



Performance-Based Funding for Transportation A Compendium

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Compendium of the Chicago Metropolitan Agency for Planning's Work on Performance-Based Funding for Transportation

Introduction

GO TO 2040, the regional comprehensive plan for metropolitan Chicago¹, emphasizes that all levels of government should seek to coordinate policies and investments to increase efficiency and produce more effective local and regional outcomes. Strategic investment is especially pertinent in the transportation sector, given the critical role of a well-maintained, modern transportation system in supporting and furthering metropolitan Chicago's position as a global transportation hub and the economic engine of the state and the Midwest.

GO TO 2040 recommends a series of implementation actions for creating more efficient use of scarce transportation dollars. First, transportation funding decisions should be based on transparent evaluation criteria, and the State and the region's transportation stakeholders should develop and utilize the necessary performance measures. The Chicago Metropolitan Agency for Planning (CMAP) strongly believes that metropolitan planning organizations (MPOs) should be involved in the identification of goals, targets, and performance measures in cooperation with the State. MPOs have the appropriate perspective and professional expertise to contribute to these policy decisions. Second, the plan specifically targets the current state practice of allocating only 45 percent of road funding to northeastern Illinois, regardless of needs, and recommends that performance-driven criteria rather than an arbitrary formula be used to determine these investments.

Further, the recently-passed federal transportation reauthorization bill, Moving Ahead for Progress in the 21st Century (MAP-21), signals a new federal emphasis on outcome-based performance measurement. The implementation of a performance-based funding system for the state highway program is a top agency priority for CMAP, and will help the State prepare for upcoming federal requirements.

This document reviews recent CMAP's efforts on the topic of performance-based funding for transportation. It first reviews CMAP's definitions of "performance measures" and "performance-based funding," and then outlines CMAP's proposal for the implementation of performance-based funding for the state highway program. The report then reviews the current practice in developing capital programs in the region, as well as best practices in performance-based planning and programming among peer agencies across the United States. The report closes with a detailed description of CMAP's activities since July 2011. The appendices describe the relationship between performance measurement, funding, and MAP-21, and also include a link to the official report from the federal Transportation Planning Capacity Building peer program on the July 2012 peer exchange hosted at CMAP.

¹ CMAP, GO TO 2040, <http://www.cmap.illinois.gov/2040/main>

Definitions

Clear, consistent definitions are crucial in discussing this topic. Throughout its work in this area, CMAP draws a distinction between “performance measures” and “performance-based funding” as follows:

Performance measures are data about the use, condition, and impact of the transportation system. These measures are best thought of as indicators – data that is publicly reported for illustrative purposes or to demonstrate progress made toward established targets. Several state departments of transportation (DOTs) are active in performance measurement, as illustrated by the Missouri DOT’s *Tracker* tool,² the Minnesota DOT’s annual performance reports,³ and the North Carolina DOT’s organizational performance website.⁴ The Illinois Department of Transportation has recently begun to inventory its existing measures, identify gaps, and reach out to the state’s metropolitan planning organizations as it works to implement the performance measurement requirements in MAP-21.⁵ CMAP is also active in performance tracking through its dissemination of data via the MetroPulse portal,⁶ the various indicators included in GO TO 2040,⁷ its Congestion Management Process,⁸ and other transportation programs.

Performance-based funding uses a variety of performance measures to assist in prioritizing and selecting projects for funding. This data is used as part of a transparent, public process that also relies on the professional judgment of transportation stakeholders and, in some cases, the general public. Project scores built from quantitative and qualitative input must be reconciled against available funds. Note that not all performance measures can be immediately applied to the programming process; many indicators are developed at the system level, not the project level, and would need to be gathered in greater detail to be useful in programming. CMAP’s issue brief⁹ on the use of performance-based evaluation criteria for transportation funding falls under this category.

Performance measures and performance-based funding are also compared and contrasted in the matrix below.

² Missouri Department of Transportation, MoDOT *Tracker*, <http://www.modot.org/about/Tracker.htm>

³ Minnesota Department of Transportation, Performance Measurement, <http://www.dot.state.mn.us/measures/>

⁴ North Carolina Department of Transportation, Organization Performance, <https://apps.dot.state.nc.us/dot/dashboard/default.aspx>

⁵ Illinois Department of Transportation, Performance Measures, <http://ilmpo.org/uploads/FAQPerformanceMeasures.pdf>

⁶ CMAP, MetroPulse, <http://www.metropulsechicago.org/#>

⁷ CMAP, GO TO 2040, <http://www.cmap.illinois.gov/2040/main>

⁸ CMAP, Congestion Management Process, Performance Measurement, <http://www.cmap.illinois.gov/cmp/measurement>

⁹ CMAP, 2012, Performance-Based Funding, <http://www.cmap.illinois.gov/documents/20583/c51c39e5-8f1a-44a0-aa63-9de062090511>

Figure 1. Comparing definitions

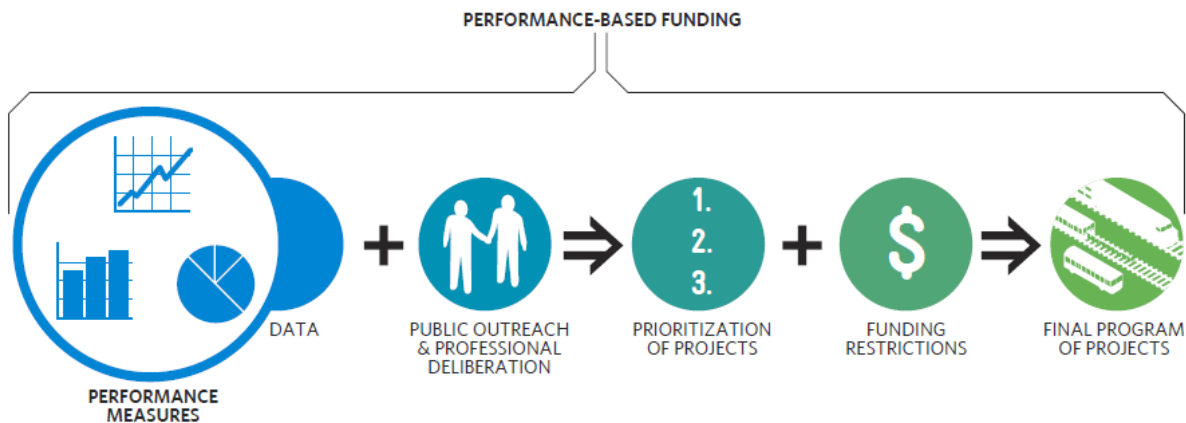
Comparing performance measures and performance-based funding

	PERFORMANCE MEASURES	PERFORMANCE-BASED FUNDING
PURPOSE	To provide a high-level assessment of system performance using transparent data. "Performance measures" are often synonymous with "indicators," in which progress toward established goals is tracked and reported.	To set transportation priorities and program funds through an inclusive process utilizing both quantitative and qualitative data and information. Performance-based funding includes multiple stakeholders in a more robust and transparent process, and requires both data and significant outreach.
NECESSARY INPUTS	Data on use, condition, and impact of the transportation system. This data is often aggregated to a system-level (state or regional) summary.	Quantitative performance measures and the creation of an overall process for gathering input from multiple stakeholders. The process must also take existing funding limitations or formulas into account. Performance-based funding takes a strategic look at the systemwide impacts of various investment scenarios.
ENTITIES INVOLVED AT A STATE-WIDE OR METROPOLITAN SCALE	State DOTs, MPOs, highway and transit implementing agencies.	State DOTs, MPOs, highway and transit implementing agencies. A performance-based funding process may also include a larger set of entities such as representatives from the business community and should include input from the general public.
EXAMPLES	Missouri DOT's Travel Tracker, CMAP's MetroPulse.	CMAP Issue Brief, agencies from Transportation Planning Capacity Building program peer exchange.

Source: CMAP staff analysis.

The following image illustrates the sequence of a performance-based funding process. Performance measures play a critical role in such a process as a source of data, although they do not determine final programming decisions.

Figure 2. Illustration of performance-based funding



Note: This image illustrates that performance measures are a form of data, and just one component of a larger performance-based funding process.
Source: Chicago Metropolitan Agency for Planning.

As this section makes clear, CMAP's work in this area focuses on performance-based funding, that is, the effort to tie the prioritization of projects and the allocation of funding to performance measures.

Current Practice in the Region

Illinois Department of Transportation

The Illinois Department of Transportation (IDOT) is responsible for constructing, operating, and maintaining a large highway network, and spends billions annually to do so. IDOT's current highway program, included in the FY 2014-2019 Multi-Modal Transportation Improvement Program, budgets \$9.53 billion in improvements across the state.¹⁰ This program includes \$7.2 billion in federal funds, \$1.9 billion in state funds, and \$0.4 billion in local funds. The six-year highway improvement program schedules \$3.1 billion for District 1,¹¹ not including statewide line items or the local road program.

CMAAP staff research into IDOT's current practice draws three main points. First, IDOT documentation refers to a variety of evaluation criteria focused on the physical condition of the system, including pavement condition ratings, crash statistics, and traffic volumes. For example, IDOT's Condition Rating Survey (CRS) measures pavement conditions, and the agency conducts bridge inspections every other year through the Bridge Analysis and Monitoring System. From this data, IDOT develops lists of backlog and accruing needs, and also determines which assets are in acceptable condition. In developing its highway program, IDOT sets a performance target of at least 90 percent of the road system in acceptable condition and at least 93 percent of bridges in acceptable condition.¹²

These criteria tend to emphasize the transportation system's physical condition, not its economic or environmental impact. Because a well-maintained, modern transportation system is integral to economic growth—and given that northeastern Illinois is the engine of the state and national economies—this issue is especially important to the region.

Second, IDOT's public documentation does not specify exactly how IDOT uses these measures to evaluate and prioritize projects, or how it navigates the inherent tradeoffs when allocating funds. While the Department identifies goals and assigns weights to various performance criteria, these tasks are done internally and are not publicly available. Additionally, relevant stakeholders, including metropolitan planning organizations, do not participate in these processes.

Third, IDOT's performance-based process does not apply statewide. Rather, a longstanding ad hoc agreement within the General Assembly directs 45 percent of transportation funds to

¹⁰ IDOT, FY 2014-2019 Proposed Multi-Modal Transportation Improvement Program, <http://www.dot.il.gov/opp/hip1419/hwyimprov.htm>

¹¹ IDOT District 1 includes Cook, DuPage, Kane, Lake, McHenry, and Will counties. Kendall County is located in IDOT District 3.

¹² Illinois State Transportation Plan 2012, http://www.illinoistransportationplan.org/pdfs/final_report/transportation_plan_2012_book.pdf

Illinois State Transportation Plan, System Management: Preservation, Maintenance, and Operations Report, September 2012, http://www.illinoistransportationplan.org/pdfs/system_management_090612_web.pdf

District 1 in northeastern Illinois and the remaining 55 percent to the eight downstate districts¹³. While IDOT uses performance measures to allocate funding within District 1 and among Districts 2 through 9, the fundamental distribution of funds in Illinois is predicated on an arbitrary formula.

A 45 percent share does not accurately reflect metropolitan Chicago’s economic, fiscal and transportation contributions to the state as a whole. Table 1 provides a summary of northeast Illinois’s share of the state’s transportation system and finances. The Chicago region accounts for a small proportion of total roads, rail, and bridges, but these facilities are heavily used. Additionally, the CMAP region contributes a disproportionate share of total transportation revenues. Northeast Illinois is the driver of the state’s economy, which suggests higher returns to transportation investments in our region. Construction in northeast Illinois is inherently expensive and complex, further contributing to the region’s funding requirements.

Table 1. CMAP Region's Share of Illinois Total, Multiple Metrics

Bridges	13%	Vehicle-miles traveled	56%
Structurally deficient bridges	15%	Gasoline sales	60%
Rail miles	17%	Motor vehicle fees	61%
Road miles	18%	Population	66%
Interstate miles	20%	Taxable sales	66%
Arterial bridges	27%	Injury crashes	66%
Interstate bridges	31%	Property damage crashes	69%
National Highway System bridges	33%	Taxable individual income	71%
Functionally obsolete bridges	44%	Bicycle and pedestrian crashes	84%
Fatal highway crashes	44%		

Sources: CMAP analysis of IDOT Highway Statistics 2010, National Bridge Inventory 2010, Illinois Department of Public Health 2009, National Transit Database 2009, Federal Aviation Administration 2010, CMAP “Highway Ride Quality in the Chicago Region as of 2006”. Road measures are in centerline miles and bridge measures are in bridge counts; these metrics likely underestimate funding needs for northeastern Illinois compared to road lane-miles and square footage of bridge deck area, respectively.

Transit Agencies

Transit systems in Illinois receive funding from federal, state, and local sources. Federal funds are distributed to states by formula through programs like the Urbanized Area Formula (Section 5307) and State of Good Repair Formula (Section 5337). State capital funding is typically raised through the Series B bond program, and large bond issuances are often financed through various fee increases. Local capital funds come from the Regional Transportation Authority’s (RTA) Strategic Capital Improvement Program bonds, and are financed to an extent through state revenues.

Through its research, CMAP staff identifies three main issues with transit funding:

¹³ CMAP, 2011, The 55-45 Split, <http://tinyurl.com/9n6bzms>

- The allocation of the RTA Sales Tax and its related Public Transportation Fund revenues—the backbone of northeast Illinois transit’s operations—is statutorily determined, and is not linked to Service Boards’ performance or need.
- The State does not describe how transit projects are included within major capital programs such as Jump Start and Illinois Jobs Now!
- While the RTA and Service Boards have taken great strides at collecting data on their assets and infrastructure and have begun utilizing it to prepare and evaluate their capital programs, it is too early to determine the extent of its effectiveness since the overall process and tools are still in the development stage.

CMAP analyzed recent capital programs for each of three regional Service Boards.¹⁴ These documents list the types of projects to be funded, in what amount, and the sources of these funds. The programs identify three broad goals—maintenance, enhancement, and expansion—demonstrate their capital needs, and utilize the criteria and process outlined in the RTA’s Capital Plan Development Process (described in this presentation¹⁵ on slide 50). This process was developed cooperatively by the Service Boards and RTA, and adopted by the RTA Board in 2008.

The Service Boards and the RTA have done considerable work in analyzing asset conditions. RTA is currently refining its objective, needs-based capital programming process.¹⁶ Furthermore, the RTA has recently received a grant to partner with the Federal Transit Administration in developing a Transit Asset Management Program.¹⁷ This effort will include consistent, data-driven decision tools to help RTA monitor and improve the state of good repair of its capital assets. The program will better link upstream asset data and condition analyses with downstream capital project prioritization and budgeting.

The Service Boards’ programs also refer to recent or upcoming strategic capital planning processes. For example, the CTA is implementing an asset management system, which will collect data on the asset inventory into a new database, update condition data, develop reporting and modeling tools to assist the CTA’s capital planning process, and create a method

¹⁴ CTA, President’s 2012 Budget Recommendations,
http://www.transitchicago.com/assets/1/finance_budget/2012_Budget_Book_for_Web.pdf

Metra, 2012 Program and Budget Book,
<http://metrarail.com/content/dam/metra/documents/2012%20Budget%20Book%20Final.pdf>

Pace, Suburban Service Budget and Regional ADA Paratransit Budget,
http://www.pacebus.com/pdf/2012Budget/2012_Final_Budget_Book.pdf

¹⁵ RTA, Budgeting for Results: Funding Priorities, Improving Outcomes with Performance Measures.
<http://www.civicfed.org/sites/default/files/7-25-11%20Session%203%20Gallucci.pdf>

¹⁶ RTA, A Regional Approach to a State of Good Repair,
www.fta.dot.gov/documents/RTA_Chicago_Practices_and_Plans_-_Grace_Gallucci_John_Goodworth.pdf

¹⁷ RTA, FTA Awards RTA \$800k to Help Prioritize Transit Maintenance Projects,
<http://www.rtachicago.com/press-releases-2011/fta-awards-rta-800k-to-help-prioritize-transit-maintenance-projects.html>

for maintaining this data in the long term.¹⁸ CMAP anticipates that these studies will more fully detail regional transit systems needs and the rationale for the selection of individual capital projects.

The RTA recently evaluated the condition of its Service Boards' capital assets.¹⁹ The 18-month effort used asset age as a proxy for condition, evaluated assets in five major categories, and identified five major cost components. According to the RTA's analysis, the three Service Boards have combined capital needs of \$24.6 billion over ten years. Fifty-six percent of the total costs are needed to address the backlog, 28 percent to address normal replacement costs, and the remaining 16 percent to address routine capital maintenance costs. The CTA accounts for about 61 percent of needs, Metra 30 percent, and Pace 9 percent.

The data collected for the RTA's capital needs analysis is essential for moving toward performance-based capital programming. This data can illustrate where needs are greatest and how to optimize an investment mix given the agency's priorities. While the RTA and Service Boards are taking the necessary first step in collecting this data, it has yet to be fully integrated into a systematic, long-term capital programming process.

Local and Regional Highway Agencies

Local and regional entities, including CMAP and the various Councils of Mayors, consider explicit performance-based evaluation criteria when prioritizing transportation projects. As an example, CMAP's evaluation²⁰ of major capital projects for inclusion in GO TO 2040 considered both quantitative and qualitative measures, including long-term economic development measures (jobs in the region, total regional income, and gross regional product), travel times, vehicle emissions, impacts on the connectivity of the transportation system, and consistency with subregional plans. Projects under CMAP's Congestion Mitigation and Air Quality Improvement program²¹ are scored by their cost-effectiveness in advancing the program's chief goals: reducing congestion and improving air quality. Additionally, they must demonstrate consistency with the regional comprehensive plan, GO TO 2040. And the various Councils of Mayors' Surface Transportation Program prioritization processes²² use explicit quantitative measures to score and rank local projects according to transportation and institutional objectives.

Through its Congestion Management Process (CMP), CMAP tracks regional indicators across four broad categories: system reliability, system operations, travel choices, and system

¹⁸ CTA, 2011, Transit Asset Management System, http://www.fta.dot.gov/documents/CTAs_Plans_for_Condition_Assessment_Process_Improvement-Leah_Dawson.pdf

¹⁹ RTA, 2010, Capital Asset Condition Assessment, www.rtachicago.com/images/stories/final_RTa_imgs/RTA_Asset_Condition_Assessment_REPORT.pdf

²⁰ CMAP, GO TO 2040 Major Capital Projects, <http://tinyurl.com/9c4zzh7>

²¹ CMAP, Congestion Mitigation and Air Quality, <http://www.cmap.illinois.gov/congestion-mitigation-and-air-quality>

²² CMAP, STP Resources, <http://www.cmap.illinois.gov/council-of-mayors/stp-resources>

maintenance.²³ More specifically, the CMP includes the following individual performance measures:

- Transit on-time performance
- Planning time indices for individual freeways
- Travel time index
- Congested hours
- Passenger miles traveled by revenue hour
- Arterial congestion
- Speed limit compliance
- Motorist delay at highway-rail grade crossings
- Means of transportation to work
- Household vehicle availability
- Inter-city travel destinations by distance and mode
- Off-peak travel by vehicle class
- Vehicle miles traveled on expressways
- Trips underway by time of day by travel mode and trip purpose
- Mode choice and trip purpose
- Bridge conditions
- Highway ride quality
- Pavement condition of intermodal freight connectors

CMAAP also tracks safety data, reported separately from the CMP performance measures.²⁴ Safety metrics include fatalities, injuries, and crashes – all reported in total as well as normalized to overall vehicle travel and population. The CMP provides safety data for 2002, 2005, 2008, 2009, 2010, and 2011.

Regional Peer Exchange

On September 17-18, 2012, CMAAP hosted a peer exchange of transportation implementers from across the region to discuss their agencies' approaches to capital programming. Participating agencies included IDOT District 1, Illinois Tollway, county transportation departments, North Shore Council of Mayors, CMAAP, City of Chicago, City of Naperville, Regional Transportation Authority, Chicago Transportation Authority, Metra, and Pace. The presentations from the peer exchange are available from CMAAP's FTP website, ftp://ftp.cmap.illinois.gov/Regional_Peer_Exchange/. The public login name is "cmapftpro" and the password is "CMAPread2013".

The transportation agencies described a variety of approaches to capital programming. Some use formal systems to score and rank projects for policymakers' deliberation, while others

²³ CMAAP, Congestion Management Process, Performance Measurement, <http://www.cmap.illinois.gov/cmp/measurement>

²⁴ CMAAP, Congestion Management Process, Northeastern Illinois Safety Data and Analysis, <http://www.cmap.illinois.gov/cmp/safety>

employ a more ad hoc approach that relies on staff experience and judgment. Common themes across agencies included the importance of collaborating across jurisdictions, leveraging scarce funds, emphasizing multimodalism, and expanding public outreach. The agencies also stressed the need for data-driven decisions and noted that such data is more readily available for certain criteria (e.g., bridge and pavement conditions) than others (e.g., economic impacts).

The regional peer exchange highlighted the North Shore Council of Mayors' performance-based programming process as a best practice example. The North Shore Council of Mayors is one of 11 suburban subregional councils charged with allocating local Surface Transportation Program (STP) funds. CMAP has compiled the Councils' STP methodologies and an overview of each Council's overall funding parameters.²⁵

Like the other subregional councils, the North Shore Council of Mayors runs a competitive application process to program its STP funds. The Council defines seven project selection categories, each of which represents a formal weight in any project's overall score. Points for each category are determined based on explicit, objective criteria. For example, safety points, which represent 20 percent of the overall weight, are based on the number of vehicular crashes (5 points), pedestrian crashes (5 points), bicycle crashes (5 points), and crash severity (5 points). The Council recently updated its scoring methodology, placing more emphasis on regional benefits, intergovernmental collaboration, pavement conditions, safety, traffic volumes, and congestion mitigation. These reforms in turn de-emphasized other criteria such as local need, roadway jurisdiction (the entity responsible for the road), project readiness, and air-quality benefits. The following chart compares the previous and current weights across evaluation criteria.

²⁵ CMAP, STP Resources, <http://www.cmap.illinois.gov/council-of-mayors/stp-resources>

Figure 3. North Shore STP Methodology



Note that “TCM” refers to “Traffic Control Measures.” The red boxes refer to criteria added to or dropped from the evaluation methodology.

The quantitative scoring described above does not determine the Council's final program. Rather, it informs decision making, with initial review and recommendations from the Council’s Technical Committee and final review and approval from the full Council. This combination of data-driven scoring, transparent processes, and public deliberation represents performance-based programming as envisioned by CMAP.

Case Studies

CMAP staff has conducted extensive research into case studies of performance-based funding. This work began in late 2011 with an initial focus on Midwestern states and large transit systems. In early and mid-2012, CMAP staff worked with the U.S. Department of Transportation to identify an additional six case studies for a Transportation Planning Capacity Building peer exchange event held in July 2012. CMAP staff considers the North Carolina Department of Transportation, one of the six participating agencies in the peer exchange, to offer a particularly compelling case study, and this section closes with a review of that example.

Midwestern Case Studies

In 2011, CMAP staff profiled performance-based project evaluation processes among three Midwestern states: Kansas, Missouri, and Ohio. These states, like Illinois, must allocate resources between major metropolitan areas and rural areas; among highway, transit, rail, bicycle, pedestrian, and multimodal projects; reduce congestion and protect the environment;

and maintain safety on an aging transportation system. In reviewing these other states' systems, certain commonalities were found. In summary, these states:

- Initiated their systems through their state DOTs, and in some cases, later formalized these systems in law.
- Divide their funding into various programmatic areas.
- Use explicitly-defined and publicly-available formulas to evaluate the various types of projects and employ a mix of formula and competitive processes to distribute funds, depending upon the type of project.
- Formalize the participation of metropolitan planning organizations.
- Use a separate commission or other entity to help evaluate and select projects.

For example, the Kansas Department of Transportation (KDOT) pools its funding into three programmatic areas -- preservation, modernization, and expansion -- and applies a tiered evaluation process to select projects within each category.²⁶ Preservation projects are scored using existing engineering criteria. Modernization projects are mostly scored using engineering criteria, but also consider regional priorities. Expansion projects consider engineering criteria and regional priorities, as well as economic impacts. The more detailed weights are presented in the figure below:

Figure 4. KDOT Performance Weights

Kansas Department of Transportation Project Selection Criteria			
	Engineering	Regional Priorities	Economic Impact
Preservation	100%	--	--
Modernization	80%	20%	--
Expansion	50%	25%	25%

Source: CMAP analysis of KDOT, 2010

Engineering formulas vary depending on the type of preservation, modernization, or expansion project. Regional priorities, or “local input,” are calculated by KDOT staff based on input from local consultation meetings and the knowledge of their district officials. Points are based on a project’s perceived safety benefits, regional impact, system connectivity benefits, and other factors. Economic impacts are modeled with the TREDIS software.²⁷ TREDIS uses input-output models to estimate a project’s impact on jobs and gross regional income. Note that the Kansas program guarantees a minimum of \$8 million in transportation spending per county.

While these states use performance-based evaluation criteria to evaluate projects for funding *within separate programmatic areas*, there is comparatively little rigor in allocating funds to *each*

²⁶ Kansas Department of Transportation, 2010, Briefing Paper: Expanded Highway Project Selection Process, <http://www.kansastlink.com/downloads/Project%20Selection%20Process%20White%20Paper.pdf>

²⁷ Economic Development Research Group, TREDIS, <http://tredis.com/>

area. In Ohio, the Transportation Review Advisory Council's scope is limited to large capital projects, defined as those exceeding \$12 million. In Missouri, funding levels are defined by the Highways and Transportation Commission, with some programmatic areas receiving fixed allocations and others receiving flexible allocations each year; the fixed funding levels are revised periodically. In Kansas, the 10-year capital program fully funds preservation projects, while funding levels for the other two main programmatic areas roughly correspond to levels from prior capital programs.

CMAAP staff conducted interviews with state DOTs and MPOs in Missouri, Ohio, and Kansas, and, on the whole, the interviewees communicated that their performance-based processes have improved the overall selection of projects. The framework these systems provide helps to improve the working relationships among stakeholders, promote transparency and certainty in the programming process, and ensure that meritorious projects are selected for funding. Soliciting the input of a broad range of stakeholders increases their commitment to the state's program, helps stakeholders understand the inherent tradeoffs in developing a transportation program, and ensures that a broad range of evaluation criteria is considered.

CMAAP research indicates that the development process for a performance-based funding system can range in length from a few months to several years. In Missouri, the new project evaluation system was developed in approximately six to nine months, and was immediately applied to the annual State Transportation Improvement Program. In Ohio, the development process lasted some two to three years, first initiated by the Ohio Department of Transportation and later codified by the legislature. In Kansas, the initial outreach to local stakeholders lasted two years, while the follow-up local consultation process lasted approximately four months.

It is important to note that the transition to a performance-based system may not materially affect the geographic distribution of transportation funds. In Ohio and Missouri, where performance-based systems have been in operation for a decade or longer, funding levels do vary by district from year to year in response to needs. To illustrate, District 6 in Missouri, which contains the St. Louis metropolitan area, received as much as 51 percent of statewide expenditures in 2007 and as little as 16 percent in 2008. However, funding levels tend to average out in the long run, with overall distributions resembling those in place before the transition to a performance-based system. In Missouri, urban districts received 49.88 percent of highway expenditures over the nine-year 2003-2011 period, which corresponds to their historic 50 percent share of funding.

Transit Case Studies

CMAAP staff also reviewed the capital development processes of five major American transit agencies: New York Metropolitan Transportation Authority (MTA), Los Angeles County Metropolitan Transportation Authority (Los Angeles Metro), Washington Metropolitan Area Transit Authority (Washington Metro), Massachusetts Bay Transportation Authority, and Southeast Pennsylvania Transportation Authority. Despite the diversity in funding levels and revenue sources, the transit agencies have broadly similar profiles. All receive a mix of federal, state, and local revenue sources to fund their operations and capital expenses; sales taxes are a particularly popular source of local revenue. Each agency has internal processes for tracking the condition of its assets and making capital funding decisions. Often, state and/or local funds

are allocated according to predetermined formulas, similar to the RTA. For example, Washington Metro's bus and rail operating subsidies are shared by the jurisdictions it serves,²⁸ as is the agency's expected \$438 million in debt issuance.²⁹ The proportions assigned to each jurisdiction are based on formulas that include weighted population and population densities, service provision by location, and service consumption by location.

However, the agencies' explicit use of performance measures in capital programming is less consistent. Here we briefly discuss two examples that illustrate opposite ends of the spectrum. New York MTA has expressed its intent to move towards a more performance-based system. Los Angeles Metro, on the other hand, works under specific direction from voter-approved ordinances.

According to its 2010-2014 Capital Program, New York MTA will implement expanded transparency measures and base its investment decisions on explicit performance data: "Each investment will address a documented and fully justified need, and deliver a specific and measureable customer benefit... Assets will no longer be replaced simply because they are old or at the end of their 'useful life'".³⁰ Additionally, MTA recognizes several responses to a documented capital need, ranging from no response to extension of useful life through rehabilitation to outright replacement. MTA will apply lifecycle costing and a performance management perspective when deciding which of these options is most appropriate.

Los Angeles Metro depends heavily on voter-approved sales taxes to fund its capital program. Ordinances that authorize local sales taxes allocate funding based on specifically defined formulas or in support of specifically identified projects; these decisions result from the political process. Measure R, for example, is a 30-year half-cent sales tax for transportation projects approved by voters in 2008. Its estimated \$40 billion in revenues will be distributed to projects identified in the enabling ordinance, such as the Orange Line extension.³¹

Volpe Peer Exchange

CMAP hosted a peer exchange event through the Federal Highway Administration (FHWA)/Federal Transit Administration (FTA) Transportation Planning Capacity Building³² program on July 10-11, 2012. That event focused on the use of performance-based evaluation criteria in the evaluation and funding of transportation projects. The participating peer agencies included three metropolitan planning organizations paired with their three state departments of transportation. This pairing provided two sets of perspectives on the same

²⁸ WMATA, WMATA Subsidy Allocation Methodology, www.wmata.com/about_metro/docs/subsidy_allocation.pdf

²⁹ WMATA, Finance and Administration Committee, Information Item IV-B, November 4, 2010, www.wmata.com/about_metro/board_of_directors/board_docs/110410_4BFY201217CIP.pdf

³⁰ MTA, MTA Capital Program 2010-2014, p. 5, http://www.mta.info/news/pdf/cap10/capital_program.pdf

³¹ Ordinance #08-01. Traffic Relief and Rail Expansion Ordinance, <http://www.metro.net/measurer/images/ordinance.pdf>

³² Transportation Planning Capacity Building program, <http://www.planning.dot.gov/>

performance management system. The peer agencies included the Minnesota DOT and Metropolitan Council (Minneapolis-St. Paul-area MPO), the North Carolina DOT and Capital Area MPO (Raleigh-area MPO), and the Pennsylvania DOT and Delaware Valley Regional Planning Commission (Philadelphia-area MPO). Additional attendees included staff from CMAP and the Illinois DOT (IDOT), along with a representative from the Illinois MPO Advisory Council. The presentations from the peer exchange are available from CMAP's FTP website ftp://ftp.cmap.illinois.gov/Volpe_Peer_Exchange/. The public login name is "cmapftpro" and the password is "CMAPread2013".

The peer agencies are national leaders in performance management and the linking of performance data to the programming of transportation funds. Although the peers represent a variety of contexts, including both centralized and decentralized DOTs, their experiences offer many similarities. CMAP staff has summarized the major lessons learned from the peer exchange into five categories: transparency, DOT-MPO relationship, de-politicization of the process, implementation, and measures and targets.

Transparency

All peer agencies illustrate exemplary transparency both in their use of performance data and throughout the programming process. On the data side, peer agencies reported extensive and ready data sharing among DOT and MPOs, as well as public and regular performance reporting of key indicators through a variety of formats. Their performance-based systems include explicit weighting of performance criteria, which are publicly documented. Project scores and rankings demonstrate a clear, defensible rationale to the public as to why a given project was selected for funding.

On the process side, peer agencies presented straightforward, intuitive explanations of the programming process to the public through websites, booklets, and other publications. State DOTs reported a strong level of outreach to MPOs, local implementing agencies, and the public in developing transportation programs, as well as extensive coordination with MPOs and meaningful consideration of their input. Peer agencies effectively incorporate technology into the process, promoting data visualization and data sharing. For example, an online "calculator" tool from the North Carolina DOT allows stakeholders and the public to understand the tradeoffs inherent in programming decisions. The NCDOT website provides an overview of that state's prioritization process, including the scores and supporting data for specific projects.³³

DOT-MPO Relationship

Peer states demonstrate a healthy working relationship between the state DOT and MPOs. Their processes formalize MPO and local agencies' input into the process. For example, North Carolina allows MPOs to determine a portion of a project's score and provides greater weight to MPOs' input for regional projects. Further, peer states allow MPOs to nominate projects for programming. In the peer cases, state DOT and MPO staff meet regularly, in some cases for

³³ NCDOT, Strategic Prioritization Process, <http://www.ncdot.gov/performance/reform/prioritization/>

annual overnight conferences. These meetings build relationships and improve communication.

De-Politicization of the Process

In some states, transportation funding decisions had been highly politicized prior to the implementation of performance-based programming. Peer agencies reported that high levels of transparency and improved DOT-MPO relationships help to de-politicize the process. In an inclusive, performance-based system all stakeholders have ownership of the process. Because outreach and collaboration are genuine, the process is seen as credible and accountable by DOT and MPO staff, state legislators, local officials, and the public. Data is transparent and the process well-communicated – all stakeholders know the “rules of the game” and can see why some projects were chosen and others were not.

Performance-based programming also offers the promise of long-term equity. The process may not deliver a set level of funding to a jurisdiction in any given year, but that jurisdiction can reasonably expect to have its needs met when the time comes.

Implementation

The implementation of performance-based funding processes may represent a significant departure from past practice, making the experience of peer states particularly instructive. Peer agencies reported that strong commitment is required from leadership of the state DOT. Executive leadership must have strong background in policy, and there must be a supportive culture of innovation within the agency. Further, appropriate staff capacity is necessary within state DOT. The staffing commitment to establish and operate performance-based funding is not necessarily high, although it is critical to have staff dedicated exclusively to this process.

It is important to get started with manageable steps and to view the implementation of performance-based funding as a process. No peer state applies performance-based programming to all its transportation funding sources, and it may be politically expedient to initially apply performance-based funding to new revenue sources only.

Measures and Targets

Successful implementation of performance-based programming ultimately depends on the performance measures and targets chosen. Peer agencies suggested it is important to have broad policy guidance from federal and state governments in setting performance measures and targets. Some peers organize funding into programmatic “buckets” similar to the approach offered in CMAP’s February 2012 issue brief on performance-based funding.³⁴ This approach can allow a focused level of review commensurate with a project’s scope and impact – the state DOT should be given considerable weight for Interstate projects, while MPOs should have considerable input for regional projects – as well as its work type. MPOs’ input may not be as necessary in evaluating routine maintenance projects, but could be critical in evaluating expansion and modernization projects.

³⁴ CMAP, 2012, Performance-Based Funding, <http://www.cmap.illinois.gov/documents/20583/c51c39e5-8f1a-44a0-aa63-9de062090511>

Overall Findings

The experience of peer agencies suggests two further points. First, all peer states use a two-year programming cycle, in contrast to the annual programming cycle in place in Illinois. This longer cycle may be necessary to complete a rigorous performance-based programming process (including extensive data collection, public outreach, etc.). Second, in no state does the objective, performance-based score determine whether a project will be funded. Other considerations come into play, including project readiness and federal funding restrictions.

North Carolina Department of Transportation

CMAP staff considers the strategic prioritization process at the North Carolina Department of Transportation (NCDOT) to be a particularly strong case study. The transportation programming process in North Carolina had long been perceived as politically driven, with decisions made based on their political impact rather than transportation benefits. In January 2009, newly-elected Governor Bev Perdue signed Executive Order #2.³⁵ That order removed the State Board of Transportation from the programming process and required NCDOT to develop and implement a “professional approval process for all highway construction programs, highway construction contracts, highway construction projects, and plans for the construction of projects”. In response, NCDOT established the Strategic Planning Office with three dedicated staff members to develop the required performance-based programming system. The Strategic Planning Office developed the Prioritization 1.0 process in 2009, the more sophisticated Prioritization 2.0 process in 2012, and is currently developing a Prioritization 3.0 process. NCDOT’s strategic prioritization process has three basic steps. Each is profiled below, and is illustrated with a slide from an NCDOT presentation on the Prioritization 2.0 process.³⁶

In the first step, projects are scored using transparent evaluation criteria. Each broad programmatic category (e.g., highway expansion, highway modernization, bicycle and pedestrian projects) has its own evaluation criteria. NCDOT allows for local stakeholders to provide formal input into the scoring process, and places more weight on these local preferences for projects of regional and subregional scale. Final project scores are available from the NCDOT website.³⁷

³⁵ Executive Order No. 2, Reforming Department of Transportation, [https://www.ncdps.gov/cit/executiveorders/EO-02\(Transportation%20Reform\).doc](https://www.ncdps.gov/cit/executiveorders/EO-02(Transportation%20Reform).doc)

³⁶ NCDOT Strategic Planning Office, Prioritization 2.0, <http://www.ncdot.gov/download/performance/Prioritization2Jan2012.pdf>

³⁷ Connect NCDOT, Strategic Prioritization, Prioritization 2.0 Final Scores and Data (at right), <https://connect.ncdot.gov/projects/planning/Pages/StrategicPrioritization.aspx>

Figure 5. NCDOT Performance Measures for Highway Expansion Projects



Source: NCDOT 2012, Slide 20

In the second step, NCDOT reaches out to transportation stakeholders and the public to determine funding allocations to major programmatic areas. NCDOT provides an interactive spreadsheet-based tool that allows stakeholders and the public to develop different funding scenarios given a budget constraint. The tool estimates the impacts of these funding scenarios on the transportation system’s level of service, and compares these results to current conditions and desired targets. NCDOT takes the input developed in these “Investment Strategy Summits” to allocate funds across program areas.

Figure 6. NCDOT's Interactive Spreadsheet Tool



Source: NCDOT 2012, Slide 48

In the third step, NCDOT staff reconciles the project scores from the first step with the funding allocations developed in the second step to develop the State Transportation Improvement Program; this programming also incorporates funding restrictions, project readiness, and other factors that affect project delivery.

Figure 7. Other Considerations in Developing the Final Program



Programming Considerations

Geographic Funding Allocation Formulas

Project Cost

Deliverability/Schedule

Logical segment progression within larger project

Special funding eligibility (earmarks, dedicate funding sources, etc.)

Fiscal Year Cash Balancing



Prioritization Results ≠ Programming



Source: NCDOT 2012, Slide 50

The new strategic prioritization process in North Carolina has proven to be popular with elected officials, transportation stakeholders, and the public. In 2012, the North Carolina legislature codified the performance-based programming process in law (S.L. 2012-84). That law does not prescribe a performance-based funding system in details, but rather sets a broad policy direction for NCDOT to follow. Specifically, it states:

The Department shall develop and utilize a process for selection of transportation projects that is based on professional standards in order to most efficiently use limited resources to benefit all citizens of the State. The strategic prioritization process should be a systematic, data-driven process that includes a combination of quantitative data, qualitative input, and multimodal characteristics, and should include local input. The Department shall develop a process for standardizing or approving local methodology used in Metropolitan Planning Organization and Rural Transportation Planning Organization prioritization.³⁸

It is worth noting that NCDOT's program has bipartisan support: a Democratic governor initiated the strategic prioritization process and a Republican-controlled legislature codified it into law. The above bill passed by overwhelming majorities in both houses of the state legislature.

³⁸ General Assembly of North Carolina, Session 2011, Session Law 2012-84, Senate Bill 890, <http://www.ncga.state.nc.us/EnactedLegislation/SessionLaws/PDF/2011-2012/SL2012-84.pdf>

CMAP's Proposal

This section outlines CMAP's best thinking on how a state performance-based funding process, once implemented, would actually work in Illinois. The details shown below are similar to CMAP's earlier issue brief on the subject, which was presented to the CMAP Board in February 2012.³⁹ Since that time, CMAP has learned a great deal about best practices from other states. This section attempts to illustrate a way forward, although final details should be fleshed out via the state technical advisory group recommended as part of this process.⁴⁰

Guiding Principles

CMAP proposes the creation of a new, inclusive, and transparent process for allocating state highway dollars via IDOT's annual and multiyear Highway Improvement Programs. A new process should be based on a brief set of guiding principles, which describe overall intent. In short:

1. The process should be well-communicated and the data should be transparent – all stakeholders should know the “rules of the game” and understand why some projects are programmed and others are not.
2. The process should lead to more effective decision-making, even within existing statutory or non-statutory funding constraints such as the 55/45 split.
3. IDOT retains its programming authority, but the process must formalize the input of metropolitan planning organizations for a subset of projects.
4. Implementation should start small on a subset of project types, chiefly capacity expansion and modernization projects. CMAP believes that these projects will benefit most from more detailed evaluation and regional buy-in. Other project types, chiefly maintenance work, require engineering expertise and considerably less formal involvement from other entities or the public.

Focus of CMAP Recommendation

As discussed in the “Current Practice” section, much of IDOT's highway program is devoted to highway and bridge maintenance. IDOT already uses performance-based evaluation criteria to prioritize these kinds of projects, and IDOT provides information about how this part of the process works. While CMAP believes that IDOT could improve the transparency of the data it uses in evaluating maintenance projects, CMAP supports IDOT's current practice in highway maintenance at this stage. CMAP makes no recommendation to change how maintenance or bridge projects are evaluated and selected in Illinois.

Rather, CMAP proposes to focus on highway modernization and highway expansion projects. Projects such as additional lanes, new interchanges, grade separations, and Intelligent Transportation Systems typically have more sizable impact on the regional economy and the development of our local communities. As such, they lend themselves to more extensive regional deliberation, including an evaluation of their alignment with GO TO 2040. However,

³⁹ CMAP, 2012, Performance-Based Funding, <http://www.cmap.illinois.gov/documents/20583/c51c39e5-8f1a-44a0-aa63-9de062090511>

⁴⁰ This state technical advisory group is outlined in the “Action Taken by the CMAP Board and MPO Policy Committee” subsection.

to date CMAP and the MPO Policy Committee have had no formal role in evaluating these projects prior to their inclusion in the state Highway Improvement Program and subsequent amendment into the regional Transportation Improvement Program. CMAP staff and committees have experience in evaluating complex projects across multiple criteria.

The following image emphasizes that CMAP proposes to focus a new performance-based funding system on highway modernization and expansion projects only.

Figure 8. Illustration of CMAP's Recommended "Bucket Approach"

Prioritization buckets

IDOT could organize its highway funds into three broad categories: maintenance, modernization, and expansion.



HIGHWAY MAINTENANCE



HIGHWAY MODERNIZATION



HIGHWAY EXPANSION

CMAP supports IDOT's current approach to evaluating and selecting maintenance projects. Rather, CMAP proposes to focus a new performance-based process on highway expansion and modernization projects.



HIGHWAY MAINTENANCE



HIGHWAY MODERNIZATION



HIGHWAY EXPANSION

Source: CMAP staff.

CMAP believes that IDOT's current practice in these areas could be improved, specifically by incorporating a more rigorous, systematic approach to evaluating and prioritizing these projects. IDOT reports that it currently considers economic needs, safety needs, congestion relief, local support, and political support in evaluating system expansion and congestion mitigation projects, but does not provide any data or documentation showing how those factors influence the development of the final program. CMAP believes that the evaluation criteria used to assess these projects should be broadened to more formally incorporate topics such as economic development, environmental impacts, and other quality of life considerations, including alignment with the livability principles of GO TO 2040.

An Illustration of Performance-Based Funding in Illinois

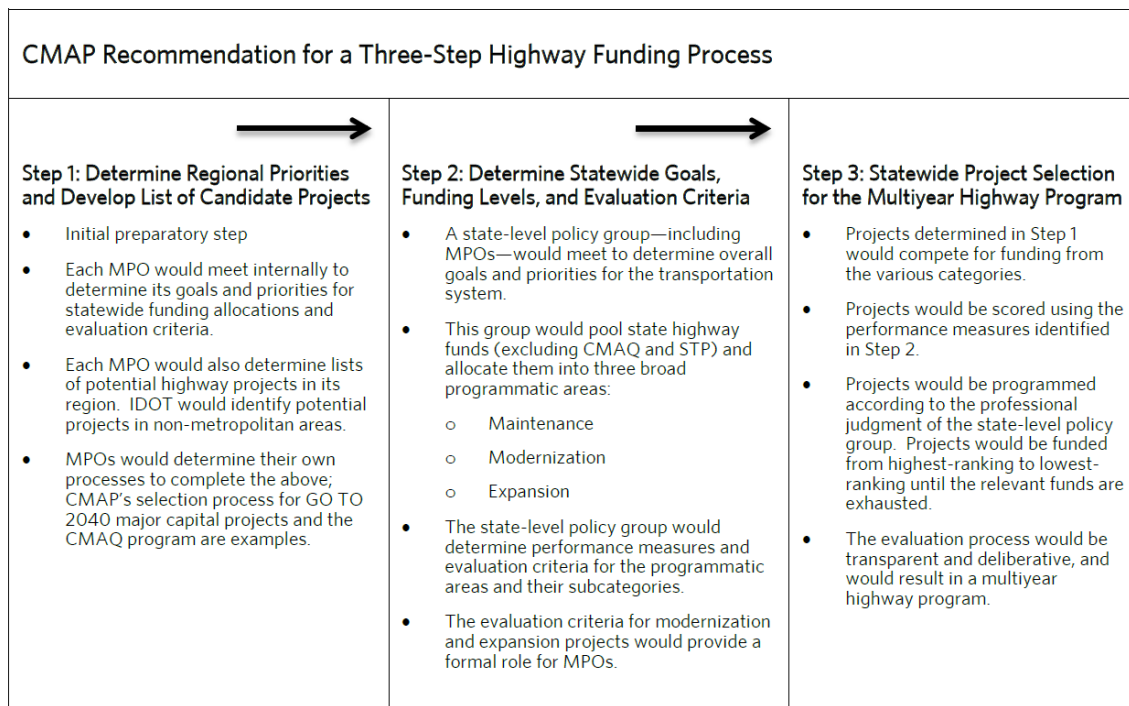
CMAP recommends a new outcome-driven process to allocate state highway funds. CMAP stresses that a new approach would continue the current state practice of developing a multiyear highway program, currently done through the five- or six-year Highway Improvement Program. IDOT would also continue to award highway funds and deliver projects under the proposed process; there would be no change in current programming authority or construction oversight. The Congestion Mitigation and Air Quality

Improvement (CMAQ) and local STP programs would be exempted from a new approach, which would apply only to the fund sources that currently finance the state Highway Improvement Program.

IDOT could organize the funds included in its highway improvement programs into three broad programmatic areas, or “buckets,” and apply tailored performance criteria to evaluate projects within each of the three areas. In this example, these buckets would include highway maintenance, highway modernization, and highway expansion. These categories are broadly consistent with current practice at IDOT, which recognizes four strategic goals of roadway maintenance, bridge maintenance, congestion mitigation, and system expansion, along with an overarching goal of highway safety.

CMAQ presented a hypothetical three-step state highway programming process in its February 2012 issue brief.⁴¹ As mentioned, that example is broadly similar to the one offered here, and the following flow chart from that document provides a high-level illustration of how such a system might operate.

Figure 9. Illustrative state highway programming process



Source: CMAQ staff analysis

The next three subsections describe CMAQ’s current thinking on how a performance-based funding system could operate in Illinois. First, funding levels to each programmatic area would be determined through extensive outreach to transportation stakeholders and the public. Second, projects would be scored used explicit evaluation criteria tailored to highway

⁴¹ CMAQ, 2012, Performance-Based Funding, <http://www.cmap.illinois.gov/documents/20583/c51c39e5-8f1a-44a0-aa63-9de062090511>

modernization and highway expansion projects; again, IDOT would continue to evaluate and select highway maintenance projects according to its existing processes. Third, projects would be programmed based on a combination of their quantitative scores and professional judgment.

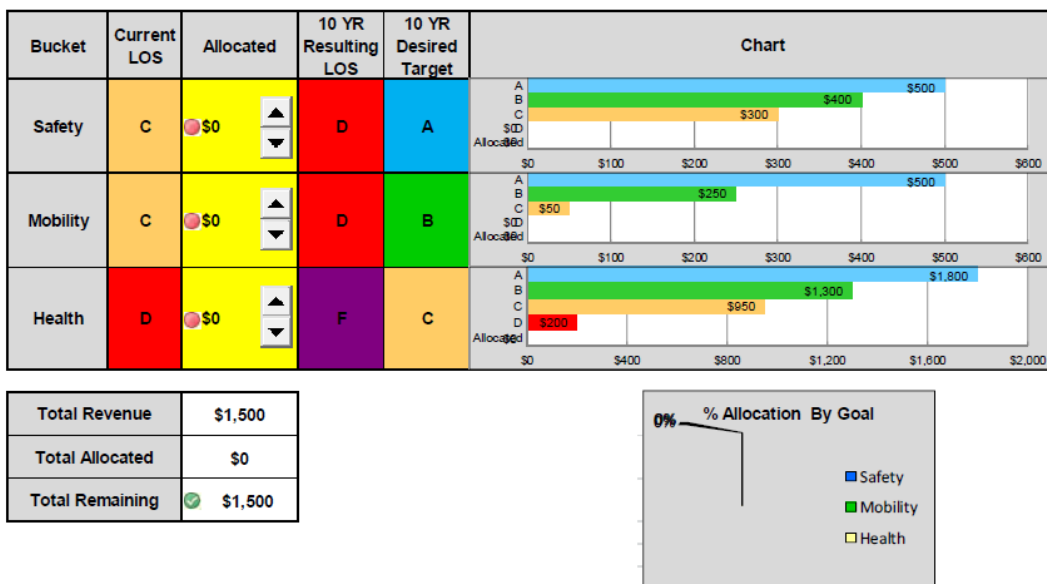
Step 1: Determine Statewide Funding Levels

In the first step, IDOT would reach out to transportation stakeholders and the public to determine funding allocations to the three major programmatic areas, or program “buckets”. CMAP recommends that IDOT develop an interactive spreadsheet-based tool that allows stakeholders and the public to develop different funding scenarios given a budget constraint. This tool would estimate the impacts of the various funding scenarios on the transportation system’s level of service, and compare these results to current conditions and desired targets. The North Carolina Department of Transportation has developed and currently operates such a tool.

Below is a screenshot from an NCDOT presentation that demonstrates how the tool operates. The leftmost columns show the Department’s broad programmatic categories and their current levels of service (LOS). In the yellow column, stakeholders or other members of the public can allocate funding across the various buckets, subject to the overall budget constraint shown in the bottom-left corner of the screen. The fourth column displays the resulting LOS from the investment level allocated to each programmatic category, and the fifth column shows the targeted level of service from the State’s long-range planning documents. The bar charts on the right show the amount of funding that would need to be allocated to each programmatic category to meet LOS A, B, C, or D. For example, an investment level of \$500 million would be required to achieve LOS A for the “Safety” category, \$400 million to achieve LOS B, and \$300 million to achieve LOS C.

Figure 10. NCDOT's Interactive Spreadsheet Tool (repeated)

Investment Strategy Summits – Example Only



Such a tool allows transportation stakeholders and the public to understand the tradeoffs inherent in funding allocations, and to demonstrate their priorities given fiscal constraint. As in North Carolina, CMAP recommends that IDOT conduct outreach across the state, employing this tool in public information meetings but also in more formal meetings with the state’s metropolitan planning organizations. IDOT would then allocate funding across its programmatic areas using the input from the public and stakeholders’ preferred funding scenarios.

Step 2: Develop List of Candidate Projects and Score Projects

In the second step, candidate projects would be determined and scored using transparent evaluation criteria. IDOT and MPOs would first develop candidate projects through their internal processes. These projects would be compiled by IDOT and grouped into the three broad programmatic categories (highway maintenance, highway modernization, and highway expansion).

Each broad programmatic category would have its own evaluation criteria. IDOT would continue to evaluate and select highway maintenance projects according to its existing processes. Rather, this example focuses on highway modernization and expansion projects. For those “buckets,” MPOs and IDOT district offices would provide formal input into the scoring process, and more weight would be placed on this local input for projects of regional and subregional scale.

Although the final criteria and weights would need to be determined through the deliberation of a new state technical advisory group, CMAP offers the following scoring system for the highway modernization “bucket” as an illustrative example. In this example, each cell shows the total points possible for a given criterion.

Table 2. Illustrative Example: Highway Modernization Projects (≈ IDOT’s “Congestion Mitigation” projects)

Tier of State Jurisdiction Highway	Quantitative Data	Local Input	
		IDOT District Rank	MPO Rank
Statewide (Interstates, expressways)	Facility geometrics – 20 points Congestion – 20 points Safety – 10 points Environmental impact – 10 points Facility condition – 10 points	20 points	10 points
Regional (Major U.S. and Illinois routes)	Facility geometrics – 15 points Congestion -- 15 points Safety – 10 points Environmental impact – 5 points Facility condition – 5 points	25 points	25 points
Subregional (Minor U.S. and Illinois routes)	Facility geometrics – 20 points Safety – 10 points	30 points	40 points

Source: CMAP staff analysis

In this example, highway modernization projects would receive additional points outside of the above scoring methodology for including multimodal components. Again, a new state technical advisory group would decide the precise evaluation criteria and scoring. CMAP offers the following as illustrative examples.

Criterion: Providing Multimodal Options (maximum number of additional points)

- Project includes HOV/HOT lanes, light rail, heavy rail, commuter rail, bus rapid transit, bus-on-shoulder, bicycle or other multimodal options provided within the highway right of way.

Criterion: Providing Multimodal Connections (medium number of additional points)

- Project provides direct connection to a terminal for an alternative mode of transportation (e.g. train or bus station).

Criterion: Accommodating Multimodal Features (minimum number of additional points)

- Project includes sidewalks, pedestrian crossings, bicycle lanes, and other Complete Street elements and/or transit signal prioritization, bus shelters, transit bypass lanes, or bus pullouts.

Although the final criteria and weights would need to be determined through the deliberation of a new state technical advisory group, CMAP offers the following scoring system for the highway expansion “bucket” as an illustrative example. In this example, each cell shows the total points possible for a given criterion.

Table 3. Illustrative Example: Highway Expansion Projects (≈ IDOT’s “System Expansion” Projects)

Tier of State Jurisdiction Highway	Quantitative Data	Local Input	
		IDOT District Rank	MPO Rank
Statewide (Interstates, expressways)	Congestion – 20 points Travel time reliability – 20 points Economic Competitiveness – 20 points Environmental impact – 10 points	20 points	10 points
Regional (Major U.S. and Illinois routes)	Congestion – 20 points Travel time reliability – 15 points Economic Competitiveness – 10 points Environmental impact – 5 points	25 points	25 points
Subregional (Minor U.S. and Illinois routes)	Congestion – 20 points Travel time reliability – 5 points Environmental impact – 5 points	30 points	40 points

Source: CMAP staff analysis

As described above, highway expansion projects would also receive bonus points for including multimodal components.

For both the highway modernization and highway expansion projects listed above, the new state technical advisory group would be responsible for determining specific performance measures and scoring procedures to determine points for each topic. In other words, this group would determine transparent, objective mechanisms to calculate a project's "congestion points" or "safety points". Further, MPOs and IDOT district offices would need to determine their internal processes for determining scores. In translating their local priorities into evaluation processes, CMAP only recommends that these groups be transparent in their use of data and throughout the overall process. All scoring decisions must be based on a clear, defensible rationale.

While the final decisions on evaluation methodology would be determined by a new state technical advisory group, CMAP stresses that the evaluation of modernization projects should incorporate measures of safety, condition, geometrics, and environment, while the evaluation of expansion projects should incorporate measures of congestion, travel time reliability, economic impact, and environmental impact. CMAP also stresses that more weight be allowed for local input on projects of regional or subregional importance.

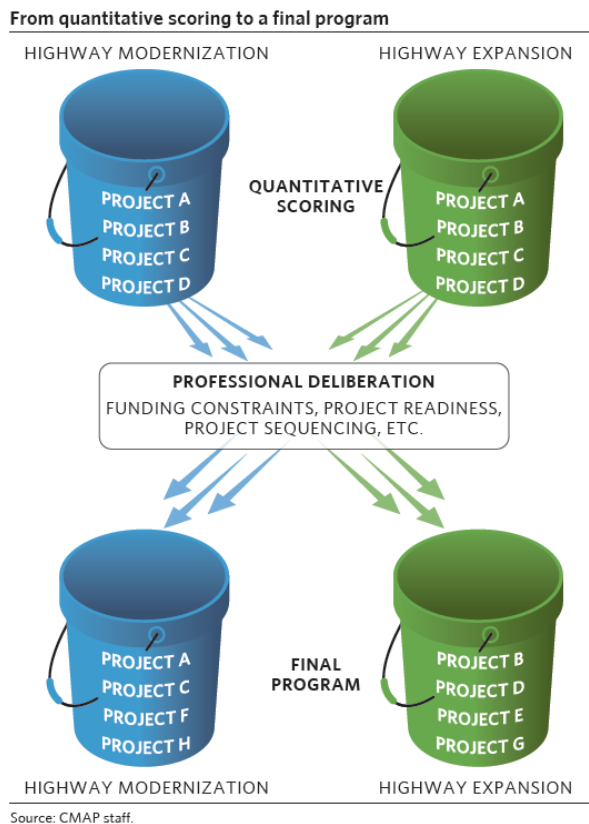
Step 3: Project Selection

Transparency in decision-making is paramount in the actual programming of projects. In the third step, IDOT staff would reconcile the project scores determined in the second step with the funding allocations developed in the first step to develop the highway improvement program, which in turn determines the federally-required State Transportation Improvement Program. Through a deliberative, transparent process, IDOT staff would apply its professional judgment to incorporate into the programming process funding restrictions, project readiness, and other factors that affect project delivery.

To promote transparency, the final program would be published showing each project's score from Step 2, along with a narrative description or other explanation of the other non-quantitative factors that influenced the programming decision. For example, IDOT could develop a series of "Yes/No"-type checkboxes to indicate the presence of other programming factors such as project special funding eligibility or restrictions, deliverability, schedule, project cost, departmental cash flow, logical sequencing of projects, etc., and summarize those findings with a short narrative description. Where appropriate, IDOT should providing supporting documentation to reinforce its narrative descriptions.

CMAP stresses that the project scores developed in the first step would not solely determine final programming decisions. This approach would allow IDOT the flexibility to incorporate real-world conditions that influence programming decisions. To illustrate, consider the image below. Projects are first scored and sorted into programmatic categories, but the projects included in the final program are not a sequential list of highest- to lowest-scoring.

Figure 11. Illustrating the bucket approach



Action Taken by the CMAP Board and MPO Policy Committee

To advance performance-based funding for transportation projects in Illinois, CMAP staff made the following two requests of the CMAP Board and MPO Policy Committee at their joint meeting on October 10, 2012. The Board and MPO Policy Committee approved both requests.

1) IDOT should form a technical advisory group for implementing performance-based funding.

Staff asked that the Board and MPO Policy Committee request IDOT to convene a state technical advisory group. The group should form at the beginning of state FY 2014 and produce a report by the end of state FY 2014. This group would consist of IDOT staff and staff from the state’s MPOs. The state technical advisory group would focus on four main themes:

- First, this group would consider organizing the state highway program into broad programmatic categories or “buckets” — for example highway maintenance, highway modernization, and highway expansion. This effort would include definitions for each category, as well as mechanisms to classify projects with multiple or ambiguous work types.
- Second, this group would be charged with determining performance measures for the programmatic categories as well as formal scoring procedures.

- Third, this group would set broad parameters for the inclusion of MPO input into the prioritization process. CMAP stresses that MPOs should have flexibility to develop their own prioritization methodologies.
- Fourth, this group would be charged with developing an overall timeline for the new performance-based funding system, with a goal of implementing the new system in state FY 2015.

2) CMAP should initiate a regional process for developing the agency’s internal prioritization and selection methodology to evaluate candidate projects.

This work would be coordinated through CMAP’s committee structure and would be delivered by the end of state FY 2014. This exercise would engage the region in a formal process on how to measure and prioritize projects, and would provide an opportunity for CMAP staff to organize the appropriate data. This work will require considerable reorientation of CMAP staff resources in FY 2014 across the policy, planning and programming, and research and analysis departments.

This timeline aligns with new federal requirements. MAP-21 requires the U.S. Department of Transportation to determine performance measures and state departments of transportation, in consultation with metropolitan planning organizations, to set performance targets for those measures. CMAP’s proposal would assist the State not only to satisfy these upcoming requirements, but transcend them to implement a true performance-based system for allocating dollars and projects. In other words, this process should strive for much more than what MAP-21 mandates.

CMAP staff recommended that State Planning and Research dollars, the federal Unified Work Program (CMAP and other MPOs’ primary source of funding), or some combination of the two be used to finance the research activities of the state technical advisory group. This effort will require dedicated staff resources from the MPOs and IDOT, and could also be supported by a consultant’s services.

Legislative Efforts

Illinois State Representative Elaine Nekritz introduced HB 1549 on February 11, 2013. This bill would compel IDOT to implement an expanded approach to performance-based programming.⁴² On February 13, the CMAP Board voted to support the general contours of this bill.⁴³ The core elements of HB 1549 – the establishment of a Technical Advisory Group, the timeline for a report in FY 2014 and implementation beginning in FY 2015, and the ongoing reporting requirements as part of IDOT’s Highway Improvement Program – all mirror CMAP’s recommended next steps as outlined above.

Similar to the CMAP proposal, the State Technical Advisory Group under HB 1549 would be charged with determining the details of performance-based programming: defining project

⁴² Illinois General Assembly, Bill Status of HB 1549, <http://tinyurl.com/bwp2bhd>

⁴³ CMAP Board meeting minutes, February 13, 2013, <http://tinyurl.com/c2nllow>

types, identifying clear performance measures, developing methodologies to tie performance measures to programming decisions, and developing methodologies to incorporate qualitative input from the state's MPOs into the evaluation process. Further, the bill includes language that would formalize the participation of MPOs in the state programming process.

The bill would be fairly prescriptive in defining the topic areas for which the Technical Advisory Group and IDOT would be responsible for developing performance measures. The bill lists twelve broad criteria:

- Improving access and mobility for users.
- Preserving and managing the existing transportation system.
- Supporting multimodal choices.
- Maximizing social equity benefits of transportation investments.
- Fostering safety.
- Coordination of current long-range plans.
- Improving the environment.
- Reducing congestion by improving the movement of people.
- Fostering economic development.
- Improving quality of life.
- Moving a growing, diverse, and active population.
- Ensuring transparency and accountability.

The bill also defines that the affected transportation infrastructure projects "shall include, without limitation, projects for highways [sic] maintenance, highway modernization, highway expansion, transit, and high-speed rail" -- in other words, almost the entirety of surface transportation delivered and managed by the public sector (the sole exception being non-high speed intercity passenger rail). The bill would focus on IDOT as the sole implementing agency.

These provisions depart from CMAP's original recommendation. CMAP believes that performance-based funding should start small on a subset of project types, chiefly capacity expansion and modernization projects that will benefit from more evaluation and regional buy-in. Other project types, such as maintenance work, require engineering expertise and considerably less formal involvement from other entities or the public. Additionally, the sole focus on IDOT would be less relevant to the development of transit projects.

After being introduced in the Illinois House of Representatives on February 11, HB 1549 was assigned to the Transportation: Regulation, Roads and Bridges Committee on February 20. The bill failed to be reported out of committee before the March 22, 2013 deadline and did not advance to the full House of Representatives.

Appendix I. MAP-21 and Performance-Based Funding

MAP-21 focuses more on implementing performance measurement than performance-based funding.⁴⁴ Under MAP-21, U.S. DOT will establish performance measures and state DOTs will develop performance targets in consultation with MPOs and others. State investments must make progress toward these performance targets, and MPOs must incorporate these performance measures and targets into their Transportation Improvement Programs (TIPs) and Long Range Transportation Plans. However, MAP-21 generally does not impose a financial penalty for states and MPOs that fail to make progress toward these performance goals, and funding decisions for any given project are not explicitly tied to performance criteria.

U.S. DOT has held outreach events to solicit the input of transportation stakeholders as it develops the rulemaking to implement performance management. From September 13-23, 2012, U.S. DOT held a national online dialogue on transportation performance measures to gather input from stakeholders. Due to the popularity of the online dialogue, the Department held a follow-up listening session on October 25, 2012.⁴⁵

The following sections outline the performance provisions of MAP-21 as they apply to the federal government, state DOTs, MPOs, and transit providers. For overviews of MAP-21's performance provisions, consult the American Association of State Highway and Transportation Officials.⁴⁶

National Performance Goals and Measures

MAP-21 identifies seven thematic areas for which the Secretary of Transportation will determine performance measures. These areas include (1) safety, (2) infrastructure condition, (3) congestion reduction, (4) system reliability, (5) freight movement and economic vitality, (6) environmental sustainability, and (7) reduced project delivery delays. MAP-21 describes the high-level national goals associated with each of these topics. To implement these goals, the Transportation Secretary must determine measures and minimum standards for states to follow for the various core programs established in MAP-21.

The law requires the Secretary to consult with state DOTs, MPOs, and other stakeholders when determining performance measures and to promulgate rulemaking within 18 months of

⁴⁴ For the full text of MAP-21, visit the Government Printing Office's website:

<http://www.gpo.gov/fdsys/pkg/BILLS-112hr4348enr/pdf/BILLS-112hr4348enr.pdf>

For FHWA's fact sheet on the law's performance management provisions, visit this website:

<http://www.fhwa.dot.gov/map21/pm.cfm>

For FHWA's question and answer document on performance management, visit this website:

<http://www.fhwa.dot.gov/map21/qandas/qapm.cfm>

⁴⁵ A recording of that event is available at this website:

<http://mediasite.yorkcast.com/webcast/Viewer/?peid=71cddef1651d4a78b41bf15a87aed8331d>

A copy of the slide deck from the listening session is available here:

http://www.dot.gov/sites/dot.dev/files/docs/oct25_virtual_town_hall_congestion-performance_slides.pptx

⁴⁶ AASHTO, 2012, <http://tinyurl.com/9lpeouq>

enactment. MAP-21 allows the Secretary to incorporate some flexibility into these standards and measures, such as allowing different minimum standards for Interstate pavement conditions for different regions of the country. U.S. DOT must also determine the data elements that are required to implement MAP-21's performance-based approach.

MAP-21 includes a number of reporting requirements for U.S. DOT. Within five years of enactment, the Secretary must submit to Congress reports on the effectiveness of MPOs' and states' performance-based planning processes. These reports will assess the overall effectiveness of performance-based planning in guiding transportation investments, including the extent to which states and MPOs select reasonable performance targets, as well as the extent to which they meet these targets.

State Performance Targets and Plans

Within a year of the Secretary's final rulemaking on performance measures, states must set performance targets for the measures identified by U.S. DOT. MAP-21 allows states to determine different performance targets for rural and urban areas. Within four years of the enactment of MAP-21 and every other year thereafter, states are required to submit reports on the condition and performance of the National Highway System, the effectiveness of their asset management plans, the progress made toward achieving performance targets, and how they address freight bottlenecks.

MAP-21 also requires states to develop a number of performance-based plans, including a risk-based asset management plan and a strategic highway safety plan. States are also encouraged to develop freight plans, and some MPOs are required to draft Congestion Mitigation and Air Quality Improvement program performance plans (see next section). These plans generally include a review of current conditions and a description of strategies to be used in meeting performance targets. States that fail to develop asset management plans for the National Highway System would receive a lower federal cost share of 65 percent for any project or activity.

MAP-21 imposes further penalties on states that fail to meet their performance targets under the National Highway Performance Program and the Highway Safety Improvement Program. The Secretary can require states to spend at least the amount apportioned in FY 2009 under the Interstate Maintenance program (adjusted over time) to redress substandard conditions on the Interstate System. Additionally, if more than 10 percent of a state's total deck area of bridges on the National Highway System is structurally deficient, states must devote at least 50 percent of the funds apportioned in FY 2009 under the former Highway Bridge Program to redress the substandard bridge conditions. Also, states that fail to meet their performance targets under the Highway Safety Improvement Program (HSIP) are required to devote an amount of obligation limitation equal to the prior year's HSIP apportionment to safety projects. No penalties are imposed for failure to meet the performance targets of the CMAQ or Freight Movement programs.

Planning and Performance

MPOs must establish performance targets that reflect national performance goals and measures. These measures must be coordinated with state DOTs and transit providers. They must be set

by MPOs within 180 days of the state DOT's or transit agency's establishment of performance targets.

The law requires long-range regional transportation plans to describe the MPOs' performance measures and targets, a practice already incorporated into GO TO 2040. For example, the Invest Strategically in Transportation section of our region's plan includes indicators and targets for three variables: principal arterials in acceptable ride quality, bridges found to be in "not deficient" condition, and time spent in congestion.⁴⁷ Under MAP-21, MPOs' transportation plans must also include a "system performance report" to track progress made toward their performance targets.

For MPOs that elect to develop multiple scenarios in the development of their long-range plans, MAP-21 recommends that each scenario be evaluated against its impact on the various performance measures. The long-range plan should describe how the preferred scenario improves performance, as well as how changes in policy and investment decisions affect the costs of achieving performance targets. As an example of a scenario-based long-range planning process, CMAP explored three alternative scenarios for future development. The alternative scenarios, along with public input gathered from the agency's "Invent the Future" campaign, were used to create a preferred Regional Scenario, a document that helped formulate ideas for the final GO TO 2040 plan.⁴⁸

MAP-21 also requires that the TIPs developed by MPOs include a description of the anticipated effect of the program on achieving regional performance targets identified in the long-range transportation plan. This requirement is designed to directly link investments to performance targets. CMAP's current TIP provides a narrative description of its consistency with GO TO 2040 and the regional Congestion Management Process. Also, CMAP has taken great strides in improving the transparency of its TIP program through an interactive map, dashboard, and database.⁴⁹

The use of performance measures for statewide planning mirror those just described for metropolitan planning. State DOTs must also incorporate performance targets into their transportation plans and State Transportation Improvement Programs (STIPs) via system performance reports and estimates of progress made toward performance targets.

Further, MPOs that cover transportation management areas of over 1 million residents that are in non-attainment or maintenance of federal air quality regulations are required to develop a CMAQ Program Performance Plan. This plan must include data on baseline traffic congestion and vehicle emissions, describe progress made toward performance targets, and describe how projects funded through the CMAQ program will make progress toward performance targets.

⁴⁷ CMAP, Invest Strategically in Transportation, <http://www.cmap.illinois.gov/2040/invest-transportation>

⁴⁸ CMAP, GO TO 2040 Process Archive, Scenario Evaluation, <http://www.cmap.illinois.gov/preferred-regional-scenarios/>

⁴⁹ CMAP, TIP Data, <http://www.cmap.illinois.gov/tip/tip-data>

In the northeastern Illinois CMAQ program, CMAP publishes a proposal's estimated reduction in volatile organic compounds, nitrous oxides, trips, and vehicles miles traveled, as well as its cost-effectiveness at achieving those reductions.⁵⁰ CMAP also adopted a focused programming approach for the program in January 2011.⁵¹ Under focused programming, applicants to the CMAQ program demonstrate their project's consistency with GO TO 2040, and projects must contribute to the program's four broad objectives: localized congestion relief, operational improvements, mode shift, and direct emissions reduction. Committees of regional stakeholders then review proposals against these criteria. These committees are organized into four focus groups based on project type (Regional Transportation Operations Coalition, Bicycle and Pedestrian Task Force, Direction Emissions Reduction, and Transit) and prioritize projects using both quantitative and qualitative criteria. The prioritizations are then relayed to the CMAQ Project Selection Committee and combined with the technical analysis completed by CMAP staff to create a proposed program.

Although MAP-21 contains extensive language on incorporating performance measures into both the statewide and metropolitan planning processes, the law does not provide a meaningful enforcement mechanism for those requirements. Neither MPOs nor states face penalties for failing to consider performance factors in their planning processes. Additionally, MAP-21 asserts that the new reporting requirements for the STIP and TIP must be completed only to the "maximum extent practicable."

Transit and Performance

Within one year of MAP-21's enactment, the Secretary must determine both performance measures and a formal definition for "state of good repair." Within three months of the Secretary's rulemaking, transit agencies receiving federal assistance are required to develop performance targets for state of good repair. Transit agencies are also required to develop asset management plans, which in turn must include capital asset inventories, condition assessments, decision support tools, and investment prioritization. The Secretary must also develop a national transit asset management system. MAP-21 requires transit agencies to report annually to the Secretary on the progress made toward performance targets in that fiscal year, as well as define new performance targets for the coming fiscal year.

Northeastern Illinois transit agencies are already moving forward on asset management systems. As described previously in this document, the RTA is currently refining its objective, needs-based capital programming process.⁵² The RTA recently received a grant to partner with

⁵⁰ CMAP, CMAQ 2012-2016 Program Information, <http://www.cmap.illinois.gov/cmaq/2012-2016-program-information>

⁵¹ CMAP, GO TO 2040 Focused Programming Approach for the CMAQ Program, <http://tinyurl.com/9eotnqo>

⁵² RTA, A Regional Approach to a State of Good Repair, www.fta.dot.gov/documents/RTA_Chicago_Practices_and_Plans_-_Grace_Gallucci_John_Goodworth.pdf

the Federal Transit Administration in developing a Transit Asset Management Program.⁵³ This effort will include consistent, data-driven decision tools to help the RTA monitor and improve the state of good repair of its capital assets.

Conclusion

MAP-21 contains extensive language on performance measurement and targets and makes strides toward the regular, public reporting of performance data. The law also seeks to improve the accountability of federal spending by requiring state DOTs, MPOs, and transit agencies to report on progress made toward performance targets and by requiring these agencies to incorporate performance measures into their broader planning processes.

MAP-21 does not, however, generally link these performance measures and targets to funding decisions. And in the instances where it does, the law simply applies penalties to states that fail to meet standards and mandates they take corrective action. In short, MAP-21 focuses on performance measures but not performance-based funding; it applies language on performance measurement to the programmatic level rather than the project level. The law's emphasis on transparency and accountability is commendable, but MAP-21 should be viewed as a first step toward a larger performance-based funding system.

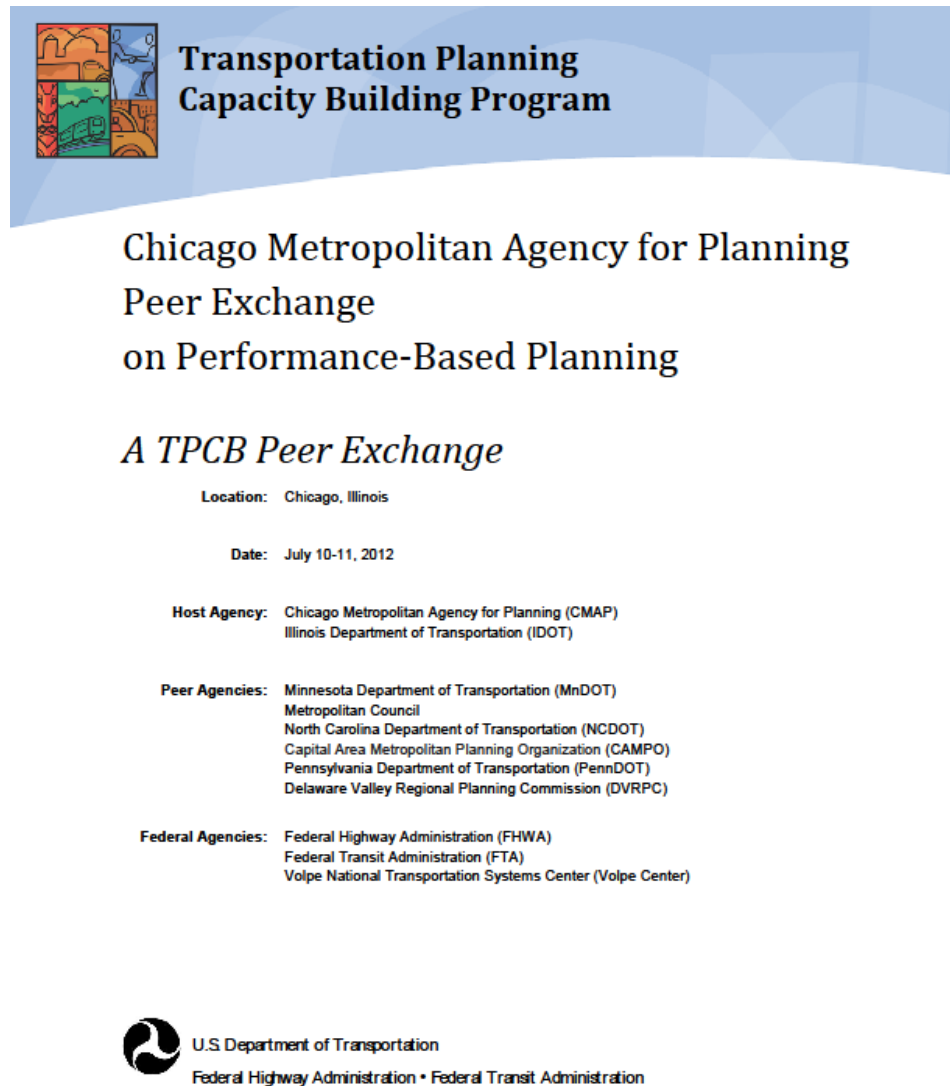
⁵³ RTA, FTA Awards RTA \$800k to Help Prioritize Transit Maintenance Projects, <http://www.rtachicago.com/press-releases-2011/fta-awards-rta-800k-to-help-prioritize-transit-maintenance-projects.html>

Appendix II: Report from TPCB Program on July 2012 Peer Exchange

The Transportation Planning Capacity Building Program report on the CMAP-hosted peer exchange on performance-based planning is available online:

<http://www.planning.dot.gov/Peer/Chicago/chicago2012.asp>.

Figure 12. Cover page of TPCB report



Source: Transportation Planning Capacity Building Peer Program,
http://www.planning.dot.gov/Peer/Chicago/CMAP_Peer_Exchange_Report.pdf



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