

# Existing infrastructure has never been under more scrutiny

Assessment of existing infrastructure is important for many reasons including the scheduling of retrofit, replacement, or resiliency studies. Extreme wind loads on the structures and lines are key contributors to such an assessment.

A challenge to this task is that a utility's asset stock has often been designed over several years, with varying design wind loads and criteria depending on age. While procedures available in guidelines or codes may make practical sense for the design of new structures, refinements can often be made to the wind loading provisions depending on the local wind characteristics along the length of the transmission line. These refinements can be used to further inform the decision-making process on prioritization of retrofit or replacement.

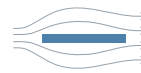
## SITE-SPECIFIC WIND HAZARD SERVICES

Detailed studies provide insight on extreme wind phenomena and their associated characteristics unique to a line or site. In contrast to code-based wind loading procedures, regional wind characteristics can vary significantly with direction. This is exceptionally important for transmission lines due to the loading contributions of the conductors and other wires. The location, orientation, and size of the transmission line are key aspects of this analysis. The results can shed light on segments of a transmission line which may be more at risk than others and provide a comparison to other lines in a service area in terms of wind hazard.



## STRUCTURE-SPECIFIC WIND TUNNEL TESTING SERVICES

Structure-specific studies provide detailed information on the aerodynamic behavior of towers and other structures. Different approaches to wind tunnel testing of transmission towers have been used in the past. These studies range from evaluation of the force coefficient (or shape factor) of various sections of a tower to the response of more unique and flexible towers such as river crossing structures. The aerodynamic behavior observed in the wind tunnel can be compared to that in wind loading procedures and efficiencies can be used where applicable. More refined wind loads are of particular benefit for commonly-used structures in a utility's asset stock.



## USING OUR EXPERTISE TO YOUR ADVANTAGE

At Cermak Peterka Petersen we are leading the way in wind engineering for existing infrastructure;

- Refine wind loads based on site-specific wind characteristics
- Provide structure-specific force coefficients, loads, and responses
- Make comparisons of wind loading criteria among different lines
- Identify wind loading conditions unique to a line or a site

When directing resources towards retrofits or replacements of existing infrastructure, prioritization makes sense. Cermak Peterka Petersen can help incorporate a more detailed approach to extreme wind loading to ensure maximum benefit from your investment. **Get in touch today to discuss how we can help.**