

2021 Electric & Broadband Outlook — A “New Green Deal”



By Mark Bridgers,
Jay Rendos, and
Ryan Stein

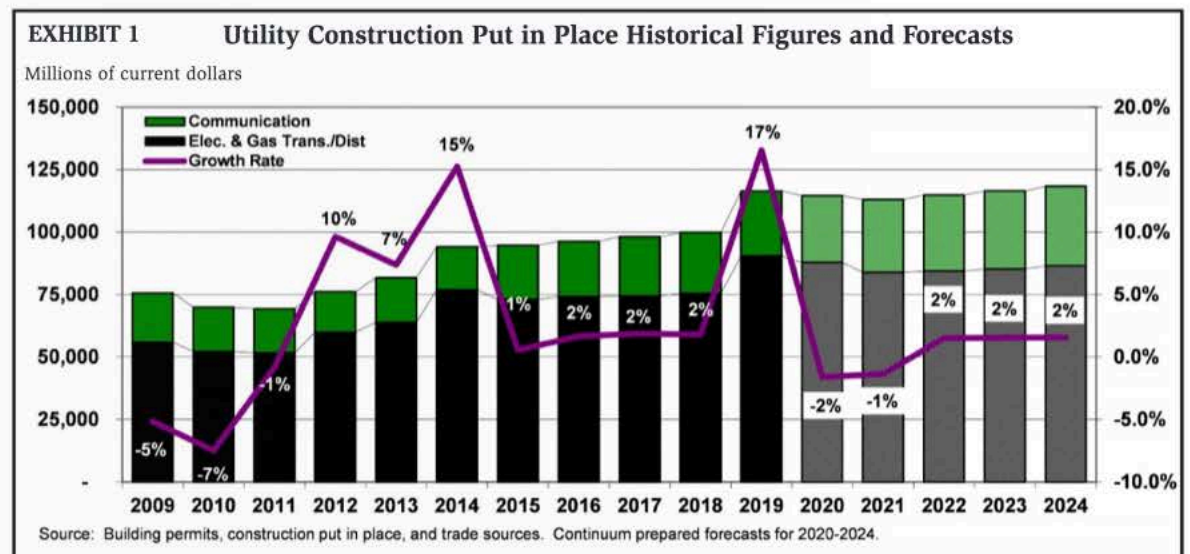
The start of the Biden administration has set the stage for the next four years, and while the Green New Deal is legislatively a non-starter, Biden is in the process of ushering in a New Green Deal that will emphasize communication and electric infrastructure. The 5G revolution continues to accelerate toward a more communication focused and energy conscious electric grid that is sustainable. While these new technologies will present unique challenges to both the broadband and electric construction markets, a plethora of emerging opportunities exist.

Exhibit 1 demonstrates the rapid industry growth that began in 2011 and peaked in 2019 followed by a very slight COVID-19-related pullback in 2020. Growth will continue beyond 2021 once the COVID-19-related recession impacts are thrown off and the efforts to execute on the Biden administration priorities are in motion. The underlying telecom market demand and electric transmission and distribution market demand remain strong, and in the following sections the drivers of

growth are explored. Long-term, the needs of these markets will outweigh any economic pullbacks, and we remain bullish on industry opportunities.

Electric T&D

The electric transmission & distribution (T&D) market continues to excite with increased spending through 2024 and strong underlying fundamentals. The observation of continued climate impacts and the Biden administration’s work toward a New Green Deal will drive both overhead and underground electric distribution. Regarding undergrounding,



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Dominion Energy, PEPCO, Georgia Power, and Florida Power & Light are leaders in these efforts and serve as an example of how undergrounding can yield tremendous resiliency and reliability benefits.

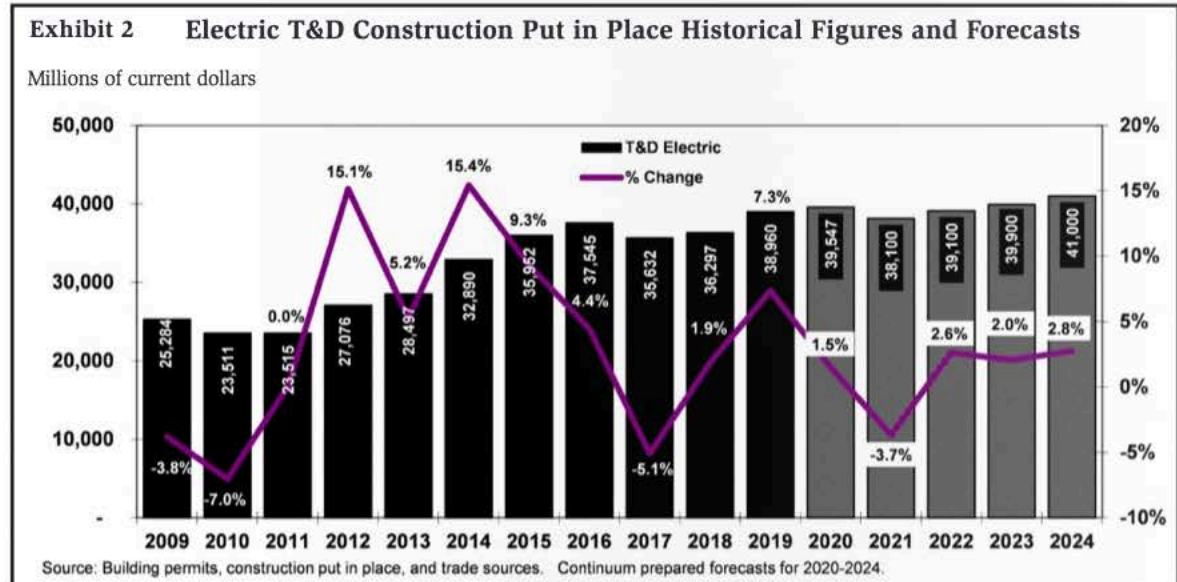
Spending Forecast

Electric T&D has seen a decade of growth beginning in 2011 with a dip in 2017 (Exhibit 2). Continuum observed COVID-19-related slowing growth in 2020 that will linger into 2021 with reacceleration into 2022 pushed by both market factors and the Biden administration’s New Green Deal priorities.

Electric Transmission & Distribution

Electric transmission capital expenditures (Exhibit 3) continue to grow significantly, with 2020 projecting to have increased by almost 2 billion nominal dollars (not adjusted for inflation) over 2019. This growth will carry into 2021 before flattening. Electric distribution capital expenditures also have shown strong growth as utilities seek to add to their rate base and bring new programs on board. Capital spending will continue to see a focus on replacing aging infrastructure, grid hardening, increasing efficiencies, and finding new ways to integrate renewable power generation into the grid. Continuum forecasts a major shift to this last focus of renewable energy with the Biden administration’s New Green Deal focus and a heightened push toward environmental protection.

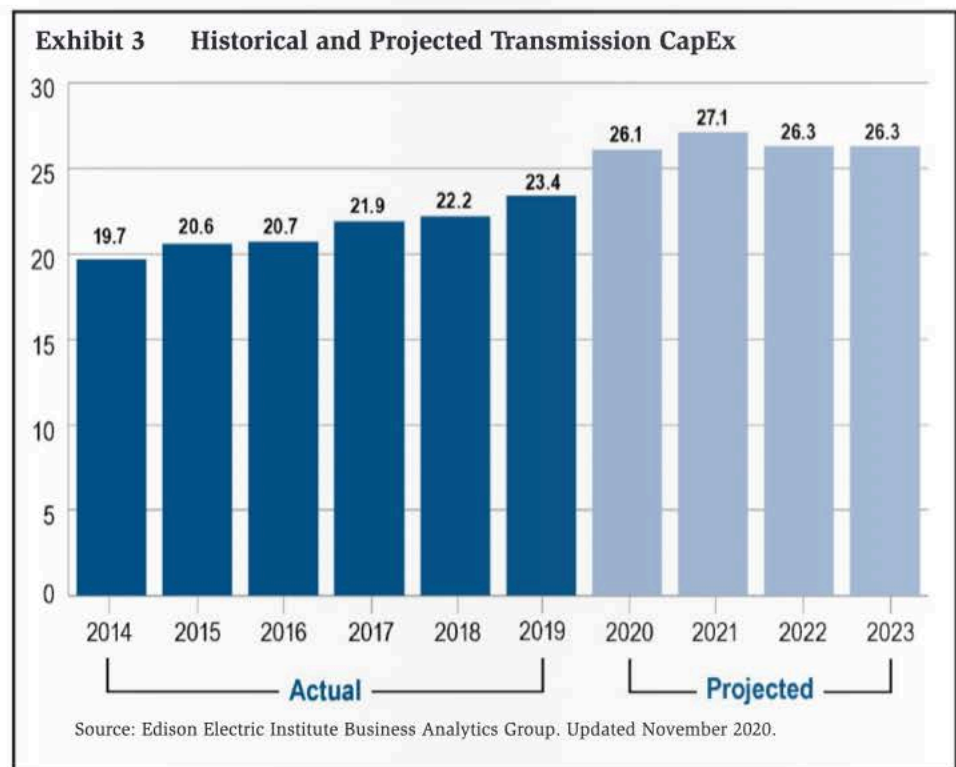
Climate change produced a record Atlantic hurricane season in 2020, with 30 named storms forming. Twelve of these storms made landfall in the United States.¹ This increase in activity continues to demand strategic undergrounding as part of a larger resiliency and reliability program, in order to lower both asset and customer risk. Power Delivery Intelligence Initiative (PDi2 — www.pdi2.org) is a leader in supporting these efforts with their recent publishing of a “Utility Infrastructure Resiliency Playbook,” which includes a series of case studies demonstrating reliability and resiliency success through limited and targeted undergrounding. The overall objective of the playbook is to support electric investor-owned, municipal, and co-op utilities throughout the U.S. and Canada in planning, gaining approval, and success-



fully undertaking an electric infrastructure resiliency program founded on undergrounding strategies. It includes detailed descriptions of how to plan for, create, obtain approval, implement, report progress, and evaluate the success of an undergrounding program. In addition, the playbook includes a host of detailed case studies, with the Florida Power and Light (FPL) case study highlighted on page 27.

Further stressing the resiliency of the electric grid is a coming storm associated with electric vehicles (EVs). The Biden administration has already indicated a preference for an electric vehicle fleet for the federal government, while both Ford and General Motors have committed to both carbon neutrality and an electric vehicle transformation of their businesses.

- **Ford:** Ford Motor Company intends to achieve carbon neutrality globally by 2050. Ford will focus initially on three



areas that account for approximately 95 percent of its CO2 emissions: vehicle use, its supply base, and the company's facilities.²

- **Ford:** Investing more than \$11.5 billion in electric vehicles through 2022, introducing zero-emission versions of some of its most popular nameplates are on the way, including the Mustang Mach-E, which starts arriving in dealerships this year, as well as a Transit Commercial EV and fully electric F-150 coming within 24 months.³
- **General Motors:** GM plans to become carbon neutral in

its global products and operations by 2040 and aspires to eliminate tailpipe emissions from new light-duty vehicles by 2035.⁴

- **General Motors:** GM will offer 30 all-electric models globally by mid-decade, and 40 percent of the company's U.S. models offered will be battery electric vehicles by the end of 2025.⁵

How will the EV push impact electric utilities? In a report published by the National Renewable Energy Laboratory, an

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Case Study III — Legislative Path Approval

Below is the process flow used by Florida Power & Light to achieve approval of legislation in Florida for undergrounding efforts.

Challenge

- The 2004 hurricane season was the most active on record in Florida. In the wake of Hurricanes Charlie, Frances, Ivan, and Jeanne, Florida suffered widespread damage and destruction to private homes and buildings, roads, bridges, and other public infrastructure. In the aftermath of each storm, widespread outages of electric service were experienced throughout the state.
- Because of the tracks taken by each storm, electric service in virtually every county in Florida was affected.
- The Florida Public Service Commission (FPSC) developed a set of hardening rules and then validated that these rules work to strengthen the state's infrastructure while keeping costs down for customers. The collection of infrastructure performance data took 10 years as no major storm land-fall occurred in Florida until the 2016 and 2017 hurricane seasons when the first opportunity to gather performance data occurred.

Solution

- In October 2004, the staff of the Committee on Utilities and Telecommunications, Florida House of Representatives, requested a study proposal from the FPSC on the cost of undergrounding electric facilities in Florida. The FPSC ordered electric utilities to implement extensive activities to improve system resilience beginning in 2006.
- A decade later, performance data was collected during the 2016 and 2017 hurricane seasons.
- The Florida State Senate passed SB796 that could lead to more underground power lines in Florida, with increased costs to consumers. The measure passed 37-2 with little debate.

Result

In July 2018, the FPSC issued its report on electric utility hurricane preparedness and restoration actions and found that, overall, the length of power outages was reduced, indicating that storm hardening and undergrounding practices work.

The report's key findings include the following:

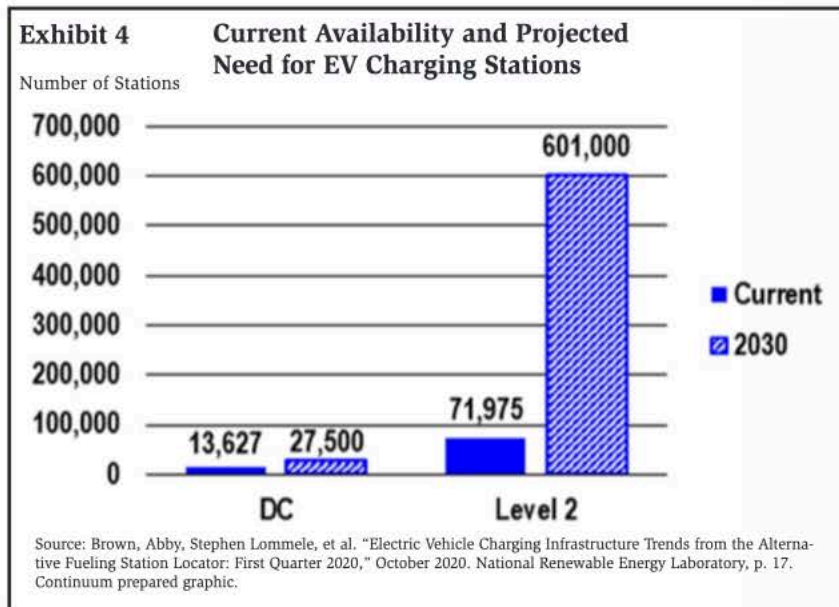
- The length of utility power outages was reduced from the baseline 2004-2005 storm season.
- Hardened/underground distribution facilities performed better than non-hardened facilities.
- Power outages primarily resulted from falling trees, vegetation, and debris from outside the utility's right-of-way.
- The commission also identified several issues the legislature might consider:
 - A statewide public education program on tree trimming.
 - Possible legislation to require inspection and hardening of non-electric utility poles.
- The report confirms that FPSC's storm hardening rules are working and also identified areas that can be improved, such as utility undergrounding programs, customer communications, and tree-trimming coordination with local governments.

Sources

1. Pounds, M., "Plan to Bury Power Lines Advances — at a Cost to Residents," Sun Sentinel, (2019).
2. Florida Power & Light Company, "FPL Delivers Best-ever Service Reliability in 2018, Plans to Harden All Main Power Lines within Six Years," (2019).
3. Florida Public Service Commission, "Florida Power & Light's Response to Review of Electric Utility Hurricane Preparedness and Restoration Actions," Docket No. 20170215-EU, (February 19, 2018).

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estimated 15 million "light-duty plug-in electric vehicles" will be on the road by 2030. To meet these needs, 27,500 "Direct Current (DC) fast charging" stations, capable of giving 60-80 miles of range in 20 minutes, and more than 600,000 Level 2 charging stations, capable of giving 10-20 miles of range in an hour, are needed.⁶ This represents a large emerging sector that will require the skills of both overhead and underground electric line contractors to implement.

Broadband

COVID-19 impacts demonstrated the bandwidth gaps in both urban and rural settings for all businesses and families. The push for improving this infrastructure is demanded by end-use customers, was pushed by the Trump administration, and is now being accelerated by the Biden administration. There is, however, a significant transition coming. Ajit Pai recently retired from his Federal Communications Commission (FCC) chairmanship, and Biden will appoint additional commissioners to give the FCC a Democrat flavor. In the interim, Biden named Jessica Rosenworcel as acting chair. She has served as a commissioner since 2012 and was reconfirmed in 2017. Biden's selection of a full-time chair nominee will reconfirm a likely push toward the Obama-era Net Neutrality preference as well as likely tucking telecom entities under Title II and fully regulating them. There is an open question of whether the combined Net

Neutrality preference and Title II regulation will yield more or less capital construction. While this is an open question, it is Continuum's forecast that construction will continue unabated for the short term due to the continued rollout of 5G and small cell technology.

Spending Forecast

The market for 5G and small cell is still in the "build" phase and will continue to accelerate. As an example, Verizon Wireless, in a November 2020 update, has officially begun providing 5G "Ultra Wideband" services in 57 cities across the country, with the expectation that 60 cities in total would have these services by the end of 2020.⁷ All of the 5G and small cell install requires fiber backhaul and will continue to drive both traditional and non-traditional telecom spending.

In Exhibit 5, 2019 yielded 6 percent growth driven largely by the desire of communications companies to roll out 5G across the country. Due to the COVID-19 pandemic, the increase for 2020 was reduced to 3 percent but still represents the sixth year of expansion for telecommunications construction and is the longest continual period of growth in recent history for this sector.

Pent-up and normal growth will combine in 2021 to yield more aggressive spending. The current launching of both Apple and Google 5G devices will accelerate demand for the fastest service possible and is already yielding a bubble of construction activity to support 5G networks, similar to the 4G LTE capital spending in the past.

5G Revolution

As smartphone usage has increased and become commonplace nationwide, the drive to increase cellular bandwidth and connection speeds has driven the telecommunications

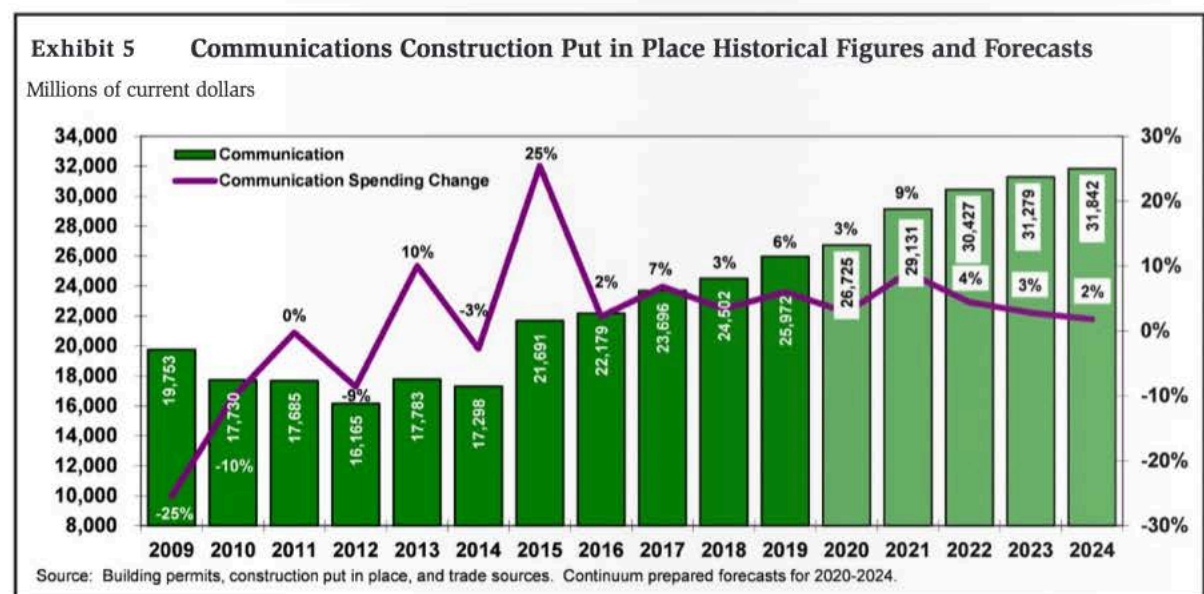
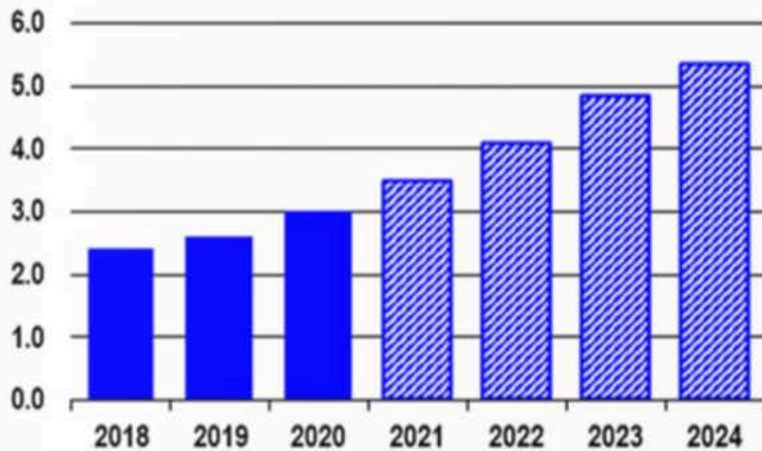


Exhibit 6 Non-Residential Small Cell Shipment Forecast

Millions of Units Shipped



Source: Mobile Experts (2019), "Small Cells 2019," April, PRNewswire, 2020. Continuum prepared graphic.

construction market. Construction was originally targeted at high-population areas, with expansion occurring with these areas at the center. Even in 2020, download and upload speeds (Exhibit 7) vary widely across the geography of the United States, demonstrating that there is still much work to do. Rural areas are still experiencing significantly slower

speeds than their urban counterparts, and there is an increasing push to expand data availability and quality nationwide.

To incentivize telecommunications construction in rural areas, the FCC established the "5G Fund for Rural America" in October 2020. This program will bring up to \$9 billion in funding toward building 5G infrastructure over lesser populated areas of the country.⁸ This, combined with increased demand in rural areas, will encourage broadband providers to increase 5G and small cell spending nationwide. The market for small cells (Exhibit 6) is expected to experience a 10 percent increase in CAGR from 2018 to 2024, up to \$5.2 billion from \$2.9 billion.⁹

Conclusions

While 2020 was a wildly abnormal year and its lasting impacts will be felt for years to come, both electric T&D and broadband construction activity have strong underlying drivers and have exhibited resilience during 2020. The Biden administration's New Green Deal has already begun setting priorities and implementing executive actions that will trans-

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form these utility construction markets, shift the nature and type of work, and place new demands on both engineering and construction firms working in this space.

While challenges such as emerging technologies, environmental protest, economic recessions, and the continuing question of “Who Will Do The Work?” linger, a drive toward

underground electric infrastructure, grid modernization, and nationwide 5G coverage will leave contractors with ample opportunity to profit. Successful contractors will adapt to the New Green Deal and aggressively seek both old and new opportunities. 🏗️

Mark Bridgers, Jay Rendos, and Ryan Stein are consultants with Continuum Capital, which provides management consulting, training, and investment banking services to the worldwide energy, utility, and infrastructure construction industry. They can be reached at (919) 345-0403 or mbridgers@continuumcapital.net and followed on twitter at @MarkBridgers. For more information on Continuum, visit www.continuumcapital.net.

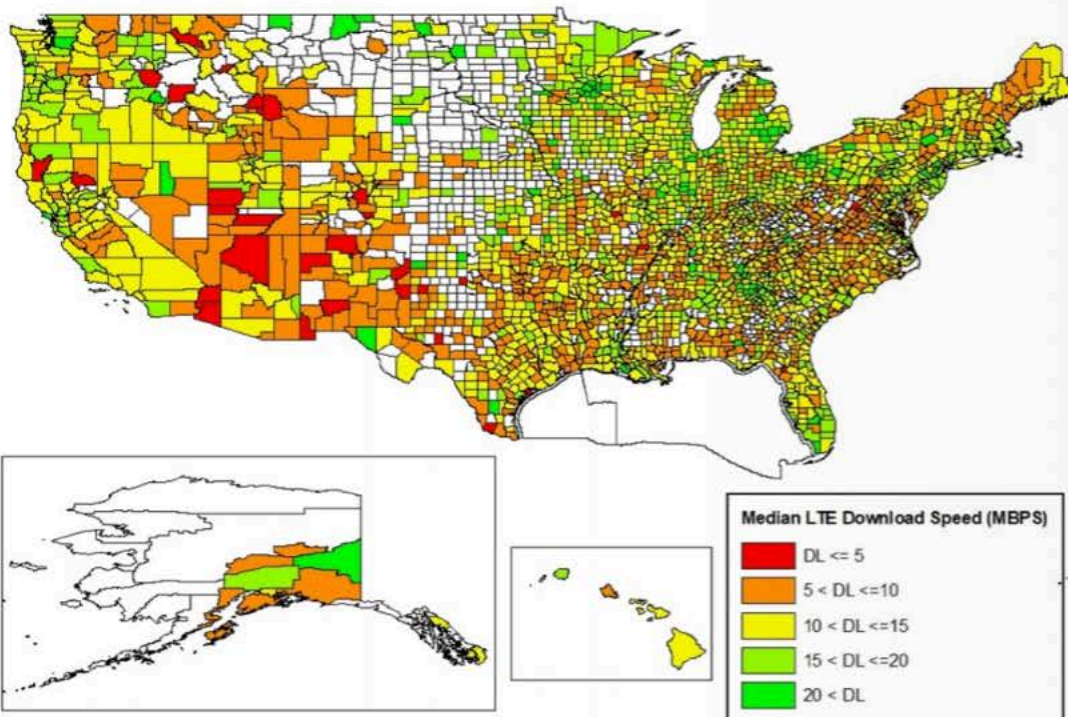
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2. Ford Motor Company, Press Release, “Ford Expands Climate Change Goals, Sets Target to Become Carbon Neutral by 2050: Annual Sustainability Report,” June 24, 2020.
3. Ibid.
4. General Motors, Press Release, “General Motors, the Largest U.S. Automaker, Plans to be Carbon Neutral by 2040,” January 28, 2021.
5. Ibid.
6. Brown, Abby, Stephen Lommele, et al. “Electric Vehicle Charging Infrastructure Trends from the Alternative Fueling Station Locator: First Quarter 2020,” October 2020. National Renewable Energy Laboratory.
7. Verizon Wireless, “Verizon 5G Ultra Wideband Service Available in More Cities,” November 20, 2020.
8. Federal Communications Commission, “In the Matter of Establishing a 5G Fund for Rural America,” October 27, 2020.
9. Mobile Experts, “Small Cell Market to Reach \$5.2 Billion by 2024,” PR Newswire, April 10, 2019.

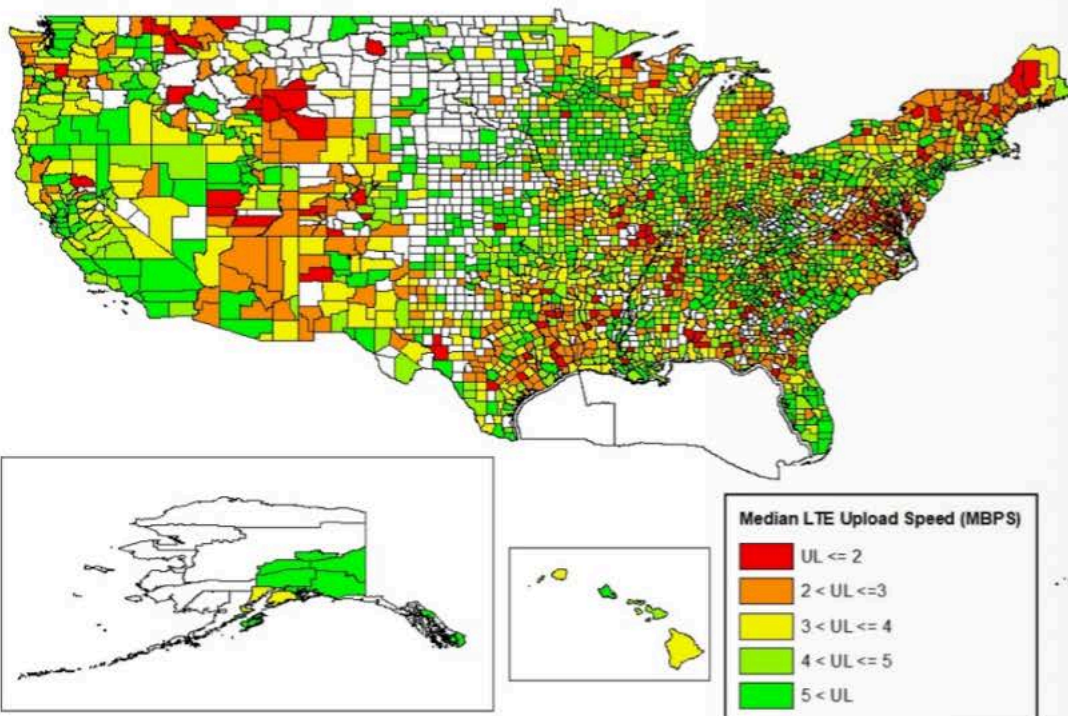
Exhibit 7

Data Upload & Download Speeds by County

Median LTE Download Speed by County - MBPS



Median LTE Upload Speed by County - MBPS



Source: Judith Dempsey, Patrick Sun, et al. (2020) “The Digital Divide in U.S. Mobile Technology and Speeds,” December, Federal Communications Commission, 2020, p. 18.