THE TRIPLE-C METHOD FOR CORRECTLY SIMULATING PV CLIPPING LOSS

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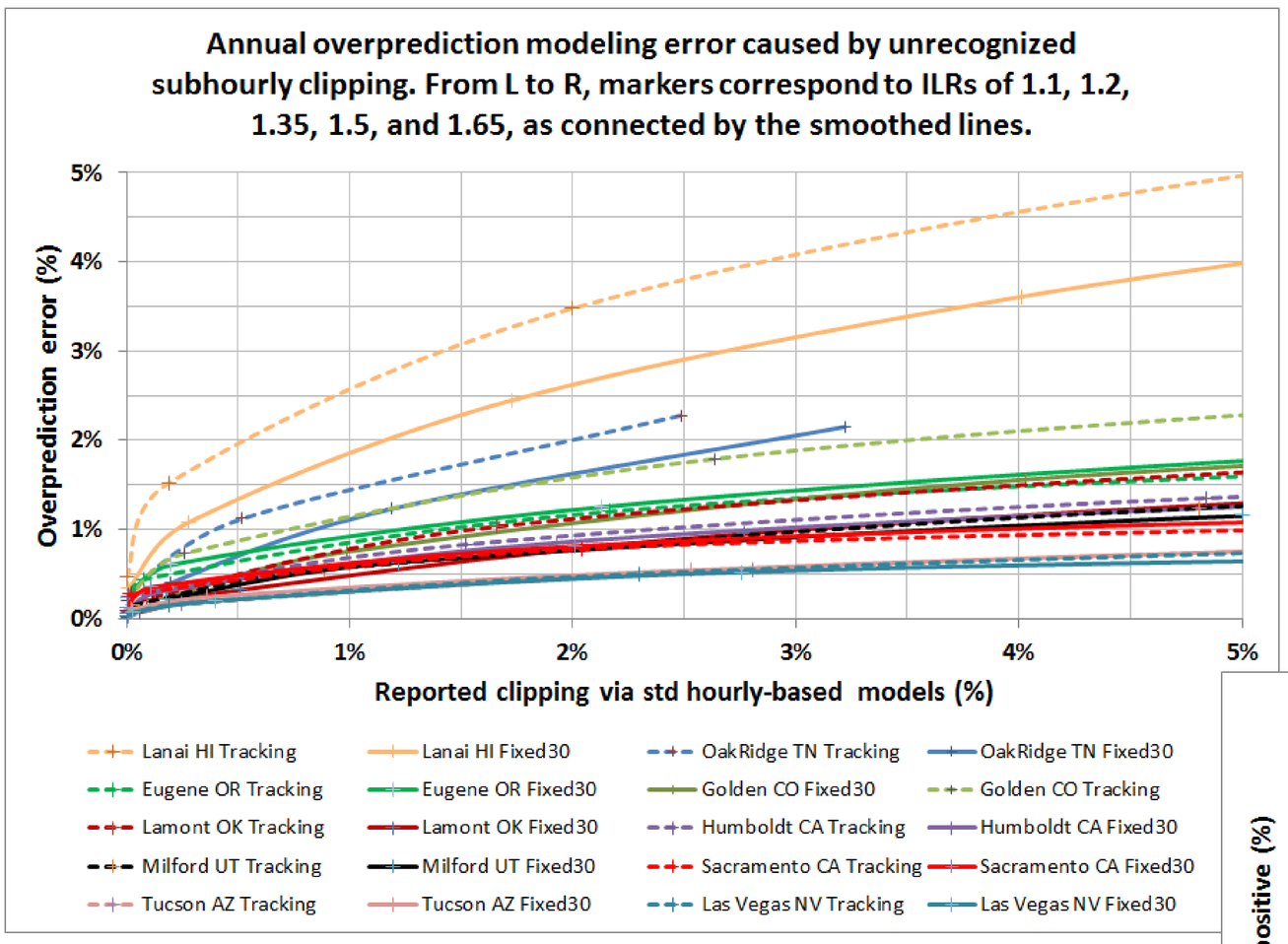
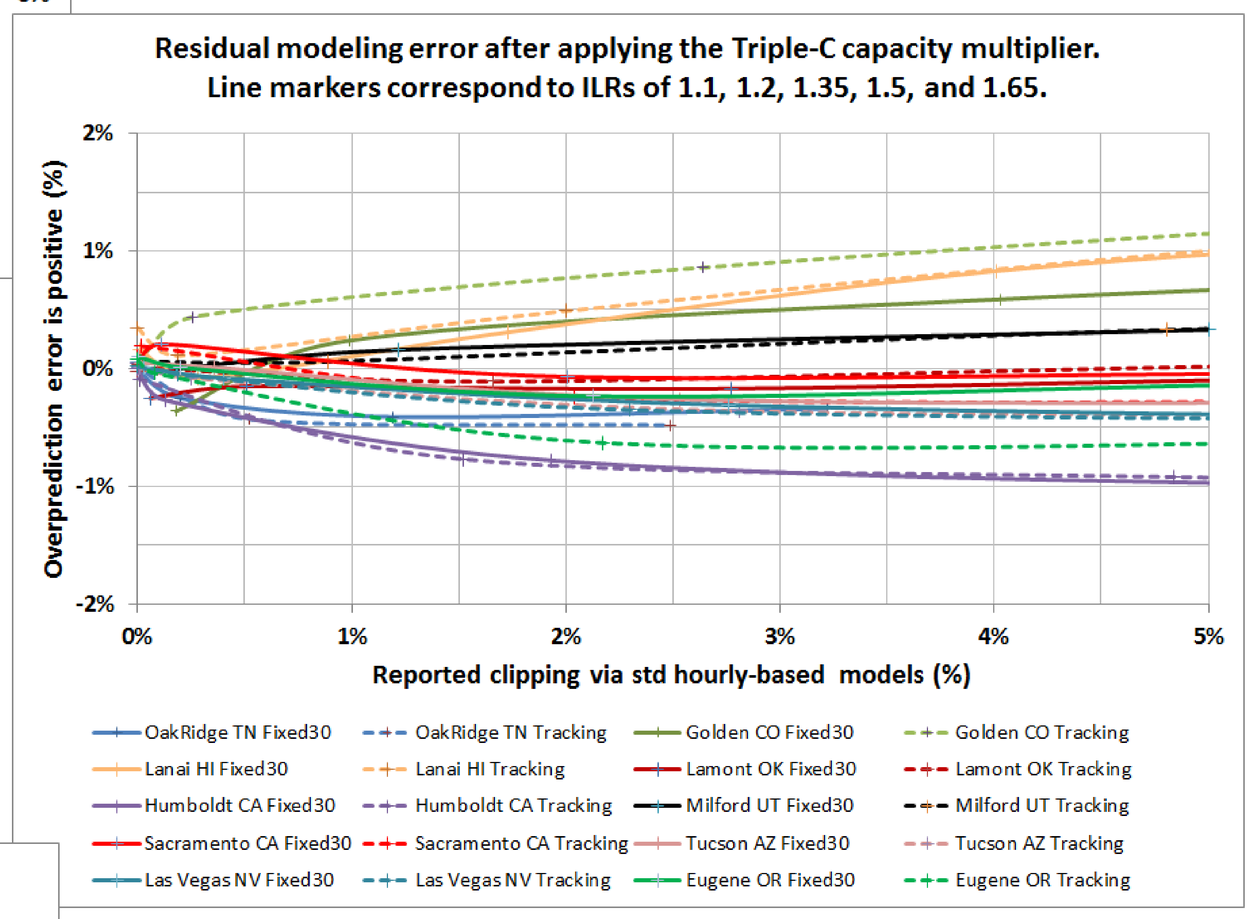
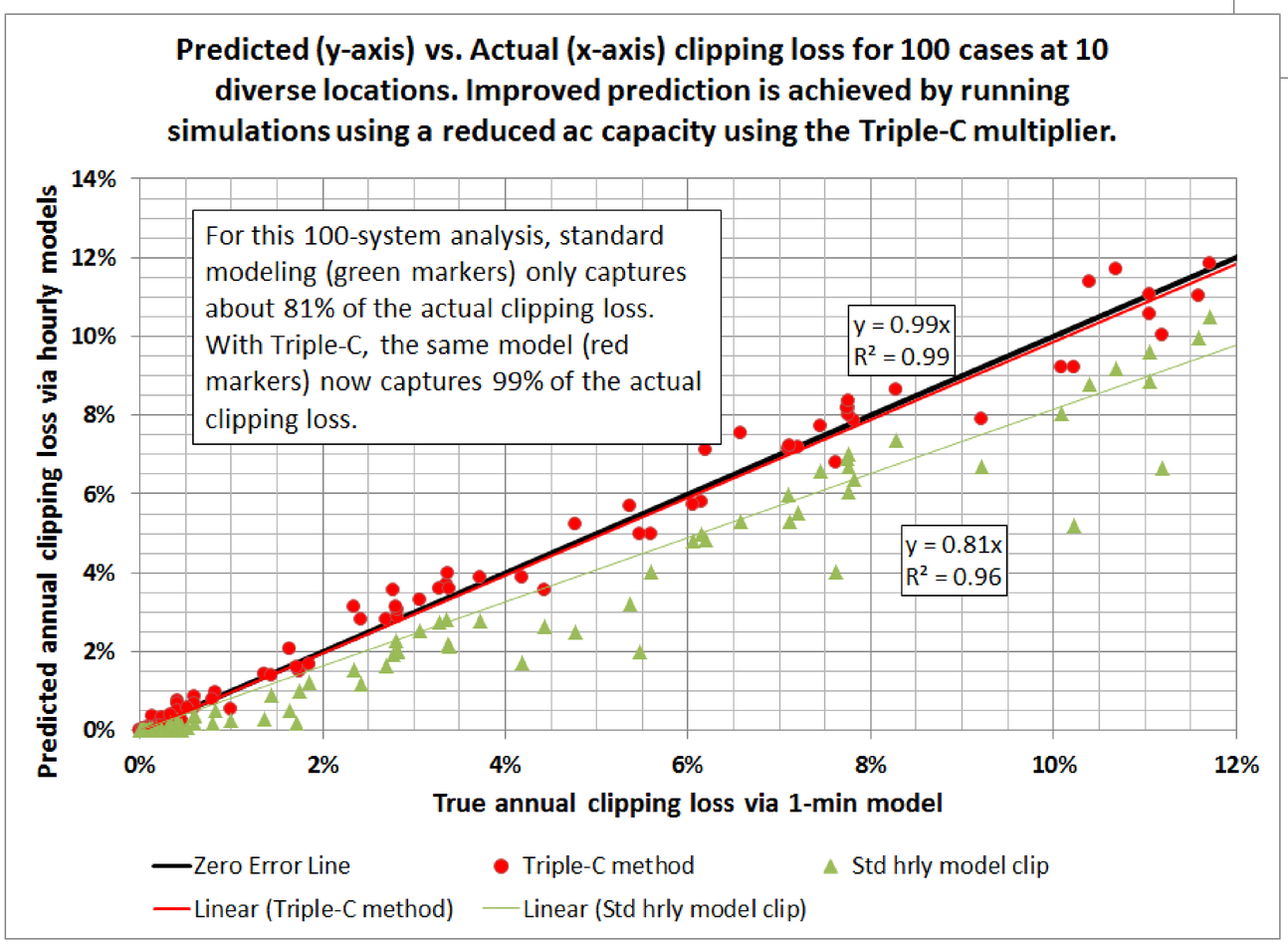
- ❑ **CLIPPING: IT'S WORSE THAN WE'VE THOUGHT**
- ❑ **HOURLY-BASED MODELS ARE "BLIND" TO SUB-HOURLY CLIPPING**
- ❑ **TRIPLE-C – *C*LOUDS, *C*APACITY, AND *C*LIPPING – "SEES" SUB-HOURLY CLIPPING**



<<< Hourly-based simulation models overlook the minute-by-minute clipping that happens on most modern PV systems. Annual bias errors of 0-4% are shown at left. The graph is based on comparing minutely vs. hourly modeled results for 100 fixed and tracking systems in 10 climates from the Tropics to Tennessee.

The Triple-C correlation reduces ac capacity by an amount that is based on inverter loading ratio (ILR) and site insolation characteristics so that any hourly model will more accurately capture clipping losses. With Triple-C, annual clipping errors are reduced to a -1% to +1% range. >>>





<<< Without the Triple-C correction, we found that conventional simulations only capture ≈81% of the true clipping losses. Using the Triple-C method, our production estimates capture >99% of it. The graph at left shows that for the 100 systems we analyzed, mean bias error (MBE) was reduced by 99% and mean absolute error (MAE) was reduced by 69%.

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