

Supplementary Table S1. Average performance comparison of all models across the eight sites under different forecast horizons.

Forecast horizon	Model	MAE (MW)	RMSE (MW)	R ²	nMAE (%)	nRMSE (%)
1h	CL-TCN-xLSTM	1.298	3.183	0.9500	2.09	5.02
	TCR-Reformer	1.656	3.812	0.9475	2.46	5.69
	2DMCNet	1.735	3.906	0.9436	2.67	5.90
	Inception-ResNet-GRU-Attention	1.726	3.427	0.9473	2.69	5.31
	QR-BiTCN-ECA	1.729	3.929	0.9433	2.64	5.92
	CNN-LSTM-Attention	1.697	3.668	0.9486	2.59	5.51
	Kmeans-TCN-LSTM-Attention	2.208	4.593	0.9103	3.45	7.14
2h	CL-TCN-xLSTM	1.690	3.970	0.9246	2.68	6.21
	TCR-Reformer	2.106	4.732	0.9216	3.12	6.97
	2DMCNet	2.066	4.641	0.9191	3.26	7.07
	Inception-ResNet-GRU-Attention	2.072	4.160	0.9256	3.20	6.33
	QR-BiTCN-ECA	2.308	5.062	0.9080	3.52	7.61
	CNN-LSTM-Attention	2.354	4.764	0.9164	3.56	7.09
	Kmeans-TCN-LSTM-Attention	2.786	5.526	0.8879	3.95	7.81
3h	CL-TCN-xLSTM	1.978	4.570	0.9008	3.13	7.13
	TCR-Reformer	2.443	5.359	0.8996	3.64	7.96
	2DMCNet	2.469	5.393	0.8938	3.82	8.17
	Inception-ResNet-GRU-Attention	2.408	4.729	0.9060	3.69	7.15
	QR-BiTCN-ECA	2.914	6.413	0.8565	4.39	9.55

	CNN-LSTM-Attention	3.045	5.856	0.8748	4.54	8.69
	Kmeans-TCN-LSTM-Attention	3.190	6.150	0.8576	4.73	9.02
4h	CL-TCN-xLSTM	2.210	5.017	0.8805	3.46	7.80
	TCR-Reformer	2.642	5.785	0.8829	3.95	8.60
	2DMCNet	2.853	6.131	0.8728	4.08	8.82
	Inception-ResNet-GRU-Attention	2.657	5.167	0.8871	4.10	7.86
	QR-BiTCN-ECA	3.493	7.712	0.7931	5.28	11.48
	CNN-LSTM-Attention	3.628	6.842	0.8281	5.47	10.20
	Kmeans-TCN-LSTM-Attention	3.672	6.917	0.8305	5.34	10.00