The data and parameters related to the simulation are given in the following:

Simulation parameters and data

Basic value:
$S_{base} = 1000\ kVA$

Modified IEEE 14-bus information:
Line data:

Distributed generators data:

Number	Type	$P^{Max}\ (kW)$	$P^{Min}(kW)$	$Q^{Max}(kVAr)$	$Q^{Min}(kVAr)$	a	b	c
#1	Generator	300	0	100	-80	0.0430292	20	0
#2	Generator	200	0	150	-100	0.35	20	0

Network data:

From	To	R	X	Current Capacity (Amp)
1	2	0.0922	0.0477	500
2	3	0.493	0.2511	500
3	4	0.366	0.1864	500
4	5	0.3811	0.1941	500
4	7	0.819	0.707	500
6	13	0.1872	0.6188	500
7	8	1.7114	1.2351	500
7	9	1.03	0.74	500
9	10	1.04	0.74	500
10	11	0.1966	0.065	500
13	12	0.3744	0.1238	500
13	14	1.468	1.155	500

Time (hour)	Demands' Zones (#bus) (pu)						
	#2	#5	#9	#10	#11	#12	#13
#1	0.05	0.01	0.01	0.01	0.0073	0.01	0.001
#2	0.05	0.01	0.01	0.01	0.0073	0.01	0.02
#3	0.2	0.014	0.014	0.014	0.0077	0.014	0.02
#4	0.2	0.014	0.024	0.014	0.0077	0.014	0.01
#5	0.2	0.014	0.044	0.014	0.0077	0.014	0.01
#6	0.3	0.017	0.067	0.017	0.0080	0.017	0.011
#7	0.3	0.017	0.077	0.017	0.0080	0.017	0.017
#8	0.18	0.022	0.122	0.022	0.0085	0.122	0.022

#9	0.18	0.022	0.122	0.022	0.0085	0.122	0.122
#10	0.25	0.035	0.135	0.035	0.0095	0.235	0.135
#11	0.3	0.042	0.152	0.052	0.023	0.252	0.152
#12	0.3193	0.048	0.158	0.158	0.034	0.358	0.158
#13	0.3	0.0468	0.160	0.160	0.035	0.360	0.16
#14	0.285	0.053	0.1982	0.2909	0.0353	0.3616	0.2364
#15	0.28	0.050	0.150	0.250	0.030	0.35	0.15
#16	0.27	0.04	0.140	0.240	0.025	0.34	0.14
#17	0.245	0.015	0.115	0.215	0.010	0.315	0.115
#18	0.225	0.009	0.109	0.029	0.0081	0.090	0.109
#19	0.12	0.008	0.108	0.028	0.0070	0.081	0.108
#20	0.115	0.006	0.01	0.016	0.0055	0.070	0.080
#21	0.115	0.006	0.01	0.006	0.0081	0.006	0.065
#22	0.11	0.005	0.006	0.006	0.0081	0.0055	0.054
#23	0.109	0.005	0.006	0.006	0.0053	0.006	0.043
#24	0.1	0.003	0.003	0.003	0.002	0.001	0.008

Time (#hour)	Reactive loads zones (#bus) (pu)						
	#2	#5	#9	#10	#11	#12	#13
#1	0.001	0.04	0.001	0.003	0.012	0.003	0.002
#2	0.01	0.05	0.001	0.005	0.012	0.004	0.002
#3	0.01	0.05	0.0015	0.005	0.012	0.005	0.002
#4	0.01	0.05	0.0010	0.005	0.012	0.005	0.003
#5	0.02	0.10	0.0070	0.001	0.021	0.01	0.0031
#6	0.02	0.16	0.0070	0.001	0.020	0.01	0.0040
#7	0.14	0.16	0.0070	0.001	0.020	0.01	0.0040
#8	0.15	0.17	0.02	0.0002	0.023	0.02	0.0043
#9	0.15	0.17	0.02	0.002	0.021	0.02	0.0071
#10	0.15	0.18	0.05	0.014	0.035	0.05	0.015
#11	0.16	0.16	0.06	0.017	0.035	0.012	0.015
#12	0.15	0.16	0.05	0.025	0.035	0.0162	0.015
#13	0.184	0.19	0.062	0.0378	0.0382	0.015	0.019
#14	0.15	0.193	0.015	0.015	0.05	0.01	0.015
#15	0.17	0.15	0.015	0.015	0.05	0.01	0.009
#16	0.15	0.10	0.015	0.04	0.05	0.005	0.007
#17	0.15	0.10	0.008	0.04	0.05	0.005	0.007
#18	0.15	0.10	0.008	0.04	0.05	0.005	0.005
#19	0.04	0.12	0.004	0.003	0.002	0.004	0.002
#20	0.04	0.12	0.004	0.003	0.002	0.002	0.002
#21	0.04	0.04	0.004	0.003	0.002	0.002	0.002
#22	0.03	0.02	0.002	0.003	0.002	0.002	0.002
#23	0.02	0.01	0.002	0.003	0.002	0.002	0.002
#24	0.001	0.04	0.001	0.003	0.012	0.003	0.0012

Description	Lifetime (year)	Rating (kVA)
Substation Transformer	15	2000

Electrical system parameters:

Parameter	***Value***
V^{max}	1.06 (p.u.)
V^{min}	0.94(p.u.)
$V_{1-slack}$	1.06(p.u.)
$\delta_{1-slack}$	0°(degree)

Traffic network's characteristics:

The OD traffic demands data can be found in references [1] and [2]. The Edmonton traffic demand dataset captures hourly traffic flows over one year and is divided into training (75%), validation (15%), and testing sets (10%) for forecasting performance assessment. The data provided below pertains to a typical day.

[1] City of Edmonton Traffic Flow Map. Accessed: Dec. 1, 2022. [Online]. Available: Downtown Area | Traffic Flow Map.

[2] Traffic Volumes, Edmonton [Online]. Available: Traffic Volumes and Turning Movements | City of Edmonton.

Actual traffic flows of the OD pairs for a typical day				
Time (hour)	OD #1	OD #2	OD #3	OD #4
#1	70	31	12	9
#2	63	25	8	4
#3	55	22	9	6
#4	44	18	9	4
#5	40	18	9	4
#6	45	17	9	5
#7	54	21	8	8
#8	59	18	11	6
#9	70	23	20	7
#10	88	24	25	12
#11	108	34	32	13
#12	113	36	26	10
#13	103	26	30	14
#14	114	49	43	15
#15	135	36	32	17
#16	102	36	31	16
#17	105	35	29	14
#18	113	41	28	11

#19	144	54	31	15
#20	112	40	36	23
#21	102	33	43	17
#22	96	36	29	22
#23	96	34	23	18
#24	86	37	19	14

Structure of the Traffic network:

Road #1	From #node	1	Road #15	From #node	7
	To #node	2		To #node	16
Road #2	From #node	2	Road #16	From #node	8
	To #node	3		To #node	17
Road #3	From #node	3	Road #17	From #node	9
	To #node	4		To #node	18
Road #4	From #node	1	Road #18	From #node	10
	To #node	5		To #node	11
Road #5	From #node	2	Road #19	From #node	10
	To #node	6		To #node	12
Road #6	From #node	3	Road #20	From #node	11
	To #node	7		To #node	13
Road #7	From #node	4	Road #21	From #node	12
	To #node	8		To #node	13
Road #8	From #node	4	Road #22	From #node	12
	To #node	9		To #node	14
Road #9	From #node	5	Road #23	From #node	13
	To #node	6		To #node	15
Road #10	From #node	6	Road #24	From #node	14
	To #node	7		To #node	15
Road #11	From #node	7	Road #25	From #node	15
	To #node	8		To #node	16
Road #12	From #node	8	Road #26	From #node	16
	To #node	9		To #node	17
Road #13	From #node	5	Road #27	From #node	17
	To #node	10		To #node	18
Road #14	From #node	6			
	To #node	11			

Roads' Non congested Travel times coefficients													
Road #1	Road #2	Road #3	Road #4	Road #5	Road #6	Road #7	Road #8	Road #9	Road #10	Road #11	Road #12	Road #13	Road #14
4.2	3.36	5.04	3.96	7.64	7.08	3.48	7.08	9.68	2.04	3.72	4.2	6.04	6.88
Road #15	Road #16	Road #17	Road #18	Road #19	Road #20	Road #21	Road #22	Road #23	Road #24	Road #25	Road #26	Road #27	
3.48	5.44	4.56	1.44	3.72	9.84	5.44	7.68	3.48	3.6	7.6	4.2	8.96	

The traffic flows for each OD pair in a 24-node, 37 roads traffic network (a typical day):

OD PAIR TRAFFIC FLOWS OF THE 24-NODE TRAFFIC NETWORK

Time (Hour)	#OD pairs									
	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
#1	50	40	80	10	40	20	10	70	20	50
#2	60	30	80	10	40	20	30	70	20	50
#3	60	40	60	10	50	30	30	70	20	60
#4	70	40	60	20	60	40	30	70	40	60
#5	170	40	110	20	70	50	30	80	40	60
#6	400	140	340	50	110	80	50	110	70	230
#7	510	150	370	160	320	220	70	350	70	330
#8	580	150	370	150	340	220	180	380	290	420
#9	300	100	180	130	310	200	140	430	260	410
#10	250	90	180	140	190	90	140	230	170	290
#11	280	90	80	40	100	90	90	240	110	300
#12	250	100	250	100	150	150	100	240	120	300
#13	450	110	230	120	120	150	90	300	200	310
#14	480	110	200	150	160	170	110	310	220	300
#15	480	120	210	150	150	180	110	320	220	300
#16	600	200	450	210	400	350	220	450	300	500
#17	610	200	450	210	400	300	220	430	320	550
#18	610	220	450	200	400	300	200	430	350	550
#19	500	190	300	150	300	240	160	370	200	380
#20	460	100	240	100	220	160	110	310	120	220
#21	270	90	170	70	190	130	80	240	50	100
#22	150	70	130	60	130	100	50	160	30	50
#23	90	50	100	30	60	40	20	90	20	50
#24	50	40	90	10	50	40	20	70	20	60