I. Nomenclature

1. Indices

- a - Index of links
- ω - Index of O-D pairs
- k - Index of paths
- i, j - Indices of nodes in the transportation network or buses in the power network

2. Sets in the Transportation Network

- T_N - Set of nodes in the transportation network
- T_A - Set of links in the transportation network
- $\Lambda^{(|N| \times |A|)}$ - Node-link incidence matrix
- Q - Set of travel demand
- K - Set of paths in the network
- W - Set of travel demand O-D pairs
- $\mathcal{L}$ - Set of battery levels for EVs
- $I^{|W|}$ - Binary matrix indicating the origins and destinations of O-D pairs
- Δ - Set of vehicle routes

3. Variables in the Transportation Network

- x_a - Number of vehicles on link a
- f_k^w - Number of vehicles assigned to path k for O-D pair w
- $F_i^{w_e l_0}$ - Charging demand at node i for vehicles in O-D pair w_e with initial battery level l_0
- $L_i^{w_e l_0}$ - Battery level at node i for vehicles in O-D pair w_e with initial battery level l_0
- v_a^w - Binary variable indicating whether O-D pair w traverses link a

4. Parameters in the Transportation Network

- δ_{ak}^w - Binary parameter indicating whether path k includes link a
- c_a - Maximum vehicle capacity of link a
- q_w - Travel demand for O-D pair w
- λ_i - Electricity price at charging station i
- c_i - Time required to charge per unit battery level at station i
- d_a - Length of link a
- ω - Energy consumption rate of EVs
- M, N - Sufficiently large constants

5. Sets in the Power Network

- P_N - Set of buses
- P_L - Set of transmission lines
- $\Gamma^{-1}(j)$ - Set of predecessor buses of bus j
- $\Gamma(j)$ - Set of successor buses of bus j
- G - Set of generation buses

6. Variables in the Power Network

- p_j^g - Power generation at bus j
- p_j^{dc} - Power demand for EV charging at bus j
- p_{ij} - Power flow on transmission line ij
- θ_i - Phase angle at bus i

7. Parameters in the Power Network

- B_{ij} - Susceptance of transmission line ij
- $p_{ij}^{\max}$ - Maximum power capacity of transmission line ij
- $p_j^{\max}$ - Maximum power generation at bus j
- $p_j^{\min}$ - Minimum power generation at bus j

II. Numeric example of data

TABLE I
SIOUX-FALLS NETWORK DATA

ID	O	D	FFT	Capacity
1	1	2	6	25900.2
2	1	3	4	23403.47
3	2	1	6	25900.2
4	2	6	5	4958.181
5	3	1	4	23403.47
6	3	4	4	17110.52
7	3	12	4	23403.47
8	4	3	4	17110.52
9	4	5	2	17782.79
10	4	11	6	4908.827
11	5	4	2	17782.79
12	5	6	4	4947.995
13	5	9	5	10000
14	6	2	5	4958.181
15	6	5	4	4947.995
16	6	8	2	4898.588
17	7	8	3	7841.811
18	7	18	2	23403.47
19	8	6	2	4898.588
20	8	7	3	7841.811
21	8	9	10	5050.193
22	8	16	5	5045.823
23	9	5	5	10000
24	9	8	10	5050.193
25	9	10	3	13915.79
26	10	9	3	13915.79
27	10	11	5	10000
28	10	15	6	13512
29	10	16	4	4854.918
30	10	17	8	4993.511
31	11	4	6	4908.827
32	11	10	5	10000
33	11	12	6	4908.827
34	11	14	4	4876.508
35	12	3	4	23403.47
36	12	11	6	4908.827
37	12	13	3	25900.2
38	13	12	3	25900.2
39	13	24	4	5091.256
40	14	11	4	4876.508
41	14	15	5	5127.526
42	14	23	4	4924.791
43	15	10	6	13512
44	15	14	5	5127.526
45	15	19	3	14564.75
46	15	22	3	9599.181
47	16	8	5	5045.823
48	16	10	4	4854.918
49	16	17	2	5229.91
50	16	18	3	19679.9
51	17	10	8	4993.511
52	17	16	2	5229.91
53	17	19	2	4823.951
54	18	7	2	23403.47
55	18	16	3	19679.9
56	18	20	4	23403.47
57	19	15	3	14564.75
58	19	17	2	4823.951
59	19	20	4	5002.608
60	20	18	4	23403.47
61	20	19	4	5002.608
62	20	21	6	5059.912
63	20	22	5	5075.697
64	21	20	6	5059.912
65	21	22	2	5229.91
66	21	24	3	4885.358
67	22	15	3	9599.181
68	22	20	5	5075.697
69	22	21	2	5229.91
70	22	23	4	5000
71	23	14	4	4924.791
72	23	22	4	5000
73	23	24	2	5078.508
74	24	13	4	5091.256
75	24	21	3	4885.358
76	24	23	2	5078.508

TABLE II
O-D TRAVEL DEMAND

O	D	E	Demand
1	20	9	500
1	20	12	500
20	1	9	500
20	1	12	500
2	13	9	500
2	13	12	500
13	2	9	500
13	2	12	500
3	15	9	500
15	3	9	500
4	18	9	500
4	18	12	500
18	4	9	500
6	14	9	500
14	6	9	500
14	6	12	500
12	7	12	500
12	7	9	500
1	20	15	500
20	1	15	500
2	13	15	500
13	2	15	500
3	15	15	500
15	3	15	500
4	18	15	500
18	4	15	500
10	13	9	500
13	10	9	500
10	13	15	500
13	10	15	500
10	20	9	500
10	20	9	500
20	10	15	500
20	10	15	500
8	14	9	500
8	14	9	500
14	8	15	500

TABLE III
GENERATOR DATA

Bus	Pg	Vg	mBase	Status	Pmax	Pmin
1	23.54	1	100	1	64	0
2	60.97	1	100	1	64	0
22	21.59	1	100	1	40	0
27	26.91	1	100	1	44	0
23	19.2	1	100	1	24	0
13	37	1	100	1	32	0

TABLE IV
COST DATA FOR GENERATOR

Model	Startup Cost	Shutdown Cost	n	C2	C1	C0
2	0	0	3	0.2	70	0
2	0	0	3	0.175	61.25	0
2	0	0	3	0.625	35	0
2	0	0	3	0.0834	113.75	0
2	0	0	3	0.25	105	0
2	0	0	3	0.25	105	0

* The 2 in the model column indicates that the polynomial cost model is used