CPP WIND ENGINEERING CONSULTANTS

Site Specific Wind Study

A site-specific wind study determines the directional design wind speeds at a project location, replacing the all-direction, generalized wind maps in ASCE 7 – Minimum Design Loads and Associated Criteria for Buildings and Other Structures, which contour wind conditions over large geographic regions. Because wind loading is the dominant force driving solar structure design, a site-specific study often reveals lower, more accurate wind speeds that directly translate into optimized designs and significant cost savings. This customized analysis is especially valuable for large-scale solar projects in complex wind environments such as coastal, desert, or mountainous areas helping developers build smarter, safer, and more cost-effective systems.

METHODOLOGY

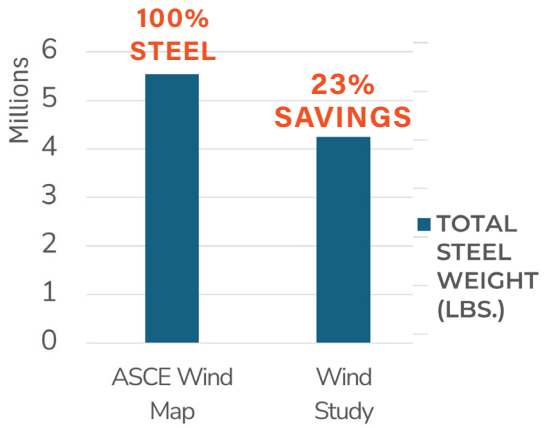
ASCE 7 recognizes that standard wind maps are not site-specific. Section 26.5.3 permits determination of local design wind speeds using approved statistical or simulation-based analyses. CPP conducts site-specific wind studies by evaluating long-term regional wind climate data from nearby anemometer stations, combined with terrain exposure and directional wind effects, to determine directional 3-second gust wind speeds from various storm events for a specified mean recurrence interval (MRI).

In hurricane-prone regions, CPP collaborates with Applied Research Associates (ARA) to perform Monte Carlo hurricane simulations, as permitted under ASCE 7. These simulations meet the Code's requirements for extreme-value statistical procedures and validated hurricane modeling, ensuring results that are both accurate and compliant.

The resulting combined probability from multiple storm types are used to establish the final design wind speed for the project.

KEY BENEFITS

- Reduced Structural Costs – Site-specific results often show lower design wind speeds than conservative code defaults, enabling more efficient designs and reducing steel, foundation, and tracker costs—typically saving 10–25% in total structure cost.
- Regulatory Compliance – All results comply with ASCE 7 provisions and are accepted by engineers of record and permitting authorities.



CONTACT CPP TO ENSURE THE EFFECTS OF WIND ARE INCORPORATED IN YOUR DESIGN

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