

```
2 Option LIMCOL=0, LIMROW=0;
3 Option Solprint=off;
4 * this version of model doesn't have operating modes
5
6
7 ***** DEFINING SETS *****
8 Set I Bus types /B06,B14,B15,B16,B17,B21,B22,B23,B26,B28/;
9
10 Set K Inputs /F fuel usage, M maintenance cost, DEF/;
11
12 Set P Parameters for inputs /MIN, MAX, PRICE/
13
14 Set E Emission /CO2,NO/;
15
16 Set R Routes /R003, R004, R005, R007, R009, R010, R014, R016, R018,
17 R019, R022, R025,R050, R061, R094, R250, R649, R652, R667, R672, R674,
18 R675, R766/;
19
20 Set T Time periods /T05, T06, T07, T08, T09, T10, T11, T12, T13, T14,
21 T15, T16, T17, T18, T19,T20, T21, T22, T23, T24/;
22
23
24 ***** IMPORTING DATA *****
25 Table AMS(I,R,K)
262 display AMS;
263 * fuel usage: gallon per mile; M, DEF: dollar per mile
264
265
266 Table EL(I,E) emission levels
283 display EL;
284 * kilograms of emission/gallon of fuel
285
286 Set IR(I,R) Mapping buses to routes; IR(I,R)=YES;
287 IR(I,R)$(AMS(I,R,"F")>500) =NO;
288
289
290
291 Parameters D(R) Route distance (miles)
292 /R003 11.0283, R004 13.7994, R005 12.9161, R007 11.1495, R009 14.4419,
293 R010 11.9998, R014 13.6039, R016 10.8919, R018 8.7030, R019 8.0338,
294 R022 18.2136, R025 17.0215, R050 8.5292, R061 15.9828, R094 11.0846,
295 R250 18.3216, R649 7.9602, R652 13.99,R667 13.3804, R672 14.2926,
296 R674 25.3110, R675 20.2573, R766 18.1889/;
297
298
299 Parameters S(I) Number of passenger seats on each type of bus
300 /B06 43, B14 58, B15 38, B16 38, B17 58, B21 38, B22 40, B23 38,
301 B26 40, B28 38/;
302
303
304 Parameters Trip(R) # of trips a bus can run within each time period
305 /R003 1.1950, R004 0.9570, R005 0.9460, R007 1.0390, R009 1.0000,
306 R010 1.0340, R014 0.8960, R016 0.9960, R018 1.2890, R019 0.8960,
307 R022 0.7350, R025 0.8613, R050 1.3420, R061 0.8610, R094 1.7820,
308 R250 1.3990, R649 2.2120, R652 1.3219, R667 1.2628, R672 1.5040,
309 R674 0.9550, R675 0.9630, R766 1.3770/;
310
311
312 Scalar CQ_OPC Weight of operating costs in objective /1/;
313
314 Scalar CQ_TEC Weight of total emission costs in objective /1/;
315
316 Scalar delta Probability of meeting max demand /0.9/;
317
318
```

```

319 Table CN(T,K,P) Parameter table for inputs
386 display CN;
387 * maximum and minimum level of inputs, input prices
388
389 Table MaxBus(T,I) Parameter table for inputs
416 display MaxBus;
417
418
419 Table EMIS(E,P) Parameter table for emissions
428 display EMIS;
429 * emission price: dollar per kilogram
430
431
432 Table FRQ(R,T) Minimum frequency of bus service
462 display FRQ;
463
464 Table CR(R,T) Capacity requirement (number of passengers) on each route
494 display CR;
495
496
497
498 ***** DELARATION OF VARIABLES *****
499 Variable X(I,R,T) Number of type I bus assigned to route R in period T,
500     Seat average number of seats, Y(T,K) Each input usage level,
501     TY(K) total performance measure, Fuel daily fuel,
502     Maint daily maint, OPC(T) Operating cost by time period,
503     BY(I,K), TOPC Total operating cost, TX(T,I),
504     Em(T,E) Total emission level, TM total milage per day,
505     EC(T) Emission cost by time, TEC total emissions cost,
506     TC Total cost, CO2L CO2 level, NOL NOx level;
507
508 Integer variable X(I,R,T);
509
510
511 ***** EQUATIONS *****
512 Equations Perform(T,K), OperatingCost(T), MaxInput(T,K), MinInput(T,K),
513     TotalY(K), TotalBus(T,I), BusPerform(I,K), TotalOPC,
514     PasDemand(T,R), Freq(T,R), Emissionlevel(T,E),
515     TotalEC, Miles, SeatNum, FuelNum, MaxEmis(T,E), MinEmis(T,E),
516     CO2level, NOxlevel, TotalEC, MaintNum, HourBus(T,I),
517     EmissionCost(T), TotalCost;
518
519
520 * Define performance measures and operating cost
521 Perform(T,K)..      Sum(R,Sum(I$IR(I,R),AMS(I,R,K)*X(I,R,T)*D(R)*
522     Trip(R)))=E= Y(T,K);
523 BusPerform(I,K)..  Sum(R,Sum(T,AMS(I,R,K)*X(I,R,T)*D(R)*Trip(R)*
524     CN(T,K,"PRICE")))=E= BY(I,K);
525 OperatingCost(T).. Sum(K,Y(T,K)*CN(T,K,"PRICE"))=L= OPC(T);
526 TotalOPC..        Sum(T,OPC(T))=E= TOPC;
527 MaxInput(T,K)..   Y(T,K)=L= CN(T,K,"MAX");
528 MinInput(T,K)..   Y(T,K)=G= CN(T,K,"MIN");
529 TotalY(K)..        Sum(T,Y(T,K))=E= TY(K);
530
531
532
533 TotalBus(T,I)..    Sum(R$IR(I,R),X(I,R,T))=L= MaxBus(T,I);
534 HourBus(T,I)..     Sum(R$IR(I,R),X(I,R,T))=E= TX(T,I);
535 Miles..            Sum(I,Sum(R,Sum(T,X(I,R,T)*D(R)*Trip(R))))=E= TM;
536 SeatNum..          Sum(T,Sum(R,Sum(I$IR(I,R),X(I,R,T)*Trip(R)*S(I))))
537     /20=E= Seat;
538 FuelNum..          Sum(T,Y(T,"F"))=E= Fuel;
539 MaintNum..         Sum(T,Y(T,"M"))=E= Maint;
540
541

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542 * Service attribute 1: seats for passeners
543 PasDemand(T,R)..      Sum(I$IR(I,R),X(I,R,T)*Trip(R)*S(I))=G=
544                      delta*CR(R,T);
545
546 * Service attribute 2: minimum frequency of bus service
547 Freq(T,R)..          Sum(I$IR(I,R),X(I,R,T)*Trip(R))=G= FRQ(R,T);
548
549
550 * Define emission levels and costs
551 Emissionlevel(T,E).. Sum(I,Sum(R$IR(I,R),X(I,R,T)*AMS(I,R,"F")*
552                      EL(I,E)*D(R)*Trip(R))) =L= Em(T,E);
553 MaxEmis(T,E)..       Em(T,E)=L= EMIS(E,"MAX");
554 MinEmis(T,E)..       Em(T,E)=G= EMIS(E,"MIN");
555 CO2level..           Sum(T,Em(T,"CO2")) =E= CO2L;
556 NOxlevel..           Sum(T,Em(T,"NO")) =E= NOL;
557 EmissionCost(T)..    EC(T) =E= Sum(E,EMIS(E,"PRICE")*Em(T,E));
558 TotalEC..            Sum(T,EC(T)) =E= TEC;
559
560
561 TotalCost..          CQ OPC*TOPC+CQ TEC*TEC =L= TC;
562
563
564 ***** MODEL *****
565 ** minimizing total costs
566 Model BusRouting1 /All/;
567 Solve BusRouting1 Using MIP Minimizing TC;
568
569 ***** RESULTS TABLES *****
570
571 Set HDR Table headers /LOWER, LEVEL, UPPER/;
572
573 Parameter RTPPerform(T,K,HDR) Table for performance measure equations;
574 RTPPerform (T,K,"LOWER") = MinInput.LO(T,K);
575 RTPPerform (T,K,"LEVEL") = MaxInput.L(T,K);
576 RTPPerform(T,K,"UPPER") = MaxInput.UP(T,K);
577 Option RTPPerform:3:2:1;
578 Display RTPPerform;
579
580 Parameter RTTotalBus(T,I,HDR) Results table for bus usage equations;
581 RTTotalBus(T,I,"LOWER") = TotalBus.LO(T,I);
582 RTTotalBus(T,I,"LEVEL") = TotalBus.L(T,I);
583 RTTotalBus(T,I,"UPPER") = TotalBus.UP(T,I);
584 Option RTTotalBus:3:2:1;
585 Display RTTotalBus;
586
587 Parameter RTPasDemand(T,R,HDR) Table for passenger demand equations;
588 RTPasDemand(T,R,"LOWER") = PasDemand.LO(T,R);
589 RTPasDemand(T,R,"LEVEL") = PasDemand.L(T,R);
590 RTPasDemand(T,R,"UPPER") = PasDemand.UP(T,R);
591 Option RTPasDemand:3:2:1;
592 Display RTPasDemand;
593
594 Parameter RTFreq(T,R,HDR) Results table for trip frequency equations;
595 RTFreq(T,R,"LOWER") = Freq.LO(T,R);
596 RTFreq(T,R,"LEVEL") = Freq.L(T,R);
597 RTFreq(T,R,"UPPER") = Freq.UP(T,R);
598 Option RTFreq:3:2:1;
599 Display RTFreq;
600
601 Parameter RTX(I,T,R) Results table for assignment variable;
602 RTX(I,T,R) = 0;
603 RTX(I,T,R) = X.L(I,R,T);
604 Option RTX:0:1:1;
605 Display RTX;
606

```

```
607 Parameter RTY(T,K) Results table for performance measures by period;
608 RTY(T,K)=0;
609 RTY(T,K)=Y.L(T,K);
610 Option RTY:2:1:1;
611 Display RTY;
612
613 Parameter RTEm(T,E) Results table for emission levels in each period;
614 RTEm(T,E)=0;
615 RTEm(T,E)=Em.L(T,E);
616 Option RTEm:2:1:1; Display RTEm;
617
618 Parameter RTOPC(T) Operating cost by time period;
619 RTOPC(T)=0;
620 RTOPC(T)=OPC.L(T);
621 Option RTOPC:2; Display RTOPC;
622
623 Parameter RTEC(T) Emission cost by time;
624 RTEC(T)=0;
625 RTEC(T)=EC.L(T);
626 Option RTEC:2; Display RTEC;
627
628
629
630
```

SEQ	GLOBAL	TYPE	PARENT	LOCAL	FILENAME
1	1	INPUT	0	0	C:\Users\Bixuan\Documents\gamsdir\projdir\Bus_Schedule_2-5-2015.gms
2	28	INCLUDE	1	28	.C:\Users\Bixuan\Documents\gamsdir\projdir\AMS.csv
3	269	INCLUDE	1	38	.C:\Users\Bixuan\Documents\gamsdir\projdir\EL-avg.csv
4	322	INCLUDE	1	80	.C:\Users\Bixuan\Documents\gamsdir\projdir\CN-avg.csv
5	392	INCLUDE	1	89	.C:\Users\Bixuan\Documents\gamsdir\projdir\MaxBus.csv
6	422	INCLUDE	1	98	.C:\Users\Bixuan\Documents\gamsdir\projdir\EMIS.csv
7	435	INCLUDE	1	108	.C:\Users\Bixuan\Documents\gamsdir\projdir\FRQ.csv
8	467	INCLUDE	1	116	.C:\Users\Bixuan\Documents\gamsdir\projdir\APC-avg.csv

COMPILATION TIME = 0.000 SECONDS 3 MB 24.2.2 r44857 WEX-WEI

---- 262 PARAMETER AMS

	F	M	DEF
B06.R003	0.243	1.457	1.010000E-4
B06.R004	0.201	1.457	1.010000E-4
B06.R005	0.223	1.457	1.010000E-4
B06.R007	0.250	1.457	1.010000E-4
B06.R009	0.231	1.457	1.010000E-4
B06.R010	0.292	1.457	1.010000E-4
B06.R014	0.215	1.457	1.010000E-4
B06.R016	0.260	1.457	1.010000E-4
B06.R018	0.241	1.457	1.010000E-4
B06.R019	0.322	1.457	1.010000E-4
B06.R022	0.255	1.457	1.010000E-4
B06.R025	0.235	1.457	1.010000E-4
B06.R050	0.595	1.457	1.010000E-4
B06.R061	0.273	1.457	1.010000E-4
B06.R094	0.290	1.457	1.010000E-4
B06.R250	1.205	1.457	1.010000E-4
B06.R649	0.312	1.457	1.010000E-4
B06.R652	0.180	1.457	1.010000E-4
B06.R667	0.811	1.457	1.010000E-4
B06.R672	0.191	1.457	1.010000E-4
B06.R674	0.180	1.457	1.010000E-4
B06.R675	0.206	1.457	1.010000E-4
B06.R766	0.463	1.457	1.010000E-4
B14.R003	0.675	1.446	
B14.R004	0.423	1.446	
B14.R005	0.468	1.446	
B14.R007	0.525	1.446	
B14.R009	0.484	1.446	
B14.R010	0.614	1.446	
B14.R014	0.451	1.446	
B14.R016	0.419	1.446	
B14.R018	0.506	1.446	
B14.R019	0.676	1.446	
B14.R022	0.459	1.446	
B14.R025	0.494	1.446	
B14.R050	0.406	1.446	
B14.R061	0.464	1.446	
B14.R094	0.722	1.446	
B14.R250	2.529	1.446	
B14.R649	0.558	1.446	
B14.R652	0.378	1.446	
B14.R667	2.412	1.446	
B14.R672	0.400	1.446	
B14.R674	0.378	1.446	
B14.R675	0.433	1.446	
B14.R766	1.568	1.446	
B15.R003	0.195	0.862	4.180000E-5
B15.R004	0.158	0.862	4.180000E-5
B15.R005	0.201	0.862	4.180000E-5
B15.R007	0.211	0.862	4.180000E-5
B15.R009	0.195	0.862	4.180000E-5
B15.R010	0.209	0.862	4.180000E-5
B15.R014	0.198	0.862	4.180000E-5
B15.R016	0.230	0.862	4.180000E-5
B15.R018	0.198	0.862	4.180000E-5
B15.R019	0.253	0.862	4.180000E-5
B15.R022	0.208	0.862	4.180000E-5
B15.R025	0.199	0.862	4.180000E-5
B15.R050	0.468	0.862	4.180000E-5
B15.R061	0.174	0.862	4.180000E-5
B15.R094	0.228	0.862	4.180000E-5

262 PARAMETER AMS

	F	M	DEF
B15.R250	0.948	0.862	4.180000E-5
B15.R649	0.209	0.862	4.180000E-5
B15.R652	0.142	0.862	4.180000E-5
B15.R667	0.638	0.862	4.180000E-5
B15.R672	0.244	0.862	4.180000E-5
B15.R674	0.142	0.862	4.180000E-5
B15.R675	0.162	0.862	4.180000E-5
B15.R766	0.376	0.862	4.180000E-5
B16.R003	0.233	0.872	1.910000E-4
B16.R004	0.261	0.872	1.910000E-4
B16.R005	0.249	0.872	1.910000E-4
B16.R007	0.259	0.872	1.910000E-4
B16.R009	0.233	0.872	1.910000E-4
B16.R010	0.246	0.872	1.910000E-4
B16.R014	0.253	0.872	1.910000E-4
B16.R016	0.268	0.872	1.910000E-4
B16.R018	0.357	0.872	1.910000E-4
B16.R019	0.256	0.872	1.910000E-4
B16.R022	0.230	0.872	1.910000E-4
B16.R025	0.215	0.872	1.910000E-4
B16.R050	0.287	0.872	1.910000E-4
B16.R061	0.235	0.872	1.910000E-4
B16.R094	0.234	0.872	1.910000E-4
B16.R250	1.284	0.872	1.910000E-4
B16.R649	0.193	0.872	1.910000E-4
B16.R652	0.192	0.872	1.910000E-4
B16.R667	0.864	0.872	1.910000E-4
B16.R672	0.282	0.872	1.910000E-4
B16.R674	0.192	0.872	1.910000E-4
B16.R675	0.196	0.872	1.910000E-4
B16.R766	0.234	0.872	1.910000E-4
B17.R003	0.710	0.907	
B17.R004	0.508	0.907	
B17.R005	0.501	0.907	
B17.R007	0.630	0.907	
B17.R009	0.581	0.907	
B17.R010	0.737	0.907	
B17.R014	0.542	0.907	
B17.R016	0.490	0.907	
B17.R018	0.607	0.907	
B17.R019	0.812	0.907	
B17.R022	0.551	0.907	
B17.R025	0.593	0.907	
B17.R050	2.207	0.907	
B17.R061	0.557	0.907	
B17.R094	0.418	0.907	
B17.R250	0.640	0.907	
B17.R649	0.670	0.907	
B17.R652	0.454	0.907	
B17.R667	2.767	0.907	
B17.R672	0.481	0.907	
B17.R674	0.454	0.907	
B17.R675	0.820	0.907	
B17.R766	1.168	0.907	
B21.R003	0.200	0.722	0.019
B21.R004	0.150	0.722	0.019
B21.R005	0.180	0.722	0.019
B21.R007	0.200	0.722	0.019
B21.R009	0.246	0.722	0.019
B21.R010	0.199	0.722	0.019
B21.R014	0.161	0.722	0.019

262 PARAMETER AMS

	F	M	DEF
B21.R016	0.222	0.722	0.019
B21.R018	0.199	0.722	0.019
B21.R019	0.219	0.722	0.019
B21.R022	0.163	0.722	0.019
B21.R025	0.185	0.722	0.019
B21.R050	0.444	0.722	0.019
B21.R061	0.178	0.722	0.019
B21.R094	0.216	0.722	0.019
B21.R250	0.899	0.722	0.019
B21.R649	0.246	0.722	0.019
B21.R652	0.134	0.722	0.019
B21.R667	0.605	0.722	0.019
B21.R672	0.086	0.722	0.019
B21.R674	0.134	0.722	0.019
B21.R675	0.149	0.722	0.019
B21.R766	0.346	0.722	0.019
B22.R003	0.093	2.402	0.006
B22.R004	0.077	2.402	0.006
B22.R005	0.085	2.402	0.006
B22.R007	0.096	2.402	0.006
B22.R009	0.088	2.402	0.006
B22.R010	0.181	2.402	0.006
B22.R014	0.082	2.402	0.006
B22.R016	0.092	2.402	0.006
B22.R018	0.092	2.402	0.006
B22.R019	0.250	2.402	0.006
B22.R022	0.084	2.402	0.006
B22.R025	0.090	2.402	0.006
B22.R050	0.228	2.402	0.006
B22.R061	0.085	2.402	0.006
B22.R094	0.243	2.402	0.006
B22.R250	0.461	2.402	0.006
B22.R649	0.102	2.402	0.006
B22.R652	0.069	2.402	0.006
B22.R667	0.310	2.402	0.006
B22.R672	0.073	2.402	0.006
B22.R674	0.069	2.402	0.006
B22.R675	0.079	2.402	0.006
B22.R766	0.177	2.402	0.006
B23.R003	0.229	0.580	0.118
B23.R004	0.236	0.580	0.118
B23.R005	0.256	0.580	0.118
B23.R007	0.244	0.580	0.118
B23.R009	0.227	0.580	0.118
B23.R010	0.227	0.580	0.118
B23.R014	0.236	0.580	0.118
B23.R016	0.268	0.580	0.118
B23.R018	0.245	0.580	0.118
B23.R019	0.290	0.580	0.118
B23.R022	0.222	0.580	0.118
B23.R025	0.327	0.580	0.118
B23.R050	1.907	0.580	0.118
B23.R061	0.235	0.580	0.118
B23.R094	0.226	0.580	0.118
B23.R250	2.995	0.580	0.118
B23.R649	0.334	0.580	0.118
B23.R652	0.250	0.580	0.118
B23.R667	0.258	0.580	0.118
B23.R672	0.102	0.580	0.118
B23.R674	0.250	0.580	0.118
B23.R675	0.204	0.580	0.118

262 PARAMETER AMS

	F	M	DEF
B23.R766	0.567	0.580	0.118
B26.R003	0.114	2.245	0.002
B26.R004	0.095	2.245	0.002
B26.R005	0.105	2.245	0.002
B26.R007	0.162	2.245	0.002
B26.R009	0.105	2.245	0.002
B26.R010	0.208	2.245	0.002
B26.R014	0.101	2.245	0.002
B26.R016	0.112	2.245	0.002
B26.R018	0.113	2.245	0.002
B26.R019	0.151	2.245	0.002
B26.R022	0.103	2.245	0.002
B26.R025	0.110	2.245	0.002
B26.R050	0.279	2.245	0.002
B26.R061	0.104	2.245	0.002
B26.R094	0.136	2.245	0.002
B26.R250	0.566	2.245	0.002
B26.R649	0.125	2.245	0.002
B26.R652	0.085	2.245	0.002
B26.R667	0.381	2.245	0.002
B26.R672	0.090	2.245	0.002
B26.R674	0.085	2.245	0.002
B26.R675	0.097	2.245	0.002
B26.R766	0.218	2.245	0.002
B28.R003	0.221	0.840	0.047
B28.R004	0.212	0.840	0.047
B28.R005	0.252	0.840	0.047
B28.R007	0.224	0.840	0.047
B28.R009	0.226	0.840	0.047
B28.R010	0.233	0.840	0.047
B28.R014	0.224	0.840	0.047
B28.R016	0.252	0.840	0.047
B28.R018	0.197	0.840	0.047
B28.R019	0.242	0.840	0.047
B28.R022	0.222	0.840	0.047
B28.R025	0.268	0.840	0.047
B28.R050	0.295	0.840	0.047
B28.R061	0.228	0.840	0.047
B28.R094	0.238	0.840	0.047
B28.R250	1.351	0.840	0.047
B28.R649	0.298	0.840	0.047
B28.R652	0.202	0.840	0.047
B28.R667	0.909	0.840	0.047
B28.R672	0.214	0.840	0.047
B28.R674	0.202	0.840	0.047
B28.R675	0.195	0.840	0.047
B28.R766	0.520	0.840	0.047

---- 283 PARAMETER EL emission levels

	CO2	NO
B06	10.277	0.035
B14	10.277	0.044
B15	10.277	0.037
B16	10.277	0.025
B17	10.277	0.034
B21	10.277	0.008
B22	10.277	0.008
B23	10.277	0.006

283 PARAMETER EL emission levels

	CO2	NO
B26	10.277	0.003
B28	10.277	0.004

---- 386 PARAMETER CN Parameter table for inputs

	MAX	PRICE
T05.F	+INF	3.141
T05.M	+INF	1.000
T05.DEF	+INF	1.200
T06.F	+INF	3.141
T06.M	+INF	1.000
T06.DEF	+INF	1.200
T07.F	+INF	3.141
T07.M	+INF	1.000
T07.DEF	+INF	1.200
T08.F	+INF	3.141
T08.M	+INF	1.000
T08.DEF	+INF	1.200
T09.F	+INF	3.141
T09.M	+INF	1.000
T09.DEF	+INF	1.200
T10.F	+INF	3.141
T10.M	+INF	1.000
T10.DEF	+INF	1.200
T11.F	+INF	3.141
T11.M	+INF	1.000
T11.DEF	+INF	1.200
T12.F	+INF	3.141
T12.M	+INF	1.000
T12.DEF	+INF	1.200
T13.F	+INF	3.141
T13.M	+INF	1.000
T13.DEF	+INF	1.200
T14.F	+INF	3.141
T14.M	+INF	1.000
T14.DEF	+INF	1.200
T15.F	+INF	3.141
T15.M	+INF	1.000
T15.DEF	+INF	1.200
T16.F	+INF	3.141
T16.M	+INF	1.000
T16.DEF	+INF	1.200
T17.F	+INF	3.141
T17.M	+INF	1.000
T17.DEF	+INF	1.200
T18.F	+INF	3.141
T18.M	+INF	1.000
T18.DEF	+INF	1.200
T19.F	+INF	3.141
T19.M	+INF	1.000
T19.DEF	+INF	1.200
T20.F	+INF	3.141
T20.M	+INF	1.000
T20.DEF	+INF	1.200
T21.F	+INF	3.141
T21.M	+INF	1.000
T21.DEF	+INF	1.200
T22.F	+INF	3.141
T22.M	+INF	1.000

386 PARAMETER CN Parameter table for inputs

	MAX	PRICE
T22.DEF	+INF	1.200
T23.F	+INF	3.141
T23.M	+INF	1.000
T23.DEF	+INF	1.200
T24.F	+INF	3.141
T24.M	+INF	1.000
T24.DEF	+INF	1.200

---- 416 PARAMETER MaxBus Parameter table for inputs

	B06	B14	B15	B16	B17	B21
T05	27.000	17.000	30.000	40.000	20.000	29.000
T06	27.000	17.000	30.000	40.000	20.000	29.000
T07	27.000	17.000	30.000	40.000	20.000	29.000
T08	27.000	17.000	30.000	40.000	20.000	29.000
T09	27.000	17.000	30.000	40.000	20.000	29.000
T10	27.000	17.000	30.000	40.000	20.000	29.000
T11	27.000	17.000	30.000	40.000	20.000	29.000
T12	27.000	17.000	30.000	40.000	20.000	29.000
T13	27.000	17.000	30.000	40.000	20.000	29.000
T14	27.000	17.000	30.000	40.000	20.000	29.000
T15	27.000	17.000	30.000	40.000	20.000	29.000
T16	27.000	17.000	30.000	40.000	20.000	29.000
T17	27.000	17.000	30.000	40.000	20.000	29.000
T18	27.000	17.000	30.000	40.000	20.000	29.000
T19	27.000	17.000	30.000	40.000	20.000	29.000
T20	27.000	17.000	30.000	40.000	20.000	29.000
T21	27.000	17.000	30.000	40.000	20.000	29.000
T22	27.000	17.000	30.000	40.000	20.000	29.000
T23	27.000	17.000	30.000	40.000	20.000	29.000
T24	27.000	17.000	30.000	40.000	20.000	29.000
+	B22	B23	B26	B28		
T05	1.000	86.000	1.000	58.000		
T06	1.000	86.000	1.000	58.000		
T07	1.000	86.000	1.000	58.000		
T08	1.000	86.000	1.000	58.000		
T09	1.000	86.000	1.000	58.000		
T10	1.000	86.000	1.000	58.000		
T11	1.000	86.000	1.000	58.000		
T12	1.000	86.000	1.000	58.000		
T13	1.000	86.000	1.000	58.000		
T14	1.000	86.000	1.000	58.000		
T15	1.000	86.000	1.000	58.000		
T16	1.000	86.000	1.000	58.000		
T17	1.000	86.000	1.000	58.000		
T18	1.000	86.000	1.000	58.000		
T19	1.000	86.000	1.000	58.000		
T20	1.000	86.000	1.000	58.000		
T21	1.000	86.000	1.000	58.000		
T22	1.000	86.000	1.000	58.000		
T23	1.000	86.000	1.000	58.000		
T24	1.000	86.000	1.000	58.000		

---- 428 PARAMETER EMIS Parameter table for emissions

	MAX	PRICE
CO2	+INF	0.038
NO	+INF	3.526

---- 462 PARAMETER FRQ Minimum frequency of bus service

	T05	T06	T07	T08	T09	T10
R003	3.000	4.000	6.000	4.000	4.000	4.000
R004	3.000	3.000	4.000	4.000	5.000	4.000
R005	3.000	6.000	8.000	8.000	8.000	9.000
R007	2.000	2.000	2.000	2.000	2.000	2.000
R009	2.000	2.000	4.000	3.000	2.000	2.000
R010	4.000	5.000	6.000	6.000	6.000	6.000
R014	3.000	4.000	4.000	4.000	3.000	4.000
R016	2.000	3.000	3.000	3.000	3.000	3.000
R018	3.000	5.000	8.000	8.000	8.000	8.000
R019	2.000	5.000	6.000	6.000	6.000	6.000
R022	3.000	4.000	5.000	5.000	4.000	3.000
R025	1.000	2.000	3.000	2.000	2.000	1.000
R061	2.000	2.000	3.000	2.000	2.000	2.000
R094	3.000	6.000	7.000	4.000	2.000	2.000
R250	2.000	4.000	13.000	7.000		
R649		2.000	2.000	1.000		
R652			1.000	1.000		
R667	1.000	4.000	3.000	1.000	1.000	
R672		2.000	2.000	1.000		
R674		2.000	1.000			
R675		2.000	2.000	2.000	2.000	2.000
R766	3.000	4.000	12.000	5.000	1.000	
+	T11	T12	T13	T14	T15	T16
R003	5.000	6.000	6.000	6.000	7.000	8.000
R004	4.000	4.000	4.000	6.000	7.000	8.000
R005	8.000	8.000	8.000	8.000	8.000	8.000
R007	2.000	2.000	2.000	2.000	2.000	3.000
R009	2.000	2.000	2.000	3.000	3.000	3.000
R010	6.000	6.000	6.000	6.000	6.000	6.000
R014	3.000	3.000	3.000	4.000	4.000	4.000
R016	3.000	3.000	3.000	3.000	3.000	3.000
R018	8.000	8.000	8.000	8.000	8.000	8.000
R019	6.000	6.000	6.000	6.000	6.000	6.000
R022	3.000	3.000	3.000	3.000	4.000	4.000
R025	1.000	1.000	1.000	1.000	2.000	2.000
R061	2.000	2.000	2.000	2.000	3.000	4.000
R094	2.000	2.000	2.000	3.000	4.000	5.000
R250			1.000	1.000	6.000	12.000
R649						2.000
R652						1.000
R667					2.000	4.000
R672					1.000	2.000
R674						2.000
R675	2.000	2.000	2.000	2.000	2.000	2.000
R766	1.000		1.000	1.000	1.000	
+	T17	T18	T19	T20	T21	T22
R003	9.000	6.000	5.000	4.000	4.000	2.000
R004	9.000	6.000	4.000	4.000	4.000	2.000
R005	7.000	6.000	6.000	4.000	4.000	4.000

462 PARAMETER FRQ Minimum frequency of bus service

	T17	T18	T19	T20	T21	T22
+						
R007	2.000	2.000	2.000	2.000	2.000	2.000
R009	2.000	2.000	2.000	2.000	2.000	2.000
R010	5.000	4.000	4.000	3.000	3.000	2.000
R014	4.000	3.000	3.000	2.000	2.000	2.000
R016	3.000	3.000	3.000	3.000	2.000	2.000
R018	8.000	7.000	7.000	5.000	4.000	4.000
R019	6.000	5.000	5.000	4.000	3.000	3.000
R022	4.000	3.000	2.000	2.000	2.000	2.000
R025	1.000	2.000				
R061	4.000	2.000	1.000	1.000	1.000	1.000
R094	5.000	4.000	1.000			
R250	6.000	3.000	1.000			
R649	2.000	1.000				
R652	1.000					
R667	3.000	1.000				
R672	1.000	1.000				
R674	1.000					
R675	2.000	1.000	1.000	1.000	1.000	1.000
R766	1.000	1.000	1.000	1.000		

	T23	T24
+		
R003	2.000	1.000
R004	2.000	1.000
R005	3.000	1.000
R007	1.000	1.000
R009	2.000	1.000
R010	1.000	1.000
R014	2.000	1.000
R016	2.000	2.000
R018	3.000	3.000
R019	2.000	1.000
R022	2.000	1.000
R061	1.000	

---- 494 PARAMETER CR Capacity requirement (number of passengers) on each route

	T05	T06	T07	T08	T09	T10
R003	26.534	25.733	89.988	49.313	43.372	39.253
R004	15.989	20.382	49.924	38.153	40.017	29.500
R005	26.594	36.341	56.882	56.019	41.558	19.017
R007	8.554	19.036	17.809	22.298	27.230	17.792
R009	19.910	17.545	27.909	31.671	32.240	20.819
R010	52.051	71.198	124.317	127.143	122.878	126.378
R014	5.152	23.198	19.843	27.570	38.165	30.553
R016	21.128	34.973	69.849	92.490	100.130	91.589
R018	39.500	31.333	20.500	14.629	31.896	25.375
R019	9.049	37.771	94.207	35.925	60.436	42.061
R022	12.517	24.795	80.421	43.330	35.585	31.969
R025	25.197	21.585	57.000	34.590	20.708	15.578
R050		14.797	62.080	85.941	46.143	10.024
R061	15.799	24.921	39.786	38.613	28.851	15.065
R094	17.000	30.448	64.220	41.590	28.063	22.108
R250		42.902	44.483			
R649		8.603	22.241	16.832		
R667		27.889	76.053		15.000	
R672		5.304	18.621	17.727		
R674		23.917				

494 PARAMETER CR Capacity requirement (number of passengers) on each route						
	T05	T06	T07	T08	T09	T10
R675	12.654	36.192	53.819	26.710	11.857	36.272
R766	33.789	33.295	48.282			
+	T11	T12	T13	T14	T15	T16
R003	31.024	41.442	52.685	66.487	54.172	72.748
R004	23.119	20.299	39.905	37.810	25.940	29.855
R005	52.661	83.035	29.297	73.353	60.263	45.645
R007	17.491	19.596	17.947	23.984	22.710	26.884
R009	21.188	36.527	39.027	23.761	27.678	33.658
R010	122.034	143.606	155.204	167.395	172.783	169.832
R014	20.734	26.983	39.334	34.404	51.488	52.725
R016	110.220	81.486	113.609	66.938	87.923	38.874
R018	23.375	55.125	51.375	59.125	53.875	35.875
R019	47.837	45.489	51.258	56.574	72.610	59.428
R022	65.972	47.611	47.606	38.654	45.541	58.075
R025	15.455	16.484	18.817	20.475	35.491	47.852
R050		29.370	13.383	68.073	77.439	69.597
R061	22.135	29.014	18.451	31.926	40.518	33.376
R094	23.833	31.479	30.314	36.986	37.818	108.391
R250					39.301	25.575
R649					17.171	22.063
R652					20.400	12.643
R667					17.878	37.516
R672						23.429
R675	27.111	8.129	22.512	31.375		29.294
R766		29.000	22.455		46.751	43.425
+	T17	T18	T19	T20	T21	T22
R003	88.376	53.248	66.733	35.077	39.036	38.065
R004	64.925	47.283	20.683	21.712	11.053	20.012
R005	45.345	23.030	30.350	27.750	30.000	23.119
R007	25.906	16.153	14.751	9.316	7.637	6.472
R009	29.342	15.116	20.620	15.811	13.104	8.225
R010	119.243	121.922	90.533	78.630	61.442	55.825
R014	32.267	20.102	22.738	18.596	20.514	28.725
R016	70.683	66.071	44.714	70.888	43.913	38.072
R018	30.500	28.625	45.917	27.000	18.333	18.750
R019	49.598	74.643	39.132	45.488	49.524	33.549
R022	28.554	28.096	24.410	35.222	28.596	28.555
R025	25.632	19.673				
R050	63.424	32.312				
R061	48.786	28.108	17.048	17.369	13.343	9.925
R094	57.209	24.199	39.755	26.197	19.583	36.613
R250	34.086	34.394	13.692			
R649	14.129	10.504				
R652	18.814	14.378				
R667	55.125	14.801				
R672	9.508					
R674	16.636					
R675	33.855	43.534	27.394	19.654	18.224	15.317
R766	36.774	8.558	24.556	1.741		
+	T23	T24				
R003	23.534	22.591				
R004	15.894	16.666				
R005	18.000	12.000				
R007		5.538				

494 PARAMETER CR Capacity requirement (number of passengers) on each
route

	T23	T24
R009	12.255	9.000
R010	47.937	14.381
R014	7.837	12.935
R016	29.073	25.932
R018	19.250	14.500
R019	22.337	
R022	21.510	11.800
R094	10.385	5.898

GAMS 24.2.2 r44857 Released Mar 4, 2014 WEX-WEI x86_64/MS Windows 06/11/15 11:52:56 Page 16
OPTIMAL BUS ROUTING ASSIGNMENT
Model Analysis SOLVE BusRouting1 Using MIP From line 567

**** 4600 Integer +INF Bounds have been reset to 100

MODEL STATISTICS

BLOCKS OF EQUATIONS	23	SINGLE EQUATIONS	1,702
BLOCKS OF VARIABLES	17	SINGLE VARIABLES	4,982
NON ZERO ELEMENTS	63,424	DISCRETE VARIABLES	4,600

GENERATION TIME = 0.219 SECONDS 8 MB 24.2.2 r44857 WEX-WEI

EXECUTION TIME = 0.235 SECONDS 8 MB 24.2.2 r44857 WEX-WEI

S O L V E S U M M A R Y

MODEL BusRouting1 OBJECTIVE TC
 TYPE MIP DIRECTION MINIMIZE
 SOLVER OSICPLEX FROM LINE 567

**** SOLVER STATUS 1 Normal Completion
 **** MODEL STATUS 1 Optimal
 **** OBJECTIVE VALUE 28742.3802

RESOURCE USAGE, LIMIT 0.199 1000.000
 ITERATION COUNT, LIMIT 30 2000000000

OSI CPLEX 24.2.2 r44857 Released Mar 4, 2014 WEI x86_64/MS Windows

OsiCplex (Osi library 0.106, CPLEX library 120600.00)
 Tried aggregator 1 time.
 MIP Presolve eliminated 993 rows and 1362 columns.
 MIP Presolve modified 4525 coefficients.
 Reduced MIP has 609 rows, 3620 columns, and 7564 nonzeros.
 Reduced MIP has 1165 binaries, 2455 generals, 0 SOSs, and 0 indicators.
 Presolve time = 0.02 sec. (13.17 ticks)
 Found incumbent of value 60517.966119 after 0.05 sec. (16.91 ticks)
 Probing time = 0.00 sec. (1.15 ticks)
 Tried aggregator 1 time.
 MIP Presolve eliminated 568 rows and 3390 columns.
 Reduced MIP has 41 rows, 230 columns, and 540 nonzeros.
 Reduced MIP has 65 binaries, 165 generals, 0 SOSs, and 0 indicators.
 Presolve time = 0.00 sec. (1.33 ticks)
 Probing time = 0.00 sec. (0.09 ticks)
 Tried aggregator 1 time.
 Reduced MIP has 41 rows, 230 columns, and 540 nonzeros.
 Reduced MIP has 65 binaries, 165 generals, 0 SOSs, and 0 indicators.
 Presolve time = 0.00 sec. (0.26 ticks)
 Probing time = 0.00 sec. (0.09 ticks)
 Clique table members: 2.
 MIP emphasis: balance optimality and feasibility.
 MIP search method: dynamic search.
 Parallel mode: none, using 1 thread.
 Root relaxation solution time = 0.00 sec. (0.17 ticks)

Nodes			Cuts/					
Node	Left	Objective	IInf	Best Integer	Best Bound	ItCnt	Gap	
*	0+	0		30762.5077	25785.9203	30	16.18 %	
*	0	0	integral	0	28742.3802	28742.3802	30	0.00 %

Elapsed time = 0.20 sec. (43.84 ticks, tree = 0.00 MB)

Root node processing (before b&c):
 Real time = 0.20 sec. (44.16 ticks)
 Sequential b&c:
 Real time = 0.00 sec. (0.00 ticks)

 Total (root+branch&cut) = 0.20 sec. (44.16 ticks)

Solved to optimality.
 MIP solution: 2.874238e+004 (0 nodes, 0.199 seconds)
 Best possible: 2.874238e+004
 Absolute gap: 0.000000e+000 (absolute tolerance optca: 0)
 Relative gap: 0.000000% (relative tolerance optcr: 10%)

GAMS 24.2.2 r44857 Released Mar 4, 2014 WEX-WEI x86_64/MS Windows 06/11/15 11:52:56 Page 19
OPTIMAL BUS ROUTING ASSIGNMENT
Solution Report SOLVE BusRouting1 Using MIP From line 567

**** REPORT SUMMARY :
0 NONOPT
0 INFEASIBLE
0 UNBOUNDED

---- 578 PARAMETER RTPerform Table for performance measure equations

	LEVEL	UPPER
T05.F	165.932	+INF
T05.M	516.645	+INF
T05.DEF	30.174	+INF
T06.F	264.702	+INF
T06.M	823.715	+INF
T06.DEF	60.397	+INF
T07.F	450.718	+INF
T07.M	1243.659	+INF
T07.DEF	70.306	+INF
T08.F	317.762	+INF
T08.M	918.855	+INF
T08.DEF	53.015	+INF
T09.F	182.123	+INF
T09.M	633.609	+INF
T09.DEF	46.341	+INF
T10.F	169.059	+INF
T10.M	587.961	+INF
T10.DEF	44.273	+INF
T11.F	170.451	+INF
T11.M	586.060	+INF
T11.DEF	45.878	+INF
T12.F	176.751	+INF
T12.M	603.685	+INF
T12.DEF	47.436	+INF
T13.F	193.164	+INF
T13.M	626.940	+INF
T13.DEF	47.436	+INF
T14.F	203.894	+INF
T14.M	675.400	+INF
T14.DEF	49.110	+INF
T15.F	300.523	+INF
T15.M	889.725	+INF
T15.DEF	58.103	+INF
T16.F	398.165	+INF
T16.M	1106.607	+INF
T16.DEF	69.751	+INF
T17.F	312.999	+INF
T17.M	949.370	+INF
T17.DEF	60.447	+INF
T18.F	232.303	+INF
T18.M	707.498	+INF
T18.DEF	50.559	+INF
T19.F	150.009	+INF
T19.M	489.710	+INF
T19.DEF	33.856	+INF
T20.F	113.413	+INF
T20.M	406.762	+INF
T20.DEF	25.706	+INF
T21.F	102.562	+INF
T21.M	375.181	+INF
T21.DEF	23.064	+INF
T22.F	89.781	+INF
T22.M	330.468	+INF
T22.DEF	18.413	+INF
T23.F	72.743	+INF
T23.M	278.886	+INF
T23.DEF	9.803	+INF
T24.F	48.678	+INF
T24.M	181.199	+INF
T24.DEF	6.231	+INF

---- 585 PARAMETER RTTotalBus Results table for bus usage equations

	LOWER	LEVEL	UPPER
T05.B06	-INF		27.000
T05.B14	-INF		17.000
T05.B15	-INF	3.000	30.000
T05.B16	-INF	3.000	40.000
T05.B17	-INF	2.000	20.000
T05.B21	-INF	29.000	29.000
T05.B22	-INF		1.000
T05.B23	-INF	14.000	86.000
T05.B26	-INF		1.000
T05.B28	-INF		58.000
T06.B06	-INF		27.000
T06.B14	-INF		17.000
T06.B15	-INF	9.000	30.000
T06.B16	-INF	5.000	40.000
T06.B17	-INF	3.000	20.000
T06.B21	-INF	29.000	29.000
T06.B22	-INF		1.000
T06.B23	-INF	33.000	86.000
T06.B26	-INF		1.000
T06.B28	-INF		58.000
T07.B06	-INF		27.000
T07.B14	-INF	1.000	17.000
T07.B15	-INF	16.000	30.000
T07.B16	-INF	10.000	40.000
T07.B17	-INF	10.000	20.000
T07.B21	-INF	29.000	29.000
T07.B22	-INF		1.000
T07.B23	-INF	40.000	86.000
T07.B26	-INF		1.000
T07.B28	-INF		58.000
T08.B06	-INF		27.000
T08.B14	-INF	1.000	17.000
T08.B15	-INF	14.000	30.000
T08.B16	-INF	5.000	40.000
T08.B17	-INF	6.000	20.000
T08.B21	-INF	29.000	29.000
T08.B22	-INF		1.000
T08.B23	-INF	31.000	86.000
T08.B26	-INF		1.000
T08.B28	-INF		58.000
T09.B06	-INF		27.000
T09.B14	-INF		17.000
T09.B15	-INF	12.000	30.000
T09.B16	-INF	2.000	40.000
T09.B17	-INF		20.000
T09.B21	-INF	29.000	29.000
T09.B22	-INF		1.000
T09.B23	-INF	28.000	86.000
T09.B26	-INF		1.000
T09.B28	-INF		58.000
T10.B06	-INF		27.000
T10.B14	-INF		17.000
T10.B15	-INF	11.000	30.000
T10.B16	-INF	1.000	40.000
T10.B17	-INF		20.000
T10.B21	-INF	29.000	29.000
T10.B22	-INF		1.000
T10.B23	-INF	27.000	86.000
T10.B26	-INF		1.000
T10.B28	-INF		58.000
T11.B06	-INF		27.000

585 PARAMETER RTTotalBus Results table for bus usage equations

	LOWER	LEVEL	UPPER
T11.B14	-INF		17.000
T11.B15	-INF	9.000	30.000
T11.B16	-INF	1.000	40.000
T11.B17	-INF		20.000
T11.B21	-INF	29.000	29.000
T11.B22	-INF		1.000
T11.B23	-INF	28.000	86.000
T11.B26	-INF		1.000
T11.B28	-INF		58.000
T12.B06	-INF		27.000
T12.B14	-INF		17.000
T12.B15	-INF	9.000	30.000
T12.B16	-INF	2.000	40.000
T12.B17	-INF		20.000
T12.B21	-INF	29.000	29.000
T12.B22	-INF		1.000
T12.B23	-INF	29.000	86.000
T12.B26	-INF		1.000
T12.B28	-INF		58.000
T13.B06	-INF		27.000
T13.B14	-INF		17.000
T13.B15	-INF	9.000	30.000
T13.B16	-INF	2.000	40.000
T13.B17	-INF	1.000	20.000
T13.B21	-INF	29.000	29.000
T13.B22	-INF		1.000
T13.B23	-INF	29.000	86.000
T13.B26	-INF		1.000
T13.B28	-INF		58.000
T14.B06	-INF		27.000
T14.B14	-INF	1.000	17.000
T14.B15	-INF	12.000	30.000
T14.B16	-INF	1.000	40.000
T14.B17	-INF	1.000	20.000
T14.B21	-INF	29.000	29.000
T14.B22	-INF		1.000
T14.B23	-INF	30.000	86.000
T14.B26	-INF		1.000
T14.B28	-INF		58.000
T15.B06	-INF		27.000
T15.B14	-INF	1.000	17.000
T15.B15	-INF	17.000	30.000
T15.B16	-INF	2.000	40.000
T15.B17	-INF	5.000	20.000
T15.B21	-INF	29.000	29.000
T15.B22	-INF		1.000
T15.B23	-INF	34.000	86.000
T15.B26	-INF		1.000
T15.B28	-INF		58.000
T16.B06	-INF		27.000
T16.B14	-INF	1.000	17.000
T16.B15	-INF	21.000	30.000
T16.B16	-INF	2.000	40.000
T16.B17	-INF	9.000	20.000
T16.B21	-INF	29.000	29.000
T16.B22	-INF		1.000
T16.B23	-INF	40.000	86.000
T16.B26	-INF		1.000
T16.B28	-INF		58.000
T17.B06	-INF		27.000
T17.B14	-INF	1.000	17.000

585 PARAMETER RTTotalBus Results table for bus usage equations

	LOWER	LEVEL	UPPER
T17.B15	-INF	20.000	30.000
T17.B16	-INF	2.000	40.000
T17.B17	-INF	5.000	20.000
T17.B21	-INF	29.000	29.000
T17.B22	-INF		1.000
T17.B23	-INF	35.000	86.000
T17.B26	-INF		1.000
T17.B28	-INF		58.000
T18.B06	-INF		27.000
T18.B14	-INF		17.000
T18.B15	-INF	9.000	30.000
T18.B16	-INF	3.000	40.000
T18.B17	-INF	3.000	20.000
T18.B21	-INF	29.000	29.000
T18.B22	-INF		1.000
T18.B23	-INF	29.000	86.000
T18.B26	-INF		1.000
T18.B28	-INF		58.000
T19.B06	-INF		27.000
T19.B14	-INF		17.000
T19.B15	-INF	6.000	30.000
T19.B16	-INF	1.000	40.000
T19.B17	-INF	1.000	20.000
T19.B21	-INF	29.000	29.000
T19.B22	-INF		1.000
T19.B23	-INF	18.000	86.000
T19.B26	-INF		1.000
T19.B28	-INF		58.000
T20.B06	-INF		27.000
T20.B14	-INF		17.000
T20.B15	-INF	4.000	30.000
T20.B16	-INF	1.000	40.000
T20.B17	-INF		20.000
T20.B21	-INF	29.000	29.000
T20.B22	-INF		1.000
T20.B23	-INF	12.000	86.000
T20.B26	-INF		1.000
T20.B28	-INF		58.000
T21.B06	-INF		27.000
T21.B14	-INF		17.000
T21.B15	-INF	4.000	30.000
T21.B16	-INF		40.000
T21.B17	-INF		20.000
T21.B21	-INF	29.000	29.000
T21.B22	-INF		1.000
T21.B23	-INF	10.000	86.000
T21.B26	-INF		1.000
T21.B28	-INF		58.000
T22.B06	-INF		27.000
T22.B14	-INF		17.000
T22.B15	-INF	2.000	30.000
T22.B16	-INF		40.000
T22.B17	-INF		20.000
T22.B21	-INF	29.000	29.000
T22.B22	-INF		1.000
T22.B23	-INF	7.000	86.000
T22.B26	-INF		1.000
T22.B28	-INF		58.000
T23.B06	-INF	1.000	27.000
T23.B14	-INF		17.000
T23.B15	-INF		30.000

585 PARAMETER RTTotalBus Results table for bus usage equations

	LOWER	LEVEL	UPPER
T23.B16	-INF		40.000
T23.B17	-INF		20.000
T23.B21	-INF	28.000	29.000
T23.B22	-INF		1.000
T23.B23	-INF	2.000	86.000
T23.B26	-INF		1.000
T23.B28	-INF		58.000
T24.B06	-INF		27.000
T24.B14	-INF		17.000
T24.B15	-INF		30.000
T24.B16	-INF		40.000
T24.B17	-INF		20.000
T24.B21	-INF	20.000	29.000
T24.B22	-INF		1.000
T24.B23	-INF	1.000	86.000
T24.B26	-INF		1.000
T24.B28	-INF		58.000

--- 592 PARAMETER RTPasDemand Table for passenger demand equations

	LOWER	LEVEL	UPPER
T05.R003	23.880	136.230	+INF
T05.R004	14.390	145.464	+INF
T05.R005	23.935	143.792	+INF
T05.R007	7.699	78.964	+INF
T05.R009	17.919	76.000	+INF
T05.R010	46.846	157.168	+INF
T05.R014	4.637	136.192	+INF
T05.R016	19.015	113.544	+INF
T05.R018	35.550	146.946	+INF
T05.R019	8.144	102.144	+INF
T05.R022	11.265	139.650	+INF
T05.R025	22.677	65.459	+INF
T05.R050			+INF
T05.R061	14.219	98.154	+INF
T05.R094	15.300	135.432	+INF
T05.R250		162.284	+INF
T05.R649			+INF
T05.R652			+INF
T05.R667		47.986	+INF
T05.R672			+INF
T05.R674			+INF
T05.R675	11.388	36.594	+INF
T05.R766	30.411	156.978	+INF
T06.R003	23.159	181.640	+INF
T06.R004	18.344	145.464	+INF
T06.R005	32.707	251.636	+INF
T06.R007	17.132	78.964	+INF
T06.R009	15.790	76.000	+INF
T06.R010	64.078	196.460	+INF
T06.R014	20.878	170.240	+INF
T06.R016	31.476	151.392	+INF
T06.R018	28.200	195.928	+INF
T06.R019	33.994	204.288	+INF
T06.R022	22.315	167.580	+INF
T06.R025	19.426	98.188	+INF
T06.R050	13.317	50.996	+INF
T06.R061	22.429	98.154	+INF
T06.R094	27.404	270.864	+INF

592 PARAMETER RTPasDemand Table for passenger demand equations

	LOWER	LEVEL	UPPER
T06.R250	38.612	243.426	+INF
T06.R649	7.743	84.056	+INF
T06.R652			+INF
T06.R667	25.100	191.946	+INF
T06.R672	4.774	114.304	+INF
T06.R674	21.525	108.870	+INF
T06.R675	32.573	109.782	+INF
T06.R766	29.965	156.978	+INF
T07.R003	80.990	272.460	+INF
T07.R004	44.931	181.830	+INF
T07.R005	51.194	323.532	+INF
T07.R007	16.028	78.964	+INF
T07.R009	25.118	152.000	+INF
T07.R010	111.886	235.752	+INF
T07.R014	17.859	170.240	+INF
T07.R016	62.864	151.392	+INF
T07.R018	18.450	342.874	+INF
T07.R019	84.786	238.336	+INF
T07.R022	72.379	195.510	+INF
T07.R025	51.300	130.918	+INF
T07.R050	55.872	77.836	+INF
T07.R061	35.807	130.872	+INF
T07.R094	57.798	270.864	+INF
T07.R250	40.035	811.420	+INF
T07.R649	20.017	84.056	+INF
T07.R652		50.232	+INF
T07.R667	68.448	143.959	+INF
T07.R672	16.759	114.304	+INF
T07.R674		72.580	+INF
T07.R675	48.437	109.782	+INF
T07.R766	43.453	470.934	+INF
T08.R003	44.381	181.640	+INF
T08.R004	34.337	181.830	+INF
T08.R005	50.417	323.532	+INF
T08.R007	20.068	78.964	+INF
T08.R009	28.504	114.000	+INF
T08.R010	114.429	235.752	+INF
T08.R014	24.813	170.240	+INF
T08.R016	83.241	151.392	+INF
T08.R018	13.166	342.874	+INF
T08.R019	32.333	238.336	+INF
T08.R022	38.997	195.510	+INF
T08.R025	31.131	98.188	+INF
T08.R050	77.346	77.836	+INF
T08.R061	34.752	98.154	+INF
T08.R094	37.431	203.148	+INF
T08.R250		486.852	+INF
T08.R649	15.149	84.056	+INF
T08.R652		50.232	+INF
T08.R667		47.986	+INF
T08.R672	15.954	57.152	+INF
T08.R674			+INF
T08.R675	24.039	109.782	+INF
T08.R766		209.304	+INF
T09.R003	39.035	181.640	+INF
T09.R004	36.015	218.196	+INF
T09.R005	37.402	323.532	+INF
T09.R007	24.507	78.964	+INF
T09.R009	29.016	76.000	+INF
T09.R010	110.590	235.752	+INF
T09.R014	34.348	136.192	+INF

592 PARAMETER RTPasDemand Table for passenger demand equations

	LOWER	LEVEL	UPPER
T09.R016	90.117	151.392	+INF
T09.R018	28.707	342.874	+INF
T09.R019	54.393	238.336	+INF
T09.R022	32.026	167.580	+INF
T09.R025	18.637	98.188	+INF
T09.R050	41.529	50.996	+INF
T09.R061	25.966	98.154	+INF
T09.R094	25.257	135.432	+INF
T09.R250			+INF
T09.R649			+INF
T09.R652			+INF
T09.R667	13.500	47.986	+INF
T09.R672			+INF
T09.R674			+INF
T09.R675	10.671	109.782	+INF
T09.R766		52.326	+INF
T10.R003	35.328	181.640	+INF
T10.R004	26.550	181.830	+INF
T10.R005	17.115	359.480	+INF
T10.R007	16.013	78.964	+INF
T10.R009	18.738	76.000	+INF
T10.R010	113.741	235.752	+INF
T10.R014	27.498	170.240	+INF
T10.R016	82.430	151.392	+INF
T10.R018	22.838	342.874	+INF
T10.R019	37.855	238.336	+INF
T10.R022	28.772	139.650	+INF
T10.R025	14.020	65.459	+INF
T10.R050	9.021	50.996	+INF
T10.R061	13.559	98.154	+INF
T10.R094	19.897	135.432	+INF
T10.R250			+INF
T10.R649			+INF
T10.R652			+INF
T10.R667			+INF
T10.R672			+INF
T10.R674			+INF
T10.R675	32.645	109.782	+INF
T10.R766			+INF
T11.R003	27.921	227.050	+INF
T11.R004	20.807	181.830	+INF
T11.R005	47.395	323.532	+INF
T11.R007	15.742	78.964	+INF
T11.R009	19.069	76.000	+INF
T11.R010	109.831	235.752	+INF
T11.R014	18.661	136.192	+INF
T11.R016	99.198	151.392	+INF
T11.R018	21.038	342.874	+INF
T11.R019	43.053	238.336	+INF
T11.R022	59.375	139.650	+INF
T11.R025	13.909	65.459	+INF
T11.R050			+INF
T11.R061	19.922	98.154	+INF
T11.R094	21.450	135.432	+INF
T11.R250			+INF
T11.R649			+INF
T11.R652			+INF
T11.R667			+INF
T11.R672			+INF
T11.R674			+INF
T11.R675	24.400	109.782	+INF

592 PARAMETER RTPasDemand Table for passenger demand equations

	LOWER	LEVEL	UPPER
T11.R766		52.326	+INF
T12.R003	37.298	272.460	+INF
T12.R004	18.269	181.830	+INF
T12.R005	74.732	323.532	+INF
T12.R007	17.637	78.964	+INF
T12.R009	32.875	76.000	+INF
T12.R010	129.246	235.752	+INF
T12.R014	24.285	136.192	+INF
T12.R016	73.337	151.392	+INF
T12.R018	49.613	342.874	+INF
T12.R019	40.940	238.336	+INF
T12.R022	42.850	139.650	+INF
T12.R025	14.836	65.459	+INF
T12.R050	26.433	50.996	+INF
T12.R061	26.112	98.154	+INF
T12.R094	28.331	135.432	+INF
T12.R250			+INF
T12.R649			+INF
T12.R652			+INF
T12.R667			+INF
T12.R672			+INF
T12.R674			+INF
T12.R675	7.316	109.782	+INF
T12.R766	26.100	52.326	+INF
T13.R003	47.417	272.460	+INF
T13.R004	35.914	181.830	+INF
T13.R005	26.367	323.532	+INF
T13.R007	16.153	78.964	+INF
T13.R009	35.124	76.000	+INF
T13.R010	139.684	235.752	+INF
T13.R014	35.401	136.192	+INF
T13.R016	102.248	151.392	+INF
T13.R018	46.238	342.874	+INF
T13.R019	46.133	238.336	+INF
T13.R022	42.845	139.650	+INF
T13.R025	16.936	65.459	+INF
T13.R050	12.045	50.996	+INF
T13.R061	16.606	98.154	+INF
T13.R094	27.283	135.432	+INF
T13.R250		81.142	+INF
T13.R649			+INF
T13.R652			+INF
T13.R667			+INF
T13.R672			+INF
T13.R674			+INF
T13.R675	20.260	109.782	+INF
T13.R766	20.210	52.326	+INF
T14.R003	59.839	272.460	+INF
T14.R004	34.029	254.562	+INF
T14.R005	66.017	323.532	+INF
T14.R007	21.585	78.964	+INF
T14.R009	21.385	114.000	+INF
T14.R010	150.656	235.752	+INF
T14.R014	30.963	170.240	+INF
T14.R016	60.244	151.392	+INF
T14.R018	53.213	342.874	+INF
T14.R019	50.916	238.336	+INF
T14.R022	34.788	139.650	+INF
T14.R025	18.427	65.459	+INF
T14.R050	61.265	77.836	+INF
T14.R061	28.733	98.154	+INF

592 PARAMETER RTPasDemand Table for passenger demand equations

	LOWER	LEVEL	UPPER
T14.R094	33.288	135.432	+INF
T14.R250		81.142	+INF
T14.R649			+INF
T14.R652			+INF
T14.R667			+INF
T14.R672			+INF
T14.R674			+INF
T14.R675	28.237	109.782	+INF
T14.R766		52.326	+INF
T15.R003	48.755	272.460	+INF
T15.R004	23.346	290.928	+INF
T15.R005	54.237	323.532	+INF
T15.R007	20.439	78.964	+INF
T15.R009	24.910	114.000	+INF
T15.R010	155.505	235.752	+INF
T15.R014	46.340	170.240	+INF
T15.R016	79.131	151.392	+INF
T15.R018	48.488	342.874	+INF
T15.R019	65.349	238.336	+INF
T15.R022	40.987	167.580	+INF
T15.R025	31.941	98.188	+INF
T15.R050	69.695	77.836	+INF
T15.R061	36.466	130.872	+INF
T15.R094	34.036	203.148	+INF
T15.R250	35.371	405.710	+INF
T15.R649	15.454	84.056	+INF
T15.R652	18.360	50.232	+INF
T15.R667	16.090	95.973	+INF
T15.R672		57.152	+INF
T15.R674			+INF
T15.R675		109.782	+INF
T15.R766	42.076	52.326	+INF
T16.R003	65.473	317.870	+INF
T16.R004	26.869	327.294	+INF
T16.R005	41.080	323.532	+INF
T16.R007	24.196	118.446	+INF
T16.R009	30.292	114.000	+INF
T16.R010	152.849	235.752	+INF
T16.R014	47.453	170.240	+INF
T16.R016	34.987	151.392	+INF
T16.R018	32.288	342.874	+INF
T16.R019	53.485	238.336	+INF
T16.R022	52.268	167.580	+INF
T16.R025	43.067	98.188	+INF
T16.R050	62.637	77.836	+INF
T16.R061	30.039	163.590	+INF
T16.R094	97.551	203.148	+INF
T16.R250	23.018	730.278	+INF
T16.R649	19.856	84.056	+INF
T16.R652	11.379	50.232	+INF
T16.R667	33.764	191.946	+INF
T16.R672	21.086	114.304	+INF
T16.R674		108.870	+INF
T16.R675	26.365	109.782	+INF
T16.R766	39.082	52.326	+INF
T17.R003	79.538	363.280	+INF
T17.R004	58.433	363.660	+INF
T17.R005	40.810	287.584	+INF
T17.R007	23.316	78.964	+INF
T17.R009	26.408	76.000	+INF
T17.R010	107.319	196.460	+INF

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	LOWER	LEVEL	UPPER
T17.R014	29.041	170.240	+INF
T17.R016	63.615	151.392	+INF
T17.R018	27.450	342.874	+INF
T17.R019	44.638	238.336	+INF
T17.R022	25.698	167.580	+INF
T17.R025	23.069	65.459	+INF
T17.R050	57.082	77.836	+INF
T17.R061	43.908	163.590	+INF
T17.R094	51.488	203.148	+INF
T17.R250	30.677	405.710	+INF
T17.R649	12.716	84.056	+INF
T17.R652	16.933	50.232	+INF
T17.R667	49.613	143.959	+INF
T17.R672	8.557	57.152	+INF
T17.R674	14.973	72.580	+INF
T17.R675	30.470	109.782	+INF
T17.R766	33.097	52.326	+INF
T18.R003	47.923	272.460	+INF
T18.R004	42.554	254.562	+INF
T18.R005	20.727	251.636	+INF
T18.R007	14.537	78.964	+INF
T18.R009	13.605	76.000	+INF
T18.R010	109.730	157.168	+INF
T18.R014	18.092	136.192	+INF
T18.R016	59.464	151.392	+INF
T18.R018	25.762	293.892	+INF
T18.R019	67.179	204.288	+INF
T18.R022	25.287	139.650	+INF
T18.R025	17.706	98.188	+INF
T18.R050	29.081	50.996	+INF
T18.R061	25.298	98.154	+INF
T18.R094	21.779	203.148	+INF
T18.R250	30.955	243.426	+INF
T18.R649	9.454	84.056	+INF
T18.R652	12.940	50.232	+INF
T18.R667	13.321	47.986	+INF
T18.R672		57.152	+INF
T18.R674			+INF
T18.R675	39.181	73.188	+INF
T18.R766	7.702	52.326	+INF
T19.R003	60.059	227.050	+INF
T19.R004	18.615	181.830	+INF
T19.R005	27.315	251.636	+INF
T19.R007	13.276	78.964	+INF
T19.R009	18.558	76.000	+INF
T19.R010	81.480	157.168	+INF
T19.R014	20.465	136.192	+INF
T19.R016	40.243	151.392	+INF
T19.R018	41.325	293.892	+INF
T19.R019	35.219	204.288	+INF
T19.R022	21.969	83.790	+INF
T19.R025			+INF
T19.R050			+INF
T19.R061	15.343	65.436	+INF
T19.R094	35.779	67.716	+INF
T19.R250	12.323	81.142	+INF
T19.R649			+INF
T19.R652			+INF
T19.R667			+INF
T19.R672			+INF
T19.R674			+INF

592 PARAMETER RTPasDemand Table for passenger demand equations

	LOWER	LEVEL	UPPER
T19.R675	24.655	73.188	+INF
T19.R766	22.100	52.326	+INF
T20.R003	31.570	181.640	+INF
T20.R004	19.540	181.830	+INF
T20.R005	24.975	179.740	+INF
T20.R007	8.385	78.964	+INF
T20.R009	14.230	76.000	+INF
T20.R010	70.767	117.876	+INF
T20.R014	16.736	102.144	+INF
T20.R016	63.799	151.392	+INF
T20.R018	24.300	195.928	+INF
T20.R019	40.939	170.240	+INF
T20.R022	31.700	83.790	+INF
T20.R025			+INF
T20.R050			+INF
T20.R061	15.632	65.436	+INF
T20.R094	23.578	67.716	+INF
T20.R250			+INF
T20.R649			+INF
T20.R652			+INF
T20.R667			+INF
T20.R672			+INF
T20.R674			+INF
T20.R675	17.689	73.188	+INF
T20.R766	1.567	52.326	+INF
T21.R003	35.132	181.640	+INF
T21.R004	9.947	181.830	+INF
T21.R005	27.000	179.740	+INF
T21.R007	6.873	78.964	+INF
T21.R009	11.793	76.000	+INF
T21.R010	55.298	117.876	+INF
T21.R014	18.462	102.144	+INF
T21.R016	39.522	113.544	+INF
T21.R018	16.500	195.928	+INF
T21.R019	44.571	136.192	+INF
T21.R022	25.737	83.790	+INF
T21.R025			+INF
T21.R050			+INF
T21.R061	12.009	65.436	+INF
T21.R094	17.625	67.716	+INF
T21.R250			+INF
T21.R649			+INF
T21.R652			+INF
T21.R667			+INF
T21.R672			+INF
T21.R674			+INF
T21.R675	16.402	73.188	+INF
T21.R766			+INF
T22.R003	34.258	90.820	+INF
T22.R004	18.011	109.098	+INF
T22.R005	20.807	179.740	+INF
T22.R007	5.825	78.964	+INF
T22.R009	7.402	76.000	+INF
T22.R010	50.243	78.584	+INF
T22.R014	25.852	102.144	+INF
T22.R016	34.265	113.544	+INF
T22.R018	16.875	195.928	+INF
T22.R019	30.194	136.192	+INF
T22.R022	25.700	83.790	+INF
T22.R025			+INF
T22.R050			+INF

592 PARAMETER RTPasDemand Table for passenger demand equations

	LOWER	LEVEL	UPPER
T22.R061	8.933	65.436	+INF
T22.R094	32.952	67.716	+INF
T22.R250			+INF
T22.R649			+INF
T22.R652			+INF
T22.R667			+INF
T22.R672			+INF
T22.R674			+INF
T22.R675	13.785	73.188	+INF
T22.R766			+INF
T23.R003	21.180	90.820	+INF
T23.R004	14.305	109.098	+INF
T23.R005	16.200	143.792	+INF
T23.R007		39.482	+INF
T23.R009	11.029	76.000	+INF
T23.R010	43.143	44.462	+INF
T23.R014	7.053	102.144	+INF
T23.R016	26.165	113.544	+INF
T23.R018	17.325	146.946	+INF
T23.R019	20.103	102.144	+INF
T23.R022	19.359	83.790	+INF
T23.R025			+INF
T23.R050			+INF
T23.R061		65.436	+INF
T23.R094	9.347	67.716	+INF
T23.R250			+INF
T23.R649			+INF
T23.R652			+INF
T23.R667			+INF
T23.R672			+INF
T23.R674			+INF
T23.R675			+INF
T23.R766			+INF
T24.R003	20.332	45.410	+INF
T24.R004	14.999	72.732	+INF
T24.R005	10.800	71.896	+INF
T24.R007	4.984	39.482	+INF
T24.R009	8.100	38.000	+INF
T24.R010	12.943	39.292	+INF
T24.R014	11.641	68.096	+INF
T24.R016	23.339	113.544	+INF
T24.R018	13.050	146.946	+INF
T24.R019		68.096	+INF
T24.R022	10.620	55.860	+INF
T24.R025			+INF
T24.R050			+INF
T24.R061			+INF
T24.R094	5.308	67.716	+INF
T24.R250			+INF
T24.R649			+INF
T24.R652			+INF
T24.R667			+INF
T24.R672			+INF
T24.R674			+INF
T24.R675			+INF
T24.R766			+INF

---- 599 PARAMETER RTFreq Results table for trip frequency equations

	LOWER	LEVEL	UPPER
T05.R003	3.000	3.585	+INF
T05.R004	3.000	3.828	+INF
T05.R005	3.000	3.784	+INF
T05.R007	2.000	2.078	+INF
T05.R009	2.000	2.000	+INF
T05.R010	4.000	4.136	+INF
T05.R014	3.000	3.584	+INF
T05.R016	2.000	2.988	+INF
T05.R018	3.000	3.867	+INF
T05.R019	2.000	2.688	+INF
T05.R022	3.000	3.675	+INF
T05.R025	1.000	1.723	+INF
T05.R050			+INF
T05.R061	2.000	2.583	+INF
T05.R094	3.000	3.564	+INF
T05.R250	2.000	2.798	+INF
T05.R649			+INF
T05.R652			+INF
T05.R667	1.000	1.263	+INF
T05.R672			+INF
T05.R674			+INF
T05.R675		0.963	+INF
T05.R766	3.000	4.131	+INF
T06.R003	4.000	4.780	+INF
T06.R004	3.000	3.828	+INF
T06.R005	6.000	6.622	+INF
T06.R007	2.000	2.078	+INF
T06.R009	2.000	2.000	+INF
T06.R010	5.000	5.170	+INF
T06.R014	4.000	4.480	+INF
T06.R016	3.000	3.984	+INF
T06.R018	5.000	5.156	+INF
T06.R019	5.000	5.376	+INF
T06.R022	4.000	4.410	+INF
T06.R025	2.000	2.584	+INF
T06.R050		1.342	+INF
T06.R061	2.000	2.583	+INF
T06.R094	6.000	7.128	+INF
T06.R250	4.000	4.197	+INF
T06.R649	2.000	2.212	+INF
T06.R652			+INF
T06.R667	4.000	5.051	+INF
T06.R672	2.000	3.008	+INF
T06.R674	2.000	2.865	+INF
T06.R675	2.000	2.889	+INF
T06.R766	4.000	4.131	+INF
T07.R003	6.000	7.170	+INF
T07.R004	4.000	4.785	+INF
T07.R005	8.000	8.514	+INF
T07.R007	2.000	2.078	+INF
T07.R009	4.000	4.000	+INF
T07.R010	6.000	6.204	+INF
T07.R014	4.000	4.480	+INF
T07.R016	3.000	3.984	+INF
T07.R018	8.000	9.023	+INF
T07.R019	6.000	6.272	+INF
T07.R022	5.000	5.145	+INF
T07.R025	3.000	3.445	+INF
T07.R050		1.342	+INF
T07.R061	3.000	3.444	+INF
T07.R094	7.000	7.128	+INF

599 PARAMETER RTFreq Results table for trip frequency equations

	LOWER	LEVEL	UPPER
T07.R250	13.000	13.990	+INF
T07.R649	2.000	2.212	+INF
T07.R652	1.000	1.322	+INF
T07.R667	3.000	3.788	+INF
T07.R672	2.000	3.008	+INF
T07.R674	1.000	1.910	+INF
T07.R675	2.000	2.889	+INF
T07.R766	12.000	12.393	+INF
T08.R003	4.000	4.780	+INF
T08.R004	4.000	4.785	+INF
T08.R005	8.000	8.514	+INF
T08.R007	2.000	2.078	+INF
T08.R009	3.000	3.000	+INF
T08.R010	6.000	6.204	+INF
T08.R014	4.000	4.480	+INF
T08.R016	3.000	3.984	+INF
T08.R018	8.000	9.023	+INF
T08.R019	6.000	6.272	+INF
T08.R022	5.000	5.145	+INF
T08.R025	2.000	2.584	+INF
T08.R050		1.342	+INF
T08.R061	2.000	2.583	+INF
T08.R094	4.000	5.346	+INF
T08.R250	7.000	8.394	+INF
T08.R649	1.000	2.212	+INF
T08.R652	1.000	1.322	+INF
T08.R667	1.000	1.263	+INF
T08.R672	1.000	1.504	+INF
T08.R674			+INF
T08.R675	2.000	2.889	+INF
T08.R766	5.000	5.508	+INF
T09.R003	4.000	4.780	+INF
T09.R004	5.000	5.742	+INF
T09.R005	8.000	8.514	+INF
T09.R007	2.000	2.078	+INF
T09.R009	2.000	2.000	+INF
T09.R010	6.000	6.204	+INF
T09.R014	3.000	3.584	+INF
T09.R016	3.000	3.984	+INF
T09.R018	8.000	9.023	+INF
T09.R019	6.000	6.272	+INF
T09.R022	4.000	4.410	+INF
T09.R025	2.000	2.584	+INF
T09.R050		1.342	+INF
T09.R061	2.000	2.583	+INF
T09.R094	2.000	3.564	+INF
T09.R250			+INF
T09.R649			+INF
T09.R652			+INF
T09.R667	1.000	1.263	+INF
T09.R672			+INF
T09.R674			+INF
T09.R675	2.000	2.889	+INF
T09.R766	1.000	1.377	+INF
T10.R003	4.000	4.780	+INF
T10.R004	4.000	4.785	+INF
T10.R005	9.000	9.460	+INF
T10.R007	2.000	2.078	+INF
T10.R009	2.000	2.000	+INF
T10.R010	6.000	6.204	+INF
T10.R014	4.000	4.480	+INF

599 PARAMETER RTFreq Results table for trip frequency equations

	LOWER	LEVEL	UPPER
T10.R016	3.000	3.984	+INF
T10.R018	8.000	9.023	+INF
T10.R019	6.000	6.272	+INF
T10.R022	3.000	3.675	+INF
T10.R025	1.000	1.723	+INF
T10.R050		1.342	+INF
T10.R061	2.000	2.583	+INF
T10.R094	2.000	3.564	+INF
T10.R250			+INF
T10.R649			+INF
T10.R652			+INF
T10.R667			+INF
T10.R672			+INF
T10.R674			+INF
T10.R675	2.000	2.889	+INF
T10.R766			+INF
T11.R003	5.000	5.975	+INF
T11.R004	4.000	4.785	+INF
T11.R005	8.000	8.514	+INF
T11.R007	2.000	2.078	+INF
T11.R009	2.000	2.000	+INF
T11.R010	6.000	6.204	+INF
T11.R014	3.000	3.584	+INF
T11.R016	3.000	3.984	+INF
T11.R018	8.000	9.023	+INF
T11.R019	6.000	6.272	+INF
T11.R022	3.000	3.675	+INF
T11.R025	1.000	1.723	+INF
T11.R050			+INF
T11.R061	2.000	2.583	+INF
T11.R094	2.000	3.564	+INF
T11.R250			+INF
T11.R649			+INF
T11.R652			+INF
T11.R667			+INF
T11.R672			+INF
T11.R674			+INF
T11.R675	2.000	2.889	+INF
T11.R766	1.000	1.377	+INF
T12.R003	6.000	7.170	+INF
T12.R004	4.000	4.785	+INF
T12.R005	8.000	8.514	+INF
T12.R007	2.000	2.078	+INF
T12.R009	2.000	2.000	+INF
T12.R010	6.000	6.204	+INF
T12.R014	3.000	3.584	+INF
T12.R016	3.000	3.984	+INF
T12.R018	8.000	9.023	+INF
T12.R019	6.000	6.272	+INF
T12.R022	3.000	3.675	+INF
T12.R025	1.000	1.723	+INF
T12.R050		1.342	+INF
T12.R061	2.000	2.583	+INF
T12.R094	2.000	3.564	+INF
T12.R250			+INF
T12.R649			+INF
T12.R652			+INF
T12.R667			+INF
T12.R672			+INF
T12.R674			+INF
T12.R675	2.000	2.889	+INF

599 PARAMETER RTFreq Results table for trip frequency equations

	LOWER	LEVEL	UPPER
T12.R766		1.377	+INF
T13.R003	6.000	7.170	+INF
T13.R004	4.000	4.785	+INF
T13.R005	8.000	8.514	+INF
T13.R007	2.000	2.078	+INF
T13.R009	2.000	2.000	+INF
T13.R010	6.000	6.204	+INF
T13.R014	3.000	3.584	+INF
T13.R016	3.000	3.984	+INF
T13.R018	8.000	9.023	+INF
T13.R019	6.000	6.272	+INF
T13.R022	3.000	3.675	+INF
T13.R025	1.000	1.723	+INF
T13.R050		1.342	+INF
T13.R061	2.000	2.583	+INF
T13.R094	2.000	3.564	+INF
T13.R250	1.000	1.399	+INF
T13.R649			+INF
T13.R652			+INF
T13.R667			+INF
T13.R672			+INF
T13.R674			+INF
T13.R675	2.000	2.889	+INF
T13.R766	1.000	1.377	+INF
T14.R003	6.000	7.170	+INF
T14.R004	6.000	6.699	+INF
T14.R005	8.000	8.514	+INF
T14.R007	2.000	2.078	+INF
T14.R009	3.000	3.000	+INF
T14.R010	6.000	6.204	+INF
T14.R014	4.000	4.480	+INF
T14.R016	3.000	3.984	+INF
T14.R018	8.000	9.023	+INF
T14.R019	6.000	6.272	+INF
T14.R022	3.000	3.675	+INF
T14.R025	1.000	1.723	+INF
T14.R050		1.342	+INF
T14.R061	2.000	2.583	+INF
T14.R094	3.000	3.564	+INF
T14.R250	1.000	1.399	+INF
T14.R649			+INF
T14.R652			+INF
T14.R667			+INF
T14.R672			+INF
T14.R674			+INF
T14.R675	2.000	2.889	+INF
T14.R766	1.000	1.377	+INF
T15.R003	7.000	7.170	+INF
T15.R004	7.000	7.656	+INF
T15.R005	8.000	8.514	+INF
T15.R007	2.000	2.078	+INF
T15.R009	3.000	3.000	+INF
T15.R010	6.000	6.204	+INF
T15.R014	4.000	4.480	+INF
T15.R016	3.000	3.984	+INF
T15.R018	8.000	9.023	+INF
T15.R019	6.000	6.272	+INF
T15.R022	4.000	4.410	+INF
T15.R025	2.000	2.584	+INF
T15.R050		1.342	+INF
T15.R061	3.000	3.444	+INF

599 PARAMETER RTFreq Results table for trip frequency equations

	LOWER	LEVEL	UPPER
T15.R094	4.000	5.346	+INF
T15.R250	6.000	6.995	+INF
T15.R649		2.212	+INF
T15.R652		1.322	+INF
T15.R667	2.000	2.526	+INF
T15.R672	1.000	1.504	+INF
T15.R674			+INF
T15.R675	2.000	2.889	+INF
T15.R766	1.000	1.377	+INF
T16.R003	8.000	8.365	+INF
T16.R004	8.000	8.613	+INF
T16.R005	8.000	8.514	+INF
T16.R007	3.000	3.117	+INF
T16.R009	3.000	3.000	+INF
T16.R010	6.000	6.204	+INF
T16.R014	4.000	4.480	+INF
T16.R016	3.000	3.984	+INF
T16.R018	8.000	9.023	+INF
T16.R019	6.000	6.272	+INF
T16.R022	4.000	4.410	+INF
T16.R025	2.000	2.584	+INF
T16.R050		1.342	+INF
T16.R061	4.000	4.305	+INF
T16.R094	5.000	5.346	+INF
T16.R250	12.000	12.591	+INF
T16.R649	2.000	2.212	+INF
T16.R652	1.000	1.322	+INF
T16.R667	4.000	5.051	+INF
T16.R672	2.000	3.008	+INF
T16.R674	2.000	2.865	+INF
T16.R675	2.000	2.889	+INF
T16.R766		1.377	+INF
T17.R003	9.000	9.560	+INF
T17.R004	9.000	9.570	+INF
T17.R005	7.000	7.568	+INF
T17.R007	2.000	2.078	+INF
T17.R009	2.000	2.000	+INF
T17.R010	5.000	5.170	+INF
T17.R014	4.000	4.480	+INF
T17.R016	3.000	3.984	+INF
T17.R018	8.000	9.023	+INF
T17.R019	6.000	6.272	+INF
T17.R022	4.000	4.410	+INF
T17.R025	1.000	1.723	+INF
T17.R050		1.342	+INF
T17.R061	4.000	4.305	+INF
T17.R094	5.000	5.346	+INF
T17.R250	6.000	6.995	+INF
T17.R649	2.000	2.212	+INF
T17.R652	1.000	1.322	+INF
T17.R667	3.000	3.788	+INF
T17.R672	1.000	1.504	+INF
T17.R674	1.000	1.910	+INF
T17.R675	2.000	2.889	+INF
T17.R766	1.000	1.377	+INF
T18.R003	6.000	7.170	+INF
T18.R004	6.000	6.699	+INF
T18.R005	6.000	6.622	+INF
T18.R007	2.000	2.078	+INF
T18.R009	2.000	2.000	+INF
T18.R010	4.000	4.136	+INF

599 PARAMETER RTFreq Results table for trip frequency equations

	LOWER	LEVEL	UPPER
T18.R014	3.000	3.584	+INF
T18.R016	3.000	3.984	+INF
T18.R018	7.000	7.734	+INF
T18.R019	5.000	5.376	+INF
T18.R022	3.000	3.675	+INF
T18.R025	2.000	2.584	+INF
T18.R050		1.342	+INF
T18.R061	2.000	2.583	+INF
T18.R094	4.000	5.346	+INF
T18.R250	3.000	4.197	+INF
T18.R649	1.000	2.212	+INF
T18.R652		1.322	+INF
T18.R667	1.000	1.263	+INF
T18.R672	1.000	1.504	+INF
T18.R674			+INF
T18.R675	1.000	1.926	+INF
T18.R766	1.000	1.377	+INF
T19.R003	5.000	5.975	+INF
T19.R004	4.000	4.785	+INF
T19.R005	6.000	6.622	+INF
T19.R007	2.000	2.078	+INF
T19.R009	2.000	2.000	+INF
T19.R010	4.000	4.136	+INF
T19.R014	3.000	3.584	+INF
T19.R016	3.000	3.984	+INF
T19.R018	7.000	7.734	+INF
T19.R019	5.000	5.376	+INF
T19.R022	2.000	2.205	+INF
T19.R025			+INF
T19.R050			+INF
T19.R061	1.000	1.722	+INF
T19.R094	1.000	1.782	+INF
T19.R250	1.000	1.399	+INF
T19.R649			+INF
T19.R652			+INF
T19.R667			+INF
T19.R672			+INF
T19.R674			+INF
T19.R675	1.000	1.926	+INF
T19.R766	1.000	1.377	+INF
T20.R003	4.000	4.780	+INF
T20.R004	4.000	4.785	+INF
T20.R005	4.000	4.730	+INF
T20.R007	2.000	2.078	+INF
T20.R009	2.000	2.000	+INF
T20.R010	3.000	3.102	+INF
T20.R014	2.000	2.688	+INF
T20.R016	3.000	3.984	+INF
T20.R018	5.000	5.156	+INF
T20.R019	4.000	4.480	+INF
T20.R022	2.000	2.205	+INF
T20.R025			+INF
T20.R050			+INF
T20.R061	1.000	1.722	+INF
T20.R094		1.782	+INF
T20.R250			+INF
T20.R649			+INF
T20.R652			+INF
T20.R667			+INF
T20.R672			+INF
T20.R674			+INF

599 PARAMETER RTFreq Results table for trip frequency equations

	LOWER	LEVEL	UPPER
T20.R675	1.000	1.926	+INF
T20.R766	1.000	1.377	+INF
T21.R003	4.000	4.780	+INF
T21.R004	4.000	4.785	+INF
T21.R005	4.000	4.730	+INF
T21.R007	2.000	2.078	+INF
T21.R009	2.000	2.000	+INF
T21.R010	3.000	3.102	+INF
T21.R014	2.000	2.688	+INF
T21.R016	2.000	2.988	+INF
T21.R018	4.000	5.156	+INF
T21.R019	3.000	3.584	+INF
T21.R022	2.000	2.205	+INF
T21.R025			+INF
T21.R050			+INF
T21.R061	1.000	1.722	+INF
T21.R094		1.782	+INF
T21.R250			+INF
T21.R649			+INF
T21.R652			+INF
T21.R667			+INF
T21.R672			+INF
T21.R674			+INF
T21.R675	1.000	1.926	+INF
T21.R766			+INF
T22.R003	2.000	2.390	+INF
T22.R004	2.000	2.871	+INF
T22.R005	4.000	4.730	+INF
T22.R007	2.000	2.078	+INF
T22.R009	2.000	2.000	+INF
T22.R010	2.000	2.068	+INF
T22.R014	2.000	2.688	+INF
T22.R016	2.000	2.988	+INF
T22.R018	4.000	5.156	+INF
T22.R019	3.000	3.584	+INF
T22.R022	2.000	2.205	+INF
T22.R025			+INF
T22.R050			+INF
T22.R061	1.000	1.722	+INF
T22.R094		1.782	+INF
T22.R250			+INF
T22.R649			+INF
T22.R652			+INF
T22.R667			+INF
T22.R672			+INF
T22.R674			+INF
T22.R675	1.000	1.926	+INF
T22.R766			+INF
T23.R003	2.000	2.390	+INF
T23.R004	2.000	2.871	+INF
T23.R005	3.000	3.784	+INF
T23.R007	1.000	1.039	+INF
T23.R009	2.000	2.000	+INF
T23.R010	1.000	1.034	+INF
T23.R014	2.000	2.688	+INF
T23.R016	2.000	2.988	+INF
T23.R018	3.000	3.867	+INF
T23.R019	2.000	2.688	+INF
T23.R022	2.000	2.205	+INF
T23.R025			+INF
T23.R050			+INF

599 PARAMETER RTFreq Results table for trip frequency equations

	LOWER	LEVEL	UPPER
T23.R061	1.000	1.722	+INF
T23.R094		1.782	+INF
T23.R250			+INF
T23.R649			+INF
T23.R652			+INF
T23.R667			+INF
T23.R672			+INF
T23.R674			+INF
T23.R675			+INF
T23.R766			+INF
T24.R003	1.000	1.195	+INF
T24.R004	1.000	1.914	+INF
T24.R005	1.000	1.892	+INF
T24.R007	1.000	1.039	+INF
T24.R009	1.000	1.000	+INF
T24.R010	1.000	1.034	+INF
T24.R014	1.000	1.792	+INF
T24.R016	2.000	2.988	+INF
T24.R018	3.000	3.867	+INF
T24.R019	1.000	1.792	+INF
T24.R022	1.000	1.470	+INF
T24.R025			+INF
T24.R050			+INF
T24.R061			+INF
T24.R094		1.782	+INF
T24.R250			+INF
T24.R649			+INF
T24.R652			+INF
T24.R667			+INF
T24.R672			+INF
T24.R674			+INF
T24.R675			+INF
T24.R766			+INF

---- 605 PARAMETER RTX Results table for assignment variable

INDEX 1 = B06

R010

T23 1

INDEX 1 = B14

R050

T07 1

T08 1

T14 1

T15 1

T16 1

T17 1

INDEX 1 = B15

R004 R018 R061

T05 3

T06 2 4 3

T07 5 7 4

605 PARAMETER RTX Results table for assignment variable

INDEX 1 = B15

	R004	R018	R061
T08	4	7	3
T09	2	7	3
T10	1	7	3
T11		7	2
T12		7	2
T13		7	2
T14	2	7	3
T15	6	7	4
T16	9	7	5
T17	8	7	5
T18		6	3
T19		6	
T20		4	
T21		4	
T22		2	

INDEX 1 = B16

	R050	R649	R766
T05			3
T06	1	1	3
T07		1	9
T08		1	4
T09	1		1
T10	1		
T11			1
T12	1		1
T13	1		1
T14			1
T15		1	1
T16		1	1
T17		1	1
T18	1	1	1
T19			1
T20			1

INDEX 1 = B17

	R250
T05	2
T06	3
T07	10
T08	6
T13	1
T14	1
T15	5
T16	9
T17	5
T18	3
T19	1

605 PARAMETER RTX Results table for assignment variable

INDEX 1 = B21

	R003	R004	R005	R007	R010	R014
T05		4	4			4
T06		2	7			5
T07			9			5
T08		1	9			5
T09		4	9			4
T10		4	10			5
T11		5	9			4
T12		5	9			4
T13		5	9			4
T14		5	9			5
T15		2	9			5
T16			9			5
T17		2	8			5
T18		7	7			4
T19		5	7			4
T20		5	5			3
T21		5	5	2		3
T22		3	5	2		3
T23	2	3	4	1		3
T24	1	2	2	1	1	2
+	R016	R018	R019	R022	R025	R061
T05	3		3	5	2	3
T06				6	3	
T07				5	4	
T08				7	3	
T09				6	3	
T10				5	2	
T11				5	2	1
T12				5	2	1
T13				5	2	1
T14				5	2	
T15				6	3	
T16				5	3	
T17				6	2	
T18				5	3	
T19			6	3		2
T20	4		5	3		2
T21	3		4	3		2
T22	3	2	4	3		2
T23	3	3	3	3		2
T24	3	3	2	2		
+	R094	R652	R674	R675		
T05				1		
T06			3	3		
T07		1	2	3		
T08		1		3		
T09				3		
T10				3		
T11				3		
T12				3		
T13				3		
T14				3		
T15		1		3		
T16		1	3	3		
T17		1	2	3		

605 PARAMETER RTX Results table for assignment variable

INDEX 1 = B21

+	R094	R652	R674	R675
T18		1		2
T19				2
T20				2
T21				2
T22				2
T23	1			
T24	1			

INDEX 1 = B23

	R003	R007	R009	R010	R016	R019
T05	3	2	2	4		
T06	4	2	2	5	4	6
T07	6	2	4	6	4	7
T08	4	2	3	6	4	7
T09	4	2	2	6	4	7
T10	4	2	2	6	4	7
T11	5	2	2	6	4	7
T12	6	2	2	6	4	7
T13	6	2	2	6	4	7
T14	6	2	3	6	4	7
T15	6	2	3	6	4	7
T16	7	3	3	6	4	7
T17	8	2	2	5	4	7
T18	6	2	2	4	4	6
T19	5	2	2	4	4	
T20	4	2	2	3		
T21	4		2	3		
T22	2		2	2		
T23			2			
T24			1			

+	R022	R094	R667	R672
T05		2	1	
T06		4	4	2
T07	2	4	3	2
T08		3	1	1
T09		2	1	
T10		2		
T11		2		
T12		2		
T13		2		
T14		2		
T15		3	2	1
T16	1	3	4	2
T17		3	3	1
T18		3	1	1
T19		1		
T20		1		
T21		1		
T22		1		

---- 611 PARAMETER RTY Results table for performance measures by period

	F	M	DEF
T05	165.93	516.64	30.17
T06	264.70	823.72	60.40
T07	450.72	1243.66	70.31
T08	317.76	918.85	53.01
T09	182.12	633.61	46.34
T10	169.06	587.96	44.27
T11	170.45	586.06	45.88
T12	176.75	603.69	47.44
T13	193.16	626.94	47.44
T14	203.89	675.40	49.11
T15	300.52	889.73	58.10
T16	398.17	1106.61	69.75
T17	313.00	949.37	60.45
T18	232.30	707.50	50.56
T19	150.01	489.71	33.86
T20	113.41	406.76	25.71
T21	102.56	375.18	23.06
T22	89.78	330.47	18.41
T23	72.74	278.89	9.80
T24	48.68	181.20	6.23

---- 616 PARAMETER RTEm Results table for emission levels in each period

	CO2	NO
T05	1705.35	2.61
T06	2720.44	4.22
T07	4632.20	9.85
T08	3265.76	6.49
T09	1871.74	2.25
T10	1737.49	1.99
T11	1751.79	1.91
T12	1816.54	2.01
T13	1985.22	2.57
T14	2095.50	2.95
T15	3088.60	5.79
T16	4092.10	8.50
T17	3216.81	6.07
T18	2387.47	3.80
T19	1541.71	2.03
T20	1165.59	1.21
T21	1054.07	1.04
T22	922.71	0.83
T23	747.61	0.69
T24	500.28	0.40

---- 621 PARAMETER RTOPC Operating cost by time period

T05 1073.99,	T06 1727.54,	T07 2743.59,	T08 1980.46,	T09 1261.21
T10 1172.05,	T11 1176.45,	T12 1215.73,	T13 1290.53,	T14 1374.70
T15 1903.30,	T16 2440.82,	T17 2004.94,	T18 1497.76,	T19 1001.47
T20 793.80,	T21 724.97,	T22 634.54,	T23 519.11,	T24 341.56

---- 626 PARAMETER RTEC Emission cost by time

T05 74.80,	T06 119.52,	T07 212.87,	T08 148.48,	T09 79.93
T10 73.85,	T11 74.12,	T12 76.96,	T13 85.43,	T14 91.01
T15 139.18,	T16 187.33,	T17 145.11,	T18 105.23,	T19 66.44

626 PARAMETER RTEC Emission cost by time

T20 49.11, T21 44.20, T22 38.40, T23 31.20, T24 20.66

EXECUTION TIME = 0.015 SECONDS 4 MB 24.2.2 r44857 WEX-WEI

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