In order to facilitate comparison, the author also solves the case of 10 times by using hill-climbing algorithm, genetic algorithm, and simulated annealing algorithm. Here are the results of various algorithms.

Table 1 Calculation results of the hill-climbing algorithm

N	TD(km)	N_i	C_t(s)	TT(min)	TEC(kWh)
1	233.29	349	1.5	157.58	714.61
2	236.99	276	1.6	173.78	718.15
3	235.45	312	1.65	231.88	724.92
4	239.38	330	1.67	176.32	723.31
5	235.44	340	1.69	233.15	718.65
6	226.22	303	1.67	211.57	724.82
7	232.84	371	1.68	168.95	723.01
8	228.14	300	1.7	179.46	706.63
9	240.83	315	1.7	209.72	731.2
10	227.62	354	1.74	157.39	731.6

Table 2 Calculation results of the genetic algorithm

N	TD(km)	N_i	C_t(s)	TT(min)	TEC(kWh)
1	212.48	267	2.07	152.71	735.7
2	217.54	294	2.88	176.52	772.01
3	210.88	276	2.6	155.42	763.9
4	254.72	260	2.5	177.02	625.79
5	227.67	264	2.1	176.42	797.4
6	215.83	255	2.77	187.52	771.1
7	212.86	243	2.6	133.62	721.2
8	254.68	277	2.5	178.61	625.2
9	225.97	330	2.14	155.32	648.9
10	193.47	224	2.24	132.72	695.7

Table 3 Calculation results of the simulated annealing algorithm

N	TD(km)	N_i	C_t(s)	TT(min)	TEC(kWh)
1	185.15	287	1.73	126.61	706.87
2	194.63	303	1.75	126.14	708.57
3	222.4	330	1.7	132.07	708.96
4	208.51	337	1.8	130.06	703.24
5	204.57	321	1.8	127.36	709.72
6	201.33	233	1.78	126.57	710.45
7	188.9	332	1.74	126.45	715.82
8	211.8	272	1.77	132.25	703
9	202.47	327	1.7	127.9	704.52
10	216.84	318	1.83	125.19	690.95

Table 4 Calculation results of the two-stage taboo search algorithm

N	TD(km)	N_i	C_t(s)	TT(min)	TEC(kWh)
1	202.36	268	1.7	125.17	707.53
2	204.11	320	1.7	125.67	710.27
3	204.22	358	1.7	124.55	709.36
4	198.56	345	1.7	120.77	697.52
5	200.62	303	1.7	124.67	704.79
6	203.99	146	1.65	125.78	711.175
7	209.88	232	1.7	126.33	721.2
8	196.505	312	1.7	116.87	690.252
9	197.25	383	1.76	123.55	698.4
10	198.1	313	1.7	125.23	701.15

Table 5 Comparison of calculation results of the hill-climbing algorithm, simulated annealing algorithm, genetic algorithm, and taboo search algorithm

Algorithm type	Hill-climbing Algorithm	Genetic Algorithm	Simulated Annealing Algorithm	Two-stage Taboo Search Algorithm
ATD(km)	234.62	222.61	203.66	201.56
AN_i	13000	10760	12240	11920
AC_t(s)	1.66	2.44	1.76	1.7
ATT(min)	189.98	165.96	128.06	123.86
ATEC(kwh)	721.69	715.69	706.21	705.16
SD(kwh)	10.42	8.07	6.38	4.97