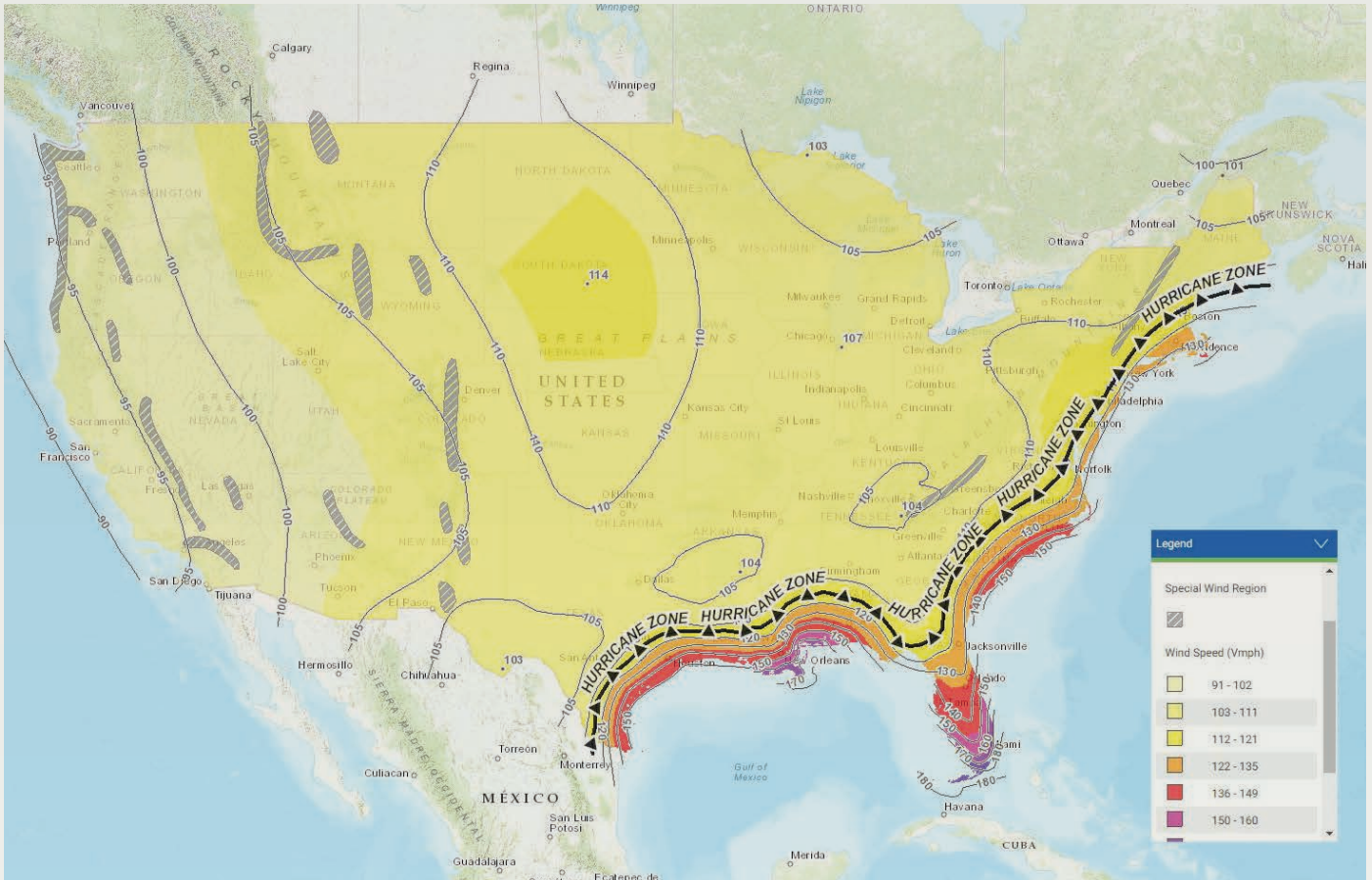


2016 AASHTO Wind Map



Notes

- Values are 3-second gust speeds in m/s (mph) at 10 m (32.8 ft) above ground for Exposure C category and are associated with an annual probability of 0.02 (50-year mean recurrence interval)
- The wind map is intended as a general guide. Always consult local authorities to determine maximum wind velocities, gusts, and special conditions for your installation.
- Hawaii has a 105 mph wind velocity.
- Puerto Rico has a 125 mph wind velocity.
- Caution must be taken when selecting wind velocity in special wind regions as indicated in the map above. These areas include:
 - Open land, oceans, or large bodies of water
 - Mountainous regions and gorges
 - Areas where extreme wind conditions such as hurricanes and tornadoes are common.
- The effective projected area (EPA) of the sum of all fixtures and arms must not exceed the maximum allowable pole EPA for the selected design wind speed.
- It is the responsibility of the specifier to correctly select a pole for a given wind load per the AASHTO standards.
- Pole foundations should be designed per the soil conditions and local codes. Structura does not offer foundation design recommendations.
- Consult the factory for luminaire arms greater than 24" in length and luminaires greater than 50 lbs.

maximum wind loading

Toka

Allowable Pole EPA

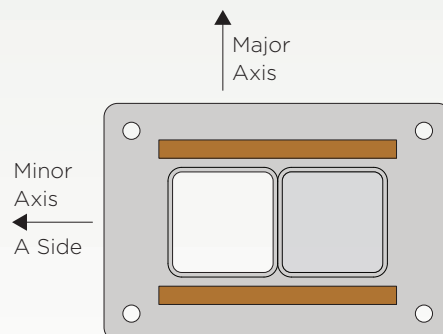
| Overall Pole Height (ft) | Pole Angle | LED Strip | Weight (Nom.) | 90mph | 100mph | 110mph | 120mph | 130mph | 140mph | 150mph |
|--------------------------|------------|-----------|---------------|-------|--------|--------|--------|--------|--------|--------|
| 12' | Straight | No | 338 | 84.4 | 68.0 | 55.9 | 46.6 | 39.4 | 33.7 | 29.1 |
| 12' | Straight | Yes | 362 | 73.3 | 58.9 | 48.2 | 40.0 | 33.7 | 28.7 | 24.7 |
| 12' | Tilted | No | 338 | 84.2 | 67.8 | 55.7 | 46.5 | 39.3 | 33.6 | 29.0 |
| 12' | Tilted | Yes | 362 | 73.0 | 58.6 | 48.0 | 39.9 | 33.6 | 28.6 | 24.6 |
| 14' | Straight | No | 376 | 61.1 | 49.1 | 40.1 | 33.3 | 28.1 | 23.9 | 20.5 |
| 14' | Straight | Yes | 404 | 54.4 | 43.6 | 35.7 | 29.6 | 24.9 | 21.1 | 18.1 |
| 14' | Tilted | No | 376 | 60.9 | 48.8 | 40.0 | 33.2 | 27.9 | 23.8 | 20.4 |
| 14' | Tilted | Yes | 404 | 54.2 | 43.4 | 35.5 | 29.4 | 24.7 | 21.0 | 18.0 |
| 16' | Straight | No | 414 | 45.9 | 36.6 | 29.8 | 24.6 | 20.6 | 17.4 | 14.8 |
| 16' | Straight | Yes | 446 | 40.8 | 32.5 | 26.4 | 21.7 | 18.1 | 15.3 | 12.9 |
| 16' | Tilted | No | 414 | 45.6 | 36.4 | 29.6 | 24.5 | 20.5 | 17.3 | 14.7 |
| 16' | Tilted | Yes | 446 | 40.5 | 32.3 | 26.2 | 21.6 | 18.0 | 15.1 | 12.8 |
| 18' | Straight | No | 452 | 35.3 | 28.0 | 22.6 | 18.5 | 15.3 | 12.8 | 10.8 |
| 18' | Straight | Yes | 488 | 31.3 | 24.7 | 19.9 | 16.3 | 13.4 | 11.1 | 9.3 |
| 18' | Tilted | No | 452 | 35.0 | 27.8 | 22.5 | 18.4 | 15.2 | 12.7 | 10.7 |
| 18' | Tilted | Yes | 488 | 31.0 | 24.5 | 19.7 | 16.1 | 13.3 | 11.0 | 9.2 |
| 20' | Straight | No | 490 | 27.7 | 21.8 | 17.4 | 14.1 | 11.5 | 9.5 | 7.8 |
| 20' | Straight | Yes | 530 | 24.4 | 19.1 | 15.2 | 12.2 | 9.9 | 8.1 | 6.6 |
| 20' | Tilted | No | 490 | 27.4 | 21.6 | 17.2 | 13.9 | 11.4 | 9.3 | 7.7 |
| 20' | Tilted | Yes | 530 | 24.1 | 18.9 | 15.0 | 12.1 | 9.8 | 8.0 | 6.5 |
| 22' | Straight | No | 528 | 21.9 | 17.1 | 13.5 | 10.7 | 8.6 | 6.9 | 5.5 |
| 22' | Straight | Yes | 572 | 19.2 | 14.9 | 11.6 | 9.2 | 7.3 | 5.8 | 4.5 |
| 22' | Tilted | No | 528 | 21.7 | 16.8 | 13.3 | 10.6 | 8.4 | 6.8 | 5.4 |
| 22' | Tilted | Yes | 572 | 18.9 | 14.6 | 11.5 | 9.0 | 7.1 | 5.7 | 4.4 |
| 24' | Straight | No | 566 | 17.5 | 13.4 | 10.4 | 8.1 | 6.3 | 4.8 | 3.7 |
| 24' | Straight | Yes | 614 | 15.2 | 11.5 | 8.8 | 6.8 | 5.2 | 3.9 | 2.9 |
| 24' | Tilted | No | 566 | 17.2 | 13.2 | 10.2 | 7.9 | 6.1 | 4.7 | 3.6 |
| 24' | Tilted | Yes | 614 | 14.9 | 11.3 | 8.7 | 6.6 | 5.0 | 3.8 | 2.8 |
| 26' | Straight | No | 604 | 13.9 | 10.5 | 7.9 | 5.9 | 4.4 | 3.2 | 2.2 |
| 26' | Straight | Yes | 656 | 12.0 | 8.9 | 6.6 | 4.8 | 3.5 | 2.4 | 1.5 |
| 26' | Tilted | No | 604 | 13.7 | 10.2 | 7.7 | 5.8 | 4.3 | 3.1 | 2.1 |
| 26' | Tilted | Yes | 656 | 11.7 | 8.7 | 6.4 | 4.7 | 3.3 | 2.3 | 1.4 |
| 28' | Straight | No | 642 | 11.1 | 8.1 | 5.8 | 4.2 | 2.8 | 1.8 | 1.0 |
| 28' | Straight | Yes | 698 | 9.4 | 6.7 | 4.7 | 3.2 | 2.0 | 1.1 | - |
| 28' | Tilted | No | 642 | 10.8 | 7.9 | 5.7 | 4.0 | 2.7 | 1.7 | 0.9 |
| 28' | Tilted | Yes | 698 | 9.1 | 6.5 | 4.5 | 3.1 | 1.9 | 1.0 | - |
| 30' | Straight | No | 680 | 8.7 | 6.1 | 4.1 | 2.7 | 1.5 | - | - |
| 30' | Straight | Yes | 740 | 7.1 | 4.6 | 2.8 | 1.4 | - | - | - |
| 30' | Tilted | No | 680 | 8.4 | 5.9 | 4.0 | 2.5 | 1.4 | - | - |
| 30' | Tilted | Yes | 740 | 6.9 | 4.4 | 2.6 | 1.2 | - | - | - |

maximum catenary loading

Toka

Allowable Horizontal Force, No LED Strip (kips)

| Overall Pole Height (ft) | Pole Angle | Axis | 90mph | 100mph | 110mph | 120mph | 130mph | 140mph | 150mph |
|--------------------------|------------|-------|-------|--------|--------|--------|--------|--------|--------|
| 12' | Straight | Minor | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.5 |
| 12' | Straight | Major | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| 12' | Tilted | Minor | 2.6 | 2.6 | 2.6 | 2.6 | 2.5 | 2.5 | 2.5 |
| 12' | Tilted | Major | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| 14' | Straight | Minor | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 |
| 14' | Straight | Major | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.0 | 1.0 |
| 14' | Tilted | Minor | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 |
| 14' | Tilted | Major | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.0 | 1.0 |
| 16' | Straight | Minor | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.6 |
| 16' | Straight | Major | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 |
| 16' | Tilted | Minor | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.6 | 1.6 |
| 16' | Tilted | Major | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 |
| 18' | Straight | Minor | 1.3 | 1.3 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| 18' | Straight | Major | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 |
| 18' | Tilted | Minor | 1.3 | 1.3 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| 18' | Tilted | Major | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 |
| 20' | Straight | Minor | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.8 |
| 20' | Straight | Major | 0.5 | 0.5 | - | - | - | - | - |
| 20' | Tilted | Minor | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.8 |
| 20' | Tilted | Major | 0.5 | 0.5 | - | - | - | - | - |
| 22' | Straight | Minor | 0.7 | 0.7 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 |
| 22' | Straight | Major | - | - | - | - | - | - | - |
| 22' | Tilted | Minor | 0.7 | 0.7 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 |
| 22' | Tilted | Major | - | - | - | - | - | - | - |
| 24' | Straight | Minor | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | - | - |
| 24' | Straight | Major | - | - | - | - | - | - | - |
| 24' | Tilted | Minor | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | - | - |
| 24' | Tilted | Major | - | - | - | - | - | - | - |



maximum catenary loading

Toka

Allowable Horizontal Force, With LED Strip (kips)

| Overall Pole Height (ft) | Pole Angle | Axis | 90mph | 100mph | 110mph | 120mph | 130mph | 140mph | 150mph |
|--------------------------|------------|-------|-------|--------|--------|--------|--------|--------|--------|
| 12' | Straight | Minor | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 |
| 12' | Straight | Major | 1.4 | 1.4 | 1.4 | 1.3 | 1.3 | 1.3 | 1.3 |
| 12' | Tilted | Minor | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.3 | 1.8 |
| 12' | Tilted | Major | 1.4 | 1.4 | 1.4 | 1.3 | 1.3 | 1.3 | 1.3 |
| 14' | Straight | Minor | 1.4 | 1.4 | 1.4 | 1.4 | 1.3 | 1.3 | 1.3 |
| 14' | Straight | Major | 1.0 | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 |
| 14' | Tilted | Minor | 1.4 | 1.4 | 1.4 | 1.4 | 1.3 | 1.3 | 1.3 |
| 14' | Tilted | Major | 1.0 | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 |
| 16' | Straight | Minor | 1.1 | 1.1 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 16' | Straight | Major | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.6 |
| 16' | Tilted | Minor | 1.1 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 16' | Tilted | Major | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.6 |
| 18' | Straight | Minor | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 |
| 18' | Straight | Major | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | - |
| 18' | Tilted | Minor | 0.8 | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 | 0.7 |
| 18' | Tilted | Major | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.5 | - |
| 20' | Straight | Minor | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 |
| 20' | Straight | Major | - | - | - | - | - | - | - |
| 20' | Tilted | Minor | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 |
| 20' | Tilted | Major | - | - | - | - | - | - | - |
| 22' | Straight | Minor | 0.5 | 0.5 | 0.5 | - | - | - | - |
| 22' | Straight | Major | - | - | - | - | - | - | - |
| 22' | Tilted | Minor | 0.5 | 0.5 | - | - | - | - | - |
| 22' | Tilted | Major | - | - | - | - | - | - | - |

Notes

- Horizontal forces based off of loading perpendicular to the pole face. Consult factor for catenary layouts that are angled from the surface.
- Allowable force based off of 12" maximum deflection on a 30' pole.