

Definition of Teleworking Narrowed But Increases Still Realized

A tightened definition of “telecommuting” has lowered the estimated number of people who work at home or in satellite locations. But despite these revisions, telecommuting rates have continued to grow steadily, according to the 2004 State of the Commute survey, which the Transportation Planning Board conducts every three years.

“Essentially the new definition insists that to be counted as a telecommuter, you must work at home or at a telework center for the entire day,” said Ron Kirby, Director of COG’s Department of Transportation Planning, when he presented the survey information at the TPB’s meeting on July 21.

Three years ago, the definition included several groups of commuters who were not counted in 2004, such as workers who travel to multiple customer locations during the course of the day and those who telecommute at client sites inside or outside the Washington region. The 2001 definition also included people who worked a portion of the work day at home or at another location, but traveled to the regular workplace for another part of the day.

Mr. Kirby explained that the tightened definition is important because the telecommuting data is used to estimate vehicle emissions. The TPB’s Commuter Connections



Under the new definition of telecommuting, workers must work a full day at home or in a satellite location or telework center.

programs include efforts to promote telecommuting across the region. For air quality improvement purposes, telecommuting programs are intended to keep cars off the roads. “If people only work at home half a day, they might be taking a trip to work for the other half a day, and it’s that trip to work that we’re interested in,” Mr. Kirby said.

The new 2004 definition now reads “wage and salary employees who at least occasionally work at home or at a telework or satellite center

See **Teleworking** on page 7

Looking at ‘What If’ Scenarios

What if more housing were built closer to future jobs? What if new jobs and housing were concentrated closer to public transit? Would driving be reduced? Would transit use increase?

The Regional Mobility and Accessibility Study, currently under development by the TPB, is looking at these and many other questions.

The TPB staff has released a preliminary analysis of five land use scenarios for the study that would shift future growth in housing or jobs to different places in the Washington region. At the TPB’s July 21 meeting, Bob Griffiths of the COG/TPB staff presented the draft analysis.

TPB Chairman Chris Zimmerman welcomed the study’s progress, but emphasized it is too early to attach a clear interpretation to the

See **Scenario Study** on page 2

Scenario Study *continued from page 1*

analysis.

"It's very exciting to see this first work," he said. "But there are a lot of questions that we need to address before we can draw any conclusions from it."

The five land use scenarios offer contrasting patterns for long-term job and housing growth over the coming decades. For example, one scenario would hypothetically increase household growth within the region, thereby reducing in-commuting from jurisdictions outside the region. Another scenario would increase jobs and housing on the eastern side of the region while reducing forecasted growth in the west.

This fall, a number of transportation scenarios, comprising various packages of new roads and transit facilities, will be developed for analysis in combination with the land use scenarios.

The draft results of the land use scenarios are available on the COG/TPB website. (See July 21 TPB meeting materials under Past Meeting Documents. Go to Item 10 under Presentations.)

Five contrasting growth patterns

The land use scenarios represent five alternative visions for future growth. The study assumes that very little can be done to influence growth before 2010. This leaves an increment of only 20 years – 2010-2030 – in which the study is measuring potential changes in forecasted growth.

1. Higher Household Growth in the Region.

This scenario would add 216,000 households (approximately 550,000 people) to the region above the current COG forecasts. These households would belong to people who, according to current assumptions, would otherwise live outside the region – in West Virginia or Baltimore, for example – and commute in. This scenario is intended to examine the impact of reducing the forecasted growth in long-distance commuting trips.

2. More Households in Inner Areas and Clusters. This scenario would shift 23 percent of the households forecasted for 2010-2030 to "inner" and "core" jurisdictions areas close to major employment concentrations. The purpose of this scenario is to examine the impacts of reducing average commuting distances by providing more housing opportunities closer to jobs in the regional core and in activity clusters. (Activity *clusters* and activity *centers* were designated in 2002 through a process at COG. They are intended to have a "mix of jobs, housing and services in a walkable environment.")

3. More Jobs in the Outer Areas. Instead of moving housing in (as in the second scenario), this scenario would shift future jobs out. The scenario would place 11 percent of the forecasted 2010-2030 job growth in outer suburban jurisdictions – mainly Prince William, Frederick and Charles counties – which currently are projected to have many more workers than jobs in 2030. The rationale for this alternative is to examine the impact of reducing average commuting distances by providing more job opportunities closer to housing in the region's outer areas.

4. Region Undivided. This scenario would put more job and household growth in areas east of I-95 in Maryland and Virginia, and east of 16th Street NW in the District of Columbia. The purpose of this scenario is to examine the impacts of reducing east-west regional disparities that were described in the Brookings Institution's report "A Region Divided." The TPB's Citizens Advisory Committee recommended this scenario.

5. Transit-Oriented Development. In this scenario, jobs and housing growth would be concentrated near transit stations – including transit facilities that are already in place, those that are in the CLRP, and those that are not yet in the CLRP, but are planned by cities and counties in the region.

The analysis of the five scenarios used a "baseline" transportation scenario. The baseline includes the road and transit system that is planned for 2030 in the TPB's Constrained Long-Range Plan (CLRP), along with basic improvements designed to make the existing transportation system operate at maximum efficiency. This baseline, dubbed "CLRP Plus,"

This newsletter is produced by John Swanson
Metropolitan Washington Council of Governments
777 North Capitol Street, NE, Suite 300
Washington, D.C. 20002-4239
202-962-3295; jswanson@mwkog.org
"TPB News" at www.mwkog.org/transportation

incorporates vital preservation improvements for the Metro system, along with additional equipment and services to accommodate new riders.

The TPB's travel demand models were used to analyze the five land use scenarios, in combination with the "CLRP Plus" transportation scenario. The models provide data on how much people are expected to be driving ("vehicle miles of travel"), the way they will travel ("mode choice"), how fast they will be going, and many other pieces of information.

The analysis of the land use scenarios that was presented to the TPB on July 21 used seven different measures of travel demand—including measures of driving, transit use and bicycling/walking.

Reducing jobs/housing imbalance

In general, the biggest percentage changes in travel demand resulted from the first scenario in which 216,000 households would be added to the region. (See chart at right.) This scenario would reduce vehicle miles of travel (VMT) per capita by 8.7 percent, according to the forecasts. This reduction would mean that on average, people would drive 22 miles per day in 2030 under the first scenario, two miles fewer than they would otherwise be expected to drive.

Explaining the impact of the first scenario, Bob Griffiths emphasized that the growth in employment is far outpacing anticipated new housing construction. "We are having to import

in-commuters to fill the jobs generated by our region's economy. These long distance commuters put a very big strain on our regional transportation system," he said.

The first scenario would dramatically—but hypothetically—reduce that jobs/housing imbalance.

Five Land Use Scenarios Analyzed for 2030

TPB staff has conducted a draft analysis of five land use scenarios for the Regional Mobility and Accessibility Study. The transportation scenario used for the analysis was based on the TPB's Constrained Long-Range Plan (what is planned and anticipated to be funded) along with a package of efficiency enhancements, especially for transit. The analysis looked at the effects of the scenarios on a number of factors, including transit usage, bicycling and walking. The graph below shows forecasted impacts on lane miles of morning congestion and vehicle miles of travel (VMT) per capita. The graph shows changes compared to conditions in 2030 that would occur with the current CLRP and land use forecasts.

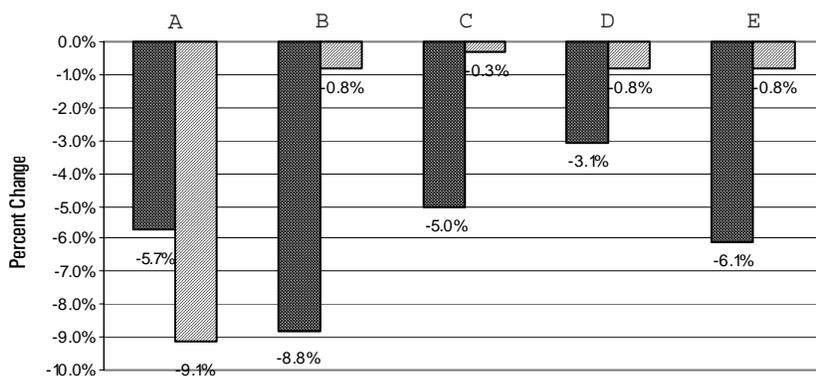


Chart compares 2030 scenario conditions with 2030 conditions that are forecast under the current plan and forecasts.

■ 2030 Morning Congestion ▨ 2030 VMT Per Capita

A – Higher Household Growth in the Region. 216,000 households would be added to the region above current expectations.

B – More Households in Inner Areas and Activity Clusters. A significant amount of the household growth forecasted for 2010-2030 would be shifted to areas closer to major regional employment concentrations in core area jurisdictions.

C – More Jobs in the Outer Areas. A significant number of the jobs forecasted for 2010-2030 would be shifted to outer suburban jurisdictions, which are projected to have many more workers than jobs in the coming decades.

D – Region Undivided. A significant number of jobs and households forecasted for 2010-2030 would be shifted to areas east of I-95 in Maryland and Virginia, and east of 16th Street NW in the District of Columbia.

E – Transit-Oriented Development. A significant number of jobs and housing forecasted for 2010-2030 would be shifted to locations near public transit.

Scenario Study continued on next page

Scenario Study *continued from previous page*

Next steps

New roads and new transit lines will form the components of various transportation scenarios that will be tested in the next step of the Regional Mobility and Accessibility Study. These transportation scenarios will be developed and refined this fall.

One of the transportation scenarios, which is already under development, will lay out a regional system of high-occupancy vehicle (HOV) and high-occupancy/toll (HOT) lanes. HOT lanes, which have been implemented in other parts of the country, permit solo drivers to pay a toll in order to use carpool lanes.

The final study results will evaluate the alternative transportation and land use scenarios against a large number of "measures of effectiveness," including non-transportation factors, such as water quality and energy consumption. The study is expected to be completed in 2005.

Origins of the study

The Regional Mobility and Accessibility Study grew out of dissatisfaction that surfaced during the update to the region's Constrained Long-Range Transportation Plan (CLRP) in 2000. Because of a regionwide funding shortfall, which has subsequently gotten worse, the CLRP included few new projects. Moreover, an analysis of the 2000 CLRP showed in dramatic fashion that travel conditions in the region would degenerate over the coming decades.

Because the CLRP is limited to projects that are likely to be funded (it is financially constrained), the TPB decided to launch a study that would test the kinds of transportation and land use changes that might improve mobility if the money were available.

A Joint Technical Working Group, composed of staff from the TPB and COG member jurisdictions, oversees the Regional Mobility and Accessibility Study. This group includes members of the TPB's Technical Committee, COG's Planning Directors' Advisory Committee and the Technical Advisory Committee for the Metropolitan Washington Air Quality Committee. Citizen advisory committees at COG, including the TPB's CAC, have actively participated in the study. ■

Other July Agenda Items

Other items on the TPB's July agenda included:

- **Approval** of an agreement between the TPB and the Fredericksburg Area Metropolitan Planning Organization (FAMPO) for FAMPO to conduct the transportation planning process for the portion of Stafford County that is part of the Washington DC-Virginia-Maryland urbanized area.
- **Progress report** on actions to improve regional transportation communications and coordination during incidents. Another progress report on this emergency preparedness issue is scheduled for the September 15 meeting. ■

Upcoming September Agenda

The TPB's September agenda is expected to include:

- **Report** on the Washington Metropolitan Area Transit Authority's (WMATA) current operational and funding challenges.
- **Status report** on the draft Air Quality Conformity Analysis for the 2004 Constrained Long-Range Plan (CLRP) and FY 2005-10 Transportation Improvement Program (TIP).
- **Briefing** on the new air quality conformity requirements for the Washington region under the EPA's recent 8-Hour Ozone Rule and on proposed non-attainment area designations for fine particulates (PM 2.5).
- **Progress report** on actions to improve regional transportation communications and coordination during incidents.
- **Briefing** on presentation for the TPB Citizens Advisory Committee (CAC) outreach meetings on the TPB's Regional Mobility and Accessibility Study. ■

Enhancements Planned in Travel Forecasting

The Transportation Research Board at the National Academies recently completed an extensive review of the TPB's travel forecasting procedures. At a July 21 work session, Ron Kirby, COG Director of Transportation Planning, briefed TPB members on the review and on forthcoming improvements in the travel demand models.

Six aspects of the TPB's travel demand modeling process will be enhanced:

1. Model validation

What did the review panel say? Modeled traffic volumes did not match observed traffic counts as closely as panel members would have expected.

What does it mean? A validation process compares travel forecasts, which are produced by the models, with data that is actually observed.

What is the TPB doing? In the short-term, improvements will be made through refined volume/delay functions (which represent the way that road speeds drop as volumes increase) and refinements to the highway and transit networks that are coded for use in the travel model. Over the long-term, staff will continue to refine the highway and transit networks used in the model. As a diagnostic tool, staff will use a computer program developed by the Federal Transit Administration (the SUMMIT model) that compares the net user benefits of different transit projects.

2. Travel estimation for trucks and commercial vehicles



What did the review panel say? Combining business and commercial vehicle trips in the "non-home-based trip" category was called "not advisable."

What does it mean? The TPB model currently does not separate out commercial vehicle travel—trips by package delivery companies, home contractors, pizza deliverymen, etc.—from other non-home-based trips (trips that do not start or end at home). A separate model for commercial vehicle trips has not been developed because the data to develop such a model has proven difficult

to obtain. Among other things, private companies have been reluctant to share information about their commercial travel patterns.

What is the TPB doing? In the short-term, the TPB has contracted with a consultant who will design a method to collect more commercial vehicle data through on-street vehicle counts. These counts will be used to develop a revised commercial vehicle model. For the long-term, TPB staff will monitor research across the country on this topic.

3. Bus network characterization

What did the review panel say? The TPB's use of fixed bus speeds could misstate the influence of transit in the future.

What does it mean? In the current TPB model, bus speeds do not slow down on existing roadways as congestion grows in future years. Further, the model does not incorporate bus services likely to be developed in growing areas, or possible future measures to improve bus speeds and reliability—such as the addition of bus lanes or priority signalization systems for buses.



What is the TPB doing? In the short-term, bus speeds will be adjusted for congestion delays in the "outyears." In the longer-term, TPB staff will adopt a more comprehensive approach to specifying where future bus service may be developed (such as in areas that are growing and becoming more dense), where priority bus services might be established, and how bus speeds might be affected.

4. Uses of adjustment factors

What did the review panel say? "Extensive use" of adjustment factors should be avoided.

What does it mean? Time and cost are the key variables assumed to influence travel patterns. Adjustment factors are used to account for unique or specific influences on travel patterns that are not

See **Model Enhancements** on following page

Model Enhancements

continued from page 5

fully described by the time and cost variables in the models. For example, the Potomac River and other jurisdictional boundaries represent barriers that will inevitably skew travel patterns.

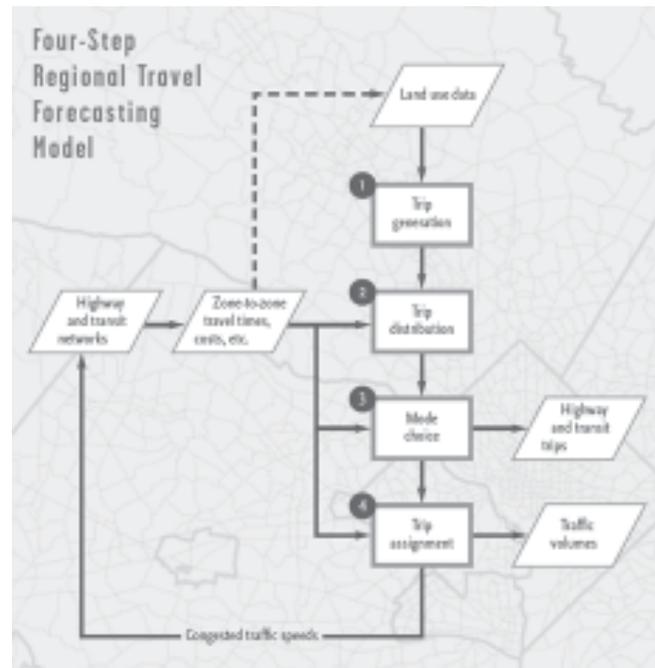
What is the TPB doing? The TPB has reviewed all of the adjustment factors in the model, and removed or dampened some of these factors as employment and other data inputs have been refined. Further, the TPB remains committed to fully document the use of adjustment factors and to continually review their use.

5. Speed feedback incorporating mode choice

What did the review panel say? The panel was concerned that the TPB's feedback of highway and transit times from the Traffic Assignment stage (Step 4 in the modeling process) to the Trip Distribution stage (Step 2) "bypasses" mode choice in some iterative cycles.

What does it mean? "Mode Choice" is Step 3 in the standard 4-step modeling process used by the TPB and most similar agencies (see the chart above). Mode choice predicts which travel mode (such as driving alone, carpooling, taking transit) a person will choose for a given trip. The choice of travel mode is influenced by many variables, including the travel times for each mode. Speeds and travel times are outputs of Step 4, which is called "Trip Assignment," in which travel is assigned to a specific path. Changes in speed, which the model predicts, are fed back into the model through Step 2, "Trip Distribution," in which trip origins and destinations are linked together. The committee that reviewed the TPB's modeling procedures was concerned about the way in which Mode Choice was incorporated into this speed feedback process.

What is the TPB doing? As a short-term response, staff has taken steps to assure agreement among speeds in Steps 2, 3 and 4. As a medium-term step, staff is planning to integrate a "post-processor" (see definition in number 6 below) into the travel demand model to reflect the impacts of peak-spreading on speeds. As a longer-term response, staff will review the model's use of "impedance functions," which are components in the model that describe "resistance" to traffic flow (congestion) on specific



The TPB and most similar agencies use a "four-step" model as the basis for its travel forecasting process.

highway and transit segments. Staff will also continue to monitor ongoing research and development activities related to "speed feedback."

6. Traffic speed and volume estimation for air pollution emissions estimation

What did the review panel say? Certain aspects of the procedure for estimating hourly traffic volumes and speeds for air quality modeling were questioned.

What does it mean? The TPB works with two different modeling processes: travel forecasting and emissions forecasting. A "post processor" is the link that converts travel forecasts into a format that can be used for emissions forecasting.

One difference between travel forecasting and emissions modeling is the time-of-day periods that are used: the travel demand model has three time-of-day periods, while the emissions model uses 24 periods—one for every hour. Among other things, the post processor assigns traffic to each hour of the 24-hour period used in the emissions model. When traffic reaches the capacity of a road segment, the post processor spreads the overflow traffic to the hours preceding and following the hour in question.

Known as “peak spreading,” this process mimics, to some degree, the behavior of travelers who start their trips earlier or later to avoid peak-period congestion.

What is the TPB doing? In the short-term, TPB staff is reviewing alternative approaches for improving time-of-day forecasts by the travel models. As a medium-term measure, the post-processor will be integrated into the travel model so the effects of peak-spreading are reflected in peak and off-peak road volumes and speeds. As a longer-term measure, the TPB will continue to monitor ongoing research and development on this topic.

Next Steps

The model examined by the TRB panel—known as Version 2.1C—was used for analysis of the TPB’s 2003 Constrained Long-Range Plan and the fiscal 2004-09 Transportation Improvement Program (TIP). The Federal Highway Administration and Federal Transit Administration, in consultation with the Environmental Protection Agency, approved those documents and the accompanying analysis. Those approvals remain valid.

But refinements to Version 2.1C are underway in response to the panel comments. On September 17, TPB staff will release an enhanced model, known as Version 2.1D, which will be used to analyze this year’s amendments to the TPB’s Constrained Long-Range Plan and the fiscal 2005-10 Transportation Improvement Program (TIP). The new model will incorporate the short-term responses to the panel review identified by the TPB.

Mr. Kirby emphasized that the two-year panel review was expensive, and cannot be repeated again soon. In order to continue the process of improving the region’s modeling practices, he said TPB staff intends to work closely with the federally funded Travel Model Improvement Program, which is conducting ongoing research and can quickly identify sources of expertise around the country.

Mr. Kirby also stressed the importance of a new federally funded “synthesis project” in which the Transportation Research Board will document and compare state-of-the-practice modeling activities across the country. Because such synthesized documentation is currently lacking, the panel members who conducted the recent review of the TPB’s modeling procedures indicated they had no set of national guidance against which to evaluate the TPB’s practices. ■

Teleworking *continued from page 1*

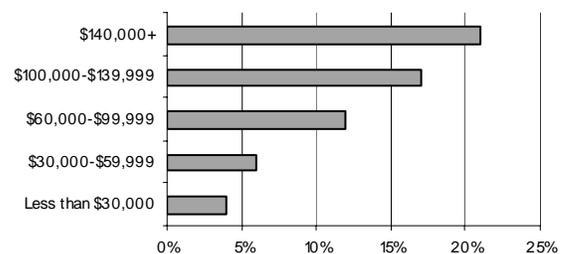
during an entire work day, instead of traveling to their regular work place.” The 2001 definition read “wage and salary employees who at least occasionally work at home or at a location other than their central work place during their normal work hours.”

Results for the 2001 State of the Commute survey were adjusted based on the new definition and incorporated into the analysis.

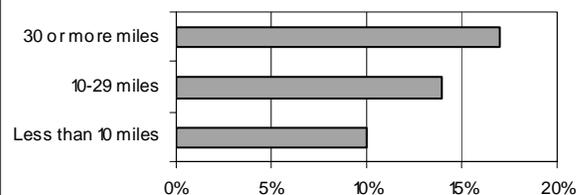
Who Telecommutes?

Percent of workers in each category who telecommute (2004 State of the Commute Survey)

Household Income



Distance to Work



Comparing the 2004 data with the adjusted numbers for 2001, the survey found that telecommuting has steadily increased in the past three years. In 2004, 12.8 percent of workers in the region were telecommuting an average of 1.3 days a week, compared to 2001, when 11.3 percent were telecommuting 1.1 days per week. The total number of workers telecommuting in 2004 was 318,000, versus 290,000 in 2001.

The most impressive gains were among federal workers. In the last three years, the percentage of federal workers telecommuting increased from 6.9 to 11.8 percent. These patterns correlate closely with data recently released by the Federal Office of Personnel Management.

For non-federal workers, 12.6 percent were telecommuting in 2001 and 13.4 percent were telecommuting in 2004. ■

Calendar of Events

Dates and times subject to change. All meetings are at COG unless otherwise indicated. If you are in need of special assistance to participate in meetings, please call (202) 962-3315 or (202) 962-3213 (TDD). Bicycle racks are located in the parking garage at 777 N. Capitol St., NE (Enter from 1st Street).

September

- 3 TPB Technical Committee (9 am)
- 3 TPB Steering Committee (noon)
- 9 TPB Citizens Advisory Committee (6 pm)
- 10 Joint Technical Working Group for the Regional Mobility and Accessibility Study (noon)
- 14 Commuter Operations Subcommittee (10 am)
- 14 Commuter Connections Subcommittee (noon)
- 14 Management, Operations and Intelligent Transportation Systems (MOITS) Policy and Technical Task Forces Joint Meeting (12:30 pm)
- 15 Transportation Planning Board (noon)**
- 17 Travel Forecasting Subcommittee (9:30 am)
- 21 Travel Management Subcommittee (9 am)
- 21 Bicycle and Pedestrian Subcommittee (1 pm)
- 23 Aviation Technical Subcommittee (10:30 am)
- 23 Access for All Advisory Committee (noon)

October

- 1 TPB Technical Committee (9 am)
- 1 TPB Steering Committee (noon)
- 5 Regional Transportation Demand Marketing (TDM) Marketing Group (10 am)
- 6 Telecommuting Ad-Hoc Group (10 am)
- 12 Management, Operations and Intelligent Transportation Systems (MOITS) Policy and Technical Task Forces Joint Meeting (12:30 pm)
- 14 TPB Citizens Advisory Committee (6 pm)
- 15 Joint Technical Working Group for the Regional Mobility and Accessibility Study (noon)
- 19 Employer Outreach Ad-Hoc Group (10 am)
- 19 Guaranteed Ride Home Ad-Hoc Group (noon)
- 20 Transportation Planning Board (noon)**

November

- 5 TPB Technical Committee (9 am)
- 5 TPB Steering Committee (noon)
- 9 Management, Operations and Intelligent Transportation Systems (MOITS) Policy and Technical Task Forces Joint Meeting (12:30 pm)
- 11 TPB Citizens Advisory Committee (6 pm)
- 12 Joint Technical Working Group for the Regional Mobility and Accessibility Study (noon)
- 16 Commuter Connections Subcommittee (10 am)
- 16 Bicycle and Pedestrian Subcommittee (1 pm)
- 17 Transportation Planning Board (noon)**
- 18 Aviation Technical Subcommittee (10:30 am)
- 18 Access for All Advisory Committee (noon)
- 19 Travel Forecasting Subcommittee (9:30 am)

Metropolitan Washington Council of Governments
 777 North Capitol Street, N.E., Suite 300
 Washington, D.C. 20002-4239

FIRST CLASS MAIL
 U.S. Postage Paid
 Washington, D.C.
 Permit #9770