

IMR Long Range Transportation Plan:
Providing Access to America's Treasures

Preferred Scenario
Technical Report

December 10, 2013

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Introduction

The final planning scenarios workshop was held with the Core Team on September 30, 2013. The purpose of the workshop was to begin refining the preferred scenario as selected on September 24, 2013. This technical report expands on the ideas discussed at the workshop and in an earlier draft report, and it presents the refined preferred scenario for the for the long range transportation plan. A draft version of this report was submitted to the Core Team for review and comment. This final version incorporates those comments and responses.

The preferred scenario fulfills the vision developed early in the LRTP process by the planning team: *Providing Access to America's Treasures*. It is the evolution of three options developed in the *Planning Scenarios Technical Report*, October 3, 2013, and is constructed in two parts.

- **Maintaining Access** - The basic preferred scenario continues a “business as usual” approach in which the region strives to balance restricted financial resources with its wide-ranging mission and growing needs. It is financially constrained to match the existing funding stream. Due to anticipated funding limits, it is not expected to meet all needs identified in the planning process.
- **Improving Access** – In order to fully illustrate the full scope of needs, their costs, and strategies to meet those needs, the preferred scenario contains a financially unconstrained element. The vision plan shows how the region could meet all identified transportation needs by 2035. It builds on the “meet identified needs” scenario presented and discussed at length at the workshop. Improving Access is not financially constrained and would require additional funds that are not anticipated to be available at this time.

Overview of Preferred Scenario

General Description

- The preferred scenario blends elements of the original Scenario 1: Business as Usual and Scenario 3: Meet Identified Needs in a two-level plan.
- **Maintaining Access:**
 - Financially constrained.
 - Includes all of the original Scenario 1: Business as Usual scenario, with minor enhancements.
 - Represents how the IMR will address transportation issues with current funding.
- **Improving Access:**
 - Not financially constrained.
 - Designed to meet identified needs by 2035 with a financial input equal to the gap between funding and needs.
 - Approximately 15% total additional funds would be needed each year to achieve the full vision plan.
 - Provides opportunities to select additional strategies supported by partial supplementary funding.

This report emphasizes strategic actions that address multiple goal areas and key issues developed through the planning process. The Core Team reviewed a series of proposed strategies by goal area for both elements of the preferred scenario at the workshop on September 30, 2013. The strategies evaluated at the workshop have been slightly modified to

eliminate duplications, use strategic language, and arrange in a format that reflects their application to each level of the plan. The LRTP document will contain a chapter briefly describing each of the preliminary scenarios and emphasizing the preferred scenario.

The Core Team has an additional opportunity to review and revise these strategies before the preferred scenario is incorporated in the LRTP document. The strategies and performance measures will be circulated independently of this report for finalization.

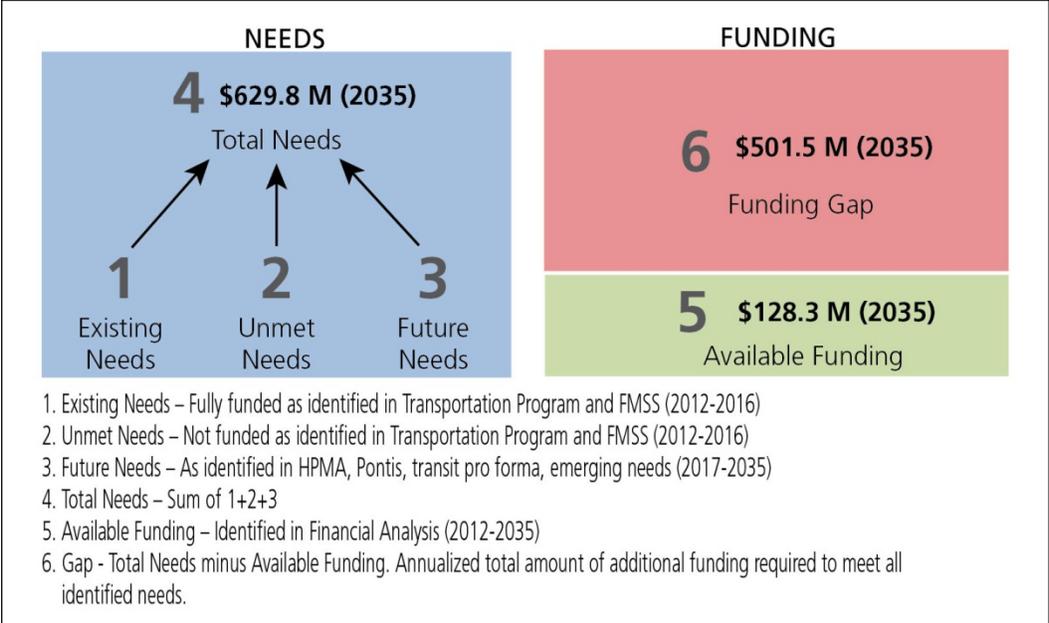
Total IMR Transportation Needs

The preferred scenario is designed to match implementation strategies with needs identified in the plan given two potential funding levels. The total gap between identified needs and funding is estimated to be \$502 million in 2035 (based on current practices).

- Maintaining Access matches those needs that can be met with existing financial resources.
- Improving Access matches unidentified additional funding to strategies designed to meet all identified needs.

Total IMR transportation needs were projected using a six-step process, combining existing, unmet, and future needs to identify all needs for all transportation requirements identified in the needs analysis. The sum of total needs was then compared to projected financial resources to identify the gap between the two. The sizable gap represents a significant challenge in operating and maintaining transportation at an acceptable level in the region’s parks. Figure 1 shows the conceptual relationship of total needs to available funding and the resulting gap, given current projected funding.

Figure 1. Identifying the Gap between Funding and Needs



The total gap between identified needs and available funding is projected to be \$502 million per year in 2035, with dollars expressed in year of expenditure (YOE). Figure 2 shows the growth in needs between 2015 and 2035 compared to the nearly flat growth in funding. Funding is assumed to increase at 2.1% annually to match the projected rate of inflation.

Figure 2. Total Needs and Funding Gap 2015-2035

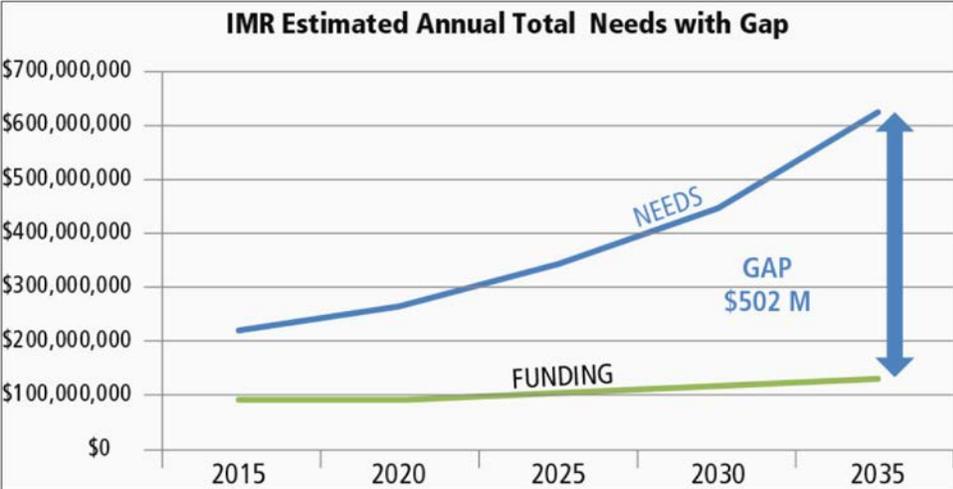


Figure 3 shows the same transportation needs (in YOE dollars) broken out into the five work types and compares to available funding in 2035. For more information on the methods used to determine available funding and needs, see *Financial Analysis Technical Report* and *Needs Assessment Technical Report*.

Figure 3. Total Need and Gap by Work Type

Total Needs and Gap by Work Type in 2035 (YOE)			
IMR TOTAL	2035 Needs	2035 Funding Forecast	2035 GAP
Maintenance	\$36,450,000	\$39,860,000	-\$3,410,000*
Component Renewal/Recapitalization	\$563,210,000	\$70,030,000	\$493,180,000
Capital Improvements/New Construction	\$4,670,000	\$2,170,000	\$2,500,000
Transit Operations	\$22,794,000	\$14,500,000	\$8,294,000
Planning	\$2,730,000	\$1,770,000	\$960,000
TOTAL NEED	\$629,844,000	\$128,330,000	\$501,514,000

* The Maintenance gap appears as a negative number in 2035 and is based on HMPA forecasts for pavement treatments. A “zero gap” in the Maintenance work type is actually achieved a year or so before the 2035 target. As conditions deteriorate over time and maintenance is deferred, the needs transfer to component renewal/recapitalization.

Preferred Scenario: Maintaining Access (Financially Constrained Element)

Maintaining Access - General Description

Maintaining Access continues activities with current funding. The Intermountain Region will carry on current programs, including provisions of the Capital Investment Strategy that direct a large percentage of funding to preserving high priority investments, i.e., asset management and maintenance, to the extent possible with existing funds. The majority of investments will necessarily occur on Class 1 and Class 2 roads and in public parking areas, but may be used on any facility depending on the project selection process.

Funding is based on an average 2.1% projected rate of inflation in total transportation funds. The financial projection is considered financially constrained to the amount reasonably expected to be available during the planning period. See *Financial Analysis Technical Report* for more information about how the projected funding stream was identified, including the assumed rate of inflation.

Key Elements

- Continue to focus on high priority assets.
- Maintenance and rehabilitation projects will be the target for most road, bridge, and existing transit facility assets.
- Yellowstone Grand Loop road program will continue at the current funding level.
- The pavement preservation program will continue at current funding levels using Cyclic Maintenance and FLTP fund sources.
- Planning efforts will continue as funding allows.
- Capital improvements will be made on a limited and competitive basis.
- Transit operations will continue to be funded under the Transportation Fee authority. All parks with a transit system have reached the capped fee limit (\$25), which is not sufficient to meet future needs.

Maintaining Access - Detailed Description

The Capital Investment Strategy served as the basis for the No Action Scenario during scenario analysis and is scheduled for full implementation by 2015. The No Action Scenario evolved to “Business as Usual,” and now to “Maintaining Access.”

The program implements core provisions of the Capital Investment Strategy as developed to date, focusing on prioritizing high value/high use assets in Bands 1 and 2 in parks that have completed the banding process. Remaining parks are expected to complete the banding process by the time of full implementation. The program strives to achieve the best balance of actions to preserve existing infrastructure in the best condition possible.

The program allocates approximately 86% of total IMR program funds (not including funds administered by the parks or the Washington Office) to asset management and other maintenance. Each of the other goal areas is addressed to some extent with current practices, but is not the principal focus of spending, generally due to funding restrictions.

Projects with non-transportation funding sources may also have beneficial impacts to transportation goal areas. For example, projects funded from other sources may also meet needs in the Visitor Experience or Resource Protection parts of the parks' missions.

Few new facilities have been built in recent years and will continue to be the case in coming years. The addition of new assets to the inventory imply additional future maintenance costs, which must be considered in project development through the Total Cost of Facility Ownership (TCFO) process. Given that current maintenance and reconstruction needs exceed available funding, new assets requiring even more on-going maintenance are seldom added to the inventory.

A key strategy for investment in goals other than Asset Management lies within the interrelated benefits in the LRTP goal areas of Mobility, Access and Connectivity; Visitor Experience; Resource Protection; and Sustainable Operations. Benefits from transportation projects often accrue to all goal areas. The plan fully recognizes cross-benefits of investments no matter the type of project or the source of funds.

These goals may also be strengthened by working with partners to leverage funds and by seeking grants and other sources of innovative solutions that add to total funds available for transportation. Partnerships may help achieve mutually beneficial goals.

Needs and Funding

Funding is based on an average annual 2.1% increase in total obligations to transportation assets, the average projected rate of inflation. This rate of increase is considered financially constrained to the amount reasonably expected to be available during the planning period.

- Financially constrained to \$88.3 million (2015 dollars). This sum represents the average annual obligations from major funding sources from 2007-2011.
- Funding projections use a standard 2.1% annual growth rate, keeping pace with inflation.
- Federal Land Transportation Program (FLTP) funds constitute approximately 61% of total funds available to the region.
- All other fund sources together constitute approximately 39% of total funds available to the region.
- The Pavement Preservation Program includes all paved assets using FLTP and Cyclic Maintenance funds.
- Capital improvements/new construction will be limited due to availability of funds.
- Rehabilitation and recapitalization projects will be funded based on available funds, with priority given to Class 1 and Class 2 roads and parking (publicly accessible assets).
- The IMR will continue its current funding for the Yellowstone Grand Loop program at approximately \$11 million per year as well as seek supplemental funding to accelerate the project.
- The IMR will continue its current funding for the Going to the Sun Road recapitalization (major reconstruction) at \$8 million/year through FY 2014.
- Transit operations will be funded with Transportation Fee funds. Parks may seek approval for Transportation Fee increases through the WASO Fee Program.

Figure 4 shows the accelerating growth in the gap between needs and funding. This serves as a useful illustration of just how far apart these two lines are and the inability of current funding to keep up with expanding needs.

Figure 4. Maintaining Access: Needs vs. Funding

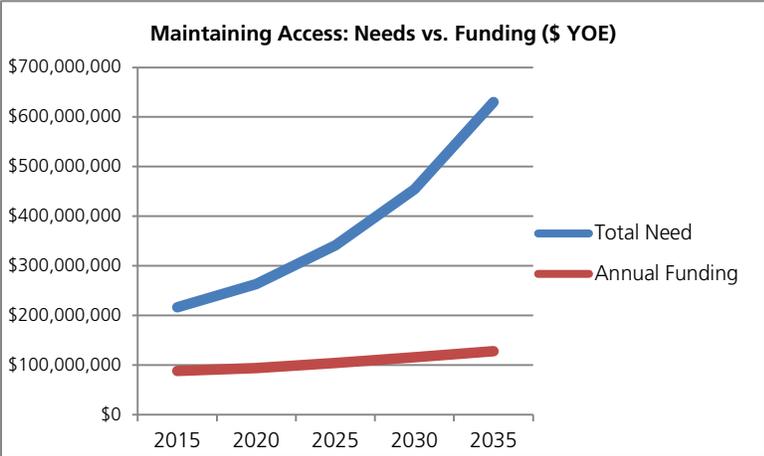


Figure 5 shows the distribution of transportation needs to the five work types in five-year increments from 2015 to 2035. This is essentially a tabular representation of the line graph in figure 4. The funding gap on the bottom line represents the difference between total needs and the available funding for that year. All dollars are in YOE meaning that they have been inflated at the assumed 2.1% inflation rate.

The largest area of growth in needs by far is in the Component Renewal/Recapitalization work type. This is generally because maintenance cycles will not keep up with recommended schedules resulting in a need for more and more reconstruction, which is expensive in comparison to regular maintenance treatments.

Figure 5. Maintaining Access: Needs - Funding - Gap

Base Plan: Maintaining Access – Needs – Funding – Gap (\$ YOE)					
WORK TYPE	2015	2020	2025	2030	2035
Capital Improvements/New Construction Needs	\$3,230,000	\$3,820,000	\$4,070,000	\$4,350,000	\$4,670,000
Maintenance Needs	\$31,200,000	\$38,100,000	\$13,300,000	\$63,000,000	\$9,400,000
Component Renewal/Recap Needs	\$166,080,000	\$202,430,000	\$303,490,000	\$363,840,000	\$590,260,000
Transit Operations Needs	\$13,984,000	\$16,656,000	\$18,494,000	\$20,544,000	\$22,794,000
Planning Needs	\$2,220,000	\$2,330,000	\$2,450,000	\$2,580,000	\$2,730,000
Total Needs	\$216,714,000	\$263,336,000	\$341,804,000	\$454,314,000	\$629,854,000
Annual Funding	\$88,290,000	\$93,960,000	\$104,240,000	\$115,660,000	\$128,330,000
Funding Gap	-\$128,424,000	-\$169,376,000	-\$237,564,000	-\$338,654,000	-\$501,514,000

Key Findings

The following key findings from previous technical reports and research during the planning process were identified as those that can best be addressed by Maintaining Access. The list is brief and leaves many needs unaddressed as the result of limited funding. Please see *Baseline Conditions*, *Macro Trends for Transportation*, *Financial Analysis*, and *Needs Assessment* technical reports for additional information.

All the key findings from the above documents were examined for their overlaps and the ability of the preferred scenario to address them. This report synthesizes the relevant aspects and eliminates duplication, since many of the same findings run as a thread through all the work to date. This approach led to dropping the hard link to key findings reported in the original documents and focusing on a consolidated look at key findings throughout the planning process. Each key finding should have a strategy that addresses the identified problem. However, there is a lot of overlap and not a one-to-one relationship between findings and strategies. For instance, a single strategy may address more than one finding.

The Core Team will provide additional review to ensure that the LRTP includes the most appropriate key findings, strategies to address them, and performance measures.

Figure 6. Key Findings to Address with the Preferred Scenario: Maintaining Access

Key Findings to Address with the Preferred Scenario: Maintaining Access
<ul style="list-style-type: none"> • Total financial resources for transportation are currently limited to about \$88 million annually, with inflation growth to about \$128 million by 2035, leaving a large gap in funds to address identified needs. • Declining regional roadway and parking area pavement conditions are major components of accelerating costs and of poor results in visitor experience. Maintaining Access makes the best possible use of available funds to improve asset conditions on targeted high use/high value assets. • Total Cost of Facility Ownership has not historically been an integral part of transportation project cost analysis and project selection processes. The preferred scenario links the Capital Investment Strategy and Total Cost of Facility Ownership to decision making. • Vehicle crashes and the safety of visitors are a significant concern, especially in congested parks and those with narrower roads and limited shoulders. Over 22,000 crashes were reported from 1990 to 2005. • Wildlife/Vehicle crashes constitute 17% of all crashes in the region, with much higher rates in some parks. Impacts to wildlife resources and visitor experience are significant, especially in those parks with abundant large animals or threatened/endangered species proximate to roadways. • The costs of cultural resource management, including historic assets and natural resources, have escalated in recent years. Such costs for maintenance and mitigation of impacts should be fully incorporated (as in FLTP projects) in project planning and design under all fund sources. • Many parks lack the staffing and other resources to understand and plan appropriate transportation improvements and maintenance, requiring support from the Intermountain Region and other NPS units. Pavement, bridge, safety, congestion, planning, data collection, and information management often require detailed analysis to support suitable project selection within given funding limits.

Strategies and Performance Measures for the Preferred Scenario

Performance measures have been selected to support the strategies addressed by the preferred scenario. A fully developed performance measurement program typically measures the progress toward a goal, or target. This LRTP does not establish performance targets, but relies on both quantifiable and subjective measures. It relies on metrics that are obtainable through existing data. Where possible, the actual numbers should be reported. For example, Pavement Condition Rating (PCR) values are readily available and can be reported as year over year or cycle over cycle changes. This simply provides a measuring stick to determine if things are getting better, getting worse, or remaining about the same. Additional development of a more robust performance measure program should be considered as part of a future LRTP update, or at the national level for development at the regional level.

Effective Strategies Contribute to Multiple Goals

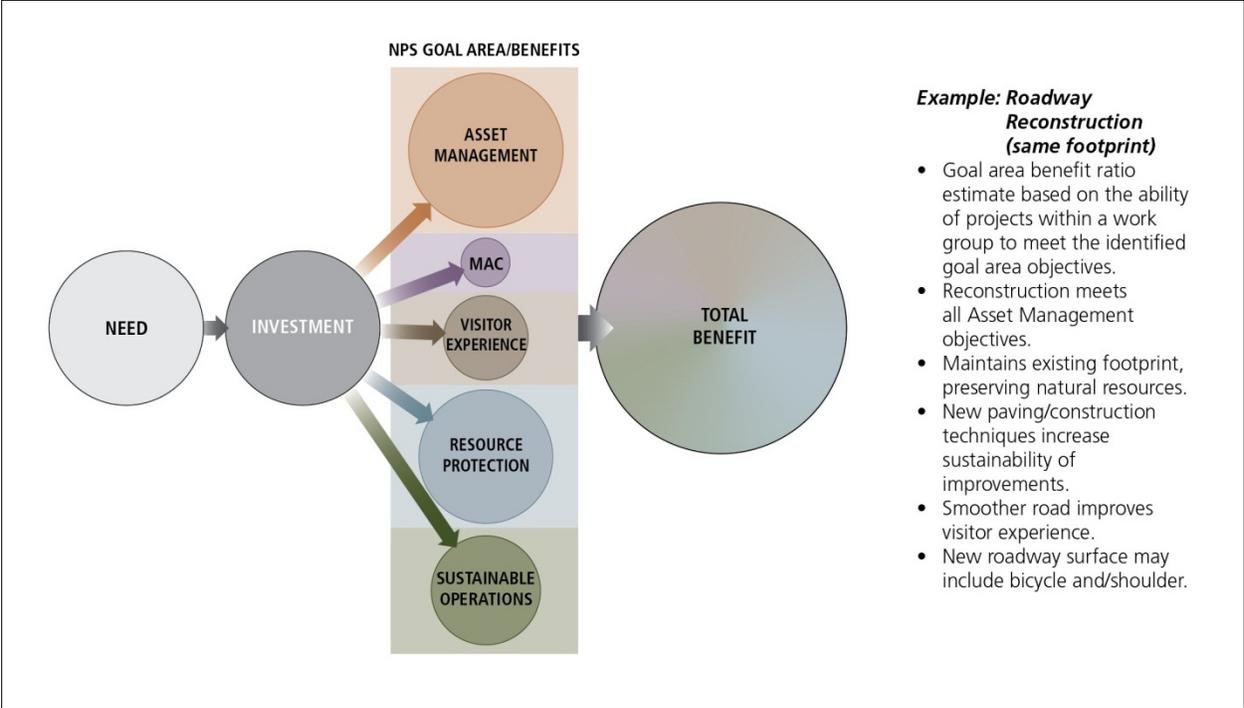
The Preferred Scenario links needs to improvements in goal achievement by action. Key issues from the plan are related to the type of work that would improve conditions, with the benefits distributed to the five planning goal areas:

- Asset Management
- Mobility, Access, and Connectivity
- Visitor Experience
- Resource Protection
- Sustainable Operations

For example, as shown in Figure 7, improving pavement conditions through roadway rehabilitation (a prominent issue documented throughout the planning process) is demonstrated to contribute to benefits in other goal areas. The value of the original investment is multiplied by reducing the costs of future maintenance, improving mobility and safety, reducing congestion, mitigating resource impacts, and sustaining the existing infrastructure.

The effect is that a given investment in a single work type typically results in a net beneficial effect across other goal areas that are greater than the original investment. Other improvement types would yield a different proportion of benefit across the goal categories.

Figure 7. Investment Benefit to Goal Multiplier



URS Note: The chart above is intended as a conceptual example of the effects of investments in one type of project. While we think this is a useful concept to carry forward in the LRTP, we expect to update the graphic to better explain the relationships between needs, investments, and benefits. Look for a future updated version.

Figure 8 on the next page shows the recommended strategies and performance measures for Maintaining Access. The chart also assigns responsibility for implementation and notes the cross benefits to LRTP goal areas from each action. This chart is draft pending further review.

Figure 8. Maintaining Access: Strategies and Performance Measures

MAINTAINING ACCESS: STRATEGIES and PERFORMANCE MEASURES										
Strategies		Responsibility			Benefits to LRTP Goals					Performance Measures
		Region	Parks	WASO	Asset Management	Mobility, Access & Connectivity	Visitor Experience	Resource Protection	Sustainable Operations	
ASSET MANAGEMENT	Utilize approved NPS criteria, including CIS core principles, TCFO, and Management System data for project selection	x	x	x	X	x	x	x	x	Asset Management Performance Measures <ul style="list-style-type: none"> Pavement Condition, measured as change in PCR for Class 1 and 2 roads and public parking areas Transportation facilities condition, measured by change in FCI Deferred Maintenance
	Deploy Regional Pavement Preservation Program on public use facilities	x			X	x	x	x	x	
	Apply Cyclic Maintenance funds as available to main park roads and parking using HPMA outputs	x	x		X	x	x		x	
	Assist parks with engineering and other technical support	x			X				x	
	Address Nationally Significant Projects at current IMR funding levels	x			X	x	x	x	x	
Manage multi-year program with flexibility to develop shelf projects	x			X	x	x	x	x		
MOBILITY, ACCESS & CONNECTIVITY	Provide leadership and guidance to transit plans, including completion of transit system <i>pro forma</i> on a regular basis	x		x		X	x		x	Mobility, Access & Connectivity Performance Measures <ul style="list-style-type: none"> Financial status of NPS-operated transit systems, measured in percent of operations and capital needs funded for next five years Obligations to multimodal components in projects Partnering efforts (documented in plans or obligated) toward enhanced connections with gateway communities Reduction in current identified barriers to the transportation system for people with disabilities
	Support existing major transit systems planning with infrastructure/service improvements/recapitalization, as funding permits	x				X	x		x	
	Support multimodal planning projects at regional and park levels	x	x			X	x	x	x	
	Promote universal access during planning and project development	x	x			X	x			
	Enhance park communications with gateway communities, as funding permits	x	x			X	x			
VISITOR EXPERIENCE	Develop additional visitor experience transportation project selection criteria	x	x		x		X		x	Visitor Experience Performance Measures <ul style="list-style-type: none"> Obligations/number of projects supporting to traveler information projects Change in congestion as reported by congestion management strategy Obligations Change in crashes as reported in STARS
	Develop traveler information projects	x	x			x	X			
	Develop congestion management strategy	x	x	x		x	X			
	Develop safety management strategy	x	x	x			X			
	Continue bicycle and road safety assessments, as funding permits	x				x	X			
RESOURCE PROTECTION	Survey and record natural/cultural resources at transportation project sites		x					X		Resource Protection Performance Measures <ul style="list-style-type: none"> Acreage returned to natural resource from transportation use Obligations specific to resource enhancement (can this be identified?) Number of vehicle/wildlife collisions per mile of road
	Support and document revegetation and landscape restoration efforts on transportation projects		x				x	X		
	Consider redesign/relocation of existing facilities that impact sensitive resources	x	x					X		
	Support fish and other wildlife crossings and passage in transportation project design	x	x					X		
	Monitor air quality in parks within air quality non-attainment areas	x						X	x	
SUSTAINABLE OPERATIONS	Evaluate options to reduce deferred maintenance including acceptance of worsening conditions, exploring closures	x			x	x	x		X	Sustainable Operations Performance Measures <ul style="list-style-type: none"> Annual change in Deferred Maintenance for transportation assets Complete adaptive management framework Amount obligated as NPS share of innovative funding strategies Acreage/number of transportation facilities removed Percentage of projects obligated
	Review transportation assets for removal/decommission consistent with CIS principles	x	x		x			X	X	
	Provide transportation-related support to parks completing Climate Change Action Plans		x						X	
	Develop adaptive management framework to respond to challenges as they evolve	x			x	x	x	x	X	
	Work with partners to leverage available funds	x	x						X	
	Maintain regular communication with local, state, and federal stakeholders	x		x					X	
	Encourage all transportation plans to support sustainability efforts, including economic, social, and environmental	x	x		x	x	x	x	X	
Prioritize LRTP data gaps and work with WASO and others to resolve high priority gaps	x		x	x				X		

Maintaining Access - Performance

The projected outcome of the Preferred Scenario: Maintaining Access has significant tradeoffs. The general effect of investing only at current levels will be to maintain access for visitors, but at less than desirable levels. Funds are available to address many needs, but will not be adequate to directly or fully support the full range of LRTP goal areas.

The long-term picture is also poor with respect to the backlog of needs:

- The gap between funding and needs will grow from \$128 million in 2015 to \$502 million in 2035 (YOE dollars), largely as the result of not affording optimal maintenance projects and schedules, allowing assets to eventually degrade to a point where more expensive reconstruction will be required.
- Despite localized improvements on individual facilities, the regional average PCR will continue to decline over time. While adequate PCR is not the only goal of an effective transportation system, it is indicative of the general health of the overall system.
- Transit systems will not be adequately supported by revenues from existing Transportation Fees.

Asset Management

Asset Management will see a large unfunded gap, growing over time, largely due to the inability to fully fund maintenance and component renewal/recapitalization needs. The regional program will emphasize maintenance needs on highest priority assets.

Maintaining Access focuses on using FLTP and Cyclic Maintenance funds to support the regional pavement preservation program on highly used and other assets critical to the parks' missions.

While conducting cyclic maintenance will extend the useful service life of treated roads, the focus on short term needs will not allow the Intermountain Region to reduce longstanding Deferred Maintenance. As a result, additional roadway PCR will decline and require more extensive heavy 3R reconstruction in the future. Most heavy 3R reconstruction will not be affordable under this scenario.

Under current funding, the region will see a continued overall decline in transportation asset condition, including pavement. The average PCR of IMR roads is estimated to decline from 69.7 in 2015 to 65.1 in 2035. The gap between available funds and Deferred Maintenance is projected to grow from \$432 million to \$576 million during that time.

The relationship between falling PCR and growing DM is shown in figure 9.

Figure 9. Maintaining Access: Pavement Condition Rating & Deferred Maintenance

Pavement Condition & Deferred Maintenance	2015	2020	2025	2030	2035
Average PCR	69.7	68.1	66.4	67.4	65.1
DM Gap (85 PCR)	-\$432 M	-\$489 M	-\$539 M	-\$510 M	-\$576 M

Mobility, Access, and Connectivity

Mobility, Access, and Connectivity will be addressed by existing transit systems as possible through Transportation Fees, which are capped at \$25. Other Mobility, Access, and

Connectivity needs such as access, congestion mitigation, and multimodal projects will also only be addressed to the extent these needs may be included during project planning, design, and implementation. General performance in the goal area will not improve.

Major service improvements or additions to NPS-operated transit systems will not be possible, absent increases in fees or other funding. The visitor experience in congested parks that depend on transit services for effective operations will continue to present a challenge to park managers.

Visitor Experience

Visitor Experience will be addressed with existing limited funding, planning, and to the extent these needs may be included during project planning, selection criteria, design, and implementation. General performance in the goal area will not improve.

Resource Protection

Resource Protection will be addressed by supporting documentation of conditions and to the extent these needs may be included during project planning, selection criteria, design, and implementation. General performance in the goal area will not improve.

Sustainable Operations

Sustainable Operations will be addressed by participating in planning activities, enhancing communications as possible, and to the extent these needs can be addressed with current funding. The regional program will focus on maintenance and rehabilitation of assets to keep them in good condition. General performance in the goal area will not improve.

Other NPS initiatives, including the *Call to Action*, the *Green Parks Plan*, and the *NPS Integrated Climate Response Strategy* intended to improve the parks' relationships with visitors, natural and cultural resources, and nearby communities will see little financial support as IMR financial resources remain focused on keeping the existing transportation system operational. Funding for these policies must come from programs other than FLTP or be rolled into project development and delivery as possible.

Preferred Scenario: Improving Access (Financially Unconstrained Element)

Improving Access – General Description

Improving Access represents a vision plan that calculates the costs to meet all needs identified in the *Needs Assessment Technical Report*. It requires an approximate 15% increase in average annual total funds for transportation. Improving Access is characterized as not financially constrained, since no additional funds can be guaranteed.

Additional funding could come from an increase in the next federal transportation reauthorization, “Centennial funding,” leveraged partnerships, innovative funding, endowments, corporate sponsorships, or other stimulus boost. The Preferred Scenario does not identify specific targets or sources for the additional funds.

This element can be approached as a menu of possible additional actions if additional funding is made available to the transportation program, including to Operations of the National Park System, repair and rehabilitation, cyclic maintenance or other funding sources. For example, individual strategies could be chosen for implementation if partial additional funding is forthcoming.

Key Elements

- Additional funds to meet all needs are calculated for each year during the 20-year planning period.
- Recapitalization and maintenance funding are increased to reach zero unmet need in 2035.
- Capital and planning needs are fully funded.
- Transit operations for existing NPS-owned transit systems are fully funded.
- Additional transit systems may be considered in parks where transportation plans recommend transit as a necessary component of the system.
- Full implementation of the Vision Plan would achieve a sustainable maintenance level by 2035.

Improving Access - Detailed Description

Improving Access is designed to address all needs described in the *Needs Assessment Technical Report* across all work types. This plan will achieve substantial improvements in all LRTP goal areas. Most importantly, it erases the gap in Deferred Maintenance and achieves an estimated average PCR 85 by 2035, which can then be maintained over time. The system achieves a sustainable rate of equilibrium.

These gains can be achieved only with an increase in funding. The gains are made possible by early intervention in the Deferred Maintenance issue, preventing its rapid-paced growth. The vision element forms a useful cost comparison to the financially constrained element and describes actions to implement the required investments to achieve LRTP goals. The Core Team determined that matching required funds to meet all known and quantifiable needs constitutes a valid and reasonable approach for analysis purposes. The plan acknowledges that some future needs are unknown or unquantifiable at this time.

Need and Funding

- Additional funds (approximately 15% of total funds available for transportation) are required to meet all identified needs. The source or amount of any future funds is uncertain.
- Component renewal/recapitalization needs are fully met by 2035.
- Pavement Preservation Program cycles for treatment will be shortened to and held at eight years, as recommended by HPMA.
- Capital Investment Strategy is continued, increasing the scope of potential target assets as funds become available in the long term.
- Deferred Maintenance is substantially decreased.
- Transit operations and capital renewal for existing and proposed new systems are fully funded.
- All identified capital improvement needs are fully met.
- All identified planning needs are fully met.

Figure 10 shows the convergence of funding with needs by 2035, creating a stable environment for maintenance beyond this point.

Figure 10. Improving Access: Needs vs. Funding

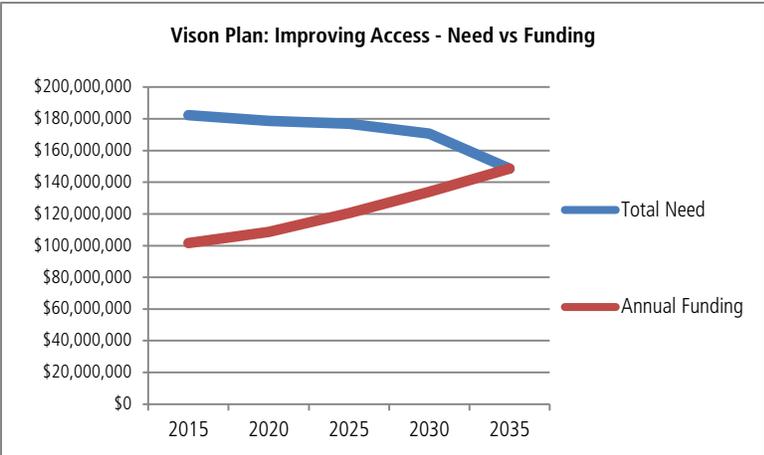


Figure 11 show the distribution of needs within the five work types. By investing heavily and early in the Component Renewal/Recapitalization work type through major reconstruction projects that reset the pavement life cycle, total costs can be brought under control and addressed more readily through cyclic and regular maintenance.

Figure 11. Improving Access: Needs - Funding - Gap

Improving Access: Needs - Funding – Gap (YOE)					
WORK TYPE	2015	2020	2025	2030	2035
Capital Improvements/New Construction Needs	\$3,230,000	\$3,820,000	\$4,070,000	\$4,350,000	\$4,670,000
Maintenance Needs	\$12,100,000	\$10,900,000	\$21,800,000	\$25,900,000	\$34,400,000
Component Renewal/Recap Needs	\$146,990,000	\$142,389,000	\$127,200,000	\$113,990,000	\$66,480,000
Transit Operations Needs	\$13,984,000	\$16,656,000	\$18,494,000	\$20,544,000	\$22,794,000
Planning Needs	\$2,220,000	\$2,330,000	\$2,450,000	\$2,580,000	\$2,730,000
Total Needs	\$182,320,000	\$178,749,000	\$176,940,000	\$170,600,000	\$134,660,000
Base Annual Funding	\$88,290,000	\$93,960,000	\$104,240,000	\$115,660,000	\$128,330,000
Additional Asset Mgt Funds	\$10,000,000	\$11,100,000	\$12,300,000	\$13,700,000	\$15,200,000
Additional Transit Funds	\$3,300,000	\$3,630,000	\$4,020,000	\$4,460,000	\$4,960,000
Total Annual Funding	\$101,590,000	\$108,690,000	\$120,560,000	\$133,820,000	\$148,490,000
Funding Gap	-\$80,730,000	-\$70,059,000	-\$56,380,000	-\$36,780,000	\$13,830,000*

* Note: The financial model shows all identified needs are met in 2034, resulting in a small surplus in 2035. The complex interplay between cyclic maintenance, reconstruction and the required assumptions about life cycles prohibit the financial/needs model from reliably attaining a precise "zero needs" in 2035. This result appears adequate from a long range planning perspective. Essentially, there are "zero needs" in 2035, because this benchmark occurred a year earlier. We could characterize this number as \$0 in the final report, but wanted to be faithful to the math for the time being. The Core Team is invited to comment.

Key Findings

The following key findings synthesized from previous technical reports and research during the planning process was identified as those that can best be addressed by the Vision Plan. Please see *Baseline Conditions, Macro Trends for Transportation, Financial Analysis, and Needs Assessment* technical reports for additional information. The Vision Plan has the ability to fully address the needs described by key findings documented during the planning process and build on those that can be addressed by the Base Plan.

The Core Team will provide additional review to ensure that the LRTP includes the most appropriate key findings, strategies to address them, and performance measures.

Figure 12. Key Findings to Address with Improving Access

Key Findings to Address with Improving Access
<ul style="list-style-type: none"> • Improving Access offers the opportunity to fully address Deferred Maintenance and the gap between funding and needs. The largest component of Deferred Maintenance (78% of all identified needs) is related to pavement costs. The ability to more effectively address life cycle costs reduces growth (6% annual growth) dramatically, to the point regular and cyclic maintenance will be able to keep pace with the life cycle by 2035. • While regional average PCR is expected to decline to 65 under current funding, the vision plan could improve the system to 85 PCR. This marker provides a useful point for comparison, but does not represent an adopted PCR target. • Current Category III funding and Transportation Fees are not sufficient to meet future transit capital and operations costs. • Most transit systems are congested during the peak season. Several parks have documented the need for new or extended transit service, but appropriate funding is not identified. • Parks have limited options to improve vehicular congestion, which could be improved with enhanced operations and congestion management tools. • Additional research and planning could assist parks in understanding the relationship between transportation, visitation, visitor experience, resource impacts, and sustainable operations. • The interrelationships of climate change, wildfire risks, and habitat fragmentation with transportation is not fully understood or addressed. Additional study and planning will help integrate such risk analysis in adaptive management strategies. • The costs to maintain and restore historic roads have been growing even faster than many other asset management categories. Additional funds would make it more possible to conduct maintenance and restoration projects on their own merit, rather than adjunct to other types of projects. • The number and severity of vehicle crashes is focused in highly visited or congested areas. A comprehensive system to address safety issues is lacking. • Communications technology and the potential benefits to visitor experience, congestion, and safety should be more effectively understood and implemented. • Enhanced efforts to explore and support planning partnerships could lead to opportunities for additional funding through non-traditional sources. • The effects and costs of non-recreational visitation impacts in parks with heavily used commuter routes should be more fully explored with partners. • The evolution of park visitor demographics, including age, ethnicity, recreational desires, and international visitation has unknown effects on long-term visitation and visitor experience. The effects, costs, and benefits of diversity among park visitors could be more fully explored and appropriate enhancements put in place.

Figure 13 on the next page shows the recommended strategies and performance measures for Improving Access. The chart also assigns responsibility for implementation and notes the cross benefits to LRTP goal areas from each action. **This chart is draft pending further review.**

Figure 13. Improving Access: Strategies and Performance Measures

IMPROVING ACCESS: STRATEGIES and PERFORMANCE MEASURES										
Strategies		Responsibility			Benefits to LRTP Goals					Performance Measures
		Region	Parks	WASO	Asset Management	Mobility, Access & Connectivity	Visitor Experience	Resource Protection	Sustainable Operations	
ASSET MANAGEMENT	Address component renewal, regular maintenance, and cyclic maintenance on HPMA recommended schedules for all public facilities	x	x		X	x	x	x	x	Same as Maintaining Access
	Apply additional funds to Nationally Significant Projects, as available	x		x	X	x	x	x	x	
	Fully fund transit recapitalization needs	x	x	x	X	x	x		x	
	Expand assistance to parks with engineering, safety and other infrastructure technical support	x		x	X				x	
	Establish and implement bridge maintenance process and program	x			X				x	
MOBILITY, ACCESS & CONNECTIVITY	Fully fund existing transit operations	x		x		X	x		x	Same as Maintaining Access
	Consider sustainable new transit systems per park plans	x	x			X	x		x	
	Conduct regional assessment of needs for improved park/gateway community (or urban area) connectivity	x				X	x		x	
	Provide additional financial support for multimodal and enhanced connections with gateway communities	x				X	x		x	
VISITOR EXPERIENCE	Plan, design, and implement a comprehensive visitor information system:	x	x				X			Same as Maintaining Access
	a) Pre-trip planning	x	x				X			
	b) En route information	x	x				X			
	c) Enhance ITS to improve real-time parking, congestion, and other information	x	x				X			
	Implement congestion management system	x	x	x		x	X			
Implement safety management system	x	x	x		x	X				
RESOURCE PROTECTION	Relocate or decommission assets with impacts to sensitive resource areas	x	x		x			X	x	Same as Maintaining Access
	Use Safety Management System and Best Practices to reduce, mitigate or avoid animal/vehicle crashes	x	x				x	X		
	Mitigate fish and other wildlife obstructions from existing transportation facilities	x	x					X		
	Enhance air quality by reducing congestion or other mitigations in parks, especially in non-attainment areas	x	x					X	x	
SUSTAINABLE OPERATIONS	Develop Regional Climate Change Action Plan, including adaptation and mitigation strategies and new selection criteria as part of project design and construction	x			x			x	X	Same as Maintaining Access
	Engage in all state DOT, MPO, and relevant local and regional planning processes	x	x						X	
	Partner with regional communities to mitigate external development impacts to parks, including viewsheds, wildlife, air and water quality	x	x				x	x	X	
	Explore and develop innovative funding sources	x							X	
	Eliminate data gaps identified in LRTP tied to performance measures in the plan	x		x	x				X	

Improving Access - Performance

Given the “financially unconstrained” nature of the Improving Access element of the preferred scenario, all needs identified in the *Needs Assessment Technical Report* would be fulfilled by 2035.

The vision plan enables the majority of paved publicly available roadways and paved public parking areas to be brought to an acceptable condition by reconstructing those pavement assets that require 3R projects and by applying HPMA recommended treatments on schedule. Thereafter, cyclic and regular maintenance will be able to sustain pavement condition at acceptable levels for the duration of the planning cycle.

The preferred scenario recognizes the limitations in the needs assessment methodology as applied to other goal areas. The most reasonable available method to forecast needs in other goal areas at the regional level is contingent on extending the history of projects in the five work types, plus readily identified future needs (mostly near-term or otherwise identified in existing plans) to 2035. Individual project long-term needs have not been identified in detail, beyond pavement and transit needs. The extended needs serve as a surrogate for the sum of needs by work type. This approach provides a reasonable assessment of gross needs in all work types and the associated goal areas.

Asset Management

The region will continue to apply core Capital Investment Strategy principles to high priority asset management projects, demonstrating a commitment to operations and maintenance as a priority. It will continue to focus on Class 1 and Class 2 roads and public parking in the near term, using the Capital Investment Strategy as the principal tool for project selection. This strategy will begin to show benefits in improved region-wide PCR in the mid-term, gaining enough ground to refocus on Classes 3 - 8 in the long-term.

The net effect of attaining acceptable pavement condition through reconstruction followed by regular treatments is to free funds for application to other types of need. The 20-year outlook shows a shift in need from reconstruction to maintenance as roadways are brought up to standards, thereby allowing subsequent lifecycle extensions through regular and cyclic maintenance. The general effect will be to significantly improve access for visitors in all goal areas through the application of funds across the full spectrum of needs, especially in the later years of the planning period.

The scenario includes major reconstruction projects, particularly the Yellowstone Grand Loop reconstruction, so as to complete it within the planning period (by 2035). Approximately 135 miles of the 254 mile Grand Loop have been reconstructed in recent decades, with the remaining 119 miles completed under Improved Access.

The average PCR of IMR roads is estimated to improve from 69.7 in 2015 to (nearly) 85 in 2035. Progress in PCR and Deferred Maintenance will be especially vital in view of the Centennial Year of 2016. The large improvement in PCR and reduction in Deferred Maintenance results in the heavy investment in early years of the planning cycle, extending pavement life to the point that minor surface treatments will keep pavement in good condition for the foreseeable future.

The envisioned increase in funding (approximately \$11 million per year) for Asset Management projects will enable a reasonable number of additional assets to receive treatment in each five year cycle, reducing backlog to manageable levels by 2035. The NPS currently spends about \$20 M per year in Yellowstone, including IMR FLTP funds and other direct allocations by the NPS to the project.

Figure 14. Vision Plan: Pavement Condition Rating & Deferred Maintenance

Pavement Condition & Deferred Maintenance	2015	2020	2025	2030	2035
Average PCR	69.72	72.54	74.83	78.3	84.33
DM Gap (85 PCR)	-\$432 M	-\$352 M	-\$287 M	-\$188 M	-\$17 M*

*URS note: The small remaining DM in 2035 is a result of the average PCR just below 85, based on URS estimates. The remaining DM gap is approximately 4% of the existing DM gap, with the forecast trajectory being one of a continued reduction in DM over time past 2035. The 4% of existing DM is well within any error range that would bound established forecasts. The forecasts were made by selecting individual assets for treatment over time, thus there were hundreds, if not thousands of individual assumptions made. As a result, the 2035 forecast is more of an estimate of magnitude rather than a precise anticipated condition. Depending on when/which projects are actually selected for pavement preservation treatments affect the rate of improvement. URS believes the table above is within a useful margin of error.

Mobility, Access, and Connectivity

Maximum improvements are available to all aspects of Mobility, Access, and Connectivity, including congestion relief. Existing transit systems are fully funded, with new systems possible at ARCH, LIBI, and BAND per plans that include transit as a preferred alternative. Better connections can be established with gateway communities. Safety needs are met as part of roadway improvement projects, and major pedestrian/non-motorized facilities can be completed. Improving Access will see the development and implementation of safety and congestion management systems.

Visitor Experience

Visitor Experience is improved with fully operational transit systems, improved communications/information infrastructure and operations, and wayfinding. The NPS can take advantage of emerging technologies that improve all aspects of transportation for managers and visitors, alike. The visitor experience in high visitation parks will be significantly improved by lowering congestion and reducing vehicle crashes. Improved transit services may also provide better access and connections to gateway communities than is currently possible.

Resource Protection

Resource Protection will be improved by mitigating or reducing environmental impacts related to transportation. Improvements may also be possible by removing or repurposing underutilized transportation assets and restoring sites to a natural condition. Other progress in the goal will occur due to improvements in transit availability and less dependence on private vehicles and accompanying tailpipe emissions, reduction in vehicle/wildlife collision rates, habitat fragmentation, and other impacts to natural and cultural resources.

Sustainable Operations

By definition, Improving Access provides a financially stable and sustainable future. Implementation of the Vision Plan will help the National Park Service decrease the agency’s total deferred maintenance.

Sustainable Operations will be substantially improved by fully funding all operations over the long term, addressing climate change at the regional level, engaging partners in mutually beneficial programs, and providing better relationships between parks and communities.

Other NPS Initiatives

The National Park Service has embarked upon several initiatives (in addition to the Capital Investment Strategy) designed to address special challenges for the agency in the near, medium, and long terms.

The NPS initiatives, including the *Call to Action*, the *Green Parks Plan*, and the *NPS Integrated Climate Response Strategy* will improve the parks' relationships with visitors, natural and cultural resources, nearby communities, and the agency's ability to adapt to and mitigate the projected effects of climate change.

Each has a high level of urgency for the agency. In some cases, appropriate responses may be integrated into IMR management strategies and day to day business without undue costs. In other cases, implementing the vision incorporated in the initiatives will require additional financial investments

The vision plan will open opportunities to address each of the initiatives in a meaningful and productive way. Significant strides will be made toward full implementation. For more information about the initiatives addressed here, see *Macro Trends for Transportation Technical Report (October 2012)*.

Preferred Scenario – Overall Performance

Performance of the preferred scenario is expressed in a “dashboard” (see Figure 15). The gauges rate expected benefits to the LRTP goals in a range of getting better to getting worse as compared to current conditions.

The gauges represent the overall performance of the preferred scenario as well as within each goal area for both Maintaining Access and Improving Access. Benefits to each LRTP goal are estimated based on the percent of need that can be met given available financial resources.

Maintaining Access

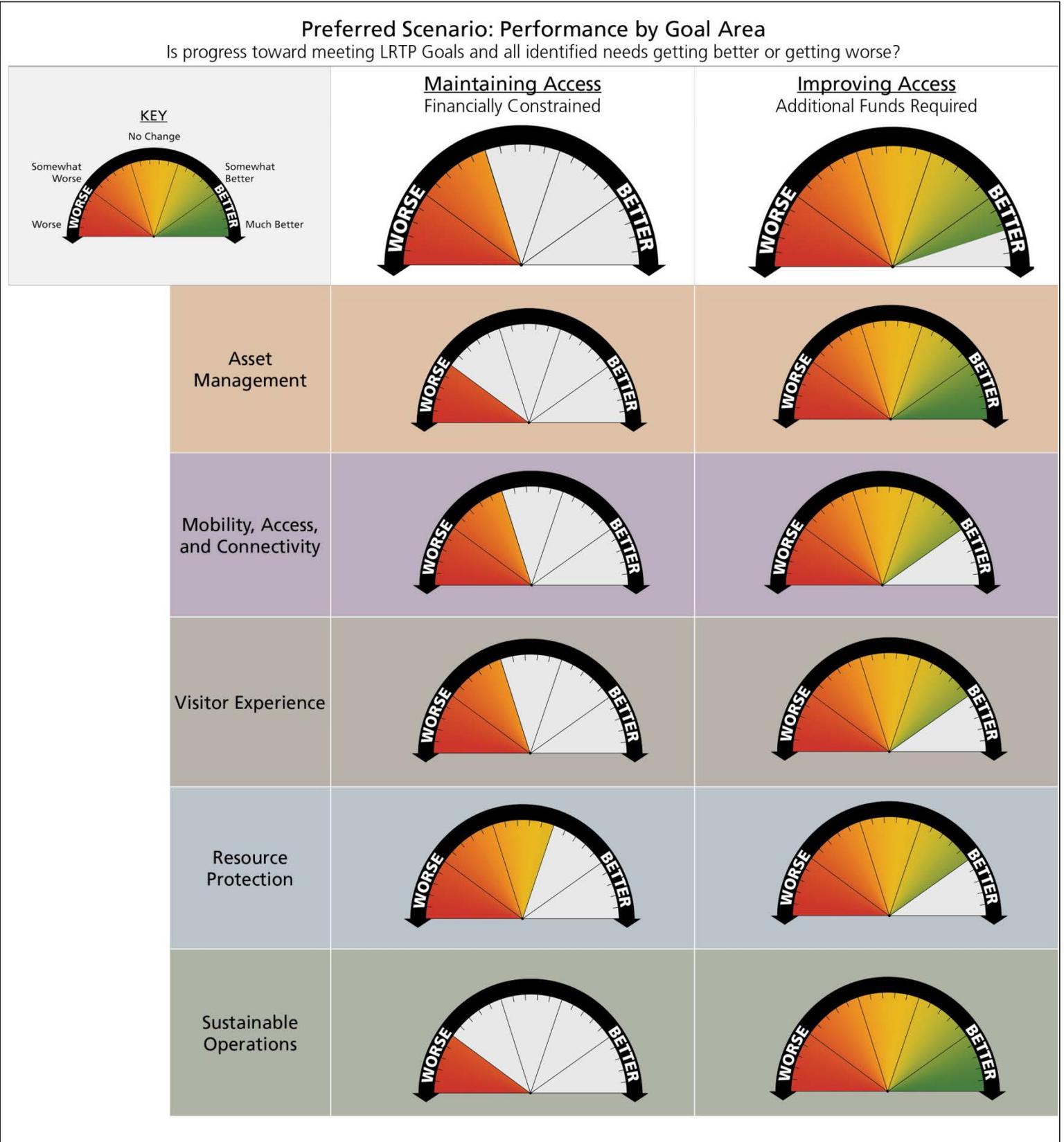
The Maintaining Access element shows the estimated effects on each LRTP goal area and on transportation plan goals as a whole if funding remains flat during the planning period. A general worsening of expected conditions is projected by 2035 given current funding limits.

Improving Access

The Improving Access element shows improvements in the LRTP goals that could be achieved by 2035 with approximately an approximate 15% increase in total funding. Additional funding is neither guaranteed nor expected.

Improving Access would be able to meet 100% of needs in the Asset Management and Sustainable Operations goal areas. The remaining three goal areas show marked improvement, but are not rated at 100% goal achievement. The plan leaves some room for improvement in the Mobility, Access, and Connectivity; Visitor Experience; and Resource Protection goals even under the “meet all identified needs” vision plan. The planning process was not able to fully quantify all future needs in these goal areas, but assumes that additional unidentified needs will exist.

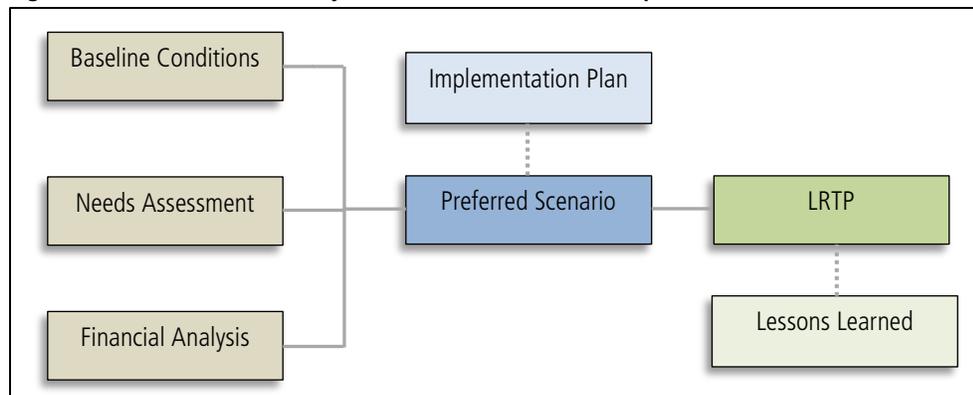
Figure 15. Preferred Scenario: Performance by Goal Area



How the Preferred Scenario Fits in the LRTP

The Preferred Scenario: Opportunities for Transportation expresses the plan in a two-tiered track for the Intermountain Region. The scenario shows the strategies, performance measures, and what can be accomplished with two given sets of funds. If funding remains similar to the recent past, the region has a plan of action. With a reasonably limited increase in available funds, it can make substantial improvements toward meeting goals and, ultimately, the mission. The information should be useful to the region, the public, and other decision makers.

Figure 16: Preferred Scenario Lays the Groundwork for LRTP Implementation



Next Steps

The completion of the Preferred Scenario represents a substantial milestone in the LRTP process. Upon review and approval, only a few steps remain, as follows:

Implementation Plan

An implementation plan will be developed to include some additional organizational detail (as described in the scope of work) that addresses:

- Data gaps.
- Reporting mechanisms and responsibilities.
- Relationship of this plan to other NPS plans.
- Brief exploration of funding mechanisms.
- Recommendations for organizational capacity.

Lessons Learned

URS will submit a brief technical memo incorporating the lessons learned at each step in the process, including items for consideration in the next update. The Core Team will be surveyed for input as part of the process.

Final Long Range Transportation Plan

Several draft chapters for the final LRTP have been completed and received preliminary review. Comments will be incorporated in a complete draft LRTP for review and additional comment. Our expectation is to complete remaining chapters and consolidate into a final draft document for review and completion by Feb. 15, 2014.

Appendix A - Implementation Plan: Outline (draft)

- I. Purpose

Describe the purpose of the Implementation Plan. Provides guidance to the Intermountain Region on what, how, and when to carry out key provisions of the LRTP.
- II. LRTP Planning Cycle

Describe the purpose of the initial long range transportation plan and items to consider in the next update. How does the LRTP fit into annual and semi-annual programming processes in the Region? What is the timing of key elements?

 - A. Description
 - B. Chart
 - C. Items for Next Update
- III. Organizational Effectiveness Strategies

What can the Region do to improve its effectiveness with regard to the LRTP? What staffing and other program requirements are needed? What are the relationships with other internal and external processes? What support is needed from partner agencies? What data gaps should be resolved?

 - A. Revisit Project Selection Criteria
 - B. Relationship of IMR LRTP to Other Regional Planning Processes
 - 1. General Management Plans
 - 2. Transportation Studies
 - 3. Program of Projects
 - 4. Other Agencies
 - a. DOTs, MPOs, Gateway Cities/Counties
 - b. Participation in Other Planning Processes
 - c. Process to Get IMR transportation projects on STIPS
- IV. Reporting Practices

How does the IMR report progress on implementing the LRTP? To whom does it report? Who completes the report? How often is it completed?

 - A. Performance Measures
 - B. Data Gaps
 - C. Priorities
 - D. Annual IMR Transportation Report
- V. Actions

Summary of actions described in the report in table format: who, what, when? NPS will provide basics, with additional input from URS.

 - A. Summary
 - B. Table: Actions