

Oncor Electric Delivery Distribution Loss Factor for 2025

General Information on Distribution Loss Factor:

The Distribution Loss Factor is a percent that ERCOT will use to determine distribution losses for each Distribution Service Provider. See ERCOT Protocols Section 13 (Transmission and Distribution Losses) for additional information, available here: <http://www.ercot.com/mktrules/nprotocols/current>.

According to this protocol, ERCOT will calculate Distribution Loss Factors for each Settlement Interval of the Operating Day for settlement purposes. Distribution Loss Factors will be calculated from the data provided by Distribution Service Providers using the following equation:

$$SILFi = F1 * (SIELi/AAL) + F2 + F3 / (SIELi / AAL)$$

Where:

i = interval (15 minutes)

SILFi = Settlement Interval Distribution Loss Factor

SIELi = Settlement Interval estimated ERCOT System Load

AAL = Annual Interval Average ERCOT System Load (15-minute basis)

F1, F2, F3 = Coefficients derived from regression analysis of the TDSP loss study results

AAL = Annual Total System MWh / (Number of settlement intervals in the year)

Typically = 365 days * 24 hrs * 4 intervals

2023 ERCOT AAL value for use in 2025 = 13,668 MWH

Assumptions Regarding Oncor's Energy and Demand Data:

1. Oncor system losses were calculated using 2023 calendar year energy and demand peak.
2. Assume AAL for Oncor corresponds to AAL for ERCOT.
3. Oncor peak is proportionately greater than the peak for ERCOT relative to AAL.

Ratio of Peak to AAL (Ratio of Peak to AAL for Oncor is not proportional to ERCOT):

<u>Oncor</u>	<u>ERCOT</u>
1.55770	1.53536

2023 Peak and AAL Values for use in 2025:

	<u>15 mins</u>	<u>1 hour</u>
Oncor Peak	7,754.25	31,017
Oncor AAL	4,978.00	19,912
ERCOT Peak	20,985.25	83,941
ERCOT AAL	13,668.00	54,672

Oncor peak is proportionately higher than Oncor AAL as compared to ERCOT peak vs ERCOT AAL, so % losses (and DLF) above AAL are increased an amount that is consistent with this higher loading at peak, so that when ERCOT hits peak, % losses will correspond to Oncor peak.

Methodology for Calculating the Distribution Loss Factor:

Oncor contracted Management Applications Consulting (MAC) to perform a distribution system loss analysis. This analysis provides a breakdown of Oncor's distribution system losses by voltage level (primary and secondary), including "no-load" and "load" losses for substation transformers, primary conductors, distribution transformers, and secondary conductors. The following equation was then used to calculate constants that are needed to calculate the total losses on Oncor's distribution system for various load levels, as shown in Attachment 1.

$$\text{Losses} = AX^2 + B$$

Where:

A = Constant

B = Constant (no-load losses)

X = Input to System (MW)

Constants A and B were then used to recalculate the loss equations by customer class (primary metered customers and secondary metered customers) at different load levels, as shown in Attachment 2. The resulting losses were plotted by customer class as a function of ERCOT AAL, as shown in Attachments 3 and 4.

Customer Coding and Distribution Loss Factor Coefficients (F1, F2 and F3):

For both primary and secondary customers, the F1, F2 and F3 coefficients were selected to provide a curve fit with the loss equations that were developed above. F1 impacts the right side of the curve, F2 impacts the middle/entire curve, and F3 impacts the left side of the curve. These coefficients were adjusted to get a curve that would fit in the most critical areas, as shown in Attachments 3 and 4.

Distribution customers that take service at secondary voltage are coded "A".

Distribution customers that take service at primary voltage are coded "B".

Oncor customers taking service at transmission level voltages have no distribution losses associated with their energy delivery. Therefore, each transmission ESI-ID account has been coded with a "T", and their losses are determined by ERCOT rules for transmission customers.

<u>For "A" Secondary Customers</u>	
F1 =	0.02350
F2 =	-0.00100
F3 =	0.01330

<u>For "B" Primary Customers</u>	
F1 =	0.01380
F2 =	-0.00048
F3 =	0.00345

Distribution Loss Factors:

<u>For "A" Secondary Customers</u> 2023 for use in 2025	
DLF at AAL	3.580%
DLF at ERCOT Peak	4.374%

<u>For "B" Primary Customers</u> 2023 for use in 2025	
DLF at AAL	1.677%
DLF at ERCOT Peak	2.295%

Attachment 1: System Loss Equations

$$\text{Losses} = AX^2 + B$$

Where:

A = Constant

B = Constant (no-load losses)

X = Input to System (MW)

Substation Transformers:

System input to substation transformers = 27,350 MW

B = Total no-load losses for substation transformers = 55.690 MW

Total load losses for substation transformers = 104.32 MW

Total losses for substation transformers = 160.010

$$160.01 = A * (27,350 * 27,350) + 55.690$$

$$A = 1.39461 * 10^{-7}$$

Primary Conductor:

System input to primary conductor = 26,290 MW

B = Total no-load losses for primary conductor = 11.550 MW

Total load losses for primary conductor = 367.220 MW

Total losses for primary conductor = 378.770

$$378.770 = A * (26,290 * 26,290) + 11.550$$

$$A = 5.31307 * 10^{-7}$$

Distribution Transformers:

System input to distribution transformers = 23,322 MW

B = Total no-load losses for distribution transformers = 178.490 MW

Total load losses for distribution transformers = 123.660 MW

Total losses for distribution transformers = 302.150

$$302.150 = A * (23,322 * 23,322) + 178.490$$

$$A = 2.27351 * 10^{-7}$$

Secondary Conductor and Services:

System input to secondary conductor and services = 23,020 MW

B = Total no-load losses for secondary conductor and services = 13.850 MW

Total load losses for secondary conductor and services = 143.430 MW

Total losses for secondary conductor and services = 157.280

$$157.280 = A * (23,020 * 23,020) + 13.850$$

$$A = 2.70663 * 10^{-7}$$

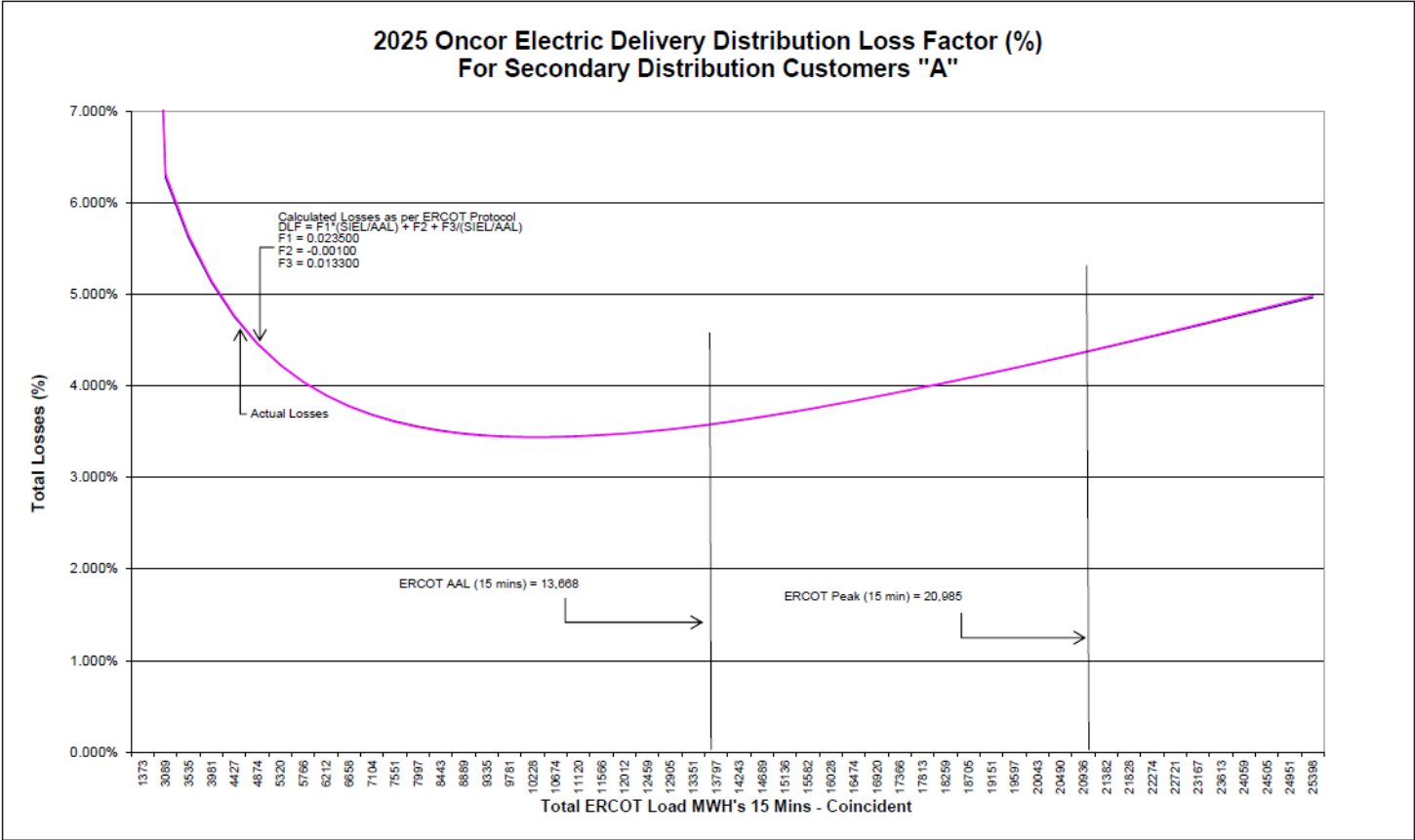
Attachment 2: Loss Calculations

															With Scaling		Using F1, F2 & F3 Coefficients		With Scaling		Adjustment for % Losses	
ERCOT Load (15 min)	ERCOT Load (1 hr)	Oncor Load (15 min)	Oncor Input To Sub Trfs (MW)	Sub Trf Losses (MW)	Input to Dist Sys (MW)	Primary Conductor Losses (MW)	Total Primary Losses	Total Primary Loss %	Input to Dist Trfs (MW)	Dist Trf Losses (MW)	2023 Input To Secondary (MW)	Secondary Conductor Losses (MW)	2023 Total Losses (MW)	2023 Total Losses (%)	2023 Total Losses (%)	2023 DLF Secondary	2023 DLF Primary	Total Primary Loss %	2023 Primary %	2023 Loss %	Sec	Pri
SIEL															0.0000%				0.0000%			
			50	55.69	-5.69	11.55	67.24	134.48%	-17.24	178.49	-195.73	13.86	259.59	519.182%	519.182%							
			135	55.69	79.31	11.55	67.25	49.81%	67.75	178.49	-110.74	13.85	259.59	192.299%	192.299%							
			500	55.72	444.28	11.65	67.38	13.49%	432.62	178.53	254.09	13.87	259.78	51.956%	51.956%							
			1000	55.83	944.17	12.02	67.85	6.79%	932.15	178.69	753.46	14.00	260.54	26.054%	26.054%							
686	2746	250	1000	56.25	1943.75	13.56	68.81	3.40%	1930.19	179.34	1750.86	14.68	263.82	13.191%	13.191%	13.378%	3.525%	3.400%	3.400%			
1373	5491	1	500	56.51	4441.49	12.03	68.55	1.70%	4419.45	182.93	4236.52	18.71	282.18	6.271%	6.271%	6.316%	1.790%	1.790%	1.790%			
3089	12356	2	1125	56.39	5090.61	25.32	84.71	1.64%	5065.29	184.32	4880.97	20.30	289.33	5.618%	5.618%	5.650%	1.643%	1.643%	1.643%			
3535	14140	3	1287.5	56.38	5739.62	29.05	89.43	1.54%	5710.57	185.90	5524.66	22.11	297.45	5.128%	5.128%	5.151%	1.538%	1.542%	1.542%			
3981	15625	4	1450	56.50	6149	33.23	94.73	1.47%	6167.00	187.67	6009.42	24.15	306.54	4.753%	4.753%	4.767%	1.464%	1.469%	1.469%			
4427	17710	5	1612.5	56.72	6707.28	100.58	100.58	1.42%	6699.42	199.63	6809.79	26.40	316.61	4.459%	4.459%	4.468%	1.412%	1.417%	1.417%			
4674	19494	6	1775	56.07	7885.93	42.94	107.00	1.38%	7843.00	191.77	7451.23	28.88	327.65	4.228%	4.228%	4.232%	1.381%	1.381%	1.381%			
5320	21279	7	1937.5	56.53	8334.47	48.46	113.99	1.36%	8286.01	194.10	8091.91	31.57	339.66	4.044%	4.044%	4.044%	1.352%	1.357%	1.357%			
5766	23094	8	2100	56.25	8982.89	54.49	121.53	1.34%	8928.47	196.61	8731.85	34.49	352.64	3.897%	3.897%	3.894%	1.343%	1.343%	1.343%			
6212	24848	9	2262.5	56.81	9631.19	60.83	129.65	1.34%	9570.35	199.31	9371.04	37.62	366.58	3.779%	3.779%	3.779%	1.332%	1.337%	1.337%			
6658	26633	10	2425	56.50	10279.37	70.63	138.32	1.34%	10211.68	202.20	10009.48	40.97	381.49	3.686%	3.686%	3.686%	1.333%	1.333%	1.333%			
7104	28418	11	2587.5	56.50	10927.44	74.99	147.56	1.34%	10852.44	205.27	10647.18	44.53	397.36	3.612%	3.612%	3.608%	1.341%	1.341%	1.341%			
7551	30202	12	2750	56.50	11650	74.62	157.36	1.35%	11492.64	208.52	11294.12	48.31	414.19	3.556%	3.556%	3.548%	1.345%	1.351%	1.351%			
7997	31987	13	2912.5	56.50	12223.21	76.79	167.72	1.36%	12132.28	211.95	11920.33	52.31	431.68	3.512%	3.512%	3.505%	1.364%	1.364%	1.364%			
8443	33772	14	3075	56.50	12870.92	99.57	178.84	1.38%	12771.36	215.57	12555.78	56.52	450.74	3.481%	3.481%	3.473%	1.380%	1.379%	1.379%			
8889	35557	15	3237.5	56.50	13518.52	108.65	190.13	1.40%	13409.87	219.37	13190.50	60.94	470.45	3.459%	3.459%	3.452%	1.398%	1.398%	1.398%			
9335	37341	16	3400	56.50	14165.99	118.17	202.18	1.42%	14047.82	223.36	13824.46	65.58	491.11	3.446%	3.446%	3.440%	1.422%	1.419%	1.419%			
9781	39126	17	3562.5	56.50	14813.35	128.14	214.79	1.44%	14685.21	227.52	14457.69	70.43	512.73	3.441%	3.441%	3.436%	1.446%	1.442%	1.442%			
10228	40811	18	3725	56.50	15490.18	138.55	227.96	1.47%	15322.94	231.86	15090.18	75.48	536.31	3.442%	3.442%	3.438%	1.471%	1.468%	1.468%			
10674	42695	19	3887.5	56.50	16107.71	149.40	241.69	1.49%	15958.31	236.39	15721.92	80.75	558.83	3.450%	3.450%	3.447%	1.499%	1.492%	1.492%			
11120	44480	20	4050	56.50	16754.71	160.70	255.98	1.52%	16594.02	241.09	16352.92	86.23	583.31	3.462%	3.462%	3.460%	1.527%	1.519%	1.519%			
11566	46265	21	4212.5	56.50	17401.60	172.44	270.84	1.55%	17229.16	245.98	16983.18	91.92	608.73	3.478%	3.478%	3.479%	1.557%	1.548%	1.548%			
12012	48049	22	4375	56.50	18048.37	184.62	286.25	1.58%	17863.75	251.04	17612.71	97.81	635.10	3.496%	3.496%	3.501%	1.588%	1.577%	1.577%			
12459	49834	23	4537.5	56.50	18695.02	197.24	302.22	1.61%	18497.78	256.28	18241.49	103.91	662.42	3.524%	3.524%	3.527%	1.620%	1.608%	1.608%			
12905	51619	24	4700	56.50	19341.55	210.31	317.65	1.64%	19131.24	261.70	18898.54	110.22	690.08	3.551%	3.551%	3.557%	1.653%	1.639%	1.639%			
13351	53403	25	4862.5	56.50	19987.96	223.62	335.85	1.67%	19794.15	267.30	19496.85	116.74	719.99	3.582%	3.582%	3.590%	1.687%	1.673%	1.673%	0	0	
13797	55188	26	5025	56.50	20634.26	237.77	353.50	1.70%	20396.50	273.07	20123.43	123.48	750.03	3.615%	3.615%	3.625%	1.721%	1.704%	1.704%	2	2	
14243	56973	27	5187.5	56.50	21280.44	252.16	371.71	1.74%	21028.29	279.02	20749.26	130.38	781.12	3.650%	3.650%	3.663%	1.756%	1.737%	1.737%	3	3	
14689	58758	28	5350	56.50	21926.50	266.99	390.48	1.77%	21659.52	285.15	21374.37	137.51	813.14	3.688%	3.688%	3.703%	1.792%	1.771%	1.771%	4	4	
15136	60542	29	5512.5	56.50	22572.45	282.26	409.81	1.81%	22290.19	291.45	21968.74	144.84	846.10	3.727%	3.727%	3.746%	1.828%	1.805%	1.805%	5	5	
15582	62327	30	5675	56.50	23218.27	297.97	429.70	1.84%	22920.30	297.93	22622.37	152.37	879.99	3.769%	3.769%	3.790%	1.864%	1.840%	1.840%	6	6	
16028	64112	31	5837.5	56.50	23863.98	314.12	450.14	1.89%	23549.86	304.58	23245.28	160.10	914.62	3.812%	3.812%	3.834%	1.902%	1.876%	1.876%	7	7	
16474	65896	32	6000	56.50	24509.57	330.72	471.15	1.91%	24178.86	311.40	23897.45	168.03	950.28	3.856%	3.856%	3.882%	1.941%	1.920%	1.920%	8	8	
16920	67681	33	6162.5	56.50	25155.04	347.75	492.71	1.95%	24807.29	318.40	24488.89	176.17	987.28	3.902%	3.902%	3.933%	1.977%	1.947%	1.947%	9	9	
17366	69466	34	6325	56.50	25800.40	365.22	514.82	1.98%	25435.18	325.57	25109.60	184.50	1024.90	3.950%	3.950%	3.983%	2.015%	1.984%	1.984%	10	10	
17813	71250	35	6487.5	56.50	26445.63	383.13	537.50	2.02%	26062.50	332.92	25729.58	193.03	1063.45	4.003%	4.003%	4.035%	2.054%	2.021%	2.021%	11	11	
18259	73035	36	6650	56.50	27090.75	401.48	560.73	2.06%	26689.27	340.44	26348.83	201.76	1102.93	4.047%	4.047%	4.088%	2.093%	2.058%	2.058%	12	12	
18705	74820	37	6812.5	56.50	27736.75	420.27	584.52	2.10%	27315.48	348.12	26967.36	210.69	1143.33	4.098%	4.098%	4.142%	2.132%	2.095%	2.095%	13	13	
19151	76604	38	6975	56.50	28380.63	439.50	608.86	2.13%	27941.14	356.98	27595.15	219.81	1184.66	4.149%	4.149%	4.197%	2.171%	2.133%	2.133%	14	14	
19597	78389	39	7137.5	56.50	29025.40	459.18	633.78	2.17%	28566.24	364.02	28202.22	229.13	1226.90	4.202%	4.202%	4.253%	2.211%	2.170%	2.170%	15	15	
20043	80174	40	7300	56.50	29670.05	479.27	659.22	2.21%	29190.78	372.22	28818.57	238.64	1270.07	4.256%	4.256%	4.310%	2.251%	2.208%	2.208%	16	16	
20490	81959	41	7462.5	56.50	30314.58	499.81	685.23	2.25%	29814.77	380.59	29434.18	248.34	1314.16	4.309%	4.309%	4.368%	2.291%	2.247%	2.247%	17	17	
20936	83743	42	7625	56.50	30958.99	520.79	711.80	2.29%	30438.20	389.13	30049.07	258.24	1359.17	4.363%	4.363%	4.420%	2.331%	2.285%	2.285%	18	18	
21382	85528	43	7787.5	56.50	31603.28	542.20	738.92	2.32%	31061.08	397.84	30683.24	268.34	1405.09	4.416%	4.416%	4.474%	2.372%	2.324%	2.324%	19	19	
21828	87313	44	7950	56.50	32247.46	564.05	766.60	2.36%	31683.40	406.71	31278.69	278.62	1451.93	4.468%	4.468%	4.526%	2.413%	2.362%	2.362%	20	20	
22274	89097	45	8112.5	56.50	32891.52	586.34	794.83	2.40%	32305.17	415.76	31899.41	289.10	1499.69	4.519%	4.519%	4.577%	2.454%	2.401%	2.401%	21	21	
22721	90882	46	8275	56.50	33535.46	609.07	823.62	2.44%	32926.38	424.97	32501.41	299.76	1548.35	4.568%	4.568%	4.626%	2.495%	2.440%	2.440%	22	22	
23167	92667	47	8437.5	56.50	34179.28	632.23	852.96	2.48%	33547.04	434.35	33112.69	310.62	1597.93	4.616%	4.616%	4.674%	2.536%	2.480%	2.480%	23	23	
23613	94451	48	8600	56.50	34822.98	655.83	882.85	2.52%	34167.15													

Attachment 3: Loss Plots for Secondary Customers "A"

For Secondary Distribution Customers "A"
Secondary Coefficients

F1 =	0.023500	right
F2 =	-0.001000	middle
F3 =	0.013300	left



Attachment 4: Loss Plots for Primary Customers “B”

For Primary Distribution Customers "B"

Primary Coefficients		
F1 =	0.013800	right
F2 =	-0.000480	middle
F3 =	0.003450	left

