



## Survey of Rates for Pole Attachments and Access to Rights of Way

(as of April 24, 2018)

The Rates and Fees Committee collected data to inform its deliberations. The primary analysis includes comparisons of (1) flat-fee wired vs. wireless pole attachment rates, (2) flat-fee regulated vs. unregulated rates for both wired and wireless pole attachments, (3) flat-fee wired and wireless pole attachment rates by type of facility owner, (4) pole attachment rates based on revenue sharing, (5) statewide pole attachment rates set by state legislation, and (6) rates for access to rights of way (ROW). Where possible, the analysis also examines any differences in federally regulated and state regulated rates. The key findings are:

- The agreements followed two models: flat rental fees and revenue sharing. Significantly more agreements were based on flat rental fees (1,146) than on revenue sharing (58).
- Wired pole attachments, which typically occupy one foot of space on the poles, had a mean rate of \$17.58 and a median rate of \$15.56. Wireless pole attachments, which can occupy a variable amount of space on poles often ranging from one to ten feet, had a mean rate of \$505.56 and a median rate of \$56.60.
- For wired pole attachments, unregulated rates (mean \$21.86, median \$20.01) were significantly higher than regulated rates (mean \$13.97, median \$9.90).
- For wireless pole attachments, unregulated rates (mean \$993.55, median \$360.00) were significantly higher than regulated rates (mean \$224.25, median \$50.00).
- For wireless pole attachments, regulated rates in areas subject to state regulation were higher (mean \$339.05, median \$50.00) than in areas subject to FCC regulation (mean \$82.26, median \$29.64), although these differences were not significant. Regulated rates for wired pole attachments were similar under FCC regulation (\$14.11) and state regulation (\$13.77).
- Among different types of facility owners, rates for wired pole attachments were highest for municipalities (mean \$23.32, median \$20.40) and lowest for private companies (mean \$7.69, median \$5.30). The difference was even larger for wireless pole attachments, with municipally owned public utilities still being the highest (mean \$1,225.07, median \$900.00) and private companies being the lowest (mean \$14.17, median \$8.88).
- Revenue sharing agreements typically charged 3%-5% of revenue and/or annual fees of \$60-\$6,000 ROW or attachment fee.
- Thirteen states have adopted statewide regulation that limits ROW and attachment fees to direct cost or caps the fee at \$50-\$250.
- Rates for access to ROW for wireless attachments were higher for municipalities (mean \$592.36, median \$300.00) than for IOUs (mean \$404.30, median \$100.00).

### A. Data Collection

Professor Christopher Yoo of the University of Pennsylvania asked all participants in the BDAC process to submit any data they were willing to share on rates for access to poles, conduits, ducts,

and rights-of-way. Many of these data were submitted under nondisclosure agreements, and the data only include rates embodied in actual agreements. Because of the voluntary nature of this process, the data have not been verified and represent a convenience sample that is not necessarily representative of national trends.

**Total Number of Data:** Participants submitted 1,204 agreements for both wired and wireless attachments for the report.

**Number of Data by Attachment Types:** Among the 1,204 agreements, the data included 592 agreements for wired pole attachments, such as aerial cables, wires, and associated applications to certain distribution poles. The data also included 612 agreements for wireless pole attachments, such as base stations, network facilities, small cell networks, and outdoor distributed antenna systems (DAS). The data also included 110 agreements for access to rights of way (ROW).

Participants did not submit a sufficiently large number of agreements on access to conduits and ducts to support a statistical analysis.

Participants did submit agreements that reflected other types of fees. For example, some agreements included cable franchise fees of 5% of gross revenue, which is the maximum allowed under the federal statute, which includes ROW access. In Oregon, some municipalities also assess fees of 7% of gross revenue from broadband and voice service that also includes access to ROW. Some states and municipalities impose additional taxes that can raise the effective rate to as high as 17.84% of revenue. The agreements also included grants and other financial commitments that can run in the tens of millions of dollars. Although some of these fees may overlap with some of the fees analyzed below, participants did not submit sufficiently large number of agreements to permit analysis of them, and they not reflected in the discussion that follows.

## **B. Analytic Framework**

In order to compare the rates data, we have classified each rate based on (1) types of facilities owners, (2) types of rates, and (3) types of charging model.

**Types of Facility Owners:** The data were classified into 5 different types of facility owners: Municipalities, Cooperatives, Investor-Owned Utilities (IOUs), Public Utilities, and Private Companies (Table 1). Some agreements provided no information on the type of facilities owner. Municipalities, cooperative, and public utilities are exempt from the FCC pole attachment regulation, while investors-owned utilities (IOUs) and private companies are subject to the FCC pole attachment regulation.

**Table 1: Types of Facility Owners**

Types	Details	FCC Regulation
IOUs	Privately-owned electric utilities Investor Owned Utilities (IOUs) whose stock is publicly traded	Subject
Municipalities	City governments that own utilities poles	Exempt
Cooperatives	Electric and energy cooperatives tasked with the delivery of a public utility	Exempt
Public utilities	Government-owned utilities (TVA, PMAs, municipally owned public utilities)	Exempt
Private companies	Private telecommunication companies and telephone companies	Subject

**Federal vs. State Regulation:** Utility pole attachments are regulated in multi-levels in the U.S. The FCC reports that access to pole attachment and attachment rates are regulated by the Federal Communications Commission (FCC) except for the 20 states and the District of Columbia that have certified that they regulate their pole attachments.

**Types of Rates:** Determining the type of rate proved somewhat complicated. The submissions described the type of rate in very diverse ways. Some references were relatively straightforward, such as pole attachment fee, node attachment fee, license fee, franchise fee, or rental fee. Other cases referred to two-party pole attachment fee, pole horizontal attachment fee, and street operation pole fee. In this report, we reclassified these various types of rates into a few simple categories to analyze all different rates under a uniform analytical framework (Table 2). Therefore, this report focuses on the Attachment Fee for the analysis.

**Table 2: Number of Observations by Types of Rates**

Types of Rates	Number of Observations
Attachment fee	1,003
Right-of-way (ROW) fee	55
Non-Utility fee	73
Other (conduit/duct/franchise fee)	44
<b>Total Number of Rate Observations</b>	<b>1,204</b>

**Types of Charging Models:** The data reflect different ways to charge rates to pole attachers. The most common way to charge fees is to charge flat rental fee per pole or per site for a year (flat rental fee model). The recurring period is mostly annual, but there were semi-annual, quarterly or monthly. In some cases, licensees were required to pay a percentage of gross revenues, sometimes in addition to a flat fee (revenue share model).

**Table 3: Number of Observations by Types of Charging Models**

<b>Types of Charging Models</b>	<b>Number of Observations</b>
Flat rental fee model	1,146
Revenue share model	58
<b>Total Number of Observations</b>	<b>1,204</b>

In addition, some states have passed legislation establishing uniform statewide rates for pole attachments (statewide rate model).

**C. Data Analysis for Flat Rental Fee Model**

The analysis calculated descriptive statistics (mean, median, standard deviation and range) for key measures and conducted independent *t*-test to assess the significance of the relevant differences. To ensure that the results were not unduly affected by outliers in the data, all analyses were rerun excluding the top and bottom 10% of the data. These alternative specifications did not materially affect the results.

**1. Wired vs. Wireless Pole Attachment Rates (*n* = 979)**

Among the total number of 1,204 rate cases, 1,066 (587 wired rates and 479 wireless rates) flat rental rate cases revealed whether the attachment was a wired or wireless pole attachment. The 138 ambiguous cases have been excluded in this analysis. The rates for wired pole attachments (*n* = 577) and wireless pole attachments (*n* = 402) have been analyzed.

**Table 4: Wired vs. Wireless Pole Attachment Rates**

<b>(Annual, \$)</b>	<b>Mean</b>	<b>Median</b>	<b>Std. Dev.</b>	<b>Range</b>
Wired Pole Attachments ( <i>n</i> = 577)	17.58	15.56	12.47	99.84
Wireless Pole Attachments ( <i>n</i> = 402)	505.56	56.60	939.30	6,299.77
<b>All Pole Attachments (<i>n</i> = 979)</b>	<b>217.96</b>	<b>21.08</b>	<b>647.72</b>	<b>6,299.84</b>

Wired pole attachments which typically occupy one foot of space on the poles, had a mean rate of \$17.58 and a median rate of \$15.56. Wireless pole attachments, which can occupy a variable amount of space on poles often ranging from one to ten feet, had a mean rate of \$505.56 and a median rate of \$56.60.

**2. Regulated vs. Unregulated Pole Attachment Rates**

Of the 979 cases of pole attachments, the agreements permit identification of the type of facility owner for 884 cases to determine whether they were regulated or unregulated. The descriptive statistics and independent *t*-test cover the 884 cases.

**a. Wired Pole Attachment Rates ( $n = 577$ )**

Of the 577 cases of wired pole attachments, the agreements did not permit identification of the type of facility owner for 95 cases to determine whether they were regulated or unregulated. The descriptive statistics and independent  $t$ -test cover only the other 482 cases.

**Table 5: Regulated vs. Unregulated Wired Pole Attachment Rates**

(Annual, \$)	Mean	Median	Std. Dev.	Range
Regulated ( $n = 254$ )	13.97	9.90	12.07	74.30
Unregulated ( $n = 228$ )	21.86	20.01	13.04	99.84
Unknown ( $n = 95$ )	16.96	15.78	8.40	43.62
<b>Wired Pole Attachments (<math>n = 577</math>)</b>	<b>17.58</b>	<b>15.56</b>	<b>12.47</b>	<b>99.84</b>

Table 5 shows that the overall mean rate for wired pole attachment is \$17.58 per year, and median rate is \$15.56 per year. The standard deviation is \$12.47.

Rates charged by unregulated pole owners had a higher mean than that of regulated pole owners (\$21.86 vs. \$13.97). The disparity between median rates was even higher (\$20.01 vs. \$9.90). Traditional  $t$ -tests indicate that this difference is statistically significant at the 99.999%+ level.

**b. Wireless Pole Attachment Rates ( $n = 402$ )**

The 402 agreements for wired pole attachments all identified the type of facility owner, which reveals whether the rate is a regulated or an unregulated rate. The descriptive statistics and independent  $t$ -test cover all 402 cases.

**Table 6: Regulated vs. Unregulated Wireless Pole Attachment Rates**

(Annual, \$)	Mean	Median	Std. Dev.	Range
Regulated ( $n = 255$ )	224.25	50.00	505.51	3,497.64
Unregulated ( $n = 147$ )	993.55	360.00	1,265.19	6,292.50
<b>Wireless Pole Attachments (<math>n = 402</math>)</b>	<b>505.56</b>	<b>56.60</b>	<b>939.30</b>	<b>6,299.77</b>

Compared to the wired pole attachment statistics above, the mean and median of wireless pole attachments were much higher than those of the wired pole attachments. Wireless pole attachment rates also exhibit significantly larger variation, as indicated by the larger standard deviations and extremely wide ranges charged by IOUs and municipalities and to a lesser extent public utilities.

The mean for unregulated rates was higher than the mean for regulated rates (\$993.55 vs. \$224.25). Again, the disparity between median rates was even larger (\$360.00 vs. \$50.00). Traditional  $t$ -tests indicate that this difference is statistically significant at the 99.999%+ level.

**c. Wired Pole Attachment Rates by Regulatory Authority (*n* = 482)**

Rates for wired pole attachments did not appear to differ significantly based on whether the rate was set by the federal or a state government. The results for these 482 cases are summarized in Table 7.

**Table 7: Regulated vs. Unregulated Wired Pole Attachment Rates by Types of Regulator**

<b>(Annual, \$)</b>	<b>Mean</b>	<b>Median</b>	<b>Std. Dev.</b>	<b>Range</b>
FCC Regulated ( <i>n</i> = 150)	14.11	9.21	12.75	74.20
FCC Unregulated ( <i>n</i> = 143)	20.37	20.00	7.75	36.64
<b>FCC Wired Pole Attachments (<i>n</i> = 293)</b>	<b>17.17</b>	<b>15.00</b>	<b>11.05</b>	<b>74.20</b>
State Regulated ( <i>n</i> = 104)	13.77	10.40	11.06	64.69
State Unregulated ( <i>n</i> = 85)	24.35	20.15	18.65	99.84
<b>State Wired Pole Attachments (<i>n</i> = 189)</b>	<b>18.53</b>	<b>15.81</b>	<b>15.82</b>	<b>99.84</b>

The rates generated through FCC and state regulation for wired pole attachments were generally similar. FCC regulation led to a mean rate of \$14.11, while state regulation led to a mean rate of \$13.77. Median rates were similar, with FCC regulation leading to a media rate of \$9.21 and state regulation leading to a median rate of \$10.40. These differences were not statistically significant.

Unregulated rates for wired pole attachments remain similar under both federal and state regulation. Looking first at means, FCC regulation led to a mean rate was \$20.37, while state regulation lead to a mean unregulated rate of \$24.35. Looking at medians, FCC regulation led to a median rate of \$20.00, while state regulation led to a median of \$20.15. Neither difference is statistically significant.

**d. Wireless Pole Attachment Rates by Regulatory Authority (*n* = 402)**

Rates for wireless pole attachments did not appear to differ significantly based on whether the rate was set by the federal or a state government. The results are summarized in Table 8.

**Table 8: Regulated vs. Unregulated Wireless Pole Attachment Rates by Types of Regulator**

<b>(Annual, \$)</b>	<b>Mean</b>	<b>Median</b>	<b>Std. Dev.</b>	<b>Range</b>
FCC Regulated ( <i>n</i> = 114)	82.26	29.64	239.89	1,499.77
FCC Unregulated ( <i>n</i> = 92)	997.32	695.00	1,134.84	6,292.50
<b>FCC Wireless Pole Attachments (<i>n</i> = 205)</b>	<b>493.23</b>	<b>33.08</b>	<b>902.35</b>	<b>6,299.77</b>
State Regulated ( <i>n</i> = 141)	339.05	50.00	622.48	3,497.87
State Unregulated ( <i>n</i> = 56)	969.98	300.00	1,461.17	5,985.00
<b>State Wireless Pole Attachments (<i>n</i> = 197)</b>	<b>518.40</b>	<b>75.00</b>	<b>978.41</b>	<b>5,997.75</b>

Mean unregulated rates were largely the same regardless of whether regulated pole attachments were subject federal (\$997.32) or state regulation (\$969.98). This is to be expected, given that these agreements were the result of arm’s length negotiation between the parties.

The same was not true for regulated rates. Mean rates for regulated wireless pole attachments were somewhat higher under state regulation (\$339.05) than under FCC regulation (\$82.26). The standard deviations were so large that these differences were not statistically significant.

**2. Pole Attachment Rates by Type of Facility Owner**

**a. Wired Pole Attachment Rates (*n* = 577)**

Wired pole attachment data were classified by types of facilities owners, and descriptive statistics were calculated for each type of owner (Table 9). Among the 577 wired pole attachment fee cases, 95 cases have no information on the type of facilities owner. The unknown fee data were obtained from a database containing the average costs that private telecommunications companies paid for the use of wired pole attachments.

**Table 9: Annual Wired Pole Attachment Rates by Types of Facility Owners**

<b>Type of Facility Owner</b>	<b>Mean</b>	<b>Median</b>	<b>Std. Dev.</b>	<b>Range</b>
IOUs ( <i>n</i> = 188)	16.18	10.72	12.51	74.20
Municipalities ( <i>n</i> = 78)	23.32	20.40	17.47	97.14
Cooperatives ( <i>n</i> = 133)	20.25	20.00	7.72	39.84
Public Utilities ( <i>n</i> = 17)	too small	too small	too small	too small
Private Companies ( <i>n</i> = 66)	7.69	5.30	7.89	56.22
Unknown ( <i>n</i> = 95)	16.96	15.78	8.40	43.62
<b>Wired Pole Attachments (<i>n</i> = 577)</b>	<b>17.58</b>	<b>15.56</b>	<b>12.47</b>	<b>99.84</b>

Means and medians of IOUs and private companies that are subject to the FCC regulation were lower than the overall mean and median, while those of municipal, cooperative, and public utilities were higher than the overall mean and median. Municipal government-owned public utilities show the highest rate among the different facilities owners.

**b. Wireless Pole Attachment Rates (*n* = 402)**

Wireless pole attachment data were classified by the types of facilities owner. Descriptive statistics (mean, median, standard deviation, and range) were calculated for each type of owners (Table 10).

**Table 10: Annual Wireless Pole Attachment Rates by Types of Facility Owners**

Type of Facility Owner	Mean	Median	Std. Dev.	Range
IOUs ( <i>n</i> = 212)	266.86	50.00	544.69	3,494.01
Municipalities ( <i>n</i> = 112)	1,225.07	900.00	1,338.79	6,285.00
Cooperatives ( <i>n</i> = 19)	too small	too small	too small	too small
Public Utilities ( <i>n</i> = 16)	too small	too small	too small	too small
Private Companies ( <i>n</i> = 43)	14.17	8.88	23.56	149.77
<b>Wireless Pole Attachment (<i>n</i> = 402)</b>	<b>505.56</b>	<b>56.60</b>	<b>939.30</b>	<b>6,299.77</b>

The wireless attachment data include 212 IOU cases, 112 municipality cases, 16 public utility cases, 43 private company cases, and 19 cooperative cases. However, we can see the mean (\$266.86) and median (\$50.00) of IOU-owned poles were lower than those for poles owned by municipalities (\$1,225.07 and \$900.00). The rates for private companies were much lower, but were based on a small number of observations.

**c. Wired Pole Attachment Rates by Regulatory Authority (*n* = 577)**

Among the 577 wired pole attachment cases, 482 rate cases identified the types of regulatory authority. 293 fee cases were FCC regulated wired pole attachment cases, while 189 fee cases were state regulated wired pole attachment cases (Table 11). The other 95 cases provided no information on which regulatory authority governed the attachment.

**Table 11: Annual Wired Pole Attachment Rates by Types of Regulatory Authority**

Type of Facility Owner	Mean	Median	Std. Dev.	Range
FCC_IOU ( <i>n</i> = 114)	16.20	10.44	12.96	74.20
FCC_Municipal ( <i>n</i> = 46)	20.07	20.00	8.51	34.14
FCC_Cooperative ( <i>n</i> = 90)	20.39	20.00	7.48	35.02
FCC_Public Utilities ( <i>n</i> = 7)	too small	too small	too small	too small
FCC_Private Companies ( <i>n</i> = 36)	7.48	4.62	9.52	55.47
<b>FCC Regulated Wired Pole Attachments (<i>n</i> = 293)</b>	<b>17.17</b>	<b>15.00</b>	<b>11.05</b>	<b>74.20</b>
State_IOU ( <i>n</i> = 74)	16.14	14.28	11.87	62.84
State_Municipal ( <i>n</i> = 32)	27.99	22.10	24.80	97.14
State_Cooperative ( <i>n</i> = 43)	19.98	20.00	8.28	39.84
State_Public Utilities ( <i>n</i> = 10)	too small	too small	too small	too small
State_Private Companies ( <i>n</i> = 30)	7.94	6.46	5.50	21.46
<b>State Regulated Wired Pole Attachments (<i>n</i> = 189)</b>	<b>18.53</b>	<b>15.81</b>	<b>15.82</b>	<b>99.84</b>

A comparison of the overall means and medians of each wired pole attachment rates reveals that the means and median rates of the types of facilities owners subject to regulation (IOUs and private companies) were lower than those exempt from regulation (municipalities, cooperatives, and public utilities) both FCC regulated and state regulated rates cases.

State regulated wired pole attachment rates (mean \$18.53, median \$15.81, and standard deviation \$15.82) were slightly higher than the FCC regulated wired pole attachment rates (mean \$17.17, median \$15.00, and standard deviation \$11.05). Especially, the standard deviation (\$15.82) and range (\$99.84) of the state regulated rates were higher than those (\$11.05 and \$74.20) of the FCC regulated rates, although both the standard deviations were relatively small compared with the means.

**d. Wireless Pole Attachment Rates by Regulatory Authority (n = 402)**

All 402 wireless pole attachment rate cases were classified by the type of regulatory authority. 205 cases were FCC regulated, while 197 fee cases were state regulated (Table 12).

**Table 12: Wireless Pole Attachment by Types of Regulatory Authority**

<b>Type of Facility Owner</b>	<b>Mean</b>	<b>Median</b>	<b>Std. Dev.</b>	<b>Range</b>
FCC_IOU (n = 85)	105.07	31.26	274.01	1,496.14
FCC_Municipal (n = 61)	1,391.02	1,300.00	1,163.69	6,268.00
FCC_Cooperative (n = 18)	too small	too small	too small	too small
FCC_Public Utilities (n = 13)	too small	too small	too small	too small
FCC_Private Companies (n = 29)	too small	too small	too small	too small
<b>FCC Regulated Wireless Pole Attachments (n = 205)</b>	<b>493.23</b>	<b>33.08</b>	<b>902.35</b>	<b>6,299.77</b>
State_IOU (n = 127)	375.15	60.00	645.99	3,490.07
State_Municipal (n = 51)	1,026.57	300.00	1,510.05	5,985.00
State_Cooperative (n = 2)	too small	too small	too small	too small
State_Public Utilities (n = 3)	too small	too small	too small	too small
State_Private Companies (n = 14)	too small	too small	too small	too small
<b>State Regulated Wireless Pole Attachments (n = 197)</b>	<b>518.40</b>	<b>75.00</b>	<b>978.41</b>	<b>5,997.75</b>

When comparing the wireless pole attachment rates in areas subject to federal vs. state regulation, pole attachment rates charged by IOUs were higher in areas subject to state regulation than in areas subject to FCC regulation. In contrast, rates charged by municipalities were higher in areas subject to federal regulation than they were in areas subject to state regulation.

**3. Pole Attachment Rates Based on Revenue Sharing (n = 58)**

In addition to the 1,146 flat rental fee cases above, there were 58 cases of the rental fee and (or) percentage of revenue share model among the 1,204 fee cases. Of these, 45 were from agreements with municipal pole owners, 1 is from agreements with IOUs, and 1 is from agreements with public utilities. The municipal city governments required telecommunications licensees to pay franchising fee and/or certain percentages of gross revenues (Table 13).

**Table 13: Revenue Share Cases**

Cases	Count	Model
\$500/year attachment fee OR 5% of revenue	1	Flat fee <b>OR</b>
\$500-\$19,500/year ROW fee OR 5% of revenue	12	% revenue share
\$60-\$1,300/year attachment fee AND 5% of revenue	18	Flat fee <b>AND</b> % revenue share
\$500-\$6,000/year ROW fee AND 5% of revenue	17	
\$60-\$80/year franchise fee AND 5% of revenue	2	
\$540/year attachment fee AND 3% of revenue	1	
5% of annual gross revenue	6	<b>ONLY</b> % revenue share
5% of video revenues & 3% of VoIP revenue	1	

The 58 revenue share cases were all for the utilities pole attachments, but there were also revenue share cases for non-utilities pole attachments. There were 20 revenue share cases for non-utilities poles (mostly streetlight poles) that charge \$400–\$15,000/year ROW fee or 5% of revenue.

#### 4. Statewide Pole Attachment Rates Set by State Legislation

In addition to the flat rental fee model and the revenue share model above, at least 13 states have passed legislation that would standardize the rates for attaching small cells to municipal poles and structures (Table 14). Fifteen additional states (AK, CA, CT, GA, HI, IL, ME, MI, MO, NE, NM, PA, VT, WA, WI) are considering similar legislation.

**Table 14: Small Cell ROW and Attachment Fee Legislation**

State	Annual ROW Fee	Annual Attachment Fee	Effective Date
AZ	Capped at \$50	Capped at \$50	8/9/2017
CO	Limited to direct cost	Limited to direct cost	7/1/2017
DE	Limited to direct cost	Limited to direct cost	8/31/2017
FL	\$0	Capped at \$150	7/1/2017
IA	Cost-based	Capped at FCC rate	7/1/2017
IN	Cost-based	Capped at \$50	4/30/2017
KS	Rate must be competitively neutral	Rate must be competitively neutral	10/1/2016
MN	Actual Cost	\$150 (+ \$25 maintenance fee)	5/30/2017
NC	Cost-based	Capped at \$50	9/1/2017
OH	\$0	Capped at \$200	4/1/2017
RI	\$0	Capped at \$150	9/27/2017
TX	\$250	\$20	9/1/2017
VA	\$0	Actual cost	7/1/2017

These statutes share a few common attributes. First, the state statutes streamline the process for permitting small wireless facilities to attach to municipal structures by establishing tight timelines. Second, the attachment fees are capped at the nondiscriminatory actual, direct, and

reasonable costs related to the use of structure. Compared to wireless attachment rates surveyed above, the state statutes are lower than the fees reflected in bilateral agreements.

**5. Access to Rights of Way**

Among all 1,204 observations, 110 observations were categorized as right-of-way (ROW) fee cases. Note that the data included cable franchise agreements that charge up to 5% of revenue and include ROW access. While important, because these agreements and rates cover more than ROW access, they were not included the following analysis.

Of the 110 agreements for ROW access, only one involved wired ROW access, with the other 109 being wireless ROW fee cases. In addition, 55 out of 109 wireless ROW fee cases were flat rental fee model cases, with 29 of the other cases being revenue share fee cases and 25 of the other cases being non-utilities fees. Thus, the 55 wireless ROW flat fee cases with regular charges were analyzed as follows:

**Table 15: Wireless Right of Way Rate Statistics**

<b>(Annual, \$)</b>	<b>Mean</b>	<b>Median</b>	<b>Std. Dev.</b>	<b>Range</b>
IOUs ( <i>n</i> = 19)	404.30	100.00	503.25	1,177.88
Municipalities ( <i>n</i> = 36)	592.36	300.00	729.41	3,580.00
<b>Wireless ROW Flat Fee (<i>n</i> = 55)</b>	<b>527.40</b>	<b>250.00</b>	<b>661.37</b>	<b>3,580.00</b>

The data are somewhat inconclusive. As an initial matter, the number of observations for ROW access agreements with IOUs is only 19. Given that, the mean rates for wireless ROW fees were higher for municipalities than for IOUs (\$592.36 vs. \$404.30). Similarly, the median rates for wireless ROW fees were higher for municipalities than for IOUs (\$300.00 vs. \$100.00). Municipal ROW rates also exhibited greater variability and covered a wider range.