

FCC Pole Attachment Rates: Rebutting Some of The Presumptions

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Range of Standards for Pricing Pole Attachments: FCC Currently Uses Cost-based Standard

- Direct comparables standard
 - ▶ Use pricing data that directly reflect utility's pole attachment services. Difficult to find market-based data.
- Indirect comparables standard
 - ▶ Value of attachments derived from valuations of "business" (i.e., revenues or profits) and translation of value into a price associated with the attachment.
- Cost-based standard
 - ▶ Determine prices based on costs. Assumes average cost reflects the cost of providing pole attachment services. Allows utility to recover embedded cost. However, attachments prices may not reflect "fair market value."
 - Prices below FMV will discourage investment in alternative attachment infrastructure.
 - Prices above FMV will make it difficult for utilities to compete with alternative providers.
 - ▶ This is the current FCC approach. And, rebutting some of the presumptions is the focus of this presentation!

The U.S. Supreme Court's Reversal of Court of Appeals' Decision* upheld the FCC's Authority to Prescribe Pole Attachment Rates

- The Court upheld that Section 224 of the Communications Act, as amended, gave the FCC authority to set rates for pole attachments to:
 - ▶ CATV companies that offer bundled CATV and internet services
 - ▶ Wireless service providers
 - ▶ As well as the previously understood scope of cable television providers and wireline telecommunications companies (*i.e.*, CLECs).
 - Joint use between electric utilities and ILECs generally fall under longer-established agreements.
- The FCC currently prescribes rates separately for attachments *by*
 - ▶ CATV companies and
 - ▶ telecommunications companies.

* National Cable & Telecommunications Association Inc. v. Gulf Power Co., et al.

FCC's Determination of Actual Pole Attachment Rates Will Continue to Be Cost based

- The FCC has adopted separate rate formulas for cable and telecom attachers. Both are based upon an allocation of pole-related costs

- ▶ FCC Cable Formula rate:

$$\text{Maximum Rate per Pole} = \frac{\text{Space Occupied}}{\text{Usable Space}} \times \frac{\text{Net Pole Investment}}{\text{Total Number of Poles}} \times 0.85 \times \text{Carrying Charge Rate}$$

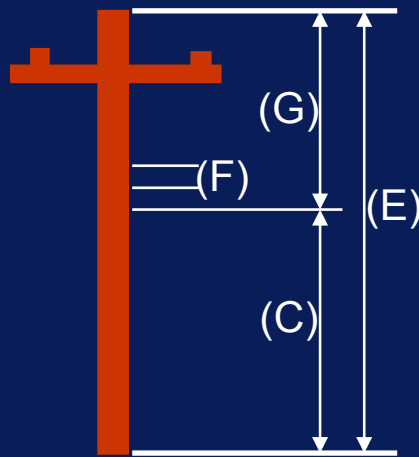
- ▶ FCC Telecom Formula:*

$$\text{Maximum Rate} = \left[\frac{\left(\frac{\text{Space Occupied}}{\text{Pole Height}} \right) + \left(\frac{2}{3} \times \frac{\text{Unusable Space}}{\text{No. of Attaching Entities}} \right)}{\text{Pole Height}} \right] \times \frac{\text{Net Pole Investment}}{\text{Number of Poles}} \times \left[\text{Carrying Charge Rate} \right] \times 0.85$$

*Note the Telecom 40% Rate = Cable rate + [(Telecom Rate – Cable Rate) x 0.40]

Cable Rates are Based on Usable Space, While Telecom Rates Are Based on Both Usable and Unusable Space

	Usable Space	Unusable Space Allocated Based on Number of Attaching Entities	Cost Data
Cable Rate	(F/G)		$\times A \times B$
Telecom Rate	$\{(F/G)$	$\times (G/E) + [2/3 \times (C/E) / D]\}$	$\times A \times B$



Legend
(A) Bare pole cost
(B) Carrying charges*
(C) Unusable space
(D) Avg # of Attaching Entities
(E) Total pole length*
(F) Space allocated to attaching entity
(G) Usable space
* Carrying charges = depreciation, administrative, maintenance and tax expenses, plus allowed return -- defined by FERC accounts (e.g., 35%)

Source of Pole Graphic and Legend: Filings before FCC; presentations at National Joint Use Educational Conference.

While the FCC's Formulas Are Theoretically Sound, Utilities Do Not Track Several Critical Data Elements (I)

- Utilities generally collect data on poles and towers through four types of systems:
 - ▶ FERC account data, which segment distribution and transmission assets and related O&M expenses from other fractional areas
 - ▶ Joint use billing systems, which identify the names and general locations of attaching entities
 - ▶ Pole and tower property records, which frequently identify the number of, types, and heights of poles and towers
 - ▶ Geographic information systems (GIS), which identify the specific location (frequently by map coordinates) of all or a subset of utility poles and towers.
- However, these systems do not capture three major pieces of data required in the FCC's formulas
 - ▶ *(1.) The number of attaching entities by pole is not tracked.* Overall, utilities track paying attaching entities but do not compile these data on a pole-by-pole basis. Further, many attachments by municipalities are allowed to attach to utility poles without paying an annual fee. The FCC requires that *all* attaching entities be included in the average.

While the FCC's Formulas Are Theoretically Sound, Utilities Do Not Track Several Critical Data Elements (II)

- ▶ (2.) *Attachment heights are generally not recorded.* Tracking the heights of attachments may not equate directly to lowest possible heights. Use of this data if available also requires understanding of engineering and standards and practices, as well as contractual requirements
- ▶ (3.) *Space needed (occupied space) per attachment is not tracked.*
- Those data gaps do not necessarily represent inappropriate practices by utilities, as absence of these data has not affected distribution and transmission operations and maintenance practices.
 - ▶ Additional data will inevitably be developed as utilities apply IT technologies and prepare for *The Distribution System of the Future*.

Incomplete Data Sets Concerning Utility Pole Characteristics Have Led the FCC to Adopt “Rebuttable Presumptions”

- FCC adopted “Rebuttable Presumptions” to expedite the process of developing averages and to avert excessive expense in research incurred by utilities.
 - ▶ For cable rate formulation the FCC adopted presumptions for: average pole height (37.5 feet), usable space (13.5 feet), and occupied space (1 foot).
 - ▶ For telecom rate formulation, the FCC adopted additional presumptions concerning the average number of attaching entities – 3 in rural areas (electric utility, ILEC, cable) and 5 in urban areas (electric utility, ILEC, cable, municipal).

Data Input Requirements for The FCC's Cable and Telecom Rates				
	Cable Rate	Telecom Rate	Frequently Tracked By Utility	Rebuttable Presumption
Average Pole Height (in feet)		X	X	37.5
Usable Space (in feet)	X	X		13.5
Unusable Space (in feet)		X		24.0
Number of Poles (in utility study area)	X	X	X	-
Space Occupied (in feet)	X	X		1
Number of Attaching Entities (average, per pole)		X		3 rural; 5 urban
FERC Accounting Data	X	X	X	-
Rate of Return	X	X	X	-

Pole Attachment Rates Are Highly Sensitive to Changes in Rebuttable Presumptions

- Space occupied is the primary driver in the “*Cable Formula*”
- Number of attaching entities is the primary driver in the “*Telecom Formula*”

Sensitivity of Pole Attachment Rates to Changes in Formula Input *			
Pole Attachment Rate Component	Change	Impact on Cable Rates	Impact on Telecom Rates
Space Occupied	Doubling of feet occupied	+100%	+16%
Usable Space	1 foot decrease	+8%	-
Unusable Space	1 foot increase	-	+4%
Number of Attaching Entities	1 entity reduction	-	+42% **

* Sensitivity analysis was based on assumed bare pole cost of approximately \$300 and carrying charge cost of approximately 32.5%. Assumptions based on benchmarks from several client utilities. These assumptions are not intended to represent industry survey data.

** Based on rural presumption (3 attaching entities). Impact will be considerably higher in cases in which reductions are of 2 or more in urban presumption (5 attaching entities)

Rebuttable Presumptions Fall Into Three Groups, Not All Are Easily Rebutted (I)

- (1) Space occupied - claimed to be outdated by some utilities, but change in this factor will require specific engineering studies and/or field surveys.
- (2) Usable space (above ground) - modification of any presumptions involving pole “space” characteristics will require both engineering studies and field surveys.
 - ▶ Attachers claim that the actual location (height) of a joint use attachment on a pole does not equate to its lowest possible location (which is the basis of determining above ground unusable space).
 - ▶ Utilities need to review engineering specifications, best practices and contractual arrangements with joint use attachers. At least one utility has informed us that joint use attachers are required to be attached at the lowest possible point. This means that, provided that joint users met contractual requirements, the lowest height of joint use attaching entities equals the lowest possible attachment height. In this case, a field survey of attachment heights can be used to determine above ground usable space.

Rebuttable Presumptions Fall Into Three Groups, Not All Are Easily Rebutted (II)

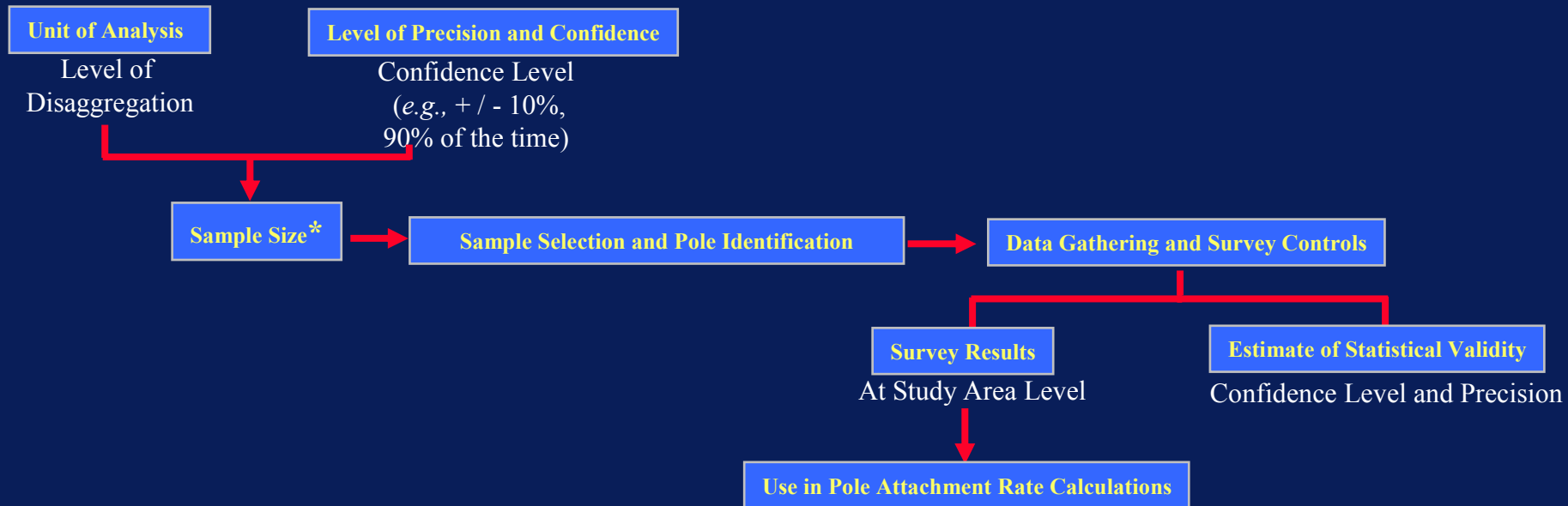
- (3) Average number of attaching entities per pole - utilities generally do not track this information but it can be readily determined using statistical sampling and survey techniques.

Rebuttable Presumptions	
Space Occupied	1.0 foot
Average Pole Height	37.5 feet
– Buried Unusable Space	6.0 feet
– Above Ground Unusable Space	18.0 feet
Usable Space	13.5 feet
Numbering of Attaching Entities	
Rural	3
Urban	5

A Well Designed Sample and a Well Executed Survey Will Provide Statistically Valid Estimates at the Study Area Level (I)

- The use of statistical data must follow the FCC's 47 CFR §1.363 (Introduction of Statistical Data).
- Sample design requires identifying the universe, the “study area” for developing rates, the appropriate sample size, and the sampling method. The “study area” is the sampling unit, stratum, or level of disaggregation desired. For example,
 - ▶ If a system-wide rate is required, a system-wide random sample is appropriate with sufficient sample size for the system.
 - ▶ If urban and rural rates are required, a stratified random sample is appropriate with sufficient sample size for urban areas and rural areas.
 - ▶ If county rates are required, a stratified random sample is appropriate with sufficient sample size for each county.
- Sample design also requires specifying confidence levels for the estimates and a level of precision (e.g., 90 percent confidence that estimate is within +/- 10 percent of mean). Generally, the sample size increases as:
 - ▶ The level of disaggregation increases (all else equal).
 - ▶ The confidence level or the precision increases (all else equal).

A Well Designed Sample and a Well Executed Survey Will Provide Statistically Valid Estimates at the Study Area Level (II)



$$\text{Sample Size} = Ns^2 / [(N B^2/t^2) + s^2]$$

where: **s** = the estimated standard deviation for mean number of attaching entities

N = the total number of poles in the study area

B = the allowed error or the bound on sampling error (e.g., .10)

t = the **t** statistic corresponding to the assumed confidence level (i.e., $t = 1.645$ for a 90 percent confidence level)

A Well Designed Sample and a Well Executed Survey Will Provide Statistically Valid Estimates at the Study Area Level (III)

- Although defining the universe may be straightforward (e.g., poles throughout the system), available sampling frames may have problems or biases. For example:
 - ▶ Joint use billing systems, which identify the names and general locations of attaching entities, may not provide exact pole identification. Also, some entities do not pay for using poles and are excluded from the billing system. Hence, drawing a sample by pole may not be possible.
 - ▶ Pole and tower property records, which frequently identify the number, types, and heights of poles and towers may be comprehensive but not “electronic.” Hence, drawing a sample may be difficult.
 - ▶ Geographic information systems (GIS), which identify the specific location of all or a subset of utility poles and towers may be the most useful sampling frame. However, these systems may over-represent certain types of poles.
- Any biases (such as overrepresentation of tall poles) must be accounted for in drawing the sample, weighting the survey results, and/or in data analysis.

The Sampling Unit for Pole Attachment Analysis Affects the Survey Sample Size and the Variance in Pole Attachment Rates (I)

- The FCC requires utility pole owners to calculate the average number of attaching entities by “service area” (when using utility-specific data rather than the FCC rebuttable presumptions).
 - ▶ Utilities with multiple “service areas” are required to classify each as either urban or rural for purposes of applying rebuttable presumptions.
 - ▶ The definition of service area is not completely clear. This definition may refer to operating districts or areas.
- Pole attachment rates can be developed (based on survey data) at a system-wide level, at very discrete county or franchise levels, or at a moderate level of aggregation such as urban and rural.
 - ▶ Typically, not all required data elements are available at a disaggregated level. For example, FERC accounting data is usually compiled on a system-wide basis, although SAP applications may produce disaggregate reports.

The Sampling Unit for Pole Attachment Analysis Affects the Survey Sample Size and the Variance in Pole Attachment Rates (II)

- Disaggregate analysis (*i.e.*, involving a large number of segments) requires a much larger sample size than system-wide analysis.
 - ▶ Sample size is driven by several factors, notably the anticipated variation concerning key variables (*i.e.*, number of attaching entities).
 - ▶ To achieve a confidence level of 90% with an accepted level of error of +/- 10% may require a sample size of:
 - ~ 200-250 for a system-wide average
 - ~ 400 for urban and rural averages
 - ~ 3,000 for 100 distinct segments

Disaggregate Analysis Will Likely Result in Variation In Number of Attaching Entities and Rates (I)

Composite Case Study*

Average Number of Attaching Entities	83 Segments	Urban/Rural Segments	System-Wide
1	1	—	—
1.0 - 1.5	23	—	—
1.5 - 2.0	36	1	1
2.0 - 2.5	12	1	—
2.5 - 3.0	11	—	—
3.0 - 3.5	—	—	—
3.5 - 4.0	—	—	—

Composite Case Study*

Calculated FCC Telecom Rate	83 Segments	Urban Segment	Rural Segment
more than 10% lower	16	10	11
System Wide Rate +/- 10%	18	5	21
more than 10% higher	49	17	19

* Results show impact of varying number of segments on number of attaching entities based on study of several (primarily) rural utilities. This composite case study is an example only and is not intended to report an industry-wide survey. FCC rebuttable presumptions for usable space are used.

Disaggregate Analysis Will Likely Result in Variation In Number of Attaching Entities and Rates (II)

- Identifying the appropriate “study area” for estimating pole attachments involves trade-offs:
 - ▶ Plus – The larger the number of study areas, the greater the rate specificity.
 - ▶ Plus – At minimum, development of utility-specific urban and rural rates are sensible.
 - ▶ Minuses:
 - The larger the number of study areas, the larger the required sample size.
 - Rate variation may raise concerns by joint use customers.
 - Rate variation may be difficult and expensive to implement (i.e., bill a customer not a “study area.”).

Survey based Estimates of Attaching Entities Can Impact the Pole Attachment Revenue Stream Significantly

- The difference in revenue streams (compared to rates developed using rebuttable presumptions) depends on several factors:
 - ▶ The difference between the FCC’s rebuttable presumptions and utility-specific results (e.g., number of attaching entities).
 - ▶ The number of pole attachment rate classes (e.g., urban vs. rural) and the variation.
 - ▶ The number of joint use telecom attaching entities and poles.

Composite Case Study Based on Utility Estimated Number of Attaching Entities*

Number of Poles	Number Telecom Joint-Use Pole Attachments	Change in Telecom Rates from Rebuttable Presumptions Number of Attachments	Annual Telecom Revenue Increase
1,000,000	100,000	75%	+\$800 k

* This composite case study is an example based on analysis developed for several utility clients, and is not intended to represent an industry-wide survey. The revenue analysis was based on a rounded average of 1 million distribution poles. The analysis is static and does not project growth in telecom attachments. Changes in rates are based on a system-wide average. Revenue increases assume the **full telecom rate**. Note that new telecom rates require a 5 year phase-in.

Whereas, Survey based Estimates of Usable Space Have Only Marginal Impact on Telecom and Cable Rates

- Usable space varies by pole height.

Usable space = Pole Height – lowest telecom attaching entity – 6 ft. in ground.

- The FCC rebuttable presumption for usable space is 13.5 feet. However, we provide a more precise estimate of usable space by combining utility record data and survey data:
 - ▶ Record data - the actual distribution of pole heights in the service area
 - ▶ Survey data - an estimate of usable space by pole height category

System-wide usable space = $\sum_i (\text{Usable Space}_i * \text{Fraction of Poles in Category}_i)$

where i = pole height category (30, 35, 40, etc.)

- *Brattle* survey results based in one utility service area resulted in usable space about 1.5 feet below FCC rebuttable presumption. A 1 foot decrease results in approximately:
 - ▶ an 8 percent increase in cable rates.
 - ▶ a 3 percent increase in telecom rates.

Very Small Changes in Estimates of the Number of Attaching Entities Can Have a *Major* Impact

- The FCC's rebuttable presumptions for attaching entities:
 - ▶ 5 attaching entities in urban areas
 - ▶ 3 attaching entities in rural areas
- However, survey data can provide a more precise estimate of the number of attaching entities. *Brattle* survey results in one utility service area resulted in estimates below the FCC presumptions. *Survey-based estimates*:
 - ▶ About 2 attaching entities system-wide.
 - ▶ About 2.5 attaching entities in urban areas
 - ▶ About 1.5 attaching entities in rural areas
- The impact on rates (and revenues) is substantial:
 - ▶ In rural areas, a 1 entity reduction increases telecom rates by 42 percent!
 - ▶ In urban areas, a 2 entity reduction increases telecom rates by 51 percent.

Challenges to the FCC's Approach to Determining Pole Attachment Rates Are Probably Not Over Yet

- Some of the FCC presumptions are worth rebutting. *In particular, the number of attaching entities!*
- Cross-subsidization and infant industry arguments still surface.
 - ▶ Lower than appropriate rates for pole attachments result in the customers of electric utilities (who are the beneficiaries of pole attachment revenues under rate-of-return ratemaking) subsidizing cable TV customers or their shareholders.
 - ▶ Arguments may also be raised concerning the FCC using pole attachment rates as a means to advance deployment of telecommunications infrastructure and introduce competition in local exchange.