

PERFORMANCE MEASURES PEER EXCHANGE

6/15/15 MPO Quarterly Meeting

Discussion Topics

- What is the relationship of performance measures to the MPO's goals and objectives – are they helping you determine if your plan will help achieve the area's vision?
- What challenges have you come across with determining performance measures? With monitoring/tracking measures?
- Have you used projected performance measures to compare different project, funding, or growth scenarios? Have they been used in project selection?
- If you've set performance targets, how have you approached the target-setting process? Are you setting specific targets or a preferred direction/trend for the metric?

Discussion Topics

- Relationship of goals, objectives, measures, targets
- Measures as indicators or tracking tools
- Setting targets and target specificity (specific vs. direction)
- Use of performance measures in scenario planning and project selection
- Monitoring measures
- What will be required with MAP-21
- Guidance

- MAP-21 requires States and MPOs to set targets for specific performance measures related to national goals (rulemaking is underway)
- Aim of today's discussion is to provide an overview of the current status of performance measures in MPO long range transportation plans and other planning efforts

- Goals, Objectives, Measures, and Targets
 - ▣ A **goal** is a broad statement that describes a desired end state.
 - *Example: A safe transportation system.*
 - ▣ An **objective** is a specific, measurable statement that supports achievement of a goal. A good objective should include or lead to development of a performance measure that can be tracked over time and is used to assess different investment or policy alternatives.
 - *Example: Reduce highway fatalities.*
 - ▣ A **performance measure** is a metric used to assess progress toward meeting an objective. Performance measures can be used in strategy analysis to compare different investment or policy alternatives and can be used to track actual performance over time.
 - *Examples: Number of highway fatalities, fatality rate per vehicle miles traveled.*
 - ▣ A **target** is a specific level of performance that is desired to be achieved within a certain timeframe. A target can be used as a basis for comparing progress over time toward a desired outcome or for making decisions on investments.
 - *Example: Reduce fatalities by 5% by 2015, which will save more than 150 lives.*

Measures in LRTPs

- Use of measures as indicators of baseline or future system performance
- Use of measures to track performance over time
- Measures can relate to the planning area, a specific topic, or a particular mode
 - System indicators
 - Bi-State 2040 LRTP
 - Tracking measures for particular areas
 - INRCOG – potential tracking measures for bicycle accommodations from 2040 LRTP
 - MPOJC – transit performance factors from 2040 LRTP
 - DMATS – measures related to safety and security from 2040 LRTP

conditions and needs for improvement. These improvements are envisioned to support the plan goals:

- **Residential Development** – Adequately designed and quality-based to produce a healthful, satisfying living environment.
- **Commercial and Industrial Development** – Opportunities for existing employers and additional employment by attracting new commercial and industrial activities to the area.
- **Transportation** – Safe, secure, efficient, economical, and sustainable movement of people and goods.
- **Cultural Attractions, Recreation and Open Space** – Cultural attractions, recreational facilities, and open space to fulfill needs for a healthful, satisfying living environment.
- **Government and Public Facilities and Installations** – Facilities and programs/services and products to more than meet the present and future needs of the nation, Bi-State Region, and metropolitan community.
- **Urban Design** – Attractive, convenient living and working conditions that minimize impacts and provide quality of life benefits for the metropolitan community.

For some transportation issues, livability and sustainability may be easy to do. The transportation problem and solution can readily be incorporated into our daily lives or organizational culture. Transportation system sustainability might make economic sense or have social benefits. There may be environmental benefits for choosing one solution over another. For others, the awareness, understanding, and actions may occur with slower deliberation and involve significant investment of time and funds. The speed of implementation for transportation improvements does not minimize or emphasize the importance of a project or problem; rather it is related to the implications of what change may mean or bring.

Technology and the availability of solutions to some transportation issues can also affect the speed at which travel behaviors are changed or projects are implemented. Reducing air pollution and

developing alternative energy sources does not happen overnight. Measures of success take time to produce tangible results and provide the basis for data-driven decisions.

Research and science continue to move forward new ideas, products, and technology to the market almost daily. However, there is no “one” solution to fix practices that cannot sustain themselves. Science has shown that individual and collective efforts can have significant measurable effects toward creating sustainable lifestyles. This collective effort is particularly important within a metropolitan area.

Every day, decisions are made that can have lasting effects. Every day, energy consumption increases. Every day, there are fewer natural resources available. Sustainability is an issue with immediacy. Today’s consumption should conserve our critical resource reserves so others can enjoy them in the future. This recognition of limited resources is why metropolitan areas are examining sustainability in their policies, operations, and decision-making and applying the concept to transportation systems.

The ultimate goal of a *Transportation System for Sustainability* is to influence decisions in such a way that they benefit or minimize negative impacts on future populations living in the Quad Cities MPO.

System Indicators and Performance

Indicators are used to track system performance and progress. While there may be a number of measures for transportation system performance, it is recognized that tracking a smaller group of strong measures over time will aid in successfully tracking progress for the metropolitan area efforts. The following Table 8.7 outlines several indicators that are suggested to be collected, measured, and/or tracked over a five-year period as the initial progress toward goals and objectives of this *2040 Long Range Transportation Plan*. Overall goal progress is the successful implementation of projects identified in this plan. Table 8.7 provides other general benchmarks for meeting the plan objectives toward a more sustainable

transportation system. To review, the plan objectives include:

- Support Economic Vitality
- Increase Safety
- Increase Security
- Increase Accessibility and Mobility Options
- Protect and Enhance the Environment
- Enhance Connectivity and Integration between Modes
- Promote Efficient System Management and Operation
- Emphasize System Preservation

**Table 8.7
Transportation System Indicators**

Measures	Data Source
Energy/Air	
Fuel Consumption – Per Capita/Household Per Vehicle Mile Traveled	US or State Departments of Energy Bi-State Regional Commission
Percent of Vehicles Powered by Alternative Fuels	Departments of Transportation
No. of Air Standards Exceedences	Iowa Department of Natural Resources Illinois Environmental Protection Agency
Transit Trips Per Capita	Local Transit Systems
Average Travel Times	US Census Bi-State Regional Commission
People	
Population Density Per Square Mile	US Census (ACS)
Change in Auto Ownership	US Census (ACS)
No. of Limited English Proficiency Speakers	US Census (ACS)
Land	
Acres of prime farmland per county	US Department of Agriculture County Soil/Water Conservation Districts County Zoning
Roadway Right-Of-Way Coverage by Land Area	Bi-State Regional Commission
Economy	
Income and Employment Distribution	US Census State Employment Offices Other Industry Data Sources by NAICS or SIC
No. of Businesses with Over 25 Employees	States' Workforce Development US Census
No. of Freight Terminals (Motor, Rail and Barge)	US Army Corps of Engineers Federal Railroad Administration Federal Motor Carrier Safety Administration Other Industry Data Sources by NAICS or SIC
Modes	
No. of miles of bicycle lanes, paths and trails, sidewalks	Bi-State Regional Commission
No. of Safe Routes to Schools training, and bicycle safety workshops	Iowa Bicycle Coalition, League of Illinois Bicyclists

Table 8.7 Continued

Measures	Data Source
Modes	
Percent signals synchronized on major roadways	Departments of Transportation Counties/Cities
No. of passenger transportation choices in the metropolitan area	Airports Transit Systems Specialized Transportation System Providers Commercial Passenger Transportation Providers – Intercity, Livery Services, Etc.
No. of roadway miles in good to fair surface condition per total roadway network miles	Departments of Transportation Counties/Cities
Reduction in roadway crash severity	Departments of Transportation Counties/Cities
No. of Safe Routes to Schools travel plans/projects	DOTs Cities School Districts
No. of Complete Streets projects	DOTS Counties/Cities

Source: Bi-State Regional Commission

Transportation System Priorities

Throughout this plan, modal needs and priorities have been identified in the various chapters. The Quad Cities MPO is well-positioned geographically in the Midwest on four national interstate corridors, the Upper Mississippi River navigation system, crossroads to two national trail systems, national and regional rail lines, host to numerous freight terminals, three public transit systems, two regional transit systems, and two airports. A summary of the more significant projects are highlighted here as area priorities.

The Quad Cities MPO is joined by a river, the internationally recognized Mississippi River. Crossing capacity of the metropolitan area is a critical need. Sufficient capacity will allow the transportation system to function as one geographic area, rather than two independent counties in Iowa and Illinois. The I-74 Mississippi River Corridor Reconstruction Project is the highest project priority within the MPO. Replacing this functionally obsolete structure will reduce congestion, improve safety and security, and provide a redundant and reliable connection within the metropolitan area for residents, workers, visitors, and travelers through our area. Other area

bridges will continue to require preventative maintenance and repair as they age.

Other major roadway priorities of this plan include the following projects, ordered by functional classification:

- I-74 (Avenue of Cities to Rock River) Widening, Moline
- I-80 Middle Road Interchange Reconstruction, Bettendorf
- US-6/69th Avenue (U.S. 150 - E of Coal Valley/Niabi Zoo Road) Widening, Coal Valley/Rock Island County
- US-6/Kimberly Road (Brady Street – Elmore Avenue) Widening, Davenport
- U.S. 67/1st Street (E 4th Ave, Milan – IL-94) Reconstruction, Milan/Rock Island County
- IL-5/John Deere Road Widening, Moline
- IL-84/Colona Road to I-80 Reconstruction, Colona
- IL-92 Reconstruction, Rock Island and East Moline

Improvements in these major roadway corridors will facilitate improved travel within the metropolitan area for movement of goods and

Table 5.7: Anticipated Funding Available for Bicycle and Pedestrian Accommodations

Timeframe	Transportation Alternatives Program		Complete Street Elements of Road Projects	
	Trails (see Table 5.6)	Available for On-road, Pedestrian, or other TAP-Eligible Projects	Expected to be Trails*	Potentially available for on-road, pedestrian, or other elements*
2018-2020	\$495,592	\$404,408	\$465,000	\$0
2021-2030	\$1,969,864	\$1,030,136	\$0	\$2,328,780
2031-2040	\$1,024,656	\$1,975,344	\$0	\$1,966,424

**Note: the actual cost of complete street elements of road projects is estimated at 5% per project. The exact amount of funding and type of complete street elements to be constructed will not be known until the project is programmed for funding and under design.*

Tracking Progress

Ways to measure the success of the BAP, or of implementing bicycle accommodations in general, include the measures listed below. These will be tracked over time as data is available and as measures are applicable.

- Existing mileage of various accommodation types (multi-use trails, bike lanes, sharrows, signed bike routes, other) – measured utilizing INRCOG’s GIS capabilities
- Percent of the population within a half mile of each type of accommodation – measured utilizing INRCOG’s GIS capabilities
- Amount of MPO funded projects that is spent on each type of accommodation – to be tracked by INRCOG
- Crashes involving bicyclists – measured using Iowa DOT crash software
- Percent of trips made via bicycling – measured with American Community Survey data and local surveys
- Usage of accommodations – measured with local counts
- Ancillary health indicators, such as BMI levels – measured as available/applicable
- Ancillary economic development indicators, such as retail activity and property values – measured as available/applicable

The MPO plans to track these measurements by taking an annual snapshot of the system and tracking progress year to year. Usage will be the hardest item to measure. The MPO will be discussing how to add counts of on-road accommodations to its 2014 trail counts. As these counts have always been done manually, a future endeavor may be to invest in camera or sensor technology that could provide more accurate counts. Additionally, any time special counts are collected for road projects, the MPO will request that those counts also include pedestrians and bicyclists if possible.

University of Iowa Cambus: Cambus provides service on 13 routes Monday through Friday, and three routes Saturday and Sunday during the academic year. Cambus is a no fare service, designed to facilitate circulation throughout the University campus. Although designed primarily to serve University students, faculty, and staff, Cambus is also open to the general public.



Cambus operates two separate levels of service throughout the year. Academic year service is the highest level of service, while summer/interim service is approximately 75% of academic year service. Differences in level of service are in the amount of service provided, not in the areas served. The service area remains the same during both periods.

The primary routes, Red and Blue, operate in nearly identical clockwise and counter clockwise loops which serve the residence halls, University Hospitals, most academic buildings, Iowa City, and commuter parking lots. The Red, Blue and Hawkeye routes are the only routes which operate on Saturday and Sunday, for 28 weeks per year. The other routes are designed for specific functions: providing service to Oakdale Campus, providing service to residence halls, providing a shuttle between main campus and the hospital area, and service to Mayflower and Hawkeye Apartments.

During the academic year, Cambus operates 28 buses during daytime peak hours, 11 buses between 6:30 p.m. and 9:00 p.m., and five buses between 9:00 p.m. and 12:00 a.m. Weekend service on the Red, Blue and Hawkeye-Interdorm routes operates between noon and midnight with three buses. Cambus also operates a **Safe Ride** service on Friday and Saturday nights from midnight to 2:20 a.m. with two buses.

All Cambus fixed route buses are lift equipped. Cambus operates a special paratransit system, Bionic Bus. Similar to the fixed-route system, it is intended for University students, faculty and staff, but is also open to the public. The Bionic Bus system operates small accessible buses on a demand responsive basis. Service hours are the same as fixed route scheduled hours on Saturday and Sunday. A reduced level of service is provided during summer and interim periods. A map showing the Cambus routes can be found on page J: 6.

Transit Performance Factors

The following section shows a map with all of the transit routes and stops in the urbanized area and highlights transit performance factors for Coralville Transit, Iowa City Transit, and University of Iowa Cambus. Information is summarized for fixed route and paratransit service. The factors include:

- Cost per ride;
- Annual revenue vehicle hours of service;
- Riders per revenue vehicle hour;
- Farebox/expense ratio



Transit

Iowa City Urbanized Area

Transit Routes & Stops

Iowa City, Coralville, Cambus Transit



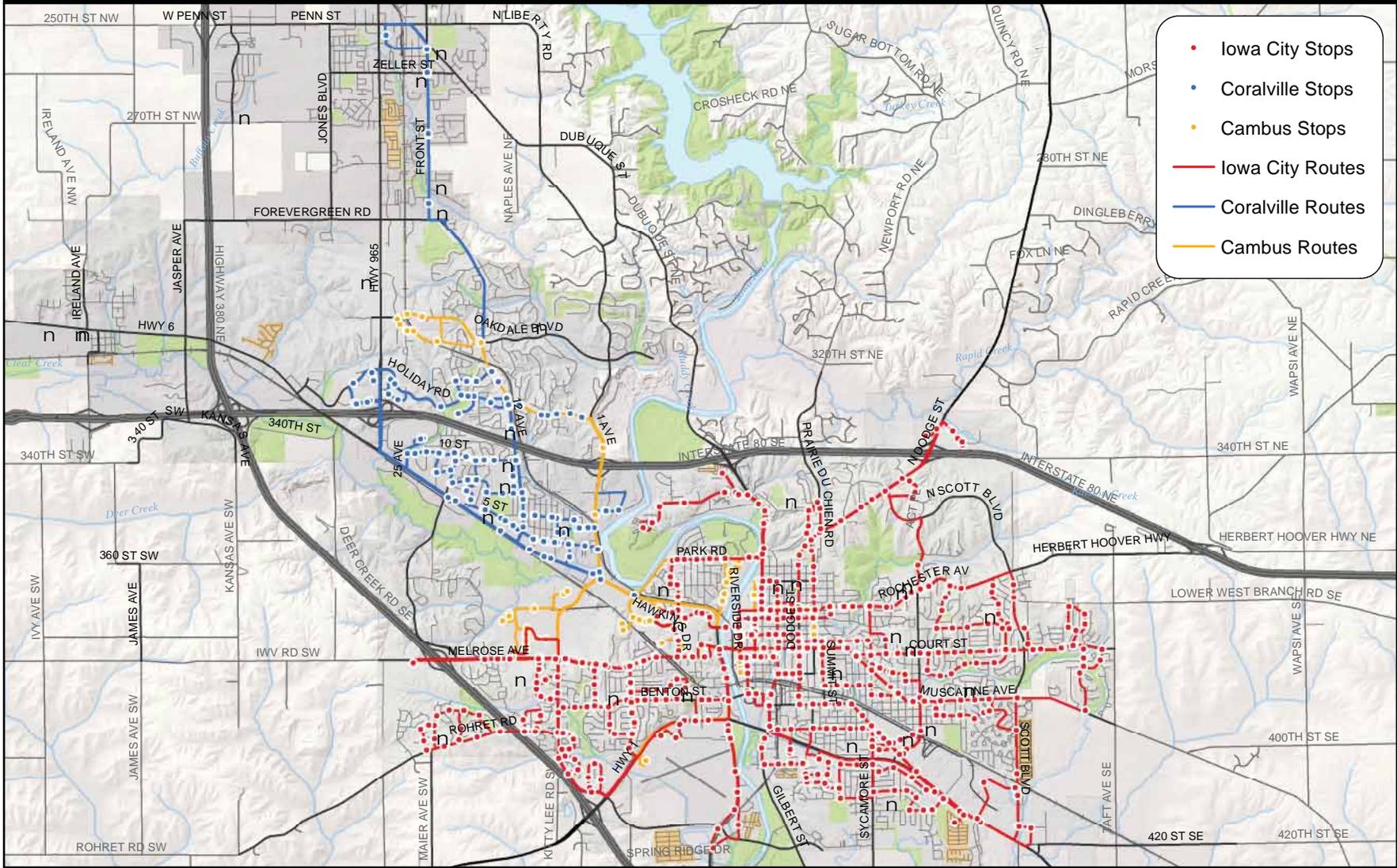
Prepared by: K. Ackerson

Date Prepared: 9/29/11

Data sources: Iowa DOT, MPOJC

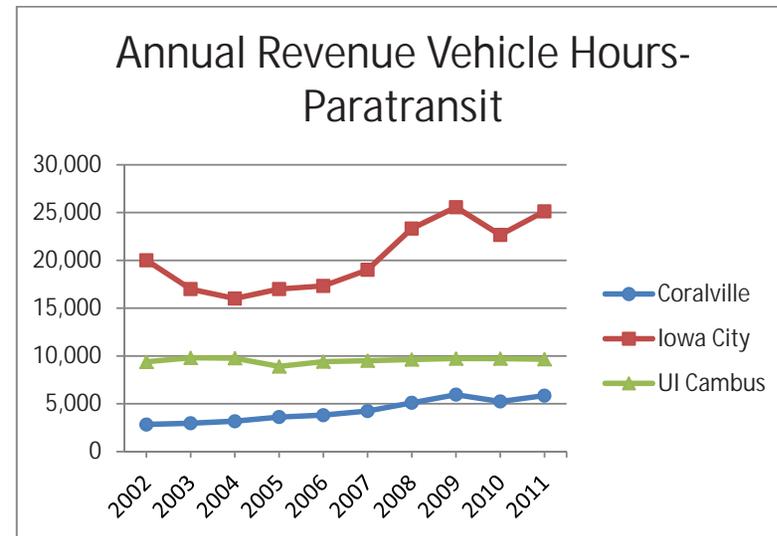
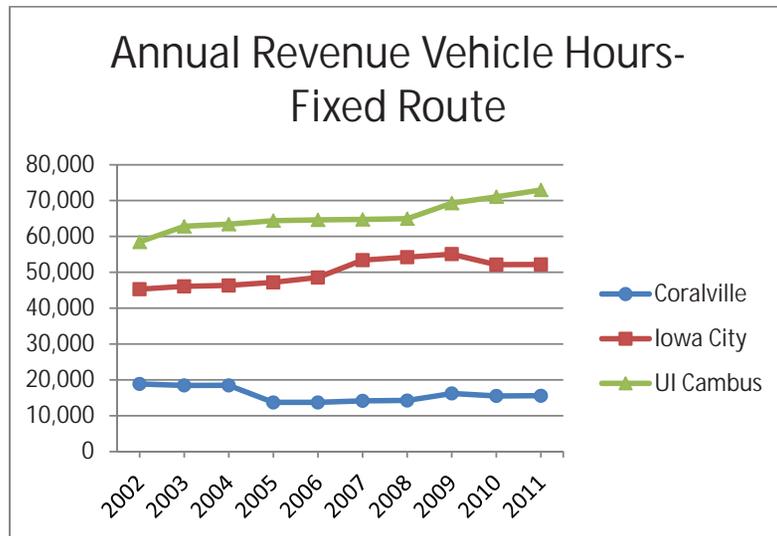
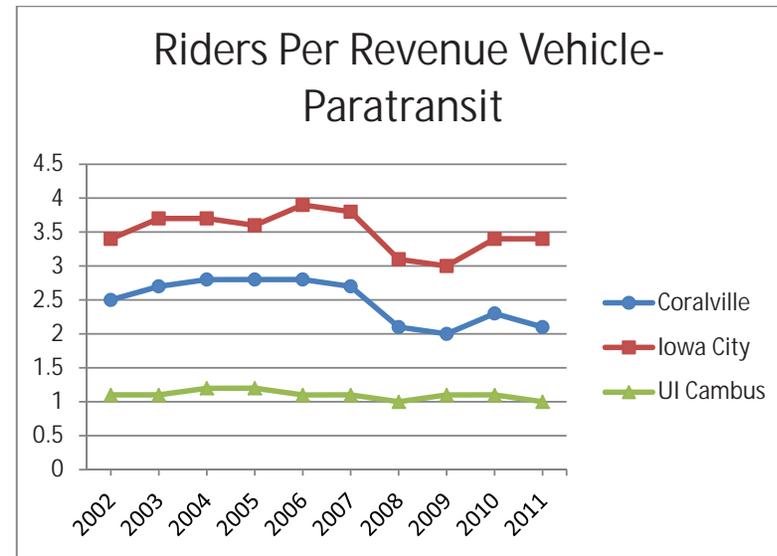
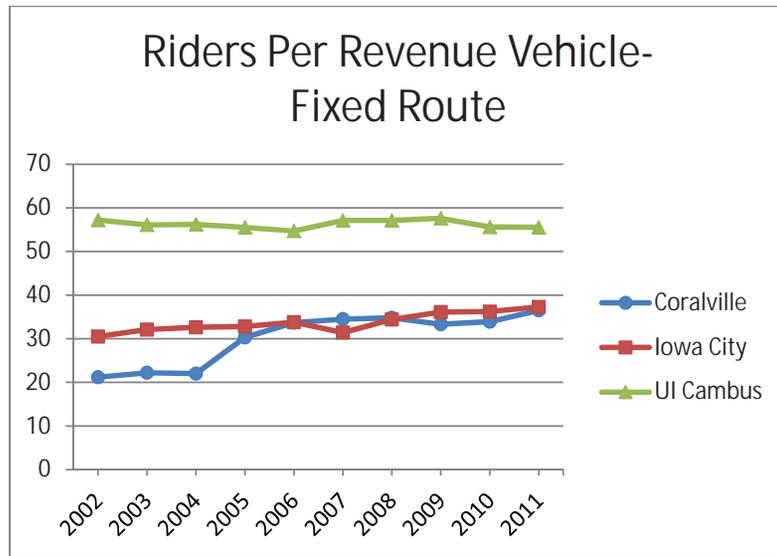


- Iowa City Stops
- Coralville Stops
- Cambus Stops
- Iowa City Routes
- Coralville Routes
- Cambus Routes



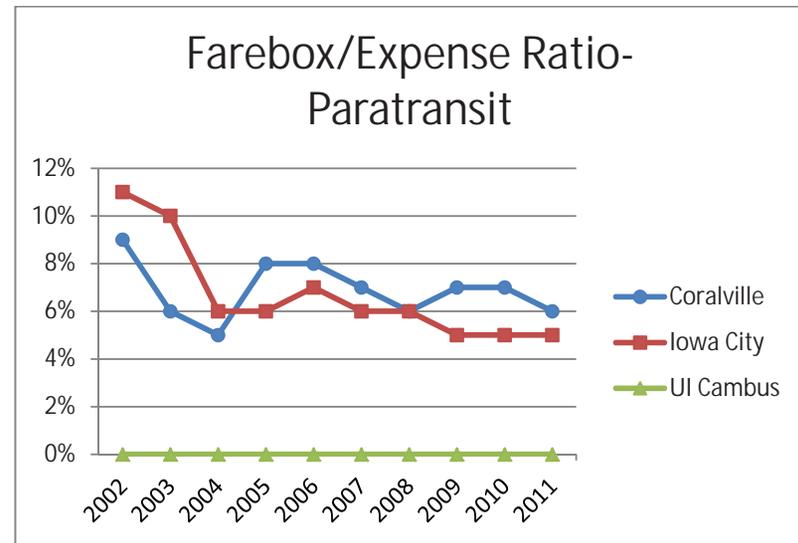
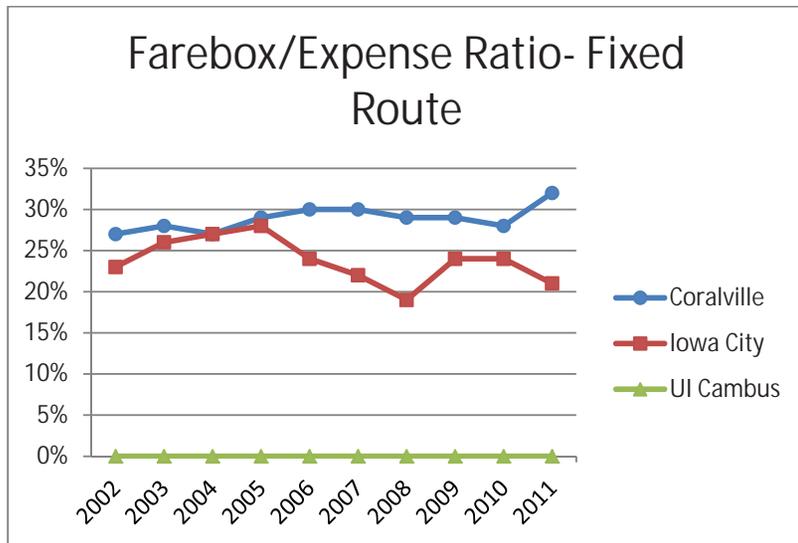
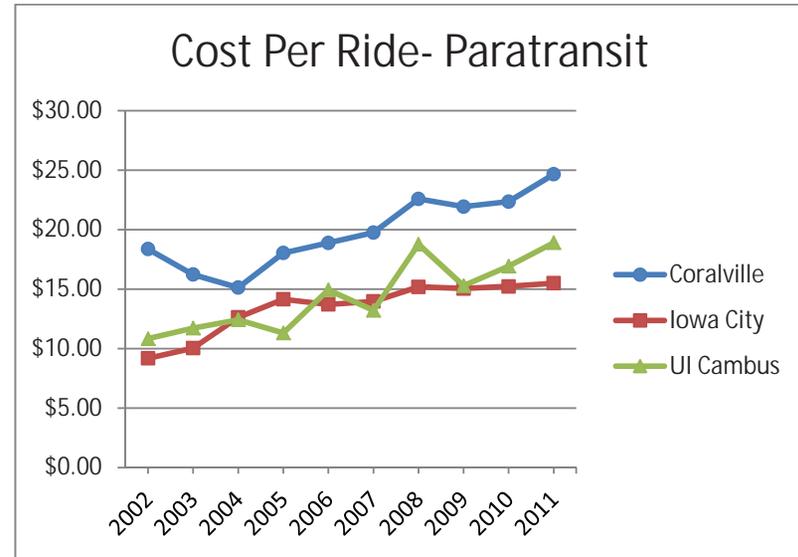
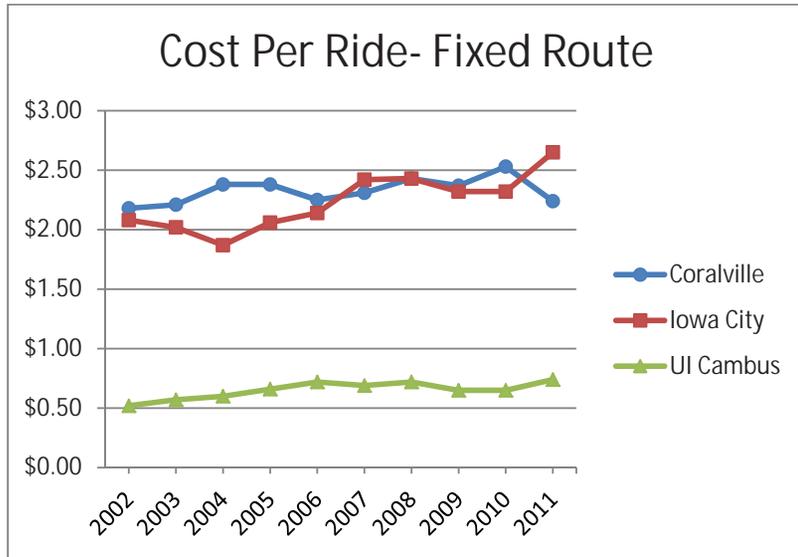


Transit





Transit



- Install security cameras at transit offices and bus depots.
- Transit offices secured with passcard swipe locks.

Safety and Security Performance measures

- Reduce the number of fatalities and decrease the economic impact from highway-related accidents
- Encourage Cities and County to implement bicycle and pedestrian improvements, services, and programs.
- Encourage local government participation in safety outreach activities, and continue bicycle and pedestrian safety education.
- Continue use of incident management patrols, coordination with law enforcement agencies, and implementation of safety and mobility projects by the members to respond to safety and security trends and issues.
- Work closely with the IADOT Rail Division on planning studies and project development activities for rail safety projects, including rail grade separations at targeted locations.
- Encourage transit systems to secure funding for full-time cameras on all buses.
- Encourage transit systems to secure funding for automated vehicle locator system.
- Encourage transit systems to contact the fire department and county emergency management regarding security and emergency preparedness plans, and ensure that all are familiar with the basic operations of a bus and are aware of the bus depot's layout.
- Encourage transit systems develop and execute at least one emergency exercise annually.
- Encourage cities and counties to continue to implement bicycle parking and encourage its installation by developers, business owners, schools, and other institutions.
- Coordinate transportation and operational agencies with the county emergency and hazard mitigation plans
- Ensure continued cooperation between transportation agencies and transit systems.
- Implement Safe Routes to School projects.



Measures in LRTPs

- Relating measures back to goals and objectives
 - AAMPO 2035 LRTP
 - Corridor MPO 2040 LRTP
 - Corridor MPO 2040 LRTP update
 - SIMPCO 2040 LRTP (under development)

- **BICYCLE SIGNAL DETECTION** – Traditional traffic signal detection is unable to detect the presence of the bicycles. On corridors with heavy bicycle volumes, it is recommended to add bicycle signal detection when the traffic signals are either being constructed, replaced or upgraded.

12.4 PERFORMANCE MEASURES

In order to monitor the LRTP's effectiveness, performance measures have been developed that relate to the goal and objectives. This data has not typically been collected in the past, so the initial collection of this data will establish the base values for future year comparisons. There may be some performance measures that AAMPO may be unable to collect at this time. Also, some of the objectives cannot be directly measured.

1. Develop a Safe and Connected Multi-Modal Network
 - Increase the connectivity of all modes including automobile, public transit, bicycle, air travel, freight rail and pedestrian.
 - Measure – Calculate the connected node ratio on an annual basis (number of street intersections divided by intersections plus cul-de-sacs).
 - Incorporate strategies to promote safety and security across the entire network.
 - Measure – Monitor crash rates on annual basis for the transportation network.
2. Foster Livability, Quality of Life, and Sustainable Development
 - Match the transportation system with the desired community development pattern.
 - Measure – Calculate the percent of new transportation projects that are consistent with the LUPP on an annual basis.
3. Deliver Context Sensitive Solutions
 - Link land uses with a multi-modal network to reduce vehicle miles traveled and enhance non-automobile modes as an efficient mean of travel and a recreational opportunity.
 - Measure – Calculate the total vehicle miles traveled (VMT) on the area's roadway system each time the system-wide traffic counts are updated. Collect the total transit passenger miles on an annual basis.
 - Reduce overall system vehicular hours traveled and improve regional access and travel times for emergency response.
 - Measure – Conduct studies to determine average travel time for selected origin-destination sets.
4. Support Area Economic Opportunities
 - Develop context sensitive transportation facilities that fit the physical setting and preserves scenic, aesthetic, historic, and environmental resources while maintaining safety and mobility.
 - Measure – Calculate the percent of transportation projects where the public input process was used.
 - Develop a transportation system that provides desirable linkages to existing developments, new developments, redevelopments, and supports economic drivers, such as the airport.
 - Measure – Percent of top 20 traffic analysis zones with the highest total employment that are served by all modes of transportation (roadway, bicycle/pedestrian and transit) on an annual basis.
5. Maximize the Benefits of Transportation Investments to Provide Efficient Transportation Service
 - Preserve and maintain existing transportation infrastructure and enhance transportation system to reduce congestion on major corridors.

- Measure – Provide annual update on roadway conditions through the Pavement Management Program.
 - Consider cost-effectiveness, initial capital costs, and life cycle costs for transportation projects.
 - Measure – Conduct a cost analysis prior to implementation of transportation projects.
 - Provide a transportation system that yields a favorable benefit to cost ratio by increasing vehicle occupancy, minimizing per capita vehicle miles traveled by auto, reducing delay, or promoting travel by non-auto modes for a practical cost.
 - Measure – Assess the benefits and cost prior to implementation of transportation projects.
6. Protect Environmental Resources
- Minimize transportation system infringement into undisturbed areas of identified natural resources.
 - Measure – Inventory of impacted natural resources by new/modified transportation systems on an annual basis.
 - Minimize transportation system impact on property and the human environment.
 - Measure – Inventory of impacted property and human environment by new/modified transportation system projects on an annual basis.

Performance Measures

The current SAFETEA-LU Federal Transportation program does not have a requirement for measuring the performance of funded projects or future projects to receive federal tax dollars. However, the draft “Surface Transportation Act of 2009” will require states and local governments to establish performance standards which measure annual progress in meeting these standards and make adjustments to achieve the objectives.

Performance measures must relate to the Connections 2040 Goals and Objectives and use statistical evidence to determine progress toward those goals and objectives. Performance measurements address the public’s demand for increased accountability and inform decision-makers on the effectiveness of the Plan.

Performance measures also enhance accountability, demonstrate prudent investments, align long-range transportation plans and transportation improvement programs with strategic direction, integrate intermodal system plans and help communicate, cooperate, and build consensus.

Implementation of performance standards, metrics and reporting processes enable monitoring and funding for all projects.

In anticipation of the new transportation bill, the development of Connections 2040 was based on goals and objectives that were measureable through qualitative and quantitative measurements. Annual monitoring of these performance measures will confirm good stewardship of limited funding and guide the Corridor MPO Policy Board.

Proposed Performance Measures

The proposed performance measures are directly related to the Connections 2040 goals and objectives. As presented in Chapter 4, the Connections 2040 goals are generalized statements which broadly relate the physical environment to values and objectives that are specific and measurable statements related to the attainment of goals.

The following are the proposed Connections 2040 goals, followed by the project objectives and suggested performance measures. It should be noted that some of these measures will require the collection of data that has not been collected in the past and will require coordination between jurisdictions and the MPO. It should be noted that because performance measures have not previously been collected, the first round of measurements will take jurisdictional coordination to determine and refine the data collection methodology and may need to be used to set benchmarks for future year comparative evaluations. In certain

cases, a specific measurement may be used to address more than one goal or objective.

Goal: Maintain our Existing Transportation System

Objective/Performance Measure

- Maintain existing roads and bridges to fair or better condition:
 - *Jurisdictions provide annual update on road and bridge conditions for regionally significant corridors.*
- Improve surface condition of existing sidewalks and bicycle paths/trails:
 - *Conduct a conditions analysis of regional trails and sidewalks on regionally significant corridors and develop a plan to achieve fair or better condition for all facilities.*



Goal: Maximize Efficiency of Existing Transportation System

Objective/Performance Measure

- Optimize our roadways through improved signal timing and fixing bottlenecks:
 - *Conduct time and delay surveys for regionally significant corridors.*
- Maximize transit, bicycle and pedestrian accessibility:
 - *Report annual increases in bicycle and pedestrian facilities.*
 - *Measure population and employment within one-quarter of a mile of new or expanded transit, bicycle and pedestrian facilities.*



Goal: Minimize Cost of Transportation

Objective/Performance Measure

- Reduce travel costs:
 - *Measure vehicle hours of travel for a corridor or region with and without a project to determine cost of personal time.*
 - *Minimize increases in travel times: Calculate delay saved per dollars of investment.*



Goal: Offer Travel Choices

Objective/Performance Measure

- Provide a transportation network which supports land use planning:
 - *Correlate integration of proposed transportation improvement with land use through measures such as proximity, staged construction and how the transportation improvement promotes and supports Connections 2040 compact growth development plans.*
- Provide travel choice including transit, bicycle trails and paths, and sidewalks:
 - *Measure annually transit revenue miles and miles of trails, paths and sidewalks by jurisdiction.*



Goal: Provide Safe and Secure Transportation

Objective/Performance Measure

- Promote improvements which reduce accidents:
 - *Annually monitor accident locations and calculate accident rates for regionally significant corridors, trails and transit.*
- Facilitate rapid movement of first responders:
 - *Measure travel time for regionally significant corridors, particularly for benefits for emergency responders (i.e., benefits of signal preemption.)*

Goal: Support Economic Vitality

Objective/Performance Measure

- Provide accessibility to existing and future development areas:
 - *Review and revise jurisdictional comprehensive plans for sustainable compact infill and redevelopment uses.*
 - *Cost or length of new transportation facilities located within or serving compact infill and redevelopment areas.*
- Plan for a transportation system that is affordable and sustainable:
 - *Demonstrate high mobility returns such as reduced delay for dollars of investment.*



- Attract new business by retaining and attracting young professionals by providing regional amenities including transportation choices:
 - *Measurement of miles of new trails, sidewalk facilities and transit access.*
- Reduce infrastructure costs:
 - *Define how planned improvement can be sustainable through reduced infrastructure and maintenance costs.*

Goal: Minimize Travel Time

Objective/Performance Measure

- Minimize road congestion:
 - *Calculate road congestion mitigation through capacity improvements or shift in alternative travel modes.*
 - *Average clearance time of traffic incidents on freeways and major arteries.*
- Minimize travel time:
 - *Travel time and delay runs for regionally significant corridor or transit frequency and travel times.*
- Improve transit, bicycle and pedestrian accessibility
 - *Measure population and employment with improved transit, bicycle or pedestrian facilities.*



Goal: Protect the Environment and Conserve Resources

Objective/Performance Measure

- Reduce fuel consumption:
 - *Calculation of vehicle miles of travel by regionally significant corridor and jurisdiction.*
- Minimize air pollution (including greenhouse gases and climate change):
 - *Calculation of vehicle miles of travel by regionally significant corridor and jurisdiction.*
- Minimize impacts on the natural environment (storm water runoff, urban temperatures):
 - *Annual monitoring of new development and development density.*
- Reduce impacts on neighborhoods, cultural and historic resources:
 - *Calculation of increased traffic through established neighborhoods.*



Performance Measures

Performance measures provide a better understanding of how well the transportation system is performing. With the focus on performance measures at the U.S. DOT, the Corridor MPO will be required to incorporate performance-based planning into its planning process.

Performance measures:

- Address the public's demand for increased accountability,
- Inform decision-makers on the effectiveness of the plan,
- Enhance accountability,
- Demonstrate prudent investments,
- Align long-range transportation plans and transportation improvement programs with strategic direction,
- Integrate intermodal system plans,
- Help communicate, cooperate, and build consensus, and
- Ensure good stewardship of limited funds.

This Plan outlines the following 2-step approach to performance measures:

1. Identify specific measures, which are outlined in Table 11-1.
2. After Plan adoption, the MPO will:
 - a. Establish the baseline year,
 - b. Collaborate on target setting, and
 - c. Develop a performance tracking system.

Many of these measures will require the collection of data that has not been collected in the past and will require coordination between the U.S. and Iowa DOTs, member jurisdictions, and the MPO. The first round of measurements will take jurisdictional coordination to determine and refine the data collection methodology. Once the baseline is established, it can be used to inform the target setting process. In certain cases, a specific measurement may be used to address more than one goal or objective. Throughout this process the MPO will need to coordinate closely with the U.S. and Iowa DOTs.

The performance measures are directly related to the Connections 2040 goals. As presented in Chapter 4, the Connections 2040 goals are generalized statements which broadly relate the physical environment to values and objectives that are specific and measurable statements related to the attainment of goals.

CHAPTER 11
IMPLEMENTATION

Table 11-1: Performance Measures

Goal	Performance Measure	Baseline ^o	Target ^o
<i>Maintain our Existing Transportation System</i>	% of Pavement on the Interstate System in Good Condition		4-year
	% of Pavement on the Interstate System in Poor Condition		4-year
	% of Pavement on the National Highway System (NHS) (excluding Interstate System) in Good Condition		4-year
	% of Pavement on the NHS (excluding Interstate System) in Poor Condition		4-year
	% of NHS Bridges in Good Condition		4-year
	% of NHS Bridges in Poor Condition		4-year
	Average Sufficiency Rating (Iowa Bridge Assessment)		
	Trail Condition		
	Sidewalk Condition		
	Average Age of Transit Fleet		
<i>Maximize Efficiency of Existing Transportation System</i>	Total Transit Ridership		
	Passenger per Transit Revenue Mile*		
	Level of Service (motor vehicles)		
<i>Minimize Cost of Transportation</i>	Total Vehicle Hours Traveled (VHT)		
	Total Vehicle Miles Traveled (VMT)		
	Per Capita VMT		
	Freight VMT		
	Fare Box Recovery Ratio (i.e. Fare box Revenue / Total Operational Costs)		

Gray highlights represent performance measures and target years set by the DOT.

^oBaseline and targets to be developed as part of Connections 2040 implementation.

*Baseline and target will be set for the entire system; individual lines may also be tracked, but will not have individual targets.

CHAPTER 11
IMPLEMENTATION

Table 11-1: Performance Measures (continued)

Goal	Performance Measure	Baseline ^o	Target ^o
<i>Offer Travel Choices</i>	Miles of On-Street Bicycle Facilities		
	Miles of Off-Street Bicycle Facilities		
	Transit Revenue Miles		
	Populated Area not within 1/2 mile of Bicycle Facility		
	Populated Area not within 1/2 mile of Transit Facility		
	Population Living within 1/4 mile of Transit Stop		
	Population Density within 1/4 mile of new/expanded Transit, Bike, & Pedestrian Facilities		
	% Change in Cyclists (MPO counts)		
	% Change in Pedestrian (MPO counts)		
	% Single Occupancy Vehicle Commuters		
	% Transit Commuters		
	% Carpool Commuters		
	% Bike Commuters		
	% Walk Commuters		
	% Work from Home / Telecommute		

^oBaseline and targets to be developed as part of Connections 2040 implementation.

CHAPTER 11
IMPLEMENTATION

Table 11-1: Performance Measures (continued)

Goal	Performance Measure	Baseline ^o	Target ^o
<i>Provide Safe & Secure Transportation</i>	Number of Fatalities		Annual
	Rate of Fatalities		Annual
	Number of Serious Injury Crashes		Annual
	Rate of Serious Injury Crashes		Annual
	% Change in Miles of Gaps in Trail System		
	% Change in Miles of Gaps in On-Street Bike System		
	% Change in Miles of Gaps in Sidewalk System		
	Bicycle / Pedestrian Level of Service		
<i>Support Economic Vitality</i>	Return on Investment		
	Freight Bottlenecks (Length of Delay)		
	Employment Density within 1/4 mile of new/expanded Transit, Bike, & Pedestrian Facilities		
	% Change in Miles of Trails		
<i>Minimize Travel Time</i>	Travel Delay		
	Mode Shift		
<i>Protect the Environment and Conserve Resources</i>	Particulate Matter		
	Greenhouse Gas Emissions		

Gray highlights represent performance measures and target years set by the DOT.

^oBaseline and targets to be developed as part of Connections 2040 implementation.

Measures in LRTPs

- Setting targets
 - DMAMPO 2050 LRTP – set trend direction or specific target for measures

PERFORMANCE MEASURES

Performance measures are quantitative descriptions that help us understand how the transportation system is performing. The MPO has developed a number of performance measures to track how well the region is meeting the goals laid out in *Mobilizing Tomorrow*, as shown in the preceding sections. This section offers an overview of these performance measures as well as a look at how certain performance measures compare in environmental justice and non-environmental justice areas across Greater Des Moines.

The MPO will track performance measures annually to gauge progress towards the target. As new information becomes available, the MPO may adjust targets and/or add new performance measures for the region to track.

Performance measures also were considered in the development of criteria for evaluating projects considered for inclusion in *Mobilizing Tomorrow*.

PERFORMANCE MEASURES

MEASURE	CURRENT	2050 TARGET
Goal 1: Enhance Multimodal Transportation Options		
Bicycle System On-Street		
Miles of On-Street Facilities	23	400
Mode Choice/Split (Peak Hour Trips to Downtown) [%]		
Single Occupancy Vehicles	77	55
Transit	7	20
Carpool	12	15
Walk/Bike/Work from Home/Other	4	10
Transit		
Total Ridership (Fiscal Year 2014)	4,400,000	8,800,000
Goal 2: Manage and Optimize Transportation Infrastructure and Services		
Bridge Sufficiency Rating		
Average Rating	82	-
Deficient Bridges [%]	25	Maintain
Transit		
Average Age of Fleet [Years]	7.7	6
Vehicles Beyond Useful Life [%]	18	0
Level of Service - Peak Hour		
Non-Congested Roads [% of Roadway Miles]	98.2	> 90
Pavement Condition Index		
Average Pavement Condition Index	60	-
Percent in Poor or Worse Condition	18	Maintain
Freight Impediments		
Number of Impediments	10	0
Goal 3: Improve the Region's Environmental Health		
Environmental Impacts		
Environmental Conflicts Areas [Acres]	45,847	Do Not Disturb
Environmental Challenge Areas [Acres]	77,106	Mitigate What Is Disturbed
Vehicles Miles Traveled		
Total [Average Weekday]	11,591,234	-
Per Capita [Average Weekday]	24.14	Decrease
Goal 4: Further the Health, Safety, and Well-Being of All Residents in the Region		
Crash Data		
Number of Fatalities [5-Year Average]	30	Decrease
Fatalities per 100 Million VMT	0.71	Decrease
Number of Serious Injuries [5-Year Average]	215	Decrease
Serious Injuries per 100 Millions VMT	5.08	Decrease
Regional Trail Gaps		
Number of Gaps	13	0
Miles of Gaps	54	0

PERFORMANCE MEASURES: ENVIRONMENTAL JUSTICE AREAS

MEASURE	CURRENT		2050 TARGET
	Environmental Justice Areas	Non-Environmental Justice Areas	
Percent of Population	15	85	-
Percent of Area	4	96	-
Pavement Condition			
Average Pavement Condition Index	50	61	EJ = Non-EJ
Pavement Condition Index [% Poor or Worse]	40	16	EJ = Non-EJ
Bridge Condition			
Average Rating	87	81	-
Deficient Bridges [%]	1	23	-
Crash			
Number of Fatalities [5-Year Average]	5	25	-
Fatalities per 100 Million VMT	0.99	0.67	EJ = Non-EJ
Number of Serious Injuries [5-Year Average]	54	156	-
Serious Injuries per 100 Millions VMT	10.74	4.18	EJ = Non-EJ
Non-Congested Roads [% of Roadway Miles]	95	98	> 90

Certain measures included in the chart do not have 2050 targets. These measures help give a clearer understanding of the current system without setting a goal for the future.

Measures in LRTPs

- Use of performance measures in scenario planning/analysis
 - ▣ MAPA draft 2040 LRTP update

7.4 PROJECT IDENTIFICATION & SCENARIO PLANNING

The project selection process for the 2040 Long Range Transportation Plan began with the list of projects from MAPA's previous LRTP. MAPA staff combed over these projects to review whether they have been completed, are in progress, remain planned for the future, or have been cancelled.

Projects identified in local or regional studies were also evaluated for possible inclusion in the LRTP. Staff compiled a draft initial list of projects that is not fiscally constrained and presents the list to MAPA's Project Selection Committee (ProSeCom). During this initial vetting, members of the Project Selection Committee identified additional transportation improvements they believed may be necessary.

The MAPA travel demand model was also utilized extensively to conduct scenario planning based on LRTP goals and elements of MAPA's CMP. The additional projects identified by ProSeCom were modeled alongside existing 2035 LRTP projects to identify impacts on regional Vehicle Miles Travelled (VMT), Vehicle Hours Travelled (VHT), and the overall efficiency of the modeled scenario (as measured by the total model flow divided by Total VHT). This analysis provided detailed information about the benefits of the LRTP & ProSeCom project scenario over a no-build scenario in which no transportation improvements were made beyond "existing and committed" projects identified in MAPA's Transportation Improvement Program (TIP).

Once this initial scenario had been identified and evaluated, MAPA staff developed four other scenarios based on strategies identified in its Congestion Management Process (CMP). A summary of each of these multi-modal scenarios is provided below:

Core Density & 2035 LRTP Projects : Shift 10% of growth from outside the interstate loop to within and construct LRTP projects

Core Density, Transit, & 2035 LRTP Projects : Shift 10% of growth from outside the interstate loop to within, construct LRTP projects, and implement Phase III transit service improvements identified in the Comprehensive Operational Analysis (COA) of MAPA's Regional Transit Vision

Intelligent Transportation Systems (ITS) & 2035 LRTP Projects : Assume 13% capacity improvement along MAPA Priority Corridors based on Adaptive Traffic Signal Control (ATSC) improvements and construct 2035 LRTP projects

Priority Corridors (6-Lanes): Increase all priority corridors in the no-build network to 6-Lanes

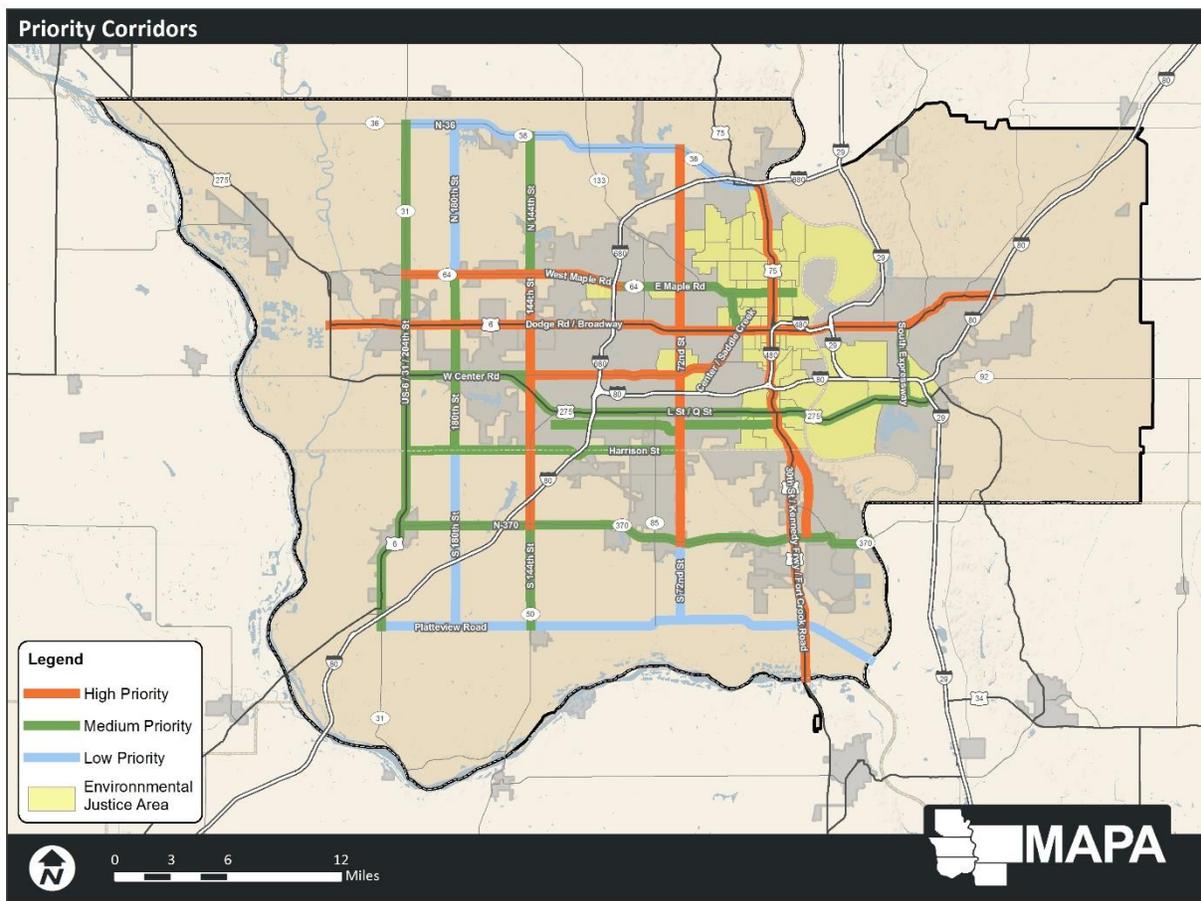
A summary of the key indicators for each of these preliminary scenarios is included in Table 7.4 on the next page.

TABLE 7.4 KEY LRTP MODELING SCENARIO METRICS

Scenario	Description	Total Flow	Priority V/C	Total VMT	Total VHT	Flow/VHT Ratio	Average Rank	Lane Mile Increase*	Capacity Increase*	Cost	Cost Effectiveness
A - ProSeCom & 2035 LRTP Projects	Projects identified by ProSeCom and existing 2035 LRTP projects	79,775,836	0.633	24,726,863	639,287	124.8	4.0	23.5%	17.0%	\$4,292,319	\$1.09
B - Core Density & 2035 LRTP Projects	Shift 10% of growth from outside Interstate loop to within and 2035 LRTP projects	79,869,167	0.733	24,334,256	626,106	127.6	2.8	18.0%	12.5%	\$4,191,534	\$0.80
C - Core Density, Transit, and 2035 LRTP Projects	Shift 10% of growth from outside Interstate loop to within, Phase III Transit projects, and 2035 LRTP projects	79,452,910	0.730	24,225,206	623,147	127.5	2.3	18.0%	12.5%	\$5,205,304	\$0.94
D - ITS & 2035 LRTP Projects	Assumption that all priority corridors would have capacity improved by 13% and 2035 LRTP projects	79,817,561	0.683	24,690,799	638,475	125.0	3.5	18.0%	22.1%	\$4,212,170	\$1.05
E - Priority Corridors (6-lanes) & LRTP 2035 Projects	Increases all Priority Corridors in the no-build network to 6 lanes	80,943,854	0.565	24,996,257	634,170	127.6	2.5	63.6%	48.0%	\$5,017,484	\$1.13

Scenario	V/C Rank	VMT Rank	VHT Rank	Flow/VHT Rank	Existing 2035 LRTP Goals				Total
					Accessibility & Mobility	Safety & Security	Urban Form & Environment	Keep Costs Reasonable	
A - ProSeCom & 2035 LRTP Projects	2	4	5	5	O	O	O	O	O
B - Core Density & 2035 LRTP Projects	5	2	2	2	O	O	+	O	+
C - Core Density, Transit, and 2035 LRTP Projects	4	1	1	3	O	O	+	-	O
D - ITS & 2035 LRTP Projects	3	3	4	4	+	O	O	+	++
E - Priority Corridors (6-lanes) & LRTP 2035 Projects	1	5	3	1	+	O	-	O	O

FIGURE 6.9
MAPA CONGESTION MANAGEMENT PROCESS NETWORK



6.5.3– MAPA’S MULTI-MODAL PERFORMANCE MEASURES

The performance measures described below were derived in part from the scenario planning conducted as a part of the development of this plan. These measures (and others) were utilized to vet scenarios and to identify strategies and projects which made the greatest impact in reducing future congestion issues.

A summary of the performance measures outlined as a part of this Congestion Management Process are included below:

Priority Corridor Volume-to-Capacity (V/C) Ratio – The volume to capacity ratio of corridor segments is an effective way of estimating future needs within the transportation network. Additionally, the V/C ratio provides a measure of the intensity of congestion along a particular segment. The V/C ratio is derived from the model.

Performance Measure: Total mileage of Priority Corridors with V/C > 1.0

Average Regional Travel Time – More than half of all commutes in the MAPA region are less than 20 minutes based on 2012 American Community Survey (ACS) data. While the population within the MAPA region continues to grow, the 20 minute commute threshold represents an important measure of the progress being made towards reducing congestion. This data is provided from the ACS.

Performance Measure: Average commute time from American Community Survey

Cost Effectiveness– In order to “Keep Costs Reasonable and Sustainable” (a goal of this LRTP), MAPA included a performance measure related to the cost effectiveness. In addition to calculating the total cost of the LRTP program of projects, MAPA estimated the total Vehicle Hours Travelled (VHT) reduction that would occur based on the output of the Travel Demand Model. This measure provides a useful way of comparing the costs of the LRTP program to the benefits realized by the travelling public (i.e. less time spent in their vehicles).

Performance Measure: Ratio of LRTP program cost to VHT reduction over 2040 no-build scenario in Travel Demand Model

6.5.4– COLLECT DATA & MONITOR SYSTEM PERFORMANCE

MAPA currently undertakes many data collection activities related to traffic patterns and travel demand. Notably, MAPA maintains a database of regional traffic count data and publishes traffic reports every two years. This data collection serves as the basis for the HPMS data submitted to NDOR on behalf of the MAPA region. Additionally, this data serves as the basis for the validation of MAPA’s regional Travel Demand Model– a critical tool for testing the effectiveness of various strategies and determining regional V/C and VHT improvements. MAPA uses US Census data as the socio-economic input when developing the model.

Additionally, MAPA maintains American Community Survey (ACS) data as it is released by the United States Census bureau. This data provides important characterizations of current commute times for residents of the MAPA region, and will be an important measure of the MAPA region’s progress towards mitigating current congestion issues through the implementation of the Transportation Improvement Program (TIP). Furthermore, the US Census data provides key population and employment data. This demographic data is used to calibrate and validate the model.

MAPA is also in the process of negotiating agreements with NDOR and IDOT to gain travel time data from a national vendor. In the future, this dataset will provide MAPA with a high resolution of bottlenecks within the CMP Network and serve as an effective tool for evaluating future strategies as a part of MAPA’s CMP.

The tables on the previous page show the various indicators of each scenario, in addition to a general measure of cost effectiveness. As identified in MAPA’s Congestion Management Process, cost effectiveness is determined by dividing the reduction in Vehicle Hours Travelled over the no-build scenario divided by the cost of that scenario. Scenario costs were based on the total investment necessary to implement each strategy along MAPA’s Priority Corridor network.

Additionally, MAPA staff analyzed the consistency of each scenario with the four Long-Range Transportation Plan goals, as shown in Table 7.4. This analysis provided ProSeCom with both quantitative and qualitative information from which to prioritize multi-modal strategies. After discussing the benefits and costs associated with each strategy, ProSeCom selected a preferred, Final Scenario Package. This final package included the following elements:

Core Density: Promote land use policies and development that increase the overall density within the urban core. While MAPA doesn’t control land use decision-making directly, encouraging communities to increase the density of existing communities improves the potential for transit service and reduces the demand for new facilities

6-Lane Priority Corridors: Increase Priority Corridors to 6-lanes to increase capacity and improve traffic flow, where applicable

Transit Improvements: Implement Phase II and Phase III service improvements identified in the Regional Transit Vision to increase the frequency of transit service along Priority Corridors

Intelligent Transportation Systems: Invest strategically in technologies such as Adaptive Traffic Signal Control (ATSC) to improve traffic flow on Priority Corridors

These factors provided MAPA with a clear set of strategies from which to prioritize investments within this LRTP. A summary of the Final Scenario outputs is included in Table 7.5 below.

TABLE 7.5 – FINAL LRTP SCENARIO PACKAGE

Scenario	Total Flow	Priority V/C	Total VMT	Total VHT	Flow/VHT Ratio	Scenario Cost (in \$1,000s)	Cost Effectiveness
Final Scenario Package	80,602,937	0.530	24,454,430	605,191	133.2	\$4,750,000	\$0.65

Measures in LRTPs

- Project level vs. regional performance measures and use of performance measures in project selection
 - AAMPO draft 2040 LRTP

Project and Regional Performance Measurement

Background

This document provides a summary of the proposed performance measures for the 2040 Long Range Transportation Plan (LRTP). The performance measures are used at two levels of analysis:

- **Project-Level Performance Scoring:** project-level performance criteria are provided to assess how individual projects fit with the Ames area’s performance goals. These criteria are applied as a part of the alternatives analysis to prioritize projects.
- **Regional-Level System Performance Assessment:** Regional performance measures were developed to assess the outcome of various scenarios or packages of projects. Similar to the project-level criteria, these regional-level measures are used as benchmarks to assess how a scenario (group or package of individual projects) does in terms of meeting the regional transportation vision.

The project-level and regional performance measures have been developed consistently with the vision themes established for the 2040 LRTP, and reflect the Moving Ahead for Progress in the 21st Century (MAP-21) authorization.

Final rulemaking associated with MAP-21 performance measurement is incomplete at this time, and will not be implemented until after the 2040 LRTP update has been completed. Performance measurement will be an ongoing activity for the MPO, and the MPO will need to continually monitor regional progress towards achieving its performance targets. In this regard, the role of the LRTP is to promote and recommend projects, policies and programs that help the region achieve its performance targets. Thus, the project performance scoring should be measured in terms consistent with the guidance provided in MAP-21. The MAP-21 established national performance goals for the Federal-Aid highway program in seven areas:

- **Safety:** To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- **Infrastructure condition:** To maintain the highway infrastructure asset system in a state of good repair.
- **Congestion reduction:** To achieve a significant reduction in congestion on the National Highway System.
- **System reliability:** To improve the efficiency of the surface transportation system.
- **Freight movement and economic vitality:** To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.

- **Environmental sustainability:** To enhance the performance of the transportation system while protecting and enhancing the natural environment.
- **Reduced project delivery delays:** To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies’ work practices.

Project-Level Performance Criteria

The project-level performance criteria are part of a hierarchy, with six (6) draft goals for the LRTP, and each of those goals has multiple draft performance objectives. In turn, each measurable performance objective has a performance measure associated with it. That relationship is illustrated as an example in **FIGURE 1** below.

Figure 1. Hierarchical Relationship between Goals – Objectives – Performance Measures

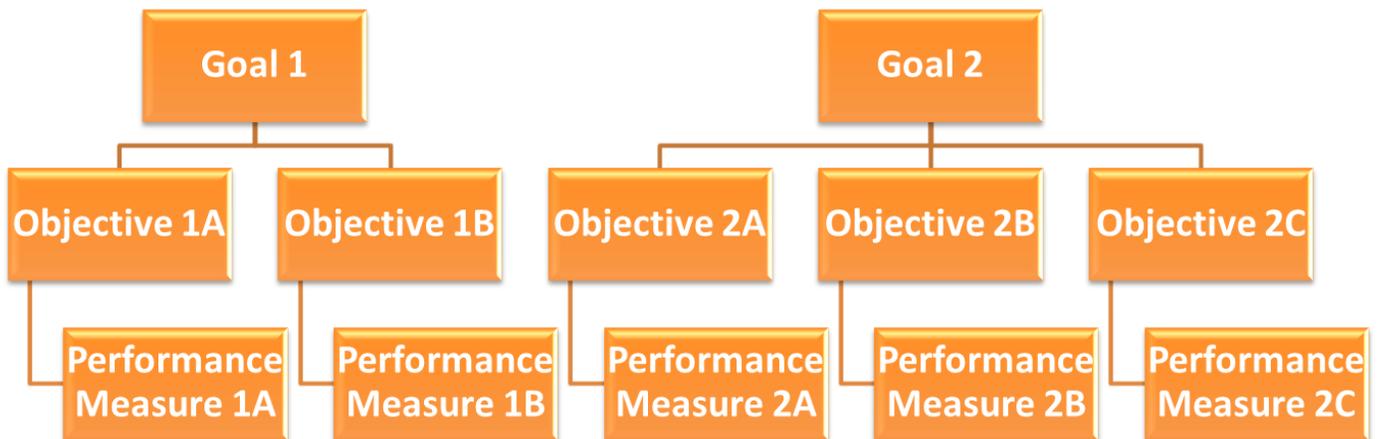


TABLE 1 illustrates the draft performance scoring matrix, and relates each of those project-level performance criteria to the appropriate performance objective and LRTP goal. The table summarizes 23 different draft performance objectives, of which 20 can be used to measure alternative performance. The three (3) performance objectives that do not have a scoring approach associated with them are still priorities for the community and / or anticipated National priorities, but do not have a feasible scoring mechanism (as outlined in the table) which will be considered during LRTP development.

There are several items to note when reviewing the draft project performance scoring matrix:

- Many of the measures are qualitative to some extent, and some may require grouping and ranking alternatives to better differentiate them for scoring.

- The scoring discussion column provides background on philosophy and approach to scoring each measure.
- Since some of the measures are mode-specific, the performance measure scores should not be used to compare alternatives of different modes. This system will be used to measure how well an alternative fits with the LRTP goals and objectives compared to other alternatives of the same mode.
- The performance scoring outcomes will not be the “final answer” to project selection. Some projects may score well, but might not be reasonable to implement due to cost, right-of-way impacts, inconsistency with wider regional initiatives, or stakeholder concerns.

TABLE 2 provides a list of performance issues that would be considered fatal flaws, and would remove an alternative from further consideration.

Additional Prioritization Considerations

CyRide Service Philosophy and Service Improvement Guidelines

Additional consideration should be given to CyRide’s service philosophy and service improvement guidelines when evaluating transit alternatives. At the November 15, 2014 special Transit Board meeting, board members discussed a service level philosophy that could guide current and future discussions and, when considering service improvements, guidelines that would provide a framework for decisions.

- **Service Level Philosophy:** Within financial constraints, provide a ride for every customer desiring to use transit when and where CyRide operates.
- **Service Improvement Guidelines (provided in order of priority):**
 - **Guideline #1 - Capacity Change:** Service changes that address capacity challenges within the existing system. For example, extra buses added due to overcrowding on a route consistently exceeding 150% of seated capacity (60 riders); published schedule is unchanged.
 - **Guideline #2 - Improved Existing Service:** Service improvements that address improved convenience/capacity within the existing system. For example, better service frequency or longer service hours on a route; published schedule is changed.
 - **Guideline #3 - New Service:** Service improvements that address expansion of service into new areas/days of service. For example, adding a new route (e.g., State Street route) or implementing service on an existing route on a day it is not currently offered; published schedule is changed.

Table 1. Draft Project Performance Scoring Approach

LRTP Project Performance Objective	Performance Method	Draft Alternative / Project Scoring Approach				Scoring Discussion
		2	1	0	-2	
		Very Good	Good	Neutral	Poor	
Goal 1: Provide a connected transportation system that offers efficient and reliable mobility options for all modes of travel.						
1A. Create and enhance multimodal access and connections between bicycle, pedestrian, transit, and private vehicle travel.	Multimodal Connectivity Ranking	Enhances access and connections between at least two modes. Or, a project that improves mobility for two or more modes.	Enhances access and connections for bicycle, pedestrian, or transit travel.	No significant impact on multimodal access or connectivity.	Creates barrier to multimodal connections.	Intermodal projects and those that have multiple modes score highest here. Projects improving bicycle, pedestrian, or transit mobility are assumed "good", as automobile travel already accounts for over 90% of regional travel. Complete streets projects score "Very Good".
1B. Reduce the incidence of roadway congestion.	Vehicular Level of Service	Improves vehicular level of service to "D" or better for a location that would be "E" or worse otherwise.	Improves vehicular level of service.	No significant impact on traffic operations.	Degrades vehicular level of service a letter grade or worse.	LOS for existing or 2040 conditions - intersections and segments where appropriate. Assumes that target is LOS D or better. Minor drops of less than 1 LOS letter grade are not negatively scored. Alternate measure: +2 scoring for LOS improvements on NHS routes (per MAP-21), and +1 for non-NHS routes.
1C. Enhance the efficiency of the existing transportation system through system management and demand management approaches.	Transportation Management Assessment	Improves existing facility or transit route mobility. OR a project that adjusts travel demand to better fit on existing system.	-	No significant impact on system or demand management.	Degrades the service levels of an existing facility or route, or increases peak demand on the system.	Assess Transportation System Management and Demand Management - potentially new transit services that degrade demand on an existing route, or alternatives that somehow increase peak hour demands.
1D. Improve system connectivity through improved multimodal network connections and reduced network gaps.	System Connectivity Assessment	New multimodal network connection where a gap of 1/2 mile or more existed before.	Provides a new connection between two existing modal facilities, or an extension of an existing facility.	No change facility connectivity.	Reduces facility connectivity.	Scored for all modes separately. Determine distance of new facility to nearest existing facility. Must connect to existing facilities. Roadways considered should be arterial or higher.
1E. Plan for and address transportation system impacts and sufficiency when considering new developments.	No way to measure and compare in LRTP on an alternative basis.					

Table 1. Draft Project Performance Scoring Approach (continued)

LRTP Project Performance Objective	Performance Method	Draft Alternative / Project Scoring Approach				Scoring Discussion
		2	1	0	-2	
		Very Good	Good	Neutral	Poor	
Goal 2: Provide a safe transportation system.						
2A. Reduce the rate and number of serious injury and fatal crashes per strategies outlined in the 2013 Iowa Strategic Highway Safety Plan.	Safety Assessment	Results in likely safety benefits or reduced crash severity in one of the top vehicular or bicycle/pedestrian safety issue areas.	Improves vehicular or bicycle / pedestrian safety non-safety issue area; or improves safety through traffic diversion from a safety issue corridor.	No effect on vehicular or bicycle / pedestrian safety.	Increases safety concerns at an identified vehicular or bicycle/pedestrian safety issue area.	Issue areas defined in LRTP as highest-crash frequency intersections, or public-identified safety concern locations. May be assessed through crash modification factors. Addresses HSIP proposed rulemaking.
2B. Consider the safety of all travel modes when considering changes to the transportation system.	Qualitative Safety Assessment	Provides anticipated safety benefits to two or more modes of travel.	Provides anticipated safety benefits to one mode with no anticipated negative safety impacts on other modes.	No anticipated change in safety for any modes.	Anticipated negative impact on any mode.	Addresses the input regarding multi-modal safety when considering projects. Projects where literature / studies suggest the improvement would enhance two or more modes' safety highest ranked here.
2C. Enhance transportation security by collaborating with the appropriate agencies and emergency responders.	Qualitative Security Assessment	Provides improved communications, emergency response coordination, secures critical asset or otherwise improves transportation security.	-	No anticipated change to security.	Negative impact on communications, emergency response coordination, critical assets, or overall transportation security.	Addresses security - many alternatives will be security neutral. No "Good", either improves security or doesn't.
Goal 3: Consider and mitigate the impacts of the transportation system on the natural and built environment.						
3A. Minimize the transportation system's impacts on the natural and built environment.	Environmental Screening	Reduces the natural / built environmental impacts of current and future transportation system.	-	Neutral effect on transportation system impacts on natural / built environment.	Overall increase transportation system impacts to natural / built environment.	Look at several factors: right-of-way impacts (acres), potential acquisitions (number), noise potential (yes/no), threatened and endangered species habitat (yes/no), wetlands and floodway impacts (acres).
3B. Identify transportation system projects and programs that can improve regional air quality.	VMT / VHT Estimation	Provides significant reduction to regional VMT and VHT.	Provides significant reduction to either VMT or VHT; no significant growth in either measure.	No significant change in regional VMT or VHT.	Project would increase both VMT and VHT.	Use model / analysis to estimate when possible. MOVES air quality model evaluates VMT at various travel speeds, with higher emissions rates coming at low urban speeds / idling. Thus, VMT and VHT declines infer improved air quality. Define "significant" in relative terms by comparing alternatives' impacts.

Table 1. Draft Project Performance Scoring Approach (continued)

LRTP Project Performance Objective	Performance Method	Draft Alternative / Project Scoring Approach				Scoring Discussion
		2	1	0	-2	
		Very Good	Good	Neutral	Poor	
Goal 3: Consider and mitigate the impacts of the transportation system on the natural and built environment (continued).						
3C. Coordinate with environmental agencies during project planning.		No way to measure and compare in LRTP on an alternative basis. Coordination is part of overall LRTP, and becomes more focused during project planning and development.				
Goal 4: Provide an accessible transportation system that fits within the context of its surroundings and preserves community character.						
4A. Plan and design transportation facilities that fit within their physical and social setting.	CSS Assessment	Alternative is generally more consistent with neighborhood context than current transportation facilities.	-	No real impact on neighborhood context.	Alternative is generally inconsistent with neighborhood context.	Qualitative assessment. Consider how the project fits aesthetically, how it enhances / conflicts with neighborhood's modal orientation, affects on-street parking where it's needed, or residents' perception of the project (if applicable). No "Good" score.
4B. Plan for transit, bicycle, and pedestrian access in new urban developments.	Bicycle / Pedestrian / Transit Screening	Provides bicycle, pedestrian, or transit access in neighborhoods / subareas that previously had none.	Expands bicycle, pedestrian, or transit access in neighborhoods / subareas that previously had access to that mode.	No change in bicycle, pedestrian, or transit access to neighborhood / subarea.	Reduces bicycle, pedestrian, or transit access to neighborhood / subarea.	Define neighborhoods as existing subdivisions, or those subareas with homogenous land uses that are bounded by arterial streets (including commercial nodes / industrial areas). Develop new streets with complete street concepts. Consider how appropriate the mode is for that corridor.
4C. Provide balanced transportation access to both environmental justice and non-environmental justice communities.	Environmental Justice Assessment	Directly improves mobility for EJ populations.	-	Limited direct effect on EJ population mobility.	Project degrades mobility for EJ populations.	Use the defined EJ areas. No "Good" score.
4D. Promote active transportation projects and programs.	Active Transportation Screening	Likely enhances walking, biking and recreational opportunities compared to current conditions.	-	Limited effect on walking, biking and recreational opportunities.	Likely reduces walking, biking and recreational opportunities compared to current conditions.	Bicycle / pedestrian projects where demand likely exists and programs that encourage biking and walking and include complete streets will score +2.
4E. Provide transit service to areas with high density or mix of land uses.	Transity Density Screening	Other subareas of similar land use mix and density have above-average ridership.		No comparative transity density.	Other subareas of similar land use mix and density have lower than-average ridership.	Qualitative assessment, considering development density and mix of land uses to gauge if appropriate for transit service.

Table 1. Draft Project Performance Scoring Approach (continued)

LRTP Project Performance Objective	Performance Method	Draft Alternative / Project Scoring Approach				Scoring Discussion
		2	1	0	-2	
		Very Good	Good	Neutral	Poor	
Goal 5: Provide a transportation system that supports the regional economy and efficiently moves goods.						
5A. Promote the efficient and safe movement of freight and goods.	Freight Route Assessment	Improves capacity, safety, or travel reliability on freight corridors through Ames area.	-	No effect on capacity, safety, or travel reliability on freight corridors through Ames area.	Decreases capacity, safety, or travel reliability on freight corridors through Ames area.	Evaluate alternatives according to whether or not they could potentially enhance mobility or safety in defined freight corridors. Work with MPO to define freight corridors.
5B. Identify projects and programs that maintain the current high levels of freight mobility on Interstate 35 through the Ames area.	I-35 Freight Assessment	Improves capacity, safety, or travel reliability on I-35 through Ames area.	-	No effect on capacity, safety, or travel reliability on I-35 through Ames area.	Decreases capacity, safety, or travel reliability on I-35 through Ames area.	Specific to I-35 only to address MAP-21 Freight National Performance Goals / Draft Rules - anticipated to only relate to Interstate Highway System.
5C. Identify multimodal transportation projects and programs that enhance the area's economy.	Employment / Retail Connectivity Assessment	Improves multimodal connection directly to employment or retail areas.	Provides improved, but indirect multimodal access / mobility to employment or retail area.	No effect on connectivity to employment or retail areas.	Reduces multimodal connectivity to employment or retail areas.	Review TAZ data for employment areas and determine if project expands access or enhances mobility to those areas. New direct access gets +2, enhanced access gets +1.
5D. Identify multimodal transportation projects and programs that enhance access to K-12 schools.	K-12 School Connectivity Assessment	Improves multimodal connection directly to school.	Provides improved, but indirect multimodal access / mobility to school.	No effect on connectivity to school.	Reduces multimodal connectivity to school.	Performance objective added to reflect input regarding concerns on K-12 school access. New direct access gets +2, enhanced access gets +1.
5E. Reduce project delivery delays	No way to measure for LRTP alternatives. LRTP will discuss processes that can help streamline project development.					
5F. Provide a financially-sustainable transportation system.	Travel Benefits per Dollar Spent	Highest ranking tier of benefits / dollar spent.	Next tier of benefits / dollar spent.	Limited benefits / dollar spent OR cannot measure.	Negative VMT / VHT benefits.	Compare VMT and VHT reductions to projects cost. Rank projects against one another. Cannot measure smaller projects that aren't modeled. Transit projects to consider operational efficiency and cost savings.

Table 1. Draft Project Performance Scoring Approach (continued)

LRTP Project Performance Objective	Performance Method	Draft Alternative / Project Scoring Approach				Scoring Discussion
		2	1	0	-2	
		Very Good	Good	Neutral	Poor	
Goal 6: Maintain transportation infrastructure in a state-of-good-repair.						
6A. Allocate resources to maintain pavement conditions at sufficient levels.	PCI	Improves pavement in a corridor with pavement considered deficient.		No impact to pavement condition.		Use PCI data from existing conditions report. Addresses NHPP proposed rulemaking.
6B. Allocate resources to maintain bridge conditions at sufficient levels.	NBI Ratings	Improves a bridge considered deficient.		No impact to bridge condition.		Use National Bridge Inventory (NBI) functional and structural ratings. Addresses NHPP proposed rulemaking.
6C. Allocate resources to maintain transit fleet in state of good repair	Average Fleet Age	Improves average fleet age.		No impact to average fleet age.		Evaluate alternatives that affect the average fleet age.

Table 2. Draft Fatal Flaws for Selected Performance Measures

LRTP Project Performance Objective	Potential Alternative Fatal Flaw
1A. Create and enhance multimodal access and connections between bicycle, pedestrian, transit, and private vehicle travel.	Alternative that removes bicycles or pedestrians from a corridor.
1B. Reduce the incidence of roadway congestion.	Alternatives that degrade traffic operations to LOS E / F on the NHS system.
2A. Reduce the rate and number of serious injury and fatal crashes per strategies outlined in the 2013 Iowa Strategic Highway Safety Plan.	Alternative increases likelihood of fatal or severe injury crashes for any mode, measured through crash modification factors.
3A. Minimize the transportation system’s impacts on the natural and built environment.	Alternative has potential for significant impact on floodplain.
5A. Promote the efficient and safe movement of freight and goods.	If a designated freight corridor, alternative reduces the mobility of heavy commercial vehicles.

Regional Performance Measures

The draft regional performance measures will be used to compare existing conditions and 2040 “do nothing” (E+C) conditions with the 2040 LRTP scenario. The regional performance measures will tie back to the six (6) LRTP performance goals, outlined as goal areas in [TABLE 3](#)¹. In addition to a summary of draft regional performance measures for consideration for the LRTP, draft performance targets are shown that reflect challenging, yet achievable performance targets for the Ames region to achieve. The performance targets are shown as a way of assessing how consistent LRTP outcomes are with the regional transportation vision and goals. It is assumed that the Ames area’s regional performance measures and targets will be changed and ultimately different when formal performance measurement rulemaking is finalized in the coming years.

Additional LRTP Regional Performance Strategies for Consideration

There are additional LRTP regional performance strategies that will relate to overall plan performance, but do not directly apply to individual projects. These strategies should be used as guiding principles when assembling the final list of LRTP projects and programs:

- Placing a priority on **safety projects** for LRTP implementation. It might be deciding on a target percentage of LRTP budget to expend on safety projects; for instance, a strategy to include at least 5 percent of all spending on safety projects.
- Implement projects that move Ames closer to **achieving bicycle-friendly community status** from the League of American Bicyclists. There are various criteria used to determine bicycle-friendly status for each of the “5E” Perspectives: Engineering, Education, Encouragement, Enforcement, and Evaluation / Planning:
http://bikeleague.org/sites/default/files/Attributes_of_BFC.pdf.

¹ Please note that tabulation of base year and 2040 system performance is still in progress.

Table 3. Draft Regional System Performance Measures (in progress)

Goal Area	Performance Measure	DRAFT Performance Measure Target for 2040 LRTP	Existing Conditions Baseline	Future No-Build Conditions Baseline	Scoring Discussion
1. Connected, Efficient, and Reliable	System Reliability / Reliability Index 80 (RI ₈₀)	Address reliability issues at the two (2) NHS segments with poorest reliability.	Arterial System: RI ₈₀ = 1.20 Freeway System: RI ₈₀ = 1.03	N/A	
	Miles of On-Street Bicycle Facilities	Increase the segment-mileage of on-street bike facilities by 100% compared to current levels.	IN PROGRESS	IN PROGRESS	
2. Safety	Serious Injury / Fatal Crashes	Address safety issues at five (5) locations with highest crash rates or most serious injury / fatal crashes.	IN PROGRESS	N/A	
3. Environment	VMT per Household	2040 VMT per Household grows by 10% or less compared to 2010 levels.	47.2 daily VMT per Household	57.7 daily VMT per Household	Transportation plan likely to have limited impact on VMT.
	VHT per Household	2040 VHT per Household grows 20% or less compared to 2010 levels.	1.13 daily VHT per Household	1.49 daily VHT per Household	
	Transit Mode Share	2040 transit mode share is higher than 2010 transit mode share.	12.5% of all modeled (auto and transit) trips.	12.0% of all modeled (auto and transit) trips.	

Table 3. Draft Regional System Performance Measures (in progress - Continued)

Goal Area	Performance Measure	DRAFT Performance Measure Target for 2040 LRTP	Existing Conditions Baseline	Future No-Build Conditions Baseline	Scoring Discussion
4. Accessibility	Household and Employment Proximity to Transit	Maintain housing and jobs proximity (¼ mile walk distance) at 2010 levels.	IN PROGRESS	IN PROGRESS	
	EJ Proximity to Transit	Provide higher levels of transit proximity (within ¼ of a route) to EJ households than non-EJ households.	IN PROGRESS	IN PROGRESS	
	Household and Employment Proximity to Bicycle Facilities	Increase the percentage of jobs and households within ½ mile of bike facilities by 25% by 2040.	IN PROGRESS	IN PROGRESS	
	EJ Proximity to Bicycle and Pedestrian Facilities	Provide higher levels of bike facility proximity (within ½ mile of a facility) to EJ households than non-EJ households.	IN PROGRESS	IN PROGRESS	
5. Economy and Goods Movement	LOS / Congested Miles of Primary Freight Corridors	2040 Congested Miles of NHS system same or lower than 2010 levels.	IN PROGRESS	IN PROGRESS	
6. Asset Management	Pavement Condition Index (PCI)	Reconstruct federal-aid roadways rated poor.	105 lane miles of State and Arterial/Collector Roads rated “poor”	N/A	Forecasts from City of Ames staff.
	Bridge Condition - (NBI)	Reconstruct structurally deficient bridges.	3 Structurally Deficient Bridges	N/A	Include maintenance funding in LRTP for deficient bridges
	Transit State-of-Good-Repair	Identify CyRide assets in Worn or Marginal condition for replacement.	?	N/A	Data from CyRide staff (if available)

Measures in other documents

- Use of performance measures in other planning documents
 - ▣ INRCOG Pedestrian Master Plan (under development)
 - ▣ MAPA Public Participation Plan

Goal	Objective	Performance Measurement
1) Safety	1.1) Traffic accidents involving pedestrians are reduced	<ul style="list-style-type: none"> ● County data: Total number of accidents involving pedestrians
	1.2) All major pedestrian crosswalks are safe and clearly marked	<ul style="list-style-type: none"> ● INRCOG pedestrian audit: Percent of crossings in special focus areas that are safe and clearly marked ● Survey results: Percent of people who rate crosswalk safety as “excellent” or “good”*
	1.3) Areas around schools are safe and encourage students to walk to school	<ul style="list-style-type: none"> ● Survey results: Percent of parents with school-age children whose children walk to school on a regular basis
	1.4) Sidewalks are in safe walking condition	<ul style="list-style-type: none"> ● Survey results: Percent of people who rate sidewalk conditions as “excellent” or “good”*
	1.5) Lighting along walkways meets public demand	<ul style="list-style-type: none"> ● Survey results: Percent of people who rate lighting at night as “excellent” or “good”*
	1.6) Walking in the MPO area is regarded as safe from criminal activity	<ul style="list-style-type: none"> ● Survey results: Percent of people who rate walking as “very safe” from street crime such as theft and assault*
2) Connectivity	2.1) Infrastructure exists to provide pedestrians easy connections to commercial centers	<ul style="list-style-type: none"> ● INRCOG pedestrian audit: Total length of sidewalks and crosswalks in special focus areas ● Survey results: Percent of people who rate the directness of walkways as “excellent” or “good”*
	2.2) Infrastructure exists to provide pedestrians easy connections to other forms of transportation	<ul style="list-style-type: none"> ● Survey results: Percent of people who indicate all their bus stops have usable sidewalk access
	2.3) Parks and cultural amenities have good pedestrian connectivity	<ul style="list-style-type: none"> ● Survey results: Percent of people who describe parks and cultural amenities as “very connected”*
	2.4) Gaps are filled in the existing sidewalk network	<ul style="list-style-type: none"> ● Survey results: Percent of people who rate the continuousness of walkways as “excellent” or “good”*
3) Wellness	3.1) A greater percentage of trips are made by foot	<ul style="list-style-type: none"> ● Census data: Total number of people who walk to work ● Survey results: Percent of people who walk at least two blocks at least once per week ● Survey results: Percent of people who regularly walk to work ● Survey results: Percent of people who regularly walk to shopping and dining
	3.2) A greater percentage of people walk for wellness	<ul style="list-style-type: none"> ● Survey results: Percent of people who indicate they walk for wellness
	3.3) The public is interested in creating a walkable community	<ul style="list-style-type: none"> ● Survey results: Percent of people who indicate that creating a walkable community is “very important”
4) Design	4.1) Sidewalks and other walking paths are accessible to pedestrians of all ages and abilities	<ul style="list-style-type: none"> ● Survey results: Percent of people who rate the safety of walkways for the elderly, disabled, and children as “excellent” or “good”*
	4.2) Pedestrian traffic is a strong consideration in street design	<ul style="list-style-type: none"> ● Survey results: Percent of people who rate the quality of design for pedestrians as “excellent” or “good”*
	4.3) Pedestrian corridors are designed with placemaking in mind	<ul style="list-style-type: none"> ● INRCOG pedestrian audit: Total number of outdoor tables, trees, planters, benches, lampposts, trash bins, and fountains in focus areas
	4.4) Pedestrian counts are regularly conducted along major thoroughfares to assess the need for pedestrian accommodations	<ul style="list-style-type: none"> ● INRCOG: Total number of pedestrian counts that have been conducted in the last five years

Evaluation Indicators

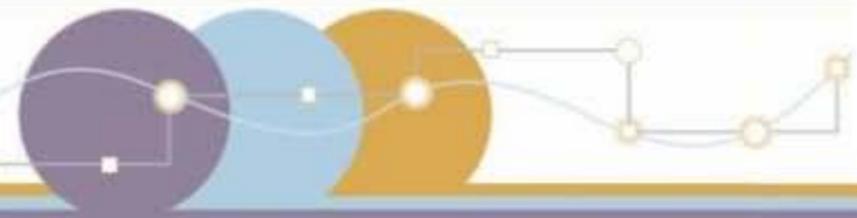
The following eight evaluation methods were included in the 2014 Public Participation Plan. They shall be used in each year's annual report to evaluate the public participation process. This will facilitate the discovery of trends.

Public Participation Tool	Evaluation Criteria	Performance Goal(s)	2014 Indicator	Goal Achieved
Public Participation Plan	Required by law - No measure	Update at least every 3 years	Approved in February 2014	Yes
Newspaper Advertisements	Required by law - No measure	Increase number of participants/ respondents indicating they saw the advertisement	Published public comment period and public meeting advertisements. 0 people indicated they heard about the meeting because of the advertisement.	No
Website	Number of website hits	Increase number of web hits over the course of each year	Website hits are an all-time number as of 1/2/15 at 11:15 am Home page = 213,107 Transportation page = 20,494 Meeting Agendas page = 9,569	Base year developed. Did not have starting data to determine if the goal was achieved.
Newsletter	Feedback from public; number of returns	Maximum of 2% return rate per mailing	Currently there are 487 addresses on the newsletter list. On average there are 2-4 returned newsletters each time, which are promptly corrected for the next mailing. This is a .004% return rate.	Yes
Brochures	Number distributed during the year	Distribute throughout the MAPA Region, including key regional libraries in 1 st year; increase by 2-4 locations annually	Distributed Heartland 2050 brochures and flyers describing public workshops, surveys, and the vision document to public libraries, post offices, and various coffee shops.	Yes
Public Forums/ Open House/ Public Information Meeting/ Public Hearing	Public Attendance*[Transit Access (10 pts) + ADA Accessibility (10 pts)] = N	Goal of 1,000 annual points for public forums/ open house/ public information meeting/ public hearing	Held public meetings/open houses for several projects. See Appendix A for the supporting mathematics. 2,290 total point	Yes
Planning Document Distribution	Number of distribution sites	100% distribution of vital documents to necessary parties	Distributed documents and flyers to fourteen local governments and twenty-one local libraries.	Yes
Citizens' Advisory Council	Public Attendance + (Quorum or less [10 pts] or Greater than Quorum [20 pts]) = N	Goal of 150 total annual points for the Citizens' Advisory Council	The CAC was instituted in August with bylaws established in October. Quorum was achieved at the October 15 th meeting. Total points = 20	No

Table 1: Public Participation Evaluation Methods (Table 7.1 from the PPP)

MAP-21 measures

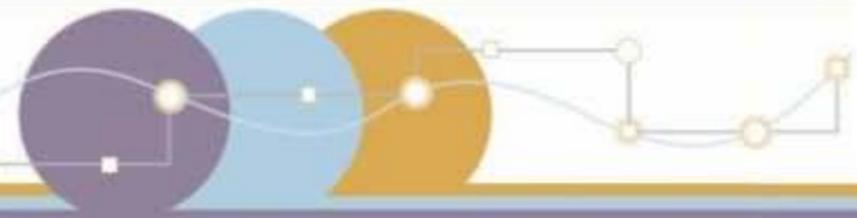
- Two of the three draft rulemakings for MAP-21 performance management are available – [Safety](#) and [Pavements/Bridges](#). The third performance management draft rulemaking, relating to freight and congestion, is currently slated for publication in September. Based on these (and assuming no changes in this area in the final rulemaking), so far we know ten performance measures that States and MPOs will be required to development targets for.
 - Number of fatalities on all roads
 - Rate of fatalities on all roads
 - Number of serious injuries on all roads
 - Rate of serious injuries on all roads
 - Percentage of pavements on the Interstate System in Good condition
 - Percentage of pavements on the Interstate System in Poor condition
 - Percentage of pavements on the NHS (excluding Interstate System) in Good condition
 - Percentage of pavements on the NHS (excluding Interstate System) in Poor condition
 - Percentage of NHS bridges classified as in Good condition
 - Percentage of NHS bridges classified as in Poor condition



MPOs Target Establishment – FHWA’s proposals

- Establish targets no later than 180 days after the respective State DOT(s) establishes their targets (23 USC 134(h)(2)(C))
 - Targets would be established for MPA area
 - Propose only 4-year targets
 - Coordinate with relevant State DOT(s) on the selection of targets to ensure consistency, to the maximum extent practicable (23 USC 134(h)(2)(B))
- Proposed 2 Target establishment options
 - agree to plan a program of projects so that they contribute to the adjusted State DOT target; or
 - commit to a new quantifiable target for the metropolitan planning area.

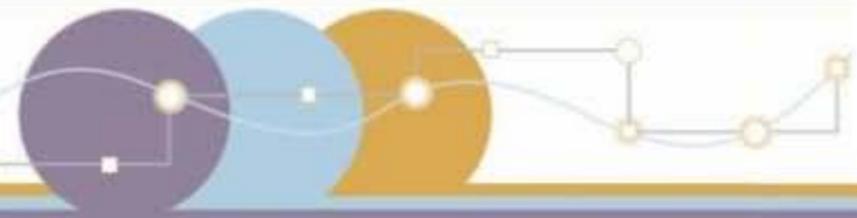




MPO Reporting Requirements and Proposals

- MPO would report established targets to State
- Metropolitan Transportation Plan/Long Range Transportation Plan to include: (23 USC 134(i)(2))
 - Performance targets,
 - System Performance Report
 - baseline condition/performance
 - progress toward the achievement of their targets
- Transportation Improvement Program
 - To the maximum extent practicable, describe the anticipated effects of investment priorities in achieving the targets and link investment priorities to performance targets (23 USC 134(j)(2)(D))





MPO Targets and Reporting – Additional Information

- 23 USC 150(e) requires State reporting on progress in achieving State established targets.
- Additional guidance:
 - Achieving targets should be a collaborative process.
 - MPOs would report progress to State as agreed upon
 - MPOs should coordinate with State on what achievement means and how it is measured.



Resources

- FHWA and FTA have good websites with performance-based planning resources, including the [Transportation Planning Capacity Building](#) website and FHWA's [Transportation Performance Management](#) website.
 - The [Performance-Based Planning and Programming Guidebook](#) gives a good overview of integrating performance management throughout the planning process.
 - [Model Long-Range Transportation Plans: A Guide for Incorporating Performance-Based Planning](#) focuses on incorporating performance-based planning throughout the LRTP, and includes examples from State DOTs and MPOs. Chapters 5 and 6 provide a good overview of crafting goals, objectives, and performance measures, as well as how to utilize performance measures.
 - [Performance-Based Planning for Small Metropolitan Areas](#) focuses on MPOs under 200,000 in population, and includes a couple case studies.

Resources

- [Let's Talk Performance webinar](#) from 3/10/15 – Charlottesville-Albemarle presentation Using Data to Make Smart Investments (presentation starts around 41 minute mark in webinar recording)
- <http://www.tjpd.org/LRTP/index.asp>
 - LRTP, lessons learned document, LRTP 101 video

Performance Measures

Measure	Description
Mobility	
Congestion	The total percentage of roads that will have a level of service E or F in 2040.
Delay	The total daily hours of delay that congestion will cause in the year 2040.
Mode Share	The percentage of trips across the four main travel modes, automotive, transit, bike and walk for 2040.
Vehicle Mobility	The total system-wide vehicle miles traveled for 2040.
Vehicle Crashes	The total system-wide crashes per year for 2040.
Bicycle Connectivity	The total percentage of bikable roads in the urban area.
Economy	
Access to Jobs	The average travel time to work.
Transit Accessibility	The percentage of population and the percentage of employed individuals within the MPO with access to transit.
Environment	
Habitat	The aggregate impact of projects on natural resources and habitats within 500 foot buffer of project.
Air Quality	The percent change in air quality gases and particulates in tons per year.
Water Quality	The percent change in the amount of stormwater pollutants in tons per year.
Flood Plain	The total acreage of flood plain within a 500 foot buffer of the projects.
Historical/Archeological Sites	The total number of historic or archeological sites within a 500 foot buffer of these projects.
Community	
Land Use	The total number of land parcels within a 500 foot buffer of the potential projects by usage: residential, comm./ind., parks, educ./religious/charitable, and agricultural/undeveloped.
Environmental Justice and Title VI: Transit Access	The total percentage of Environmental Justice or Title VI groups with access to transit: minorities, 65 and older, limited-English speaking, and household income of less than \$25,000.
Environmental Justice and Title VI: Impacts	The total percentage of Environmental Justice or Title VI groups <u>potentially impacted</u> due to projects: minorities, 65 and older, limited-English speaking, and household income of less than \$25,000.

Evaluation of Scenarios

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Performance Measurement	Base		Scenario 1A		Scenario 1B		Scenario 1C	
	Value	Unit of Measure	Value	% Change	Value	% Change	Value	% Change
Mobility								
Congestion (% of roads at LOS E or F)	14.1%	% of Roads	12.6%	10.5%	14.6%	-3.5%	12.9%	8.0%
Congestion (hours of delay per day)	23,181.0	Hours	20,187.0	11.6%	23,757.1	-2.5%	20,907.8	9.8%
Mode Share (percent of Trips)	759,319	Trips/Day	759,334	0.0%	759,488	0.0%	759,317	0.0%
Auto	88.1%	Percent of Trips	88.1%	0.1%	87.6%	0.7%	87.9%	0.2%
Transit	2.5%	Percent of Trips	2.5%	0.1%	3.1%	25.9%	2.6%	5.1%
Bike	2.7%	Percent of Trips	2.7%	0.2%	2.7%	-0.8%	2.7%	0.3%
Walk	6.7%	Percent of Trips	6.8%	0.9%	6.7%	-0.6%	6.8%	1.1%
Vehicle Mobility (vehicle miles traveled)	6,228,031.0	Miles/Day	6,145,450.8	0.6%	6,214,996	0.2%	6,193,388	0.6%
Vehicle Crashes (crashes per year)	2,865.0	Crashes/Year	2,827.0	1.3%	2,859.0	0.2%	2,849.0	0.6%
Bicycle Connectivity (% in largest connected area)	68.2%	% of largest area	73.4%	5.2%	79.2%	16.1%	81.6%	19.6%

Next steps

- Will continue to interpret MAP-21 rulemakings and work with MPOs on target setting and reporting process
- Specific areas where additional guidance is desired?