Transportation Control Measure (TCM)
Summary Assessment

TCM Definition: Areawide Rideshare Program and
Employer Based Commuter Efficiency Programs

TCM Project/Policy Description:
Area-wide rideshare programs are aimed at encouraging commuters to use alternatives to driving alone. The strategy focuses on increasing vehicle occupancy during peak traffic periods. The Atlanta Region's area wide rideshare program will promote and provide incentives for commuters to share rides in carpools, vanpool, and subscription bus services. Short term or "passive" program elements include rideshare promotions to attract participants and data collection to support a computer matching services. This element will focus on marketing rideshare options to the general public via roadside billboards and mass media campaigns. Park-and-ride facilities are an important element of rideshare programs. They serve as a collection point for individuals transferring to another vehicle containing at least one other person. A review is underway to determine the emissions benefit of implementation of park-and-ride lots throughout the Region to serve rideshare participants.

A more long term or "hands on" approach will be established to develop commute option programs at individual employment centers. Commute option programs promote all alternatives to SOV such as alternative work hours, telecommuting, transit, and bicycling. Flextime allows employees to commute outside the peak travel periods each day. Typical employees with compressed work schedules eliminate trips and move one end of the daily commute outside the peak period. Employees who telecommute spend part of the work week working at another location, usually at home. Telecommuting eliminates trips to work. The development of employer based parking management programs will provide incentives to HOV usage and disincentives to SOV usage. Examples include preferential parking for carpoolers, transit subsidies, modifications to parking supply and pricing strategies based on auto occupancy.

TCM Project/Policy Scenario:
By 1996, it is expected that an areawide rideshare program will be offered on a regional basis, and commute option programs will be offered to employers. The emissions benefit scenario includes a regionwide program and the employer commute options program to employers with 100+ employees in the CBD, Midtown, Cumberland, Buckhead and Perimeter areas. Hospital and hotel employees have been excluded from the commuter options scenario because existing work schedules are traditionally off-peak. The commute options scenario for major employers includes emission reductions from ridesharing, alternative work schedules, telecommuting and employer transit incentive programs.

TCM Air Quality Impacts:

	1996
TCM HC Reduction (Tons/Day)	.2604

Cost Impacts:

Estimated Annualized Costs	$1million/yr
Estimated Capital Cost	$150,000

Note: A survey recently performed by the Association for Commuter Transportation for FHWA reveals recent cost figures for areawide rideshare programs. Nonprofit organizations report an annual program cost between $19,000 and $7.3 million. After consultation with rideshare experts from Washington State DOT and Pacific Rim, a recommended start-up annual budget for the Atlanta program is one million dollars.

Regional Commitment:

TIP Tier I __X__ **Tip Tier II** _____ **RTP** _____ **Other**_____

Note:

$3 million is programmed in Tier I 1994-1996 Congestion Mitigation and Air Quality Funds in the current TIP for implementing and operating a regional rideshare and commuter efficiency program. There is considerable regional commitment for areawide rideshare and employer based programs. Public, private and nonprofit organizations (ARC, FHWA, GDOT, MARTA, GA Power, AT&T, EPD, EPA, CCT, Telecommuting Advisory Council, and Atlanta Chamber of Commerce) within the Atlanta Region have shown enthusiastic support for development of the program.

Assumptions:

(a) Areawide rideshare incentives offered to 70% of all peak period commuters to obtain a 5% increase in non-SOV modes.

(b) Rideshare incentives offered to 80% of employees in major activity centers to obtain a 15% increase in non-SOV modes.

(c) Employer transit incentives (50% subsidy for monthly pass) offered to 80% of employees in major activity centers to switch from automobile to transit modes.

(d) Alternative work schedule incentives offered to assume a total of 35% participation rate among employers with 100+ employees with 15% choosing flextime, 15% compressed work week and 5% telecommuting.

Calculations: **(note below or attach spreadsheet)**

(a) See Calculation Worksheets

Caveats:

(a) It is difficult to predict accurately the air quality benefits of TCM implementation until a monitoring and evaluation program is developed. Emissions benefit predictions requires information on the distribution of passenger vehicles and their occupancy levels before and after TCM implementation. Monitoring tools included sampling, employer surveys and home interview surveys.

(b) Percentage increase in non-drive alone modes will vary depending on accessibility to transit and individual commuter work and home locations for ridematching potential. Ideally, employer programs would be developed with Average Vehicle Occupancy targets unique to each worksite. AVO targets can be developed through employer surveys.

(c) The methodology presented is simplistic and does not account for the type of "non-drive" alone mode. Average carpool size is increased for the employer based programs because it is assumed that vanpools and subscription buses would be developed primarily through employer based work programs. For the purpose of this analysis, non-drive alone mode promotion includes carpools, vanpools, subscription buses. Realistically, the program itself would promote all non-drive alone commute options such as telecommuting, biking, walking and transit usage. The emissions benefits from these alternatives would be sequentially additive to carpool/vanpool benefits.

(d) Implementation of ridesharing programs and flexible work hour programs may provide conflicting incentives for increasing non-drive alone modes. By spreading start and end times, the probability of finding a match for rideshare is reduced. In addition, implementation of rideshare programs and traffic signal improvements may conflict. By improving travel speed times and traffic flow, drive alone commuters may not be convinced of need for ridesharing to improve regional congestion levels.

(e) Parking Management, Park and Ride lots and HOV Lane implementation provide additional incentives for increasing non-drive alone modes other than an areawide rideshare program. The combined effects of these programs would result in synergistic emissions benefits.

TCM Emissions Calculations Worksheet
Areawide Rideshare & Commuter Efficiency Program

I. Areawide rideshare program – incentives (ridematching, referrals, information) offered to 70% of all peak period commuters to obtain a 5% increase in non Single Occupant Vehicle modes (carpools, vanpools etc.)

(a) Reduction in person trips = (1–(Drive alone share of commute trips))*(Percent increase in non–drive–alone modes)*(Total commute person trips)*(Percent of employees affected)*(Percent of commute trips in peak period)
Reduction in person trips = (1–(.87))*(.05)*(3081460)*(.7)*(.59)=8272
(b) Reduction in total trips = (1–(Percent of new carpool riders that still make a trip)* (Reduction in person trips)–((Reduction in person trips)/(Average size of carpool))
Reduction in total trips = (1–(.25))*(8272)–((8272/2.25))=2527
(c) Reduction in VMT = (Reduction in Trips) * (Average commute length) * (Percent of maximum VMT reduction realized due to circuity of ridesharing or access to transit)
Reduction in VMT = (2527)*(13)*(.95)=31208
(d) HC Emissions Benefit = {((Percentage of Highway VMT Reduction)*(Total VMT Reduction)) * (20% Cold Start Factor @ 31.5 mph)} + {((Percentage of Non–Highway VMT Reduction) * (Total VMT Reduction)) * (20% Cold Start Factor @ 15 mph)+{((Percentage of HOV VMT Reduction)*(Total VMT Reduction))*(20% Cold Start Factor @ 55 mph))}
(e) HC Benefit=((.67*31208)*(1.25))+((.1*31208)*(2.09))+((.23*31208)*(.93))=39335
HC Emissions Benefit/Tons/Day = (Grams/ # Grams per Ton)

Plus HC Emissions Benefit/Tons/Day = 39335/907200 = .043 Tons Per Day

II. Employer Commute Options program – Additional incentives (gtd ride home, preferred parking etc.) offered to 80% of employees who are employed with large employers (100+ employees) within major activity centers in the Atlanta Region (CBD, Midtown, Perimeter, Buckhead and Cumberland areas) to obtain a 15% increase in non Single Occupant Vehicle modes of travel (carpool, vanpool etc.)

(a) Reduction in person trips = (1–(Drive alone share of commute trips))*(Percent increase in non–drive–alone modes)*(Total commute person trips)*(Percent of employees affected)*(Percent of Commute Trips in Peak Period)
Reduction in person trips = (1–(.88))*(.15)*(177985*2)*(.8)*(.6)=3076
(b) Reduction in total trips = (1–(Percent of new carpool riders that still make a trip)* (Reduction in person trips)–((Reduction in person trips)/(Average size of carpool))
Reduction in total trips = (1–(.25))*(3076)–((3076/2.5))= 1076
(c) Reduction in VMT = (Reduction in Trips) * (Average commute length) * (Percent of maximum VMT reduction realized due to circuity of ridesharing or access to transit)
Reduction in VMT = (1076)*(13)*(.95)= 13288
(d) HC Emissions Benefit = {((Percentage of Highway VMT Reduction)*(Total VMT Reduction)) * (20% Cold Start Factor @ 31.5 mph)} + {((Percentage of Non–Highway VMT Reduction) * (Total VMT Reduction)) * (20% Cold Start Factor @ 15 mph)+{((Percentage of HOV VMT Reduction)*(Total VMT Reduction))*(20% Cold Start Factor @ 55 mph))}
(e) HC Benefit= ((.56*13288)*(1.25)+((.2*13288)*(2.09))+((.24*13288)*.93)) = 17822
HC Emissions Benefit/Tons/Day = (Grams/ # Grams per Ton)
HC Emissions Benefit/Tons/Day = 17822/907200 = .0196 Tons Per Day

Plus

III. Employer Transit Incentive Program offered to 80% of employees who are employed with large employers (100+ employees within major activity centers in the Atlanta Region (CBD, Midtown, Perimeter,Buckhead and Cumberland areas). Employers will subsidize fifty percent of the cost of a monthly transit pass.

(a) Reduction in Total Trips = (Total Commute Person Trips)*(Percentage of Commute Trips in Peak Period)* (Public Transit Share of Commute Trips)*(Price Elasticity for Transit)*(Percent Subsidy of Cost of Monthly Transit Pass)*(Percent of Employees Affected)*(Percent of Transit Ridership That Equals the Trip Reduction)=
Reduction in Total Trips=(177985*2)*(.59)*(.052)*(.23)*(.5)*(.8)*(.9)=904
(b) Reduction in VMT=Average Trip Length * Reduction in Total Trips=
Reduction in VMT = 13*904=11752
(c) HC Emissions Benefit = {((Percentage of Highway VMT Reduction)*(Total VMT Reduction)) * (20% Cold Start Factor @ 31.5 mph)} + {((Percentage of Non–Highway VMT Reduction) * (Total VMT Reduction)) * (20% Cold Start Factor @ 15 mph)=
(d) HC Benefit = ((.8*11752)*1.25)+((.2*11752)*2.09)= 16664
(e) HC Emissions Benefit/Tons/Day = (Grams/ # Grams per Ton)
HC Emissions Benefit/Tons/Day = (16664/907200)= .0184 Tons Per Day

Plus

IV. Flextime/compressed work week/telecommute program offered to employees of large employers (100+ employees) in major activity centers in the Atlanta Region (CBD, Midtown, Perimeter, Buckhead, and Cumberland areas), assuming a total 35% participation rate with 15% flextime, 15% compressed work week, and 5% telecommute. The compressed work week and telecommute percentages are then adjusted to reflect actual commuting patterns on any given day.

Flextime Worksheet

Number of Employees	177985			
x Percentage of Employees in SOV	87.00%			
Number of SOV Employees	154847			
x Percentage of Commute Trips in Peak	59.00%			
Number of SOV Peak Commute Trips	91360			
x 1.5 (a.m. and 50% p.m.)	1.5			
Number of SOV Peak Commute Trips per Day	137040			
x Participation Rate	15.00%			
Number of SOV Peak Commute Trips Shifted	20556			
x Average Trip Length	13			
Total VMT Shifted	267227	267227		Total VMT Shifted
x Emissions Rate at Peak Travel Speed	1.25	0.93		x Emissions Rate at Off-Peak Travel Speed
Peak Period Emissions of Shifted Trips =	0.368203	0.2739431	=	Off-Peak Period Emissions of Shifted Trips

Peak Period Emissions of Shifted Trips	0.368203	
− Off-peak Period Emissions of Shifted Trips	0.273943	
Total Emissions Reduction =	0.094260	tons per day

Telecommute Worksheet

Number of SOV Peak Commute Trips	91360	
x 2 (a.m. and p.m.)	2	
Number of SOV Peak Commute Trips per Day	182719	
x Participation Rate	1.00%	
Number of SOV Peak Commute Trips Eliminated	1827	
x Average Trip Length	13	
VMT Eliminated	23754	
x Emissions Rate at Average Travel Speed	0.97	
Total Emissions Reduction =	0.025397	tons per day

Compressed Work Week Worksheet

Number of SOV Peak Commute Trips	91360			
x Participation Rate	12.00%			
Number of SOV Peak Commute Trips Shifted	10963			
x Average Trip Length	13			
Total VMT Shifted	142521	142521		Total VMT Shifted
x Emissions Rate at Peak Travel Speed	1.25	0.93		x Emissions Rate at Off-Peak Travel Speed
Peak Period Emissions of Shifted Trips =	0.196375	0.1461030	=	Off-Peak Period Emissions of Shifted Trips

Peak Period Emissions	0.196375	
− Off-peak Period Emissions	0.146103	
Emissions Reduction from Shift of Trips =	0.050272	tons per day

Number of SOV Peak Commute Trips	91360	
x 1.5 (a.m. and 50% p.m.)	1.5	
Number of SOV Peak Commute Trips per Day	137040	
x Participation Rate	0.50%	
Number of SOV Peak Commute Trips Eliminated	685	
x Average Trip Length	13	
Total VMT Eliminated	8908	
x Emissions Rate at Average Travel Speed	0.97	
Emissions Eliminated from Peak Period	0.009524	tons per day

Emissions Reduction from Shift of Trips	0.050272	
+ Emissions Reduction from Elimination of Trips	0.009524	
Total Emissions Reduction	0.059796	tons per day

Flextime Emissions Reduction	0.094260	
+ Telecommute Emissions Reduction	0.025397	
+ Compressed Work Week Emissions Reduction	0.059796	
Total Emissions Reduction	0.179454	tons per day

		0.0430	
		0.0196	
		0.0184	
	±	0.1794	
TOTAL TONS/DAY REDUCTION	=	0.2604	tons per day