# ASSET MANAGEMENT

for the
DELAWARE VALLEY REGION

State of the Practice

DELAWARE VALLEY
REGIONAL PLANNING
COMMISSION

2008

Created in 1965, the Delaware Valley Regional Planning Commission (DVRPC) is an interstate, intercounty and intercity agency that provides continuing, comprehensive and coordinated planning to shape a vision for the future growth of the Delaware Valley region. The region includes Bucks, Chester, Delaware, and Montgomery counties, as well as the City of Philadelphia, in Pennsylvania; and Burlington, Camden, Gloucester and Mercer counties in New Jersey. DVRPC provides technical assistance and services; conducts high priority studies that respond to the requests and demands of member state and local governments; fosters cooperation among various constituents to forge a consensus on diverse regional issues; determines and meets the needs of the private sector; and practices public outreach efforts to promote two-way communication and public awareness of regional issues and the Commission.
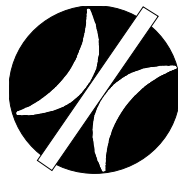
Our logo is adapted from the official DVRPC seal, and is designed as a stylized image of the Delaware Valley. The outer ring symbolizes the region as a whole, while the diagonal bar signifies the Delaware River. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey.

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EXECUTIVE SUMMARY

Asset management is defined by the Federal Highway Administration (FHWA) as "a systematic process of maintaining, upgrading, and operating physical assets cost-effectively. It combines engineering principles with sound business practices and economic theory, and it provides tools to facilitate a more organized, logical approach to decision-making. Thus, asset management provides a framework for handling both short- and long-range planning." It is considered a means to more effectively distribute funding to both preservation and new capacity projects, making sure that an agency's dollar stretches as far as possible. For the purposes of this effort, the assets covered are those related to the regional transportation system.

The difficult aspect of this work is the fact that the Delaware Valley Regional Planning Commission (DVRPC) does not own any of the assets in these programs. The assets are owned and maintained by the respective Departments of Transportation, various authorities, and transit operators. In order to determine how DVRPC could become involved in asset management within our nine county region, research was conducted to determine what other states were doing, including New Jersey and Pennsylvania. The initial focus was on highway related assets. Data on other states' programs was obtained from the FHWA/AASHTO/NCHRP July 2007 publication, "U.S. Domestic Scan Program, Best Practices in Transportation Asset Management." Because New Jersey and Pennsylvania were not included in the Scan, they were contacted directly to obtain the same categories of information.

Based upon the data from other states, the data from NJDOT and PennDOT plus general research on asset management from various publications, several issues were identified which need to be further investigated. Most importantly, it is unclear at this time how DVRPC should be involved. However, since NJDOT and PennDOT are in the early stages of setting up asset management programs for their own respective agencies, now is the time for DVRPC to become involved as a partner in their endeavors. The next step will be to convene a meeting with all stakeholders to determine how DVRPC can be involved in asset management for this region.

BACKGROUND

Over the past several decades asset management has become a tool often utilized by transportation asset owners to determine how to most efficiently invest in their system. According to the FHWA, asset management is defined as "a systematic process of maintaining, upgrading, and operating physical assets cost-effectively. It combines engineering principles with sound business practices and economic theory, and it provides tools to facilitate a more organized, logical approach to decision-making. Thus, asset management provides a framework for handling both short- and long-range planning."

History

There are several issues that have arisen that have contributed to the increase in asset management programs. From the 1960's through the early 1990's, the primary focus on transportation in this country was construction of the Interstate Highway System. Once this was completed in the early 1990's, the focus switched to preservation of existing transportation infrastructure. That switch in focus came at the right time, as many roadways and bridges that were part of the National Highway System were nearing the end of their useful lives, and in need of repair or replacement. Many agencies have adopted asset management programs to ensure they are addressing the preservation needs in their systems.

The current financial environment has also contributed to the increased use of asset management programs. Although there is now more of a demand than ever on our transportation network, funding has not increased at the same pace. Compounding this is the significant increase in costs of construction materials, which has led to the importance of utilizing asset management programs to maximize the benefit to the roadway network. Systematic asset management has also become more necessary as the public increases their demand that the government be as efficient and accountable as private industry.

Legislation

In 1999, the Governmental Accounting Standards Board (GASB) issued Statement Number 34, "Basic Financial Statements for State and Local Governments." This requires that State and Local government report additional data on their assets and liabilities, and that they need to use a historical cost approach to establish transportation asset values. However, they are not required to depreciate assets if they have an asset management program and their assets are being preserved, providing incentive to governments to utilize asset management programs.

What helped to bring asset management into the work programs of Metropolitan Planning Organizations (MPOs) across the country was US DOT Statewide and

Metropolitan Planning Regulations (23 CFR 450.306(e)) regarding the scope of the metropolitan transportation planning process. It states that "In carrying out the metropolitan transportation planning process, MPO's, States, and public transportation operators may apply asset management principles and techniques in establishing planning goals, defining TIP priorities, and assessing transportation investment decisions, including transportation system safety, operations, preservation, and maintenance, as well as strategies and policies to support homeland security of all motorized and non-motorized users."

General Principles

There are many definitions for asset management, including the one stated previously from FHWA, but in essence, asset management consists of the following steps:
- Determine which assets are to be included in program;
- Create performance targets (i.e., percent of pavement in good condition, percent of bridges not structurally deficient);
- Collect data, including integration of existing data if needed.
- Analyze data to determine system condition;
- Run economic analysis to determine how available funding should be distributed to most efficiently meet performance targets previously defined; and
- Determine a set of improvements.

It is a cyclical process, as the data is constantly changing as more assets deteriorate or are improved, so performance targets and proposed improvements should be constantly re-evaluated.

FHWA also defines five principles of asset management which accurately describe the main facets of any asset management program:
- <u>Policy Driven</u> - Decisions reflect policy goals and objectives that define desired system conditions and service levels.
- <u>Performance Based</u> – Clear measures of performance and target service levels are established for each of the program's assets. These performance targets should be based upon the desired optimal performance of the asset, but should also take into account realistic costs and funding to bring it to the required level.
- <u>Options Evaluated</u> – Comprehensive choices and tradeoffs are examined at each level of decision-making. FHWA states that "Policy goals and objectives are considered in evaluating investment and funding alternatives to meet transportation needs. Tradeoffs among asset classes or modes, program investments, and funding availability are conducted to seek the best performance at the lowest life-cycle cost."
- <u>Decisions Based on Quality Information</u> – One of the most important aspects of asset management is to collect and utilize quality data for all assets included in the plan. Data needs to be continuously collected and fed back into the asset management program.

- <u>Clear Accountability</u> – Performance results are monitored and reported by the agency.

Relationship of Asset Management to the Transportation Improvement Program and Long Range Plan

The Transportation Improvement Program (TIP) is the agreed upon list of specific priority projects for the 9-county Delaware Valley Region. The TIP lists all projects for which federal funds are anticipated in the next 4 years, along with non-federally funded projects that are regionally significant. The TIP represents the transportation improvement priorities of the region and is required by federal law. Typically, projects are first brought up for inclusion in the TIP by the State DOT's, counties or major city they are located in. They are then reviewed by various committees and the Board at DVRPC, and are selected to be included in the TIP based upon a set of criteria. Those criteria are in the process of being updated and are expected to include more criteria based upon asset management concepts as early as 2009.

Projects in the TIP must also be drawn from the Long Range Plan. The DVRPC 2030 Plan has taken a limited asset management approach in the selection of projects. Policy ranges of funding were established for various categories of improvement projects, with the greatest proportion of funds targeted to reconstruction, rehabilitation, and replacement of existing assets.

CURRENT ASSET MANAGEMENT PROGRAMS

Many states and a few MPO's already have asset management programs in place. The FHWA (Federal Highway Administration), AASHTO (American Association of State Highway and Transportation Officials), and NCHRP (National Cooperative Highway Research Program) recently completed a scan of asset management programs across the country, and published their findings in the July 2007 report, "U.S. Domestic Scan Program, Best Practices in Transportation Asset Management." The information below is a summary of some of the programs detailed in the report.

Florida Department of Transportation

The Florida Department of Transportation (FDOT) is responsible for roadways, bridges, aviation, transit and seaports within the state, with a Fiscal Year 05/06 5-year Work Program of $31.1 billion. They do not have a stand alone asset management program or a separate asset management organizational unit; they have instead made asset management part of the entire process of planning, programming, and system monitoring for their agency. They have also placed the most emphasis on maintenance needs within their system, with all maintenance needs funded first, before any capacity expansion projects are programmed. FDOT has been quite successful utilizing asset management as part of their process; they have exceeded their performance targets for the last 10 years. Some of the specifics of how asset management is utilized in their state are summarized below:

- Performance Targets
  - Ensure that 80 percent of the pavement on the state highway system meets department standards.
  - Ensure that 90 percent of the Department-maintained bridges meet Department standards.
  - Ensure that the Department achieves 100 percent of the acceptable maintenance standards on the state highway system.
- Data Systems
  - <u>Pavement Management System</u> – contains data needed to evaluate ride quality, crack severity, and average depth of wheel-path ruts. Roadway segment is then rated in each area, and a rating of 6 or less on a ten point scale in any of these areas causes the segment to no longer meet Department standards.
  - <u>Bridge Management System</u> – Contains information on all state owned bridges as well as an additional 4,000 locally owned bridges. A bridge meets Department standards when it does not show any evidence of structural deterioration, is not being limited by weight restrictions or not needing preventative maintenance.
  - <u>Maintenance Management System</u> – Contains information on production, personnel, equipment, and materials.
  - <u>Maintenance Rating Program</u> – Used to provide information to schedule and prioritize routine maintenance activities, and to provide uniform

maintenance conditions that meet established departmental objectives. State highway maintenance condition is based on a sampling process which rates five primary categories of the highway environment three times a year. They are roadway, roadside, vegetation and aesthetics, traffic services, and drainage. This information is utilized to schedule and prioritize routine maintenance activities. A score for each sample segment is calculated on a scale of 0 to 100. The Department's objective is for 100 percent of the sampled roadways to have a score of 80 or above. This is implemented on a district level, and each district is responsible for meeting their goals.

Florida Turnpike Enterprise

The Florida Turnpike Enterprise has a 10-year finance plan of $11.1 billion, which is split into 59 percent for new projects, 25 percent for debt service, and 16 percent on operations and maintenance. They do have an asset management program, which includes pavements, roadways, facilities, bridges, drainage systems, and safety conditions. Specifics of their asset management program are summarized below:
- Data Systems
    - TEAMS (Turnpike Enterprise Asset Management System), which allows the FTE to show an accurate inventory of infrastructure assets, provide the current condition of these assets, and forecast and prioritize capital expenditures needed to renew this asset base.

Michigan Department of Transportation

The Michigan Department of Transportation is responsible for many of the state's assets including roadways, park-and-ride lots, traffic lights, rest areas, travel information centers, rail lines, airports and planes, and their 2006 budget is approximately $3.5 billion. An Asset Management Division does exist within the organization; however, the asset management function is shared and integrated across many areas within the Department. The Asset Management Division is focused on coordinating asset management efforts within different areas of the Department. Project selection begins with the Integrated Call for Projects, an annual activity that starts with a confirmation of the asset condition goals and is completed when a new fifth year is added to the five-year transportation program. Goals are then entered into the Road Quality Forecasting System and Bridge Condition Forecasting System, and candidate projects are identified. Their asset management program has allowed them to make strides in improving asset conditions within the state. In 2005, about 85% of non-freeway, and 90% of freeway miles were considered good, up from 55% and 78% respectively in 1996, and about 85% of bridges were in good/fair condition, up from between 75%-80% in 1996. Some specifics of their asset management program are detailed below:

- Performance Targets – exist for 20 different program categories, some examples are:
    - Bridge goals
        - 95 percent of freeway bridges and 85 percent of non-freeway bridges being in good/fair condition.
        - No more than 35 percent of bridges should be rated as "structurally deficient."
    - Safety Program
        - Signal Goal – Modernize signal network every 10 years.
        - Sign Replacement Goal – Replace every 15 years.
        - Pavement Marking Goal – Re-stripe 85 percent of network annually.
    - Pavement Goals
        - No more than 30 percent of the pavements should be rated as "poor" or "very poor."
- Data Systems
    - Road Quality Forecasting System & Bridge Condition Forecasting System– utilized to predict future system condition based on various investment strategies.
    - Pavement Management System, Bridge Management System, Congestion Management System, Intermodal Management System, Public Transit Facilities and Equipment Management System and Safety Management System.

Minnesota Department of Transportation

The Minnesota Department of Transportation has a most recent capital budget of $1.625 billion. Their asset management program includes assets such as roadways, bridges, transit, and aviation. They do not have a separate asset management process or organizational structure dedicated for the purpose; they have integrated asset management into their broader performance-based decision-making process. Funding decisions are made with pavement and bridge preservation needs fully funded first. The program has been nearing their performance targets for bridges, but falling behind on pavements. Some specifics of their asset management initiatives are described below:
- Performance Targets
    - Performance measures for asset management were subject to public input by utilizing a random sampling of customers to get feedback on what condition of the roadway was most desirable.
    - Performance measures were also set by taking into account probable funding, meaning some measures were lowered because it would be impossible to attain with the current level of funding.
    - Some examples include:
        - 55% of bridges should be rated good or better by 2023.

- 70% of principal arterials should have ride quality indexes rated good or higher, no more than 2% should be rated poor.
- 50% of principal arterials should have a remaining service life of 50% or more, no more than 10% should have a remaining service life of less than 3 years.
- 80% of the transit fleet should have a remaining life within the minimum normal service life.
- 82.25% of airport runways should be rated in good condition, no more than 5.75% should be rated in poor condition.
- Data Systems
  - Transportation Information System (TIS) – central repository for data on the public road network in the state.
    - Pavement Management System
    - Bridge Management System
    - Traffic Operations Conditions
    - Fleet/Communications Equipment

Ohio Department of Transportation

The Ohio Department of Transpiration does not have a formal asset management program, they have, instead, integrated it into all departments within the agency. Some specifics of their asset management initiatives are described below:
- Performance Measures
  - 90% of roadway pavements are acceptable.
  - 96% of bridges are acceptable, 95% of bridge floor condition is acceptable, 96% of bridge wearing surface is acceptable, 89% of bridge paint condition is acceptable.
  - Specific goals are set for maintenance of roadways in the following categories:
    - Drainage obstructions
    - Guardrail
    - Litter
    - Pavement Marking
    - Pavement Deficiency
    - Pavement Drop-off
    - Sign Deficiency
    - Vegetation Obstruction
- Data systems
  - Fully integrated between legacy systems, GPS, and new web applications.
    - Ellis – project management system
    - Pavement Database
    - Bridge Inventory Database
    - Maintenance Database

Oregon Department of Transportation

The Oregon Department of Transportation is in the early stages of implementing a comprehensive asset management program. Some details of their proposed program are:

- Organizational Structure
    - Asset Management Executive Steering Committee
    - Asset Management Steering Committee
    - Asset Management Tactical Committee
    - Asset Management Region 2 Pilot Team
    - ODOT GIS Steering Committee
    - Additionally, asset managers and corresponding teams exist within various technical disciplines. Their duties include:
        - Performing field data collection and condition rating, updating restrictions, and training for data collection processes.
        - Performing needs analysis for project selection and development.
        - Working together with other asset owners, between systems to integrate asset data annually and on an as-needed basis.
        - Performing quality assurance/quality control on annual asset data.
- Data Systems
    - Currently have between 60 and 70 different unlinked databases, major are as follows:
        - Bridge Management System (Pontis)
        - Bridge Document System – scans of as-built project documents, foundation: sheets, boring logs, and calculation books.
        - PMS – Pavement Management System
        - R2SIGN – Sign inventory database
        - ITIS – Integrated Transportation Information System
        - MMS – Maintenance Management Systems
        - TMS – Traffic Monitoring System
        - TransGIS – GIS tool
        - HERS – Highway Economic Requirements System
        - EDMS – Environmental Data Management System
        - RAIN – Right-of-way Automated Information Network
        - TMOC – Transportation Management Operations Center
        - TEAMS – Transportation Environment Accounting and Management System (financial services)
        - CDS – Crash Data System
        - They are in the process of creating a more integrated database system.

Utah Department of Transportation

The Utah Department of Transportation (UDOT) is responsible for about 5,900 miles of roadway, which is about 14 percent of the states total roadway miles. Asset management has long been a part of the organizations philosophy, dating back to publications from 1978. They do not have a formal asset management program. Asset

management is instead integrated throughout their practices. Funding is dedicated first to system preservation, second to improving system performance, and third to new capacity. Some specifics of their asset management initiatives are included below:

- Performance Targets
    - o Maintain 90 percent of freeway pavements, 70 percent of arterial pavements, and 50 percent of collector pavements in fair or better conditions.
    - o Maintain no less than 65 percent of bridges in very good condition, 25 percent of bridges in good condition, and no more than 10 percent of bridges in fair condition.
    - o Maintain a grade of B+ for snow and ice removal based on conditions reported one hour after a storm.
    - o Maintain a grade of A for signing and striping.

Grand Valley Metropolitan Council

The Grand Valley Metropolitan Council is the Metropolitan Planning Organization (MPO) for the Grand Rapids, Michigan area, which has a population of 771,000, and includes Kent County and part of Ottawa County. They have become involved in asset management for their region by purchasing an instrumented van which collects pavement condition data on much of the road network in the study area. The van collects data on the entire Federal-Aid network of roadways in the MPO jurisdiction (1,350 miles), and on up to 3,000 miles of the local road network. They then calculate the PCI (Pavement Condition Index) for roadways, and utilize this data to program transportation investments in the region's TIP.

Southeast Michigan Council of Governments

The Southeast Michigan Council of Governments is the MPO for the Detroit, Michigan area, which has a population 4.9 million, and includes seven counties and over 200 local governments. They are currently in the early stages of developing a structured asset management approach in their planning program, and are moving from an organizing phase to a point where they are beginning to educate local agencies on the benefits of asset management as well as assessing the pavement and bridge data collected over the last three years. They are focusing on road and bridge conditions, as transit programs in the area already have their own asset management process. However, when transit agencies request investments in the TIP process, justification is required on why their request is necessary. Pavement data is collected using visual surveys utilizing PASER (Pavement Surface Evaluation and Rating System) for all federal-aid eligible roads in the region.

STATE OF ASSET MANAGEMENT IN PENNSYLVANIA AND NEW JERSEY

Although Pennsylvania and New Jersey were not included in the FHWA/AASHTO/NCHRP report, representatives at both organizations were contacted to attempt to obtain the same amount of data for those states.

New Jersey Department of Transportation

The New Jersey Department of Transportation (NJDOT) has a most recent Fiscal Year 2006 budget of approximately $2.7 billion. They have limited ownership of roadway assets, with a large amount of the transportation assets in the state of New Jersey being owned by municipalities, counties, and authorities.

NJDOT is currently in the early stages of creating an asset management program. The Division of Capital Investment Strategies will be responsible for implementing a department-wide Asset Management Program. Capital Investment Strategies will also be responsible for developing and updating the NJDOT Asset Management Plan and the Asset Management Improvement Strategy. An Asset Management Steering Committee will be created to guide implementation of this Policy, and will support the Division of Capital Investment Strategies in the Asset Management Program implementation and operation. NJDOT divisions will be charged with developing specific asset management plans for assets under their purview. These specific asset management plans will be incorporated into the overall Asset Management Plan. The specifics of the NJDOT asset management program are as follows:

- **Assets Agency is Responsible For:**
  - Roadway Assets
    - State Highways and all appurtenances such as:
      - Guiderail
      - Signs
      - Curbs
      - Drainage systems
  - Bridge Assets
    - Major Bridges, including high cost and movable bridges
    - Minor Bridges (culverts)
    - Dams
    - Retaining structures
  - Safety and Congestion Assets
    - Traffic Signals
    - Intelligent Transportation System assets
  - Support Facilities Assets
    - Office buildings
    - Maintenance yards

- o Equipment Assets
    - ▪ Cars
    - ▪ Trucks
    - ▪ Heavy equipment
    - ▪ Telecommunications
    - ▪ Information technology equipment
- **Assets Included in Asset Management Program:**
    - o All the above.
- **Performance Measures**
    - o Established for major bridges, pavement, dams, congestion, safety.
- **Decision-Making/Funding Strategy**
    - o Investment categories established.
    - o Assets classified within each category.
    - o Asset condition levels quantified.
    - o Performance measures and reasonable, realistic 10-year target levels are established.
    - o Alternative investment scenarios are developed that show alternative investment levels and projected conditions.
    - o Investment trade-offs are compared and investment priorities are established.
    - o Target investment levels for each category are determined.
    - o Target investment levels serve as a guide for the capital programming process.
- **Data systems**
    - o Pavement Management System
    - o Bridge Management System (PONTIS)
    - o Drainage Management System
    - o Safety Management System
    - o Congestion Management System
- **Program Outcomes**
    - o Statewide Capital Investment Strategy has been developed that set targets for investment for all state transportation agencies (NJDOT, NJ Turnpike, SJTA, NJ TRANSIT) over the next ten years.
    - o Established common investment categories across these agencies.
    - o Working to develop a standardized asset classification and asset management plan structure.

Pennsylvania Department of Transportation

The Pennsylvania Department of Transportation (PennDOT) owns and operates the nation's fifth largest state-owned highway system, with an annual budget of over $5 billion. They have done some preliminary asset management work within specific units, but have not pursued a central asset management program for the entire department. The specifics of their asset management program are as follows:

- **Assets Agency is Responsible For:**
  o Bridges
  o State maintained highways (pavement, shoulders, drainage, guide rail)
  o Signs
  o ITS
  o Rest Areas/Welcome Centers/Facilities
  o Equipment Fleet
- **Assets Included in Asset Management Program:**
  o Each asset is managed to varying degrees individually, but no overall Asset Management program is in place to date.
- **Performance Measures –** select asset related measures are provided below:
  o Bridge –
    District Budget Spent on Roads/Bridges
    Committed Bridge Projects Let (Dollars & Number of Projects)
    Percent of Structurally Deficient (SD) Bridges by Deck Area
    Percent of Dollars Spent on SD Bridges
    Annual Bridge Letting (Dollars for Preservation)
    Completed Bridge Maintenance Priorities
  o Pavement –
    Surface Improvements (Resurfacing, Leveling/Sealing, Total)
    Crack Sealing on High Level Bituminous Roadway Network
    Ride Quality, by Roadway Network
    Non-NHS miles with Inadequate Pavement Width
  o Other –
    Days to Complete Drainage Repairs
    Total Maintenance Priorities
- **Organizational Structure**
  o No asset management organization, management responsibilities are integrated into Bureaus responsible for each asset.
- **Decision-Making/Funding Strategy**
  o Interstate Management System – Bridge and highway projects determined from prioritized needs based on condition, age, and treatment type.
  o Bridge – Bridge Risk Analysis used to:
    a. establish risk levels for selected Department-owned bridge types and structures and establish measures to mitigate risks over a period of time, especially for SD bridges; and
    b. systematically and rationally prioritize bridge projects as the Transportation Improvement Program (TIP) is updated every 2 years.
  o County Maintenance – annual funding distribution determined from roadway and bridge needs.
- **Data Systems**
  o Bridge Management System (BMS2)
  o Roadway Management System (RMS)
  o Plant Maintenance/SAP
  o Multi-modal Project Management System (MPMS)
  o Electronic Contract Management System (ECMS)

- o Geographic Information System (GIS)
- o Crash Reporting and Analysis System (CRASH)
- **Program Outcomes**
  - o Bridge –

    With 25,000 state-owned bridges, Pennsylvania has the third largest number of bridges in the nation. Nearly 6,000 bridges are classified as "structurally deficient." The average age of bridges on the state system is 50 years.

  - o Roadway –

    The 2007 median IRI value for the Interstate improved from 76 in./mi. in 2006 to 73 in./mi., and the median for the NHS (Non-Interstate) improved from 103 in./mi. in 2006 to 101 in./mi. The percentage of "Poor" mileage for the Interstate network dropped from 5.2% to 4.2%, and the "Poor" mileage on the NHS (Non-Interstate) network decreased from 9.4% in 2006 to 6.8%. The median IRI value for Non-NHS routes with ADT $\geq$ 2000 improved from 125 in./mi. in 2006 to 121 in./mi., and the percentage of "Poor" mileage improved 10.6% in 2006 to 7.9%. The median IRI value for Non-NHS routes with ADT < 2000 improved from 181 in./mi. in 2006 to 173 in./mi., while the "Poor" mileage improved from 32.4% to 28.1%. With respect to IRI, 17.4% of the entire state-owned highway system is "Poor," compared to 20.8% in 2006.

ISSUES IN THE DVRPC REGION

Through research of DOT and MPO asset management programs as well as review of several FHWA and AASHTO reports, the following issues have been identified that will need to be addressed before completing an asset management plan for the DVRPC region.

What should be the role of DVRPC in asset management in our region?

There are several ways that DVRPC can fit into asset management in our region:
- Data Collection – Other MPO's have been involved in data collection on non federal-aid roadways and local bridges.
- Education - DVRPC could provide education on creating and maintaining an asset management program to stakeholders within our region.
- Program Framework Creation – DVRPC could be the agency responsible for creating the framework for a region-wide asset management program, or could assist NJDOT and PennDOT with creation of their own program.
- Program Guidance – DVRPC could work with other stakeholders in the region to create asset management programs within their agencies.

Who are the transportation asset owners in the DVRPC Region?

Stakeholders that have been identified with transportation assets in the DVRPC region are PennDOT, NJDOT, PA Turnpike Commission, NJ Turnpike Authority, South Jersey Transportation Authority, City of Philadelphia, counties, municipalities, SEPTA, NJ TRANSIT, PATCO, DRPA, and DRJTBA.

Which of these stakeholders should be included in a regional asset management plan?

Although it is clear that PennDOT and NJDOT would have to be included in the plan, it is not clear at this time how extensively other stakeholders should be included, or whether it would be sufficient to encourage them to have asset management programs in place at their agency.

What data would be needed for a regional asset management plan?

The following data would be needed, at a minimum, as input to an asset management plan:
- Roadways
  - Pavement Condition
  - Safety Device Condition
  - Traffic Signal Equipment Condition
  - Pavement Marking Condition
  - Signage Conditions

- Bridges
    - Bridge Conditions
- Transit
    - Fleet Condition
    - Infrastructure Condition
    - Station Condition
    - Equipment Condition

What data may already be available to DVRPC?

The following databases are currently owned by PennDOT and NJDOT, and data from these systems could possibly be made available to DVRPC from those agencies:

- PennDOT
    - Bridge Management System (BMS2)
    - Roadway Management System (RMS)
    - Plant Maintenance/SAP
    - Geographic Information System (GIS)
    - Crash Reporting and Analysis System (CRASH)
- NJDOT
    - Pavement Management System
    - Bridge Management System (PONTIS)
    - Drainage Management System
    - Safety Management System
    - Congestion Management System

Additional data may be available from other agencies such as the PA Turnpike Commission, NJ Turnpike Authority, South Jersey Transportation Authority, the City of Philadelphia, SEPTA, NJ Transit, PATCO, DRPA, DRJTBA, as well as various counties and municipalities. We anticipate working with these agencies to determine what data may be available for DVRPC use.

What are potential issues with combining all data into one database?

PennDOT's data is all based upon their roadway management system methodology and defined by county, route, segment and offset, so that all asset data for state roadways could be combined into one database. NJDOT, as part of its straight line diagram program, developed a common methodology to reference the data. However, it is not yet used in each of their databases, so it would require extensive work to combine all asset data from each database for all NJDOT state roadways.

What performance measures would be applied to condition data?

Performance measures would be decided upon by the asset owners. Some examples of performance measures utilized by other states are:

- Percent of pavement in good condition
- Percent of pavement with good ride quality index
- Percent of roadways having a remaining service life of 50 percent of more
- Percent of bridges in good condition
- Percent of structurally deficient bridges
- Replace all signs every 15 years
- Modernize all signals every 10 years
- Percent of transit fleet with a remaining service life within the minimum normal service life

What life-cycles are appropriate for various asset maintenance improvements?

Each asset maintenance improvement has its own life expectancy, which would be determined by the asset owners during the analysis phase.

How should financial resources be allocated between different asset classes and owners?

Typically, in the absence of a complete asset management system, decisions on how to allocate financial resources have been determined by individual asset owners based on competition within their organization. Recently, increased emphasis has been placed on bridge assets.

How can the information from an asset management system be used to strategically direct funding allocation to system components most effectively?

The information from an asset management system can be utilized to select projects that will provide the best performance at the lowest life-cycle cost. Many factors are examined in the project selection process, including the performance measures previously set, the current system condition, as well as economic analysis. Performance can be further defined by the asset owner according to what funding priorities have been set, such as an emphasis on maintenance rather than new capacity, to ensure that projects that are selected reflect the future goals of the asset owner.

NEXT STEPS

The next step will be to convene a meeting with all potential stakeholders to not only determine the state of their asset management programs but also identify what role DVRPC should play, and to also gain input into how, and at what level DVRPC will be involved in the various asset management systems within the region. Based upon the discussion at that initial meeting, DVRPC will work with the identified primary regional stakeholders to address the remaining issues. DVRPC expects to publish a second report in June 2009 which will summarize its findings under these "next steps."

Title of Report

ASSET MANAGEMENT IN THE DELAWARE VALLEY REGION
STATE OF THE PRACTICE

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ABSTRACT
This report summarizes the research completed to determine the state of asset management in the Delaware Valley region. In order to determine how DVRPC could become involved in asset management within our nine county region, research was conducted to determine what other states were doing, including New Jersey and Pennsylvania. Based upon the data from other states, the data from NJDOT and PennDOT, plus general research on asset management from various publications, several issues were identified which need to be further investigated. The next step will be to convene a meeting with all stakeholders to determine how DVRPC can be involved in asset management for this region.

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