Appendix

A Mixed-integer program for piecewise linear duration and consumption functions

In this appendix we provide a formulation of the TDASPR under the assumption that functions $\tau_i(t)$, $\theta_i(t)$, and $\rho_i(t)$ are non-negative, piecewise linear, and lower semi-continuous for each $1 \leq i \leq n$ and that the replenishment duration Δ_i is a constant for each $1 \leq i \leq n$. Like before we assume that the FIFO property holds, i.e., that $\theta_i(t)$ is non-decreasing. Note that we do not require $\tau_i(t)$, $\theta_i(t)$, and $\rho_i(t)$ to be continuous. This allows us to consider applications such as durations of trips conducted with public transport services where discontinuities occur when the scheduled departure time is missed and waiting time until the next scheduled departure needs to be considered.

Let S_i^τ and S_i^ρ denote the set of piecewise linear segments of τ_i and ρ_i. For each linear segment $s \in S_i^\tau \cup S_i^\rho$, let e_s and l_s denote the start and end of the segment and let a_s denote the slope and b_s the intercept of the respective linear function. Thus, if the start time t_i of activity i is within segment $s \in S_i^\tau$, then $\tau_i(t_i) = a_s t_i + b_s$.

With this, the problem can be modelled with binary variables $x_{i,s}$ indicating whether segment $s \in S_i^\tau$ of the duration function or segment $s \in S_i^\rho$ of the consumption function is used for activity i. A binary variable y_i indicates whether the resource is replenished after conducting the activity i, linear variables d_i and q_i indicate the duration and resource consumption of activity i, and t_i indicates the start time of activity i. Linear variables $t_{i,s}$ indicate time values for activity i associated to segment $s \in S_i^\tau$ of the duration function or for segment $s \in S_i^\rho$ of the consumption function.

The TDASPR with piecewise linear duration and consumption functions can be formulated as a mixed-integer program by

minimize

$$t_n + d_n \tag{11}$$

subject to

$$\sum_{s \in S_i^\tau} x_{i,s} = 1 \text{ for all } 1 \leq i \leq n \tag{12a}$$

$$e_s x_{i,s} \leq t_{i,s} \leq l_s x_{i,s} \text{ for all } 1 \leq i \leq n, s \in S_i^\tau \tag{12b}$$

$$t_i = \sum_{s \in S_i^\tau} t_{i,s} \text{ for all } 1 \le i \le n \tag{12c}$$

$$d_i = \sum_{s \in S_i^\tau} (a_s t_{i,s} + b_s x_{i,s}) \text{ for all } 1 \le i \le n \tag{12d}$$

$$t_i + d_i + \Delta_i y_i \le t_{i+1} \text{ for all } 1 \le i < n \tag{12e}$$

$$\sum_{s \in S_i^\rho} x_{i,s} = 1 \text{ for all } 1 \le i \le n \tag{13a}$$

$$e_s x_{i,s} \le t_{i,s} \le l_s x_{i,s} \text{ for all } 1 \le i \le n, s \in S_i^\rho \tag{13b}$$

$$t_i = \sum_{s \in S_i^\rho} t_{i,s} \text{ for all } 1 \le i \le n \tag{13c}$$

$$q_i = \sum_{s \in S_i^\rho} (a_s t_{i,s} + b_s x_{i,s}) \text{ for all } 1 \le i \le n \tag{13d}$$

$$\sum_{k=i}^{j} q_k \le Q + M \sum_{k=i}^{j-1} y_k \text{ for all } 1 \le i \le j \le n \tag{13e}$$

$$x_{i,s} \in \{0,1\} \text{ for all } s \in S_i^\tau \cup S_i^\rho, 1 \le i \le n \tag{14}$$

$$y_i \in \{0,1\} \text{ for all } 1 \le i \le n \tag{15}$$

The objective (11) is to minimize the completion time. Constraint (12a) ensures that for each activity exactly one of the time segments is selected. Constraints (12b) and (12c) ensure that $t_{i,s}$ is zero if $x_{i,s} = 0$ and $t_{i,s} \in [e_s, l_s]$ if $x_{i,s} = 1$, and that the start time of activity i is set accordingly. Note that the boundary values of $[e_s, l_s]$ might not belong to the segment s because we do not require continuity of the functions. Due to the lower semi-continuity, however, this is not a problem in an optimal solution. The duration d_i of activity i can be obtained by constraint (12d). Because of constraint (12e), the start time of any activity must not be before the completion time of the previous activity plus the time required for a potential replenishment. Constraints (13a) to (13d) are analogous to constraints (12a) to (12d) for the resource consumption. Constraint (13e) requires that the cumulative resource consumption of any sequence of activities does not exceed Q unless the resource is replenished. Lastly, the domain of the binary variables is given by (14) and (15).

B Restrictions on replenishments

A variation of the TDASPR, in which replenishments are forbidden or required after certain activities, can be obtained by constraining the binary variables indicating the choice of whether to conduct a replenishment or not. This can be achieved by adding a constraint $y_i = 0$ or $y_i = 1$ for each activity i which prohibits or requires a replenishment after its completion in the problems given by (5) to (9) or (11) to (15).

If a replenishment is not allowed after an activity, we can avoid replenishments by adapting Algorithm 4 in such a way that the earliest time after the replenishment t^* is set to a value that exceeds l_{i+1} in line 10.

Let us now consider the case that a replenishment is required after activity i. In this case Property 2 loses its relevance for all vertices of activity i, because the property does not consider the duration of the required replenishment. The main purpose of Property 2 was to ensure that the vertex representing the earliest possible time at which the next activity can be conducted is included in the partially expanded network. In Algorithm 4, this is achieved by line 12 which includes a vertex for the next activity and the earliest time after the required replenishment. We can adapt Algorithm 4 in such a way that lines 14 to 19, which update the labels assuming that no replenishment is conducted, are skipped if a replenishment is required. Furthermore, the condition in line 22 of function `DDD::addRecursive` can be changed in such a way that the recursive insertion of vertices is terminated if a replenishment is required after the current activity. With these changes our approach can be used to solve the TDASPR with required replenishments even if Property 2 does not hold for activities requiring a replenishment.

C Detailed results

Tables 5 to 7 show detailed results of our experiments analysing the impact of the discretization parameter ε. The first column gives the discretization parameter ε. The second and third columns show the average number of vehicles and the total completion time which are identical for both dynamic discretization discovery approaches and Algorithm 1 applied on the fully time-expanded network. For the dynamic discretization discovery approach (DDD) and its variant with vertex preloading (DDD-PL), the average computation time is given in the column titled *CPU*, the percentage of vertices of the fully time-expanded network is given in the column titled *Vertices (%)*, and the average number of vertices per route evaluation is given in the column titled *Vertices (∅)*. For Algorithm 1 applied on the fully time-expanded network (TEN) the average computation time is given in the column titled *CPU*. Dashes indicate that no solution was found within the time limit of 7200 seconds.

Tables 8 to 12 show detailed results of our experiments considering the possibility to recharge the battery. The first column gives the name of the instance. The results for the approach based on dynamic discretization discovery with replenishments (DDD) are given in columns 2 to 5. The results for the dynamic discretization discover approach with replenishments and preloading (DDD-PL) are given in columns 6 to 9. The results for the approach using CPLEX for solving for the mixed integer program (MIP) are given in columns 10 to 13. For each approach, the total computation time is given in the column titled *CPU*, the number of vehicles required is given in the column titled *Veh.*, the total completion time is given in the column titled *Compl.*, and the number of replenishments at service stations is given in the column titled *Repl.*. Dashes in the columns for MIP indicate that no solution was found within the time limit of 7200 seconds. For the dynamic discretization discovery approaches DDD and DDD-PL, the results violating the time limit are written in italic.

			DDD			DDD-PL			TEN
Instance	Veh.	Compl.	CPU	Vertices (%)	Vertices (⌀)	CPU	Vertices (%)	Vertices (⌀)	CPU
c101	13	11589.1	101.4	0.43	50.6	97.8	0.32	37.6	—
c102	16	12064.9	645.3	0.23	56.0	628.2	0.18	42.6	—
c103	11	11809.4	271.2	0.14	52.9	256.5	0.1	36.6	—
c104	11	11788.7	60.2	0.11	54.5	49.2	0.07	33.6	—
c105	15	10946.8	96.4	0.39	56.0	89.1	0.27	39.2	—
c106	16	12357.3	116.9	0.36	54.7	110.3	0.27	41.5	—
c107	13	10653.1	126.7	0.36	61.5	115.6	0.24	40.7	—
c108	13	10884.0	139.0	0.34	65.2	122.6	0.23	44.3	—
c109	13	10612.8	160.4	0.27	67.2	143.1	0.17	41.5	—
c201	5	11321.1	29.4	0.19	82.0	7.3	0.08	37.6	—
c202	8	17256.2	417.9	0.08	61.7	382.6	0.05	39.5	—
c203	9	17404.2	143.3	0.04	52.7	120.2	0.03	33.2	—
c204	8	16319.8	4599.1	0.05	87.9	4804.2	0.04	67.2	—
c205	5	11123.6	47.6	0.17	96.7	16.2	0.07	41.9	—
c206	8	15428.4	171.2	0.12	73.6	126.0	0.07	45.5	—
c207	10	19200.6	248.5	0.11	67.6	202.9	0.06	40.0	—
c208	5	10839.4	97.1	0.14	115.7	42.9	0.06	47.9	—
r101	28	4596.6	21.2	3.03	52.5	18.5	2.64	45.7	—
r102	23	3864.5	37.3	1.53	55.4	31.3	1.1	39.9	—
r103	19	3470.5	33.7	1.16	58.4	24.4	0.66	33.0	—
r104	15	2951.3	25.4	1.01	62.3	12.0	0.45	27.7	—
r105	22	3717.0	44.9	2.49	57.1	41.4	1.91	43.8	—
r106	21	3373.2	38.0	1.47	56.6	29.4	0.95	36.4	—
r107	19	3093.4	36.0	1.19	59.5	25.7	0.64	32.1	—
r108	16	2937.1	24.6	1.06	63.7	9.9	0.47	28.3	—
r109	20	3273.5	56.4	2.06	59.8	48.4	1.37	39.9	—
r110	18	2964.8	37.7	1.52	56.7	26.9	0.88	32.7	—
r111	18	3126.4	33.4	1.35	58.1	21.3	0.74	32.1	—
r112	15	2638.0	28.2	1.42	63.7	9.2	0.67	30.2	—
r201	12	6799.5	254.3	0.43	62.2	246.2	0.29	42.4	—
r202	11	6422.3	604.6	0.26	62.2	592.1	0.21	50.0	—
r203	9	4988.8	415.7	0.17	59.6	420.5	0.12	43.7	—
r204	8	4210.2	783.1	0.15	74.7	797.1	0.1	48.5	—
r205	10	5732.0	493.0	0.4	81.1	491.3	0.29	59.4	—
r206	10	5211.6	1064.1	0.27	78.0	1155.0	0.19	55.9	—
r207	9	4700.4	814.1	0.19	72.9	844.3	0.14	52.1	—
r208	8	3528.3	810.9	0.16	86.5	820.8	0.1	53.8	—
r209	11	5820.9	785.4	0.3	72.3	784.0	0.22	52.4	—
r210	10	5400.0	536.3	0.31	81.3	543.4	0.24	63.2	—
r211	9	4499.5	1463.2	0.31	104.4	1501.0	0.24	81.0	—
rc101	25	4553.7	26.5	2.51	55.3	24.5	1.95	43.0	—
rc102	23	4007.6	34.5	1.66	54.6	28.9	1.04	34.2	—
rc103	21	3739.8	31.0	1.38	57.7	22.4	0.7	29.5	—
rc104	15	3123.7	30.2	1.19	63.1	16.0	0.53	27.9	—
rc105	22	4030.0	36.9	1.85	52.9	32.8	1.2	34.3	—
rc106	22	3735.4	47.9	2.0	56.4	42.8	1.32	37.3	—
rc107	22	3515.4	24.8	1.52	53.4	16.2	0.82	28.7	—
rc108	17	3115.6	23.7	1.41	56.4	10.1	0.68	27.3	—
rc201	14	7851.4	479.4	0.44	60.3	470.6	0.36	48.7	—
rc202	13	7266.6	346.8	0.27	60.2	345.7	0.21	46.3	—
rc203	11	5670.8	417.6	0.2	65.2	400.1	0.15	48.0	—
rc204	9	4235.3	941.1	0.18	85.1	906.5	0.12	56.2	—
rc205	13	7177.7	495.4	0.35	62.1	489.4	0.27	48.8	—
rc206	12	6883.9	772.5	0.43	83.1	768.8	0.33	62.6	—
rc207	12	6388.6	761.0	0.32	73.6	755.6	0.24	54.4	—
rc208	11	4764.5	1399.6	0.31	97.8	1438.3	0.25	78.7	—

Table 5: Detailed results for $\varepsilon = 0.1$

			DDD			DDD-PL			TEN
Instance	Veh.	Compl.	CPU	Vertices (%)	Vertices (∅)	CPU	Vertices (%)	Vertices (∅)	CPU
c101	14	11736.0	10.2	3.03	35.3	6.8	2.51	29.1	819.1
c102	18	12322.0	24.7	1.66	39.8	16.8	1.32	31.5	4976.3
c103	12	12195.0	25.9	1.17	43.0	16.5	0.86	31.6	—
c104	11	11556.0	17.0	0.91	44.2	9.5	0.6	29.2	—
c105	15	11044.0	14.8	2.86	40.9	8.8	2.22	31.7	1293.6
c106	14	12151.0	19.4	2.58	39.0	13.4	2.14	32.3	1559.1
c107	13	10716.0	19.5	2.63	45.4	11.6	1.95	33.6	1869.2
c108	14	11161.0	27.6	2.55	48.2	18.1	1.92	36.3	2771.6
c109	11	10628.0	28.9	2.1	52.0	15.6	1.42	35.3	4004.7
c201	5	11438.0	18.6	1.34	58.5	6.2	0.82	35.9	—
c202	10	18599.0	21.3	0.51	40.4	12.3	0.38	29.9	—
c203	9	16352.0	67.5	0.37	44.7	51.6	0.29	34.2	—
c204	8	15443.0	191.2	0.35	58.6	184.9	0.25	42.3	—
c205	5	11344.0	30.4	1.18	68.0	11.4	0.7	40.3	—
c206	7	15067.0	38.3	0.95	58.8	24.1	0.67	41.6	—
c207	7	16613.0	38.1	0.82	52.8	21.6	0.57	36.7	—
c208	5	10877.0	48.4	1.04	84.6	20.6	0.55	44.3	—
r101	26	4447.0	3.0	16.84	28.5	2.1	15.66	26.5	10.3
r102	22	3862.0	8.4	9.39	33.8	5.2	7.46	26.8	70.4
r103	20	3503.0	9.3	7.43	36.8	6.0	5.0	24.8	145.2
r104	17	3234.0	10.8	6.79	40.9	5.2	3.92	23.7	229.4
r105	21	3669.0	6.3	15.5	35.6	4.8	13.32	30.6	25.3
r106	21	3384.0	10.3	9.74	37.5	7.1	7.37	28.4	90.8
r107	19	3224.0	10.8	7.86	39.0	6.5	5.18	25.7	153.9
r108	15	3000.0	12.9	7.11	42.5	5.5	4.07	24.3	216.8
r109	19	3236.0	9.8	13.22	37.5	7.2	10.26	29.1	50.9
r110	19	3127.0	10.8	10.44	38.5	6.3	7.24	26.7	89.0
r111	19	3179.0	11.1	9.09	38.8	6.3	6.17	26.3	117.2
r112	15	2838.0	14.5	9.77	43.1	6.1	5.92	26.1	136.5
r201	13	7140.0	21.4	3.04	44.5	15.8	2.31	33.7	1514.8
r202	11	6136.0	31.8	1.81	43.4	24.0	1.4	33.7	5443.5
r203	9	4967.0	45.0	1.31	45.5	39.2	1.03	35.8	—
r204	8	4058.0	82.6	1.11	56.7	71.2	0.73	36.9	—
r205	11	5902.0	43.4	2.57	53.0	36.0	2.03	41.9	3299.3
r206	10	5567.0	55.1	1.83	51.9	41.8	1.37	39.0	7153.2
r207	9	4499.0	73.8	1.39	53.3	69.8	1.03	39.3	—
r208	7	4072.0	71.6	1.11	57.8	61.1	0.72	37.6	—
r209	11	5777.0	61.5	2.08	50.5	49.9	1.57	38.1	5613.2
r210	11	5915.0	42.6	1.9	48.9	34.7	1.45	37.2	6497.3
r211	10	4292.0	116.7	2.03	69.2	113.7	1.53	52.0	—
rc101	23	4242.0	4.8	15.59	34.4	3.9	13.45	29.6	17.1
rc102	21	3808.0	8.1	10.79	35.3	5.0	8.01	26.2	55.0
rc103	21	3740.0	10.3	9.04	37.5	5.3	5.88	24.4	94.9
rc104	17	3316.0	11.8	7.89	40.9	5.3	4.62	24.0	163.9
rc105	23	4087.0	6.6	12.0	33.9	4.7	9.06	25.6	37.4
rc106	23	3906.0	7.8	12.89	35.9	5.7	9.88	27.6	36.4
rc107	21	3530.0	9.1	10.37	36.0	4.3	6.95	24.1	71.0
rc108	18	3289.0	11.0	9.77	38.5	4.8	6.07	23.9	103.0
rc201	14	7936.0	22.6	2.86	39.5	19.2	2.36	32.6	1352.6
rc202	13	6801.0	39.3	1.97	43.4	37.2	1.62	35.5	4590.4
rc203	11	5934.0	40.8	1.39	44.7	35.6	1.05	34.0	—
rc204	9	4496.0	84.6	1.25	58.0	75.0	0.84	39.0	—
rc205	14	7367.0	40.0	2.44	43.8	39.5	2.08	37.2	2645.9
rc206	12	6911.0	63.4	2.86	54.8	57.2	2.27	43.4	2960.0
rc207	12	5873.0	55.8	2.23	51.6	50.4	1.73	40.0	4851.0
rc208	11	4691.0	113.5	1.99	62.0	108.9	1.57	48.7	—

Table 6: Detailed results for $\varepsilon = 1.0$

			DDD			DDD-PL			TEN
Instance	Veh.	Compl.	CPU	Vertices (%)	Vertices (∅)	CPU	Vertices (%)	Vertices (∅)	CPU
c101	17	12095.0	4.4	11.34	25.2	3.2	10.35	23.0	37.6
c102	17	11870.0	9.2	6.57	31.1	6.1	5.55	26.3	190.3
c103	14	12675.0	10.6	4.5	32.6	6.8	3.52	25.5	431.4
c104	13	12180.0	10.8	3.8	36.0	6.4	2.7	25.5	657.7
c105	15	11335.0	6.4	10.88	30.3	5.0	9.56	26.6	66.3
c106	16	12010.0	7.8	10.28	30.5	5.4	9.11	27.0	78.1
c107	14	11210.0	8.5	10.22	33.6	6.0	8.77	28.9	93.5
c108	13	11400.0	10.9	9.85	36.0	7.8	8.31	30.3	124.2
c109	12	10715.0	14.1	8.51	41.2	8.8	6.54	31.6	188.5
c201	7	14085.0	11.3	4.71	40.0	6.3	3.78	32.1	477.4
c202	9	18740.0	14.4	2.11	33.1	8.3	1.73	27.1	2571.6
c203	9	16575.0	25.0	1.49	35.8	20.4	1.22	29.2	5336.1
c204	7	16125.0	37.1	1.24	41.9	30.4	0.91	30.5	—
c205	5	11685.0	16.7	4.58	51.0	7.9	3.33	37.1	719.7
c206	8	15625.0	20.5	3.66	44.8	12.7	2.95	36.1	1051.8
c207	9	17605.0	17.9	3.34	43.0	10.6	2.53	32.5	1248.2
c208	6	11550.0	26.6	3.77	59.8	11.9	2.57	40.7	1497.2
r101	29	5040.0	0.8	53.23	15.1	0.7	51.52	14.6	1.1
r102	26	4435.0	2.8	30.74	20.2	2.2	27.27	17.9	6.8
r103	21	3775.0	4.3	25.96	24.1	2.9	20.52	19.1	13.1
r104	16	3320.0	5.7	24.38	27.7	3.5	17.74	20.2	18.1
r105	24	4105.0	1.9	50.51	20.1	1.6	49.0	19.5	2.5
r106	23	3715.0	4.4	33.7	23.9	3.7	30.38	21.5	8.3
r107	20	3445.0	5.5	28.26	26.3	3.9	22.84	21.3	13.6
r108	16	3215.0	6.8	25.62	28.9	3.9	18.86	21.3	19.3
r109	20	3485.0	3.4	45.48	23.2	2.8	42.18	21.5	5.2
r110	21	3470.0	5.1	37.01	25.0	3.5	31.45	21.3	9.4
r111	19	3275.0	5.9	33.37	26.6	3.7	27.83	22.2	12.3
r112	18	3120.0	8.3	36.04	28.9	4.6	28.56	22.9	14.9
r201	13	7100.0	10.4	11.32	32.2	7.9	9.94	28.3	77.7
r202	10	5855.0	13.7	7.04	33.4	10.2	6.06	28.8	211.1
r203	10	5380.0	17.8	5.22	36.2	15.3	4.29	29.7	394.7
r204	8	4155.0	22.8	4.32	42.8	15.3	3.24	32.1	612.4
r205	12	6395.0	16.7	9.71	38.7	13.3	8.11	32.4	149.6
r206	11	5520.0	21.3	7.31	41.6	16.2	5.97	33.9	296.4
r207	10	5085.0	28.0	5.62	42.5	23.5	4.66	35.2	448.0
r208	8	4760.0	27.3	4.68	46.6	20.3	3.63	36.2	624.5
r209	10	5415.0	21.3	8.55	41.1	16.2	7.06	34.0	220.7
r210	10	5740.0	20.1	7.58	38.8	13.6	6.26	32.0	258.6
r211	10	4540.0	39.7	7.54	50.3	29.1	5.87	39.1	338.8
rc101	26	4710.0	1.5	51.83	20.1	1.2	50.07	19.4	1.8
rc102	24	4265.0	3.1	38.6	23.2	2.3	33.86	20.3	5.2
rc103	22	3955.0	4.4	33.18	25.7	3.0	26.29	20.3	9.1
rc104	19	3645.0	5.9	29.38	28.5	3.6	21.71	21.0	16.4
rc105	25	4510.0	2.5	42.51	21.6	1.8	37.64	19.1	3.7
rc106	23	4145.0	2.8	45.95	23.0	2.2	41.88	20.9	3.6
rc107	22	3825.0	4.2	38.49	24.5	2.8	31.99	20.4	7.9
rc108	21	3690.0	5.8	36.87	26.5	3.5	28.92	20.8	11.7
rc201	14	8120.0	9.0	11.13	29.8	7.2	9.93	26.5	70.9
rc202	13	7240.0	14.2	7.3	31.5	12.0	6.35	27.5	187.9
rc203	10	5600.0	17.9	5.62	35.6	13.4	4.66	29.5	349.9
rc204	10	4565.0	26.9	4.78	43.6	18.8	3.58	32.7	545.4
rc205	13	7555.0	12.6	9.11	31.6	10.2	8.04	27.9	120.8
rc206	13	7070.0	18.3	10.5	38.9	14.2	8.92	33.1	133.8
rc207	12	6400.0	18.9	8.39	38.2	16.5	7.04	32.1	198.3
rc208	11	5095.0	38.2	7.69	47.2	31.5	6.26	38.5	303.5

Table 7: Detailed results for $\varepsilon = 5.0$

	DDD				DDD-PL				MIP			
Instance	CPU	Veh.	Compl.	Repl.	CPU	Veh.	Compl.	Repl.	CPU	Veh.	Compl.	Repl.
c101	101.4	13	11589.1	0	97.8	13	11589.1	0	1083.0	14	11507.9	0
c102	645.3	16	12064.9	0	628.2	16	12064.9	0	2189.1	15	11974.3	0
c103	271.2	11	11809.4	0	256.5	11	11809.4	0	3308.8	12	11978.7	0
c104	60.2	11	11788.7	0	49.2	11	11788.7	0	4389.2	11	11644.2	0
c105	96.4	15	10946.8	0	89.1	15	10946.8	0	1505.1	14	10930.6	0
c106	116.9	16	12357.3	0	110.3	16	12357.3	0	1601.9	16	12432.2	0
c107	126.7	13	10653.1	0	115.6	13	10653.1	0	2054.6	12	10487.1	0
c108	139.0	13	10884.0	0	122.6	13	10884.0	0	2351.3	15	11077.0	0
c109	160.4	13	10612.8	0	143.1	13	10612.8	0	3379.3	13	10606.5	0
c201	29.4	5	11321.1	0	7.3	5	11321.1	0	2054.1	5	11317.0	0
c202	417.9	8	17256.2	0	382.6	8	17256.2	0	2863.3	9	17647.4	0
c203	143.3	9	17404.2	0	120.2	9	17404.2	0	4360.3	11	18616.1	0
c204	4599.1	8	16319.8	0	4804.2	8	16319.8	0	—	—	—	—
c205	47.6	5	11123.6	0	16.2	5	11123.6	0	2662.4	5	11119.2	0
c206	171.2	8	15428.4	0	126.0	8	15428.4	0	2902.9	8	15554.2	0
c207	248.5	10	19200.6	0	202.9	10	19200.6	0	2825.2	10	18998.1	0
c208	97.1	5	10839.4	0	42.9	5	10839.4	0	5048.7	5	10834.5	0
r101	21.2	28	4596.6	0	18.5	28	4596.6	0	473.6	28	4619.5	0
r102	37.3	23	3864.5	0	31.3	23	3864.5	0	1767.6	23	3835.1	0
r103	33.7	19	3470.5	0	24.4	19	3470.5	0	2853.6	19	3491.1	0
r104	25.4	15	2951.3	0	12.0	15	2951.3	0	4224.7	14	2839.2	0
r105	44.9	22	3717.0	0	41.4	22	3717.0	0	852.4	23	3913.1	0
r106	38.0	21	3373.2	0	29.4	21	3373.2	0	2228.1	21	3332.1	0
r107	36.0	19	3093.4	0	25.7	19	3093.4	0	3216.4	20	3241.5	0
r108	24.6	16	2937.1	0	9.9	16	2937.1	0	4398.2	16	2917.9	0
r109	56.4	20	3273.5	0	48.4	20	3273.5	0	1811.9	19	3185.3	0
r110	37.7	18	2964.8	0	26.9	18	2964.8	0	2859.1	18	3036.1	0
r111	33.4	18	3126.4	0	21.3	18	3126.4	0	3153.0	18	3079.2	0
r112	28.2	15	2638.0	0	9.2	15	2638.0	0	4878.3	15	2632.5	0
r201	254.3	12	6799.5	0	246.2	12	6799.5	0	2502.3	12	6839.2	0
r202	604.6	11	6422.3	0	592.1	11	6422.3	0	3366.1	11	6204.6	0
r203	415.7	9	4988.8	0	420.5	9	4988.8	0	4085.9	9	4880.5	0
r204	783.1	8	4210.2	0	797.1	8	4210.2	0	—	—	—	—
r205	493.0	10	5732.0	0	491.3	10	5732.0	0	3678.4	11	6038.5	0
r206	1064.1	10	5211.6	0	1155.0	10	5211.6	0	4797.2	10	5341.0	0
r207	814.1	9	4700.4	0	844.3	9	4700.4	0	5726.8	9	4453.6	0
r208	810.9	8	3528.3	0	820.8	8	3528.3	0	—	—	—	—
r209	785.4	11	5820.9	0	784.0	11	5820.9	0	4621.4	11	5785.2	0
r210	536.3	10	5400.0	0	543.4	10	5400.0	0	4554.3	11	5888.0	0
r211	1463.2	9	4499.5	0	1501.0	9	4499.5	0	—	—	—	—
rc101	26.5	25	4553.7	0	24.5	25	4553.7	0	668.5	24	4400.1	0
rc102	34.5	23	4007.6	0	28.9	23	4007.6	0	1702.7	23	3933.6	0
rc103	31.0	21	3739.8	0	22.4	21	3739.8	0	2748.0	21	3774.4	0
rc104	30.2	15	3123.7	0	16.0	15	3123.7	0	4073.1	16	3198.8	0
rc105	36.9	22	4030.0	0	32.8	22	4030.0	0	1348.8	24	4142.6	0
rc106	47.9	22	3735.4	0	42.8	22	3735.4	0	1360.1	21	3661.8	0
rc107	24.8	22	3515.4	0	16.2	22	3515.4	0	2488.5	22	3504.7	0
rc108	23.7	17	3115.6	0	10.1	17	3115.6	0	3763.3	18	3191.4	0
rc201	479.4	14	7851.4	0	470.6	14	7851.4	0	2118.6	14	7992.2	0
rc202	346.8	13	7266.6	0	345.7	13	7266.6	0	3475.4	12	7203.4	0
rc203	417.6	11	5670.8	0	400.1	11	5670.8	0	4632.7	11	5723.4	0
rc204	941.1	9	4235.3	0	906.5	9	4235.3	0	—	—	—	—
rc205	495.4	13	7177.7	0	489.4	13	7177.7	0	3102.3	13	7081.8	0
rc206	772.5	12	6883.9	0	768.8	12	6883.9	0	4046.7	12	6880.8	0
rc207	761.0	12	6388.6	0	755.6	12	6388.6	0	4897.0	12	5790.4	0
rc208	1399.6	11	4764.5	0	1438.3	11	4764.5	0	—	—	—	—

Table 8: Results for instances without service stations.

	DDD				DDD-PL				MIP			
Instance	CPU	Veh.	Compl.	Repl.	CPU	Veh.	Compl.	Repl.	CPU	Veh.	Compl.	Repl.
c101	112.7	13	11589.1	0	105.7	13	11589.1	0	1570.7	14	11507.9	0
c102	662.5	17	12063.2	1	650.8	17	12063.2	1	3620.6	15	11974.3	0
c103	296.2	11	12038.8	2	274.7	11	12038.8	2	5572.4	12	12213.4	2
c104	80.9	11	11590.4	1	56.8	11	11590.4	1	—	—	—	—
c105	105.9	15	10946.8	0	92.0	15	10946.8	0	2194.6	14	10930.6	0
c106	124.4	16	12292.3	2	114.3	16	12292.3	2	2367.1	16	12343.1	2
c107	138.6	13	10653.1	0	120.5	13	10653.1	0	2999.0	12	10487.1	0
c108	151.1	13	10884.0	0	127.1	13	10884.0	0	3583.9	15	11077.0	0
c109	179.7	13	10612.8	0	147.9	13	10612.8	0	5342.9	13	10606.5	0
c201	78.1	4	10800.4	2	16.1	4	10800.4	2	3493.4	4	10864.3	2
c202	166.5	8	13213.7	11	33.7	8	13213.7	11	5350.8	9	14985.1	9
c203	947.5	6	14026.1	8	700.4	6	14026.1	8	—	—	—	—
c204	829.3	5	13141.1	8	671.6	5	13141.1	8	—	—	—	—
c205	119.8	4	10609.8	2	36.4	4	10609.8	2	4953.0	4	10576.7	2
c206	481.9	5	12078.3	8	125.9	5	12078.3	8	—	—	—	—
c207	742.5	5	13219.8	11	465.2	5	13219.8	11	—	—	—	—
c208	278.8	4	10388.0	2	140.0	4	10388.0	2	—	—	—	—
r101	21.4	28	4596.6	0	18.9	28	4596.6	0	486.3	28	4619.5	0
r102	41.0	23	3864.5	0	32.5	23	3864.5	0	2332.4	23	3835.1	0
r103	44.3	19	3470.5	0	26.4	19	3470.5	0	4156.0	19	3491.1	0
r104	42.7	15	2951.3	0	14.5	15	2951.3	0	6477.7	14	2839.2	0
r105	46.0	22	3717.0	0	41.5	22	3717.0	0	884.5	23	3913.1	0
r106	42.9	21	3373.2	0	30.2	21	3373.2	0	2896.1	21	3332.1	0
r107	46.4	19	3093.4	0	27.5	19	3093.4	0	4605.1	20	3241.5	0
r108	42.1	16	2937.1	0	12.4	16	2937.1	0	6614.1	16	2917.9	0
r109	57.3	20	3273.5	0	48.9	20	3273.5	0	1912.1	19	3185.3	0
r110	40.5	18	2964.8	0	27.5	18	2964.8	0	3259.8	18	3036.1	0
r111	38.8	18	3126.4	0	22.7	18	3126.4	0	3862.2	18	3079.2	0
r112	33.3	15	2638.0	0	10.5	15	2638.0	0	5568.3	15	2632.5	0
r201	244.7	7	5173.2	10	226.5	7	5173.2	10	3869.1	7	5197.1	8
r202	1636.8	9	5846.2	8	1294.1	9	5846.2	8	6243.5	8	5509.5	7
r203	587.8	8	4510.7	5	408.5	8	4510.7	5	—	—	—	—
r204	307.2	5	3675.6	6	173.5	5	3675.6	6	—	—	—	—
r205	1229.0	8	4897.6	7	795.3	8	4897.6	7	—	—	—	—
r206	1649.9	7	4529.1	7	1147.0	7	4529.1	7	—	—	—	—
r207	758.8	7	3606.0	4	467.2	7	3606.0	4	—	—	—	—
r208	919.6	5	3417.8	6	474.3	5	3417.8	6	—	—	—	—
r209	1403.9	7	4583.4	8	935.3	7	4583.4	8	—	—	—	—
r210	2123.2	7	4276.1	6	1503.8	7	4276.1	6	—	—	—	—
r211	2597.0	6	3616.2	5	1894.3	6	3616.2	5	—	—	—	—
rc101	35.5	25	4553.7	0	24.0	25	4553.7	0	694.4	24	4400.1	0
rc102	48.3	23	4007.6	0	28.9	23	4007.6	0	2059.9	23	3933.6	0
rc103	50.0	21	3739.8	0	22.8	21	3739.8	0	3635.7	21	3774.4	0
rc104	56.5	15	3123.7	0	17.5	15	3123.7	0	5767.0	16	3198.8	0
rc105	49.4	22	4030.0	0	32.5	22	4030.0	0	1452.3	24	4142.6	0
rc106	64.1	22	3735.4	0	42.1	22	3735.4	0	1437.7	21	3661.8	0
rc107	35.7	22	3515.4	0	16.3	22	3515.4	0	2801.4	22	3504.7	0
rc108	35.6	17	3115.6	0	10.4	17	3115.6	0	4243.9	18	3191.4	0
rc201	1068.9	11	6859.0	7	760.0	11	6859.0	7	3792.7	8	6058.0	8
rc202	614.7	8	5630.5	9	435.3	8	5630.5	9	5983.0	8	5627.6	9
rc203	484.1	9	4591.2	7	312.3	9	4591.2	7	—	—	—	—
rc204	1307.1	5	3924.7	6	940.8	5	3924.7	6	—	—	—	—
rc205	919.5	10	6271.4	10	667.1	10	6271.4	10	5332.3	9	5982.3	10
rc206	1288.5	7	5019.8	9	893.5	7	5019.8	9	—	—	—	—
rc207	831.2	9	5249.0	9	575.2	9	5249.0	9	—	—	—	—
rc208	1614.4	6	4136.9	7	1196.6	6	4136.9	7	—	—	—	—

Table 9: Results for instances with recharging at the depot.

	DDD				DDD-PL				MIP			
Instance	CPU	Veh.	Compl.	Repl.	CPU	Veh.	Compl.	Repl.	CPU	Veh.	Compl.	Repl.
c101	216.7	13	11589.1	0	148.3	13	11589.1	0	1839.8	14	11507.9	0
c102	898.6	17	12063.2	1	663.6	17	12063.2	1	4255.9	15	12042.2	2
c103	629.0	13	12129.1	4	416.1	13	12129.1	4	6915.7	12	12219.9	2
c104	122.2	11	11719.3	2	60.2	11	11719.3	2	—	—	—	—
c105	144.1	15	10946.8	0	94.9	15	10946.8	0	2538.3	14	10930.6	0
c106	185.9	16	12365.6	2	126.3	16	12365.6	2	3064.5	16	12297.4	3
c107	189.1	13	10653.1	0	123.8	13	10653.1	0	3476.7	12	10487.1	0
c108	214.9	13	10884.0	0	134.2	13	10884.0	0	4384.8	15	11077.0	0
c109	249.4	13	10612.8	0	155.8	13	10612.8	0	6372.4	13	10606.5	0
c201	149.3	4	10754.0	2	19.7	4	10754.0	2	4363.4	4	10880.6	2
c202	799.7	8	13114.4	10	211.8	8	13114.4	10	—	—	—	—
c203	2078.1	6	14079.3	7	1006.9	6	14079.3	7	—	—	—	—
c204	3071.9	5	13153.1	8	1559.3	5	13153.1	8	—	—	—	—
c205	232.9	4	10622.9	2	38.4	4	10622.9	2	6382.4	4	10656.9	2
c206	932.9	5	12398.6	9	335.1	5	12398.6	9	—	—	—	—
c207	1361.8	6	13238.2	10	331.9	6	13238.2	10	—	—	—	—
c208	496.5	4	10388.0	2	161.3	4	10388.0	2	—	—	—	—
r101	28.2	28	4596.6	0	18.9	28	4596.6	0	488.0	28	4619.5	0
r102	54.7	23	3864.5	0	32.6	23	3864.5	0	2384.4	23	3835.1	0
r103	59.2	19	3470.5	0	26.4	19	3470.5	0	4282.0	19	3491.1	0
r104	57.7	15	2951.3	0	14.9	15	2951.3	0	6679.9	14	2839.2	0
r105	60.1	22	3717.0	0	42.1	22	3717.0	0	880.3	23	3913.1	0
r106	56.9	21	3373.2	0	30.8	21	3373.2	0	2952.0	21	3332.1	0
r107	62.6	19	3093.4	0	27.8	19	3093.4	0	4969.0	20	3241.5	0
r108	56.8	16	2937.1	0	12.9	16	2937.1	0	6827.5	16	2917.9	0
r109	75.5	20	3273.5	0	48.7	20	3273.5	0	1916.4	19	3185.3	0
r110	54.1	18	2964.8	0	27.5	18	2964.8	0	3299.7	18	3036.1	0
r111	51.6	18	3126.4	0	22.8	18	3126.4	0	3975.8	18	3079.2	0
r112	44.8	15	2638.0	0	10.5	15	2638.0	0	5667.4	15	2632.5	0
r201	362.1	8	5228.0	8	253.5	8	5228.0	8	4074.7	7	5237.2	9
r202	1705.6	8	5562.3	7	1269.4	8	5562.3	7	6423.5	8	5408.0	7
r203	561.2	8	4493.1	5	390.5	8	4493.1	5	—	—	—	—
r204	849.3	5	3735.3	6	510.2	5	3735.3	6	—	—	—	—
r205	1721.7	7	4660.5	7	1159.9	7	4660.5	7	—	—	—	—
r206	2038.9	7	4570.1	7	1455.0	7	4570.1	7	—	—	—	—
r207	669.9	7	3586.8	4	373.7	7	3586.8	4	—	—	—	—
r208	996.6	5	3303.6	5	539.1	5	3303.6	5	—	—	—	—
r209	1829.5	8	4613.9	7	1216.3	8	4613.9	7	—	—	—	—
r210	913.2	8	4598.5	7	621.5	8	4598.5	7	—	—	—	—
r211	2836.2	6	3612.4	5	2059.4	6	3612.4	5	—	—	—	—
rc101	35.7	25	4553.7	0	24.1	25	4553.7	0	707.4	24	4400.1	0
rc102	50.4	23	4007.6	0	29.2	23	4007.6	0	2307.7	23	3933.6	0
rc103	54.1	21	3739.8	0	23.5	21	3739.8	0	4111.0	21	3774.4	0
rc104	64.3	15	3123.7	0	18.4	15	3123.7	0	6503.2	16	3198.8	0
rc105	50.5	22	4030.0	0	32.8	22	4030.0	0	1548.1	24	4142.6	0
rc106	65.3	22	3735.4	0	42.1	22	3735.4	0	1513.0	21	3661.8	0
rc107	37.1	22	3515.4	0	16.5	22	3515.4	0	2953.0	22	3504.7	0
rc108	39.1	17	3115.6	0	11.0	17	3115.6	0	4588.9	18	3191.4	0
rc201	500.4	9	6035.4	10	313.2	9	6035.4	10	6469.3	8	5757.2	9
rc202	506.7	9	5530.7	11	342.1	9	5530.7	11	—	—	—	—
rc203	484.8	8	4406.0	8	317.1	8	4406.0	8	—	—	—	—
rc204	501.9	6	4009.1	6	287.5	6	4009.1	6	—	—	—	—
rc205	1207.3	9	5812.7	12	818.9	9	5812.7	12	—	—	—	—
rc206	2284.8	8	5272.5	9	1426.5	8	5272.5	9	—	—	—	—
rc207	1412.4	8	5032.1	10	902.4	8	5032.1	10	—	—	—	—
rc208	3377.5	7	4078.1	6	2038.5	7	4078.1	6	—	—	—	—

Table 10: Results for instances with recharging at the depot and one station per city.

	DDD				DDD-PL				MIP			
Instance	CPU	Veh.	Compl.	Repl.	CPU	Veh.	Compl.	Repl.	CPU	Veh.	Compl.	Repl.
c101	169.5	13	11589.1	0	115.3	13	11589.1	0	2059.8	14	11507.9	0
c102	930.9	17	12063.2	1	681.4	17	12063.2	1	4734.5	15	12079.1	1
c103	432.2	11	11992.5	3	292.6	11	11992.5	3	—	—	—	—
c104	152.9	11	11732.0	3	63.6	11	11732.0	3	—	—	—	—
c105	156.8	15	10946.8	0	99.1	15	10946.8	0	2851.8	14	10930.6	0
c106	202.5	16	12389.2	3	130.6	16	12389.2	3	3611.1	16	12262.3	4
c107	202.1	13	10653.1	0	128.3	13	10653.1	0	3928.6	12	10487.1	0
c108	246.3	13	10884.0	0	149.1	13	10884.0	0	5407.3	15	11077.0	0
c109	272.4	13	10612.8	0	161.3	13	10612.8	0	—	—	—	—
c201	414.4	4	10758.8	2	31.1	4	10758.8	2	6725.1	4	10778.2	1
c202	1162.7	7	12369.5	9	206.6	7	12369.5	9	—	—	—	—
c203	2520.5	6	14003.2	8	579.7	6	14003.2	8	—	—	—	—
c204	4710.0	5	13259.3	7	1262.7	5	13259.3	7	—	—	—	—
c205	677.5	4	10071.8	2	63.4	4	10071.8	2	—	—	—	—
c206	1413.5	5	12160.6	8	171.0	5	12160.6	8	—	—	—	—
c207	*12235.4*	*5*	*12469.8*	*8*	6787.1	5	12469.8	8	—	—	—	—
c208	2069.5	4	10040.9	2	612.1	4	10040.9	2	—	—	—	—
r101	28.5	28	4596.6	0	18.9	28	4596.6	0	504.2	28	4619.5	0
r102	58.1	23	3864.5	0	33.3	23	3864.5	0	2754.6	23	3835.1	0
r103	67.7	19	3470.5	0	27.8	19	3470.5	0	5128.7	19	3491.1	0
r104	68.4	15	2951.3	0	16.4	15	2951.3	0	—	—	—	—
r105	60.8	22	3717.0	0	41.8	22	3717.0	0	931.2	23	3913.1	0
r106	61.2	21	3373.2	0	31.5	21	3373.2	0	3440.5	21	3332.1	0
r107	71.3	19	3093.4	0	28.8	19	3093.4	0	5651.0	20	3241.5	0
r108	68.0	16	2937.1	0	14.2	16	2937.1	0	—	—	—	—
r109	79.1	20	3273.5	0	50.2	20	3273.5	0	2070.6	19	3185.3	0
r110	58.9	18	2964.8	0	28.5	18	2964.8	0	3690.6	18	3036.1	0
r111	59.8	18	3126.4	0	23.4	18	3126.4	0	4616.6	18	3079.2	0
r112	56.5	15	2638.0	0	11.8	15	2638.0	0	6645.8	15	2632.5	0
r201	716.5	7	5192.1	9	352.9	7	5192.1	9	—	—	—	—
r202	1038.9	8	5185.6	10	688.2	8	5185.6	10	—	—	—	—
r203	903.3	8	4053.7	7	535.2	8	4053.7	7	—	—	—	—
r204	324.3	4	3698.4	5	143.1	4	3698.4	5	—	—	—	—
r205	4064.5	7	4353.7	8	1197.2	7	4353.7	8	—	—	—	—
r206	2180.7	6	4183.6	8	1021.8	6	4183.6	8	—	—	—	—
r207	6237.2	6	3756.8	5	983.5	6	3756.8	5	—	—	—	—
r208	1360.3	5	3478.2	6	570.5	5	3478.2	6	—	—	—	—
r209	2220.9	7	4082.1	7	1357.0	7	4082.1	7	—	—	—	—
r210	1814.5	7	4512.7	7	1036.7	7	4512.7	7	—	—	—	—
r211	6747.9	5	3571.9	6	3528.3	5	3571.9	6	—	—	—	—
rc101	36.0	25	4553.7	0	25.0	25	4553.7	0	727.9	24	4400.1	0
rc102	52.1	23	4007.6	0	29.5	23	4007.6	0	2439.6	23	3933.6	0
rc103	58.6	21	3739.8	0	24.7	21	3739.8	0	4504.1	21	3774.4	0
rc104	71.9	15	3123.7	0	19.6	15	3123.7	0	—	—	—	—
rc105	51.6	22	4030.0	0	33.7	22	4030.0	0	1613.9	24	4142.6	0
rc106	65.4	22	3735.4	0	43.3	22	3735.4	0	1538.2	21	3661.8	0
rc107	39.9	22	3515.4	0	17.1	22	3515.4	0	3154.1	22	3504.7	0
rc108	43.6	17	3115.6	0	11.7	17	3115.6	0	4950.6	18	3191.4	0
rc201	559.2	8	5729.6	12	310.7	8	5729.6	12	—	—	—	—
rc202	633.2	8	5248.6	10	415.8	8	5248.6	10	—	—	—	—
rc203	645.4	8	4484.0	7	409.1	8	4484.0	7	—	—	—	—
rc204	634.5	5	3835.8	6	350.5	5	3835.8	6	—	—	—	—
rc205	1166.8	8	5418.7	12	762.6	8	5418.7	12	—	—	—	—
rc206	2217.4	7	4900.0	9	1035.5	7	4900.0	9	—	—	—	—
rc207	1763.2	7	4601.0	9	969.5	7	4601.0	9	—	—	—	—
rc208	4365.7	6	4249.1	8	2435.1	6	4249.1	8	—	—	—	—

Table 11: Results for instances with recharging at the depot and three stations per city.

	DDD				DDD-PL				MIP			
Instance	CPU	Veh.	Compl.	Repl.	CPU	Veh.	Compl.	Repl.	CPU	Veh.	Compl.	Repl.
c101	163.7	13	11589.1	0	109.4	13	11589.1	0	2075.3	14	11507.9	0
c102	1131.3	17	12092.0	1	819.4	17	12092.0	1	4747.5	15	12042.2	2
c103	474.6	11	11996.9	3	319.4	11	11996.9	3	—	—	—	—
c104	157.1	11	11734.8	3	65.6	11	11734.8	3	—	—	—	—
c105	157.6	15	10946.8	0	102.0	15	10946.8	0	2830.1	14	10930.6	0
c106	203.1	16	12518.0	3	136.7	16	12518.0	3	3492.2	16	12198.2	4
c107	204.3	13	10653.1	0	131.1	13	10653.1	0	3925.5	12	10487.1	0
c108	280.3	13	10884.0	0	172.2	13	10884.0	0	5678.6	15	11077.0	0
c109	277.5	13	10612.8	0	167.8	13	10612.8	0	—	—	—	—
c201	575.9	4	10778.6	3	42.8	4	10778.6	3	6230.4	4	10746.7	3
c202	1288.0	7	13123.4	9	178.5	7	13123.4	9	—	—	—	—
c203	4930.8	6	14079.3	9	1421.5	6	14079.3	9	—	—	—	—
c204	2570.6	6	14850.6	7	1425.2	6	14850.6	7	—	—	—	—
c205	774.3	4	10224.1	3	77.2	4	10224.1	3	—	—	—	—
c206	3835.5	5	12270.4	8	1221.1	5	12270.4	8	—	—	—	—
c207	*8697.8*	*5*	*12641.5*	*10*	1124.0	5	12641.5	10	—	—	—	—
c208	1783.7	4	10091.8	2	347.6	4	10091.8	2	—	—	—	—
r101	28.8	28	4596.6	0	18.7	28	4596.6	0	513.5	28	4619.5	0
r102	59.6	23	3864.5	0	33.7	23	3864.5	0	2821.4	23	3835.1	0
r103	68.9	19	3470.5	0	28.3	19	3470.5	0	5237.5	19	3491.1	0
r104	71.6	15	2951.3	0	16.3	15	2951.3	0	—	—	—	—
r105	61.3	22	3717.0	0	41.9	22	3717.0	0	956.4	23	3913.1	0
r106	62.9	21	3373.2	0	32.0	21	3373.2	0	3517.4	21	3332.1	0
r107	73.4	19	3093.4	0	29.0	19	3093.4	0	5790.4	20	3241.5	0
r108	71.6	16	2937.1	0	14.4	16	2937.1	0	—	—	—	—
r109	87.4	20	3273.5	0	56.3	20	3273.5	0	2191.8	19	3185.3	0
r110	62.3	18	2964.8	0	29.4	18	2964.8	0	3970.4	18	3036.1	0
r111	61.8	18	3126.4	0	24.3	18	3126.4	0	4841.8	18	3079.2	0
r112	68.7	15	2638.0	0	12.9	15	2638.0	0	—	—	—	—
r201	439.5	7	5183.7	10	188.9	7	5183.7	10	—	—	—	—
r202	1228.2	7	5076.0	9	827.9	7	5076.0	9	—	—	—	—
r203	655.5	8	4053.2	8	415.9	8	4053.2	8	—	—	—	—
r204	435.3	5	3602.7	5	223.5	5	3602.7	5	—	—	—	—
r205	5509.8	6	4306.3	8	1222.2	6	4306.3	8	—	—	—	—
r206	*7646.0*	*7*	*4328.1*	*7*	2577.0	7	4328.1	7	—	—	—	—
r207	*14042.4*	*6*	*3522.8*	*5*	2011.1	6	3522.8	5	—	—	—	—
r208	1836.2	5	3418.4	6	518.6	5	3418.4	6	—	—	—	—
r209	2253.6	6	4304.3	8	1080.7	6	4304.3	8	—	—	—	—
r210	6243.7	7	4274.3	7	2822.7	7	4274.3	7	—	—	—	—
r211	*28924.2*	*5*	*3508.6*	*5*	*8027.5*	*5*	*3508.6*	*5*	—	—	—	—
rc101	36.2	25	4553.7	0	24.5	25	4553.7	0	738.7	24	4400.1	0
rc102	53.1	23	4007.6	0	29.7	23	4007.6	0	2517.9	23	3933.6	0
rc103	60.3	21	3739.8	0	24.2	21	3739.8	0	4609.4	21	3774.4	0
rc104	75.4	15	3123.7	0	19.5	15	3123.7	0	—	—	—	—
rc105	52.1	22	4030.0	0	32.9	22	4030.0	0	1677.6	24	4142.6	0
rc106	67.3	22	3735.4	0	43.2	22	3735.4	0	1632.7	21	3661.8	0
rc107	41.0	22	3515.4	0	17.0	22	3515.4	0	3246.2	22	3504.7	0
rc108	47.3	17	3115.6	0	11.8	17	3115.6	0	5205.7	18	3191.4	0
rc201	817.4	8	5783.4	10	422.7	8	5783.4	10	—	—	—	—
rc202	816.7	7	5042.8	11	461.9	7	5042.8	11	—	—	—	—
rc203	781.4	9	4393.2	7	472.8	9	4393.2	7	—	—	—	—
rc204	1351.0	5	3683.4	6	590.2	5	3683.4	6	—	—	—	—
rc205	1202.1	8	5395.7	11	795.4	8	5395.7	11	—	—	—	—
rc206	5815.9	7	4973.4	9	2376.0	7	4973.4	9	—	—	—	—
rc207	2052.8	7	4784.9	8	1148.8	7	4784.9	8	—	—	—	—
rc208	5848.9	6	4041.8	8	3193.4	6	4041.8	8	—	—	—	—

Table 12: Results for instances with recharging at the depot and five stations per city.