

*Signal Warrant Analysis*

**Bluffton Parkway at Buckwalter Towne  
Boulevard  
Bluffton, SC**

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## **1.0 Introduction**

The intersection in question is the intersection of Buckwalter Parkway, Buckwalter Towne Boulevard, and Bluffton Parkway. This intersection is located in Bluffton, SC. The purpose of this study is to determine whether or not the signal that is currently at this intersection will be warranted after an upcoming construction project is complete. The intersection will be evaluated according to the standard MUTCD warrants for a traffic signal. There are nine warrants and only four of these were considered in the analysis. The nine warrants are:

- Warrant 1: Eight-Hour Vehicular Volume
- Warrant 2: Four-Hour Vehicular Volume
- Warrant 3: Peak Hour Vehicular Volume
- Warrant 4: Pedestrian Volume
- Warrant 5: School Crossing
- Warrant 6: Coordinated Signal System
- Warrant 7: Crash Experience
- Warrant 8: Roadway Network
- Warrant 9: Intersection Near a Grade Crossing

Only Warrants 1, 2, 3, and 4 were considered in this analysis.

## **2.0 Existing Conditions**

Bluffton Parkway and Buckwalter Parkway are both four-lane roadways with planted medians in the area of this intersection. Both roads have posted speed limits of 45 miles per hour (mph).

Buckwalter Towne Boulevard is a two-lane roadway providing access to a large multi-family complex. There is no posted speed limit on this road.

Figure 1 shows an aerial view of the intersection in its current state.

## **3.0 Proposed Conditions**

In the future, Bluffton Parkway will be relocated approximately 1,000 feet to the south of the current intersection. Once the new section is constructed, a new traffic signal will be constructed at the new intersection of Bluffton Parkway and Buckwalter Parkway and the old section of Bluffton Parkway will be removed. This leaves the intersection in question in the form of a t-intersection with most of the major turning movements being made at the new, proposed intersection.



Figure 1: Intersection Aerial View

#### 4.0 Data Collection and Analysis

To determine whether or not the existing signal location will continue to be warranted in the future, a traffic count was completed on September 18, 2013 to gather traffic volumes for the existing intersection. Count data was collected from 7 am – 9 am, 11 am – 1 pm, 4 pm – 6 pm in order to capture the peak hour volumes. After the volumes were collected, the volumes were adjusted for the future intersection, a t-intersection. For example, the eastbound left turns on Bluffton Parkway were added to the northbound thru movement on Buckwalter Parkway. Attached to this report are the traffic volumes collected as well as the future volumes once the new section of Bluffton Parkway is constructed.

These adjusted volumes were input into the Warrants 7 software to determine whether or not the signal will be warranted after construction of the new section of Bluffton Parkway. It should be noted that usually when there are separate right turn lanes, the right turn volume is not

considered in the warrant analysis. However, we kept the right turn volumes in the analysis. Table 1 below summarizes the results of the warrant analysis.

<b>Hour</b>	<b>Warrant 1</b>	<b>Warrant 2</b>	<b>Warrant 3</b>	<b>Warrant 4</b>
<b>7am – 8 am</b>	Yes	Yes	No	No
<b>8 am – 9 am</b>	No	No	No	No
<b>11 am – 12 pm</b>	No	No	No	No
<b>12 pm – 1 pm</b>	No	No	No	No
<b>4 pm – 5 pm</b>	No	No	No	No
<b>5 pm – 6 pm</b>	No	No	No	No
<b>Warrant Met?</b>	<b>No (1 hour met, 8 required)</b>	<b>No (1 hour met, 4 required)</b>	<b>No (0 hours met, 1 required)</b>	<b>No</b>

Table 1: Warrant Analysis Results

## 5.0 Conclusion

As seen in Table 1, the intersection does not meet any of the four warrants. Therefore, we recommend that when the new section of Bluffton Parkway is completed, the signal at the current intersection be removed and replaced with a stop sign for the Buckwalter Towne Blvd approach. Buckwalter Parkway will become free-flow at this intersection.

Existing Volumes (Collected 9-18-2013)

	Buckwalter Pkwy Southbound				The Townes Westbound				Buckwalter Pkwy Northbound				Bluffton Pkwy Eastbound			
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
<b>7:00 AM</b>	7	70	2	0	7	1	7	0	2	102	64	0	104	0	6	0
<b>7:15 AM</b>	16	89	1	0	6	2	7	5	6	147	89	0	114	2	18	4
<b>7:30 AM</b>	21	94	1	0	3	1	17	0	3	138	80	0	139	0	16	0
<b>7:45 AM</b>	13	80	0	1	9	1	13	4	1	126	83	0	149	0	19	2
<b>8:00 AM</b>	14	73	3	0	10	2	10	3	3	124	74	0	152	1	15	0
<b>8:15 AM</b>	17	71	2	0	5	4	2	1	1	128	70	0	140	2	18	0
<b>8:30 AM</b>	11	56	3	2	3	2	10	0	1	96	67	2	136	1	21	0
<b>8:45 AM</b>	13	80	3	1	6	2	7	2	3	103	47	0	120	1	11	0
<b>*BREAK*</b>																
<b>11:00 AM</b>	9	63	2	0	4	1	4	0	2	68	69	0	87	2	8	0
<b>11:15 AM</b>	11	46	3	0	1	1	5	1	2	71	62	0	87	0	9	0
<b>11:30 AM</b>	7	67	3	0	5	0	4	1	4	66	68	0	93	3	7	0
<b>11:45 AM</b>	12	68	1	0	1	5	0	1	2	85	78	0	73	2	14	0
<b>12:00 PM</b>	16	79	3	0	3	1	2	0	1	87	80	0	72	0	11	1
<b>12:15 PM</b>	17	60	0	0	3	1	5	0	4	67	76	0	86	2	8	0
<b>12:30 PM</b>	10	76	5	0	2	1	2	0	3	70	74	0	82	1	10	1
<b>12:45 PM</b>	16	84	2	0	2	2	4	1	4	70	64	0	86	1	10	0
<b>*BREAK*</b>																
<b>4:00 PM</b>	15	105	6	1	2	2	5	0	6	99	119	0	93	3	19	1
<b>4:15 PM</b>	24	91	3	0	2	0	7	1	3	110	109	0	117	1	23	1
<b>4:30 PM</b>	16	114	3	0	2	2	6	1	8	101	87	0	116	1	8	0
<b>4:45 PM</b>	16	145	4	0	3	2	7	0	8	119	112	0	107	3	11	2
<b>5:00 PM</b>	12	128	6	0	2	2	4	0	9	112	123	0	115	4	23	0
<b>5:15 PM</b>	17	134	5	0	1	0	2	0	14	119	109	0	137	0	12	1
<b>5:30 PM</b>	24	151	1	0	9	0	7	1	11	135	119	0	119	4	29	0
<b>5:45 PM</b>	15	127	4	0	5	1	3	0	8	137	96	0	129	1	8	1

**Future Volumes (Adjusted Existing Volumes for After New Section of Bluffton Parkway is Completed)**

	Buckwalter Pkwy Southbound				The Townes Westbound				Buckwalter Pkwy Northbound				Bluffton Pkwy Eastbound			
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
7:00 AM	0	77	2	0	7	0	8	0	2	108	0	0	0	0	0	0
7:15 AM	0	105	1	0	6	0	9	5	8	165	0	0	0	0	0	4
7:30 AM	0	115	1	0	3	0	18	0	3	154	0	0	0	0	0	0
7:45 AM	0	93	0	1	9	0	14	4	1	145	0	0	0	0	0	2
8:00 AM	0	87	3	0	10	0	12	3	4	139	0	0	0	0	0	0
8:15 AM	0	88	2	0	5	0	6	1	3	146	0	0	0	0	0	0
8:30 AM	0	67	3	2	3	0	12	0	2	117	0	2	0	0	0	0
8:45 AM	0	93	3	1	6	0	9	2	4	114	0	0	0	0	0	0
*BREAK*																
11:00 AM	0	72	2	0	4	0	5	0	4	76	0	0	0	0	0	0
11:15 AM	0	57	3	0	1	0	6	1	2	80	0	0	0	0	0	0
11:30 AM	0	74	3	0	5	0	4	1	7	73	0	0	0	0	0	0
11:45 AM	0	80	1	0	1	0	5	1	4	99	0	0	0	0	0	0
12:00 PM	0	95	3	0	3	0	3	0	1	98	0	0	0	0	0	1
12:15 PM	0	77	0	0	3	0	6	0	6	75	0	0	0	0	0	0
12:30 PM	0	86	5	0	2	0	3	0	4	80	0	0	0	0	0	1
12:45 PM	0	100	2	0	2	0	6	1	5	80	0	0	0	0	0	0
*BREAK*																
4:00 PM	0	120	6	1	2	0	7	0	9	118	0	0	0	0	0	1
4:15 PM	0	115	3	0	2	0	7	1	4	133	0	0	0	0	0	1
4:30 PM	0	130	3	0	2	0	8	1	9	109	0	0	0	0	0	0
4:45 PM	0	161	4	0	3	0	9	0	11	130	0	0	0	0	0	2
5:00 PM	0	140	6	0	2	0	6	0	13	135	0	0	0	0	0	0
5:15 PM	0	151	5	0	1	0	2	0	14	131	0	0	0	0	0	1
5:30 PM	0	175	1	0	9	0	7	1	15	164	0	0	0	0	0	0
5:45 PM	0	142	4	0	5	0	4	0	9	145	0	0	0	0	0	1