METRO

Tracking Transportation Project Outcomes:

Better information needed to measure effectiveness

February 2010

A Report by the Office of the Auditor

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MEMORANDUM

February 3, 2010

To: David Bragdon, Council President
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Carl Hosticka, Councilor, District 3
Kathryn Harrington, Councilor, District 4
Rex Burkholder, Councilor, District 5
Robert Liberty, Councilor, District 6

From: Suzanne Flynn, Metro Auditor

Re: Audit of Transportation Project Outcomes

The attached report covers our audit of Metro's ability to evaluate transportation project outcomes. Primary responsibility resides in the Planning and Development Department and its efforts to plan, prioritize, and coordinate transportation investments that use federal funds. This audit was included in our FY09-10 Audit Schedule.

As you are aware, Metro is unique because it is the only Metropolitan Planning Organization that functions within an elected regional government. Metro also has responsibility for meeting state planning requirements to manage urban growth. We looked at this unique intersection of roles to determine if the Department's efforts in transportation planning to meet federal and state requirements were also addressing urban growth objectives.

To accomplish our work, we analyzed transportation investments for Federal Fiscal Years 2004 through 2008. We were unable to determine if these investments were moving the region toward the desired outcomes in the 2040 growth management plan. The Department only tracked projects that received funding directly allocated by Metro. While we determined these projects aligned with the plan, a determination about the majority of investments could not be made because of incomplete data.

We have discussed our findings and recommendations with Scott Robinson, Deputy COO, and Robin McArthur, Director, Planning and Development. A formal follow-up to this audit will be scheduled within 1-2 years. We would like to acknowledge and thank the management and staff in the Department who assisted us in completing this audit.

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Summary

A basic principle of effective planning is to evaluate a plan and/or program after it has been implemented to determine if it is achieving its objectives. The results of the evaluation should then be used to revise the plan as appropriate to better achieve objectives.

Federal highway and transit statutes require that urban areas identify a Metropolitan Planning Organization to plan, prioritize, and coordinate transportation investments that use federal funds. Metro is the Metropolitan Planning Organization (MPO) for the Portland region. In addition to the federal planning requirements of MPOs, Metro also must meet state land use planning requirements.

The 2040 Growth Concept, adopted by the Metro Council in 1995, is a long-term plan on how the region should manage growth. The plan contains several objectives intended to guide transportation planning. This audit attempted to determine if Metro would be able to evaluate if it was meeting these growth objectives. We examined regional transportation projects completed over a five-year period.

We found that Metro's processes to plan transportation projects in the region were linear when they should have been circular. After a plan was adopted, the update process began anew with little or no reflection about the effectiveness of the previous plan or the results of the performance measures they contained.

For the period we examined, Metro was successful in meeting state and federal planning requirements for transportation planning, with few exceptions. However, we found that the Department fell short of meeting the needs of the Metro Regional Government, which has larger outcomes it wants to achieve. Systems to collect data and measure progress towards these outcomes were not in place.

We identified several obstacles that needed to be addressed. Metro only took responsibility for tracking projects that it had control over the funding. This resulted in an incomplete data set. As a result, we found that measuring outcomes for transportation projects in the five-year period we studied would be difficult. Although there were several sources of data available to measure outcomes, Metro relied primarily on estimations of potential outcomes rather than actual data.

Metro's role in determining which projects were included in the transportation plan heightened the need for outcome measurement. Metro was reluctant to assume a more regulatory role at the front end of the process. Metro does not screen transportation projects as they are approved for funding. We also identified examples of tools used by other jurisdictions that Metro might employ to improve evaluation of outcomes.

The audit makes several recommendations to improve Metro's ability to evaluate the outcomes of transportation planning efforts. Metro needs to assign responsibility for evaluation of 2040 Plan outcomes, improve data collection and management and improve evaluation tools.

Background

Federal highway and transit statutes require that urban areas identify a Metropolitan Planning Organization to plan, prioritize, and coordinate transportation investments that use federal funds. These organizations have two primary planning responsibilities:

- Establish investment policies and identify projects over a 20-year horizon in a Regional Transportation Plan
- Prioritize projects to receive federal funds over a four-year horizon in a Transportation Improvement Program

Metro is the Metropolitan Planning Organization (MPO) for the Portland region. It is the only MPO in the nation that functions within an elected regional government. As a result, Metro's MPO structure has an additional layer of decision-makers, the Metro Council.

In addition to the federal planning requirements of MPOs, Metro also must meet state planning requirements. These requirements direct Metro to coordinate land use and transportation planning as part of its role in managing the urban growth boundary. This is another unusual aspect of Metro's planning environment. It has legal authority for both land use planning and transportation planning.

The organization's role as MPO and elected regional government requires Metro planners to wear two hats. As the region's MPO, they have to meet federal and state planning requirements, as well as address the long-term vision Metro Council established for the region.

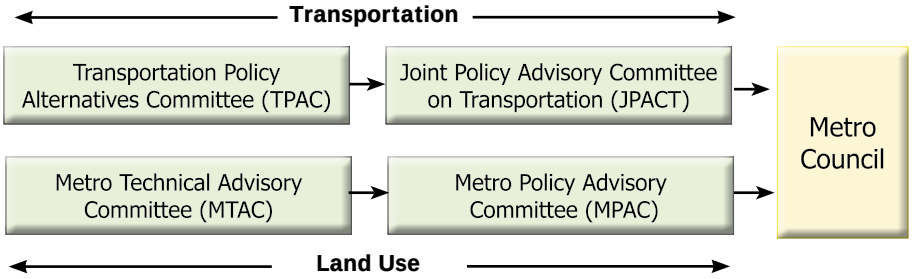
The 2040 Growth Concept is the long-term vision for how the region should manage growth. It was adopted by Council in 1995 to guide Metro's planning efforts. The 2040 Growth Concept, which we refer to in this report as the 2040 Plan, contains objectives for the transportation system. Regional Transportation Plans are intended to implement the 2040 Plan.

Transportation planning activities are led by Metro's Planning and Development Department. In addition to transportation planning, the Department has units dedicated to planning for land use, corridors and transit, and development. A separate department, the Research Center also contributes to transportation planning. It contains the data and analysis tools that are used for transportation modeling.

Key personnel that staff the MPO function at Metro are organizationally part of the Transportation System Planning Program within the Planning and Development Department. Fiscal year 2007-08 was the first year expenditures for this Program were reported. In that year, the Program's expenditures were $5.2 million with 24 full-time equivalent employees (FTE). Staff and resources in other Departments also contribute to the MPO function at Metro.

Metro's decision-making process is based on two parallel tracks, one for land-use planning and the other for transportation planning. Each track includes two levels of advisory committees: one focused on technical matters and the other focused on policy. These two tracks ultimately make recommendations to Metro Council for final decisions.

Exhibit 1
Regional decision-making process



Source: Regional Transportation Plan

Scope and methodology

This audit attempted to assess the effectiveness of implementing the 2040 Plan by examining completed transportation projects and the planning processes undertaken to develop the Regional Transportation Plan. The scope of the audit included transportation projects completed during the five-year period from October 1, 2003 through September 30, 2008. There were three objectives for this audit:

- Determine if completed projects aligned with the 2040 Plan.
- Determine if the results of Metro's planning and project selection processes were meeting the needs of the region.
- Determine if Metro was applying best practices in its planning and project selection processes and suggest areas for possible improvement.

However, due to data limitations we were unable to fully complete all of our objectives. In addition, we analyzed why data limitations existed.

To meet these objectives, auditors reviewed information about federal and state planning requirements, analyzed planning processes and plans and collected data about completed projects. In addition, we analyzed published data about how federal funds were allocated in the region, reviewed indicators of transportation system performance and identified best practices in other planning organizations. Auditors conducted interviews with Metro staff, management and Councilors, as well as external stakeholders from around the region who serve on the Transportation Policy Alternatives Committee and the Joint Policy Advisory Committee on Transportation (JPACT).

Auditors conducted an analysis of completed capital projects and created maps with the help of the Planning and Development Department. The analysis excluded projects completed through regional programs such as Transit-Oriented Development and Regional Transportation Options and planning projects such as corridor refinement studies and environmental impact statements. The analysis also excluded projects funded entirely by local jurisdictions, and projects for transit facility maintenance and bus purchases. Total investment amounts for each project were not readily available for non-transit projects. For projects where total investment amounts were not available, we used the amount paid to the contractor for our analysis.

This audit was included in the Fiscal Year 2009 audit schedule. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Results

A basic principle of effective planning is to evaluate a plan and/or program after it has been implemented to determine if it is achieving its objectives. The results of the evaluation should then be used to revise planning processes and plans as appropriate. We found that Metro did not routinely collect data or conduct analyses on completed transportation projects. Metro defined its analytic responsibilities narrowly and collected project data only for the federal funds that it allocated in the region.

Auditors reviewed transportation projects completed in a five-year period. We found that projects with funding controlled by Metro were aligned with the 2040 Plan's regional investment priorities. However, we were unable to determine if the remaining projects were aligned.

Metro was successful in meeting state and federal planning requirements for transportation planning with few exceptions. However, we found that the Department fell short of meeting the needs of the Metro Regional Government, which has larger goals it wants to achieve.

We identified several obstacles that needed to be addressed in order for Metro to implement a planning process that meets its dual roles of complying with federal and state transportation planning requirements and addressing regional growth. We also found examples in the areas of equity and environmental justice, project tracking and reporting, and benefit-cost analysis from other planning organizations that may be useful to the Department.

Evaluating outcomes is challenging

For the purposes of this audit, we used the 2040 Plan as the basis for our evaluation of project outcomes. Although it is primarily a land-use planning strategy, its success depends on alignment between land use patterns and transportation investments. The Regional Transportation Plan stated it is intended to implement the 2040 Plan.

The underlying assumptions of the 2040 Plan were that denser development would result in an efficient and effective transportation system. For the transportation system user, this would mean fewer vehicle miles traveled, more transportation options and reduced costs for transportation and housing for area residents. As such, our evaluation of outcomes was twofold:

- Analysis of how completed projects aligned with the policies in the Regional Transportation Plan, and
- Analysis of whether users of the transportation system were realizing the benefits assumed in the 2040 Plan.

We attempted to evaluate both types of outcomes to reach conclusions about the quality of the planning process and progress made toward realization of the user benefits that are assumed to result from implementation of the 2040 Plan.

Evaluation of outcomes was challenging because the data was incomplete. Metro did not collect data or conduct analysis of completed projects. Auditors identified 57 capital construction projects that were completed in the region in Federal FY 04-08 (see Appendix for full project list and maps). Data was not available to allow auditors to reach conclusions.

Exhibit 2
Data availability for completed projects

	2040 Plan		Transportation Type	
Data Available	Projects	% of Total	Projects	% of Total
Yes	30	53%	37	65%
No	27	47%	20	35%
TOTAL	**57**	**100%**	**57**	**100%**

Source: Auditor's Office analysis based on data from ODOT, Metro and TriMet

As the chart above shows, some projects could not be linked to the Regional Transportation Plan, resulting in a lack of information about the transportation type or land use component that the project was trying to address. Not all projects are required to be listed in the Regional Transportation Plan, such as ODOT's projects to preserve existing roads. Lack of data about how these projects were intended to address the objectives of the 2040 Plan were a barrier to evaluation of outcomes. In some cases, information in the Regional Transportation Plan about the land-use component of the project was missing. Data about the transportation type was slightly more complete.

Projects selected by Metro align with the regional plan

Metro focused primarily on projects for which it directly approved funding. As a result, the project data it maintained covered only a small portion of the projects that were planned and implemented in the region in a given year. For example, Metro reported that about $722 million in federal funds were allocated to the region in FY 2004-08. Of that total only $108 million (15%) was allocated directly by Metro.

Analysis of the 22 projects that were approved by Metro showed they conformed to the 2040 Plan priority investment areas (Exhibit 3). Projects addressing the highest priority land use areas accounted for 55% of all projects and 97% of the amount paid to contractors. Thirty-two percent of the projects addressed lower priority land use areas, which accounted for 2% of the amount paid to contractors.

Exhibit 3
Completed projects allocated by Metro by priority area

Priority Area	Projects	Amt paid to Contractor	% of Total Projects	% of Total Payment
Highest	12	$422,526,038 *	55%	97%
Lower	7	$ 8,798,989	32%	2%
Less emphasis	2	$ 3,311,215	9%	1%
None listed	1	$ 2,420,675	4%	1%
TOTAL	**22**	**$437,056,917**		

Source: Auditor's Office analysis based on data from ODOT, Metro and TriMet
** One project, the Yellow MAX Line, accounts for $350 million of this total*
Note: Total percentage exceeds 100% due to rounding

Similarly, the completed projects (Exhibit 4) met the goal of investment in a variety of transportation types. Projects that were completed in Federal FY04-08 and were allocated directly by Metro addressed a diverse set of transportation types. Projects that addressed motor-vehicle-related facilities accounted for 41% of the projects and 6% of the amount paid to contractors. Fifty-four percent of the projects, and 93% of the amount paid to contractors, addressed transit, bicycle and pedestrian facilities.

Exhibit 4
Completed projects allocated by Metro by transportation type

Transportation Type	Projects	Amt paid to Contractor	% of Total Projects	% of Total Payment
Bicycle and/or Pedestrian	10	$ 11,026,515	45%	3%
Motor Vehicle	9	$ 27,983,528	41%	6%
Transit	2	$395,300,000	9%	90%
System Management	1	$ 2,746,875	5%	1%
TOTAL	**22**	**$437,056,917**	100%	100%

Source: Auditor's Office analysis based on data from ODOT, Metro and TriMet

Actual data sources were available to measure performance

Analysis of how completed projects matched up with regional plans provided basic information about whether regional plans were followed. It did not tell much about the actual performance of the transportation system. We identified many readily available sources of data to track and analyze the transportation system. This data could be used to monitor performance and generate analysis that is more complete. Eventually, it could be used to make adjustments or challenge assumptions. This data came from national studies and federal and state agencies that provide raw data and analysis.

As the data below shows, the system appeared to be delivering some of the benefits to the users in line with the expectations in the regional plan. For example:

- Vehicle miles traveled per person declined,
- Transit ridership increased,
- Safety improved, and
- Air quality was good compared to other urban areas.

Other data raised questions about system performance. For example, even though Metro was a national leader in the percentages of commuters that use transit and bicycles to get to work, the percentage of commuters that drove alone remained constant. This indicated that continued focus on expanding the utilization of many transportation options was needed. Similarly, although congestion was reduced from 2007 levels, total traffic counts increased. This indicated that efforts to reduce traffic volumes and/or increase the capacity of the system were important in meeting user needs.

Transit

One of the goals in the 2040 Plan is to increase the use of mass transit. Over the last ten years, ridership on TriMet buses and MAX increased by 9% and 97% respectively. Although transit ridership increased, it still made up less than 10% of commuter travel.

The total number of miles traveled using public transportation also increased. In fact, over the last ten years, miles traveled by transit increased at a faster rate (30%) than motor vehicle miles traveled (18%). However, citizens in the region traveled an average of only 250 miles by transit each year, compared to an average of 5,560 miles traveled each year using motor vehicles.

Road system

Another 2040 Plan goal is to provide adequate levels of mobility (ease of travel), and roads are an important factor. Traffic volumes in the Portland area increased between 1999 and 2007 on the majority of routes and intersections reviewed for this audit. There was general agreement between ODOT and Metro that most state highways in the region did not meet the state's highway mobility standard related to volume and capacity.

Per capita daily vehicle miles traveled (VMT) declined by 4% over the last ten years although total daily VMT increased by 18%. On average, each area resident drove fewer miles, but because the population increased, the total amount of miles traveled on area roads increased. According to a national transportation study, overall congestion in the region was down 36% in 2008 compared to 2007.

Quality of life

Maintaining the region's air quality is also highlighted in the 2040 Plan. Air quality in the region was better than many other large urban areas. Safety in the region appeared to be improving as well. Total fatalities and injuries on area roads declined by 16% and 4% respectively even though the total number of crashes increased by 3% between 2004 and 2008.

Commuter transportation options

Although the 2040 Plan recognizes that the predominant form of transportation is the automobile, it also recommends a mix of transportation types. In 2008, 70% of area commuters drove alone; 10% carpooled; 7% took public transportation; 4% walked; and 2% bicycled. These percentages largely were unchanged over the four years for which data was available. Nationally, Portland was a leader among urban areas in the percentage of commuters that used transit and bicycles to get to work.

As Metro continues to implement the 2040 Plan, it will be important to periodically review this type of data to provide information about transportation system user benefits. This will help demonstrate successful trends and point to areas where additional attention is needed and resources should be committed. Moreover, it can help check the accuracy of the assumptions in regional transportation plans and models.

Metro relied on modeled data

Metro relied almost entirely on modeled data to estimate the impact of the regional transportation plan rather than on actual data. Each of the last three Regional Transportation Plans included an estimate of the future impacts of the full project list over a 20-year period, such as vehicle miles traveled, congestion delay and the percentage of travelers using different forms of transportation.

Modeling developed to estimate the results of Metro's most recent regional plan indicated that an investment of $9-$20 billion would not result in better outcomes in some measures and would not meet the targets proposed. This contradicted the analysis of prior Regional Transportation Plans, which forecasted progress toward the performance measures in those plans. Conflicting model results highlight the challenges of trying to reach conclusions about outcomes based on forecasted data.

To its credit, Metro has proposed a new performance measurement system that includes modeled and actual data as part of the Regional Transportation Plan. At the time of this audit, non-modeled performance measures were still in development and the process for incorporating performance measurement in planning processes had yet to be determined.

Data not managed to evaluate outcomes

During the audit, we determined that Metro's data management was not organized effectively to monitor, analyze and report outcomes. Senior management had not designated responsibility for data management and evaluation of outcomes. Data to track projects from planning through construction were incomplete and inconsistent. For example:

- Metro's project tracking system changed several times and there was no unique identification number for each project.
- There was no master list linking project numbers in plans to identification numbers for construction.
- There were inconsistencies among many project lists used for reporting.

These factors resulted in fragmented data management. Without a central clearinghouse of data, it was time consuming and difficult to determine basic elements of projects, including total investment amounts, completion dates, and information about why the project was planned and what it was intended to achieve.

The Department acknowledged that data management and quality was a challenge. The database used to track projects contained unreliable data, and employees developed their own side systems to ensure data quality. In response, Metro has been developing a replacement project tracking database called TransTracker over the last five years. TransTracker was not fully operational at the time of the audit. While TransTracker appeared to be an improvement over the previous database, we were still unsure if it would be able to address Metro's needs.

Planning process created challenges

At first glance, Metro's transportation planning process as the MPO and its land-use planning process as the Metro Regional Government would seem to be interrelated. However, combining these two processes as one created challenges for effective and efficient transportation planning. Further, it has implications for Metro's ability to monitor progress toward the outcomes in the 2040 Plan.

As the MPO, Metro defined a narrow role for itself based on available funding and federal planning requirements. It provided technical expertise and coordinated transportation planning processes. With few exceptions, it met the expectations of the federal regulators overseeing the expenditures of transportation funds. It defined no role for itself in the implementation of projects, leaving that to the Oregon Department of Transportation, TriMet, Wilsonville's transit agency, and county and local governments.

If complying with federal laws governing MPOs were its sole responsibility, the findings of this audit would be limited to a handful of areas that the Department could improve, such as making the processes more efficient and transparent. We found that the Department fell short of meeting the needs of the Metro Regional Government, which has larger goals it wants to achieve. Simply complying with federal rules did not provide the tools and information needed to measure whether the Regional Transportation Plan led to better transportation and community outcomes.

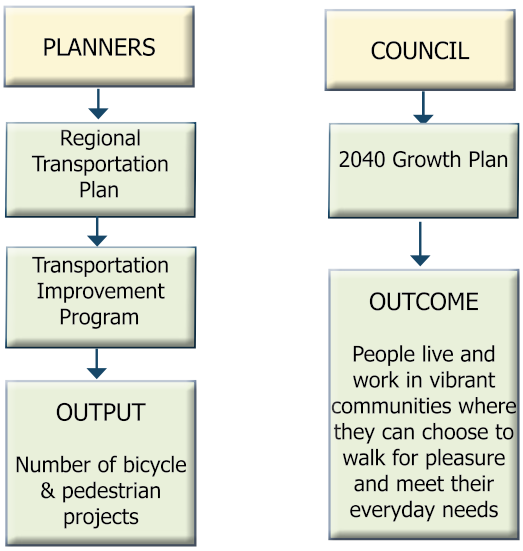
We identified several obstacles that inhibited Metro's ability to measure progress in meeting the goals contained in the 2040 Plan. Two overarching barriers were:

- Metro's planning process was linear and focused on outputs instead of outcomes.
- Metro's roles were not defined and prioritized.

Metro's planning process was linear and focused on outputs

An output is a quantity of the work being done. An outcome is a result achieved from the outputs. When asked how they defined the success of Metro's planning process, planners inside and outside of Metro mostly pointed to outputs, such as getting a plan adopted or crossing a completed construction project off the list. In contrast, the Metro Council usually expressed interest in terms of outcomes, such as a reduction in travel demand or negative effects on the environment.

Exhibit 5
Example of outputs versus outcomes



Source: Auditor's Office

Metro's planning process was linear when it should have been circular. After a plan was adopted, the update process began anew with little or no reflection about the effectiveness of the previous plan. The process did not take stock of what was built since the last update and whether those projects helped the region move closer to achieving the outcomes in the 2040 Plan. The linear planning process left out important information. Metro's transportation planning process largely was paid for and designed by the federal government. It was not a safe assumption that as such it would meet the needs of the Metro Regional Government.

To achieve outcomes in the 2040 Plan, Metro needed to move toward a circular planning process. A circular process would have increased the focus on outcomes. Circling back to compare results to plans is a basic step in evaluating whether a planning or management process is on track. If not, the plan should be revised based on the new information. Leaving out this evaluation step could mean proceeding for years on the wrong course.

We found two examples where a circular planning process was needed. Metro did not evaluate how prioritization and project selection policies for the funds it allocated might have skewed transportation outcomes. One policy that may have affected project selection was rewarding cities that could provide funds above the required matching level. Plans may have needed to be adjusted if this policy resulted over time in an inequitable distribution of funds.

Another example of the lack of evaluation was the effect of local jurisdictions opting out of Metro's application process altogether. We heard from stakeholders that some cities and counties opted out when they weighed the investment of resources against the probability that they would be competitive. Metro should know the effect of this "opting out" on outcomes, especially if high priority investment areas were

removed from the process. Management did not conduct these types of evaluations because they would have taken staff away from higher priority tasks.

Metro's reluctance to regulate increased the need for outcome measurement

Metro's role in the planning process appeared to be more passive than might be expected given its integrated land-use and transportation planning authority. For example, Metro did not screen projects for compatibility with the 2040 Plan before they were included in the Regional Transportation Plan.

Three County Coordinating Committees, which are made up of representatives of the cities and counties in the region, developed the list of projects over the 20-year horizon from their individual Construction Improvement Plans. The City of Portland, TriMet, and ODOT submitted projects directly to Metro rather than through Coordinating Committees. Metro planners did not screen any lists to determine if the projects submitted were compatible with the 2040 Plan or policies outlined in the Regional Transportation Plan. Stakeholders said there were projects that were not compatible with Metro's plans. Some of these were only identified as a result of the public comment period for the most recent Regional Transportation Plan.

Some Metro employees were reluctant to be perceived as gatekeepers of the list, though others were not opposed to implementing a screening process. The source of the discomfort was the fact that some of the funding for projects came from local government sources. Allowing the grass-roots assembly of the lists without an eventual screening process may have streamlined the planning process, but it likely will work against Metro's goal of achieving outcomes in the 2035 Regional Transportation Plan. Without a screening process, the importance of monitoring and measuring outcomes is increased.

Roles not defined and prioritized

The requirements of the MPO function took considerable time and resources of the Department. The decision-making timeline was lengthy for several reasons:

- Federal law requires that the process be continuing, cooperative, and comprehensive. Representatives from 25 cities, three counties, a handful of government agencies, and the public participated in the process.
- The process included required technical analyses, such as determining how projects in the plan would affect air quality.
- The Metro Council has four advisory committees, two each for land-use decisions and transportation decisions. Transportation planners had to brief committees on both tracks, even though they did so for the land-use committees mostly as a courtesy. These committees met monthly, so staff at times waited weeks before receiving direction on how to proceed. In some cases, they received conflicting direction from the advisory committees.

Beginning in 2000, Metro acknowledged a relationship between the 2040 Plan and regional transportation policies. This resulted in increased expectations for the Department. Recent Metro Council actions further increased the importance of measuring outcomes of the 2040 Plan. These actions also increased expectations of transportation planners.

We reviewed the Department's budgets and strategic plan for descriptions of these added responsibilities and guidance on how they should have been prioritized. We found no such guidance, which left staff to figure out as they went along how to cope with competing requests for time and resources. Without this direction, we were unable to assess what progress had been made and whether it was done efficiently and effectively.

Managing workload was a recurring theme during the audit, and there was evidence that Metro's MPO function operates with fewer full-time employees than its peers. Management stated Metro had 25 employees staffing the federally required planning function, lagging behind both a national median of 49 and an average of 31 for MPOs that served populations greater than one million.

However, the Department did not track activities based on whether they were MPO functions or Metro Regional Government functions. Without an understanding of which projects went above the MPO requirements and how they helped the Department achieve other goals, we were not able to conclude whether more staff was needed or whether the current resources needed to be better managed.

Lacking guidance on how to prioritize its roles, managers and staff were left to define their own priorities and measures of success. The system worked to varying degrees, but it also created inefficiencies such as:

- Managers treated work requests with the same level of importance and found themselves never saying no. Staff said the effect was that employees were assigned twice as many projects as they could complete by their deadlines.
- When experienced project managers left, their replacements had no written procedures to help them get started. They were unable to build on the lessons learned from those who had come before them, increasing the potential for repeating mistakes.
- After observing the process to develop the most recent Regional Transportation Plan for several months, we concluded that the process managed the staff more than the staff managed the process. Participants said the time for them to consider and provide input on the scope and variety of new policies and approaches were unrealistic. Deadlines drove decisions, they said, not substantive discussions.

This informal management approach is ill-suited for a Department that must wring more productivity out of its current resources to achieve the region's ambitious outcomes. Federal and state requirements have expanded. The Council's desire to achieve and measure regional outcomes also places new demands on the Department for data collection, analysis, and reporting. In addition, the Director wants the Department to help local jurisdictions implement projects. It was not known if more resources would be available for these expanded responsibilities.

Stakeholders who participated in this audit lauded Metro's planners for their professionalism and determination to produce innovative plans. The success of those plans, however, may rest more on the Department's ability to improve its internal management system.

Better tools needed to evaluate outcomes

Best practices for equity analysis, project tracking and reporting and benefit-cost analysis are particularly relevant for Metro's increasing focus on outcomes. Considerations of equity, transparency and cost-effectiveness were often mentioned in our interviews, though suggestions about how to integrate them in the planning process were not definitive. Increasing transparency through better data management and expanding analysis techniques to evaluate equity and net societal benefits will be important tools if the region is to realize the promise of the 2040 Plan.

Equity and environmental justice

Federal civil rights and environmental justice laws and regulations require recipients of federal funds to involve the public in planning and decision-making, protect minority and low-income communities from adverse health and social effects of investments, and make sure the groups protected by the law enjoy equitable benefits.

Equity and environmental justice concerns have emerged as the region has become more demographically diverse. So far, no jurisdiction in the region has developed an approach to analyzing and addressing equity issues in a meaningful way.

Other MPOs have developed practices in assessing the benefits and burdens that transportation projects place on neighborhoods. The Southern California Association of Governments in the Los Angeles area developed its approach in response to a threatened lawsuit in the 1990s. A coalition of advocacy groups argued that the MPO's preliminary Regional Transportation Plan had few benefits for low-income communities.

The Mid-Ohio Regional Planning Commission in the greater Columbus area also established analytical foundations for determining benefits and burdens. The Mid-Ohio region included a needs-assessment of its communities that were underserved by transportation in its decision-making.

Metro had integrated public involvement procedures into its planning process. It had no established policies and procedures for identifying human health and environmental effects or determining whether some

populations were underserved. The environmental justice report in the 2008 Transportation Improvement Program identified projects by their proximity to certain neighborhoods, but did not articulate whether the project would be a benefit or burden. In the most recent analysis, a Metro planner conducted site visits at some of projects that applied for Flexible Funds.

Decision-makers and Department planning staff expressed a desire to improve analytical capabilities and decision-making in terms of equity. This translated into criteria being included in the selection criteria for some Flexible Fund categories. Metro could better address its stated concern about equity by providing deeper analytical information and emphasizing it in the planning process.

Project tracking and reporting

The San Francisco area's MPO had a web site where anyone could obtain data about transportation projects and funding. Called the Fund Management System, this tool not only helped manage data for planning purposes but also improved transparency by offering a one-stop clearinghouse of information for transportation projects in the region. Project owners update their information in the database. Information collected included the problem the project was trying to solve, project screening data (including whether it was consistent with the Regional Transportation Plan), funding by project phase, timelines, and the political districts where the project was located. This information could easily have been converted into a periodic progress report on completed and ongoing projects.

The Puget Sound Regional Council's 2004 milestone report is an example of how data can be useful for decision-making and determining progress on outcomes. The report assessed 10 years of transportation investments and compared them to Puget Sound's long-range vision and principles. Puget Sound was able to produce the report after it developed a project-tracking database with the help of the Washington Department of Transportation. The first report did not include all transportation funds spent, but Puget Sound planned to incorporate additional projects in its next report (2010). Metro stakeholders we interviewed agreed milestone reports would be helpful in assessing what is being built and how well the projects conform to regional policies.

The milestone report not only provided a benchmark for Puget Sound decision-makers and planners, but the project-tracking system netted the MPO an unexpected $12 million in "found" money. By working with the Washington Department of Transportation to pull together data on past projects, Puget Sound realized that some of the projects had not spent all of their obligated funds. Washington DOT allowed Puget Sound to commit those unspent funds to other projects.

Benefit-cost analysis

We found several examples of benefit-cost analysis being used for transportation planning. The examples indicate that this type of analysis could be incorporated at various stages in the planning process. For example:

- Evaluation of a proposed project: The City of Cincinnati completed an analysis of a proposed street-car project to determine if the project would result in more benefits than it cost to construct.
- Evaluation of a group of projects: The Ohio-Kentucky-Indiana MPO conducted a benefit-cost analysis on a group of projects in its transportation improvement plan. The results demonstrated that the projects generated benefits for the region in excess of their costs.
- Transportation System Development: The Department for Transport in the United Kingdom conducted analyses of potential transportation projects. The resulting benefit-cost ratios for each project were used to develop national transportation priorities.

The examples we reviewed indicated that benefit-cost analysis could be an effective tool to provide standardized and objective evaluation of policies and projects. The primary advantage of using it was in estimating a monetary value for all costs and benefits to develop a single measure, a benefit-cost ratio, for each project or policy option under consideration. Having a single measure in the form of a benefit-cost ratio facilitated comparisons of options regardless of transportation type, purpose, geography, and funding structure. In practice, the utility of this analysis was dependent on many factors, including the availability of data, methodology used to monetize costs and benefits, and structure of the decision-making process.

In addition to examples where benefit-cost analysis was used in transportation planning, there were several technical resources available to facilitate this type of analysis. These included:

- Two manuals, developed by EcoNW (based in Oregon), that provide technical methodologies and theoretical backgrounds for analysis of transit and highway projects.
- Two guidebooks developed by the Transportation Research Board that provide a comprehensive discussion of transportation project analysis techniques, general methodologies and a state of the practice literature review.
- Free software developed by the Federal Highway Administration that uses information generated by travel demand models as inputs for benefit-cost analysis.

Metro does not conduct formal benefit-cost analysis but we found elements of this type of analysis in its planning process. For example, Metro has included an evaluation of cost-effectiveness as one of the selection criteria for projects applying for Flexible Funds. Cost-effectiveness criteria were a relatively small part of the quantitative scoring process, accounting for at

most 15% of the project score. In addition, elements of benefit-cost analysis were part of many transit-related plans and studies, such as the High Capacity Transit System Plan, corridor and alternative analysis studies, and applications to the Federal Transit Administration to fund light-rail and streetcar projects.

While systematic use of this type of analysis remained the exception rather than the rule, we believe Metro is better positioned than most MPOs to make greater use of benefit-cost analysis in transportation planning. Metro generates data from its travel demand model to meet mandated federal and state planning requirements (for example air quality conformity, scenario analysis, Environmental Impact Statements) which provide a rich foundation for this type of analysis. Moreover, Metro's unique structure, land-use authority, technical expertise, and willingness to go beyond compliance provide a favorable environment to incorporate benefit-cost analysis at various points in the planning process.

Recommendations

To improve Metro's ability to evaluate the outcomes of its transportation planning efforts, the Chief Operating Officer and the Department should:

1. Define roles and responsibilities for evaluation of 2040 Plan outcomes including:
   a. What evaluation is expected
   b. Who will do the work
   c. What resources will be committed
   d. When reporting will be done
   e. How the evaluation will be incorporated in planning and decision-making processes

2. Improve data management and collection in line with defined roles and responsibilities established as part of recommendation number one, including:
   a. Collect data about completed transportation projects
   b. Collect sufficient information about each completed project to be able to evaluate progress toward outcomes
   c. Develop a data management system that will facilitate data collection, maintenance and reporting

3. Improve tools used for outcome evaluation in line with defined roles and responsibilities established as part of recommendation number one, including:
   a. Develop a methodology for equity analysis
   b. Develop a consistent methodology for benefit-cost analysis and increase use

MANAGEMENT RESPONSE

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February 1, 2010

The Honorable Suzanne Flynn
Metro Auditor
600 NE Grand Ave
Portland, Oregon 97232

Dear Ms. Flynn:

Thank you for the opportunity to respond to your audit "Tracking Transportation Outcomes." We appreciate the Auditor's recognition that Metro is unique among Metropolitan Planning Organizations (MPOs), in that we are a chartered government with regional planning authority in addition to functioning as the federally designated transportation planning entity. As Metro's regional planning program has evolved over the years, the agency has leveraged federal transportation funds to address both regional objectives and federal requirements.

However, our federal grants depend on successfully meeting federal regulations and the growing scope of our mandated MPO work has increasingly limited the ability to fund additional regional activities. The Auditor's report captured this reality with the conclusion that we are successfully meeting our federal transportation planning requirements, but not always fully meeting our regional planning objectives.

The Auditor's report includes findings that suggest that Metro's MPO staffing level lags behind other MPOs of similar size. Given that we are also carrying out regional tasks that extend beyond the federal transportation planning mandates, we believe that our limited staffing capacity has contributed to a number of the operational issues noted by the auditor. Therefore, our responses to the specific recommendations from the auditor, below, hinge on the extent to which Metro reprioritizes its work program and/or can find the capacity to staff the additional efforts proposed. We will also seek more efficient and effective ways of doing business.

Response to Specific Recommendations
The following summarizes the Planning and Development Department's response to the specific recommendations in the Auditor's report.

Recommendation No. 1: *Define roles and responsibilities for evaluation of 2040 Plan outcomes including:*

a. *What evaluation is expected;*
b. *Who will do the work;*
c. *What resources will be committed;*
d. *When reporting will be done;*
e. *How the evaluation will be incorporated in planning and decision-making processes?*

Management Response:

We recognize the need to become more efficient and effective in managing our varied tasks. We concur that a clearer definition of roles and responsibilities is essential in allocating our limited resources and recommend the following actions to improve our performance:

- Implement Best Management Practices for Project Development: The Planning & Development Department has been implementing Regional Leadership Initiative (RLI) best management practices and successfully used this approach for the current Regional Transportation Plan (RTP) update. We believe that this approach adds to our effectiveness, and plan to expand the RLI approach to all major projects carried out in the department to better address (b) and (c), above, related to identification of resources, roles and responsibilities.

- Implement Outcomes Based Approach: Unlike previous RTP's, the new RTP establishes an outcomes-based approach consistent with Region 2040 and federal and state requirements. It relies on an information feedback loop as called for by the auditor. This new approach addresses the Auditor's recommendations in (a), (d) and (e), above, by creating a more circular planning process centered on reporting and evaluation of progress toward Region 2040 goals. We have not fully developed and implemented the evaluation phase but will make substantial progress in 2010.

  A possible way to create efficiencies with existing staff is to change the Metropolitan Transportation Improvement Program (MTIP) update schedule. The RTP follows a mandatory 4-year update cycle that allows for a feedback loop on plan performance. It would be beneficial to align the MTIP project/program funding component with this update cycle to provide sufficient time to evaluate performance prior to committing new funds. While federal regulations allow for a 4-year MTIP update cycle, the Oregon Department of Transportation currently operates on a 2-year update cycle for the State Transportation Improvement Plan. To support the Auditor's findings, we recommend that Metro discuss this possibility with to ODOT to adopt the longer MTIP cycle.

Recommendation No. 2: I*mprove data management and collection in line with defined roles and responsibilities established as part of recommendation number one, including:*

a. Collect data about completed transportation projects;
b. Collect sufficient information about each completed projects to be able to evaluate progress toward outcomes;
c. Develop a data management system that will facilitate data collection, maintenance and reporting.

Management Response:

We have made great strides in our data collection and analysis systems in the past few years. Our data emphasis focuses on complying with state and federal regulations. It does not fully address regional planning objectives and overall performance of the transportation system.

For example, we are nearing completion on a new database that will allow Metro to:

- track projects from planning to commitment of funds for construction
- conduct historical analyses of funding patterns, priorities and progress on plan implementation
- serve as a financial planning tool for tracking transportation revenues and project funding allocations

As pointed out by the auditor, this database does not include information on local projects funded outside of the regional process or state-funded projects that are not part of the RTP. We recognize this is a significant gap, but that level of effort is well beyond our current capacity. We estimate it would require an additional management analyst to support this work. Therefore, we recommend exploring other options for bringing this information to the regional planning process in order to fill this gap, including enacting reporting requirements for local governments or cooperative agreements with ODOT.

A second gap in our project-related data tracking identified by the auditor is information on projects that have been obligated, and are moving into the construction phase. Metro lacks the resources to track projects through construction to determine whether completed projects reflect the original funding purpose.

We concur with the auditor that this is essential information to track. While it may not be possible to meet this need in the current budget cycle in light of funding shortfalls, we may be able to pursue this if funds become available in the next federal transportation reauthorization.

A notable exception to this finding by the auditor is when project development is funded with regional funds. In recent years, Metro has begun to administer those contracts directly in order to ensure projects meet the original funding intent.

Recommendation No. 3: *Improve tools used for outcome evaluation in line with defined roles and responsibilities established as part of recommendation number one, including:*

a. Develop a methodology for equity analysis;
b. Develop a consistent methodology for benefit-cost analysis and increase use.

Management Response:

Metro began applying an equity analysis through the MTIP and RTP programs in the late 1990s, and has been refining the approach to this analysis in the years since. We recognize that the current approach is broad and left open to interpretation by stakeholders and policy makers, and concur with the auditor that the importance of the issue calls for continued improvement in our methodology. We will survey other MPOs to determine if they have perfected an approach to equity analysis that could be applied in our region. We also recommend enhancing existing partnerships between Metro's Research Center, the Portland Institute for Metropolitan Studies and the Oregon Transportation Research and Education Consortium to develop and maintain regional data to facilitate this analysis.

Councilor Collette, with staff support from the Transportation Planning Division, is currently serving on the STIP (State Transportation Improvement Program) Stakeholder Committee. The committee is an advisory group to the Oregon Transportation Commission that will soon be taking up the issue of how to apply the least cost planning as the preferred method of cost-benefit analysis in transportation planning and project selection. This work is expected to be completed in 2011, and the recommendations could provide a template for conducting least-cost planning in Metro's transportation planning programs (or any other infrastructure planning at Metro). It is important for this kind of approach to be advanced statewide, so we are excited to part of the effort.

In her role as JPACT Chair, and as an advocate for least cost planning, Councilor Collette will also be able to have a direct impact on how we apply this approach to regional transportation planning. We believe this work will fully address the Auditor's recommendations in (b) above.

Sincerely,

Robin McArthur

Robin McArthur, AICP
Director, Planning and Development Department

cc: Michael Jordan
Scott Robinson
Tom Kloster
Ted Leybold

APPENDIX

Transportation Projects

ODOT Key#*	Project Name	Regional Flexible Fund**	2040 Plan	Transportation Type	Amount Paid to Contractor
11302	Interstate MAX (Rose Garden to Expo Center)	✓	Central City and Regional Centers	Transit	$350,000,000^
13199	Streetcar extension: PSU to South Waterfront	✓	Central City and Regional Centers	Transit	$45,300,000^
09393	St. Johns Bridge		None listed***	Roads/Boulevard	$38,055,603
13459	US26: Cornell Road - OR217		Industrial Areas and Intermodal Facilities	Freeways/Highways	$36,322,678
12493	Rehabilitation of Willamette River Bridges (Broadway)		None listed***	Bridges	$22,492,738
12522	I-205 North Auxiliary Lane Improvements		None listed***	Freeways/Highways	$21,847,663
09364	I-5: Capitol Hwy - Marquam Bridge		Town Centers, Main Streets and Station Communities	Bicycle/Pedestrian	$21,785,138
12858	I-5: Capital Hwy - Tualatin River		Unable to link to RTP****	Unable to link to RTP****	$14,407,428
10685	I-5: Columbia River (NB/SB) Bridges		Unable to link to RTP****	Unable to link to RTP****	$12,455,604
08815	North Lombard Railroad Overcrossing	✓	Industrial Areas and Intermodal Facilities	Roads/Boulevard	$12,372,339
12374	Burnside Bridge		Central City and Regional Centers	Bridges	$7,857,536
10680	TV Hwy: Hocken - Minter Bridge Road		None listed***	System Management	$6,287,153
12855	OR99E: Kellogg Cr. - MP 9.19		Town Centers, Main Streets and Station Communities	Roads/Boulevard	$5,821,766
14545	OR99E: Division St - Ross Island Br.		Unable to link to RTP	Unable to link to RTP	$5,815,800
12854	OR217: Sunset Hwy - SW 72nd		None listed***	Freeways/Highways	$5,302,104
12872	OR224: SE 17th Ave. - E. Portland Fwy.		Unable to link to RTP****	Unable to link to RTP****	$5,281,936
03346	I-205: E Portland Freeway at Sunnybrook Interchange		None listed***	Freeways/Highways	$4,671,171
10665	OR 212: Rock Creek Jct to Richey Road		Unable to link to RTP****	Unable to link to RTP****	$4,421,697
11468	OR 213: At South Beaver Creek Road	✓	Central City and Regional Centers	Freeways/Highways	$4,345,749
11435	SW Nyberg Rd @ I-5	✓	Industrial Areas and Intermodal Facilities	Freeways/Highways	$3,263,838
10705	SE Bybee Blvd: McLoughlin/SPRR Br.		Central City and Regional Centers	Roads/Boulevard	$3,096,021
10666	Beaverton-Hillsdale Hwy: Beaverton/Tigard Hwy		Unable to link to RTP****	Unable to link to RTP****	$2,920,049
10731	US26: Ross Island Br. - SE 50th	✓	Other	System Management	$2,746,875
10679	OR47: Quince - District Boundary		Town Centers, Main Streets and Station Communities	Roads/Boulevard	$2,745,792
05651	OR 99E: Kellogg Creek-SE Harrison St	✓	None listed***	Freeways/Highways	$2,420,675
13256	Tualatin River Bike Pedestrian Bridge	✓	Town Centers, Main Streets and Station Communities	Bicycle/Pedestrian	$2,323,551
12477	Molalla Ave. Sidewalk Infill, Phase 2	✓	Central City and Regional Centers	Bicycle/Pedestrian	$2,064,570
12158	OR-224: East Portland Fwy - SE Evelyn St.		Unable to link to RTP****	Unable to link to RTP****	$2,054,026
10078	Abernethy Creek Bridge		Central City and Regional Centers	Roads/Boulevard	$1,985,935
11425	Divison: NW Wallula Ave - NE Kelly Ave	✓	Central City and Regional Centers	Roads/Boulevard	$1,803,219
14272	92nd Ave: SE Powell - SE Holgate	✓	Town Centers, Main Streets and Station Communities	Bicycle/Pedestrian	$1,568,226
14454	Washington County Sidewalk Projects	✓	Town Centers, Main Streets and Station Communities	Bicycle/Pedestrian	$1,522,927
11064	Stark Street Boulevard: SE 181st - SE 190th	✓	Town Centers, Main Streets and Station Communities	Roads/Boulevard	$1,480,842
12295	I-205 Multi-Use Path O-Xing Powell	✓	Central City and Regional Centers	Bicycle/Pedestrian	$1,191,621
10258	Johnson Creek Blvd: 32nd Ave to 45th Ave	✓	Town Centers, Main Streets and Station Communities	Roads/Boulevard	$1,120,447
12905	OR10: Hwy 217 - SW Maple Dr.		Unable to link to RTP****	Unable to link to RTP****	$994,912
14057	Rose Biggi Ave: Crescent Street to Millikan	✓	Central City and Regional Centers	Roads/Boulevard	$900,333
12148	SW Rosemont Road @ SW Stafford Road		Other	Roads/Boulevard	$743,881
10867	Hillsboro/Silverton Hwy @ SE Walnut		Unable to link to RTP****	Unable to link to RTP****	$742,830
13258	Hillsboro Regional Center Pedestrian Project	✓	Central City and Regional Centers	Bicycle/Pedestrian	$641,796
11454	Fuller Road: SE King Rd. - SE Harmony Rd.	✓	Central City and Regional Centers	Bicycle/Pedestrian	$587,954
11420	Gresham/Fairview Trail: NE Halsey - NE Burnside Rd	✓	Other	Bicycle/Pedestrian	$564,341
10663	Stark Street Viaduct		Unable to link to RTP****	Unable to link to RTP****	$550,464
13107	Beaverton/Tualatin Hwy - Tigard Hwy @ Scholls Ferry Rd		Unable to link to RTP****	Unable to link to RTP****	$543,091
14518	I-84: Wilkes Sound Wall		Unable to link to RTP****	Unable to link to RTP****	$517,188
11462	Cornell Rd Bike Path: NE Elam Yound Parkway - NE Ray Cr	✓	Town Centers, Main Streets and Station Communities	Bicycle/Pedestrian	$506,909
14472	122nd @ Whitaker & Lombard @ Portsmouth		Unable to link to RTP****	Unable to link to RTP****	$505,770
13454	Linnton Improvements: NW Harbor - NW 112th		Unable to link to RTP****	Unable to link to RTP****	$487,614
07146	E. Burnside/MLK to 37th Ave.		Unable to link to RTP****	Unable to link to RTP****	$440,278
10877	OR 99E/Canemah Rockfall Mitigation		Unable to link to RTP****	Unable to link to RTP****	$368,674
13644	I-405 @ Kerby Avenue Offramp		Central City and Regional Centers	Roads/Boulevard	$341,617
14010	US 30: Lake Yard Hub Facility Access Improvement		Unable to link to RTP****	Unable to link to RTP****	$327,361
13233	OR 43: Laurel Street - Glenmorrie Dr.		Unable to link to RTP****	Unable to link to RTP****	$302,910
11422	Bertha Sidewalk Improvement: Vermont - Capitol Hwy	✓	Town Centers, Main Streets and Station Communities	Roads/Boulevard	$276,085
09394	Lombard: Pacific East - Philadelphia Ave.		Unable to link to RTP****	Unable to link to RTP****	$243,879
12149	US26: Powell Blvd @ 82nd Ave		Unable to link to RTP****	Unable to link to RTP****	$236,662
11459	Greely/Interstate: Russel/Killingsworth Bike Path	✓	Central City and Regional Centers	Bicycle/Pedestrian	$54,619

Source: Auditor's Office analysis based on data from ODOT, TriMet, Portland Streetcar and Metro

* Some projects were listed under multiple ODOT key numbers in various transportation improvement program documents.

** Check mark (✓) indicates that Regional Flexible Funds were used for a portion of the project cost.

*** Indicates that no information about 2040 Plan land-use information was listed in the Regional Transportation Plan.

**** Indicates that auditors were unable to match a project to the Regional Transportation Plan.

^ This is the total for the entire project as reported by TriMet or Portland Streetcar. The total may include expenditures in excess of the amount paid to the contractor.

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