



FHWA Reporting: Performance Management Form (PMF) Full Performance Period (2018-2021) & Baseline Performance Period (2022-2025)

Federal Fiscal Year 2022
Performance Measure (PM) 2
Pavement & Bridge

This document outlines the Federal Fiscal Year (FFY) 2022 Full Performance Period (FPP - 2018-2021) progress, and Baseline Performance Period (BPP – 2022-2025) targets for PM2 system performance, as required by 23 CFR 490, Subpart C - National Performance Management Measures for Assessing Pavement Condition and Subpart D – National Performance Management Measures for Assessing Bridge Condition. New Mexico Department of Transportation (NMDOT) Transportation Performance Management personnel are responsible for reporting on progress and coordinating the setting of PM 2 targets.

Overview of PM 2 Measures

1. Percentage of Interstate pavements on the NHS in Good Condition
2. Percentage of Interstate pavements on the NHS in Poor Condition
3. Percentage of non-Interstate pavements on the NHS in Good Condition
4. Percentage of non-Interstate pavements on the NHS in Poor Condition
5. Percentage of bridges on the NHS in Good condition
6. Percentage of bridges on the NHS in Poor Condition

The NMDOT used a coordinated effort with the Metropolitan Planning Organizations (MPOs) and other stakeholders to set the targets. The bulleted sections below provide an explanation of events leading to the development of the performance measures and this document:

1. Annually, NMDOT began collect the pavement condition data for all NMDOT maintained roadways and non-DOT maintained NHS based on the four condition metrics (IRI, rutting, faulting and cracking) and three inventory data elements (through lanes, surface type, and structure type) included in 23 CFR 490.309. Pavement condition data is collected based on one-tenth mile.
2. In preparation for developing the 2022 Transportation Asset Management Plan (the TAMP) the following was done:
 - a. Numerous internal meetings took place with representatives from the Districts and Pavement Management and Design Bureau staff to review and analyze pavement condition data and performance trends. NMDOT maintains the pavement condition data in a Pavement Management System database (PMS) on the AgileAssets platform. The PMS is used to predict future performance based on criteria identified for various funding scenarios. It can also forecast funding required to attain a desired condition.
 - b. Funding allocations for Interstate, non-Interstate NHS and non-NHS pavements, NHS and non-NHS Bridges were determined based on reviewing historical information based on obligated amounts for federally funded projects contained in the Statewide Transportation Improvement Program (STIP) database. In addition, historical funding amounts for pavements and bridges was obtained from data in the Maintenance Management System and Contract Maintenance Databases.
3. On September 13, 2022, the NMDOT provided a presentation on all Performance Measures to the MPO's attending the quarterly MPO meeting. NMDOT collected Pavement Condition data was presented by MPO area for the Interstate and non-Interstate NHS pavements within each MPO boundary to show how pavements are performing within each MPO area. NMDOT reported Bridge Condition data was also presented by MPO area for bridges in the NHS.



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Predicting future condition of pavements and bridges is dependent on funding. The period determined for predicting future condition is ten years. To prepare predictions of future conditions, funding allocations needed to be established. The funding allocations for Interstate, non-Interstate NHS and non-NHS pavements and NHS and non-NHS bridges were based on a review of information contained in historical STIP's and MMS data. A combination of federal and state funding is used to determine the total amount of funding available for TAM activities. In addition to STIP and MMS financial information, a review of NMDOT historical budget, state road fund revenue projections and future debt service payments were reviewed to determine the TAM-eligible revenues. This analysis also included review of pavement and bridge allocations.

In setting the 2- and 4-year performance targets for the pavement measures, NMDOT analyzed historical pavement condition data based on the FHWA measures to prepare a trend analysis. The PMS is used to predict future condition; however, it is unable to predict future condition based on the FHWA metrics. As a result, the PMS uses a Pavement Condition Rating (PCR) to determine condition. The PMS was configured based on a multi-year collaborative effort to develop the decision trees that combine the various pavement distresses collected for each tenth mile section to determine an Overall Condition Index (OCI) for each 2-mile managed segment. The PCR is 80 percent OCI and 20 percent smoothness index, which is IRI and rutting metric converted to a 100 scale.

The annual funding allocation is entered into the PMS to predict an annual PCR for each system. The PCR is then mapped to the Federal Good, Fair and Poor to predict a future pavement condition each year for the ten-year analysis period.

NMDOT maintains bridge condition data in a Bridge Management System (BrM); however, BMS does not have the capability of predicting future condition. NMDOT uses a spreadsheet-based tool to predict performance of each bridge given predicted deterioration. The model components include measures, deterioration, treatments and prioritization. The model uses the National Bridge Inventory (NBI) data weighted by deck area. A Markov modeling approach, similar to Pontis models is used but applied to the NBI data. The approach predicts a percent chance a rating will drop to the next value in a year. NCHRP Report 713 was used to determine median years to reach ratings of 3, 4 and 5. NMDOT Bridge Management evaluated the spreadsheet tool for predicting future condition prior to adopting for use.



FULL PERFORMANCE PERIOD (FPP – 2018-2021)

PMF Question O2:

As of July 31, 2022, FHWA has not received the required significant progress additional reporting information, and it must be included in the PMF. Did you upload the additional reporting for target(s)?

Answer:

Yes - 2022_NM_Freight_2022_1103_NM Freight Plan FINAL FHWA Submittal.pdf

Freight - The 2022 NM Freight Plan Update responds to the additional information we are required to provide due to the 'significant progress' determination.

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|------------------------|---|--|
| PMF Question O3 | Who should FHWA contact with questions? | Virginia Rae Stubella |
| PMF Question O4 | What is the phone number for this contact? | 5054792151 |
| PMF Question O5 | What is the email address for this contact? | virginia.stubella@state.nm.us |

PAVEMENT PERFORMANCE OVERVIEW

PMF Question P1

Please use this space to provide any general comments that may assist FHWA in its review of this part of the submission. You can use this space to provide greater context for your targets and current condition, provide additional background detail or clarification, note any assumptions, or discuss complications.

Answer:

The 2 and 4-year pavement condition performance targets are set using a performance management process based on data driven decision-making framework. NHS pavement conditions are monitored to meet federally established minimum condition level which requires that no more than 5 percent pavement lanes miles on the Interstate system are in poor condition. The 4-year target of 5 percent of Poor on the Interstate was met. The 4-year actual of Poor on the Interstate is 0.9 percent. The 4-year target of Good on the Interstate is missed by 0.1%. To meet and exceed the target, more pavement preservation treatment should be considered to improve the pavement condition on the Interstate.



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INTERSTATE SYSTEM PERFORMANCE OVERVIEW

PMF Question P2

Discuss how the actual condition achieved for the statewide Interstate System [23 CFR 490.105(c)(1)] during the performance period, which indicates the near-term direction or trend, supports both the long-term national infrastructure condition performance goal of maintaining the highway infrastructure asset system in a state of good repair identified in 23 U.S.C. §150(b), and goal of improving project and investment decision making through performance-based planning and programming [23 U.S.C. 150(a)] Include an assessment of the effectiveness of the investment strategies documented in the State asset management plan required under 23 U.S.C. 119(e) related to pavement condition on the statewide Interstate NHS measure area. [23 CFR 490.107(b)(3)(ii)(C)]

Answer:

A performance gap analysis process for pavement condition has been established at NMDOT. As part of the gap analysis, actual pavement performance is compared to 4-year target performance using FHWA's Interstate Good performance measure. Performance scenario analysis is a useful technique for examining the implications of different funding levels and allocations. It provides the ability to predict future conditions, compare these conditions against targets, define funding gaps, and inform resource allocation decisions. NMDOT predicted future conditions of pavement from two funding scenarios, current and desired. The current funding scenario is based on historical budget allocations, while the desired funding scenario represents an optimistic picture of what could be achieved with an increase in funding. The Statewide Transportation Improvement Program (STIP) document lists all federally funded projects in the State of New Mexico. Achieving pavement performance targets is a key component of STIP project prioritization process.



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Statewide Performance Target for the Percentage of Pavements on the Interstate System in Good Condition

	Baseline 2018	4-Year Target 2021	4-Year Actual 2021
Interstate Good	55.0%	55.0%	54.0%

PMF Question P6

Discuss the decisions and/or investments that contributed to the actual condition, and if they were effective in achieving the intended condition. For the statewide Percentage of Pavements on the Interstate System in Good Condition, this discussion:

- 1) Shall compare the actual 4-year condition to the 4-year target and document the reasons the target was or was not met, and [23 CFR 490.107(b)(3)(ii)(B)]
- 2) Shall document if the State DOT expects that significant progress was or was not made toward the 4-year target, and summarize the accomplishments achieved during the performance period that demonstrate whether significant progress is expected or not. [23 CFR 490.107(b)(3)(ii)(E)]

Answer:

The 4-year target was missed by 1%. This indicates that the current funding of average \$105.2M per year allocated for the Interstate is barely sufficient to meet the target. To meet and exceed the target, more pavement preservation treatment should be considered to improve the pavement condition on the Interstate. Moderate progress was made toward achieving the 4-year target. Pavement treatment scenarios analysis based on pavement performance were used in the decision-making and project selection. Application of pavement preventive maintenance early in pavement life, when it is still in relatively good condition, can delay the need for rehabilitation or reconstruction and result in an overall lower life cycle cost. In addition, preventive maintenance can yield a higher level of pavement condition over time. Current funding in conjunction with a rise in the cost of construction prevented significant progress toward achieving and exceeding the 4-year target.



Statewide Performance Target for Percentage of Pavements on the Interstate System in Poor Condition

	Baseline 2018	4-Year Target 2021	4-Year Actual 2021
Interstate Poor	0.9%	5.0%	1.7%

PMF Question P11

Discuss the decisions and/or investments that contributed to the actual condition, and if they were effective in achieving the intended condition. For the statewide Percentage of Pavements on the Interstate System in Poor Condition, this discussion:

- 1) Shall compare the actual 4-year condition to the 4-year target and document the reasons the target was or was not met, and [23 CFR 490.107(b)(3)(ii)(B)]
- 2) Shall document if the State DOT expects that significant progress was or was not made toward the 4-year target, and summarize the accomplishments achieved during the performance period that demonstrate whether significant progress is expected or not. [23 CFR 490.107(b)(3)(ii)(E)]"

Answer:

The 4-year target was met. This indicates that the current funding of average \$105.2M per year allocated for the Interstate is sufficient to meet and exceed the target. This is due to more pavement preservation treatment implemented that resulted in stabilizing the pavement condition of Poor on the Interstate. Significant progress was made toward achieving the 4-year target. Pavement treatment scenario analysis based on pavement performance were used in the decision-making and project selection process. Application of pavement preventive maintenance early in pavement life, when it is still in relatively good condition, can delay the need for rehabilitation or reconstruction and result in an overall lower life cycle cost. In addition, preventive maintenance can yield a higher level of pavement condition over time.



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PAVEMENT PERFORMANCE ON THE **NON-INTERSTATE NHS** OVERVIEW

PMF Question P13

Discuss how the actual pavement condition achieved for the statewide Non-Interstate NHS [23 CFR 490.105(c)(2)] during the performance period, which indicates the near-term direction or trend, supports both the long-term national infrastructure condition performance goal of maintaining the highway infrastructure asset system in a state of good repair identified in 23 U.S.C. §150(b), and goal of improving project and investment decision making through performance-based planning and programming [23 U.S.C. 150(a)]

Include an assessment of the effectiveness of the investment strategies documented in the State asset management plan required under 23 U.S.C. 119(e) related to pavement condition on the statewide Non-Interstate NHS measure area. [23 CFR 490.107(b)(3)(ii)(C)]

Answer:

A performance gap analysis process for pavement condition has been established at NMDOT. As part of the gap analysis, actual pavement performance is compared to 4-year target performance using FHWA's Non-Interstate NHS performance measures. Performance scenario analysis is a useful technique for examining the implications of different funding levels and allocations. It provides the ability to predict future conditions, compare these conditions against targets, define funding gaps, and inform resource allocation decisions. NMDOT predicted future conditions of pavement from two funding scenarios, current and desired. The current funding scenario is based on historical budget allocations, while the desired funding scenario represents an optimistic picture of what could be achieved with an increase in funding. The Statewide Transportation Improvement Program (STIP) document lists all federally funded projects in the State on New Mexico. Achieving pavement performance targets is a key component of STIP project prioritization process.



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Statewide Performance Target for Pavements on the Non-Interstate NHS in Good Condition

	Baseline 2018	2-Year Target 2019	2-Year Actual 2019	4-Year Target 2021	4-Year Actual 2021
Non-Interstate NHS Good	70.0%	35.6%	35.8%	34.2%	36.7%

PMF Question P21

Discuss the decisions and/or investments that contributed to the actual condition, and if they were effective in achieving the intended condition. For the statewide Percentage of Pavements on the Non- Interstate NHS in Good Condition, this discussion:

- 1) Shall compare the actual 4-year condition to the 4- year target and document the reasons the target was or was not met, and [23 CFR 490.107(b)(3)(ii)(B)]
- 2) Shall document if the State DOT expects that significant progress was or was not made toward the 4- year target, and summarize the accomplishments achieved during the performance period that demonstrate whether significant progress is expected or not. [23 CFR 490.107(b)(3)(ii)(E)]

Answer:

The 4-year target was met. This indicates that the current funding of average \$168.3.2M per year allocated for the Non-Interstate NHS is sufficient to meet and exceed the target. This is due to more pavement preservation treatment implemented that resulted in improving the pavement condition of Good on the Non-NHS Interstate. It is evident that significant progress was made toward achieving the 4-year target. Pavement treatment scenarios analysis based on pavement performance were used in the decision-making and project selection. Application of pavement preventive maintenance early in a pavement’s life when it is still in relatively good condition can delay the need for rehabilitation or reconstruction and result in an overall lower life cycle cost. In addition, preventive maintenance can yield a higher level of pavement condition over time.



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Statewide Performance Target for the Percentage of Pavements on the Non-Interstate NHS in Poor

Condition Note: For the first performance period only, the overall condition for all Non-Interstate NHS pavement types will use IRI only (or PSR values for road sections where speed is less than 40 mph). [23 CFR 490.313(e)]

	Baseline 2018	2-Year Target 2019	2-Year Actual 2019	4-Year Target 2021	4-Year Actual 2021
Non-Interstate NHS Poor	5.6%	9.0%	2.5%	12.0%	2.6%

PMF Question P30

Discuss the decisions and/or investments that contributed to the actual condition, and if they were effective in achieving the intended condition. For the statewide Percentage of Pavements on the Non- Interstate NHS in Poor Condition, this discussion:

- 1) Shall compare the actual 4-year condition to the 4- year target and document the reasons the target was or was not met, and [23 CFR 490.107(b)(3)(ii)(B)]
- 2) Shall document if the State DOT expects that significant progress was or was not made toward the 4- year target, and summarize the accomplishments achieved during the performance period that demonstrate whether significant progress is expected or not. [23 CFR 490.107(b)(3)(ii)(E)]

Answer:

The 4-year target was met. This indicates that the current funding of average \$168.3.2M per year allocated for the Non-Interstate NHS is sufficient to meet and exceed the target. This is due to more pavement preservation implemented that resulted in reducing the pavement condition of Poor on the Non-NHS Interstate. Significant progress was made toward achieving the 4-year target. Pavement treatment scenario analysis based on pavement performance were used in the decision-making and project selection. Application of pavement preventive maintenance early in pavement life, when it is still in relatively good condition, can delay the need for rehabilitation or reconstruction and result in an overall lower life cycle cost. In addition, preventive maintenance can yield a higher level of pavement condition over time.



BRIDGE PERFORMANCE OVERVIEW

PMF Question B1:

Please use this space to provide any general comments that may assist FHWA in its review of this part of the submission. You can use this space to provide greater context for your targets and current condition, provide additional background detail or clarification, note any assumptions, or discuss complications. (Optional)

Answer:

NMDOT's bridge condition projections are based on a spreadsheet that uses, (1.) Deterioration curves for deck, superstructure, substructure, and culvert conditions; (2.) Probabilities of deterioration; (3.) Benefit to cost ratios; (4.) Costs for replacement, rehabilitation and preventive maintenance; and (5.) Budget forecasts; to project bridge conditions 10 years into the future.

PMF Question B2

Discuss how the actual condition achieved for the statewide Bridges on the NHS [23 CFR 490.105(c)(3)] during the performance period, which indicates the near-term direction or trend, supports both the long-term national infrastructure condition performance goal of maintaining the highway infrastructure asset system in a state of good repair identified in 23 U.S.C. §150(b), and goal of improving project and investment decision making through performance-based planning and programming [23 U.S.C. 150(a)]

Include an assessment of the effectiveness of the investment strategies documented in the State asset management plan required under 23 U.S.C. 119(e) related to the bridge condition measure area. [23 CFR 490.107(b)(3)(ii)(C)]

Answer:

During the 2018 to 2021 4-year timeframe, NMDOT determined that it had allocated more funding towards NHS bridge preservation projects and needed to increase spending on NHS bridge replacement projects. Over the last 10+ years, NMDOT has set aside approximately \$11 million/year annually for NHS bridge preventive maintenance work. This has enabled NMDOT to keep the majority of the inventory in a "fair" or better condition and keeping the inventory below the 10% poor Federal rule. NMDOT's preservation program has resulted in the number of "Poor" condition bridges being significantly below the federal requirements of 10%. This has allowed NMDOT to allocate more funding towards bridge replacements which will increase the number of percent of NHS "Good" bridges.



STATEWIDE PERFORMANCE TARGET FOR BRIDGES ON THE NHS CLASSIFIED AS IN GOOD CONDITION

	Baseline 2018	2-Year Target 2019	2-Year Actual 2019	4-Year Target 2021	4-Year Actual 2021
NHS Good	37.4%	36.0%	37.6%	30.0%	36.2%

PMF Question B8

Discuss the decisions and/or investments that contributed to the actual condition, and if they were effective in achieving the intended condition. For the statewide Percentage of deck area of Bridges on the NHS Classified as in Good Condition, this discussion:

- 1) Shall compare the actual 4-year condition to the 4-year target and document the reasons the target was or was not met, and [23 CFR 490.107(b)(3)(ii)(B)]
- 2) Shall document if the State DOT expects that significant progress was or was not made toward the 4-year target, and summarize the accomplishments achieved during the performance period that demonstrate whether significant progress is expected or not. [23 CFR 490.107(b)(3)(ii)(E)]

Answer:

We were able to meet our targets as both our 2-Year and 4-Year actual percentages for the NHS Good are above their respective targets. \$13 million dollars are targeted towards bridge preservation projects annually (of this, over \$11 million dollars goes towards our NHS inventory). As a result of this and other funding, there were over 100 NHS bridges that were preserved during the 2018 to 2021 4-year timeframe. These bridge preservation projects primarily work on fair condition bridges and once construction is completed these “fair” bridges are anticipated to move up into a “Good” condition. Also, during this 4-year span there were approximately 20 NHS bridges that were rehabilitated. It is anticipated that their condition went from a fair condition (possibly a poor condition) up into a good condition once construction was completed. During this 4-year span there were also 8 NHS bridges that were replaced so it is anticipated that their condition went from a poor condition up into a good condition. All these NHS projects programmed in NMDOT’s STIP were the key reason NMDOT was able to be above these % NHS Good targets.



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STATEWIDE PERFORMANCE TARGET FOR BRIDGES ON THE NHS CLASSIFIED AS IN POOR CONDITION

	Baseline 2018	2-Year Target 2019	2-Year Actual 2019	4-Year Target 2021	4-Year Actual 2021
NHS Poor	3.3%	3.3%	3.1%	3.3%	2.4%

PMF Question B15

Discuss the decisions and/or investments that contributed to the actual condition, and if they were effective in achieving the intended condition. For the statewide Percentage of deck area of Bridges on the NHS Classified as in Poor Condition, this discussion:

- 1) Shall compare the actual 4-year condition to the 4-year target and document the reasons the target was or was not met, and [23 CFR 490.107(b)(3)(ii)(B)]
- 2) Shall document if the State DOT expects that significant progress was or was not made toward the 4-year target, and summarize the accomplishments achieved during the performance period that demonstrate whether significant progress is expected or not. [23 CFR 490.107(b)(3)(ii)(E)]

Answer:

We were able to meet our targets for the 2-Year actual percentages for the NHS Poor Bridges and were extremely close on the original 4-Year actual percentage for the NHS Poor Bridges. During the PMF midterm baseline, NMDOT Bridge Bureau requested to adjust the 4-Year target for NHS Bridges to 3.3%. Our basis for the adjustment that was listed at the PMF midterm baseline was that our model projections suggested that if we didn't prioritize more money towards replacement that our % Poor numbers would likely exceed 3%. It should be noted that both numbers are well below federal requirements. NMDOT's bridge modelling spreadsheet was prioritizing preventive maintenance projects to preserve our assets and turn more of the "fair" bridges to "good" bridges. In other words, our model was putting more money towards preservation projects and these preservation projects are not working on "poor" bridges. Looking at the let projects over this 2018 to 2021 4-year timeframe this is apparent with how we have been spending money towards bridge projects as there were over 100 NHS bridges that were preserved (preventive maintenance) and there were only 8 NHS bridges that were replaced. To get our % NHS Poor down we will have to prioritize more money towards replacement projects. However, it is not NMDOT's intent to replace all "Poor" condition bridges. Doing so could result in some bridges being replaced before they should be. Engineering judgement and budget constraints will continue to be a large factor on NMDOT's allocation of bridge funding.



BASELINE PERFORMANCE PERIOD (BPP – 2022-2025)

PMF Question O1

Metropolitan Planning Organization (MPO) Coordination: Please provide a description of how the State DOT is coordinating with relevant MPOs in target selection. [23 CFR 490.105(e)(2)]

Answer:

For Performance Measure 2 (PM2), NMDOT provided a presentation on all Performance Measures to the MPO's attending the quarterly MPO meeting (September 13, 2022). NMDOT collected Pavement Condition data was presented by MPO area for the Interstate and non-Interstate NHS pavements within each MPO boundary to show how pavements are performing within each MPO area. NMDOT reported Bridge Condition data was also presented by MPO area for bridges in the NHS.

For Performance Measure 3 (PM 3), NMDOT coordinated with the MPOs in the following ways to set the PM 3 targets. 1) 3/7/22 NMDOT presented the PM 3 Dashboard to the MPOs at the MPO Quarterly; the PM 3 Dashboard showed the baseline scores for the LOTTR and TTTR 2022-2025 performance period (among other things); NMDOT gave the MPOs access to the Dashboard so they could explore the various features, including looking at the performance of specific segments of roadway. 2) 6/14/22 NMDOT sent draft 2- and 4-year LOTTR and TTTR targets to the MPOs for their consideration; no comments received. 3) 6/15/22 NMDOT presented the PM 3 forecasting methodology and draft 2- and 4-year LOTTR and TTTR targets to the MPOs at the MPO Quarterly; the only comments received were in support of the targets. 4) Throughout 2022 NMDOT coordinated with El Paso MPO on the various Emissions targets, as well as the PHED and Non-SOV, culminating in our agreement of targets, which were included in NMDOT's PM 3 Report. 5) 9/8/22 NMDOT sent the MPOs a draft of the PM 3 report, which included all PM 3 targets and descriptions of the methodologies used; few comments were received and nothing substantive that affected the targets or narrative. 6) 11/22/22 NMDOT Cabinet Secretary concurred with the 2- and 4- year targets and on 11/23/22, NMDOT sent the final targets and methodologies (the PM 3 Report) to the MPOs.

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PAVEMENT PERFORMANCE OVERVIEW

PMF Question P1

General Comments: Please use this space to provide any general comments that may assist FHWA in its review of this part of the submission. You can use this space to provide greater context for your targets and baseline condition, provide additional background detail or clarification, note any assumptions, or discuss complications.

Answer:

The 2 and 4-year pavement condition performance targets are set using a performance management process based on data driven decision-making framework. NHS pavement condition is maintained to meet federally established minimum condition level which requires that no more than 5 percent pavement lanes miles on the interstate system are in poor condition.

INTERSTATE SYSTEM PERFORMANCE OVERVIEW

PMF Question P2

Relationship to Other Performance Expectations: Discuss how the 2-year and 4-year targets established for the 2022-2025 Performance Period for the pavements on the statewide Interstate System [23 CFR 490.105(c)(1)], which indicates the anticipated near-term direction or trend, support the achievement of both the long-term national infrastructure condition performance goal of maintaining the highway infrastructure asset system in a state of good repair identified in 23 U.S.C. §150(b), and goal of improving project and investment decision making through performance-based planning and programming [23 U.S.C. 150(a)]

Include how the established targets for the pavements on the statewide Interstate System for the Performance Period support expectations documented in longer range plans, such as the State asset management plan required by 23 U.S.C. 119(e) and the long-range statewide transportation plan. [23 CFR 490.107(b)(1)(ii)(C)]

Answer:

A performance gap analysis process for pavement condition has been established at NMDOT. As part of the gap analysis, actual pavement performance is compared to 4-year target performance using FHWA's Interstate Good performance measure. Performance scenario analysis is a useful technique for examining the implications of different funding levels and allocations. It provides the ability to predict future conditions, compare these conditions against targets, define funding gaps, and inform resource allocation decisions. NMDOT predicted future conditions of pavement from two funding scenarios, current and desired. The current funding scenario is based on historical budget allocations, while the desired funding scenario represents an optimistic picture of what could be achieved with an increase in funding. The Statewide Transportation Improvement Program (STIP) document lists all federally funded projects in the State on New Mexico. Achieving pavement performance targets is a key component of STIP project prioritization process. These targets are part of the long-range targets for pavements on the statewide Interstate System for the performance period projected and documented in NMDOT 2022 Transportation Asset Management Plan (TAMP).



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Statewide Performance Target for Pavements on the Interstate System in Good Condition

	Baseline 2021	2-Year Target* 2023	4-Year Target* 2025
Interstate Good	54.0%	42.7%	37.0%

*From the 2022 TAMP

PMF Question P6

Basis for Targets: Provide a discussion of the basis for the 2-year and 4- year targets established for the 2022-2025 Performance Period for the statewide Percentages of Pavements of the Interstate System in Good Condition. [23 CFR 490.107(b)(1)(ii)(A)] This includes an explanation of the data, method(s), and/or process(s) used to identify the targets.

Answer:

A performance gap analysis process for pavement condition has been established at NMDOT. As part of the gap analysis, actual pavement performance is compared to 4-year target performance using FHWA’s Interstate Good performance measure. Performance scenario analysis is a useful technique for examining the implications of different funding levels and allocations. It provides the ability to predict future conditions, compare these conditions against targets, define funding gaps, and inform resource allocation decisions. NMDOT predicted future conditions of pavement from two funding scenarios, current and desired. The current funding scenario is based on historical budget allocations, while the desired funding scenario represents an optimistic picture of what could be achieved with an increase in funding. The Statewide Transportation Improvement Program (STIP) document lists all federally funded projects in the State on New Mexico. Achieving pavement performance targets is a key component of STIP project prioritization process. These targets are part of the long-range targets for pavements on the statewide Interstate System for the performance period projected and documented in NMDOT 2022 Transportation Asset Management Plan (TAMP).



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Statewide Performance Targets for Pavements on the Interstate System in Poor Condition

	Baseline 2021	2-Year Target* 2023	4-Year Target* 2025
Interstate Poor	1.7%	3.2%	3.8%

*From the 2022 TAMP

PMF Question P10

Basis for Targets: Provide a discussion of the basis for the 2-year and 4-year targets established for the 2022-2025 Performance Period for the statewide Percentages of Pavements of the Interstate System in Poor Condition. [23 CFR 490.107(b)(1)(ii)(A)] This includes an explanation of the data, method(s), and/or process(s) used to identify the targets.

Answer:

A performance gap analysis process for pavement condition has been established at NMDOT. As part of the gap analysis, actual pavement performance is compared to 4-year target performance using FHWA’s Interstate Poor performance measure. Performance scenario analysis is a useful technique for examining the implications of different funding levels and allocations. It provides the ability to predict future conditions, compare these conditions against targets, define funding gaps, and inform resource allocation decisions. NMDOT predicted future conditions of pavement from two funding scenarios, current and desired. The current funding scenario is based on historical budget allocations, while the desired funding scenario represents an optimistic picture of what could be achieved with an increase in funding. The Statewide Transportation Improvement Program (STIP) document lists all federally funded projects in the State on New Mexico. Achieving pavement performance targets is a key component of STIP project prioritization process. These targets are part of the long-range targets for pavements on the statewide Interstate System for the performance period projected and documented in NMDOT 2022 Transportation Asset Management Plan (TAMP).



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NON-INTERSTATE NHS PAVEMENT PERFORMANCE OVERVIEW

PMF Question P11

Relationship to Other Performance Expectations: Discuss how the 2- year and 4-year targets established for the 2022-2025 Performance Period for the pavements on the statewide Non-Interstate NHS [23 CFR 490.105(c)(2)], which indicates the anticipated near-term direction or trend, support the achievement of both the long-term national infrastructure condition performance goal of maintaining the highway infrastructure asset system in a state of good repair identified in 23 U.S.C. §150(b), and goal of improving project and investment decision making through performance-based planning and programming [23 U.S.C. 150(a)]

Include how the established targets for the pavements on the statewide Non-Interstate NHS for the performance period support expectations documented in longer range plans, such as the State asset management plan required by 23 U.S.C. 119(e) and the long-range statewide transportation plan. [23 CFR 490.107(b)(1)(ii)(C)]

Answer:

A performance gap analysis process for pavement condition has been established at NMDOT. As part of the gap analysis, actual pavement performance is compared to 4-year target performance using FHWA's Non-Interstate NHS condition performance measure. Performance scenario analysis is a useful technique for examining the implications of different funding levels and allocations. It provides the ability to predict future conditions, compare these conditions against targets, define funding gaps, and inform resource allocation decisions. NMDOT predicted future conditions of pavement from two funding scenarios, current and desired. The current funding scenario is based on historical budget allocations, while the desired funding scenario represents an optimistic picture of what could be achieved with an increase in funding. The Statewide Transportation Improvement Program (STIP) document lists all federally funded projects in the State on New Mexico. Achieving pavement performance targets is a key component of STIP project prioritization process. These targets are part of the long-range targets for pavements on the statewide Interstate System for the performance period projected and documented in NMDOT 2022 Transportation Asset Management Plan (TAMP).



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Statewide Performance Targets for Pavements on the **Non-Interstate NHS** in **Good** Condition.

	Baseline 2021	2-Year Target* 2023	4-Year Target* 2025
Non-Interstate NHS Good	36.7%	40.6%	38.4%

*From the 2022 TAMP

PMF Question P15

Basis for Targets: Provide a discussion of the basis for the 2-year and 4- year targets established for the 2022-2025 Performance Period for the statewide Percentages of Pavements of the Non-Interstate NHS in Good Condition. [23 CFR 490.107(b)(1)(ii)(A)] This includes an explanation of the data, method(s), and/or process(s) used to identify the targets.

Answer:

A performance gap analysis process for pavement condition has been established at NMDOT. As part of the gap analysis, actual pavement performance is compared to 4-year target performance using FHWA’s Non-Interstate NHS Good performance measure. Performance scenario analysis is a useful technique for examining the implications of different funding levels and allocations. It provides the ability to predict future conditions, compare these conditions against targets, define funding gaps, and inform resource allocation decisions. NMDOT predicted future conditions of pavement from two funding scenarios, current and desired. The current funding scenario is based on historical budget allocations, while the desired funding scenario represents an optimistic picture of what could be achieved with an increase in funding. The Statewide Transportation Improvement Program (STIP) document lists all federally funded projects in the State on New Mexico. Achieving pavement performance targets is a key component of STIP project prioritization process. These targets are part of the long-range targets for pavements on the statewide Interstate System for the performance period projected and documented in NMDOT 2022 Transportation Asset Management Plan (TAMP).



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Statewide Performance Targets for Pavements on the Non-Interstate NHS in Poor Condition

	Baseline 2021	2-Year Target* 2023	4-Year Target* 2025
Non-Interstate NHS Poor	2.6%	3.2%	3.9%

*From the 2022 TAMP

PMF Question P19

Basis for Targets: Provide a discussion of the basis for the 2-year and 4- year targets established for the 2022-2025 Performance Period for the statewide Percentages of Pavements of the Non-Interstate NHS in Poor Condition. [23 CFR 490.107(b)(1)(ii)(A)] This includes an explanation of the data, method(s), and/or process(s) used to identify the targets.

Answer:

A performance gap analysis process for pavement condition has been established at NMDOT. As part of the gap analysis, actual pavement performance is compared to 4-year target performance using FHWA’s Non-Interstate NHS Poor performance measure. Performance scenario analysis is a useful technique for examining the implications of different funding levels and allocations. It provides the ability to predict future conditions, compare these conditions against targets, define funding gaps, and inform resource allocation decisions. NMDOT predicted future conditions of pavement from two funding scenarios, current and desired. The current funding scenario is based on historical budget allocations, while the desired funding scenario represents an optimistic picture of what could be achieved with an increase in funding. The Statewide Transportation Improvement Program (STIP) document lists all federally funded projects in the State on New Mexico. Achieving pavement performance targets is a key component of STIP project prioritization process. These targets are part of the long-range targets for pavements on the statewide Interstate System for the performance period projected and documented in NMDOT 2022 Transportation Asset Management Plan (TAMP).



BRIDGE PERFORMANCE OVERVIEW

PMF Question B1

General Comments: Please use this space to provide any general comments that may assist FHWA in its review of this part of the submission. You can use this space to provide greater context for your targets and baseline condition, provide additional background detail or clarification, note any assumptions, or discuss complications. (Optional)

Answer:

NMDOT's bridge condition projections are based on a spreadsheet that uses, (1.) Deterioration curves for deck, superstructure, substructure and culvert conditions; (2.) Probabilities of deterioration; (3.) Benefit to cost ratios; (4.) Costs for replacement, rehabilitation and preventive maintenance; and (5.) Budget forecasts; to project bridge conditions 10 years into the future. The 2022 TAMP bridge projections were based on an analysis performed in late 2021. We have seen that bid prices have not stabilized yet and have continued to increase. As of early 2022, NMDOT has received Bridge Formula funds which will help NMDOT reach our % Good NHS and our % Poor NHS targets.

PMF Question B2

Relationship to Other Performance Expectations: Discuss how the 2-year and 4-year targets established for the 2022-2025 Performance Period for the statewide Bridges on the NHS [23 CFR 490.105(c)(3)], which indicates the anticipated near-term direction or trend, support the achievement of both the long-term national infrastructure condition performance goal of maintaining the highway infrastructure asset system in a state of good repair identified in 23 U.S.C. §150(b), and goal of improving project and investment decision making through performance-based planning and programming [23 U.S.C. 150(a)]

Include how the established targets the statewide Bridges on the NHS for the Performance Period support expectations documented in longer range plans, such as the State asset management plan required by 23 U.S.C. 119(e) and the long-range statewide transportation plan. [23 CFR 490.107(b)(1)(ii)(C)]

Answer:

The 2-Year and 4-Year targets for both the % NHS Good and % NHS Poor are based on the assumptions that our bridge treatment costs are roughly twice as expensive as they were for the 2017 TAMP and that our bridge funding was not going to increase over the next five years. The models that we ran for the 2022 TAMP projected that our % NHS Good was going to increase and our % NHS Poor was going to decrease.

After we submitted the 2022 TAMP, NMDOT received additional funding from the Federal Bridge Formula Funding Program. It is anticipated that NMDOT will receive an additional \$45 Million/Year for the next five years. Our intention is to put approximately half of this money towards non-NHS bridges including locally owned bridges. Historically, NMDOT's non-NHS inventory has not been funded as much as our NHS bridge inventory. The remainder of this formula funding will go towards underfunded projects and for NHS bridges. Due to extreme unit bid cost increases, even with this additional bridge formula funding we anticipate our % NHS Good continuing to decrease and our % NHS Poor to increase.



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Statewide Performance Targets for Bridges on the NHS Classified as in Good Condition

	Baseline	2-Year Target*	4-Year Target*
	2021	2023	2025
NHS Good	36.2%	30.8%	23.9%

*From the 2022 TAMP

PMF Question B6

Basis for Targets: Provide a discussion of the basis for the 2-year and 4- year targets established for the 2022-2025 Performance Period for the statewide Percentage of deck area of Bridges on the NHS Classified as in Good Condition. [23 CFR 490.107(b)(1)(ii)(A)] This includes an explanation of the data, method(s), and/or process(s) used to identify the targets.

Answer:

The primary reason our % NHS Good projections continue to decrease is because the cost to do any type of bridge work has gone up drastically since 2020. For the 2017 TAMP, our estimated bridge treatment costs were based on the annual unit bid construction replacement costs we submit to FHWA for the year of 2017. We were projecting roughly \$308 per square foot (2017 average of unit bid replacement cost multiplied by a 1.8 factor) to do a bridge replacement and to encompass doing some roadway work or mobilizing the contractor to the jobsite. We estimated all our other bridge treatments (bridge preservation, bridge rehabilitation, etc.) were a percentage of this bridge replacement cost. For the 2022 TAMP, our estimate was based on the 2021 unit bid replacement cost we submit to FHWA. In those 4 years between 2017 to 2021, we saw the cost to do a bridge replacement project nearly doubled. Labor shortages, increase in fuel, shipping costs, and construction materials, etc. are attributed to this increase in doing bridge work. Nearly all unit bid costs have continued to increase and have not stabilized yet. Review of bridge costs showed that the applied multiplier should increase from 1.8 to a factor of 2 for our 2021 Unit Bid Cost values (we were estimating nearly \$640 per square foot). Since the cost to do any other type of bridge treatment is based on a percentage of doing a bridge replacement, the cost to do any other type of bridge treatments has also doubled. Since the 2022 TAMP was submitted, the cost to replace a bridge has continued to increase.

At the time the 2022 TAMP was submitted we were anticipating spending the same \$11 million a year towards doing bridge preservation on NHS bridges and that yearly NHS funding was not going to increase from the previous year. Therefore, we were anticipating this would only allow us to work on half of the number of bridges that we used to be able to work on in past years. As such our % NHS Good is anticipated to decrease until we can receive additional funding or until the cost to do bridge work has stabilized and hopefully decreased.

After we submitted the 2022 TAMP, NMDOT received additional funding from the Federal Bridge Formula Funding Program. It is anticipated that NMDOT will receive an additional \$45 Million/Year for the next five years. Our intention is to put approximately half of this money towards non-NHS bridges including locally owned bridges. Historically, NMDOT’s non-NHS inventory has not been funded as much as our NHS bridge inventory. The remainder of this formula funding will go towards underfunded projects and for NHS bridges. It is anticipated that this remainder of Bridge Formula funding will help NMDOT maintain our NHS bridge inventory but due to price escalations it is difficult to predict if we will have enough funding to keep our % NHS Good targets near their current level (above 35%).



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Statewide Performance Targets for Bridges on the NHS Classified as in Poor Condition

	Baseline	2-Year Target*	4-Year Target*
	2021	2023	2025
NHS Poor	2.4%	4.1%	5.5%

*From the 2022 TAMP

PMF Question B10

Basis for Targets: Provide a discussion of the basis for the 2-year and 4- year targets established for the 2022-2025 Performance Period for the statewide Percentage of deck area of Bridges on the NHS Classified as in Poor Condition. [23 CFR 490.107(b)(1)(ii)(A)] This includes an explanation of the data, method(s), and/or process(s) used to identify the targets.

Answer:

The primary reason our % NHS Poor projections continue to increase is because the cost to do any type of bridge work has gone up drastically since 2020. In the 2017 TAMP, our estimated bridge treatment costs were based on the annual unit bid replacement construction costs we submit to FHWA for the year of 2017. We were projecting roughly \$308 per square foot (2017 average of unit bid replacement cost multiplied by a 1.8 factor) to do a bridge replacement and to also account for doing some roadway work or mobilizing the contractor to the jobsite. We estimated all our other bridge treatments (bridge preservation, bridge rehabilitation, etc.) were a percentage of this bridge replacement cost. For the 2022 TAMP, our estimate was based on the 2021 unit bid replacement cost we submit to FHWA. In those 4 years between 2017 to 2021, we saw the cost to do a bridge replacement project nearly doubled. Labor shortages, increase in fuel, shipping costs, and construction materials, etc. are attributed to this increase in doing bridge work. Nearly all unit bid costs have continued to increase and have not stabilized yet. Review of bridge costs showed that the applied multiplier should increase from a 1.8 to a factor of 2 for our 2021 Unit Bid Cost values (we were estimating nearly \$640 per square foot). Since the cost to do any other type of bridge treatment is based on a percentage of doing a bridge replacement, the cost to do any other type of bridge treatments has also doubled. Since the 2022 TAMP was submitted, the cost to replace a bridge has continued to increase.

At the time the 2022 TAMP was submitted we were anticipating spending the same \$11 million a year towards doing preventive maintenance on NHS bridges and that yearly NHS funding was not going to increase. Therefore, we were anticipating this will only allow us to work on half of the number of bridges that we used to be able to work on in past years. As such our % NHS Poor is anticipated to increase until we can receive additional funding or until the cost to do bridge work has stabilized and hopefully decreased.

After we submitted the 2022 TAMP, NMDOT received additional funding from the Federal Bridge Formula Funding Program. It is anticipated that NMDOT will receive an additional \$45 Million/Year for the next five years. Our intention is to put approximately half of this money towards non-NHS bridges including locally owned bridges. Historically, NMDOT’s non-NHS inventory has not been funded as much as our NHS bridge inventory. The remainder of this formula funding will go towards underfunded projects and for NHS bridges. It is anticipated that this remainder of Bridge Formula funding will help NMDOT maintain our NHS bridge inventory



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but due to price escalations it is difficult to predict if we will have enough funding to keep our % NHS Poor targets near their current level (below 3%).