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VIA ELECTRONIC FILING

August 29, 2018

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: *Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment*, WT Docket No. 17-79

Dear Ms. Dortch:

Corning Incorporated (“Corning”) submits the attached report, *Assessing the Impact of Removing Regulatory Barriers on Next Generation Wireless and Wireline Broadband Infrastructure Investment: Annex 2, 5G Attachment and Application Fee Scenarios* (“Report”),¹ which supplements previous reports submitted by Corning in this proceeding and the Commission’s *Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment* proceeding.²

This report assesses the impact of small cell attachment and application fees in two ways: (1) calculating the cost savings from capping fees at a level in line with the median of recent state regulations documented in a recent report published by CTIA and WIA; and (2) estimating the new capital investment that could occur due to these cost savings making more neighborhoods economically viable for 5G fixed wireless deployment. The report concludes that reducing small cell attachment and application fees could reduce deployment costs by \$2.1 billion over five years, or \$7,900 per small cell built. These cost savings could lead to an additional \$2.6 billion in capital expenditure due to additional neighborhoods moving from being economically unviable to becoming economically viable, with 97% of this capital expenditure going towards investment in rural and suburban areas.

Pursuant to Section 1.1206 of the Commission’s rules, 47 C.F.R. § 1.1206, a copy of this letter is being filed via ECFS. Should you have any questions, please do not hesitate to contact me.

¹ See Attachment A.

² See Letter from Thomas J. Navin, Counsel to Corning, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 17-79 (Jan. 25, 2018), at Attachments A and B.

Ms. Marlene H. Dortch, Secretary
August 29, 2018
Page 2

Respectfully Submitted,

/s/ Thomas J. Navin

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Attachment A

Assessing the Impact of Removing Regulatory Barriers on Next Generation Wireless and Wireline Broadband Infrastructure Investment: Annex 2, 5G Attachment and Application Fee Scenarios

August 2018

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Ed Naef is a Partner at CMA Strategy Consulting and Micah Sachs is a Principal at CMA Strategy Consulting. The authors would like to thank Corning for the funding to support this study.

Table of Contents

- Introduction 3
 - Context and Objective 3
 - Methodology..... 4
- Revised Assumptions 5
 - Revised Base Case Assumptions 6
 - Reduced Small Cell Fees Case Assumptions 9
 - Comparison with June 2017 Base Case..... 9
- Impact Assessment of Reduced Small Cell Fees 9
 - Cost Savings 9
 - New Investment..... 9
- Conclusion..... 10
- Appendix 11

Introduction

Context and Objective

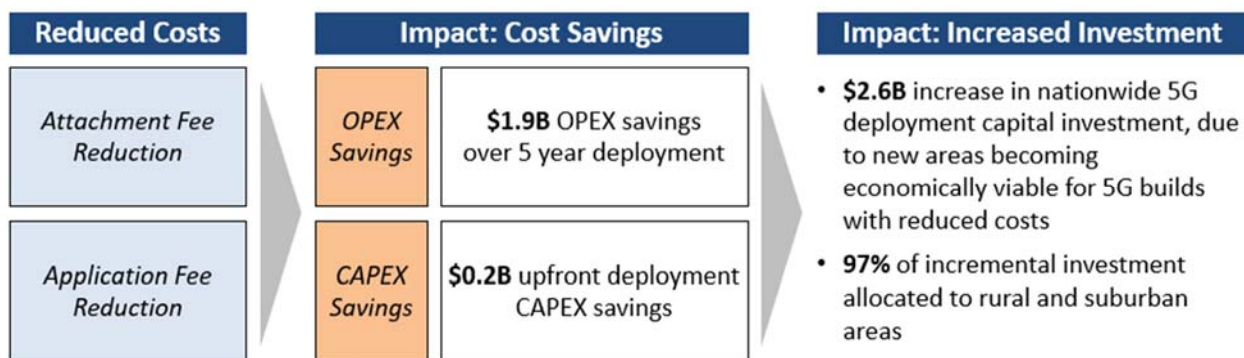
In our June 2017 study co-authored with Economists Incorporated, *Assessing the Impact of Removing Regulatory Barriers on Next Generation Wireless and Wireline Broadband Infrastructure Investment*, CMA estimated the deployment and economic benefits of reducing regulatory barriers to fiber-to-the-home and 5G fixed wireless broadband deployment. In light of new information published by CTIA and WIA¹ and recent filings from developers of wireless infrastructure, CMA has revised its original national 5G fixed wireless model to reflect the potential impact of these new data on small cell pole attachment and application fees, and estimated the potential impact on 5G fixed wireless deployment of instituting a cap on these fees. For purposes of this analysis, the term “attachment” fees include recurring annual charges both for right-of-way (ROW) access and for attaching to poles.

CMA has assessed the impact of reducing small cell fees in two ways: 1) calculating the cost savings from capping fees at a level in line with the median of recent state regulations documented in CTIA/WIA’s report and 2) estimating the new capital investment that could occur due to these cost savings making more neighborhoods economically viable for 5G fixed wireless deployment. The first assessment is a straight calculation of forgone cost (e.g., if attachment fees drop from \$2,500 a year to \$150 a year, how much could be saved across the country?), while the second assessment leverages our 2017 5G fixed wireless model to evaluate the economic viability of 5G fixed wireless deployment in every neighborhood in the country.

Key findings from this report are:

- Reducing small cell attachment and application fees could reduce deployment costs by \$2.1 billion over five years, or \$7,900 per small cell built. \$1.9 billion would be operating expenditure reductions due to lower annual attachment fees, and \$200 million in cost reductions would be attributable to lower application fees, which are required prior to building out a small cell network.
- These cost savings could lead to an additional \$2.6 billion in capital expenditure due to additional neighborhoods moving from being economically unviable to becoming economically viable. 97% of this capital expenditure would go towards investment in rural and suburban areas.

¹ See Ex Parte Letter from Kara Graves, CTIA, and Zachary Champ, WIA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 17-84 and WT Docket No. 16-421 (Aug. 10, 2018).



Methodology

In its initial report² and a follow-up analysis,³ CMA evaluated the business case for deploying next-generation broadband throughout the United States to predict how many homes and small businesses could be served with current regulation, and with future regulatory reforms. CMA examined two types of next-generation deployments: fully wired fiber-to-the premises (FTTP) and fifth generation (5G) fixed wireless broadband. For both FTTP and 5G fixed wireless, CMA constructed a full business case for next-generation network deployment for every inhabited census block group in the country,⁴ which allowed us to calculate the economic net present value (NPV) for each census block group.⁵ Those census block groups with a positive NPV were considered economically viable for broadband deployment, and those with a negative NPV were considered economically unviable. As costs were reduced or deployment timelines shortened due to modeled regulatory reforms, additional census block groups moved from being economically unviable to being economically viable.

The assumed builder and operator of the FTTP or 5G fixed wireless network in our model is an ILEC evaluating network expansion in its own traditional wireline service territory. Therefore, our business case only considered the *incremental* benefits and costs of next-generation network deployment, excluding revenues from customers already using legacy services and costs to serve them and to maintain the existing copper network.

² See Comments of Corning Inc., WC Docket No. 17-84 (June 15, 2017), at Attachment A (Hal Singer, Economists Incorporated, and Ed Naef and Alex King, CMA Strategy Consulting, *Assessing the Impact of Removing Regulatory Barriers on Next Generation Wireless and Wireline Broadband Infrastructure Investment* (June 2017) (“Initial Report”).

³ See Letter from Thomas J. Navin, Counsel to Corning Inc., to Marlene H. Dortch, Secretary, FCC, WT Docket No. 17-79 (Jan. 25, 2018), at Attachment A (Ed Naef and Alex King, CMA Strategy Consulting, *Assessing the Impact of Removing Regulatory Barriers on Next Generation Wireless and Wireline Broadband Infrastructure Investment: Annex 1, Model Sensitivities* (Jan. 2018) (“Annex 1”)); CMA examined the impact of a nationwide change to “one-touch make-ready” procedures on both FTTP and 5G network deployments. CMA also estimated the impact of higher municipality-imposed costs on a nationwide 5G deployment. Both impacts were measured in relation to the June 2017 Base Case scenario.

⁴ Census block groups on average contain ~650 homes and small businesses, and are therefore roughly the size of neighborhoods as commonly understood.

⁵ See Initial Report for methodology and assumptions used.

While FTTP economics are well understood from numerous deployments in the U.S. and the rest of the world, the business case for 5G fixed wireless network deployment is still being evaluated. Almost every key driver of 5G fixed wireless economics, including small cell cost, ARPU and expected take rate (as well as lesser drivers like attachment and application fees), have yet to be proven out on any scale. Thus, CMA's initial analyses of 5G deployment was a higher level analysis and reflected more assumptions about potential market evolution.⁶ For our "June 2017 Base Case" for 5G fixed wireless, we assumed small cell attachment fees were equivalent to typical wireline attachment fees and assumed no upfront small cell application fees.⁷

For this report, CMA revised the June 2017 Base Case to account for new data on current small cell attachment and application fees, leaving other assumptions unchanged—creating what we term the "Revised Base Case" in this report. CMA then estimated the impact of reducing these fees to levels in line with recent state legislation detailed in CTIA/WIA's survey by creating a new "Reduced Small Cell Fees Case," with reduced fees, and contrasting the outputs with those of the Revised Base Case.

Revised Assumptions

For the Revised Base Case, CMA developed state-level assumptions for annual small cell attachment fees and application fees. For states with caps documented by the CTIA/WIA survey, CMA used the documented caps, under the assumption that most municipalities will charge the maximum fee allowed. For other states (or states included in the CTIA/WIA survey that did not have caps on one of the two categories of fees), CMA used national benchmarks drawn from recent filings⁸ from developers of wireless infrastructure as part of the proceedings Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment, WT Docket No. 17-79; Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment, WC Docket No. 17-84; and Streamlining Deployment of Small Cell Infrastructure, WT Docket No. 16-421.

The fees reported by small cell developers largely only cover municipally owned non-utility poles such as streetlights and traffic lights, not utility poles used for electrical wires and telecommunications wires,

⁶ See Initial Report and Annex 1.

⁷ Our January 2018 follow-on did not revise the base case assumptions for attachment fees and application fees. It did, however, illustrate several sensitivities on the base case model, including higher application fees and higher attachment fees. Those sensitivities reflected values within the ranges observed in the limited number of comments that were on the record at the time, including comments from Verizon, Crown Castle International and ExteNet Systems. See Annex 1.

⁸ Christopher Yoo of the University of Pennsylvania recently conducted a study looking at 1,204 pole attachment agreements to determine typical rates for different types of regulatory regimes and different types of pole owners. See "Survey of Rates for Pole Attachments and Access to Right of Way" (Apr. 24, 2018), available at: <https://www.fcc.gov/sites/default/files/ad-hoc-committee-survey-04242018.pdf>. CMA did not use this study for two reasons: (1) it was not clear how prevalent municipally owned non-utility pole agreements were in the data collection and (2) because the Broadband Development Advisory Committee publicly expressed concerns about outliers in the data (see BDAC Rates & Fees Ad Hoc Committee, Preliminary Report (Apr. 25, 2018), at 9, available at <https://www.fcc.gov/sites/default/files/ad-hoc-committee-presentation-04242018.pptx>) and did not use the data to fashion its recommendations in its draft final report. See Broadband Deployment Advisory Committee Rates and Fees Committee, DRAFT – Final Report to the BDAC (v 2.5) (July 2018), available at <https://www.fcc.gov/sites/default/files/bdac-07-2627-2018-rates-fees-wg-report-07242018.pdf>.

whether the owner is the municipality⁹ or another party.¹⁰ Because most small cells today are located on municipally owned non-utility poles, we assumed in both the Revised Base Case and the Reduced Small Cell Fees Case that small cells would be deployed on municipally owned poles or other poles with similar fee structures. The higher fees in these scenarios apply only to the small cells, not the fiber backhaul.

Revised Base Case Assumptions

For the Revised Base Case, the following state-wide caps were provided by the CTIA/WIA survey:

TABLE 1: BASE CASE STATE-LEVEL FEE ASSUMPTIONS USED IN REVISED BASE CASE

		Revised Base Case		
		Annual Attachment Fee <i>(per small cell)</i>	One-Time Application Fee <i>(per small cell)</i>	Legislation Year
States in CTIA/WIA Survey	AZ ¹¹	\$100	\$50	2017
	CO	N/A	N/A	2017
	DE	N/A	\$100	2017
	FL	\$150	N/A	2017
	HI	N/A	N/A	2018
	IA ¹²	N/A	\$50	2017
	IL ¹³	\$200	\$350	2017
	IN ¹⁴	\$50	\$100	2017

⁹ It is important to make the distinction between municipal utility poles and municipally owned non-utility poles. Municipal utility poles carry electrical and telecommunications wires and equipment for the municipality and other third parties such as the ILEC, the local cable company or an investor-owned electrical utility. Third parties attach to these poles based on pole agreements that were typically first drawn up decades ago and revised over the years. Municipally owned *non*-utility poles, on the other hand, have not historically provided collocation for any other parties' infrastructure. Collocating small cells on these types of poles, such as traffic lights and streetlights, is a new use of these poles, and municipalities therefore are charging a range of prices for accessing these poles.

¹⁰ Other common owners of utility poles include investor-owned utilities, cooperative utilities, the ILEC and the local cable company.

¹¹ Arizona's attachment fee is the combined total of the attachment fee (\$50) and ROW access fee (\$50) listed in the CTIA/WIA survey. The fees in the table apply for networks built in the city. For networks built in counties, the state charges a \$60 application fee, \$20 attachment fee and \$50 ROW access fee. The small differences between city and county fee levels change the number of economically viable locations only slightly.

¹² Iowa charges a \$500 application fee per small cell for an application with 5 or less small cells. Every small cell after the fifth small cell is charged a \$50 application fee. We used the lower \$50 application fee because we assumed most small cell applications from ILECs will have far more than five nodes, and therefore the average application fee per small cell will trend towards \$50.

¹³ Illinois charges a \$650 application fee for the first small cell and \$350 for each after. The state also charges a \$1,000 application fee for an application that includes the installation of a new utility pole. We used the lower \$350 application fee because we assumed most small cell applications from ILECs will be for far more than one node, and therefore the average application fee per small cell will trend towards \$350.

¹⁴ Indiana charges an application fee that is the lesser of \$100 or the amount charged by the permit authority for a building permit. We assumed \$100 for simplicity's sake.

	KS¹⁵	N/A	\$500	2016
	MN	\$175	N/A	2017
	MO¹⁶	\$150	\$100	2019
	NC¹⁷	\$50	\$50	2017
	NM¹⁸	\$270	\$50	2018
	OH¹⁹	\$200	\$250	2018
	OK²⁰	\$40	\$100	2018
	RI²¹	\$150	N/A	2017
	TN²²	\$100	\$50	2018
	TX²³	\$270	\$250	2017
	UT²⁴	\$50	\$100	2018

¹⁵ Kansas has no application, attachment and ROW access fee if other providers do not pay a fee.

¹⁶ Missouri has a \$500 application fee for each small cell on a new, modified or replacement utility pole. The ROW access rate is variable based on actual ROW management costs for each pole-owner and therefore not included in our assumption.

¹⁷ North Carolina charges an application fee that is the lesser of 1) actual cost to review an application, 2) amount charged for permitting similar activities or 3) \$100 for each small cell up to 5 and \$50 for each afterwards. We used the lower \$50 application fee because we assumed most small cell applications from ILECs will be for far more than five nodes, and therefore the average application fee per small cell will trend towards \$50.

¹⁸ New Mexico's attachment fee is the combined total of the attachment fee (\$20) and ROW access fee (\$250) listed in the CTIA/WIA survey. New Mexico charges a \$100 application fee for each small cell up to 5 and \$50 for each afterwards. The state charges a \$750 application fee for each small cell if it involves the installation of a new, replacement or modified utility pole. The ROW access rate (\$250 per small cell) applies only if other providers are charged. We used the lower \$50 application fee because we assumed most small cell applications from ILECs will be for far more than five nodes, and therefore the average application fee per small cell will trend towards \$50.

¹⁹ Ohio's attachment fee is the combined total of the attachment fee (\$200) and ROW access fee (\$0) listed in the CTIA/WIA survey.

²⁰ Oklahoma's attachment fee is the combined total of the attachment fee (\$20) and ROW access fee (\$20) listed in the CTIA/WIA survey. Oklahoma charges a \$200 application fee for each small cell up to 5 and \$100 for each afterwards. The state charges a \$350 application fee for each small cell that involves the installation, modification or replacement of a pole. We used the lower \$100 application fee because we assumed most small cell applications from ILECs will be for far more than five nodes, and therefore the average application fee per small cell will trend towards \$100.

²¹ Rhode Island's attachment fee is the combined total of the attachment fee (\$150) and ROW access fee (\$0) listed in the CTIA/WIA survey.

²² Tennessee's attachment fee is the combined total of the attachment fee (\$100) and ROW access fee (\$0) listed in the CTIA/WIA survey. Tennessee charges a \$100 application fee for each small cell up to 5 and \$50 for each afterwards. There is a \$200 one-time application fee for the first application. We used the lower \$100 application fee because we assumed most small cell applications from ILECs will be for far more than five nodes, and therefore the average application fee per small cell will trend towards \$100.

²³ Texas' attachment fee is the combined total of the attachment fee (\$20) and ROW access fee (\$250) listed in the CTIA/WIA survey. Texas charges an application fee that is the lesser of 1) actual cost to process an application or 2) \$500 per small cell up to 5 and \$250 for each afterwards. We used the lower \$250 application fee because we assumed most small cell applications from ILECs will be for far more than five nodes, and therefore the average application fee per small cell will trend towards \$250.

²⁴ Utah's attachment fee does not include the ROW access fee (\$250) listed in the CTIA/WIA survey because the ROW access fee only applies to entities who do not pay the state's Municipal Telecom License Tax, which we

	VA ²⁵	N/A	\$50	2017
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For states where information was not provided in the CTIA/WIA survey, CMA used assumptions that are below the averages and medians of rates reported by developers of wireless infrastructure so as to better account for reporting bias.²⁶ There is still significant uncertainty around what “typical” rates are, and the lack of federal regulation and limited current deployment of small cells in suburban and rural areas means that only the mostly urban benchmarks provided by developers of wireless infrastructure are available. CMA therefore used benchmarks from the lower end of ranges provided by operators. Our Revised Base Case illustrates the impact on our 5G deployment model if these observed costs are prevalent across states without fee caps.

TABLE 2: NATIONWIDE SMALL CELL FEE ASSUMPTIONS USED IN REVISED BASE CASE

	Annual Attachment Fee	Application Fee
Assumption Used in Revised Base Case	\$2,500	\$1,000
Average of Sources	\$4,784	\$5,284
Median of Sources	\$3,250	\$2,400
Min and Max of Sources	\$0 to \$37,000	\$100 to \$24,000
Standard Deviation of Sources	\$6,636	\$6,333
Sources	AT&T, Verizon, Crown Castle, CCA, Mobilitie, T-Mobile, Uniti, Verizon, WIA ²⁷	AT&T, Sprint, Crown Castle, CCA, Mobilitie, T-Mobile, Uniti, WIA, Xcel Energy ²⁸

For states in the CTIA/WIA survey with recently enacted legislation (2018 or later), CMA used a blended average of the survey fees in TABLE 1 and the assumptions used in the Revised Base Case in TABLE 2. The blended average was calculated by weighting one year of the assumptions in TABLE 2 and four years of CTIA/WIA fees together to reflect the fact that operators may still face high fees in states where new legislation is being rolled out.

assume ILECs already pay. Utah charges a \$250 application fee for each small cell that involves the installation, modification or replacement of a pole.

²⁵ Virginia charges a \$100 application fee for each small cell up to 5 and \$50 for each afterwards. We used the lower \$50 application fee because we assumed most small cell applications from ILECs will be for far more than five nodes, and therefore the average application fee per small cell will trend towards \$50.

²⁶ CMA chose a range of large operators, industry organizations and utilities to identify representative benchmarks. While CMA was not able to document every data point from the record, we feel that the data points we collected are representative of operators’ experience in significant portions of the country.

²⁷ For operator-specific sources, refer to Table 4 in the Appendix.

²⁸ For operator-specific sources, refer to Table 4 in the Appendix.

Reduced Small Cell Fees Case Assumptions

For the Reduced Small Cell Fees Case, CMA assumed a nationwide cap on small cell attachment and application fees. Since there is not a specific proposal to analyze, CMA used the median attachment and application fees, \$150 and \$100 respectively, of the states reported in the CTIA/WIA survey.²⁹ The median values were used instead of the average to exclude outliers in the survey. For states with lower caps than these median figures, the lower cap was used in this scenario.

Comparison with June 2017 Base Case

CMA's June 2017 Base Case assumed a \$20 attachment fee and \$0 application fee for all network elements based on the available data at that time. Assuming new higher attachment and application fees in the Revised Base Case lowers the total number of viable premises from the June 2017 Base Case. The total number of viable premises decreases by approximately 4.5 million from 91.5 million in the June 2017 Base Case to 87 million in the Revised Base Case.

Impact Assessment of Reduced Small Cell Fees

Cost Savings

CMA assessed the total deployment cost reduction that could occur if operators were to face lower attachment and application fees than the fees assumed in the Revised Base Case. It is estimated that deployment costs would be reduced by \$1.9 billion in attachment fees over a five-year period and \$0.2 billion in one-time application fees for a total of \$2.1 billion over five years, if all economically viable areas were built. Using total savings and the total number of expected small cells in the Revised Base Case (~270,000 small cells), CMA estimates that operator deployment costs would be reduced by \$7,900 per small cell due to lower fees.

New Investment

By lowering application and attachment fees, CMA estimates an additional \$2.6 billion of capital expenditure would be spent to build small cells in areas that were previously not economically viable in the Revised Base Case, assuming all economically viable areas were built. CMA estimates that 97% of total incremental capital expenditure would flow into rural and suburban areas. More specifically, 63% (\$1.6 billion) of incremental capital expenditure would flow to rural areas and 34% (\$0.9 billion) would flow to suburban areas. In these areas a lower set of fees has the effect of pushing a large number of slightly negative NPV premises towards positive NPVs over a five-year period.

²⁹ The fees in the CTIA/WIA survey are often judged as fair prices by operators deploying 5G in the U.S. For example, in Sprint's ex parte communication to the FCC on August 13, 2018, Sprint mentions that the City of Los Angeles charges a reasonable application fee of \$350 per small cell while Los Angeles County charges a higher application fee of \$9,820 per small cell. See Letter from Keith C. Buell, Sprint, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 17-79 (Aug. 13, 2018).

TABLE 3: INCREMENTAL CAPEX BY MORPHOLOGY

	Sparse	Rural	Suburban	Urban	Dense Urban	Total
Incremental CAPEX (\$M)	\$0	\$1,616	\$880	\$67	\$2	\$2,565

Finally, CMA examined the impact of lower fees on the number of viable premises in the U.S. Similar to the distribution of capex, 97% of the total increase in viable premises (1.9M additional premises total) would occur in rural and suburban areas.

Conclusion

Reductions in small cell attachment and application fees could have a multibillion-dollar impact on operator investment in fixed wireless 5G networks. Imposing fee caps in line with some state regulations could save operators \$2.1 billion over five years in operating and capital expenses above currently observed costs. These savings would improve the business case for millions of marginal homes and businesses that would otherwise not be economically viable for 5G fixed wireless. These newly viable neighborhoods would require \$2.6 billion in capital investment to cover in our model. Virtually all (97%) of this incremental investment would take place in rural and suburban areas.

Appendix

TABLE 4: OPERATOR-REPORTED ATTACHMENT AND APPLICATION FEES

Filer	City	State	Attachment Fee	Application Fee
AT&T ³⁰	Howard County	MD	\$1,000	\$1,800
AT&T	Baltimore County	MD	\$5,000	N/A
AT&T	Oakland	CA	\$2,300	N/A
AT&T	Citrus Heights	CA	\$2,000	N/A
AT&T	Lowell	MA	\$6,000	\$20,000
AT&T	Escondido	CA	\$1,650	N/A
CCA ³¹	San Francisco	CA	\$4,000	N/A
CCA	New York	NY	\$4,000	N/A
CCA	Hempstead	NY	N/A	\$900
CCA	New York	NY	\$4,000	N/A
CCA	Chicago	IL	\$4,000	N/A
CCA	San Francisco	CA	\$4,000	N/A
CCI ³²	Vacaville	CA	\$1,500	\$4,000
CCI	Dallas	TX	\$2,500	N/A
CCI	Philadelphia	PA	\$3,000	N/A
CCI	Cottleville	MO	\$6,000	N/A
CCI	Newport Beach	CA	\$10,800	N/A
CCI	Montgomery County	MD	N/A	\$1,000
CCI	Gaithersburg	MD	\$500	\$500
CCI	Hempstead	NY	N/A	\$650
CCI	Brookville	NY	N/A	\$4,000
CCI	Laurel Hollow	NY	N/A	\$900
CCI	Unspecified	VA	\$12,000	N/A
CCI	Fairfax County	VA	N/A	\$15,000
Mobilitie ³³	Unspecified	NY	\$2,000	N/A
Mobilitie	Unspecified	NV	N/A	\$2,400
Mobilitie	Unspecified	GA	N/A	\$2,800
Sprint ³⁴	City of Los Angeles	CA	N/A	\$350
Sprint	Los Angeles County	CA	N/A	\$9,820
Sprint	Anytown	IL	\$2,000	\$1,000

³⁰ See Ex Parte Letter from Henry Hultquist, AT&T, to Marlene Dortch, FCC, WT Docket No. 17-79 and WC Docket No. 17-84 (Aug. 6, 2018).

³¹ See Comments of CCA, WT Docket No. 17-79, WT Docket No. 15-180, and WC Docket No. 17-84 (June 15, 2017); Ex Parte Letter from Courtney Neville, CCA, to Marlene Dortch, FCC, WT Docket No. 17-79, WT Docket No. 15-180, and WC Docket No. 17-84 (July 16, 2018).

³² See Ex Parte Letter from Kenneth Simon and Monica Gambino, Crown Castle, to Marlene Dortch, FCC, WT Docket No. 16-421 (Aug. 10, 2018); Comments of Crown Castle International Corp., WT Docket No.17-79 (June 15, 2017).

³³ See Comments of Mobilitie, LLC USA, Inc., WT Docket No. 17-79 and WC Docket No. 17-84 (June 15, 2017).

³⁴ See Comments of Sprint, WT Docket No. 17-79 and WC Docket No. 17-84 (July 15, 2017); Ex Parte Letter from Keith Buell, Sprint, to Marlene Dortch, FCC, WT Docket No. 17-79 (Aug. 13, 2018).

T-Mobile ³⁵	Unspecified	MO	N/A	\$6,000
T-Mobile	Unspecified	Unspecified	N/A	\$9,500
T-Mobile	Unspecified	Unspecified	N/A	\$350
T-Mobile	Unspecified	Unspecified	\$24,000	N/A
T-Mobile	"31 Jurisdictions"	Unspecified	N/A	\$3,500
T-Mobile	"43 Jurisdictions"	Unspecified	\$3,500	N/A
T-Mobile	Unspecified	VA	N/A	\$12,000
T-Mobile	Unspecified	VA	N/A	\$15,000
T-Mobile	Montgomery County	MD	N/A	\$2,000
Uniti ³⁶	Unspecified	AZ	N/A	\$750
Uniti	Unspecified	AZ	\$50	\$100
Uniti	Unspecified	DE	\$0	\$100
Uniti	Unspecified	FL	\$150	N/A
Uniti	Unspecified	IL	\$200	\$650
Uniti	Unspecified	IA	N/A	\$100
Uniti	Milwaukee	WI	N/A	\$15,500
Verizon ³⁷	San Jose	CA	\$175	N/A
Verizon	Lincoln	NE	\$1,995	N/A
Verizon	Seattle	WA	\$1,872	N/A
Verizon	Portland	OR	\$2,350	N/A
Verizon	Rancho Cordova	CA	\$4,300	N/A
Verizon	Fresno	CA	\$2,000	N/A
Verizon	Unspecified	Midwest	\$6,000	N/A
Verizon	Unspecified	Northeast	\$6,000	N/A
Verizon	Unspecified	Northeast	\$9,000	N/A
Verizon	Unspecified	Northeast	\$37,000	N/A
WIA ³⁸	Chicago	IL	\$4,000	N/A
WIA	San Francisco	CA	\$4,000	N/A
WIA	New York	NY	\$4,000	N/A
WIA	Unspecified	VA	N/A	\$24,000
WIA	Unspecified	MN	N/A	\$5,000
WIA	Unspecified	MN	N/A	\$4,000
WIA	Unspecified	NC	N/A	\$10,000
WIA	Unspecified	TX	\$2,500	N/A
Xcel Energy ³⁹	Unspecified	CO	N/A	\$707

Note: filer-specific footnotes apply to all fees listed for the filer

³⁵ See Comments of T-Mobile USA, Inc., WT Docket No. 16-421 (March 8, 2017); Comments of T-Mobile USA, Inc., WT Docket No. 17-79 and WC Docket No. 17-84 (June 15, 2017); Reply Comments of T-Mobile USA, Inc., WT Docket No. 17-79 and WC Docket No. 17-84 (July 17, 2017); Comments of Mobilitie, LLC USA, Inc., WT Docket No. 17-79 and WC Docket No. 17-84 (June 15, 2017).

³⁶ See Ex Parte Letter from Jeffrey Strenkowski and Kelly McGriff, Uniti, to Marlene Dortch, FCC, WT Docket No. 17-79 and WC Docket No. 17-84 (Aug. 22, 2018); Ex Parte Letter from Ronald Del Sesto, Jr., Uniti, to Marlene Dortch, FCC, WT Docket No. 17-79 and WC Docket No. 17-84 (March 1, 2018).

³⁷ See Ex Parte Letter from Tamara Preiss, Verizon, to Marlene Dortch, FCC, WT Docket No. 17-79 (Aug. 10, 2018); Comments of Verizon, WC Docket No. 16-421 (March 8, 2017).

³⁸ See Reply Comments of the Wireless Infrastructure Association, WT Docket No. 17-79 and WC Docket No. 17-84 (July 17, 2017); Ex Parte Letter from Scott Houston, Texas Municipal League, to Marlene Dortch, FCC, WT Docket No. 17-79 (July 17, 2017).

³⁹ See Comments of Xcel Energy Services Inc., WT Docket No. 17-79 (June 15, 2017).