

HANDOUTS

from previous meeting



May 16, 2006

Expanding Arterial Highway Congestion Monitoring Program

Commuter Connections Subcommittee

May 16, 2006



Congestion Monitoring Program

- Freeway Congestion Monitoring
 - **300 mile** system monitored every three years during AM and PM peak period
- Arterial Highway Congestion Monitoring
 - 363 miles of Major arterial highways monitored every three years during the PM peak and off-peak period.
 - One third of the 363 miles monitored each year.



Arterial Highway Travel Time/Speed Monitoring Study

Purpose

- To identify the location, severity and extent of congestion on the major arterial highway routes in the region.

Overview of the monitoring program

- Monitored 42 major Arterial Highway Routes totaling 363 miles in Maryland, Virginia and the District of Columbia.
- Three cars per route equipped with Global Positioning System (GPS) and handheld computer to record travel time and speed data during the PM peak period and off-peak period.
- During each hour a minimum of three runs were performed.
- Speed and travel time monitoring occurred between 1 PM and 8 PM on weekdays with good weather and no major incidents.

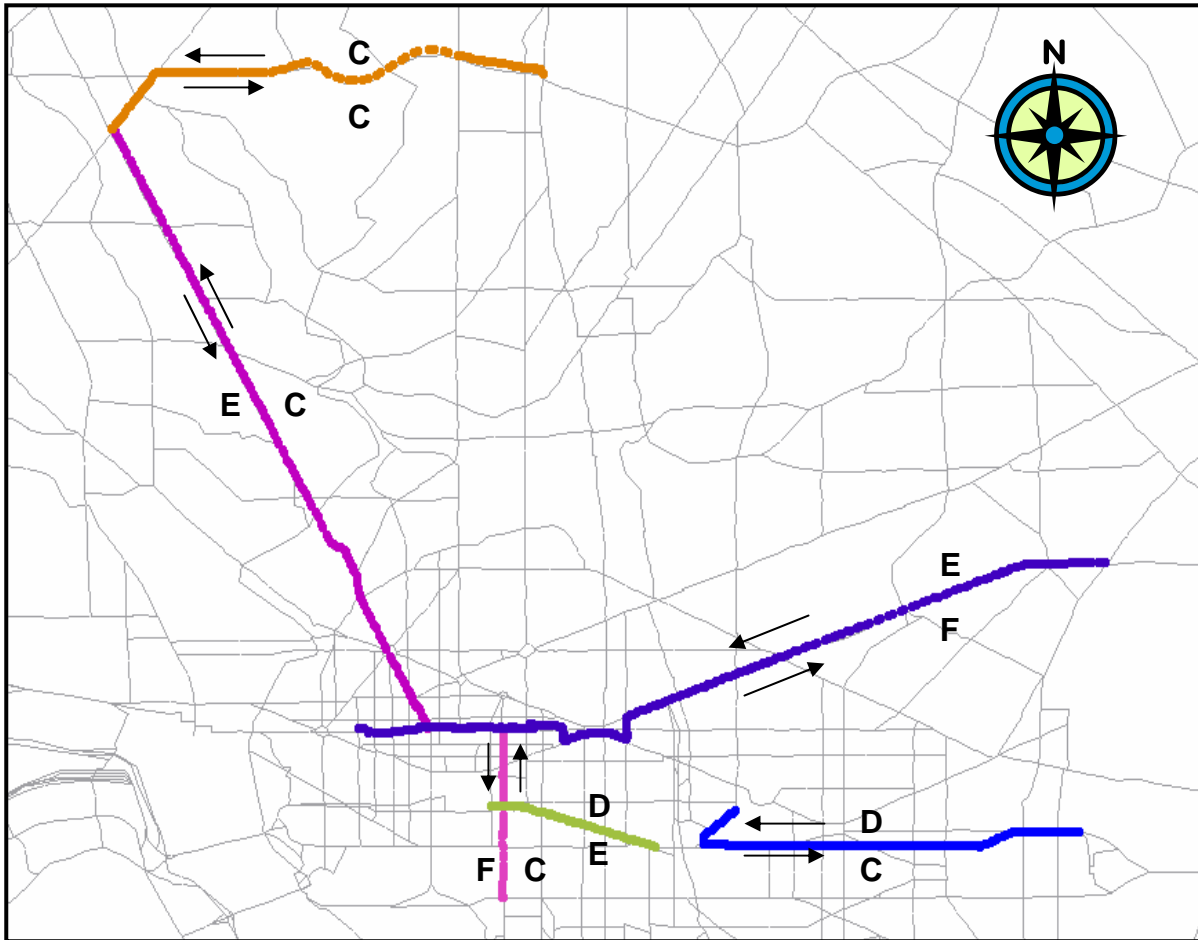
Route Performance Analysis Methodology

- Level of Service (LOS) is determined by using speed data and the 2000 Highway Capacity Manual procedure.
- LOS E and F are congested conditions.
- LOS was determined at the segment level during the PM peak hour, peak period and off-peak period.
- LOS based on the average travel conditions during the time period for which it was reported.
- Staff was unable to collect travel data for 16th St. NW and L St. NW due to repaving activities. Every route has been surveyed twice except for 16th St. NW and L St. NW.

Table A:**Schedule and Routes for Arterial Travel Time Data Collection**

Jurisdiction	FY 2000 and 2003	FY 2001 and 2004	FY 2002 and 2005
Maryland	MD 355	MD 4	MD 97 (Georgia Avenue)
	MD 198	MD 586	MD 5
	MD 117	MD 450	MD 28
	MD 197	MD 144	MD 193
			Randolph Road
Virginia	US 50	VA 234	FFX County Parkway
	VA 123	VA 28	US 1
	US 15	VA 120	US 29
		VA 7	
District of Columbia	Wisconsin Avenue	Canal Road/M Street	Connecticut Avenue
	Pennsylvania Avenue	7 th Street/Georgia Avenue	K Street/New York Ave
	17 th Street	Georgia Avenue	Nebraska Ave/Military Rd.
	Independence Avenue	Constitution/Louisiana Ave.	Penn. Ave/Constitution
	I Street NW	Penn. Ave/Branch Avenue	14 th Street NW
	H Street		16 th Street NW
	15 th Street NW		L Street

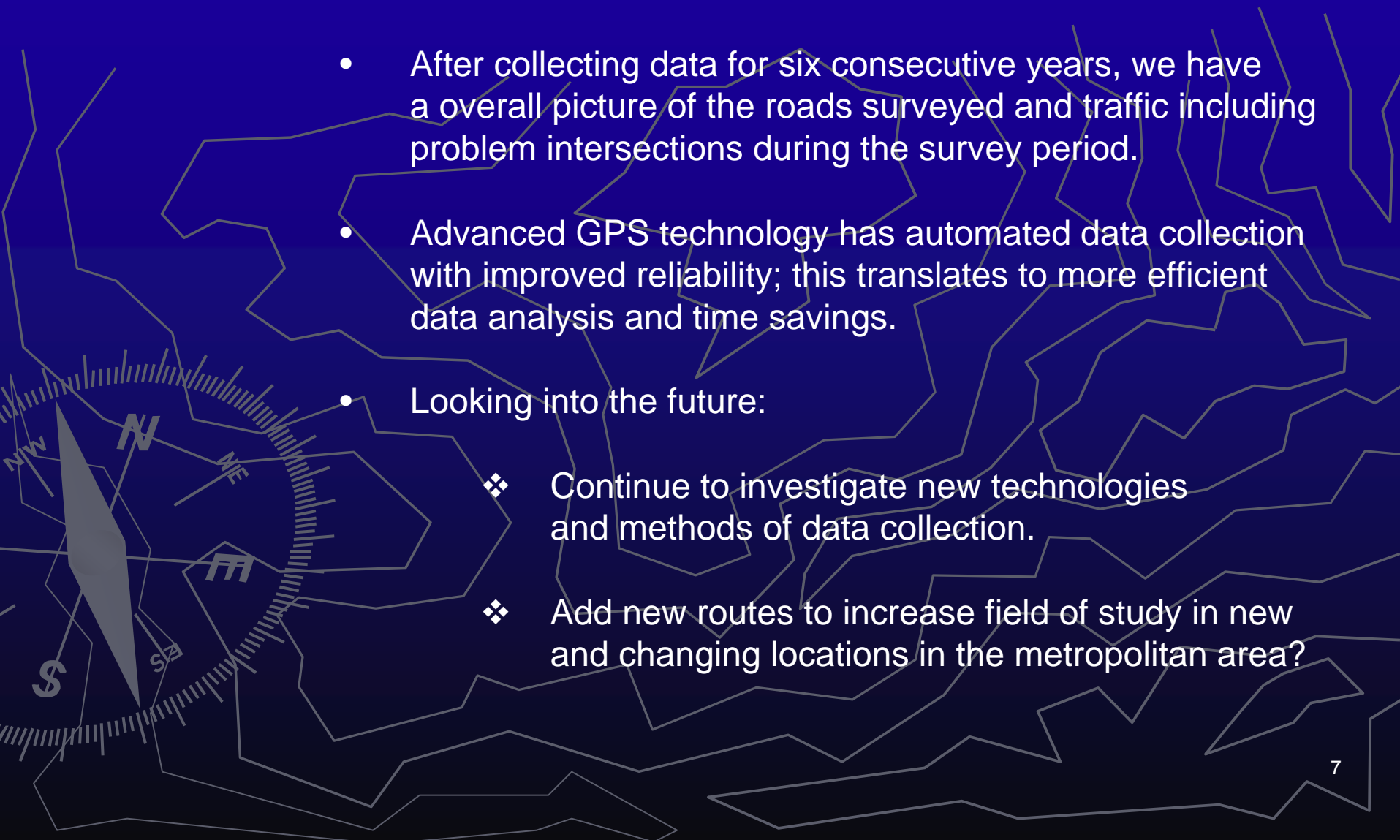
Figure 18
District of Columbia Tours
LOS for PM Peak Hour (FY 2005)
5:00 PM - 6:00 PM



- 1) 14th Street NW
(Independence Ave to K Street NW)
- 2) Connecticut Avenue
(K Street NW to Nebraska Ave)
- 3) K Street / New York Avenue
(21st Street to Bladensburg Road)
- 5) Military Road
(Connecticut Ave to Georgia Ave)
- 6) Pennsylvania Avenue
(15th Street NW to Constitution Ave)

NEXT STEPS FOR TRAVEL SURVEY

- After collecting data for six consecutive years, we have a overall picture of the roads surveyed and traffic including problem intersections during the survey period.
- Advanced GPS technology has automated data collection with improved reliability; this translates to more efficient data analysis and time savings.
- Looking into the future:
 - ❖ Continue to investigate new technologies and methods of data collection.
 - ❖ Add new routes to increase field of study in new and changing locations in the metropolitan area?



Draft

5/16/06

**A Pilot Project Using Volunteer Drivers
To Expand the Coverage of the
Arterial Highway Congestion Monitoring Program
In the Metropolitan Washington Region**

I. Introduction

TPB staff has been monitoring PM peak period and off-peak period congestion on selected arterial highways in the region for the past six years. The methodology consists of drivers traveling on the selected routes and recording speed and travel time information using a global positioning system (GPS) and a hand held computer. The data are collected over a seven hour period from 1 PM to 8 PM. Multiple runs using multiple drivers are used to develop average speeds and travel times during every hour for which data are collected. Due to time, budget and staff constraints this program has been limited to arterial highways on the National Highway System (NHS).

In the FY 2006 UPWP, the congestion monitoring work program allocated funds for staff to study different approaches to expanding coverage of the arterial highway congestion monitoring program to cover more roads. As part of this effort, staff investigated the potential of an emerging cellular telephone technology to monitor congestion. A pilot project utilizing cellular telephone technology is underway in the Baltimore metropolitan area, and evaluation of the project is about to get underway. The methodology and algorithm used to develop speeds on arterial highways are proprietary.

Since determining the viability of obtaining congestion data on arterial highways using the cellular telephone technology in the Metropolitan Washington Region will take sometime, staff has developed the outline of a pilot study using a different data collection approach which would immediately expand coverage of arterial highways. The pilot program would use volunteer drivers to collect speed/travel time information on commuter routes using a GPS and hand held computer. For the pilot study, volunteer drivers would be chosen mostly from the pool of people who have subscribed to the Commuter Connections ride-matching program. The study would test the proposal and if successful develop a plan to incorporate it into the congestion monitoring work program.

II. Project Description

The regional Commuter Connections database has a list of commuters who live or work in the region and who commute using alternative means of transportation such as transit, carpool or vanpool. Under this proposal we would solicit volunteer drivers from this data base, and select drivers from among the volunteers to collect travel time/speed data using GPS and hand held computers. Drivers would be selected to ensure wide geographic

coverage as well as travel interchanges between important activity centers. Drivers who use primarily arterial highways for commuting would be selected over drivers who use primarily interstate highways. Time of travel during the day of the drivers would also be considered when selecting volunteers. Volunteers would collect data using the GPS equipment for a week and mail back the equipment with the data. The data would be reviewed and analyzed by staff. A report will be prepared on results of the analysis, as well as the viability of expanding this program to a year round activity.

III Logistics

We have listed below a number of tasks that are required for the successful demonstration of this pilot study. The activities are not necessarily sequential and related tasks are grouped together so different activities can proceed in parallel.

Activity A (Planning)

- Develop volunteer request letter.
- Send an email or US mail to all possible volunteers drawn from CC database
- Select Volunteers (Short listing of Volunteers as per their travel pattern).
- Develop a data collection schedule
- Mail equipment with mail back provision.
- Mail a gift coupon upon successful data collection.

Activity B (Operations)

- Purchase GPS/data recording equipment purchase.
- Develop an instruction booklet on how to operate the GPS/data collection equipment.
- Test the booklet and the equipment using volunteers from COG staff

Activity C (Reporting)

- Review the data for accuracy, and analyze the data.
- Prepare a report.

IV Potential Issues

Even though the Commuter Connections data base has over 10,000 members, we have no control over who will volunteer, or over the routes, or the time of the day they may drive to and from work. Even though operation of the GPS equipment is not very difficult, the volunteers will have to spend time turning on and turning off the equipment, and trouble shooting equipment problems, and successfully storing the data during each run. Some volunteers may find these tasks too troublesome and not complete them.

COMMUTER CONNECTIONS QUARTERLY BUDGET
 COMMITMENTS AND EXPENDITURES
 FOR COG FY06 (July 1, 2005 - March 31, 2006)

ITEM # 8

	BUDGET TOTAL	FUNDS COMMITTED*	FUNDS EXPENDED**	%FUNDS EXPENDED***
COMMUTER OPERATIONS CENTER	\$371,526	\$371,526	\$186,512	50%
Data & PC	\$49,500		\$19,975	40%
Contract Services/Consultants	\$0		\$0	0%
COG/TPB staff, indirect & direct costs	\$322,026		\$166,537	52%
GUARANTEED RIDE HOME	\$509,308	\$509,308	\$161,290	32%
Data & PC	\$25,000		\$0	0%
Contract Services/Consultants	\$115,000		\$65,707	57%
User Subsidies	\$170,500		\$108,184	63%
COG/TPB staff, indirect & direct costs	\$223,808		\$114,584	51%
MARKETING	\$2,100,564	\$2,100,564	\$1,016,075	48%
Data & PC	\$2,500		\$0	0%
Contract Services/Consultants	\$510,000		\$258,755	51%
COG/TPB staff, indirect & direct costs	\$1,588,064		\$757,320	48%
MONITORING AND EVALUATION	\$407,468	\$407,468	\$268,596	66%
Data & PC	\$0		\$0	0%
Contract Services/Consultants	\$105,000		\$72,557	69%
COG/TPB staff, indirect & direct costs	\$396,968		\$196,039	49%
EMPLOYER OUTREACH	\$750,596	\$750,596	\$221,156	29%
Data & PC	\$3,000		\$0	0%
Contract Services/Consultants	\$0		\$0	0%
Pass-thru to local governments	\$662,000		\$167,300	25%
COG/TPB staff, indirect & direct costs	\$85,596		\$53,856	63%
TELEWORK	\$162,126	\$162,126	\$79,066	49%
Data & PC	\$0		\$0	0%
Contract Services/Consultants	\$0		\$0	0%
COG/TPB staff, indirect & direct costs	\$162,126		\$79,066	49%
INFOEXPRESS KIOSKS	\$155,154	\$155,154	\$111,386	72%
Data & PC	\$0		\$0	0%
Contract Services/Consultants	\$75,000		\$59,637	80%
COG/TPB staff, indirect & direct costs	\$80,154		\$51,749	65%
TOTAL	\$4,456,742	\$4,049,274	\$2,044,081	46%

* Committed funds are based on funding commitment letters received.

** Preliminary funds expended are through December 30, 2005

*** Percentage is based on Budget Total Column