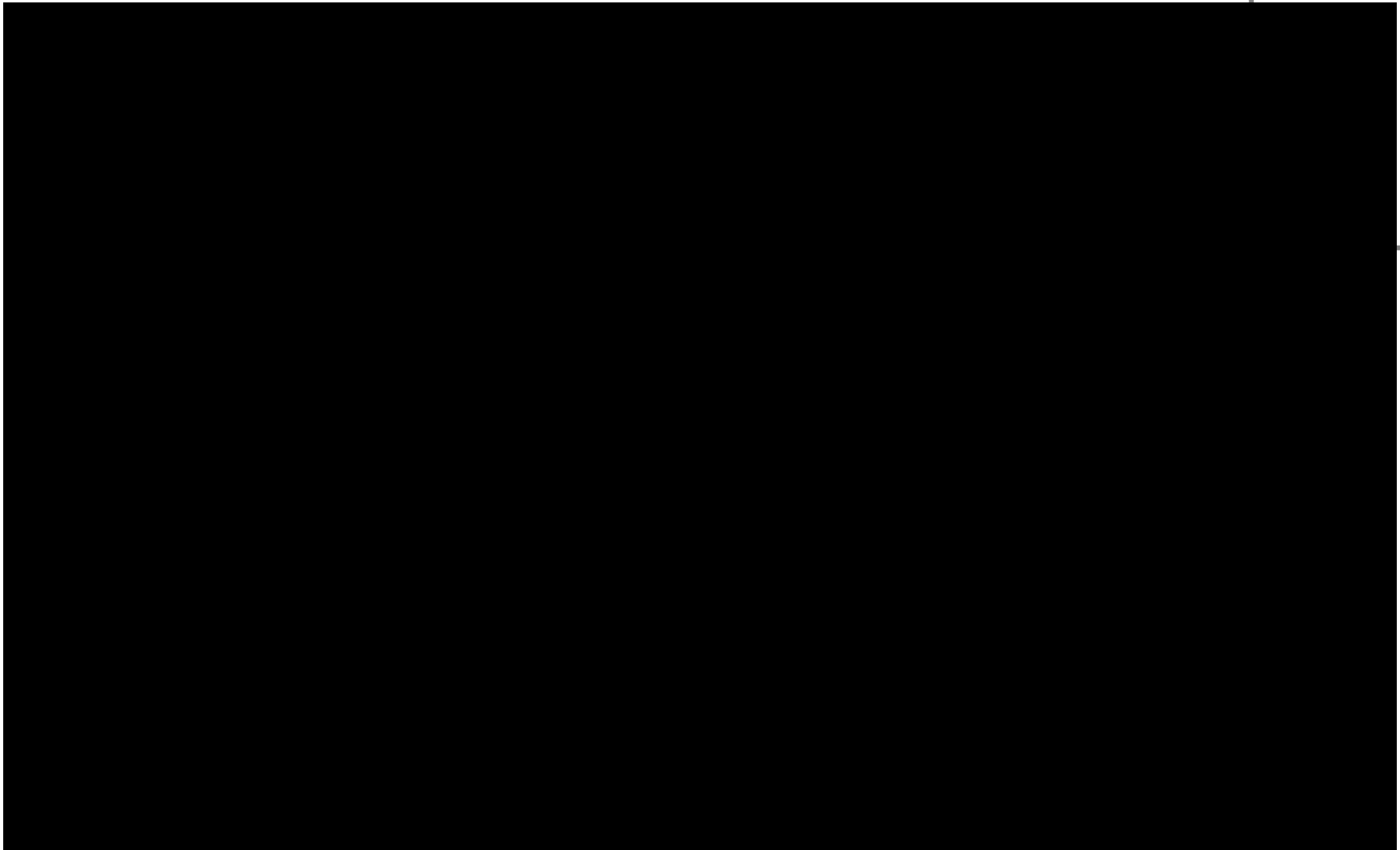
- ■ T-Mobile anchor sites
- ■ Sprint Keep sites integrated into the New T-Mobile West Brooklyn network
- 600 MHz, PCS, AWS, & 2.5 GHz utilized across the cluster
- New T-Mobile offered sector capacities range from ■ TB to ■ TB / month
- Total Cluster Capacity : ■ PB/Month **~3.1x T-Mobile+Sprint Standalone Networks**

Why West Brooklyn?

- Similar ratio of retain to anchor sites as the National model
- Great example of dense urban America
- Clear demonstration of the capacity benefit of retain sites
- Also illustrates material coverage quality gains

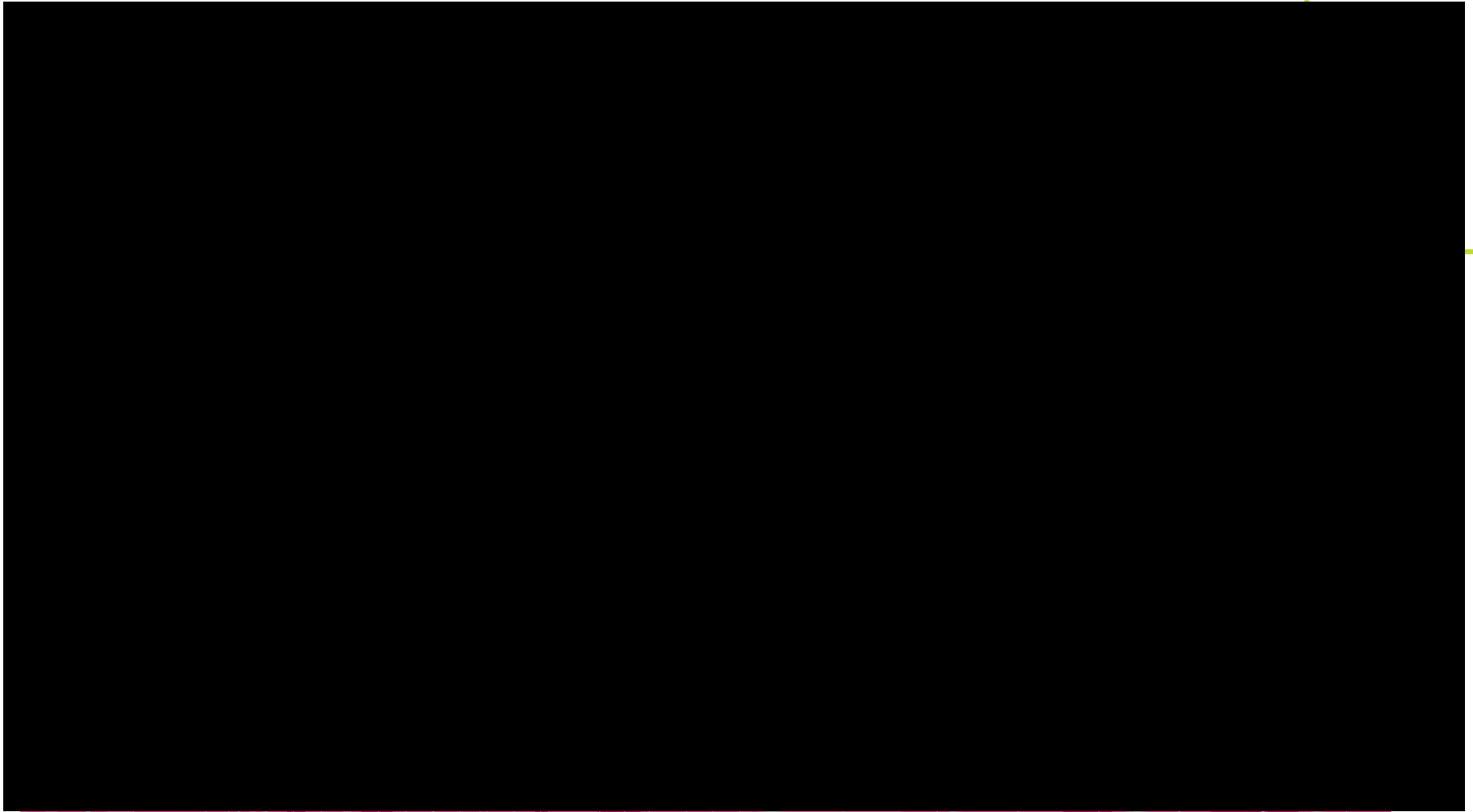
Sprint Standalone 2024 5G Delivers ■ PB/month Capacity with ■ Sites

Sprint Standalone Coverage



T-Mobile Standalone 2024 5G Delivers [REDACTED] PB/month Capacity with [REDACTED] Sites

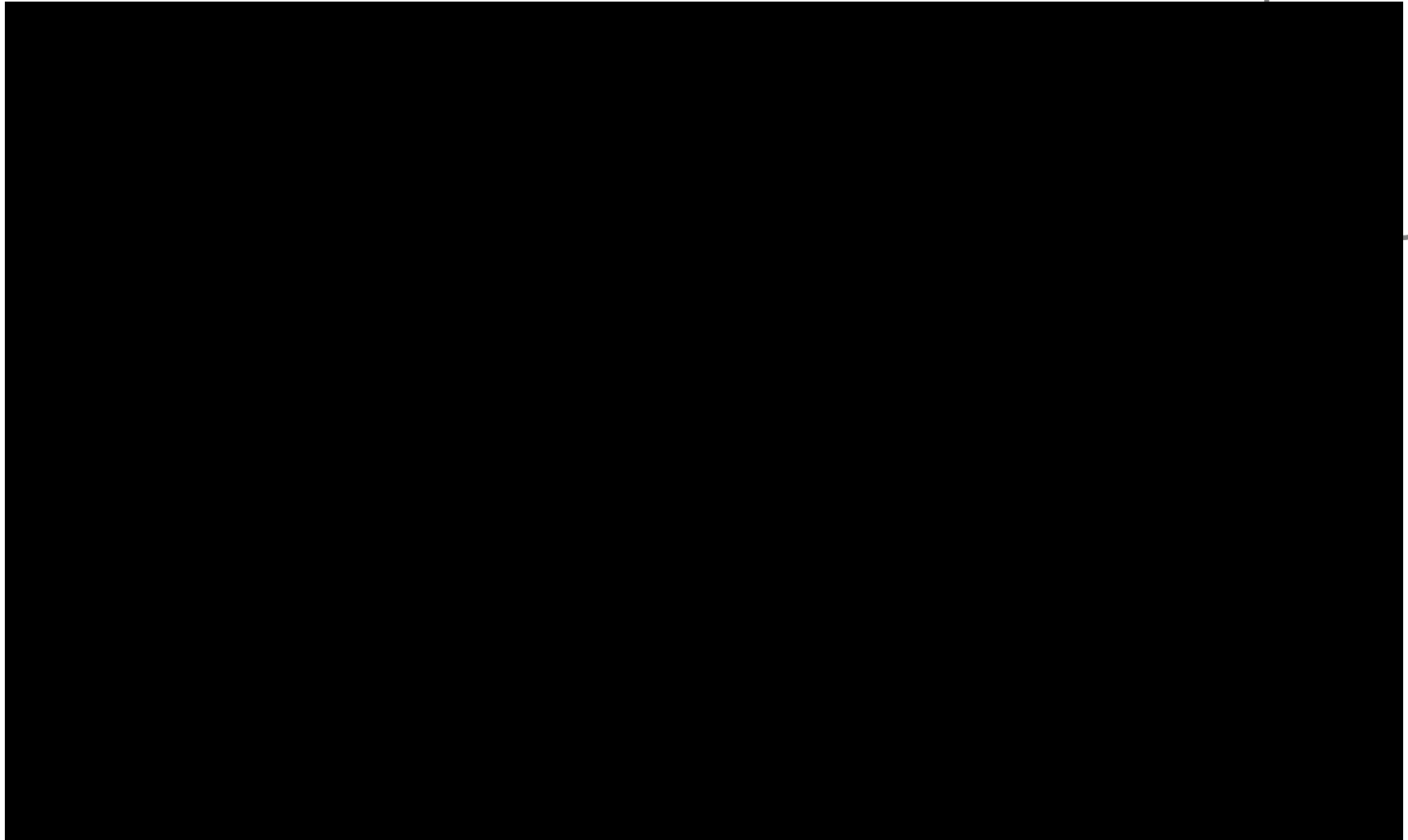
T-Mobile Standalone Coverage



0 0.5
miles

New T-Mobile 2024 5G Delivers ~3.1x Capacity of Sum of Standalones, with 30% Fewer Sites

New T-Mobile



0 0.5
miles

Operational Plan To Realize Network Benefits

Operational Plan Maximizes Value of Complementary Assets

Proven Operational Plan to Realize Network Benefits



ANCHOR **ON T-MOBILE** **NETWORK**

- Fast and low-risk way to deliver synergies and protect customer experience
- Use T-Mobile as the anchor network and increase network density and coverage with Sprint “keep sites,” with scale enabling broader reach of 2.5 GHz spectrum
- Deploy T-Mobile spectrum portfolio across Sprint ~ 11k “keep sites” + Sprint 2.5GHz and PCS on T-Mobile sites



SMOOTH **CUSTOMER** **MIGRATION**

- Leverage T-Mobile compatible handsets within Sprint base to minimize customer disruption and sell compatible handsets in Sprint distribution from day one
- 20+M Sprint customers have handsets that can access the existing T-Mobile network and this capability will be “switched on” within weeks of the deal closing
- Migrate remaining Sprint customers to New T-Mobile network within 3 years while improving their user experience

MetroPCS: Proven Track Record To Success



- Record speed in delivering value for consumers
 - T-Mobile shut down majority of MetroPCS's CDMA equipment within 12 months
 - Added >8,000 sites for deployment of 700 MHz spectrum in parallel
 - Full migration of all MetroPCS customers completed by July 2015
 - Similar integration playbook for T-Mobile/Sprint merger, led by the same team
- Cost savings ahead of schedule and more synergies than originally announced
 - T-Mobile achieved the projected \$1.5 billion in annual cost savings a year ahead of schedule
 - Synergies \$3 billion higher (>40%) compared to original plan
- **Doubled customer base over 4.5 year time period** testifies to amazing customer experience

“The result was one of the more surprisingly successful mergers in telecommunications history. . . . And the still-active MetroPCS prepaid brand has nearly doubled its customer base, from nine million to almost 18 million.”

Source: Fortune, May 5, 2017

“The PCS deal is now the template for almost any proposed telecom merger”

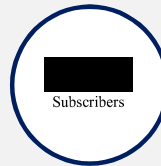
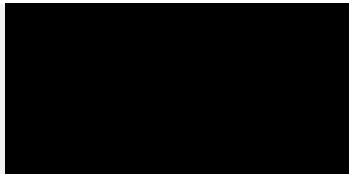
Source: Craig Moffett

Similar Magnitude of Migration, by Geography, Achieved Successfully With MetroPCS

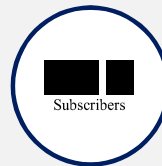
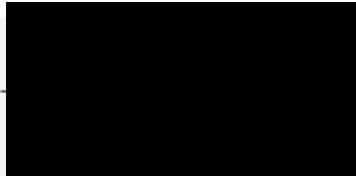
Customer experience for both MetroPCS & T-Mobile subscribers was maintained or improved

- Rapid spectrum refarming, capacity retain sites,
- Methodical device migration planning

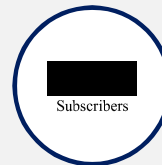
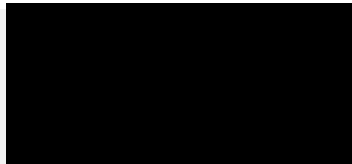
FLORIDA



LOS ANGELES

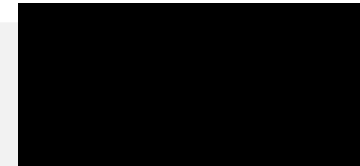
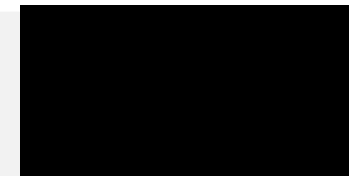
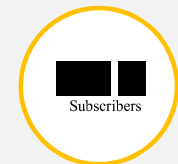
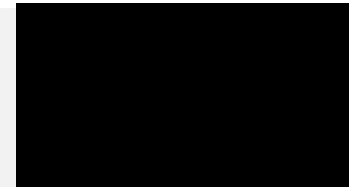


NEW YORK



Migrating Sprint customer presents no greater challenge than MetroPCS

- VoLTE will aid migration with 20M+ Sprint customers further easing migration



Thank You