



US 52

BCDCOG US 52 Corridor Study

Travel Forecasting Summary Report

Berkeley and Charleston Counties, South Carolina

BCDCOG
BERKELEY-CHARLESTON-DORCHESTER
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January 2022

Prepared for
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1 Introduction

The US 52 Corridor Study is a key planning project in the region that seeks to establish a vision for the corridor from North Charleston, through Goose Creek, to Moncks Corner. The study will define the relationship between the roadway and adjacent land uses while planning for the corridor's overall future growth. Additionally, the study serves as a tool to assess the corridor's existing conditions and develop a preferred future condition. The study examines current plans for the area, considers existing land use trends, and provides an inventory of the environmental and transportation elements within the corridor. These factors will drive a range of context-sensitive multimodal solutions, such as high-capacity transit, that maximize existing infrastructure and improve roadway safety, access/mobility, and long-term capacity of the corridor. Transit service and traffic operations scenarios were developed to complement the three land use scenarios. Finally, the US 52 Corridor Study will support coordinated land uses and corridor preservation across all impacted jurisdictions.

To help in the visioning process, the US 52 Corridor Study includes the development and assessment of future corridor land use development scenarios. This Summary Report outlines the three Development Scenarios, The Travel Forecasting process and the resultant traffic analysis for each scenario.

2 Land Use Development Scenarios

Three Land Use Scenarios were developed and evaluated including the **Base Scenario** which reflects conditions in 2040 if current trends continue. The Base Scenario assumes that 100 percent of developed parcels will remain developed, 100 percent of parcels with committed development will develop as planned, and no development will take place on parcels designated as open space. The Growth Management Scenario, as in all modeled development scenarios, assumes that 100 percent of developed parcels will remain developed, 100 percent of parcels with committed development will develop as planned, and no development will take place on parcels designated as open space. The **Growth Management Scenario** provides an alternate future development pattern to the Base Scenario by redistributing a portion of future growth from the corridor's study area to the eleven identified nodes. The Growth Management Scenario does not assume any additional growth in the study area but instead provides a theoretical alternative to the Base Scenario under which growth is redistributed to, and concentrated in, identified nodes where multimodal access can be provided. The **TOD Scenario**, as in all modeled development scenarios, assumes that 100 percent of developed parcels will remain developed, 100 percent of parcels with committed development will develop as planned, and no development will take place on parcels designated as open space. The TOD Scenario provides an alternate future development pattern to the Base and Growth Management Scenarios by redistributing future growth to the identified nodes from both the study area and the additional areas of influence surrounding the TOD nodes. In the TOD Scenario, TOD nodes follow the same footprint as nodes used in the Growth Scenario but redistribute population and jobs from a larger area of influence to achieve a higher density. This larger area of influence is the geographic area beyond the study area boundary out to a two-mile radius beyond the center point of the TOD node.

3 Travel Forecasting

The CHATS Travel Demand Model (TDM) was used to develop traffic assignments for the US 52 study area to assess the changes resulting from the shifts in population, households, and employment forecasts identified in the 2040 Growth Management and 2040 Transit-Oriented Development (TOD) land use scenarios compared to the Base Scenario. Four model runs were performed: 2020 Land Use, 2040 Base Land Use, 2040 Growth Management Land Use and 2040 TOD Land Use. The 2040 Base Land Use represents the current 2040 Land Use estimates currently in place in the CHATS model.

This report evaluates different possible development trajectories than those represented by the current 2040 Base Land Use forecasts to help establish a vision for the corridor. The 2040 Growth Management and 2040 TOD land uses changes were made through adjustments in the socio-economic data inputs at certain selected Traffic Analysis Zones (TAZ) that either connect directly to US 52 or to adjacent roadways in proximity to the corridor study area. The socio-economic inputs of these scenarios were incorporated into two separate CHATS TAZ files representing the 2040 Growth Management and 2040 TOD land uses. Two model scenarios were created and run in the TDM for the 2040 Growth Management and 2040 TOD conditions and a series of metrics/measures of effectiveness (MOE) were generated by the model. The metrics for the 2020, 2040 Base, 2040 Growth Management, and 2040 TOD scenarios were summarized and compared to determine the differences compared to the 2040 Base condition.

As expected, there is a noticeable change between what the model predicts for current (2020) conditions and those forecast for the 2040 scenarios. The primary purpose of comparison is to identify the potential performance differences predicted between each scenario. The 2020 conditions are included in the tables as a benchmark for current network performance.

Application of Performance Measures

The first set of performance measures evaluate Peak Period Volume, Daily Traffic Volume and Volume-to-Capacity (v/c) ratio for a representative sample of twelve selected roadway links within the study area along US 52, Old US 52, and Rembert C Dennis Boulevard.

Peak Period Volume

Table 3-1 below provide the model results for Peak Period (6-9 AM & 4-7 PM).

Table 3-1: Peak Period Volume

Link #	Street	AM Peak Period Volume				PM Peak Period Volume			
		2020	2040 Base	2040 GM	2040 TOD	2020	2040 Base	2040 GM	2040 TOD
12880	US 52 north of Old US 52/Rembert C. Dennis Blvd	2,322	4,632	4,379	4,051	2,359	4,550	4,193	3,971
12082	Rembert C. Dennis Blvd north of US 52 /Old US 52	1,748	2,927	2,705	2,898	1,816	3,196	3,169	3,290
12875	US 52 north of Gaillard Road	2,069	4,420	4,125	4,067	2,272	4,333	4,326	4,284
11921	Old US 52 north of Gaillard Road	118	380	311	370	138	383	327	350
12890	US 52 north of Cypress Gardens Road	2,504	4,933	4,801	4,861	3,541	8,539	8,495	8,451
12887	US 52 north of Old US 52	4,374	9,968	9,929	9,756	2,910	6,533	6,472	6,402
11918	Old US 52 north of US 52	703	2,142	2,018	2,254	1,144	2,043	2,007	2,121
12901	US 52 north of US 176	2,962	5,608	5,667	5,696	6,123	10,726	10,718	10,756
12218	US 52 north of US 78	9,860	14,533	14,544	14,549	4,796	8,879	8,902	8,913
12782	US 176 west of US 52	6,783	14,503	14,495	14,481	7,251	14,348	14,191	14,239
12216	US 52 north of Otranto Road	11,077	13,041	13,026	13,038	5,104	8,536	8,515	8,532
12976	US 78 west of US 52	9,845	14,064	14,086	14,088	9,539	14,324	14,361	14,351

As indicated, there are significant increases in peak period volumes from 2020 to 2040, but minimal differences between scenarios. Average increases along US 52 range from 18% to 126% during the AM peak period and between 67% and 140% during the PM peak period. The largest percent increases are in the central portion of the corridor, between north of Old US 52 and the northern end of the corridor where the majority of new development is likely to occur. The smallest percent increases are shown south of US 176 and west along US 78 where current traffic volumes are already the highest within the study area.

Daily Volume

Table 3-2 below provide the model results for Daily Traffic.

Table 3-2: Daily Volume

Link #	Street	Daily Volume			
		2020	2040 Base	2040 GM	2040 TOD
12880	US 52 north of Old US 52/Rembert C. Dennis Blvd	10,767	22,410	21,185	20,012
12082	Rembert C. Dennis Blvd north of US 52 /Old US 52	8,680	13,881	12,989	13,684
12875	US 52 north of Gaillard Road	10,353	19,889	19,492	19,330
11921	Old US 52 north of Gaillard Road	544	1,663	1,391	1,513
12890	US 52 north of Cypress Gardens Road	14,833	33,668	33,310	33,281
12887	US 52 north of Old US 52	16,011	35,308	35,136	34,617
11918	Old US 52 north of US 52	4,574	10,564	10,201	10,931
12901	US 52 north of US 176	22,840	40,592	40,675	40,834
12218	US 52 north of US 78	30,957	48,482	48,499	48,587
12782	US 176 west of US 52	33,519	67,004	66,466	66,545
12216	US 52 north of Otranto Road	33,615	45,427	45,364	45,406
12976	US 78 west of US 52	43,620	65,469	65,549	65,535

Similarly, there are some significant increases in daily volumes from 2020 to 2040, but minimal differences between scenarios. Average increases along US 52 range from 35% to 125% with the largest percent increases between north of Old US 52 and the northern end of the corridor. The smallest percent increases are shown south of US 176 and west along US 78.

Volume-to-Capacity Ratio (v/c)

The v/c ratio results for these selected links are in **Table 3-3**.

Table 3-3: V/C ratios

Link #	Street	AM Peak Period				PM Peak Period			
		2020	2040 Base	2040 GM	2040 TOD	2020	2040 Base	2040 GM	2040 TOD
12880	US 52 north of Old US 52/Rembert C. Dennis Blvd	0.23 / A	0.34 / B	0.33 / B	0.32 / B	0.18 / A	0.41 / B	0.34 / B	0.33 / B
12082	Rembert C. Dennis Blvd north of US 52/Old US 52	0.40 / B	0.58 / C	0.54 / C	0.60 / C	0.40 / B	0.62 / C	0.57 / C	0.60 / C
12875	US 52 north of Gaillard Road	0.19 / A	0.41 / B	0.38 / B	0.38 / B	0.23 / A	0.45 / B	0.45 / B	0.44 / B
11921	Old US 52 north of Gaillard Road	0.03 / A	0.08 / A	0.06 / A	0.08 / A	0.03 / A	0.09 / A	0.07 / A	0.08 / A
12890	US 52 north of Cypress Gardens Road	0.23 / A	0.46 / B	0.45 / B	0.45 / B	0.35 / B	0.86 / E	0.85 / E	0.85 / E
12887	US 52 north of Old US 52	0.39 / B	0.88 / E	0.88 / E	0.87 / E	0.29 / A	0.66 / C	0.66 / C	0.65 / C
11918	Old US 52 north of US 52	0.15 / A	0.35 / B	0.30 / B	0.38 / B	0.32 / B	0.43 / B	0.43 / B	0.43 / B
12901	US 52 north of US 176	0.28 / A	0.53 / C	0.54 / C	0.54 / C	0.62 / C	1.09 / F	1.09 / F	1.09 / F
12218	US 52 north of US 78	0.86 / E	1.27 / F	1.27 / F	1.27 / F	0.48 / B	0.89 / E	0.89 / E	0.89 / E
12782	US 176 west of US 52	0.49 / B	1.00 / E	1.00 / E	0.99 / E	0.42 / B	0.83 / D	0.82 / D	0.82 / D
12216	US 52 north of Otranto Road	0.98 / E	1.16 / F	1.16 / F	1.16 / F	0.52 / C	0.87 / E	0.87 / E	0.87 / E
12976	US 78 west of US 52	0.77 / D	1.21 / F	1.21 / F	1.21 / F	0.83 / D	1.19 / F	1.19 / F	1.19 / F

As shown, there is little or no difference between scenarios except for a few minor increases or decrease between scenarios. In general the v/c ratios increase from north to south, especially in Goose Creek and North Charleston.

For the remaining MOE comparisons shown in **Table 3-4** through **Table 3-9**, the US 52 corridor was split into 9 segments between Rembert C. Dennis Blvd and Otranto Road. The performance of US 78 through the US 52 interchange is also reported.

The metrics are summarized in the northbound and southbound directions and are each comprised of anywhere from one to five separate model network links.

Peak Period Average Speed

Table 3-4 summarizes the results for the predicted average speed (in miles per hour) in the morning and afternoon peak periods.

Table 3-4: AM/PM average speed

Northbound US 52 from Otranto Road to Rembert C Dennis Blvd	Length	AM Average Speed (mph)				PM Average Speed (mph)			
		2020	2040 Base	2040 GM	2040 TOD	2020	2040 Base	2040 GM	2040 TOD
From Gaillard Rd to Rembert C Dennis Blvd	3.68	66.81	65.84	66.13	66.19	66.80	65.88	65.94	65.98
From Cypress Garden Rd to Gaillard Rd	3.85	68.59	67.58	67.69	67.68	68.42	61.59	61.46	61.50
From Old US 52 to Cypress Garden Rd	2.29	68.58	68.11	68.12	68.08	68.34	57.72	58.39	57.99
From Old Mt Holly Rd to Old US 52	1.80	64.67	62.32	62.25	62.29	63.83	37.43	38.95	39.00
From Central Avenue to Old Mt Holly Road	1.82	51.94	49.86	49.77	49.72	49.10	31.52	31.63	31.53
From Liberty Hall Rd to Central Avenue	0.40	47.29	43.08	42.90	42.82	38.34	6.77	7.00	6.89
From US 176/Red Bank Rd to Liberty Hall Rd	0.37	42.68	42.33	42.31	42.30	40.68	25.95	26.00	26.05
From US 78 Interchange to US 176/Red Bank Rd	1.22	39.42	38.49	38.49	38.47	28.89	6.52	6.61	6.57
Within the US 78 Interchange Area	0.85	47.18	46.47	46.44	46.44	34.25	12.52	12.59	12.63
From Otranto Road to the US 78 interchange	0.13	46.81	46.63	46.63	46.63	35.47	19.63	19.82	20.00
Total	16.41	59.38	58.05	58.09	58.08	54.63	27.40	27.75	27.65

Southbound US 52 from Otranto Road to Rembert C Dennis Blvd	Length	AM Average Speed (mph)				PM Average Speed (mph)			
		2020	2040 Base	2040 GM	2040 TOD	2020	2040 Base	2040 GM	2040 TOD
From Gaillard Rd to Rembert C Dennis Blvd	3.70	60.35	59.76	59.74	59.74	60.31	58.21	58.81	58.87
From Cypress Garden Rd to Gaillard Rd	3.84	68.35	61.13	60.89	60.88	68.40	64.75	64.90	64.92
From Old US 52 to Cypress Garden Rd	2.30	67.95	52.68	52.88	53.70	68.48	62.73	62.93	63.15
From Old Mt Holly Rd to Old US 52	1.80	63.78	63.78	63.78	63.78	63.78	63.78	63.78	63.78
From Central Avenue to Old Mt Holly Road	1.82	49.79	31.21	31.57	31.52	51.53	42.52	42.64	42.50
From Liberty Hall Rd to Central Avenue	0.40	24.57	4.32	4.36	4.29	30.16	11.82	11.79	11.81
From US 176/Red Bank Rd to Liberty Hall Rd	0.34	28.87	21.49	21.72	21.48	29.29	26.95	26.96	26.94
From US 78 Interchange to US 176/Red Bank Rd	1.24	29.62	5.14	5.23	5.22	40.30	26.71	26.80	26.68
Within the US 78 Interchange Area	0.85	18.44	7.20	7.23	7.22	37.17	25.91	26.04	25.93
From Otranto Road to the US 78 interchange	0.13	32.42	22.81	22.93	22.93	45.34	42.23	42.27	42.24
Total	16.42	48.85	21.80	22.06	22.00	55.53	44.88	45.08	45.06

In the northbound direction during the AM peak period, higher speeds over 60 mph are predicted within the northern end of the US 52 corridor north of Old Mt Holly Road. South of Old Mt Holly Road, northbound speeds are generally predicted to be between approximately 40 to 50 mph, with the lowest predicted speed just under 40 mph between the US 78 Interchange and US 176/Red Bank Road. Average speeds are generally comparable between the 2040 Base, 2040 Growth Management, and 2040 TOD.

During the PM peak period, higher average speeds in the upper 50 mph to mid-60 mph are predicted to occur along the corridor north of Cypress Gardens Road. South of Cypress Gardens Road, the average speeds are substantially lower than those predicted in the AM peak period and do not exceed 40 mph. Significant congestion is expected to occur between the US 78 interchange and US 176/Red Bank Road and between Liberty Hall Road and Central Avenue, where the predicted speeds are less than seven mph. As in the AM peak period, there are no significant differences between the predicted between the 2040 Base, 2040 Growth Management and 2040 TOD scenarios.

Similarly, in the southbound direction during the AM peak period, speeds north of Old Mt Holly Road are predicted to range between 50 mph and 65 mph. The predicted speeds drop to about 30 mph between Central Avenue and Old Mt Holly Road, and to about 20 mph between Liberty Hall Road and US 176/Red Bank Road and between the US 78 interchange and Otranto Road. Very low predicted speeds between four and eight mph occur through the southbound segments between Central Avenue and Liberty Hall Rd, and from US 176/Red Bank Road through the US 78 Interchange area.

During the PM peak period, average southbound speeds in the upper 50 mph to mid-60 mph are predicted to occur along the corridor north of Old Mt Holly Road. The US 52 segments between Old Mt Holly Road and Central Avenue and between the US 78 interchange and Otranto Road are predicted to have speeds just over 40 mph. The three segments between Liberty Hall Road through the US 78 interchange are predicted

to have average speeds about 25 mph. The lowest predicted average speed (about 12 mph) occurs between Central Avenue and Liberty Hall Road.

There is no significant difference in speeds between the 2040 Base, 2040 Growth Management, and 2040 TOD land use scenarios in either the AM or PM peak periods.

Peak Period Travel Time

Another performance measure obtained from the CHATS model scenarios is travel time. The results for the AM and PM peak periods are provided in **Table 3-5**. Travel time is inversely proportional to speed (lower speed means higher travel times) and dependent on the length of the segment considered.

In the northbound direction, travel times of over 11 minutes are predicted during the PM peak period on the 1.22 mile long segment between the US 78 Interchange to US 176/Red Bank Rd across all 2040 scenarios. In the southbound direction, the travel time is over 14 minutes during the AM peak period for the same link from US 176/Red Bank Road to the US 78 Interchange across all 2040 scenarios. These travel times are a substantial increase compared to the estimated 2.5 minute travel time predicted for this segment in the 2020 model forecasts.

Table 3-5: AM/PM travel time

Northbound US 52 from Otranto Road to Rembert C Dennis Blvd	Length	AM Travel Time (minutes)				PM Travel Time (minutes)			
		2020	2040 Base	2040 GM	2040 TOD	2020	2040 Base	2040 GM	2040 TOD
From Gaillard Rd to Rembert C Dennis Blvd	3.68	3.30	3.35	3.34	3.34	3.31	3.35	3.35	3.35
From Cypress Garden Rd to Gaillard Rd	3.85	3.37	3.42	3.41	3.41	3.38	3.75	3.76	3.76
From Old US 52 to Cypress Garden Rd	2.29	2.00	2.02	2.02	2.02	2.01	2.38	2.35	2.37
From Old Mt Holly Rd to Old US 52	1.80	1.67	1.73	1.73	1.73	1.69	2.89	2.77	2.77
From Central Avenue to Old Mt Holly Road	1.82	2.10	2.19	2.19	2.20	2.22	3.46	3.45	3.46
From Liberty Hall Rd to Central Avenue	0.40	0.51	0.56	0.56	0.56	0.63	3.55	3.43	3.48
From US 176/Red Bank Rd to Liberty Hall Rd	0.37	0.52	0.52	0.52	0.52	0.55	0.86	0.85	0.85
From US 78 Interchange to US 176/Red Bank Rd	1.22	1.86	1.90	1.90	1.90	2.53	11.23	11.07	11.14
Within the US 78 Interchange Area	0.85	1.08	1.10	1.10	1.10	1.49	4.07	4.05	4.04
From Otranto Road to the US 78 interchange	0.13	0.17	0.17	0.17	0.17	0.22	0.40	0.39	0.39
Total	16.41	16.58	16.96	16.95	16.95	18.02	35.94	35.48	35.61

Southbound US 52 from Otranto Road to Rembert C Dennis Blvd	Length	AM Travel Time (minutes)				PM Travel Time (minutes)			
		2020	2040 Base	2040 GM	2040 TOD	2020	2040 Base	2040 GM	2040 TOD
From Gaillard Rd to Rembert C Dennis Blvd	3.70	3.68	3.71	3.72	3.72	3.68	3.81	3.77	3.77
From Cypress Garden Rd to Gaillard Rd	3.84	3.37	3.77	3.78	3.78	3.37	3.56	3.55	3.55
From Old US 52 to Cypress Garden Rd	2.30	2.03	2.62	2.61	2.57	2.02	2.20	2.19	2.19
From Old Mt Holly Rd to Old US 52	1.80	1.69	3.18	3.04	3.05	1.68	2.09	2.06	2.06
From Central Avenue to Old Mt Holly Road	1.82	2.19	3.50	3.46	3.46	2.12	2.57	2.56	2.57
From Liberty Hall Rd to Central Avenue	0.40	0.98	5.56	5.51	5.59	0.80	2.03	2.04	2.03
From US 176/Red Bank Rd to Liberty Hall Rd	0.34	0.71	0.95	0.94	0.95	0.70	0.76	0.76	0.76
From US 78 Interchange to US 176/Red Bank Rd	1.24	2.51	14.47	14.22	14.25	1.85	2.79	2.78	2.79
Within the US 78 Interchange Area	0.85	2.77	7.08	7.05	7.07	1.37	1.97	1.96	1.97
From Otranto Road to the US 78 interchange	0.13	0.24	0.34	0.34	0.34	0.17	0.18	0.18	0.18
Total	16.42	20.17	45.19	44.67	44.79	17.74	21.95	21.85	21.87

Peak Period Vehicle Hours Travelled

The estimated vehicle hours travelled (VHT) along the US 52 segments are provided in **Table 3-6**. In the northbound and southbound directions, the total VHT is less than two percent lower in the 2040 Growth

Management and 2040 TOD scenarios than the 2040 Base scenario during both the AM and PM peak periods.

In the northbound direction, the PM peak period VHT is over four times that of the AM peak period VHT. The southbound VHT is about 3.4 times higher in the AM peak period than in the PM peak period.

The VHT for the 2040 Growth Management and the 2040 TOD scenarios are within less than one percent of each other, indicating that neither scenario provide an noticeable advantage in reducing VHT.

Table 3-6: AM/PM Vehicle hours travelled

Northbound US 52 from Otranto Road to Rembert C Dennis Blvd	Length	AM Vehicle Hours Travelled (VHT)				PM Vehicle Hours Travelled (VHT)			
		2020	2040 Base	2040 GM	2040 TOD	2020	2040 Base	2040 GM	2040 TOD
From Gaillard Rd to Rembert C Dennis Blvd	3.68	115.77	249.54	229.34	224.34	111.31	219.08	215.96	213.08
From Cypress Garden Rd to Gaillard Rd	3.85	129.07	258.68	250.78	251.60	160.24	424.28	427.89	427.15
From Old US 52 to Cypress Garden Rd	2.29	58.63	125.88	124.85	127.95	99.16	312.76	302.99	308.40
From Old Mt Holly Rd to Old US 52	1.80	65.25	159.96	161.36	160.83	112.89	517.55	484.99	484.04
From Central Avenue to Old Mt Holly Road	1.82	105.36	208.14	210.78	212.51	212.08	601.68	597.51	601.04
From Liberty Hall Rd to Central Avenue	0.40	23.32	49.44	49.96	50.23	58.85	531.14	509.94	519.98
From US 176/Red Bank Rd to Liberty Hall Rd	0.37	25.77	46.77	47.04	47.24	58.75	133.15	132.65	132.38
From US 78 Interchange to US 176/Red Bank Rd	1.22	99.45	198.60	198.47	198.96	360.74	2,280.24	2,241.69	2,260.18
Within the US 78 Interchange Area	0.85	55.50	104.78	105.40	105.51	213.14	804.06	798.53	795.21
From Otranto Road to the US 78 interchange	0.13	12.20	18.13	18.20	18.20	42.10	92.92	91.77	90.74
Total	16.41	690.33	1,419.91	1,396.17	1,397.39	1,429.24	5,916.85	5,803.91	5,832.19

Southbound US 52 from Otranto Road to Rembert C Dennis Blvd	Length	AM Vehicle Hours Travelled (VHT)				PM Vehicle Hours Travelled (VHT)			
		2020	2040 Base	2040 GM	2040 TOD	2020	2040 Base	2040 GM	2040 TOD
From Gaillard Rd to Rembert C Dennis Blvd	3.70	128.30	247.49	250.38	250.75	144.96	288.20	269.29	267.79
From Cypress Garden Rd to Gaillard Rd	3.84	174.52	485.69	492.76	493.50	146.71	340.30	335.80	335.27
From Old US 52 to Cypress Garden Rd	2.30	148.05	435.22	431.87	417.87	97.72	239.53	236.56	233.14
From Old Mt Holly Rd to Old US 52	1.80	130.23	673.78	627.28	631.92	88.56	281.02	274.39	273.22
From Central Avenue to Old Mt Holly Road	1.82	218.24	683.61	670.89	672.99	130.79	333.61	331.45	334.10
From Liberty Hall Rd to Central Avenue	0.40	97.74	845.19	836.12	851.04	45.80	226.92	227.32	227.16
From US 176/Red Bank Rd to Liberty Hall Rd	0.34	69.43	142.78	140.45	143.01	36.15	82.37	82.21	82.43
From US 78 Interchange to US 176/Red Bank Rd	1.24	397.19	3,410.16	3,344.17	3,353.80	140.98	403.38	401.55	404.23
Within the US 78 Interchange Area	0.85	487.64	1,522.57	1,514.12	1,518.05	108.71	270.45	268.38	270.14
From Otranto Road to the US 78 interchange	0.13	53.27	85.44	84.79	84.84	19.07	28.20	28.12	28.18
Total	16.42	1,904.62	8,531.92	8,392.82	8,417.77	959.44	2,493.97	2,455.08	2,455.67

Peak Period Vehicle Miles Travelled

The estimated vehicle miles travelled (VMT) along the US 52 segments are provided in **Table 3-7**. In the northbound and southbound directions, the VMT is less than two percent lower in the 2040 Growth Management and 2040 TOD scenarios than the 2040 Base scenario during both the AM and PM peak periods.

In the northbound direction, the PM peak period VMT is about 63 percent higher than the AM peak period VMT. The southbound VMT is about 41 percent higher in the AM peak period than in the PM peak period.

The VMT for the 2040 Growth Management and the 2040 TOD scenarios are within less than one percent of each other, indicating that neither scenario provide an noticeable advantage in reducing VMT.

Table 3-7: AM/PM Vehicle miles travelled

Northbound US 52 from Otranto Road to Rembert C Dennis Blvd	Length	AM Vehicle Miles Travelled (VMT)				PM Vehicle Miles Travelled (VMT)			
		2020	2040 Base	2040 GM	2040 TOD	2020	2040 Base	2040 GM	2040 TOD
From Gaillard Rd to Rembert C Dennis Blvd	3.68	7,748.22	16,448.31	15,187.82	14,875.83	7,458.60	14,471.98	14,284.79	14,106.67
From Cypress Garden Rd to Gaillard Rd	3.85	8,851.99	17,478.09	16,972.60	17,024.85	10,960.97	26,034.17	26,209.73	26,184.74
From Old US 52 to Cypress Garden Rd	2.29	4,023.70	8,579.56	8,510.98	8,715.98	6,780.50	18,063.04	17,702.24	17,894.45
From Old Mt Holly Rd to Old US 52	1.80	4,220.30	9,970.75	10,047.40	10,020.06	7,207.66	19,378.69	18,892.92	18,884.14
From Central Avenue to Old Mt Holly Road	1.82	5,502.78	10,407.42	10,527.34	10,601.25	10,270.20	18,801.86	18,716.98	18,766.22
From Liberty Hall Rd to Central Avenue	0.40	1,099.16	2,122.36	2,136.04	2,143.49	2,248.71	3,583.27	3,559.87	3,571.45
From US 176/Red Bank Rd to Liberty Hall Rd	0.37	1,090.05	1,961.44	1,972.16	1,980.06	2,368.32	3,423.90	3,418.07	3,417.25
From US 78 Interchange to US 176/Red Bank Rd	1.22	3,940.71	7,611.96	7,620.07	7,634.25	10,436.30	14,893.89	14,869.99	14,888.65
Within the US 78 Interchange Area	0.85	2,617.14	4,862.13	4,887.68	4,892.59	7,034.82	9,647.82	9,628.29	9,625.96
From Otranto Road to the US 78 interchange	0.13	575.50	851.90	854.79	855.14	1,504.47	1,837.60	1,832.22	1,828.69
Total	16.41	39,669.56	80,293.91	78,716.88	78,743.51	66,270.53	130,136.22	129,115.11	129,168.21

Southbound US 52 from Otranto Road to Rembert C Dennis Blvd	Length	AM Vehicle Miles Travelled (VMT)				PM Vehicle Miles Travelled (VMT)			
		2020	2040 Base	2040 GM	2040 TOD	2020	2040 Base	2040 GM	2040 TOD
From Gaillard Rd to Rembert C Dennis Blvd	3.70	7,859.13	15,015.51	15,218.32	15,237.82	8,790.89	16,794.41	15,871.27	15,810.06
From Cypress Garden Rd to Gaillard Rd	3.84	11,939.97	29,565.35	29,897.60	29,941.12	10,046.44	22,045.17	21,805.89	21,776.05
From Old US 52 to Cypress Garden Rd	2.30	10,046.59	22,896.78	22,805.19	22,408.89	6,682.97	15,006.55	14,866.48	14,704.12
From Old Mt Holly Rd to Old US 52	1.80	8,299.59	22,862.27	22,287.78	22,355.52	5,700.76	14,532.59	14,339.08	14,308.57
From Central Avenue to Old Mt Holly Road	1.82	10,925.50	21,339.48	21,184.45	21,218.09	6,723.33	14,146.15	14,094.80	14,163.23
From Liberty Hall Rd to Central Avenue	0.40	2,383.04	3,620.79	3,614.77	3,624.71	1,371.02	2,660.78	2,660.07	2,661.31
From US 176/Red Bank Rd to Liberty Hall Rd	0.34	1,994.01	3,052.33	3,034.35	3,054.73	1,053.06	2,208.15	2,204.79	2,209.16
From US 78 Interchange to US 176/Red Bank Rd	1.24	11,859.09	17,700.11	17,670.33	17,682.00	5,738.47	10,833.61	10,829.55	10,850.38
Within the US 78 Interchange Area	0.85	8,370.39	10,730.71	10,712.73	10,719.52	3,948.91	6,829.84	6,809.88	6,826.10
From Otranto Road to the US 78 interchange	0.13	1,781.84	2,010.56	2,006.37	2,007.58	892.07	1,229.11	1,226.54	1,228.25
Total	16.42	75,459.14	148,793.89	148,431.87	148,249.97	50,947.93	106,286.37	104,708.36	104,537.22

Daily VHT and VMT

Daily VHT and VMT are provided in **Table 3-8**. The results are similar to the results in **Table 3-6** and **Table 3-7** above.

In the northbound and southbound directions, the daily VHT and VMT are predicted to be less than two percent lower in the 2040 Growth Management and 2040 TOD scenarios than the 2040 Base scenario during both the AM and PM peak periods. There is less than one percent difference between the VHT and the VMT in the 2040 Growth Management and 2040 TOD scenarios, indicating that neither scenario provide an noticeable advantage in reducing daily VHT or VMT.

Table 3-8: Daily vehicle hours travelled, and daily vehicle miles travelled

Northbound US 52 from Otranto Road to Rembert C Dennis Blvd	Length	Daily Vehicle Hours Travelled (VHT)				Daily Vehicle Miles Travelled (VMT)			
		2020	2040 Base	2040 GM	2040 TOD	2020	2040 Base	2040 GM	2040 TOD
From Gaillard Rd to Rembert C Dennis Blvd	3.68	538.85	1,050.49	1,012.39	998.61	36,086.76	69,445.35	67,144.48	66,293.69
From Cypress Garden Rd to Gaillard Rd	3.85	705.56	1,645.25	1,640.21	1,638.96	48,351.05	107,550.92	107,210.40	107,158.23
From Old US 52 to Cypress Garden Rd	2.29	393.99	1,053.31	1,028.73	1,045.07	27,003.84	67,514.36	66,251.39	67,108.18
From Old Mt Holly Rd to Old US 52	1.80	444.65	1,488.23	1,431.63	1,427.64	28,631.24	74,962.36	73,536.31	73,418.10
From Central Avenue to Old Mt Holly Road	1.82	781.69	1,744.81	1,742.57	1,751.36	39,507.23	72,458.05	72,412.18	72,650.16
From Liberty Hall Rd to Central Avenue	0.40	190.82	828.34	806.19	818.49	8,397.97	13,798.14	13,764.13	13,805.05
From US 176/Red Bank Rd to Liberty Hall Rd	0.37	209.47	366.28	365.70	366.29	8,728.13	12,949.66	12,939.31	12,969.83
From US 78 Interchange to US 176/Red Bank Rd	1.22	1,035.80	3,475.66	3,440.09	3,454.11	36,760.53	55,154.06	55,090.63	55,154.47
Within the US 78 Interchange Area	0.85	596.72	1,434.88	1,427.92	1,424.78	24,830.04	35,683.38	35,625.66	35,633.95
From Otranto Road to the US 78 interchange	0.13	123.09	204.50	203.10	202.06	5,276.86	6,759.32	6,747.09	6,744.77
Total	16.41	5,020.65	13,291.75	13,098.52	13,127.36	263,573.65	516,275.59	510,721.58	510,936.43

Southbound US 52 from Otranto Road to Rembert C Dennis Blvd	Length	Daily Vehicle Hours Travelled (VHT)				Daily Vehicle Miles Travelled (VMT)			
		2020	2040 Base	2040 GM	2040 TOD	2020	2040 Base	2040 GM	2040 TOD
From Gaillard Rd to Rembert C Dennis Blvd	3.70	638.25	1,197.96	1,164.60	1,164.34	38,825.37	71,519.47	69,833.29	69,852.18
From Cypress Garden Rd to Gaillard Rd	3.84	734.18	1,811.94	1,812.33	1,812.61	50,271.20	114,399.63	114,248.05	114,258.15
From Old US 52 to Cypress Garden Rd	2.30	539.82	1,418.74	1,407.84	1,372.29	36,777.33	81,100.13	80,704.35	79,513.94
From Old Mt Holly Rd to Old US 52	1.80	482.86	1,966.15	1,861.34	1,865.52	30,935.53	79,849.98	78,289.20	78,234.62
From Central Avenue to Old Mt Holly Road	1.82	753.30	2,083.77	2,061.48	2,069.77	38,141.30	75,076.11	74,904.56	75,099.28
From Liberty Hall Rd to Central Avenue	0.40	345.74	1,262.23	1,259.97	1,264.32	8,004.34	13,080.18	13,064.51	13,088.20
From US 176/Red Bank Rd to Liberty Hall Rd	0.34	224.16	537.76	529.43	538.41	6,413.41	10,903.41	10,868.94	10,902.90
From US 78 Interchange to US 176/Red Bank Rd	1.24	1,310.53	4,543.40	4,505.75	4,518.48	37,211.30	59,053.80	58,915.14	59,056.32
Within the US 78 Interchange Area	0.85	1,306.47	2,488.25	2,475.78	2,478.22	25,820.85	36,923.26	36,853.97	36,889.03
From Otranto Road to the US 78 interchange	0.13	174.52	298.97	296.51	296.88	5,618.39	6,802.36	6,785.33	6,792.76
Total	16.42	6,509.84	17,609.17	17,375.03	17,380.83	278,019.02	548,708.33	544,467.33	543,687.38

Peak Period Lane Miles Over Capacity

The total lane-miles predicted to operate over capacity (LOS F) in the model for the AM and PM peak periods are displayed in **Table 3-9**. In the northbound and southbound directions, no segments are predicted to operate over capacity in the 2020 land use scenario.

Six segments contain links that are predicted to operate overcapacity in the northbound direction during the PM peak period. Five of the same six segments are predicted to contain links operating at LOS F in the southbound direction in the PM peak period (the missing segment is between the US 78 interchange and Otranto Road). This pattern reflects the directional flow of traffic; in the AM peak period, more traffic is heading from Monks Corner and Goose Creek towards Charleston while in the PM peak period they heavier direction of travel is northbound along US 52.

The total number of lane-miles that are predicted to operate over-capacity are the same in the 2040 Base, 2040 Growth Management and 2040 TOD scenarios. This indicates that neither the 2040 Growth Management or the 2040 TOD scenarios are predicted to reduce the amount of over-capacity lane miles compared to the 2040 Base scenario or when compared to each other.

Table 3-9: AM/PM Lane Miles Over Capacity

Northbound US 52 from Otranto Road to Rembert C Dennis Blvd	Lane Miles	AM LOS F Lane Miles				PM LOS F Lane Miles			
		2020	2040 Base	2040 GM	2040 TOD	2020	2040 Base	2040 GM	2040 TOD
From Gaillard Rd to Rembert C Dennis Blvd	7.36	-	-	-	-	-	-	-	-
From Cypress Garden Rd to Gaillard Rd	7.70	-	-	-	-	-	-	-	-
From Old US 52 to Cypress Garden Rd	4.58	-	-	-	-	-	-	-	-
From Old Mt Holly Rd to Old US 52	3.60	-	-	-	-	-	3.60	3.60	3.60
From Central Avenue to Old Mt Holly Road	3.64	-	-	-	-	-	3.64	3.64	3.64
From Liberty Hall Rd to Central Avenue	0.80	-	-	-	-	-	0.80	0.80	0.80
From US 176/Red Bank Rd to Liberty Hall Rd	1.11	-	-	-	-	-	-	-	-
From US 78 Interchange to US 176/Red Bank Rd	3.66	-	-	-	-	-	3.66	3.66	3.66
Within the US 78 Interchange Area	2.55	-	-	-	-	-	1.44	1.44	1.44
From Otranto Road to the US 78 interchange	0.52	-	-	-	-	-	0.52	0.52	0.52
Total	35.52	-	-	-	-	-	13.66	13.66	13.66

Southbound US 52 from Otranto Road to Rembert C Dennis Blvd	Lane Miles	AM LOS F Lane Miles				PM LOS F Lane Miles			
		2020	2040 Base	2040 GM	2040 TOD	2020	2040 Base	2040 GM	2040 TOD
From Gaillard Rd to Rembert C Dennis Blvd	7.40	-	-	-	-	-	-	-	-
From Cypress Garden Rd to Gaillard Rd	7.68	-	-	-	-	-	-	-	-
From Old US 52 to Cypress Garden Rd	4.60	-	-	-	-	-	-	-	-
From Old Mt Holly Rd to Old US 52	3.60	-	3.60	3.60	3.60	-	-	-	-
From Central Avenue to Old Mt Holly Road	3.64	-	3.64	3.64	3.64	-	-	-	-
From Liberty Hall Rd to Central Avenue	0.80	-	0.80	0.80	0.80	-	-	-	-
From US 176/Red Bank Rd to Liberty Hall Rd	1.02	-	-	-	-	-	-	-	-
From US 78 Interchange to US 176/Red Bank Rd	3.72	-	3.72	3.72	3.72	-	-	-	-
Within the US 78 Interchange Area	2.55	-	2.55	2.55	2.55	-	-	-	-
From Otranto Road to the US 78 interchange	0.52	-	-	-	-	-	-	-	-
Total	35.53	-	14.31	14.31	14.31	-	-	-	-

Scenario Evaluation and Comparison

The travel forecast and application of the associated performance measures indicate some significant changes between 2020 and 2040, but little differences between scenarios. The differences that do exist are more noticeable closer to the northern end of the corridor. The differences become smaller when traveling through Goose Creek and into North Charleston, with nearly identical results at the southern end.

As a result, any proposed infrastructure improvements or demand management strategies to accommodate design year volumes traffic volumes would likely be the same under each scenario, except perhaps in Moncks Corner where the differences between scenarios are slightly more pronounced.