Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Streamlining Deployment of Small Cell	)	WT Docket No. 16-421
Infrastructure by Improving Wireless Facilities	)	
Siting Policies	)	
	)	
Mobilitie, LLC Petition for Declaratory Ruling	)	
	)	

Comments of ITIF

The Information Technology and Innovation Foundation (ITIF) welcomes the opportunity to provide input on potential Commission actions to help expedite the deployment of next generation wireless infrastructure.[1] Efficient access to rights of way and municipal infrastructure to deploy wireless infrastructure will be essential to securing U.S. leadership in developing a robust Internet ecosystem around advanced wireless capabilities. ITIF strongly supports efforts to spur this deployment, and therefore urges the Commission to adopt the interpretation of Section 253 advanced by Mobilitie in its request for declaratory ruling, as well as other efforts to streamline deployment.[2] The Commission should not let ill-informed fearmongering over health effects of radio-frequency (RF) emissions impede the deployment of 5G systems.

GOVERNEMENT EFFORTS TO SPUR DEPLOYMENT ARE WARRANTED

Red tape, inefficient processes, and hold-out NIMBYism can all contribute to delaying or preventing the rollout of broadband services. This problem will be especially acute as the nation transitions to the next generation of wireless services. Government efforts to help drive down these costs are well-justified to encourage U.S. leadership in developing a 5G ecosystem and vibrant municipalities.

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[1] Founded in 2006, ITIF is a 501(c)(3) nonprofit, nonpartisan research and educational institute—a think tank—focusing on a host of critical issues at the intersection of technological innovation and public policy. Its mission is to formulate and promote policy solutions that accelerate innovation and boost productivity to spur growth, opportunity, and progress.

[2] Mobilitie, LLC, "Petition for Declaratory Ruling" WT Docket No 16-421 (November 15, 2016), https://ecfsapi.fcc.gov/file/122306218885/mobilitie.pdf.

5G Deployment Matters for Both U.S. Leadership and Vibrant Municipalities

5G, if implemented as hoped, will prove a significant boon to economic output and consumer welfare. Like 4G before it, next generation wireless systems will play an important role as a platform enabling other innovations adjacent or on top. The wireless industry touches an increasing number of key verticals throughout economy, so U.S. wireless policy has a compounding effect in advancing productivity and growth. Building the ecosystem of new applications, devices, and uses around new broadband access systems faces something of a chicken and egg problem—those new access systems must first be deployed before new use cases can be developed. There is first-mover advantage for countries that facilitate an early deployment of this platform and successfully integrate it with other parts of the economy.

Several countries are active in the race to 5G, both for economic reasons and to display technological leadership. Many government organizations around the world have taken an active role in development of 5G, especially the European Commission, and the governments of Japan, South Korea, and China.[3] Of course, the international scramble for 5G is not a zero-sum game, and there are significant advantages to global cooperation. International competition can help drive a more optimal standard for wireless communications, which in turn yields tremendous economies of scale as companies around the world organize production around a single specification.

The incredibly successful U.S. mobile ecosystem that grew around 4G LTE networks proved a gem in the post-recession economy. Developing a successful economy around applications, devices, and services that depend on 5G systems may prove a comparative advantage moving forward in the 21st century economy.[4] The United States government tends to take a hands-off approach when it comes to standards setting, allowing industry to lead the development of new technologies. But when it comes to spurring the actual deployment of these technologies, the government is more than justified in lowering transaction costs, eliminating unnecessary barriers, and kick starting network effects.

Beyond U.S. competitiveness, spurring broadband infrastructure deployment is in the best interest of municipalities. Obviously, citizens benefit: Civic Internet of Things applications have the potential to greatly increase the efficiency of municipal services.[5] A recent study by Accenture Strategy for CTIA estimated that

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[3] *See* GSMA Intelligence, "Understanding 5G: Perspectives on Future Technological Advancements in Mobile" at 18 (December 2014), https://www.gsmaintelligence.com/research/?file=141208-5g.pdf&download.

[4] For a still relevant discussion of this leadership factor in the 4G era, *see* Eric Openshaw & Craig Wigginton, "The Leader Advantage: Implications for the Mobile Communications National Achievement Index" *Financial Times* (December 2012), https://www.ft.com/content/fb9a84b4-504c-11e2-9b66-00144feab49a.

[5] *See*, e.g., Blair Levin, "Cities, Technology, the Next Generation of Urban Development, and the Next Administration," *Brookings Metropolitan Infrastructure Initiative* (July 18, 2016), https://www.brookings.edu/blog/the-avenue/2016/07/18/cities-technology-the-next-generation-of-urban-development-and-the-next-administration-part-1.

the next generation of wireless technology is "expected to create 3 million new jobs and boost annual GDP by $500 billion," but highlighted that before these benefits are seen, operators must navigate local permitting and regulations, and fee structures designed for a macro cell world.[6] Many of the benefits envisioned flow from smart city applications.

5G Deployment Will be Expensive, Justifying Examination of Impediments

Many of the new wireless technologies introduced in the coming years will impact the costs of deploying or operating networks. Some technological changes will lower costs—for example, the general transition of virtualizing more network functions and running them in software instead of purpose-built hardware is expected to significantly lower the cost of operating a large-scale access network—some estimate by about 30 percent.[7] On the other hand, other new technologies will require significant investment to deploy. Of particular importance, given the need to densify networks to increase capacity through spectrum re-use and the limited propagation characteristics of high-frequency spectrum, deploying millimeter wave radios in a meaningful way will require extraordinary capital investment.

Beyond the equipment itself, negotiating siting locations, and acquiring backhaul connections and rights-of-way, all compound the transaction costs of deploying 5G networks. Any small-cell densification, but particularly densification with high-band spectrum contemplated for 5G systems, will require significant investment in infrastructure—both for siting the antenna equipment and for backhaul—facts well-articulated in the Mobilitie petition.

Here, more cooperation from municipalities would greatly assist in streamlining cost-effective deployment of next-gen wireless systems. Local governments should view wireless build-out as a partnership goal that will not only assist citizens in their daily lives, but also help cities provide better government services. These efforts should not be like franchise agreements of the past, which cities viewed as a cash cow, but cooperative endeavors.

Many of the same recommendations touted for deployment of wired networks apply, as backhaul will be a constraint in buildout of small cells. Streamlining of permitting and access to rights-of-way, dig-once policies for streets and sewers, installation of additional conduit where available, consolidated paperwork, a single

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[6] Accenture Strategy, "Smart Cities; How 5G Can Help Municipalities Become Vibrant Smart Cities," https://ecfsapi.fcc.gov/file/1011316028434/170113%20-%20FINAL%20CTIA%20Ex%20Parte%20Submitting%20Accenture%20Paper.pdf.

[7] Arthur D. Little & Bell Labs, "Reshaping the Future with NFV and SDN," May 2015, *available at* http://www.adlittle.com/downloads/tx_adlreports/ADL_BellLabs_2015_Reshapingthefuture.pdf.

point-of-contact, and discouraging "not in my backyard" thinking for wireless equipment would all go a long way to facilitate 5G.

In addition to rights of way access, key infrastructure assets for small cell deployment include utility poles and streetlamps. Utility poles have existing access to power, and often fiber that can be leased; they are positioned in populated areas, and at an appropriate height for small cells. The FCC has rules around the pole attachment process, and has worked to keep those up-to-date and to address challenges as they arise.[8] However, under statute, states have the right to take on pole attachment regulations themselves. So far, 20 states and the District of Columbia have decided to do so, with varying degrees of success.[9] The FCC should seek to update those rules, altering its shot clock mechanism to spur small cell deployment consistent with Supreme Court precedent.

The Interpretations Advanced by Mobilitie Are a Needed Step in Advancing Broadband Deployment

The Commission, industry, and local policymakers alike must examine creative ways of lowering these transaction costs if we are to see 5G truly flourish. The interpretations of Section 253 advanced by Mobilitie in its petition for declaratory ruling are a reasonable first step in these efforts.[10] There, the proposed interpretations of "fair and reasonable compensation" as cost-based fees, "competitively neutral and non-discriminatory" as similar fees for similar access, and "publicly disclosed by such a government" as requiring access to charges municipalities have previously imposed, are all imminently reasonable, low-hanging fruit in spurring deployment.

THE COMMISSION SHOULD DISREGARD WILDLY OVERSTATED CLAIMS OF POTENTIAL HARM FROM ELECTROMAGNETIC RADIATION

The Commission's docket examining these issues, like so many wireless policy fora, has been overrun by a vocal minority who would stand in the way of broadband deployment for fear of potential harm from electromagnetic radiation. This harm is wildly overstated, and holding back growth of next-generation wireless services by giving undue air to these claims would be an injustice to the public interest.

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[8] Implementation of Section 224 of the Act, Report and Order and Order on Reconsideration, 26 FCC Rcd 5240 (2011); updated last year with Implementation of Section 224 of the Act, Order on Reconsideration, 30 FCC Rcd 13731 (2015).

[9] *See* CTIA, "Enabling the Wireless Networks of Tomorrow: Rules of the Road for Pole Attachments in States Across America," *CTIA* (April 2016), http://www.ctia.org/docs/default-source/default-document-library/enabling-the-wireless-networks-of-tomorrow.pdf.

[10] Mobilitie petition at 23-35.

RF radiation is non-ionizing, and the only biological impact from non-ionizing radiation—tissue warming from absorbing energy—has been thoroughly studied and is well-understood. Exposure to high-power RF radiation can heat tissue (like a microwave oven), but there is no known way it can cause cancer or any of the effects described by some in the record. Furthermore, the Commission, in cooperation with other federal agencies and non-government organization such as the American National Standards Institute, has done extensive work to standardize safe emissions levels and protective measures for interacting with high-power transmitters. There is no evidence in the record to date that these policies on human exposure to RF fields, set forth in OET Bulletin 65, are insufficient to guide 5G small cell deployment.[11]

The thermal effects from RF radiation depend overwhelmingly on the power-level of the transmitting source, and small cells will use significantly lower power than existing macro cells. If anything, policies to spur the rapid deployment of small cells are likely to reduce the risk of exposure to high-power RF energy due to a reduced reliance on high-power macro cells.

The groups behind these filings believe wireless technology in all forms, including cell phones, smart meters, smart cars and others, is a health hazard because they believe that exposure to electromagnetic fields has the potential to cause a variety of adverse health outcomes. However, the scientific consensus is that there is no evidence that radio-frequency energy can cause cancer.[12]

Many of these brief filings point to the partial findings of a U.S. National Toxicology Program published in 2016.[13] Setting aside the fact that this was an early publication of partial findings and not yet subject to peer review, there are several reasons why that study should not give the Commission or any state and local authorities pause in encouraging wireless deployment.

Perhaps most importantly, as many reviewers of the study have since pointed out, with a sample size of only 90 rats in each group, the findings are significantly under-powered from a statistical standpoint.[14] The study

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[11] *See* Federal Communications Commission, "OET Bulletin No. 65: Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields" (August 1997) and supplements, *available at* https://www.fcc.gov/general/oet-bulletins-line.

[12] National Cancer Institute, "Cell Phones and Cancer Risk," https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/cell-phones-fact-sheet.

[13] Michael Wyde, et al. "Report of Partial Findings from the National Toxicology Program Carcinogenesis Studies of Cell Phone Radiofrequency Radiation in Hsd: Sprague Dawley SD Rats (Whole Body Exposure)," *bioRxiv The Preprint Server for Biology* (June 2016) http://biorxiv.org/content/early/2016/06/23/055699.

[14] *See* David Gorski, "No, a Rat Study with Marginal Results Does Not prove that Cell Phones Cause Cancer, No Matter What *Mother Jones* and *Consumer Reports* Say," *Science-Based Medicine* (May 2016),

also did not find any dose response, which one would expect if there was a causal relationship between RF radiation considering the dramatic step changes in dose level for the tested groups.[15] Moreover, the study found those rats exposed to modulated RF lived longer than the control groups on average. This fact lead Aaron Carroll, director of the Center for Health Policy and Professionalism in Research and Associate Dean for Research Mentoring at Indiana University School of Medicine to write:

> At the end of the study, survival was lower in the control group of males than in all the exposed males. Survival was lower in the control group of females for two of the three exposed groups. Yet no headlines blared that cell phones extend life. Nor will mine. No statistics are presented on whether this is significant.[16]

Ultimately the RF fears expressed here and in other discussions of wireless deployment are unfounded, and the Commission, as well as other policymakers, should disregard them.

CONCLUSION

Chairman Pai is right in his vocal support for using the FCC's "existing authority … to remove state and local barriers to deployment, such as unfair and unreasonable fees.[17] The Mobilitie petition presents compelling evidence that exactly this action is justified. The Commission should issue a declaratory ruling as described in the petition and issue a notice of proposed rulemaking to pursue the further changes explored in the public notice.

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https://sciencebasedmedicine.org/no-a-rat-study-with-marginal-results-does-not-prove-that-cell-phones-cause-cancer-no-matter-what-mother-jones-and-consumer-reports-say.

[15] *Id.*

[16] Aaron Carroll, "None of You Can Troll Me Like Austin Can. Also, Cell Phones and Cancer. Again." *The Incidental Economist: The Health Services Research Blog* (May 2016), http://theincidentaleconomist.com/wordpress/none-of-you-can-troll-me-like-austin-can-also-cell-phones-and-cancer-again.

[17] Summary of FCC Commissioner Ajit Pai's Digital Empowerment Agenda, http://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0913/DOC-341210A2.pdf.