

SUMMARY

Towers and monopoles are integral components for wireless networks that require height to reach the intended coverage area. The three structural options are a guyed tower, a self-supporting tower, or a monopole. Each has its own features and benefits and choosing the best option for a given site is important. If the net present value of future lease payments is greater than the total cost of erecting a tower then a tower is the best choice. If an existing tower is not located at a point that optimizes your network, then you may want to consider a new structure or leasing a rooftop.

STRUCTURAL OPTIONS

- Guyed tower
- Bracketed guyed tower
- Self-supporting tower
- Lightweight self-supporting tower
- Monopole

FEATURES AND BENEFITS

Each tower is different due to its geographic location and wind-loading capabilities. Here are some general guidelines for deciding which tower type is needed. When it's time to make a decision, be sure to use the online TESSCO Tower Calculator, found on www.tessco.com/go/towercalculator, to make the best choice to meet your needs.

- Guyed Tower
 - > Ideal for heights over 200 feet
 - > Requires significant installation footprint to accommodate guy anchors
 - > Has significant wind-loading capacity
- Bracketed Guyed Towers
 - > Ideal for requirements under 70 feet with moderate wind-loading capacity
 - > Minimal installation footprint with simple concrete foundation
 - > Must be bracketed to a building within 20 feet of its top
- Self-Supporting Tower
 - > Can be used for installations from 20 to 190 ft2
 - > Smaller installation footprint than a guyed tower, but larger than a bracketed or self-supporting guyed tower and monopole
 - > Often ships knocked down, reducing freight expenses but requiring on-site assembly
 - > Significant wind-loading capacity
- Lightweight Self-Supporting Tower
 - > Ideal for requirements under 96 feet with minimal wind-loading capacity
 - > Some options use a minimal installation footprint with simple concrete foundation

- Monopole
 - > Smallest footprint of all tower types
 - > Can be used for installations from 30 to 150 ft.
 - > Generally considered the most aesthetically pleasing structure
 - > In some jurisdictions, zoning permits are not required for installations under 60 feet
 - > Significant wind-loading capacity
 - > Requires crane for installation
 - > Higher freight costs because a full flatbed is required for delivery

REAL WORLD EXAMPLES


Situation: A VAR was installing a wireless broadband network in a newly developed 20-acre office park. The antennas were small and wind loading was not a consideration.

Problem: A rooftop installation would have been ideal; however, the VAR needs 24-hour access to each network hub. The office park owner is unwilling to provide it.

Solution: The VAR installed bracketed towers on the sides of two buildings without windows, where aesthetics were not a concern. He installed two monopoles where aesthetically pleasing structures were desired by the office park owner.

ADDITIONAL CONSIDERATIONS

- Where is the structure located or and what is the surface area of the equipment being mounted in order to calculate wind loading?
- For new structures, what is the soil type?
- What is the available footprint for the tower?
- How high do the antennas need to be mounted?
- What is the required antenna spacing?
- What are the antenna's sway limits? (Highly directional antennas, such as dishes, will have a tighter tolerance for sway than an omni or yagi.)
- How is the site to be grounded?
- Are aesthetics to be considered when choosing a tower?
- If mounting antennas to an existing structure, what type of tower is it?



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