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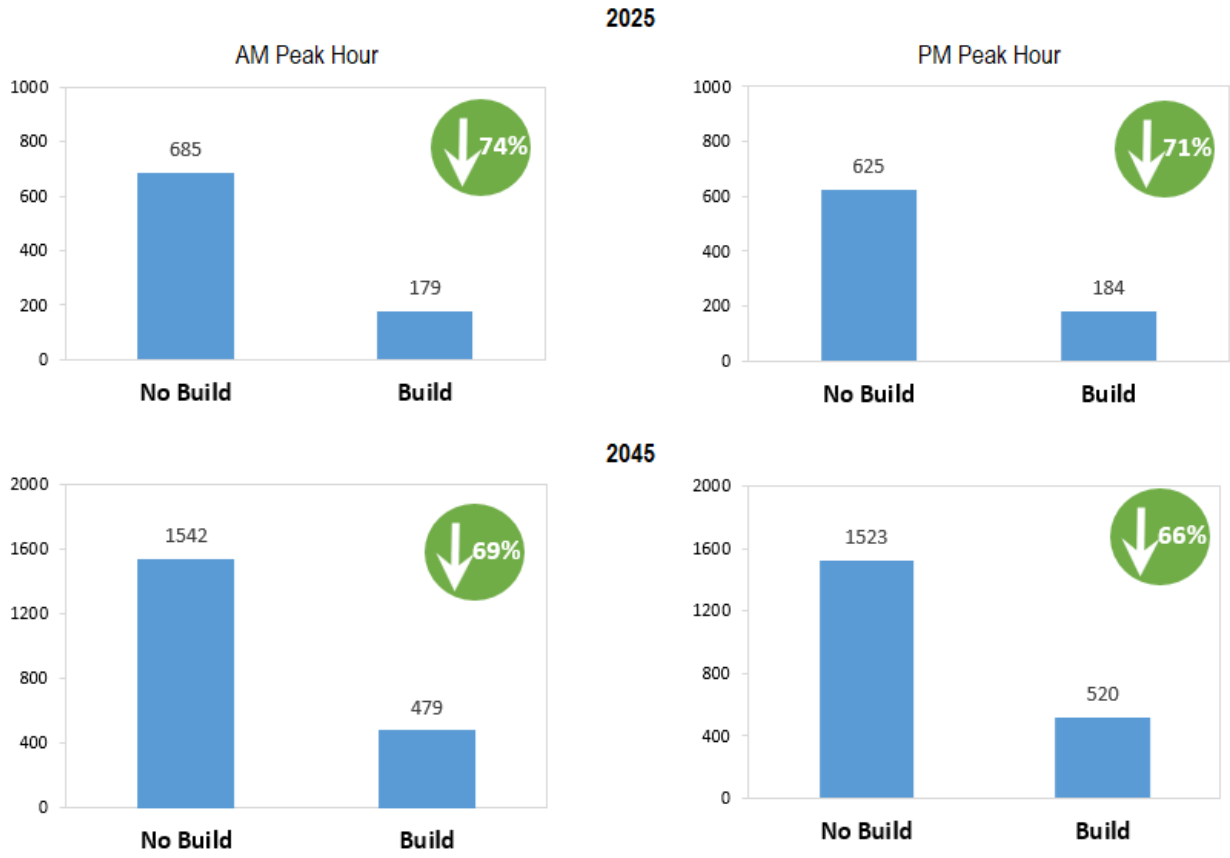
A summary of the cumulative delay for the intersections is presented in **Figure 6.2**. Results indicate that the Build alternative will have a 69 and 66 percent reduction in total intersection delay within the AOI in the 2045 design year AM and PM peak hour, respectively, when compared to the No Build. This major reduction in delay will reduce congestion within the AOI and improve traffic operations.

Figure 6.2
Cumulative Intersections Delay (secs)



6.3. FUTURE SAFETY EVALUATION

A safety analysis was conducted to study the future impacts of the proposed Polk Parkway and S.R. 540 interchange modification on the existing roadways within the AOI. The analysis was conducted using the predictive methods in Chapters 12 and 19 of the Highway Safety Manual (HSM), where applicable, and the Interchange Safety Analysis Tool (ISATe), which apply a combination of Safety Performance Functions (SPFs), Crash Modification Factors (CMFs), and calibration factors to estimate frequency and cost of crashes for each segment and intersection. The No Build and Build alternatives were evaluated and the predicted number of crashes and associated costs from 2025 to 2045 are summarized in **Table 6.13**.

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The results show that predicted crashes and costs will be lower with the Build CPP project compared to No Build at most of the existing intersections, ramps and arterials within the analysis area such as U.S. 98, S.R. 540 and U.S. 92. This is due to traffic diversion from the existing roadways to the proposed CPP facility. The S.R. 98 interchange ramps and intersections will experience the highest reduction in traffic within the analysis AOI and thus, experience the highest reduction in crashes and associated costs of approximately 27 and 32 percent, respectively. Reduction in predicted crashes and costs on S.R. 540 and U.S. 92 is expected to range from two to five percent. The CPP will relieve traffic congestion on U.S. 98 and S.R. 540 by providing a more direct and faster route for trips originating from Lakeland and I-4, to the regions east or northeast of Bartow. As a result, potential crashes along U.S. 98 south of Polk Parkway to Bartow are also expected to be lower with the Build alternative compared to the No Build.

With the addition of the proposed CPP ramps along Polk Parkway, new conflict points will be created. However, the design of the ramps and gores follows FDOT standards to provide features that mitigate potential crashes such as long acceleration and deceleration lanes, adequate sight distances, gentle cross-slopes, superelevation, wide curve radii, wide shoulders, signing, among others. It's also important to note that crash analysis for existing conditions previously presented in **Section 3.3** showed that the highest safety ratio for the Polk Parkway mainline and ramps is 0.57, indicating that there is currently no safety deficiency in the area. A roadway may have a safety deficiency if the safety ratio is greater than 1.0. It is expected that future Build conditions will not create adverse safety concerns along Polk Parkway. Detailed safety analysis tables are provided in **Appendix H**.

Table 6.13
Predicted Number of Crashes and Costs from 2025 to 2045

	No Build		Build	
Site	**$N_{predicted*}$**	**2018 Present Value**	**$N_{predicted*}$**	**2018 Present Value**
Intersections				
U.S. 98 and Polk Parkway Eastbound Ramps	145.5	$15,959,232	103.0	$10,492,362
U.S. 98 and Polk Parkway Westbound Ramps	126.4	$13,854,845	95.8	$9,670,313
S.R. 540 and Landfill Road	168.6	$16,938,103	169.4	$17,000,018
S.R. 540 and Polk Parkway East Ramps	75.2	$7,407,514	-	-
S.R. 540 and CPP Westbound Ramps	-	-	148.1	$14,705,523
S.R. 540 and CPP Eastbound Ramps	-	-	71.4	$7,095,149
S.R. 540 and Thornhill Road	186.2	$18,681,758	181.7	$18,132,033
U.S. 92 and Polk Parkway Eastbound Ramps	38.7	$3,848,649	40.4	$4,424,306
U.S. 92 and Polk Parkway Westbound Ramps	32.8	$3,278,108	31.3	$3,158,486
S.R. 540 Segments				
Landfill Road to Polk Parkway East Ramps	103.7	$10,435,752	105.2	$10,575,773
Polk Parkway East Ramps to Thornhill Road	272.7	$27,388,229	266.5	$26,606,016
Polk Parkway				
Ramp Segments				
U.S. 98	88.5	$6,129,880	64.7	$4,480,759
S.R. 540	18.6	$1,290,501	18.2	$1,260,257
CPP	-	-	41.9	$2,576,573
U.S. 92	14.0	$967,876	14.0	$967,876
Freeway Segments	822.7	$56,957,332	1055.5	$70,606,644

*Predicted Crashes Note: ISATe output adjusted using calibration factors

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Design of the CPP segment from Polk Parkway to U.S. 17 (FPID: 440897-2) which includes the proposed S.R. 540 interchange modification is expected to be completed in Spring 2020. Right of way is programmed in Fiscal Year 2020-2023 and construction in 2023. The estimated right of way and construction costs are approximately $13.6 Million and $227.4 Million, respectively.