



# 2024 PSERC Summer Tutorial

## New Developments in the Application of Weather Information in Electric Grid Analysis

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While it is widely recognized that weather impacts electric grid operations and planning, historically weather information has only been implicitly included in common grid analysis packages. This tutorial provides new developments in the application of weather information in the power flow and the optimal power flow (OPF). Key issues addressed include the availability of weather information sufficient for power flow analysis, the mapping of weather information to electric grid components, a flexible and extensible modeling approach for relating weather values to the power flow models, and the visualization of the weather impacts on the results. Among the new developments considered are 1) the convenient integration of ERA5 results, which provides fifth generation reanalysis weather data covering the global on a 0.25 degree grid going back January 1940, 2) the easy availability of forecast data going out two weeks, 3) the use of weather information to determine historical renewable resource droughts. The tutorial shows how this information, along with present and longer-range results, can be directly utilized in the power flow and OPF including time-series analysis.

**JUNE 19, 2024**

REGISTRATION

**12:00 – 1:30 P.M. CT**

(10:00 - 12:30 P.M. PDT)

**Thomas J. Overbye** is a Professor and holder of the O'Donnell Foundation Chair III in the Department of Electrical and Computer Engineering at Texas A&M University (TAMU). Prior to joining TAMU he was a Professor at the University of Illinois at Urbana-Champaign. He received his BS, MS, and Ph.D. degrees in Electrical Engineering from the University of Wisconsin-Madison. Before starting his academic career he was employed with Madison Gas and Electric Company. He is the original developer of PowerWorld Simulator, a co-founder of PowerWorld Corporation, an author of a widely used Power System Analysis and Design book and is a member of the US National Academy of Engineering.

