

\$1.26 billion, in the year of expenditure. Additionally, it was found that an estimated \$30 million cost or savings would be realized for every one-year change in the start of construction.

D. MDTA Financial Commitments

The Nice Bridge meets FHWA requirements for a subsequent phase to be programmed in the STIP/TIP upon completion of the NEPA process. Preventive maintenance activities are programmed in the 2013 Maryland CTP/STIP and the National Capitol Region’s TIP. Preventive maintenance activities will continue to be programmed in the STIP/TIP until the bridge reaches the appropriate structurally deficient rating, at which time replacement activities would occur.

The project is also consistent with the Statewide and MPO planning process. The project is listed in the National Capital Region’s Constrained Long Range Transportation Plan in the amount of \$850M and is planned to be constructed by 2030.

MDTA has identified the following schedule for the Nice Bridge:

- System Preservation (preventive maintenance/rehabilitation): 2012-2018 (\$14.8M)
- Preliminary Engineering: 2022-2025 (\$105M - \$137M)
- ROW: 2024-2026 (\$49M - \$64M)
- Construction: 2025-2030 (\$807M - \$1.059B)

The above information clearly demonstrates MDTA’s commitment to continue to advance the project upon completion of the NEPA process.

III. ALTERNATES EVALUATION

This section discusses the alternates evaluated for the Nice Bridge project and the evaluation process that led to identification of MDTA’s Preferred Alternate.

A. Preliminary Alternates

Fourteen preliminary build alternates were analyzed to determine overall feasibility (*Table 1*).

Table 1: Preliminary Alternates

Alternate	Description	Determination
1: No Build	Conditions in 2030 if a build alternate is not selected	Retained
2: Rehab South	New 2-lane bridge to the south, rehabilitate existing bridge	Retained
3: Replace South	New 2-lane bridge to the south, replace existing bridge	Retained
4: Rehab North	New 2-lane bridge to the north, rehabilitate existing bridge	Retained
5: Replace South	New 2-lane bridge to the north, replace existing bridge	Retained
6: 4-Lane South	New 4-lane bridge to the south, take exist bridge out of service	Retained
7: 4-Lane North	New 4-lane bridge to the north, take exist bridge out of service	Retained – Eventually preferred as Modified Alternate 7
8 North: Off Alignment	Relocate US 301 2.5 miles north of existing bridge	Eliminated - 9.9 miles long, \$1.9 billion cost, displaces over 100 residences & businesses, impacts 4 acres wetlands, 17 acres farmland, 58 acres forest.

8 South: Off Alignment	Relocate US 301 1.5 miles south of existing bridge	Eliminated - 7.8 miles long, \$3.2 billion cost, displace over 200 residences & businesses, 5 stream crossings, impacts 9 acres farmland and 72 acres forest.
9 MD North: Roadway Shift	Alignment of new 2-lane bridge shifted northward on MD shore, southward in VA	Eliminated - Retains existing bridge and associated deficiencies, impacts NSF Dahlgren, difficult maintenance of traffic.
9 MD South: Roadway Shift	Alignment of new 2-lane bridge shifted southward on MD shore, northward in VA	Eliminated - Retains existing bridge and associated deficiencies, impacts VA parkland, difficult maintenance of traffic.
10: Tunnel	New 4-lane tunnel beneath Potomac River	Eliminated - Adversely affects operations at NSF Dahlgren because hazmats and flammables would be prohibited in tunnel, river substrate has questionable bearing capability. \$1.9 bil cost.
11: Stacked Deck	Build new 2-lane bridge above existing bridge	Eliminated - Retains existing bridge and associated deficiencies.
12: Reversible Third Lane	Widen existing bridge to include reversible third lane	Eliminated - Impacts NSF Dahlgren, insufficient capacity, bridge cross-section incompatible with approach road cross-section, would retain 3.75% grade and HS 20 loading.
13: TSM/TDM	Stand-alone TSM & TDM measures	Eliminated - Retains existing bridge and associated deficiencies.
14: Transit	Stand-alone transit improvements	Eliminated - Retains existing bridge and associated deficiencies.
15: Replace in same location	Remove exist bridge, build new 4-lane bridge in same location	Eliminated - Requires closure of river crossing for several years, with 100+ mile detour.

Criteria used to screen the alternates included the degree to which they meet the purpose and need; impacts to socio-economic, natural and cultural resources; and cost. The preliminary alternate screening process is documented in the *Combined Purpose and Need/Alternates Retained for Detailed Study* package (January 2008); the EA (July 2009) and the Final Section 4(f) Evaluation. Each is available on the project website at www.nicebridge.maryland.gov.

B. Alternates Retained for Detailed Study (ARDS)

A total of seven alternates (six build alternates and the No-Build) were retained for detailed study. This section summarizes the ARDS that were not chosen as the Preferred Alternate, and describes why they were dismissed. **Table 2** summarizes the environmental impacts of the ARDS compared to the Preferred Alternate, Modified Alternate 7.

Each of the ARDS included the replacement of the existing tollbooths at the Nice Bridge with Open Road Tolling (ORT) provisions, which permit the electronic collection of tolls without a reduction of vehicle speed. Any build alternate retained for detailed study would require a slight alignment shift of the US 301 approach roadway to connect to the structure's new location. In addition, the profile grade of any new bridge, or replacement bridge, would not be as steep as the existing bridge grade (3% compared to the existing 3.75%), but would maintain or exceed the existing vertical and horizontal clearance of the navigational channel. The revised profile grade results in a shift in the location of the new bridge abutment in Maryland, approximately 800 feet east of the existing bridge abutment. This would not affect the location of the bridge abutment on the Virginia shore.

Each of the build alternates included a barrier-separated bike/ped path option. This option was incorporated per Maryland Senate Bill 492 and requests from members of the public prior to and during the public comment period.

Alternates 2, 3, and 6 expand the roadway and bridge footprint along the south side of the existing bridge. Alternates 4, 5, and 7 expand the roadway and bridge footprint along the north side of the existing bridge.

1. Alternate 1 (No-Build)

This alternate depicts conditions in the year 2030 if a build alternate is not selected. It would include other programmed improvements identified in the Consolidated Transportation Program (CTP), as well as extensive rehabilitation to maintain service on the existing bridge. This alternate was retained as a baseline for comparison with the build alternates. *Alternate 1 was not selected because it would not satisfy the purpose and need. Alternate 1 would perpetuate the geometric deficiencies, the capacity limitations, the safety risks, and the design limitations associated with the existing structure.*

2. Alternate 2 (New Two-Lane Bridge to the South, Rehabilitate Existing Bridge)

A new bridge to the south would contain two 12-foot lanes with a 12-foot outside shoulder and 4-foot inside shoulder. The bike/ped option would include a single two-way, 10-foot path on the south side of the new bridge, with a path on each approach to guide users between the two-way path on the bridge and the respective outside shoulder along each direction of the US 301 roadway. *Alternate 2 was not selected because it would not fully meet the purpose and need. Because the existing bridge would no longer be required to accommodate bi-directional traffic, the potential for head-on collisions would be eliminated. However, the existing bridge has 11-foot lanes, no shoulders, and a steep grade, which compromise safety and capacity. Alternate 2 would locate the new bridge south of US 301 which is considered unreasonable because it would impact the critical mission of NSF Dahlgren, which is vital to national security.*

3. Alternate 3 (New Two-Lane Bridge to the South, Replace Existing Bridge)

This alternate would provide increased capacity and safety on both the northbound and southbound bridges as opposed to only the northbound bridge in Alternate 2. This alternate would construct a new two-lane bridge to the south, remove the existing bridge, and construct a new, parallel, two-lane bridge in its place. The bike/ped option for this alternate would include a one-way, 10-foot path on the outside of both new bridges. *Alternate 3 was not selected because it would locate the new bridge south of US 301 which is considered unreasonable because it would impact the critical mission of NSF Dahlgren. Alternate 3 would also cost more than Modified Alternate 7 because two bridges would be constructed under this option. Since Alternate 3 would require the existing bridge to be removed before the second two-lane bridge could be constructed, Alternate 3 would involve a longer construction period (which contributes to the higher construction cost) and would expose motorists to a longer period of travel delays through a construction zone. Alternate 3 would also result in greater impacts to aquatic resources, particularly dredging impacts, due to the greater footprint of disturbance necessitated to construct twin bridges and a second phase of dredging.*

4. Alternate 4 (New Two-Lane Bridge to the North, Rehabilitate Existing Bridge)

A mirror image of Alternate 2, this alternate would provide a new bridge to the north rather than the south. The cross section of the new bridge and bike/ped path option would be identical to Alternate 2. *Alternate 4 was not selected for the same reasons Alternate 2 was not selected, as noted above, except Alternate 4 would not impact NSF Dahlgren.*

5. Alternate 5 (New Two-Lane Bridge to the North, Replace Existing Bridge)

A mirror image of Alternate 3, with the first new bridge constructed to the north, rather than the south. *Alternate 5 was not selected for the same reasons Alternate 3 was not selected, as noted above, except Alternate 5 would not impact NSF Dahlgren.*

Table 2: Summary of Environmental Impacts*

Resource	Alternates Retained For Detailed Study							Preferred Alternate
	No-Build	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7	Modified Alt. 7
Cultural Resources								
Historic Standing Structures (no.)	0	1	1	1	1	1	1	1
Archeology Sites ¹ (no.)	0	1	1	2	2	1	2	2
Socio-economic Resources								
Business Displacements (no.)	0	0	0	0	0	0	0	0
Institutional Displacements ² (no.)	0	1	1	2	2	1	2	2
Residential Displacements (no.)	0	0	0	0	0	0	0	0
Business Right-of-Way ³ (acres)	0	0	0	7.0	7.0	0	7.6 (8.5)	7.6
NSF Dahlgren Right-of-Way (acres)	0	3.1 (3.3)	3.1	0	0	3.7	0	0
Residential Right-of-Way (acres)	0	0	0	0	0	0	0	0
Parkland and Recreational Facilities ⁴ (acres)	0	0	0	3.9	3.9	0	6.5	6.5
Low-Income/Minority Pop. Impacts	0	0	0	1	1	0	1	1
Natural Environmental Resources								
Streams (linear feet)	0	2,480	2,500	3,640	3,670	2,420	3,670	3,660
Wetlands (acres)	0	0.7	0.7	0.1	0.2	0.7	0.1	0.1
Potomac River Open Water Impacts-Piers ⁵ (acres)	0	0.3 (0.4)	0.7	0.3 (0.4)	0.7	0.5 (0.6)	0.5 (0.6)	0.5
Potomac River Temporary Dredge Impacts (acres)	0	61 (62)	85 (88)	62 (63)	85 (89)	67 (68)	65 (67)	65
MD Chesapeake Bay Critical Area (acres)	0	14.5	14.5	24.4	24.5	14.2	24.2 (24.3)	24.2
VA Chesapeake Bay Preservation Areas ⁶ (acres)	0	3.3 (3.4)	3.4 (3.5)	1.9 (2.3)	2.2 (2.3)	3.6	2.2	2.2
100-Year Floodplains (acres)	0	5.9 (6.3)	7.7 (7.8)	8.1 (8.4)	8.5 (8.7)	6.4 (6.5)	8.4 (8.6)	8.4
Submerged Aquatic Vegetation	0	0	0	0	0	0	0	0
Rare, Threatened & Endangered Species ⁷ (no.)	0	0	0	0-1	0-1	0-1	0-1	1
Forests (acres)	0	0.5	0.5	1.0	1.0	0.7	1.8 (1.9)	2.7
Noise (Impacted NSAs)	0	1	1	1	1	1	1	1
Cost								
Total Estimated Cost (Millions)	\$110-120	\$430-475 (\$515-565)	\$735-810 (\$915-1010)	\$485-535 (\$570-625)	\$765-850 (\$945-1040)	\$640-705 (\$805-885)	\$705-775 (\$870-955)	\$805-885
<p><i>Note:</i> Limit-of-disturbance does not include potential stormwater management areas or bridge pilings.</p> <p>*Impact numbers within parentheses () represent the impact number for build alternates with bike/ped options that is different from build alternates without the bike/ped path option. In most cases, impact numbers for alternates with and without the bike/ped path option are the same.</p> <p>¹ Additional testing will be conducted within the expanded limit-of-disturbance to determine the presence of any unrecorded archeological sites.</p> <p>² Institutional displacements include the Naval Support Facility Dahlgren, Nice Bridge Campus Facilities, and Potomac Gateway Welcome Center.</p> <p>³ Business right-of-way (ROW) impacts consist of impacts to the Aqua-Land Marina and Campground.</p> <p>⁴ Parkland/Recreational facility impacts are to Barnesfield Park, Dahlgren Wayside Park, and Potomac Gateway Welcome Center.</p> <p>⁵ Potomac River open water impacts are limited to permanent impacts for bridge piers based on conceptual engineering.</p> <p>⁶ Impacts are based on a 100-foot buffer of tidal area within the limit-of-disturbance of the Virginia portion of the study area.</p> <p>⁷ Impacts are based on an encroachment onto the 50-foot buffer of Bald Eagle Concentration Zone area(s). No direct impacts to bald eagle nesting areas or any other state or federal rare, threatened, or endangered species habitat is anticipated.</p>								

6. Alternate 6 (New Four-Lane Bridge to the South, Take Existing Bridge Out of Service)

This alternate would construct a new four-lane bridge with 12-foot lanes, 4-foot inside shoulders, and 12-foot outside shoulders, separating the two directions of travel with a median barrier. The bike/ped option would include a one-way, 10-foot path in each direction. *Alternate 6 was not selected because it would locate the new bridge south of US 301, which is considered unreasonable because it would impact the critical mission of NSF Dahlgren.*

IV. ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

This section summarizes the environmental impacts associated with the proposed action (Modified Alternate 7) and describes efforts to minimize and mitigate impacts to affected environmental resources. Impact values have been updated from the July, 2009 EA to reflect the minor changes to Alternate 7 that were incorporated into Modified Alternate 7. These are reflected in the *Summary of Environmental Impacts* table (**Table 2**).

As stated in Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27(a), analysis of “significance,” as used in the National Environmental Policy Act (NEPA), requires considerations of both context and intensity:

(a) Context. This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

(b) Intensity. This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:

- Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.
- The degree to which the proposed action affects public health or safety.
- Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.
- The degree to which the effects on the quality of the human environment are likely to be highly controversial.
- The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
- The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
- Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.
- The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places (NRHP) or may cause loss or destruction of significant scientific, cultural, or historical resources.
- The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.