

The primary purpose of the Boynton Beach Boulevard Interchange Modification Report (IMR) project is to identify the long-term needs through 2045 and to evaluate the concepts to address existing traffic congestion and related capacity deficiencies caused by the short weaving section which is currently operating at Level of Service (LOS) F during AM peak hour. As traffic demand increases in the future, traffic operations are expected to deteriorate within the interchange weaving section and thus impacting the freeway mainline. This IMR evaluates the traffic operations of the No-Build and Build alternatives.

The information and analysis indicate that several of the merge, diverge, and weaving areas along Florida's Turnpike and ramp intersections along Boynton Beach Boulevard are projected to experience operational failures in 2045. Proposed modifications to the mainline, ramps, and the interchange are recommended to address projected deficiencies in the future. Listed below are specific modifications and projected benefits:

- The proposed Build Alternative includes relocating the southbound off-ramp upstream of Boynton Beach Boulevard. The southbound on-ramp serving the westbound to southbound traffic merges with the mainline upstream of Boynton Beach Boulevard as a lane-add. A new southbound on-ramp serving the eastbound to southbound traffic is added and merges with the mainline. The two-lane exit for the northbound off-ramp will have a lane-drop under the Build condition. The Build alternative lane configuration is depicted on **Figure 5.1**.
- Under the 2045 No-Build condition, majority of the freeway mainline segments are projected to operate at LOS E or worse in both the northbound and southbound directions either during one or both design hours. The proposed Build alternative with a 10-lane section south of Boynton Beach Boulevard and an 8-lane section north of Boynton Beach Boulevard will provide LOS D or better operations for all freeway mainline segments.
- Under 2045 No-Build condition, the failure of the existing barrier separated southbound weaving section between the southbound off-ramp and the southbound on-ramp is expected to cause operational and safety problems on the Turnpike mainline. The freeway mainline will be over-capacity south of the southbound on-ramp merge from Boynton Beach Blvd. The proposed elimination of this weaving section under the Build condition will significantly improve the safety and flow of traffic along the Turnpike mainline.
- The proposed two-lane exit for the northbound off-ramp with a lane-drop under the 2045 Build condition will significantly improve the ramp junction Level of Service from LOS F under the 2045 No-Build condition to LOS D under the Build condition. Further modification was made at the northbound off ramp terminal by assigning northbound shared left, thru and right turn lane which will stop at the traffic signal and an exclusive northbound right turn lane which will operate under yield condition as part of the Transportation System Management and Operations (TSM&O). This configuration will reduce the weaving issue for the northbound off-ramp traffic turning eastbound left at Hagen Ranch Road.

- The southbound ramp improvements and modifications proposed under the 2045 Build condition will improve the Level of Service of the southbound ramp terminal intersection from LOS F under the 2045 No-Build condition to LOS B under the Build condition during AM design hour.
- All mainline and ramp freeway segments projected to operate at LOS E or worse under the 2045 No-Build condition are expected to operate at LOS D or better under the 2045 Build condition.

These improvements address the traffic operation deficiencies by eliminating or improving the failing conditions within the interchange influence area and improving safety by reducing congestion and improving operating conditions along Boynton Beach Boulevard. Considering the overall operations along Florida's Turnpike, ramp terminals, and along Boynton Beach Boulevard, the Build alternative is projected to provide better operating conditions than the No-Build. The Highway Safety Manual (HSM) safety analysis shows that the Build condition is expected to have approximately 499 fewer crashes than the No-Build with a saving of approximately \$46 million over a 20-year period in 2020 present value.

The Federal Highway Administration's (FHWA's) newly adopted policy on *Access to the Interstate System* became effective on May 22, 2017 and replaces the policy of August 27, 2009 on *Access to the Interstate System*, published at 74 Federal Register 43743. The changes in this policy are made to ensure this policy focuses on safety, operational, and engineering issues. The consideration of social, economic, and environmental impacts discussed in the 2009 policy are removed from this policy. However, the removal from this policy does not eliminate the need to consider those matters. Those issues will be addressed under the National Environmental Policy Act and other statutes and regulations applicable to the approval process.

Considerations and Requirements

1. *An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, and ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections. The analysis should, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access (Title 23, Code of Federal Regulations (CFR), paragraphs 625.2(a), 655.603(d) and 771.111(f)). The crossroads and the local street network, to at least the first major intersection on either side of the proposed change in access, should be included in this analysis to the extent necessary to fully evaluate the safety and operational impacts that the proposed change in access and other transportation improvements may have on the local street network (23 CFR 625.2(a) and 655.603(d)). Requests for a proposed change in access should include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute, and accommodate traffic on the Interstate facility, ramps, intersection of ramps with crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request should also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 U.S.C. 109(d) and 23 CFR 655.603(d)).*

The operational analysis conducted for the IMR confirmed that the proposed interchange modifications are not expected to have any adverse impacts on safety and operations on the interstate facility (Florida's Turnpike). The proposed elimination of the barrier separated southbound weaving segment between the southbound off-ramp and the southbound on-ramp will significantly improve the safety and flow of traffic along the Turnpike mainline and the southbound ramps. The proposed two-lane exit for the northbound off-ramp with a lane-drop under the Build condition will significantly improve the ramp junction Level of Service from LOS F under the No-Build to LOS D under the Build condition. The southbound ramp improvements and modifications proposed under the Build condition will improve the Level of Service of the southbound ramp terminal intersection from LOS F under the No-Build condition to LOS B under the Build condition during the AM design hour. In addition, all mainline and ramp freeway segments projected to operate at LOS E or worse under the No-Build condition are expected to operate at LOS D or better under the Build condition.

The projected failing conditions under the No-Build Alternative are expected to increase future crash risk within the project corridor. This potential for increased crash risk is alleviated by the capacity improvements proposed in the Build Alternative. The predictive crash analysis comparison between No-Build and Build Alternatives shows that the overall predicted number of crashes are lower for Build compared to the No-Build. The Build Alternative is predicted to have a 20-year crash cost savings of approximately \$46 Million compared to the No-Build Alternative, in 2020 present value.

- 2. The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" may be considered on a case-by-case basis for applications requiring special access, such as managed lanes (e.g., transit or high occupancy vehicle and high occupancy toll lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)). In rare instances where all basic movements are not provided by the proposed design, the report should include a full-interchange option with a comparison of the operational and safety analyses to the partial-interchange option. The report should also include the mitigation proposed to compensate for the missing movements, including wayfinding signage, impacts on local intersections, mitigation of driver expectation leading to wrong-way movements on ramps, etc. The report should describe whether future provision of a full interchange is precluded by the proposed design.*

This IMR does not propose any new interchanges along Florida's Turnpike. The existing interchange provides access to public roads only. The improvements proposed at the interchange will maintain full access to the existing cross streets and accommodate all movements.