

SMARTLINE-TCF™

Transmission Capacity Forecasting System

SMARTLINE-TCF eliminates the dispatch and operational limitations associated with fixed capacity transmission assets.

SMARTLINE-TCF is a high accuracy transmission line capacity forecasting system combining learned conductor behavior modeling and reliability-based rating and forecasting techniques to develop highly accurate forecasts. Capacity forecasts are provided in 1- to 48 hour increments with 99% or better accuracy, usable for operations and economic dispatch.

Firm, Flexible Forecasting

SMARTLINE-TCF provides firm line capacity forecasts from 1- to 48-hours ahead. For example, a 2-hour forecast means the line may be operated at the forecast level for the next two hours. These ratings may be updated with any desired frequency; e.g., a 24-hour forecast could be updated every 6 hours.

High Accuracy Forecasts

SMARTLINE-TCF forecasted ratings are $\geq 99\%$ accurate. These reliability-based ratings take into account learned line behavior, SMARTLINE-DLR dynamic line ratings, and real-time weather. The learned line behavior is combined with forecast weather parameters including wind, temperatures, solar radiation, ambient temperature, to develop exceptionally accurate line capacity forecasts.

The Logical Extension of SAR and AAR

The trend towards using seasonally adjusted ratings (SAR) and ambient adjusted ratings (AAR) reflect utility knowledge that traditional static line ratings are often, or usually, overly conservative. SMARTLINE-TCF ratings are the logical extension of this trend, by providing actual capacity ratings based on actual conductor behavior and forecasted weather conditions.

Grounded in SMARTLINE Next Generation DLR

The foundation of SMARTLINE-TCF are dynamic line ratings developed by the SMARTLINE-DLR system. SMARTLINE-DLR is a next generation dynamic line rating system that uniquely utilizes continuous direct measurements of conductor clearance to ground (via LiDAR), conductor temperature, current, and real-time weather data. SMARTLINE-DLR actively learns how conductor behavior varies with these parameters.



LINDSEY

Always Clearance Complaint

Unlike all other dynamic line rating techniques, SMARTLINE's use of real-time, LiDAR-based, measurements of conductor clearance to ground, result in ratings which ensure the line remains compliant to clearance limitations as well as adhering to all thermal limitations.

Actionable Ratings for Operations

SMARTLINE-TCF forecasts suitable for operations including economic dispatch, contingency operations, and energy trading.

Simple Installation with Cloud or Server Based Options

Installation of Lindsey TLM conductor monitors is simple and fast, and does not require a line outage.

Cloud-based or on-premises installation provide flexible deployment options.

Applications

SMARTLINE-TCF forecast ratings may be used for:

- Increasing economic value by maximizing power transfer opportunities;
- Enhancing flexibility and reducing uncertainty when operating the grid;
- Improving reliability by moving towards a dynamic rather than static capacity grid.
- Improving computation of available transfer capacity (ATC) or flowgate capabilities (AFC).

Operational Data

Forecasted line capacity ratings are included on the engineering dashboard, and are provided as discrete SCADA points to EMS.

Engineering Dashboard

Comprehensive display of measured line and weather parameters along with graphical representation of previously forecasted ratings aligned with the corresponding actual instantaneous line DLR.



Lindsey Manufacturing Co.
760 N Georgia Avenue
Azusa, CA 91702 USA

©2017 Lindsey Manufacturing Co. Lindsey, SMARTLINE, SMARTLINE-DLR, SMARTLINE-TCF, TLM, and TOUCHING HIGH VOLTAGE EVERYDAY are trademarks or registered trademarks of Lindsey Manufacturing Co.

Publication Number 11F-006 SMARTLINE-TCF • April 2017

LINDSEY

Touching High Voltage Every Day™

www.lindsey-usa.com