



TEXAS DEPARTMENT OF TRANSPORTATION



BRIDGE PERFORMANCE MEASURES - TARGETS



National Bridge Performance Measures

National Bridge Performance Measures

23 CFR Part 490 “National Performance Management Measures” sets federal performance measures for evaluating bridge conditions:

- Percent of bridge deck area on the National Highway System in “good” condition
- Percent of bridge deck area on the National Highway System in “poor” condition

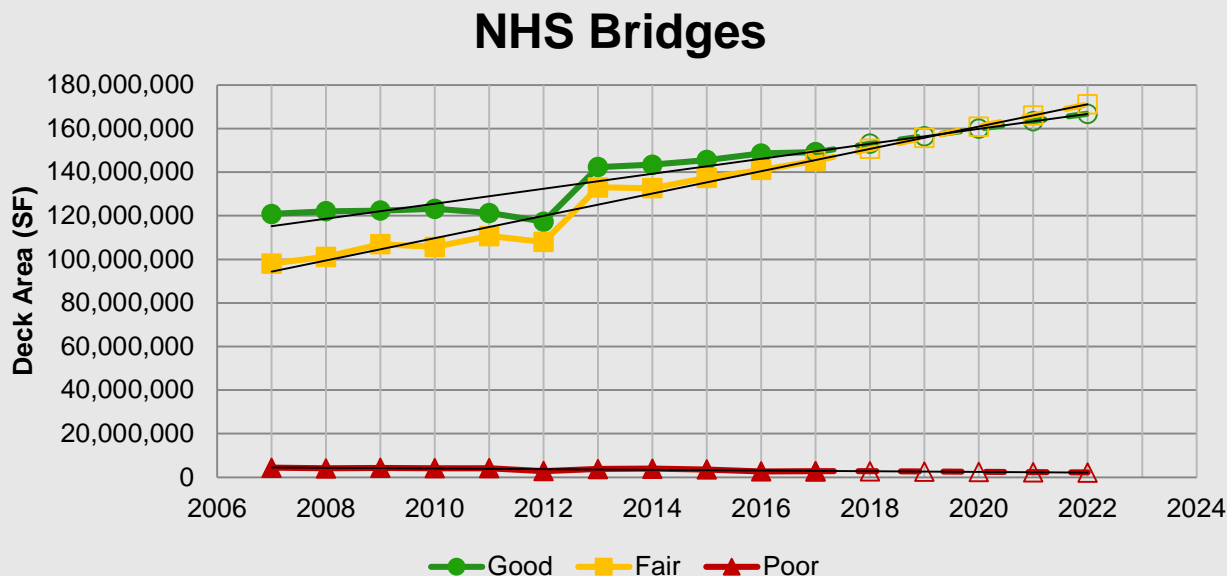
National Bridge Performance Measures

Measures are calculated using National Bridge Inspection (NBI) data:

- Deck area is calculated as follows:
 - For culverts or other structure types under fill: Deck Area = (Approach Roadway Width) x (Structure Length)
 - For all other bridges: Deck Area = (Deck Width) x (Structure Length)
- A bridge in “Poor” condition has at least one of the major component condition ratings for deck, superstructure, substructure, or culvert less than or equal to 4 (on a 0-9 scale).
- A bridge in “Good” condition has no major component rating less than 7.
- A bridge in “Fair” condition is not classified as “Good” or “Poor”.
- Each bridge in the inventory is assigned a “good, fair, poor” rating, then a network-level PM calculation is made, weighted by individual bridge deck areas.

National Performance Measure Target Setting

- States are required to set performance measure targets for Years 2020 and 2022.
- BRG used a trend -line analysis based on historic bridge data to set targets.
- Historic data shows consistent annual trends for deck area classified as good, fair or poor:



National Performance Measure Target Setting

- Based on the trend-line analysis, BRG has calculated initial performance measure targets as follows:

Performance Measure	Current Performance	Target (2020)	Target (2022)
Percent of NHS Deck Area in Poor Condition	0.8%	0.8%	0.8%
Percent of NHS Deck Area in Good Condition	50.8%	50.6%	50.4%

National Performance Measure Target Setting

- BRG used a trend-line analysis to set the initial targets because of the lead time involved with “turning the ship”.
- Due to project development activities required to place a bridge into service (planning, programming, ROW acquisition, PS&E preparation, letting, utility relocations, bridge construction, approach roadway work, initial routine inspection to add bridge to inventory, etc.), any conventional bridge improvement work (Project) being considered right now will have no influence on bridge conditions for the next 3 - 5 years.
- Targets for “Percent of NHS Bridges in Poor Condition” in 2020 and 2022 are believed to be the lowest attainable.

Other Bridge Performance Measures – Percent Good or Better

- In addition to the federally-mandated bridge performance measures, TxDOT has reported “Percent Good or Better” bridges (based on number of bridges, not weighted by deck area) to the LBB since 2002.
- For this measure, a bridge is considered “Good or Better” if it is not classified as either Structurally Deficient or Functionally Obsolete according to the federal definitions in place prior to January 1, 2018, and is not classified as “substandard for load only”, a TxDOT term that refers to a bridge that has not deteriorated to the point where it’s load carrying capacity has diminished, but it is load-restricted nonetheless (usually because the bridge was designed long ago, before state legal loads were increased to present values).
- Beginning next year, TxDOT will no longer be reporting “Percent Good or Better Bridges” to the LBB, as a new State Performance Measure, “Bridge Condition Index” (BCI) is being adopted.

Other Bridge Performance Measures – Bridge Condition Index (BCI)

- The BCI is a composite score indicating the overall condition of the network of bridges in Texas. It is applied to all bridges in the inventory, not just NHS bridges, as the federal measures are applied.
- Each bridge is assigned a numeric score based on the lowest condition state rating for deck, superstructure, substructure, or culvert components:

Numeric Score		Component Condition State Rating	
95		Min. key component rating ≥ 7	
85		Min. key component rating = 6	
75		Min. key component rating = 5	
65		Min. key component rating = 3 or 4	
50		Min. key component rating ≤ 2	

Other Bridge Performance Measures – Bridge Condition Index (BCI)

- The numeric score assigned to each structure is then multiplied by the deck area of the individual structure, then summed for all structures, and this sum is then divided by the total network deck area to arrive at a composite Bridge Condition Index which is weighted by deck area.
- Current and future projections of BCI are as follows:

