



US 52

BCDCOG US 52 Corridor Study

Scenario Briefing Report

Berkeley and Charleston Counties, South Carolina

BCDCOG
BERKELEY-CHARLESTON-DORCHESTER
COUNCIL OF GOVERNMENTS
PLANNING, PARTNERSHIP & PROSPERITY



Scenario Briefing Report

BCDCOG US 52 Corridor Study
Berkeley and Charleston Counties, South Carolina

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Prepared for
BCDCOG

Prepared by



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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 Briefing Report outlines the scenario development process, describes the three land use scenarios under consideration, and evaluates each against a set of performance criteria which includes environmental resources, active transportation, transit and traffic measures.

2 Land Use Scenario Development Process

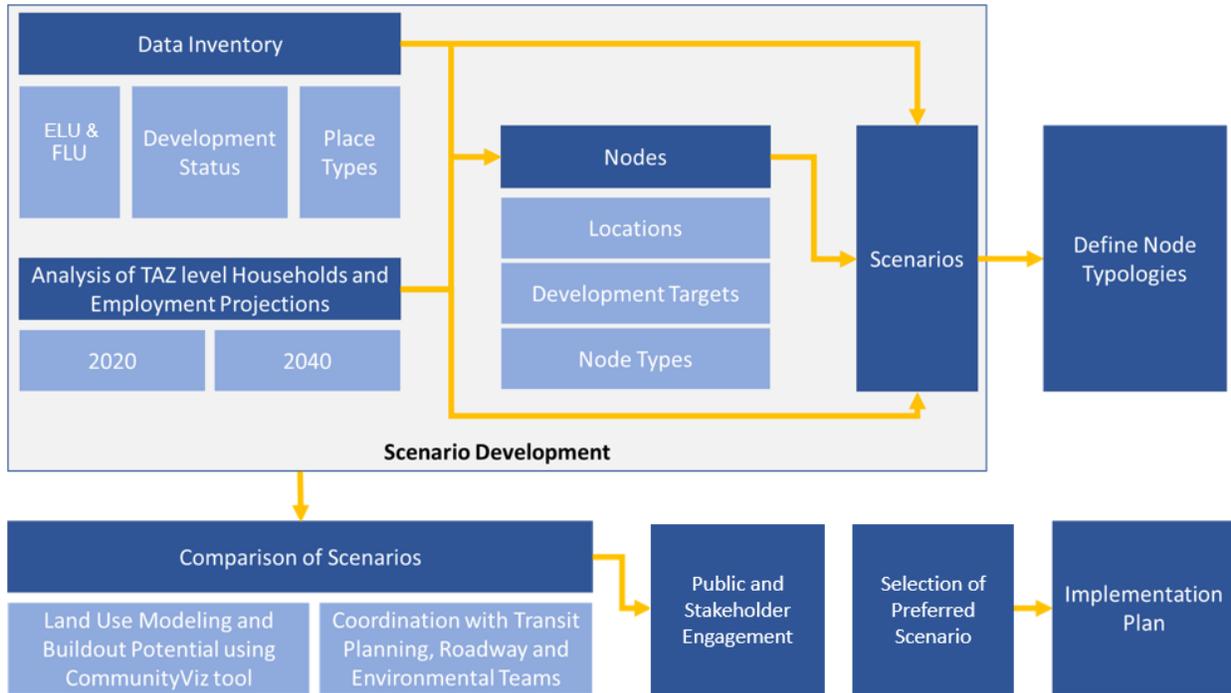
The land use scenarios were created using CommunityViz software, an extension of ArcGIS, and represent three potential future alternatives of how projected population and job growth can be accommodated within the corridor.

Figure 2-1 illustrates the model-building process in CommunityViz. A data inventory of existing and adopted future land uses, land development status and place types, and employment and population projections from the Charleston Area Transportation Study Travel Demand Model (CHATS TDM), are used to identify general areas of concentrated development or development nodes. These inputs are then used to construct scenarios, or alternative versions of future growth and development within the corridor, that can be used in land use decision-making.

Scenarios are based on several assumptions:

- The total amount of residential and job growth is finite and based on 2040 future projections derived from the CHATS TDM.
- Residential and job densities within a particular area can be readjusted based on the spatial arrangement of development.
- Changing a place type to include more density will reallocate residential and/or commercial growth from nearby areas.

Figure 2-1: CommunityViz Scenario Development Process



Identifying the location of general development clusters or nodes along the study corridor was a critical first step in building the future alternative scenarios. Nodes are defined as geographic areas which extend out from a center point located on the study corridor for one-half mile in all directions, to which future development density is guided. Based on the assumed development densities located within nodes, these locations have the potential to support higher quality transit service and serve as future transit stops. Subsequent transit analysis of the alternative land use scenarios will further evaluate which nodes are best suited for transit and what type of transit to implement.

Eleven nodes were identified based on a review of existing and future land use, forecasted growth, committed development, and coordination with the transit planning consultant team, BCDCOG staff, and local jurisdictions. All identified nodes are included in each scenario: in the Base Scenario, the nodes serve as a basis of comparison for existing development conditions. In the Growth Management and Transit-Oriented Development (TOD) Scenarios, the nodes are the areas targeted for more concentrated development. **Figure 2-2** illustrates the node locations within the study area. **Table 2-1** presents nodes by name and location.

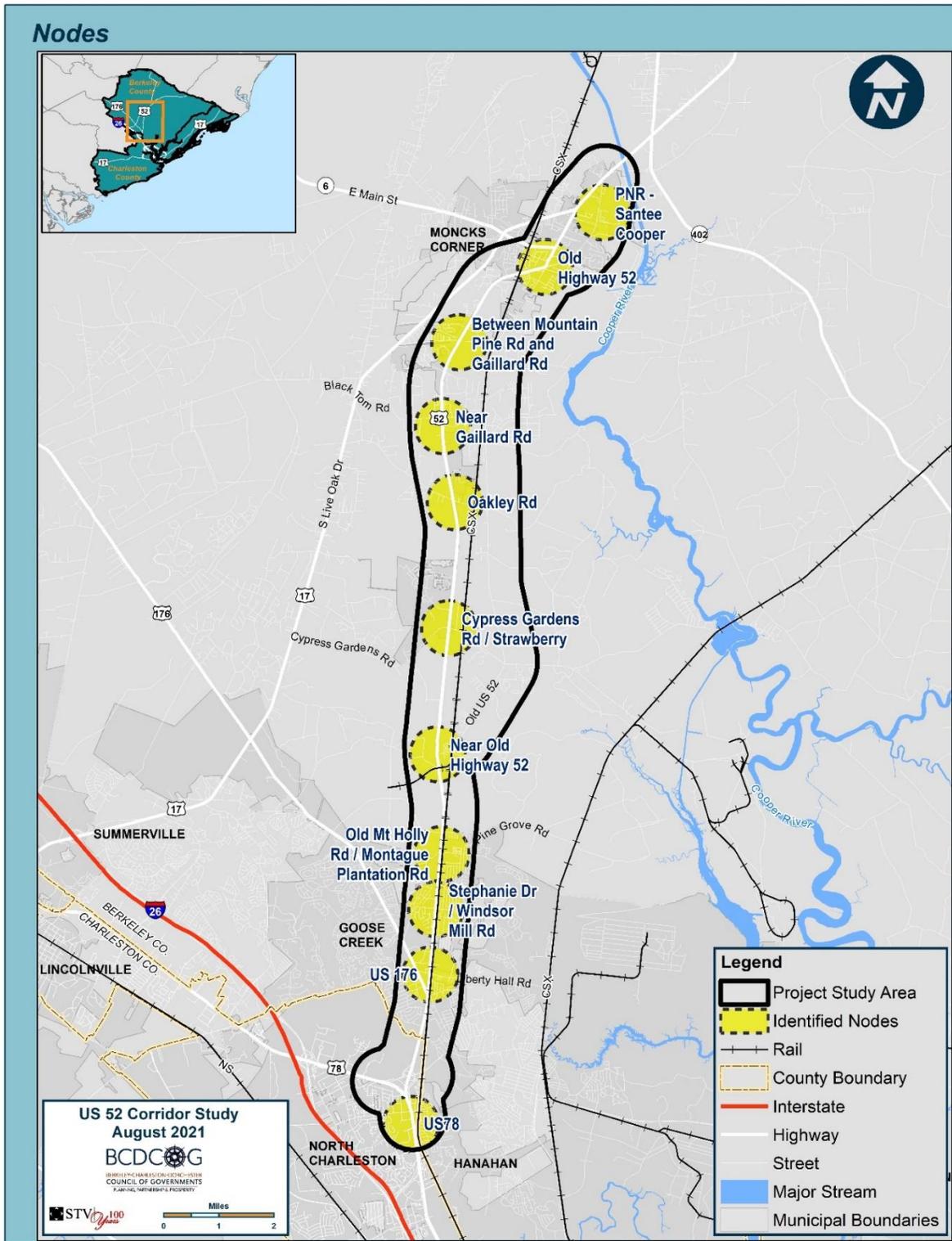


Figure 2-2: Identified Nodes

Table 2-1: Nodes by Name and Location

Node Name	Location	Node Type
US 78	North Charleston	Town Center
US 176*	Goose Creek	Town Center
Stephanie Dr / Windsor Mill Rd	Goose Creek	Neighborhood**
Old Mt Holly Rd / Montague Plantation Rd	Goose Creek	Neighborhood**
Near Old Highway 52	Goose Creek, Berkeley County	Employment**
Cypress Gardens Rd / Strawberry*	Moncks Corner	Neighborhood / Town Center
Oakley Rd	Berkeley County, Moncks Corner	Neighborhood**
Near Gaillard Rd	Berkeley County	Neighborhood**
Between Mountain Pine Rd and Gaillard Rd	Berkeley County, Moncks Corner	Neighborhood**
Old Highway 52	Moncks Corner	Employment Hub
Park and Ride (PNR) - Santee Cooper*	Moncks Corner	Employment Hub

*TOD Node under the TOD Scenario

**Density is not anticipated to reach the specified density for the node type

TOD nodes, a subset of the nodes identified in the model, are used only in the TOD Scenario and represent areas of denser development. Due to their existing and committed development patterns, TOD nodes have the potential to serve as primary transit stops, while the other nodes in the corridor may serve as supplemental transit stops. TOD nodes follow the same footprint as nodes used in the Growth Management Scenarios but redistribute population and jobs from a larger area of influence to achieve a higher density within the node. This larger area of influence is the two-mile radius beyond the center point of the TOD node. **Figure 2-3** highlights the three nodes identified as TOD nodes used only in the TOD Scenario.

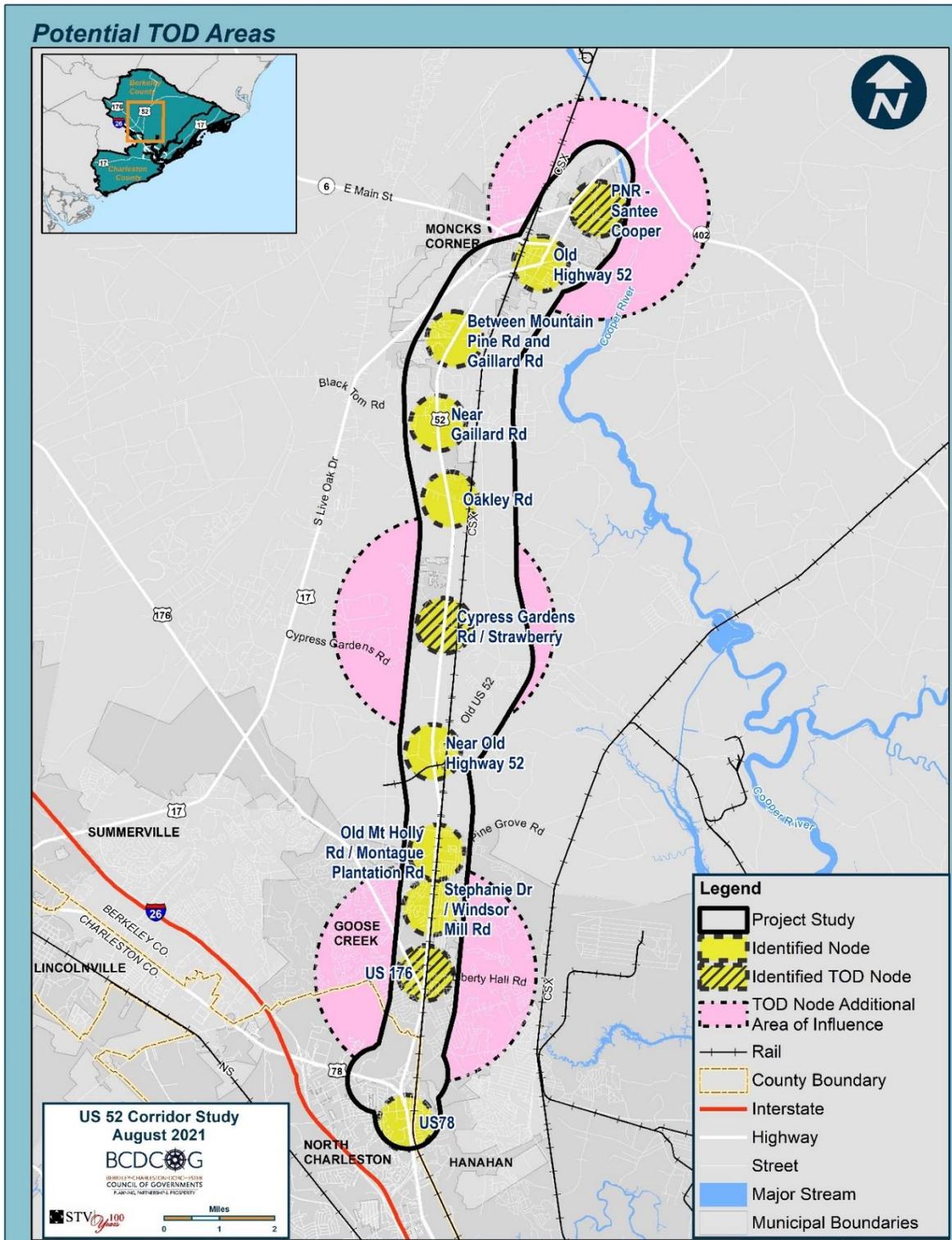


Figure 2-3: Identified TOD Nodes

2.1 CommunityViz Output

The US 52 Corridor Study CommunityViz Model was created to visualize three alternative growth scenarios using a planning horizon year of 2040. In all cases, the parcels selected for development in the model do not represent real-world development or redevelopment intent.

2.1.1 BASE SCENARIO

Model outputs for the Base Scenario reflect on-the-ground conditions in 2040 if current trends continue. The Base 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.

In some cases, the CHATS TDM projected that there would be more residents or jobs within a node than is permitted under current development regulations. In these cases, indicated by shares of undeveloped and underdeveloped parcels at levels of over 100 percent in **Table 2-2**, the node was assigned new, denser place types to meet the projected growth level.

Table 2-2 shows where nodes were assigned new, denser place types to meet the projected level of growth. To obtain these density results, the County or municipality would need to modify the place type and underlying zoning to allow for denser development.

Under the Base Scenario, the place type capacity is exceeded at the following nodes:

- Oakley Road (residential development)
- Near Old Highway 52 (residential development)
- PNR – Santee Cooper (non-residential development)

Table 2-2: Share of Undeveloped and Underdeveloped Parcels by Node Under the Base Scenario

Node	Residential	Non-Residential
Undeveloped / Underdeveloped Parcels Within ½ Mile of Nodes		
US78	0%	0%
US 176	0%	0%
Stephanie Dr / Windsor Mill Rd	0%	0%
Old Mt Holly Rd / Montague Plantation Rd	20%	10%
Near Old Highway 52	100+%	40%
Cypress Gardens Rd / Strawberry	30%	10%
Oakley Rd	100+%	10%
Near Gaillard Rd	70%	0%
Between Mountain Pine Rd and Gaillard Rd	90%	0%
Old Highway 52	20%	10%
PNR - Santee Cooper	50%	100+%
Undeveloped / Underdeveloped Parcels Outside of Nodes, within Study Area		
Outside of Nodes	75%	50%

Source: WSP



Figure 2-5 through **Figure 2-8** illustrate place types and development status of the study area under the Base Scenario.

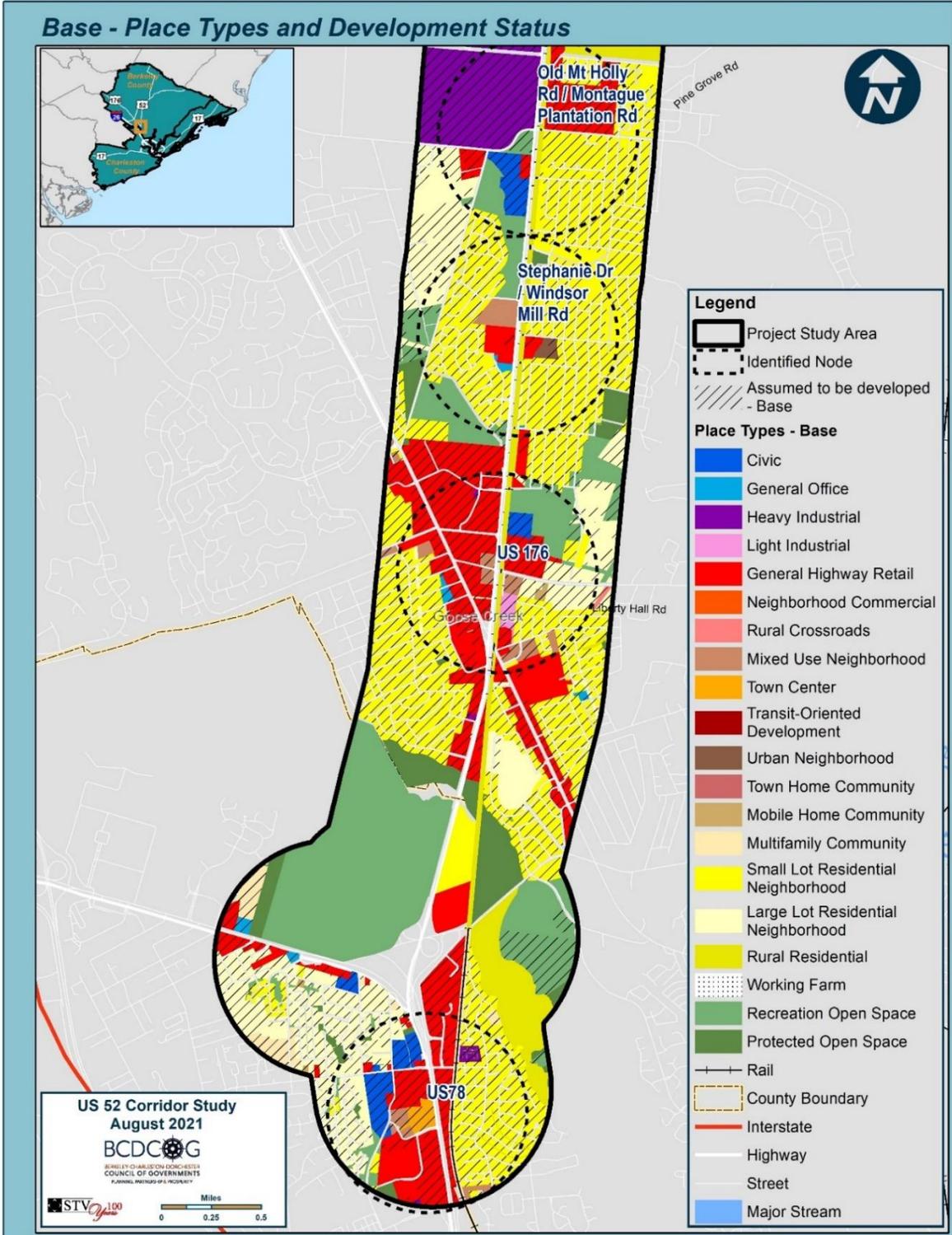


Figure 2-5: Base Scenario Place Types and Development Status, Map A

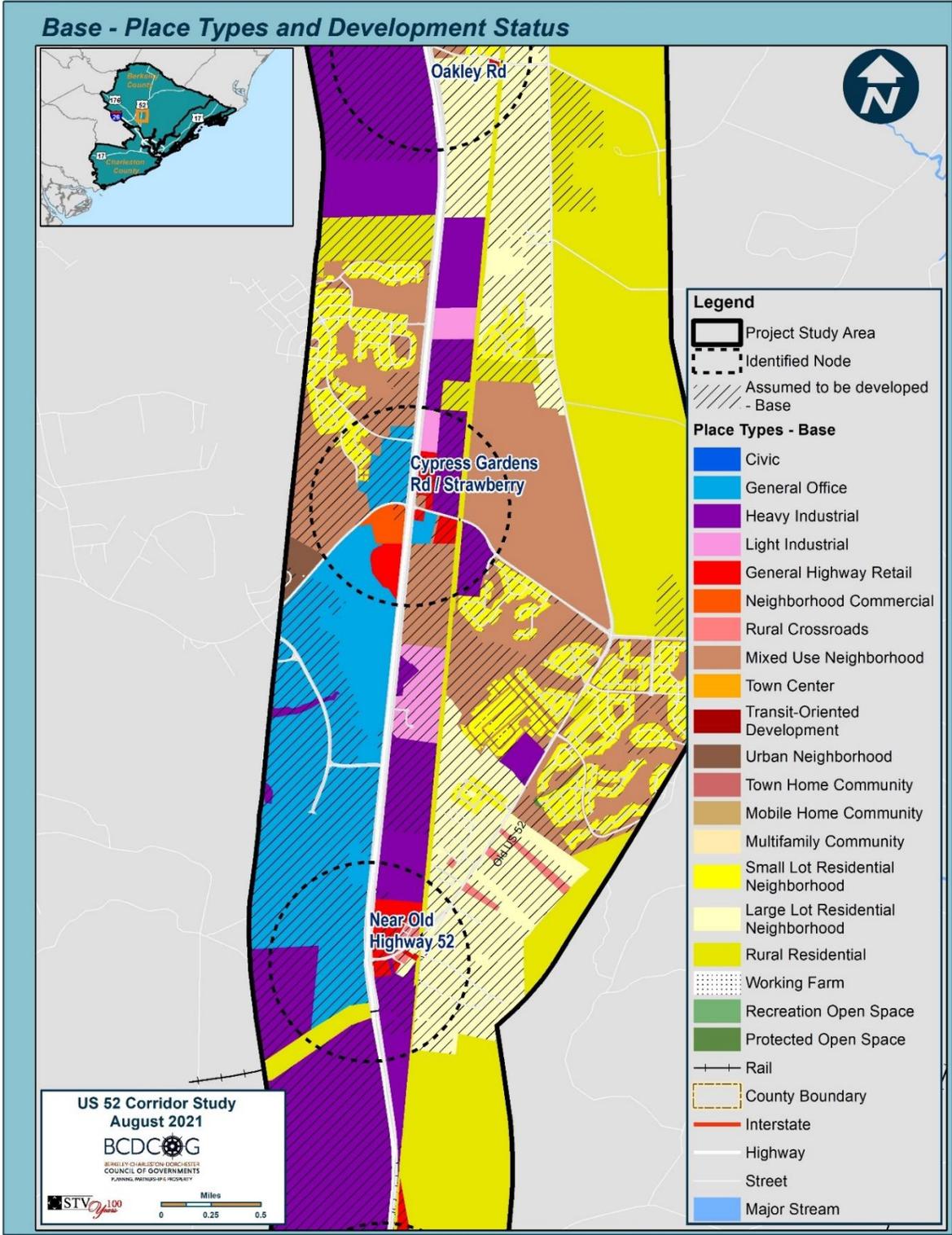


Figure 2-6: Base Scenario Place Types and Development Status, Map B

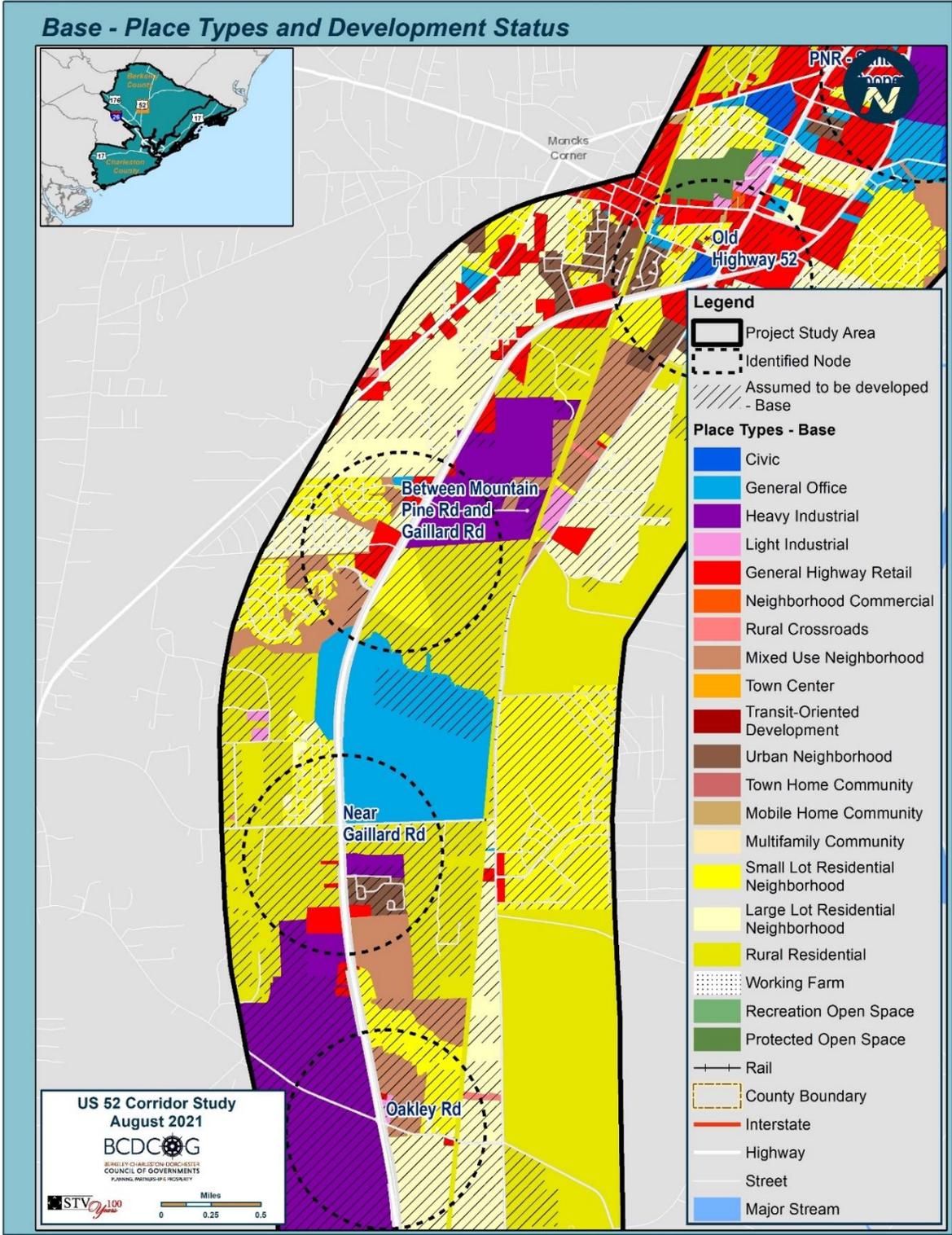


Figure 2-7: Base Scenario Place Types and Development Status, Map C

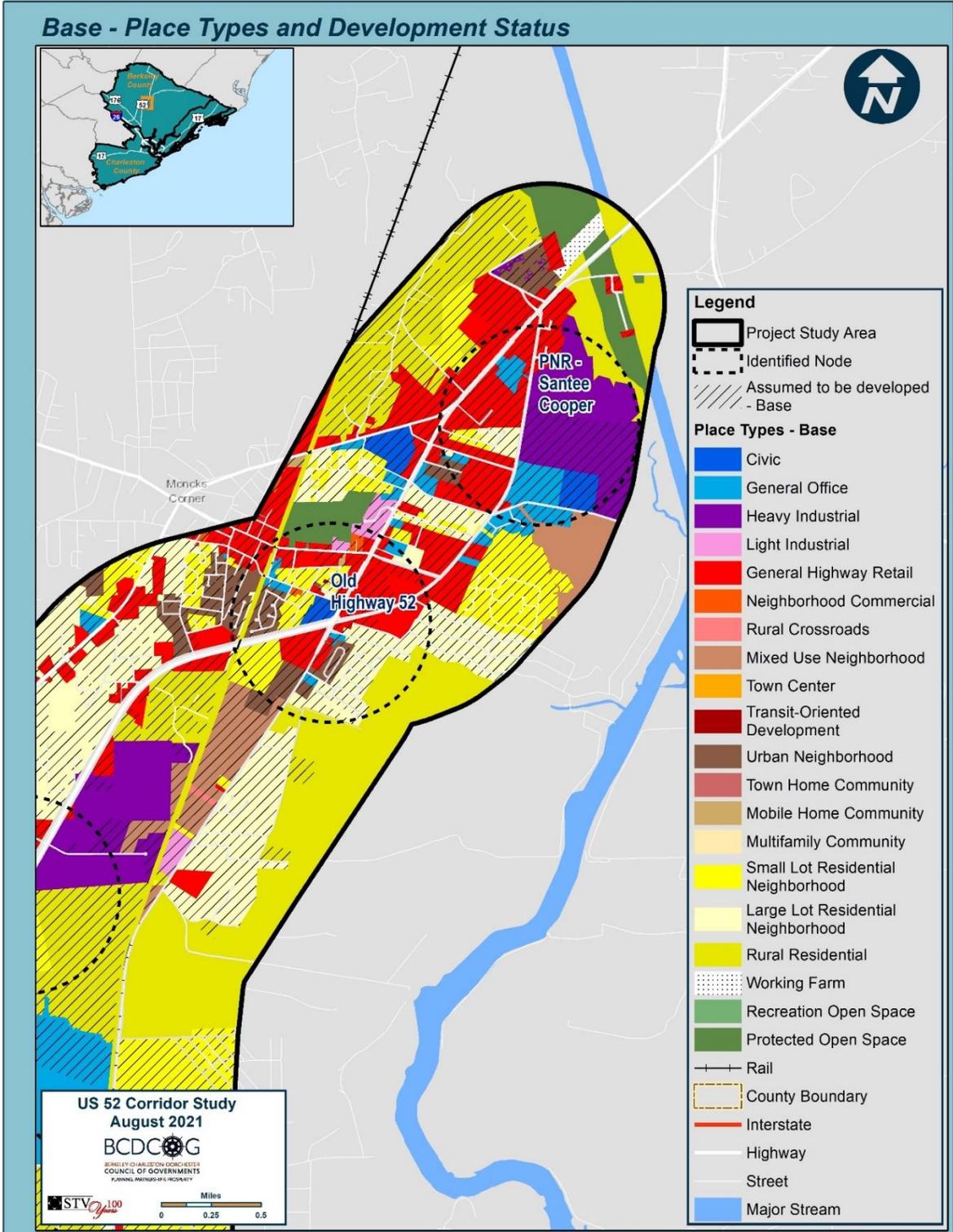


Figure 2-8: Base Scenario Place Types and Development Status, Map D

2.1.2 GROWTH MANAGEMENT SCENARIO

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.

As in the Base Scenario, CommunityViz identified more residents or jobs within a node than is permitted under current development regulations. In these cases, indicated by shares of undeveloped and underdeveloped parcels at levels of 100+% in **Table 2-3**, the node was assigned new, denser place types to meet the targeted growth level. This adjustment resulted in nodes with development patterns that are congruent with the goals of the Growth Management Scenario and adequately concentrate development within the study area into the 11 identified nodes. To obtain these density results, the County or municipality would need to modify the place type and underlying zoning to allow for denser development.

Figure 2-9 through **Figure 2-12** illustrate place types and development status of the study area under the Growth Management Scenario.

Because the Growth Management Scenario concentrates development within the nodes to a greater extent than in the Base Scenario, development targets in the Growth Management Scenario meet or exceed previously determined place type capacity at seven nodes:

- US 78 (residential development)
- US 176 (residential development)
- Near Old Highway 52 (residential development)
- Oakley Road (residential development)
- Near Gaillard Road (residential development)
- Between Pine Mountain Road and Gaillard Road (residential development)
- PNR – Santee Cooper (residential and non-residential development)

Table 2-3: Share of Study Area Growth Accommodated by Undeveloped and Underdeveloped Parcels located in Nodes Under the Growth Management Scenario

Node	Residential	Non-Residential
Undeveloped / Underdeveloped Parcels Within Nodes		
US78	100%	15%
US 176	100+%	50%
Stephanie Dr / Windsor Mill Rd	75%	40%
Old Mt Holly Rd / Montague Plantation Rd	75%	10%
Near Old Highway 52	100+%	85%
Cypress Gardens Rd / Strawberry	65%	10%
Oakley Rd	100+%	15%
Near Gaillard Rd	100%	20%

Node	Residential	Non-Residential
Undeveloped / Underdeveloped Parcels Within Nodes		
Between Mountain Pine Rd and Gaillard Rd	100+%	5%
Old Highway 52	50%	95%
PNR - Santee Cooper	100+%	100+%
Undeveloped / Underdeveloped Parcels Outside of Nodes, within Study Area		
Outside of Nodes	60%	25%

Source: WSP

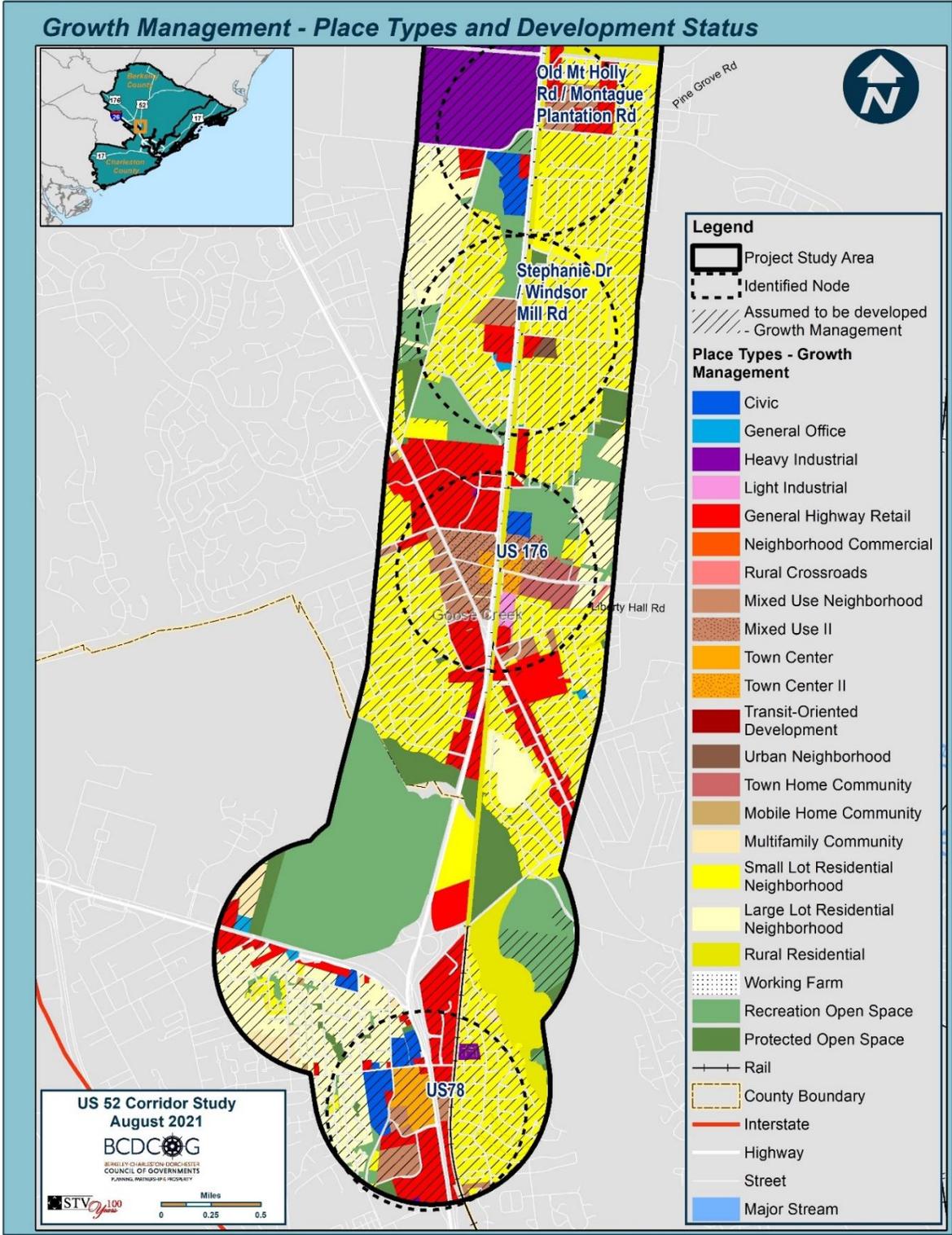


Figure 2-9: Growth Management Scenario Place Types and Development Status, Map A

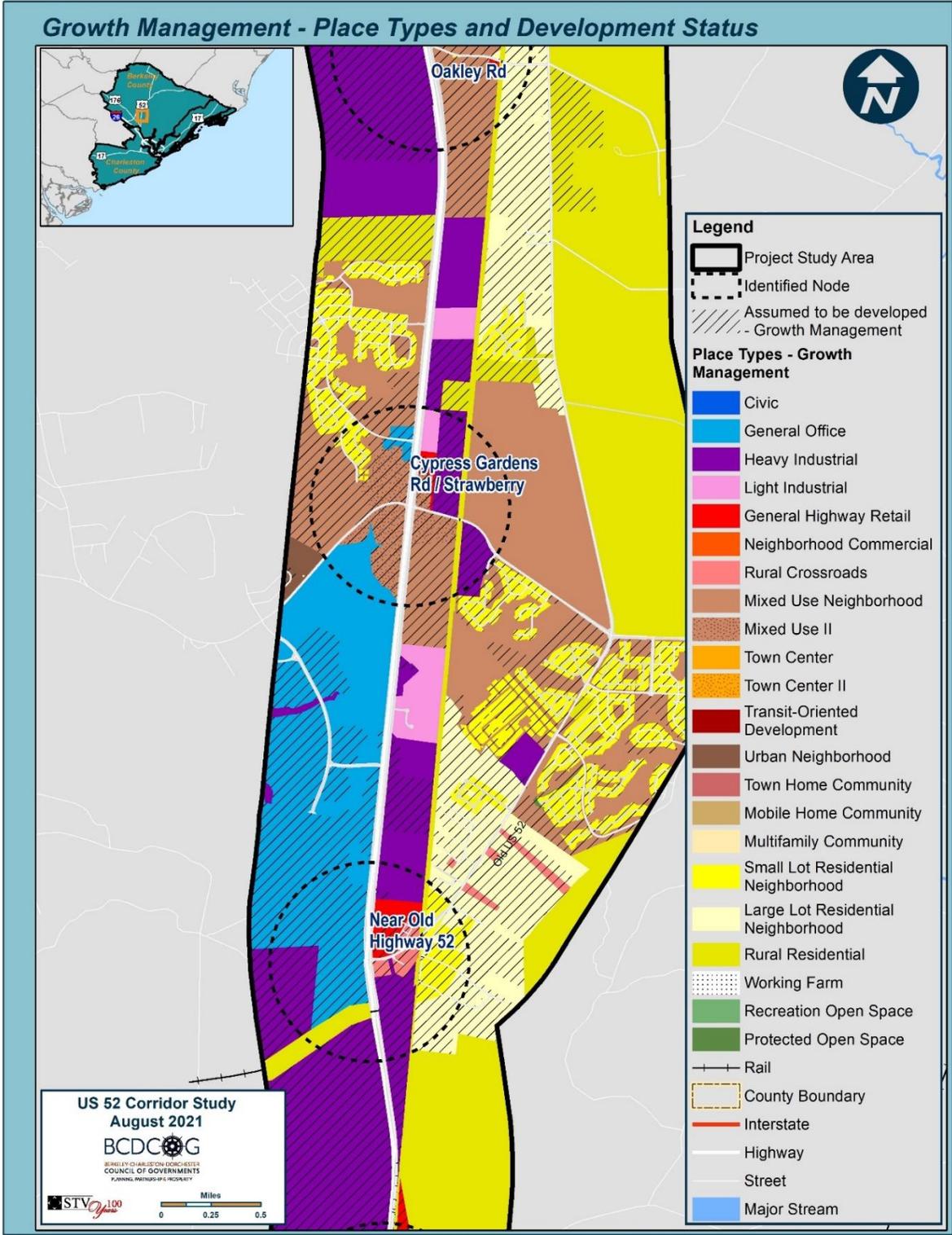


Figure 2-10: Growth Management Scenario Place Types and Development Status, Map B

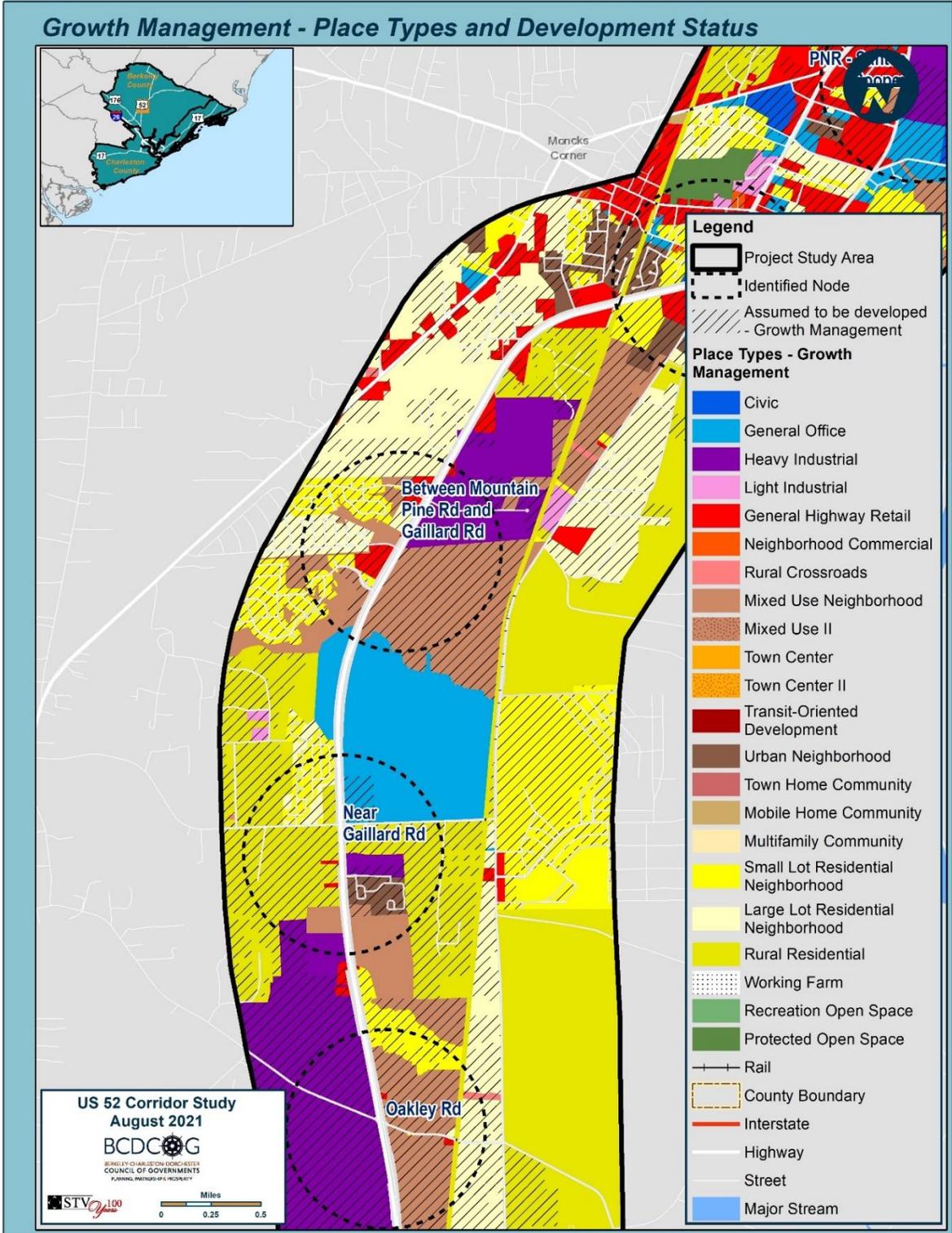


Figure 2-11: Growth Management Scenario Place Types and Development Status, Map C

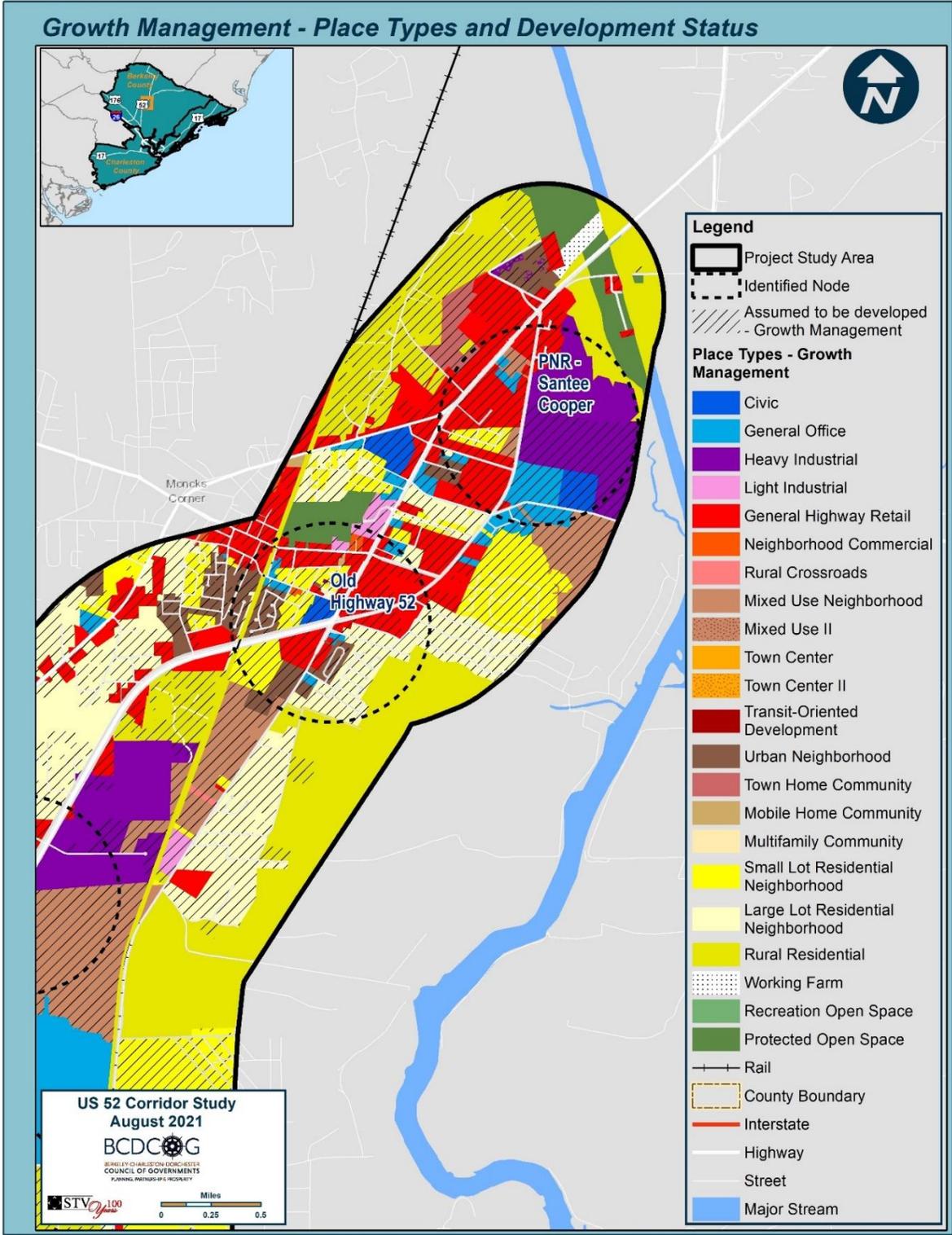


Figure 2-12: Growth Management Scenario Place Types and Development Status, Map D

2.1.3 TOD SCENARIO

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. **Figure 2-13** through **Figure 2-16** illustrate place types and development status of the study area under the TOD Scenario.

As in the Base and Growth Management Scenarios, CommunityViz identified more residents or jobs within a node than is permitted under current development regulations. In these cases, indicated by shares of undeveloped and underdeveloped parcels at levels of 100+% in **Table 2-4**, the node was assigned new, denser place types to meet the targeted level of growth. This adjustment resulted in development patterns that are congruent with the goals of the TOD Scenario and adequately concentrate development within the study area into the identified nodes and TOD nodes. To obtain these density results, the County or municipality would need to modify the place type and underlying zoning to allow for denser development.

Because the TOD Scenario concentrates development within the nodes to a greater extent than in the Base Scenario and includes residential and non-residential development from the expanded area of influence for the three TOD nodes, development targets in the TOD Scenario meet or exceed previously determined place type capacity at seven nodes:

- US 78 (residential development)
- US 176 (residential development)
- Near Old Highway 52 (residential development)
- Oakley Road (residential development)
- Near Gaillard Road (residential development)
- Between Pine Mountain Road and Gaillard Road (residential development)
- PNR – Santee Cooper (residential and non-residential development)

Table 2-4: Share of Undeveloped and Underdeveloped Parcels by Node Under the TOD Scenario

Node	Residential	Non-Residential
Undeveloped / Underdeveloped Parcels Within Nodes		
US78	100%	15%
US 176 (TOD Node)	100+%	60%
Stephanie Dr / Windsor Mill Rd	75%	40%
Old Mt Holly Rd / Montague Plantation Rd	75%	10%
Near Old Highway 52	100+%	85%
Cypress Gardens Rd / Strawberry (TOD Node)	100%	15%
Oakley Rd	100+%	15%
Near Gaillard Rd	100%	20%
Between Mountain Pine Rd and Gaillard Rd	100+%	5%
Old Highway 52	50%	95%
PNR - Santee Cooper (TOD Node)	100+%	100+%
Undeveloped / Underdeveloped Parcels Outside of Nodes, within Study Area		
Outside of Nodes	60%	25%
Undeveloped / Underdeveloped Parcels within TOD Nodes' Additional Areas of Influence		
Within Additional Areas of Influence	55%	15%

Source: WSP

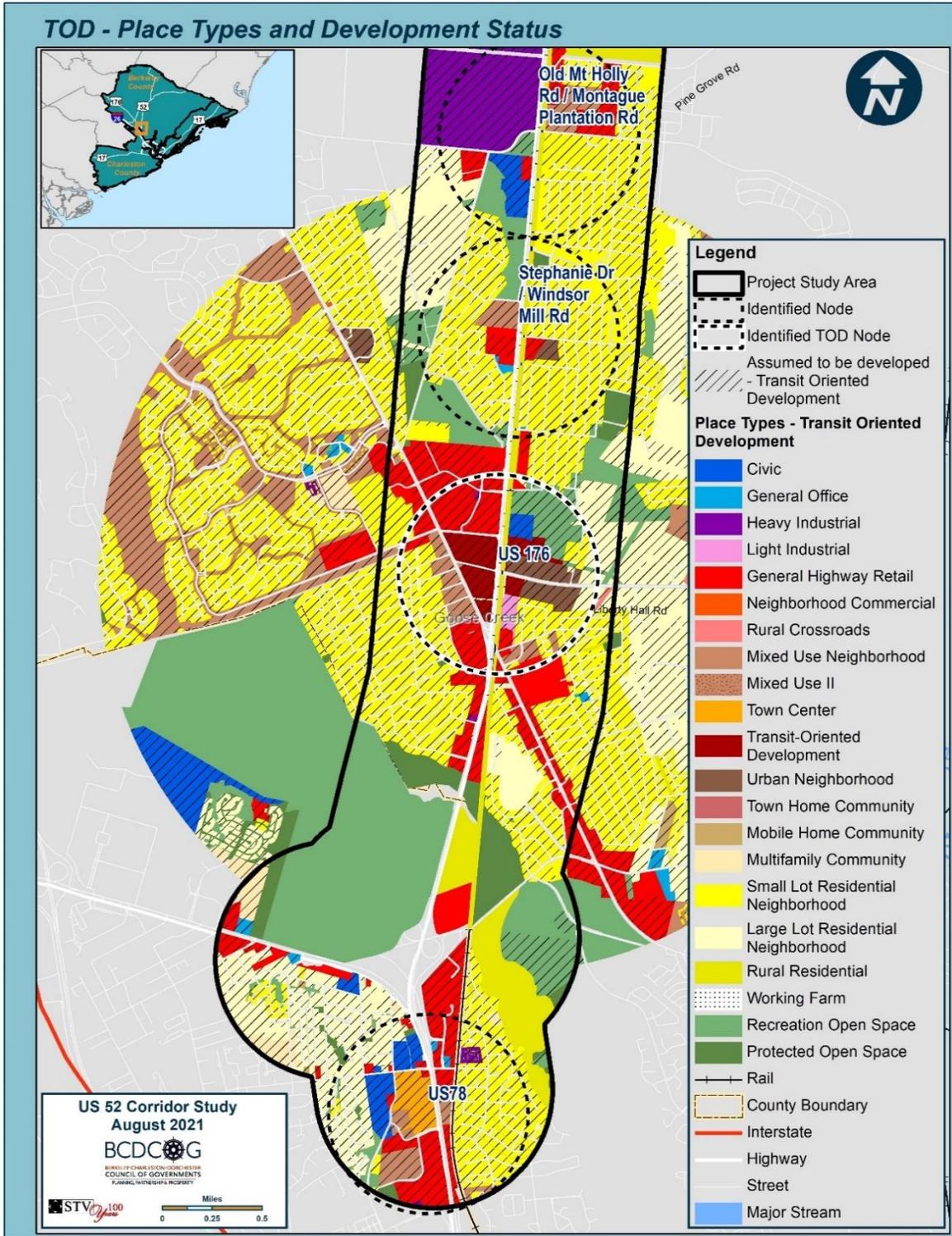


Figure 2-13: TOD Scenario Place Types and Development Status, Map A

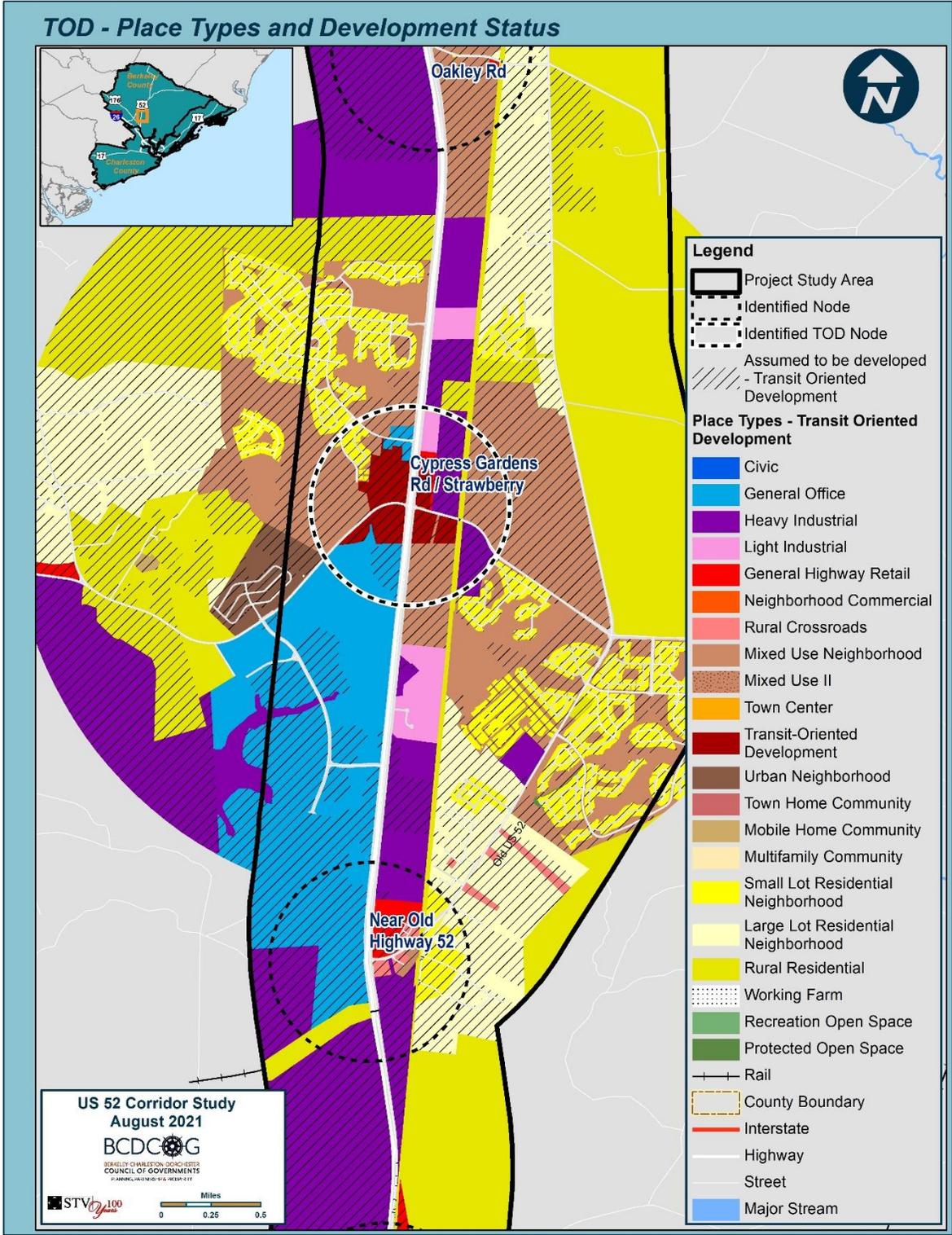


Figure 2-14: TOD Scenario Place Types and Development Status, Map B

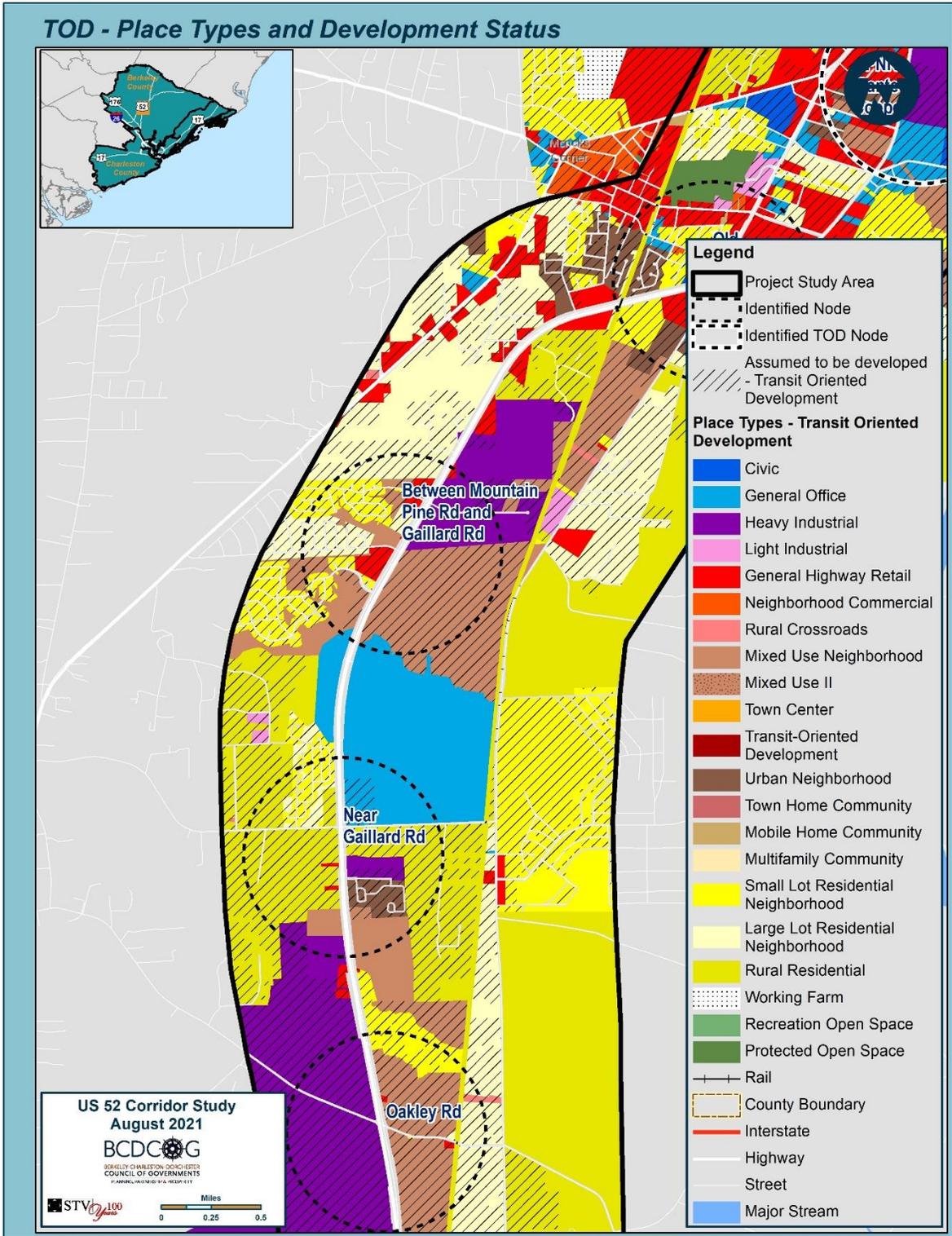


Figure 2-15: TOD Scenario Place Types and Development Status, Map C

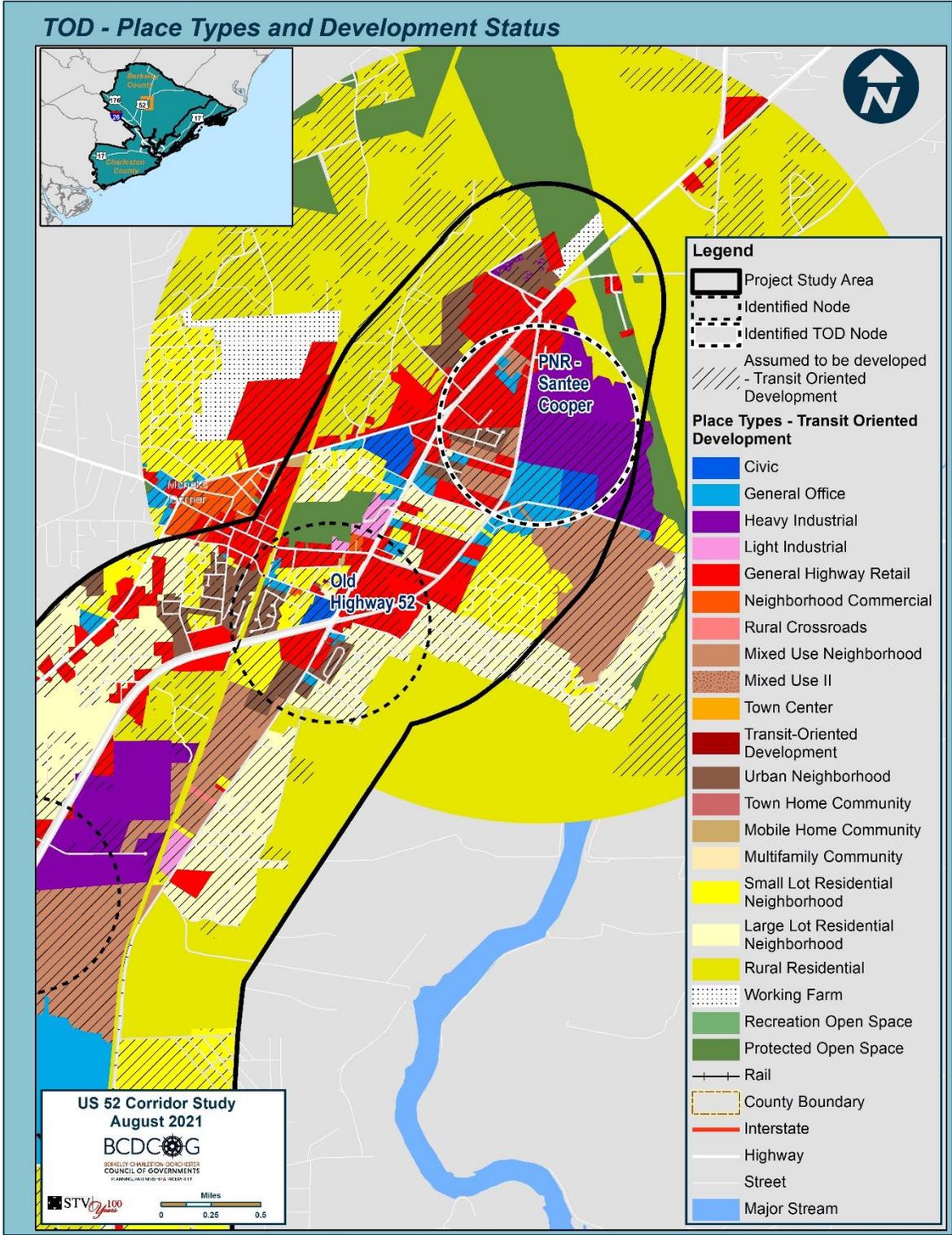


Figure 2-16: TOD Scenario Place Types and Development Status, Map D

2.2 Example Node Development Renderings

Sample renderings were developed for the US 176 node illustrating what the area might look like, in terms of building mass, under the Growth Management and TOD Scenarios. Under both scenarios, the node is conceived of as a Town Center. In a Town Center TOD node, residential uses make up 60 percent of land uses, and commercial uses make up 40 percent, and there is a maximum of 1,500 housing units and 1,200 jobs at the node. The rendered assemblages illustrate the projected form and nature of residential, office and retail development under the Growth Management and TOD Scenarios. These materials are presented for visualization and comparison for decision-making and does not imply a proposed plan for development in this or any form.

Figure 2-17 presents development metrics by place type for the US 176 node under the Growth Management Scenario. The assemblage translates the CommunityViz outputs into residential and non-residential (commercial) developmental form. **Table 2-5** presents the development potential for each of the assembled blocks under the Growth Management Scenario. Using Place Types selected for the Growth Management Scenario and corresponding residential and non-residential development metrics, the US 176 node can be developed with 376 residential units (152 units in the Mixed Use I Place Type, 54 in the Town Center II Place Type, and 170 in the Town Home Commercial Place Type).

Figure 2-18 presents a rendering of what development might look like for the US 176 node under the Growth Management Scenario. The typology presents a visual rendering of the development assemblage.

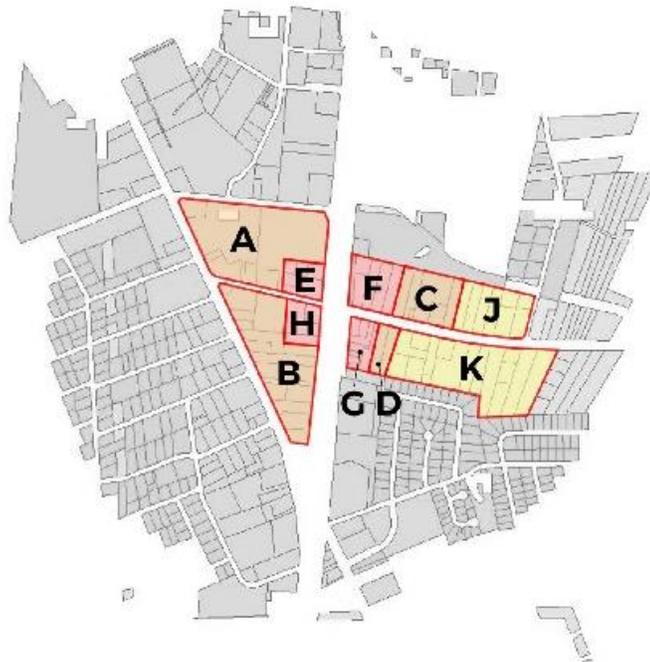


Figure 2-17: US 176 Assemblage Under the Growth Management Scenario

Source: WSP

Table 2-5: US 176 Assemblage Under the Growth Management Scenario

	Place Type	Assemblage Sq. Ft.	Res. Units	Res. Sq. Ft.	Net Res. Area	% Res.	% Non-Res.	% Efficiency	Net Non-Res. Area	Non-Res. FAR	Non-Residential Sq. Ft.
A	Mixed Use I	835,669	65	63,227	355,159	50%	50%	85%	355,159	0.75	266,369
B	Mixed Use I	662,141	52	51,682	281,410	50%	50%	85%	281,410	0.75	211,057
C	Mixed Use I	352,601	28	27,522	159,855	50%	50%	85%	159,855	0.75	112,392
D	Mixed Use I	92,716	7	7,237	39,404	50%	50%	85%	39,404	0.75	29,553
		Totals	152	151,667							771,057
E	Town Center II	135,228	13	13,194	57,472	50%	50%	85%	57,472	1.00	57,472
F	Town Center II	161,563	16	15,763	68,664	50%	50%	85%	68,664	1.00	68,664
G	Town Center II	122,989	12	12,000	52,270	50%	50%	85%	52,270	1.00	52,270
H	Town Center II	136,153	13	13,284	57,865	50%	50%	85%	57,865	1.00	57,865
		Totals	54	54,240							236,272
J	Town Home Commercial		50								
K	Town Home Commercial		120								
	*Residential Unit Factor=1,000 sq. ft	Totals	170								

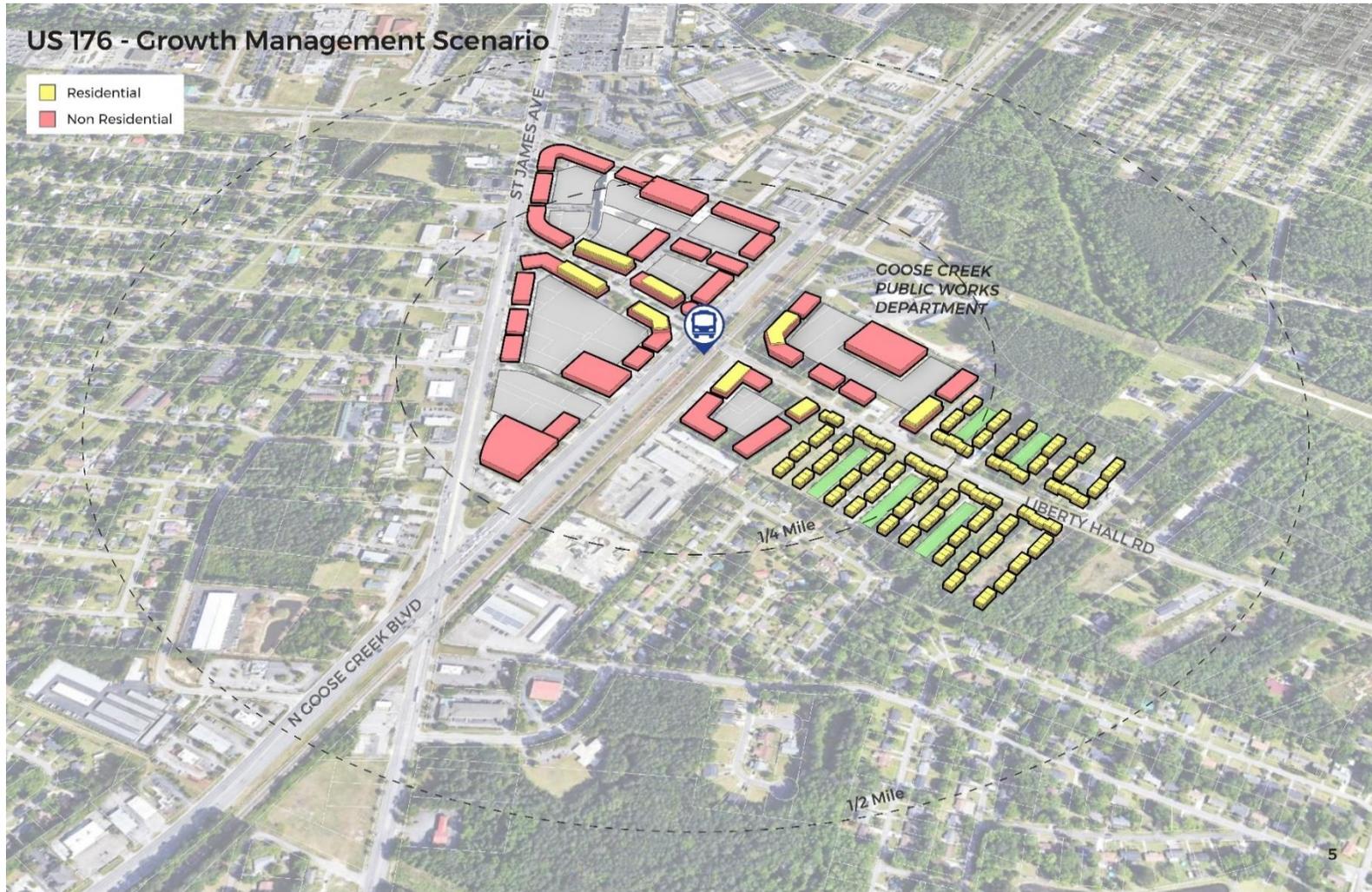


Figure 2-18: US 176 Typology Under the Growth Management Scenario

Figure 2-19 presents the development assemblage for the US 176 node under the TOD Scenario.

Table 2-6 presents the development potential for each of the assembled blocks under the TOD Scenario. Using Place Types selected for the TOD Scenario and corresponding residential and non-residential development metrics, the US 176 node can be developed with 743 residential units (292 units in the TOD Place Type and 451 in the Urban Neighborhood Place Type).

Figure 2-20 presents a rendering of what development might look like for the US 176 node under the TOD Scenario.

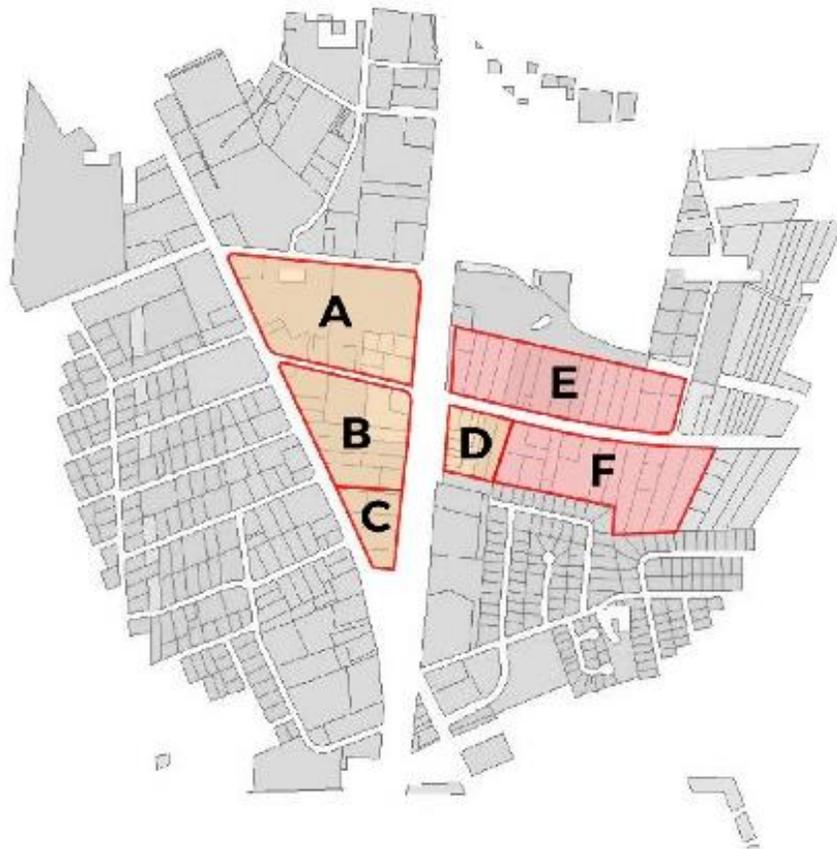


Figure 2-19: US 176 Node Assemblage Under the TOD Scenario

Table 2-6: Development Assemblage for the US 176 Node under the TOD Scenario

Assemblage	Place Type	Assemblage Sq. Ft.	Res. Units	Res. Sq. Ft.	Net Res. Area	% Res.	% Non-Res.	% Efficiency	Net Non- Res. Area	Non-Res. FAR	Non-Residential Sq. Ft.
A	TOD	990,273	145	144,926	420,866	50%	50%	85%	420,866	1.5	631,299
B	TOD	604,053	88	88,403	256,723	50%	50%	85%	256,723	1.5	385,084
C	TOD	183,814	27	26,901	78,121	50%	50%	85%	78,121	1.5	117,181
D	TOD	215,706	32	31,569	91,675	50%	50%	85%	91,675	1.5	137,513
		Totals	292	291,799							1,422,762
E	Urban Neighborhood	822,514	227	226,588	658,011	100%	0%	80%	0		0
F	Urban Neighborhood	815,772	225	224,731	652,618	100%	0%	80%	0		0
		Totals	451								0

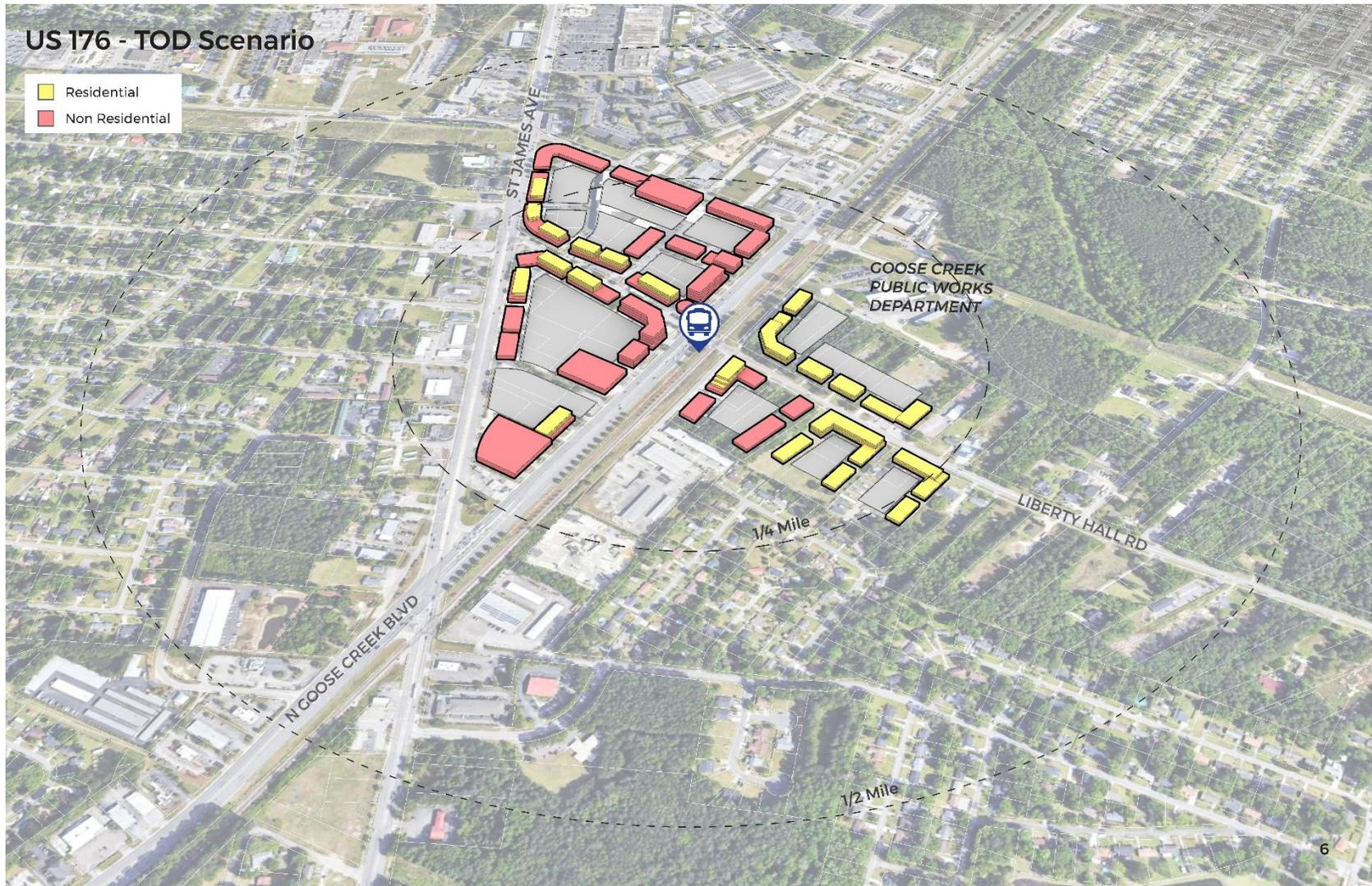


Figure 2-20: US 176 Typology Under the TOD Scenario

2.3 Application of Performance Measures

The three scenarios are evaluated across select performance measures identified in coordination with BCDCOG. **Table 2-7** summarizes the scenarios' performance on land use performance measures based on the CommunityViz model outputs.

Table 2-7: Performance Measures

Objective	Performance Measure (s)	Base	Growth Management	Transit Oriented Development
Encourage planned residential densities along the corridor including future locations for transit supportive land use in association with Lowcountry Rapid Transit.	Number of residential units per acre	1.09	1.09	1.15
	Unit density within 1/2 mile of proposed transit stop (increase in units)	1.39	1.93 (+0.54)	2.13 (+0.74)
Minimize occurrences of conflicting land uses; provide adequate buffers to shield residences from incompatible uses	Width of landscape and/or use buffer between residential and heavy industrial uses / Number of heavy industrial uses without a buffer from residential uses	855 ft / 10 parcels	598 ft / 9 parcels	598 ft / 9 parcels
Provide a broader range of housing types and prices to meet area needs. Seek to meet minimum State of South Carolina thresholds for affordable housing	Total Single Family Detached Units (Units within nodes)	20,335 (7,308)	20,060 (7,975)	20,434 (8,348)
	Total Single Family Attached Units (Units within nodes)	971 (510)	1,864 (1,463)	1,930 (1,529)
	Total Multifamily Units (Units within nodes)	1,449 (597)	1,961 (1,168)	2,609 (1,817)

Objective	Performance Measure (s)	Base	Growth Management	Transit Oriented Development
Organize existing and new patterns of commercial, office and industrial uses along Hwy 52 in nodes compatible with adjacent uses	Number of retail jobs within ½ mile of transit stops	2,460	3,175	3,641
	Number of office jobs within ½ mile of transit stops	6,376	7,159	7,852
	Number of industrial jobs within ½ mile of transit stops	184	184	184
	Ratio of development nodes to preserved open space	Preserved Open Space is same across the three scenarios		
	Activity density within 1/2 mile of transit stops	3.11	3.91	4.33
Protect unique environmental resources, including prime farmlands, numerous wetlands and Goose Creek, which is on the South Carolina 2018 303d list of impaired waterbodies. Several privately-owned protected plantations in the vicinity of the Old US 52 intersection and are part of the Lord Berkeley Conservation Trust.	Percent share of environmental features / protected lands within 1/2 mile of transit stops / study area	364 acres	364 acres	364 acres
Continue to support economic development and employment growth within the corridor	Number of jobs in the study area	20,246	20,246	21,407

Objective	Performance Measure (s)	Base	Growth Management	Transit Oriented Development
Continue to provide suitable locations for new development and redevelopment for appropriate employment land uses with which to grow Goose Creek and Moncks Corner's own employment and commercial base.	Number of jobs in the study area	20,246	20,246	21,407
	Number of jobs with access to transit	9,472	10,968	12,129

Table 2-8 compares parcel development characteristics across scenarios. Place types were kept constant across the scenarios unless a change was needed to accommodate projected growth. Place types were changed across more parcels in the Growth Management and TOD Scenarios to accommodate marginal growth at slightly greater densities at nodes and TOD nodes.

Table 2-8: Development of Scenarios: Percent Area Developed Based on Targets and Existing Development

Characteristics	Base Scenario	Growth Management Scenario	TOD Scenario
Developed Parcels	100%	100%	100%
Committed Development	100%	100%	100%
Open Space	0%	0%	0%
Undeveloped / Underdeveloped Parcels Within Nodes			
US 78	Residential: 0% Non-Residential: 0%	Residential: 100% Non-Residential: 15%	Residential: 100% Non-Residential: 15%
US 176	Residential: 0% Non-Residential: 10%	Residential: 100+% Non-Residential: 50%	Residential: 100+% Non-Residential: 60%
Stephanie Dr / Windsor Mill Rd	Residential: 0% Non-Residential: 0%	Residential: 75% Non-Residential: 40%	Residential: 75% Non-Residential: 0%
Old Mt Holly Rd / Montague Plantation Rd	Residential: 20% Non-Residential: 10%	Residential: 75% Non-Residential: 10%	Residential: 75% Non-Residential: 10%
Near Old Highway 52	Residential: 100+% Non-Residential: 40%	Residential: 100+% Non-Residential: 85%	Residential: 100+% Non-Residential: 85%
Cypress Gardens Rd / Strawberry	Residential: 30% Non-Residential: 10%	Residential: 65% Non-Residential: 10%	Residential: 65% Non-Residential: 15%
Oakley Rd	Residential: 100+%	Residential: 100+%	Residential: 100+%

Characteristics	Base Scenario	Growth Management Scenario	TOD Scenario
	Non-Residential: 10%	Non-Residential: 15%	Non-Residential: 15%
Near Gaillard Rd	Residential: 70% Non-Residential: 0%	Residential: 100% Non-Residential: 20%	Residential: 100% Non-Residential: 20%
Between Mountain Pine Rd and Gaillard Rd	Residential: 90% Non-Residential: 0%	Residential: 100+% Non-Residential: 5%	Residential: 100+% Non-Residential: 5%
Old Highway 52	Residential: 20% Non-Residential: 10%	Residential: 50% Non-Residential: 95%	Residential: 50% Non-Residential: 95%
PNR - Santee Cooper	Residential: 50% Non-Residential: 100+%	Residential: 100+% Non-Residential: 100+%	Residential: 100+% Residential: 100+%
Undeveloped / Underdeveloped Parcels Outside of Nodes and within Study Area			
Outside of Nodes	Residential: 75% Non-Residential: 50%	Residential: 60% Non-Residential: 25%	Residential: 60% Non-Residential: 25%
Undeveloped / Underdeveloped Parcels within TOD Nodes' Additional Areas of Influence			
TOD Nodes' Additional Areas of Influence	N/A	N/A	Residential: 55% Non-Residential: 15%

Source: WSP

Table 2-9 presents a summary of total households and employment within the nodes in each scenario. By design, the TOD scenario has the highest total number of households and employment within the nodes.

Table 2-9: Summary of Households and Employment Within Nodes

	Households (2020)	Households (2040)	Growth in Households	Employment (2020)	Employment (2040)	Growth in Employment
Within Nodes (Base)	5,353	7,693	2,340	7,133	9,472	2,340
Within Nodes (Growth Management)	5,353	10,660	5,306	7,133	10,968	3,836
Within Nodes (TOD)	5,353	11,785	6,431	7,133	12,129	4,996

Source: WSP

Table 2-10 presents a summary of households and employment outside of one half-mile of the nodes in each scenario. The Base Scenario has the highest number of households and employment in this area, as some of the growth in this area is redirected to nodal areas under the Growth Management and TOD Scenarios.

Table 2-10: Summary of Households and Employment Outside One Half-Mile of Nodes

	Households (2020)	Households (2040)	Growth in Households	Employment (2020)	Employment (2040)	Growth in Employment
Outside Nodes, within Study Area (Base)	7,601	13,535	5,933	7,640	10,774	3,134
Outside Nodes, within Study Area (Growth Management)	7,601	10,568	2,967	7,640	9,278	1,638
Outside Nodes, within Study Area (TOD)	7,601	10,568	2,967	7,640	9,278	1,638

Source: WSP

Table 2-11 compares residences and jobs and their level of access to transit across scenarios. Under the TOD Scenario, the total number of jobs and the number of jobs accessible by transit are greater than under the other scenarios. The same is true for residential dwelling units.

Table 2-11: Comparison of Scenarios for Residential and Employment Density

Characteristics	Base Scenario	Growth Management Scenario	TOD Scenario
Number of Residential Dwelling Units (DUs)	22,755	23,885	24,973
Number of residential DUs with access to transit	8,414	10,606	11,694
Non-residential Area, in square feet	31,532,784	31,867,370	33,712,941
Number of Jobs	20,246	20,246	21,407
Number of Jobs with access to transit*	9,472	10,968	12,129

Source: WSP

*Residence or Job is within one-half mile of transit

3 Environmental Resources

3.1 Development Scenarios

There are numerous environmental resources in the US 52 Corridor Study Area, including: rivers and streams; wetlands and floodplains; rare, threatened, and endangered species; farmland soils and agricultural lands; historic resources; open space, parks and recreation areas; and churches/cemeteries, schools and community facilities. These natural and human environmental resources in the study area and surrounding areas were mapped to identify potential constraints to future development, as well as evaluate the environmental impacts of alternative future land use scenarios. Environmental screening compared the three future land use scenarios for the study corridor as a whole.

Table 3-1: Growth in Population, Households, and Employment by Scenario 2020-2040

Scenario	Growth (2020-2040)		
	Population	Households	Employment
Base	21,517	8,273	5,473
Growth Management	21,517	8,273	5,473
TOD	34,187	12,937	7,860

Source: US 52 CommunityViz Model Methodology Report

CommunityViz model was used to make changes to defined place types within the nodes to accommodate the increased development densities associated with the alternative scenarios. More detailed information on methodologies for developing the scenarios and place types is included in the *BCDCOG US 52 Corridor Study CommunityViz Model Scenario Development Methodology Report* (draft 02, September 2021) and *BCDCOG US 52 Corridor Study CommunityViz Model Scenario Outputs Report* (draft 02, September 2021). It should be noted that future population and jobs growth were not allocated to parcels identified as open space in any scenario.

3.2 Performance Measures

Performance measures were developed to compare the effects of the three alternative future scenarios on environmental resources. Three performance measures are discussed in this report:

- Change in impervious areas
- Land consumption of sensitive lands
- Number of identified environmental constraints within node or TOD node

Change in Impervious Areas

Estimated impervious area associated with each land use scenario was calculated for the corridor. Impervious surface consists of artificial surfaces where water cannot soak through, such as rooftops, asphalt, or concrete, and is an indicator of potential adverse effects to water quality because increases in impervious surface have a direct effect on water storage and flow in a watershed. As impervious surface increases, runoff increases in velocity, quantity, temperature, and pollution load.

Average percent impervious area factors for standard land use categories are defined in the SCS Technical Release 55: Urban Hydrology for Small Watersheds (1986). The TR-55 Manual is widely used for drainage studies and runoff calculations. Land use categories with their associated percentage of impervious coverage applied in this analysis are shown in **Table 3-2**.

Table 3-2: Percent Impervious Surface by Land Use Category

Land Use Category	% Impervious using SCS TR-55 Manual
Commercial	85%
Industrial/Office/Institutional	72%
High Density Residential/Multi-family	65%
Medium Density Residential (Single-family Attached)	38%
Low Density Residential/Single-family Detached	25%
Open Space	0%



These percentages were applied to place types based on their defined combination of residential and non-residential land uses (consistent with Berkeley County CommunityViz Model) to determine the average impervious cover for each place type. **Table 3-3** shows the land uses comprising each place type and resulting average impervious cover percentage. Then, for each scenario, the total acreage of each place type within the corridor was determined, and total impervious surface was calculated by applying the average impervious cover percentage associated with each place type. These results are shown in **Table 3-4**.

Table 3-3: Land Use Make-up of Place Types

	% Residential	% Residential Use			% Non-Residential	% Non-Residential Use				% Impervious
		SFD	SFA	MF		IND	OFF	COM	INST	
Civic	0	0	0	0	100	0	15	85	0	83.05
General Highway Retail	0	0	0	0	100	0	0	100	0	85.00
General Office	0	0	0	0	100	0	75	0	25	72.00
Heavy Industrial	0	0	0	0	100	100	0	0	0	72.00
Large Lot Residential Neighborhood	100	100	0	0	0	0	0	0	0	25.00
Light Industrial	0	0	0	0	100	100	0	0	0	72.00
Mixed Use Neighborhood	80	60	20	20	20	0	25	70	5	44.70
Mixed Use II	50	40	30	30	50	0	25	70	5	61.00
Mobile Home Community	100	100	0	0	0	0	0	0	0	25.00
Multifamily Community	100	0	0	100	0	0	0	0	0	65.00
Neighborhood Commercial	0	0	0	0	100	0	0	100	0	85.00
Protected Open Space	0	0	0	0	100	0	0	0	0	0.00
Recreation Open Space	0	0	0	0	100	0	0	0	100	72.00
Rural Crossroads	25	100	0	0	75	0	0	100	0	70.00
Rural Residential	100	100	0	0	0	0	0	0	0	25.00
Small Lot Residential Neighborhood	100	100	0	0	0	0	0	0	0	25.00
Town Center*	50	20	30	50	50	0	25	50	25	63.70
Town Center II	50	20	30	50	50	0	25	50	25	63.70
Town Home Community	100	0	100	0	0	0	0	0	0	38.00
Transit-Oriented Development*	50	20	30	50	50	0	25	75	0	65.33
Urban Neighborhood	100	40	30	30	0	0	0	0	0	40.90
Working Farm	50	100	0	0	50	80	0	20	0	49.80

Source: Berkeley County CommunityViz Model

* Place Types not included in Berkeley County

SFD = Single-family Detached; SFA = Single-family Attached; MF = Multi-family; IND = industrial; OFF = office; COM = commercial; INST = institutional

Table 3-4: Impervious Cover by Place Type and Scenario

	% Impervious	Site Efficiency ¹	Base Scenario		Growth Management Scenario		TOD Scenario	
			Total Acres	Impervious Acres	Total Acres	Impervious Acres	Total Acres	Impervious Acres
Civic	83.05	85%	130.6	92.2	130.6	92.2	130.6	92.2
General Highway Retail	85.00	70%	1,475.1	877.7	1,207.2	718.3	1,164.1	692.6
General Office	72.00	85%	1,313.8	804.1	1,274.9	780.3	1,272.2	778.6
Heavy Industrial	72.00	85%	2,085.6	1,276.4	2,085.6	1,276.4	2,085.6	1,276.4
Large Lot Residential Neighborhood	25.00	90%	2,388.4	537.4	2,189.6	492.7	2,173.0	488.9
Light Industrial	72.00	85%	142.5	87.2	139.2	85.2	139.2	85.2
Mixed Use Neighborhood	44.70	85%	1,568.7	596.0	2,049.3	778.6	2,064.7	784.5
Mixed Use II	61.00	85%	19.4	10.1	239.0	123.9	103.2	53.5
Mobile Home Community	25.00	97%	7.7	1.9	5.2	1.3	5.2	1.3
Multifamily Community	65.00	85%	37.5	20.7	37.5	20.7	37.7	20.8
Neighborhood Commercial	85.00	85%	28.0	20.2	8.2	5.9	8.2	5.9
Protected Open Space	0.00	0%	323.9	-	323.9	-	323.9	-
Recreation Open Space	72.00	20%	749.2	107.9	749.2	107.9	749.2	107.9
Rural Crossroads	70.00	95%	41.7	27.8	34.4	22.9	34.4	22.9
Rural Residential	25.00	90%	4,355.6	980.0	4,133.9	930.1	4,164.8	937.1
Small Lot Residential Neighborhood	25.00	94%	2,723.2	640.0	2,685.2	631.0	2,671.6	627.8
Town Center	63.70	85%	14.2	7.7	31.4	17.0	31.4	17.0
Town Center II	63.70	85%	-	-	16.2	8.7	-	-
Town Home Community	38.00	85%	4.5	1.4	69.3	22.4	40.9	13.2
Transit-Oriented Development	65.33	85%	-	-	-	-	170.3	94.5
Urban Neighborhood	40.90	80%	212.6	69.6	212.6	69.6	252.0	82.5
Working Farm	49.80	99%	17.5	8.6	17.5	8.6	17.5	8.6
TOTAL			17,639.9	6,166.8	17,639.9	6,193.7	17,639.9	6,191.5
				35.0%		35.1%		35.1%

¹ Site efficiency = buildable area

Differences in impervious area between the scenarios are small relative to the overall size of the corridor and anticipated level of development in the Base Scenario. The Growth Management and TOD Scenarios both have slightly higher percentages of impervious area within the corridor due to changes in place types to allow for higher density development at nodes. The increases in impervious cover would be concentrated within the nodes but decreases in impervious cover in the corridor outside of the nodes would offset these increases, resulting in little net change in total impervious cover.

Land Consumption of Sensitive Lands

Sensitive lands are areas that have environmental benefits for natural and recreational resources. For this analysis, sensitive lands include:

- **Farmland** (prime farmland or farmland of statewide importance) - Prime farmland is land identified by US Department of Agriculture as having the best combination of physical and chemical characteristics for producing food and crops and that is available for these uses (i.e., it is not urban or built-up land). The State of South Carolina has similarly identified farmland of statewide importance. The loss of prime farmland or farmland of statewide importance to other uses, such as urban or industrial development, puts pressure on marginal lands, which are generally less productive and not easily cultivated, to produce food and crops.
- **Wetlands** – Wetlands are defined by a combination of soils, vegetation, and hydrology, and provide numerous ecological, economic, and social benefits. National Wetlands Inventory (NWI) mapping provided by the US Fish and Wildlife Service includes information on the distribution and type of wetlands likely to be found in an area.
- **Streams** – National Hydrography Dataset (NHD) includes the water drainage network including rivers, streams, lakes, and ponds,
- **100-year flood areas** – areas with 1 percent annual chance of flooding as defined by FEMA
- **Protected open space** – as defined in place type data from BCDCOG
- **Recreation open space** – as defined in place type data from BCDCOG

These areas were identified and discussed in the *BCDCOG US 52 Corridor Study Existing Conditions Report & Short-Term Recommendations* (July 2021). Within the development nodes, sensitive lands would be vulnerable to being developed in any scenario. However, in the TOD scenario, a percentage of anticipated future growth in the TOD influence area (outside the corridor but within a 2-mile radius of the TOD nodes) was reallocated to the TOD nodes. This could result in less future development within these slivers, and therefore, result in positive effects to environmental resources in these areas.

Table 3-5 shows the amount of sensitive lands within the development nodes, as well as within the TOD influence areas. The relative amounts of these sensitive areas are less in the development nodes than in the TOD influence areas as a result of existing development along the US 52 corridor. As shown in the table, there are substantial amounts of sensitive lands in the TOD influence areas outside of the immediate US 52 corridor. For instance, approximately 35 percent of the TOD influence area is indicated as NWI wetlands

and 25 percent is within a FEMA 100-year flood area. The TOD scenario could shift development away from these areas to nodes along the US 52 corridor.

Table 3-5: Sensitive Lands in the US 52 Corridor Study Area

Sensitive Lands	Nodes	Project Study Area (including nodes)	TOD Influence Area (outside of study area)
Total Acreage	5,526	19,398	13,343
Farmland (Prime Farmland or Farmland of Statewide Importance) (ac)	4,725	16,760	12,400
NWI Wetlands (ac)	805	4,995	4,630
NHD Streams (lf)	84,270	336,185	281,830
FEMA 100-year Flood Area (ac)	325	3,150	3,365
Protected Open Space (ac)	30	325	540
Recreation Open Space (ac)	140	750	630

Identified Environmental Constraints

A complete summary of environmental constraints in the vicinity of the US 52 corridor can be found in the *BCDCOG US 52 Corridor Study Existing Conditions Report & Short-Term Recommendations* (July 2021). Potential impacts of the alternative future land use scenarios on environmental constraints can be estimated by identifying the constraints within the development nodes (negative impacts) and TOD influence area (positive impacts). Environmental constraints include protected species (waterbird colony and bald eagle nesting sites), historic resources (National Register eligible and listed), and cemeteries. As shown in **Table 3-6**, there are few environmental constraints within the nodes that could be impacted by changes in land use resulting from the future scenarios. There are, however, several resources in the TOD influence areas that could benefit from growth shifting away from these areas and into the development nodes along US 52.

Table 3-6: Environmental Constraints in the US 52 Corridor Study Area

Environmental Constraint	Nodes	Project Study Area (including nodes)	TOD Influence Area (outside of study area)
Waterbird Colony	0	2	7
Bald Eagle Nest	1	1	1
Historic Structures (National Register Listed)	0	3 ¹	3 ²
Historic Structures (Potentially Eligible)	1 ³	3 ⁴	0
Historic Areas (National Register Listed)	0	1 ⁵	1 ⁵
Cemeteries	2	8	3

¹ St James Goose Creek Church and Cemetery, Otranto Plantation

² Biggin Church Ruins, Biggin Church Cemetery, Tailrace Canal

³ Swamp Fox Drive-in Theatre

⁴ Swamp Fox Drive-in, Gippy Plantation House/Gippy Dairy Plant, The Oaks Plantation

⁵ Old Santee Canal

3.3 Scenario Evaluation and Comparison

The three alternative future scenarios do not differ significantly in potential impacts to environmental resources based on evaluation of performance measures including change in impervious areas, land consumption of sensitive lands, and number of identified environmental constraints within nodes or TOD nodes. Based on projected changes in land use under the alternative future scenarios, the Growth Management Scenario would result in slightly higher impervious surface area compared to the TOD Scenario and Base Scenario. Sensitive lands within the development nodes and TOD influence areas were calculated to identify potential impacts to environmental features from future development. The relative amount of these sensitive areas is less in the development nodes than in the TOD influence areas as a result of existing development along the US 52 corridor, but there are substantial amounts of sensitive lands in the TOD influence areas outside of the immediate US 52 corridor. Similarly, there are few identified environmental constraints within the nodes that could be impacted by changes in land use resulting from the future scenarios; however, there are several resources in the TOD influence areas that could benefit from growth shifting away from these areas and into the development nodes along US 52.

4 Active Transportation

Bicycle and pedestrian infrastructure along the US 52 corridor is sporadic and disconnected, and at present the facilities that do exist are largely insufficient for safe walking and biking. Using the three establish land use scenarios, bicycle and pedestrian improvements have been evaluated based on the anticipated growth and transit service within the proposed development nodes.

The US 52 study area is served by TriCounty Link (TCL), the rural bus service in Berkeley, Charleston, and Dorchester counties. “Commuter Solution” (CS) Route CS1, which originates at the US 52/Riverwood Drive (Santee Cooper) Park and Ride lot at the north end of Moncks Corner, travels along US 52. It has stops at the park and ride lots at:

- Santee Cooper site in Moncks Corner
- US 52/Altman Avenue (Berkeley County Administration Building) in Moncks Corner
- US 52/Button Hall Avenue in Goose Creek
- CARTA Melnick Drive/Antler Drive (Rivers Avenue).

Unlike TCL local routes which uses flag stops, commuter routes only stop at timepoints listed in published timetables; all stops are at the park and ride lots along US 52. The route has a heavy concentration of reverse commuters who work at Santee Cooper, the park and ride stop at the northern end of the project corridor. In 2019, CS1 route had the strongest ridership among TCL routes, though all routes experienced a decrease in ridership during 2020 and the COVID-19 pandemic. Based on the 2018 Regional Transit Framework Plan, of the over 700 yearly boardings in 2015 at the Rivers Avenue Park and Ride (now the Melnick Drive/Antler Park and Ride), 42 percent accessed the lot by driving themselves and parking, 21 percent accessed it by walking to it, 21 percent transferred between buses and 16 percent were dropped off.

4.1 Overview of Active Transportation Scenarios

Active transportation scenarios were developed based on three land use scenarios and associated transit service scenarios. While bicycle and pedestrian facility improvements will be presented throughout the

corridor, improvements are also reliant on modifications to the transit system. This section gives a high level overview of the proposed active transportation improvements and changes.

4.1.1 BASE SCENARIO

With the continuing growth and development along the US 52 corridor, and likely continued demand for active transportation facilities, walking and bicycling routes throughout the communities should be safe and convenient in order to access residences, employment and transit facilities.

Based on the land use and transit approaches set forth for the Base Scenario, which entail:

- Land use: reflect the existing and expected development pattern if current development trend continues through 2040
- Transit: focus on routing changes for the routes in the vicinity of the US 52 corridor but does not suggest significant changes in the route type or frequency for the intersecting routes as the intensity of development is not anticipated enough to warrant increased service on these connecting routes; it assumes that stops will remain at the four park and ride lots, though additional stops may arise at other nodes as development naturally occurs. Where development does occur, in the base scenario, it is suggested that sidewalks be implemented within the development areas and along US 52.

It is expected that the Base Scenario would incorporate and implement planned active transportation facilities as set forth in the *WalkBike BCD* Plan as well as the Goose Creek and Moncks Corner local plans at the four park and ride nodes as well as suggesting additional connections to the park and ride sites. In addition to the WalkBike recommendations at the four nodes, the Base Scenario includes filling sidewalk gaps for improved connectivity and incorporating crosswalks, where feasible, at intersections where sidewalks exist on both sides of an intersection. The four nodes include:

- US 78
- US 176
- Old Highway 52
- Santee Cooper Park and Ride.

Figure 4-1 presents bicycle and pedestrian recommendations within the four nodes for the Base Scenario.

The *WalkBike BCD* Plan recommends improvements in five phases, with Phase one having a goal of a 2021 implementation; phases two through five do not have a timeframe provided. As development naturally occurs within other nodes, sidewalks should be implemented along US 52 and connecting roadways.

The Base Scenario would be served with a transportation network that remains car oriented.

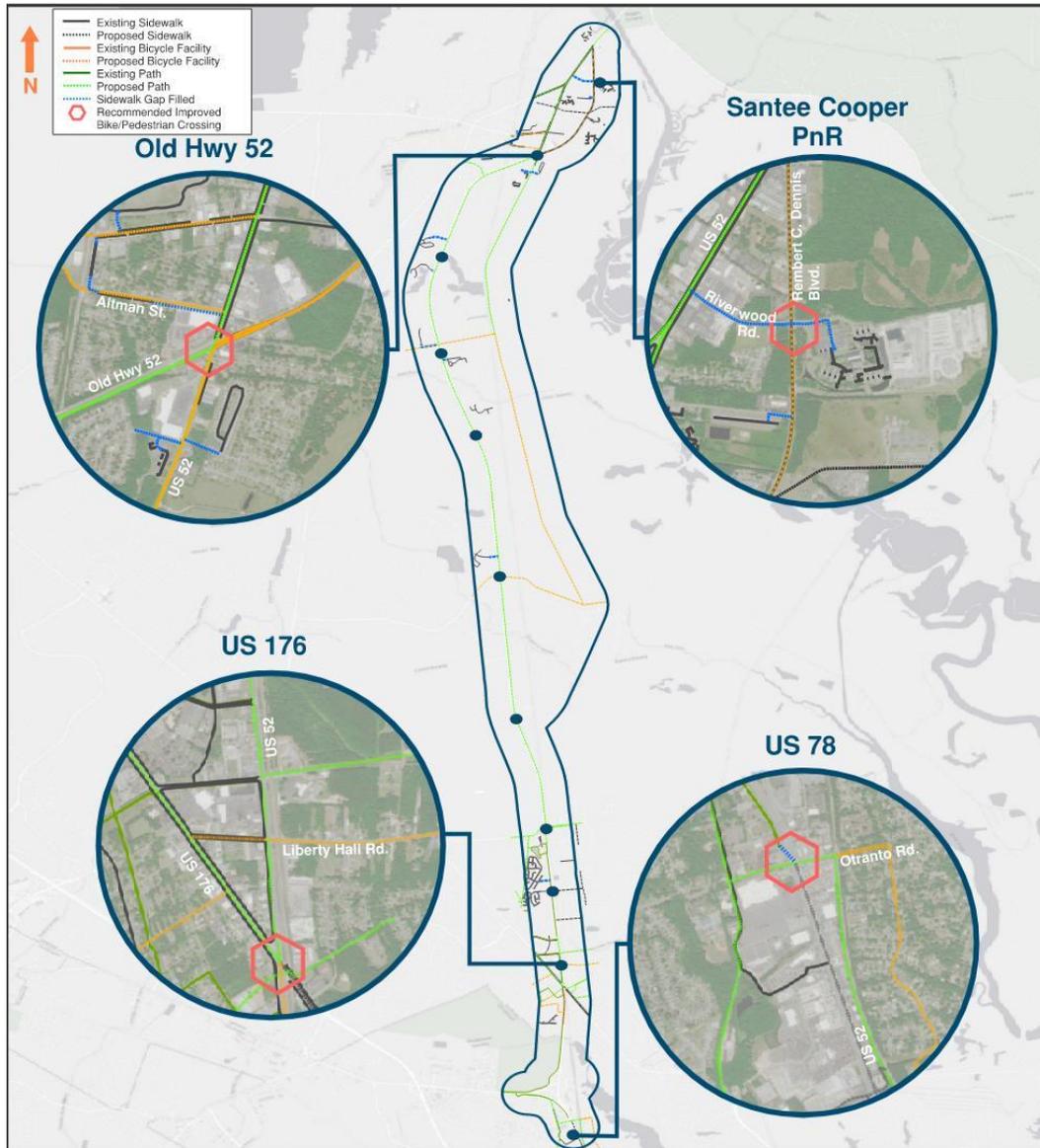


Figure 4-1: US 52 Base Scenario Bicycle and Pedestrian Facilities

4.1.2 GROWTH MANAGEMENT SCENARIO

With the expected increase in development density, number of jobs and residents, a higher capacity transit service (BRT Lite) and stops/stations proposed at all nodes for the Growth Management Scenario, improved bicycle and pedestrian connections within the nodes and improved connections to transit stations would be incorporated.

Stations, located within each node, would include amenities such as shelters, benches, lighting, real-time “next bus” signs, and bike racks. See **Figure 2-2** for nodes along the project corridor.

Active transportation within the Growth Management Scenario would focus on safe and direct pedestrian connections to transit facilities and on bicycle network improvements, where feasible.

The Growth Management Scenario also focuses on expected study area growth within the identified nodes; developments would include higher densities, allowing for additional sidewalk and bicycle connections and

opportunities through new development. For example, developments may include new streets or access points that would incorporate sidewalks and connections to existing pedestrian facilities.

Landscape buffered sidewalks and enhanced intersection crosswalks are examples of facilities that could be implemented in and supported by the Growth Management Scenario, increasing the presence and amount of sidewalk and bicycle facilities, as well as providing safe connectivity to transit stops. Design for enhanced crosswalks may be as minimal as basic striping to increase visibility or as intensive as fully controlled crossings with traffic signals and call buttons. Installation of simple concrete islands in the existing center turn lane may be practical short-term solutions to increase safety. Installing raised medians or pedestrian crossing islands would improve safety by simplifying crossing maneuvers and allowing pedestrians to cross one direction of traffic at a time.

In addition to incorporating the *WalkBike BCD* improvements, additional sidewalk connections are proposed:

- Along Woodland Lakes Road between US 52 and Sora Lane (Stephanie Windsor Mill node)
- Between US 52 and the park and ride lot at Altman Street
- Between Old US 52/Rembert C. Dennis Blvd and the Santee Cooper park and ride site; along Riverwood Drive (Santee Cooper node)
- Between Old US 52/Rembert C. Dennis Boulevard and US 52, along Riverwood Road (Santee Cooper node)
- Between E. Main Street and Peagler Way (filling the connection into Moncks Corner Regional Recreation Complex (Old Hwy 52 node)
- Along 1st St. John Drive between Old Hwy 52 and Rockville Road (Old Hwy 52 node)
- Along Bradley Road, to Shannonwood Drive (Old Hwy 52 node)
- Along Shannonwood Drive between Birchwood Drive and Old US 52 (Old Hwy 52 node)
- Along Gaillard Road between Stoney Creek Way and US 52 (Near Gaillard node)
- Along Westbury Lane between US 52 and Sugeree Drive
- Between Highway 52 and the entrance of Foxbank Plantation (Cypress Gardens node)
- Along Robin Wood Boulevard between Piney Branch Drive and US 52 (Between Mountain Pine node)
- Along Moss Grove Drive between entrance of Moss Grove Plantation and US 52 (Between Mountain Pine node)
- Along Red Bank Road, across US 52 (US 176 node)
- Along Liberty Hall Road, across US 52 (US 176 node).

Figure 4-2a and **Figure 4-2b** present bicycle and pedestrian recommendations within the four nodes for the Growth Management and TOD Scenarios.

This scenario would be served with a transportation network that remains primarily car-oriented, but the focused growth within the nodes would allow vehicular trips to be shorter and more effectively served by walking, bicycling, and transit.

4.1.3 TOD SCENARIO

The TOD Scenario would focus more intense growth and density within the nodes, presenting added active transportation opportunity for connection within the new development footprint, such as along new roadways and access points. Building upon what is presented in the Growth Management Scenario, the TOD scenario envisions a further intensity of development around three nodes as shown in **Figure 2-3**;

- Santee Cooper Park and Ride (enhanced transit zone),
- Cypress Gardens/Strawberry Road (enhanced transit zone), and
- US 176 (enhanced transit zone)

With enhanced transit service (micro-transit) at three of the nodes, and due to anticipated increase in population and employment in these TOD nodes, landscape buffered sidewalks, mid-block pedestrian crossings, protected bicycle lanes and enhanced intersection crosswalks are examples of facilities that could be implemented in and supported by the TOD Scenario, increasing the presence and amount of sidewalk and bicycle facilities, providing safe connectivity to transit stops and enhancing user safety and comfort level. When street-facing retail and commercial developments replace car-oriented shopping centers and strip malls along the corridor, the volume of pedestrians and cyclists from residential and employment centers should increase.

Figure 4-2a and **Figure 4-2b** present bicycle and pedestrian recommendations within the four nodes for the Growth Management and TOD Scenarios.

The TOD Scenario would be served with a transportation network that remains primarily car-oriented, but the more intensely focused growth nodes would be transit-oriented, focused along US 52, with enhanced transit service as described in Section 5.1.3.

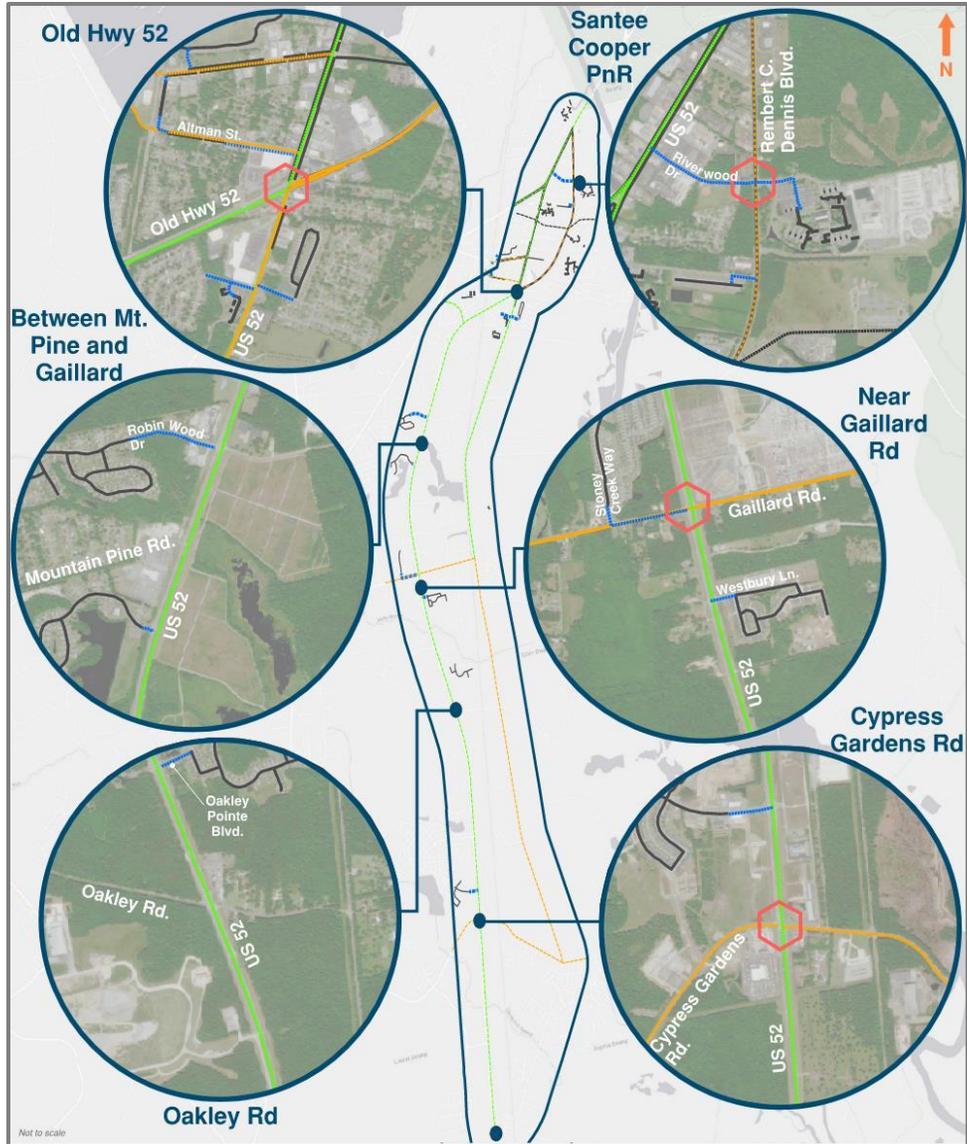


Figure 4-2a: North US 52 Growth Management and TOD Scenario Bicycle and Pedestrian Facilities

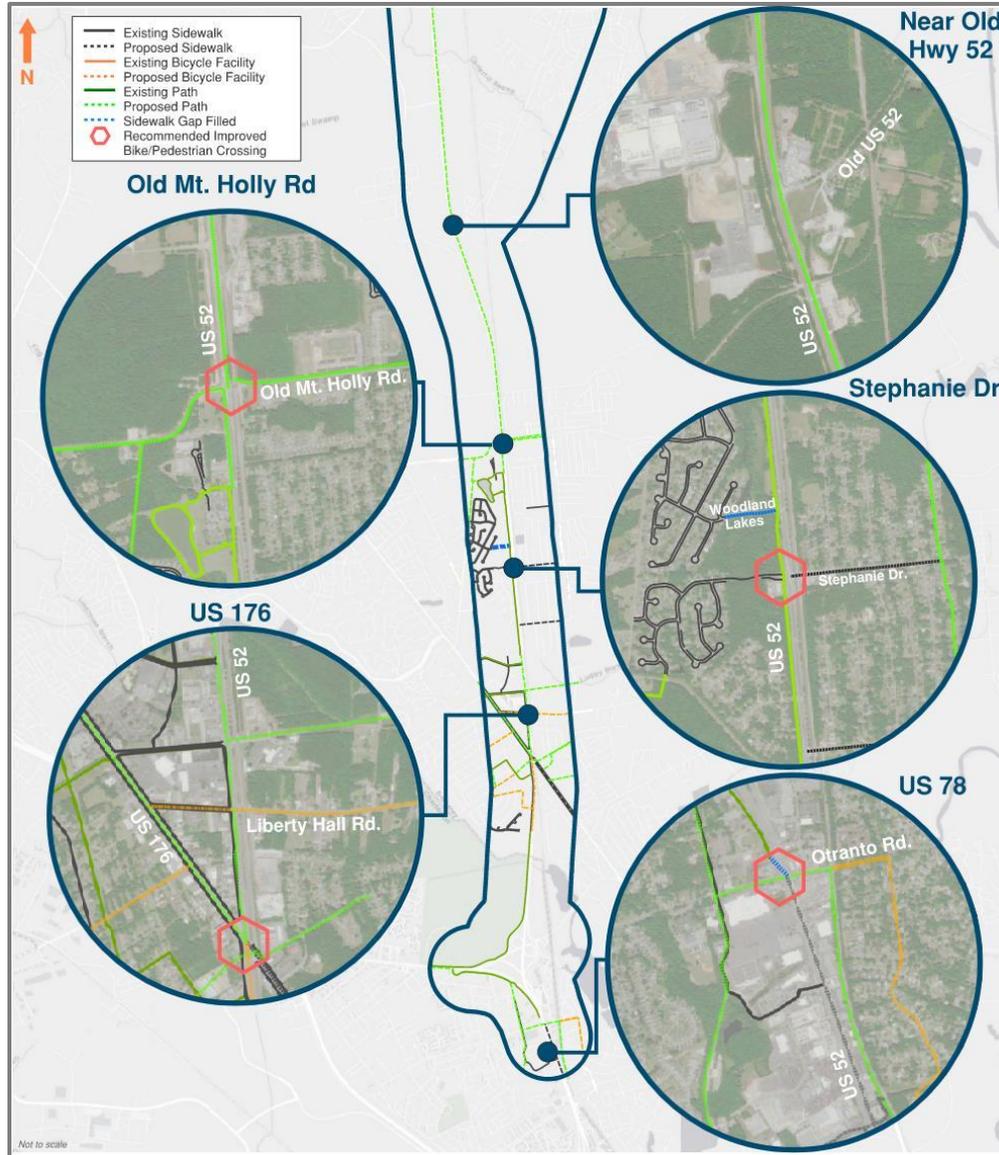


Figure 4-2b: South US 52 Growth Management and TOD Scenario Bicycle and Pedestrian Facilities

4.2 Application of Performance Measures

To evaluate each development scenario in terms of Active Transportation, performance measures were established. Using existing and proposed/planned active transportation facilities from the *WalkBike BCD* Plan, Goose Creek and Moncks Corner local plans and the Charleston County Park and Recreation plan, lengths of active transportation facilities were calculated within the various nodes for the three scenarios. The individual performance measures are as follows;

- Linear mileage of new sidewalk and connections filled
 - Measured by calculating the length of proposed sidewalk facilities within each node for each scenario. Additionally, using aerial imagery, areas within the nodes were analyzed for gaps in the sidewalk network and were “filled” and included in new sidewalk facilities.
- Linear feet of new bicycle facilities

- Measured by calculating the length of proposed bicycle facilities within each node for each scenario.
- Linear feet of new trail or path
 - Measured by calculating the length of proposed shared used path, trail or other path facilities within each node for each scenario.

4.3 Scenario Evaluation and Comparison

Table 4-1 below presents the outcome of the performance measures between scenarios. The Base Scenario has less proposed linear feet of sidewalk, bike and path facilities due to improvements being focused at the four park and ride locations. The Growth Management and TOD Scenarios propose a similar amount of active transportation facilities due to the shared focus on nodes and would likely include additional sidewalks and bicycle facilities, not calculated, as new and denser development occurs within the nodes.

Table 4-1. Active Transportation Scenario Comparison

	Base Scenario	Growth Scenario	TOD Scenario
New Sidewalk Facilities (miles)	4.5	6.2+	6.2+
New Bicycle Facilities (miles)	4.8	6.8	6.8+
New Path Facilities (miles)	6.7	14.6	14.6+
Total New Active Transportation Facilities (miles)	16	27.6	27.6+

+ Additional opportunity for active transportation connections based on future development densities

The Base Scenario would expect to see approximately 4.5 miles of new sidewalk, 4.6 miles of new bicycle facilities and 6.7 miles of new path facilities. The Growth Management and TOD Scenarios would expect to see approximately 6.2 miles in new sidewalk, 6.8 feet of new bicycle facilities and 14.6 miles in path facilities.

Though there are no differences in the calculation of proposed active transportation facilities between the Growth Management and TOD Scenarios, it is anticipated that there would be different levels of opportunity for more sidewalk connections within the new development footprint, such as along new roadways and side streets. Additional access points within a development footprint could provide an opportunity to connect sidewalk, bicycle facility or a path facility to a nearby existing facility.

With the TOD Scenario anticipating a larger transit zone within the three designated nodes, identified in section 2.3, there is opportunity to implement more enhanced bicycle and pedestrian facilities within the area to increase user separation from vehicles and improve user safety and comfort level. These include separated bicycle and pedestrian facilities from an activity center to a larger residential area or another activity center. The improved bicycle and pedestrian facilities would connect and activate the recommended higher density land use along the corridor.

5 Transit

The US 52 study area is served by the area’s local transit service provider, TriCounty Link (TCL), which operates both commuter and fixed route bus service in the rural areas of Berkeley, Charleston, and Dorchester counties. TCL’s service is comprised of 11 deviated fixed routes (operating as a flag stop system) and five commuter routes, of which two routes operate either partially (Fixed Route B102) or fully (Commuter Route CS1) along the extents of the study corridor. CS1 originates at the Santee Cooper Park and Ride lot at the north end of Moncks Corner with stops at the park and ride lots at the Berkeley County

Administration Building and at 303 N. Goose Creek Boulevard and terminates at the CARTA Melnick Drive/Antler Drive (Rivers Avenue) Park and Ride Lot in North Charleston. There are eight scheduled weekday round trips, with four operating in the morning and four operating in the afternoon/evening. B102 also uses a major portion of US 52 between Moncks Corner and Goose Creek, stopping at the same park and ride lots. This route consists of a single morning trip and a single early afternoon trip. Both routes make connections to other routes on both the north and south ends of the corridor, including routes operated by the urban transit provider Charleston Area Regional Transportation Authority (CARTA).

5.1 Overview of Transit Service Scenarios

Transit service scenarios were developed to complement the three land use scenarios. The growth assumptions made in the land use scenarios influence what transit services can potentially be sustained or accommodated, although there is no one-size-fits-all density formula to ensure project success.¹ Residential and employment density thresholds² are a starting point for collaboration among transit agencies, local governments, communities, and private developers. For example, the Base Scenario assumes the continued development of lower population and employment densities and land uses that are not mixed use. It has been assumed, therefore, that this type of future land use scenario can only support a similar transit system that currently operates in the corridor with limited designated stops at park and ride locations. As development grows and densities increase, it is expected that a more robust transit system is warranted. The Growth Management Scenario could warrant more frequent bus service with designated stops, improved passenger amenities, and increased frequencies on feeder routes. The more frequent bus service could come in the form of “Bus Rapid Transit (BRT) Lite”³, a bus that operates in mixed traffic with designated stops and greater passenger amenities, supported by pedestrian infrastructure such as traffic signals and marked crosswalks. As even more growth occurs in the TOD Scenario, additional transit services such as a dedicated BRT⁴ system could be introduced due to the transit supportive land uses developed around each proposed bus stop node. For all scenarios, it is assumed that connections would be made to the proposed Lowcountry Rapid Transit (LCRT) at a station at US 78 in North Charleston.

This section gives a high-level overview of potential transit service changes for TCL routes that either operate on US 52 or intersect with that corridor between Moncks Corner and North Charleston. The three transit service scenarios reflect the potential land use scenarios. Note: for each of the land use scenarios, any current TCL routes not discussed are assumed to have their routing unchanged.

Three transit service scenarios were analyzed as follows:

- **Base Case Scenario:** The Base Case Scenario focuses on routing changes for the routes in the vicinity of the US 52 corridor (i.e. CS1 and B102). It does not recommend significant changes in

1 Source: *Planning for Transit-Supportive Development: A Practitioner’s Guide*, FTA Report No. 0057, (June 2014)

2 Residential densities exceeding 15 to 20 homes/acre and employment areas with densities of 50 jobs per acre or higher are targets for higher frequency, higher volume service provided by high-capacity transit. Source: *Transit-Supportive Densities and Land Uses*, A PSRC Guidance Paper (February 2015).

3 Bus Rapid Transit (BRT) “Lite” is envisioned as being a network of fast and frequent enhanced transit routes on existing high density, mixed-use arterial corridors serving “transit lifestyle” market areas that are expected to respond positively to an enhanced transit product.

4 Bus Rapid Transit (BRT), also called a busway or transitway, is a bus-based public transport system designed to have better capacity and reliability than a conventional bus system. Typically, a BRT system includes roadways with lanes that are dedicated to buses, and gives priority to buses at intersections.

the route type or frequency for the intersecting routes as the intensity of development is not anticipated to warrant increased service on these connecting routes.

- **Growth Management Scenario:** The Growth Management Scenario will funnel a significantly higher number of employees and residents into the corridor and at some nodes in particular, which should provide enough additional riders to allow for some high-level frequency recommendations. The initiation of a Bus Rapid Transit (BRT) Lite service is a potential for this land use scenario.
- **TOD Scenario:** The TOD Scenario could potentially support a fully built out a BRT system. An additional transit mode (micro transit)⁵ can be layered on top of it in order to provide enhanced service to certain high density TOD developments. The micro transit services would be in the form of a demand response service. Due to the smaller service area (i.e. focused around each TOD node) it is expected that it will be more responsive/easier to schedule. An option could allow a rider to take it without a reservation when boarding at one of the BRT transfer points.

All scenarios assume that the main transfer location in Moncks Corner moves from the TCL offices and garage to the Santee Cooper Park and Ride on a temporary basis. Ideally, a permanent bus transfer facility with an indoor waiting area and assigned bus bays could be developed somewhere in Moncks Corner as part of the US 52 transit infrastructure improvements. Note also that any expansion or improvements in bus service along the US 52 corridor is heavily reliant on improvements in the pedestrian and bicycle access infrastructure; i.e. direct walking and bike routes throughout adjacent communities which provides safe, convenient access to the US 52 corridor. As stated in the *Existing Conditions Report*, given the current development patterns, it would be very difficult for a resident to currently access a fixed transit route along US 52; there are limited multimodal connections between residences and the corridor, residential subdivisions and commercial areas do not front the US 52 corridor, and there are limited access points. A particular concern regarding existing conditions in the US 52 corridor is that the speeds and speed limits are very high (60 mph), and most intersections are not currently signalized. Consequently, there is no safe way for passengers to get to/from stops on the opposite side of the roadway. Thus, new traffic signals, crosswalks and other pedestrian amenities including street lighting will be needed to allow transit passengers to safely cross US 52 to access transit stops at key nodes in the corridor.

Figure 5-1 shows the 11 development nodes that have been proposed in the land use scenarios and are assumed to be potential bus stop locations for the Growth Management and TOD scenarios. The Base Scenario assumes that stops will remain at the four park and ride lots where CS1 and B102 currently stop and include some additional stops at nodes that have been developed with pedestrian friendly infrastructure as part of the Base Scenario.

5.1.1 BASE SCENARIO

Once the transit and pedestrian friendly infrastructure improves on US 52, there is a greater potential it could support one trunk line route that serves the entire length of the US 52 corridor, with the other TCL routes providing support for that route by “feeding” passengers by means of transfers. Improvements include better pedestrian crossings and additional sidewalks to allow riders to access any additional transit stops from surrounding neighborhoods. This is especially important on US 52, which is a high speed divided highway and difficult for pedestrians to cross. The existing routes that currently serve shorter segments of US 52 could be replaced by this trunk line route concept. Transfers will be more feasible when the trunk

⁵ Micro transit is a form of demand responsive transport. This transit service offers a highly flexible routing and/or highly flexible scheduling of minibus vehicles shared with other passengers

line route⁶ has more frequent service than the eight roundtrips that CS1 currently offers and when intermediate stops are established at select nodes that have been enhanced by signal-protected crosswalks and other pedestrian infrastructure. This will allow for the “feeder” TCL routes to have their routes and schedules adjusted to make timed transfers with the US 52 route at these select nodes.

TCL is interested in moving away from the flag stop system to a more on-demand model. Therefore, it is suggested the feeder routes in the study area that loop in the rural areas north of Moncks Corner be transformed into demand response routes; in more urban areas, these routes will be changed into linear routes to provide more direct and faster service. Buses will continue to stop at the existing park and ride lots but due to a potential increase in service for the trunk line as well as some additional land development, it may make sense to introduce either some bus stops along US 52 or an additional park and ride lot mid-corridor provided land can be acquired.

Table 5-1 and **Figure 5-2** show the suggested changes to the feeder routes in order to restructure service under the Base Scenario. Note that routes are suggested to be eliminated in whole and replaced with general demand response service due to the following reasons:

- Moving the transfer point north to Santee Cooper makes stopping near Old Highway 52 unnecessary for many routes;
- Many “B” routes are currently duplicated by more frequent service (the “CS” or “D” routes) for most of their length;
- The parts of the route loops eliminated generally travel along rural roads with little to no population;
- Changing loop routes to linear routes improves the rider experience by not requiring them to ride a circuitous route to their destination;
- Moving to a general public demand response service north of Moncks Corner will be more cost effective and serve a larger population than deviated service along a few loop routes.

⁶ Currently CS1 acts as a trunk line route along US 52 in the study area; this route can either be replaced or enhanced to function as the trunk line route suggested in the base scenario.

Transit Corridor with Development Nodes

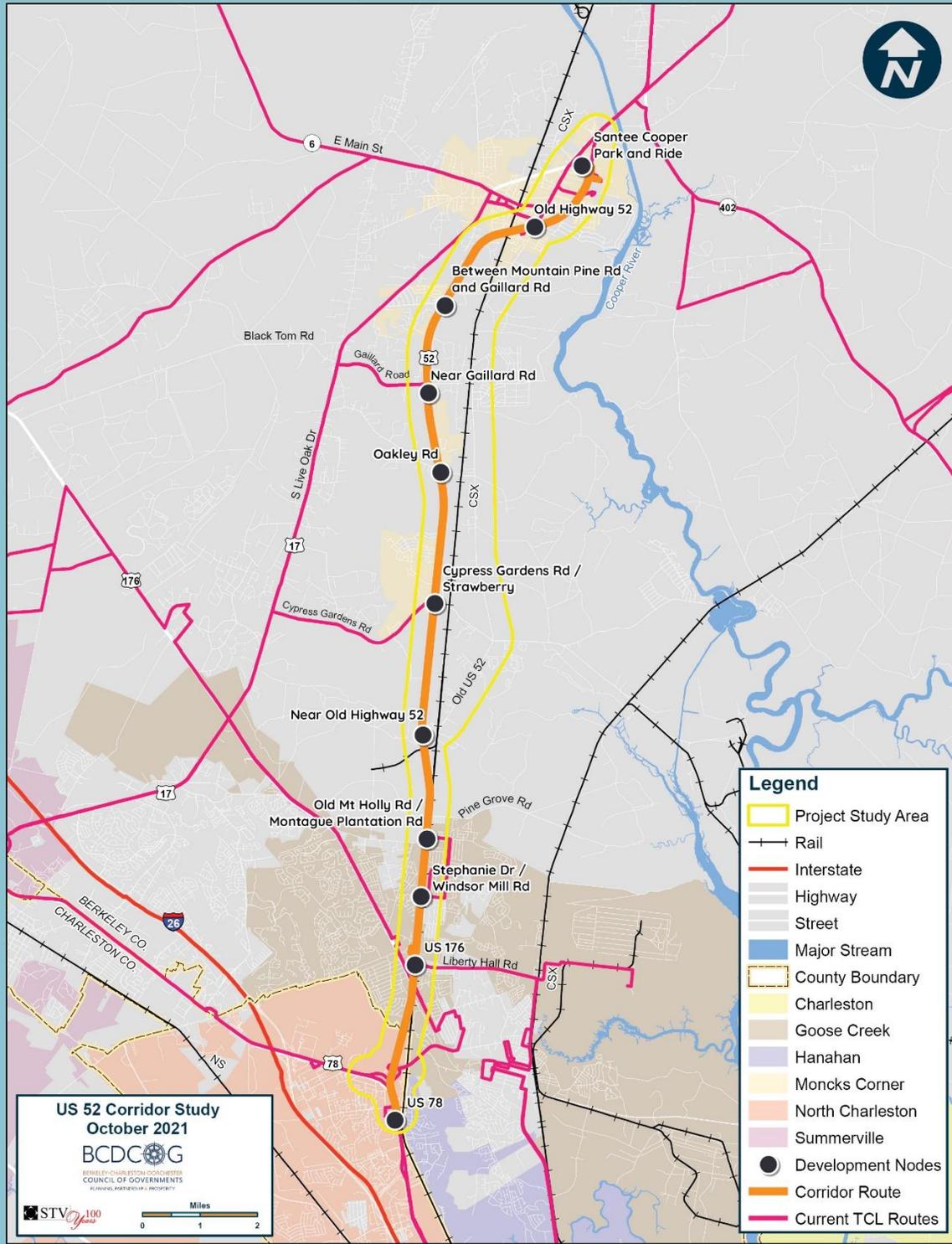


Figure 5-1: US 52 Transit Corridor Showing Development Nodes.

Table 5-1: Summary of Base Scenario Route Modifications

Route	Name	Transfer	Change
B101	Moncks Corner/Jamestown	Santee Cooper,	Route eliminated and replaced with general public demand response service north of Moncks Corner
B102	Moncks Corner/Goose Creek	US 176	Convert route to a linear route from Moncks Corner to Hanahan
B104	Moncks Corner/St. Stephen	n/a	Route eliminated and replaced with general public demand response service north of Moncks Corner;
B105	Moncks Corner/Mt. Pleasant	Santee Cooper	Route eliminated and replaced with general public demand response service north of Moncks Corner
D305	Summerville Connector	n/a	Route eliminated and replaced with general public demand response service in the corridor

Source: TranSystems

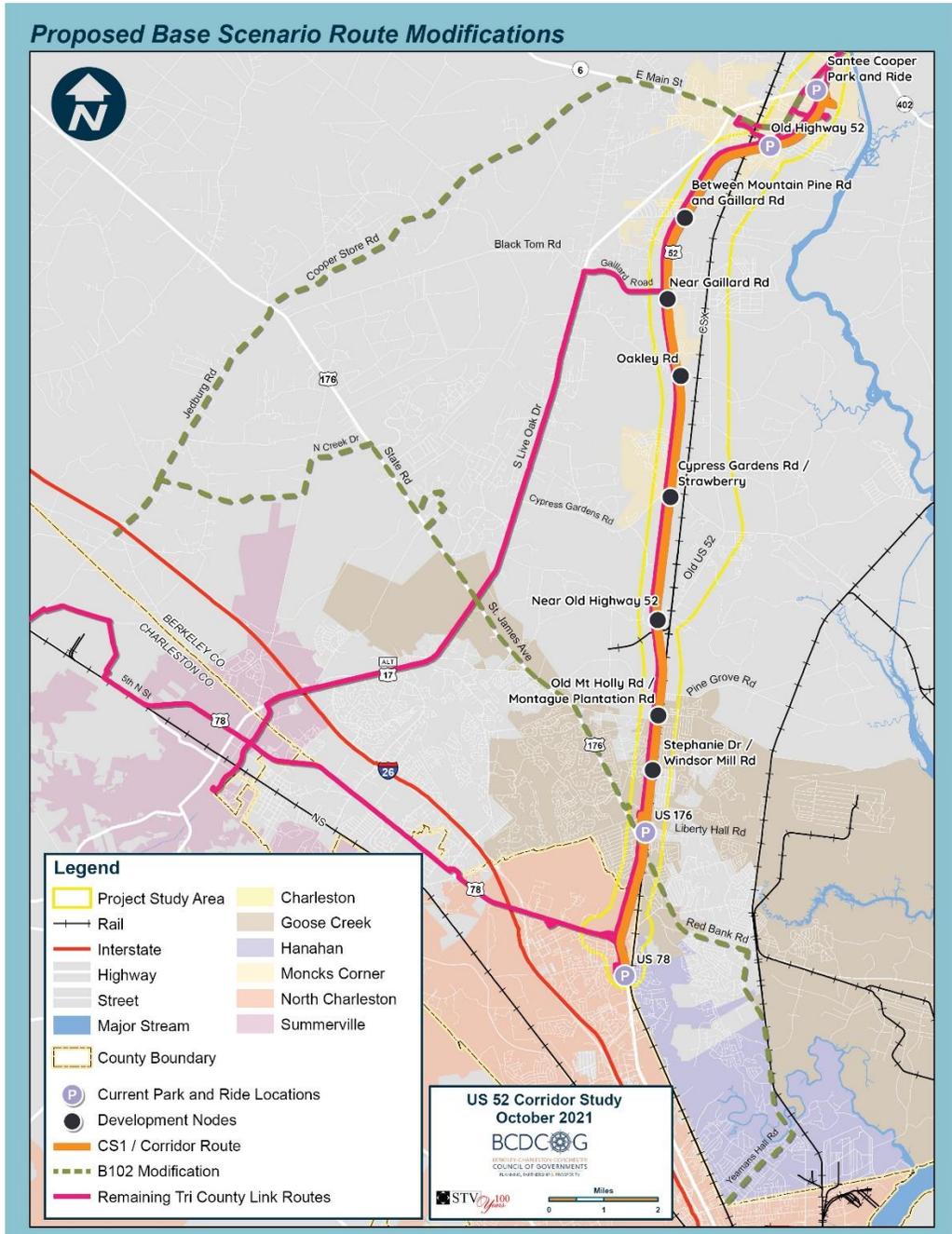


Figure 5-2: Proposed Base Scenario Route Modifications⁷

⁷ Only routes with routing modifications (from the current service) are shown

5.1.2 GROWTH MANAGEMENT SCENARIO

The higher population and employment densities focused at compact nodes in the US 52 corridor which the Growth Management Scenario envisions, could support a higher capacity transit service such as BRT Lite. A BRT Lite service would not require dedicated bus lanes, rather service could be enhanced by treatments such as level boarding platforms at station stops, queue jump lanes and/or transit signal priority (TSP) at intersections. Bus “stations”, with amenities such as shelters, benches, lighting, real-time “next bus” signs, and bike racks should be at each stop location.

It is assumed that BRT Lite service will stop at each of the 11 development nodes along US 52. Where high intensity development is planned, intersecting routes will be rerouted to those nodes/stations. This scenario also assumes the routing changes for the Base Scenario remain the same (with the exception of the Route B102 modifications, represented in this scenario by Routes 2, 3, and 6 as referenced in **Table 5-2**). The route changes for this scenario also include changes in service type; many of the routes are proposed to transition to all day service to match the increase in transit demand at the BRT Lite stops. In addition, TCL should transition to set signed stops on feeder routes operating south of Moncks Corner rather than routes stopping anywhere along its alignment using flag stops. Complimentary ADA service would be provided along all (non-deviated) local fixed routes proposed in this plan. Once development is more robust, bus stop signs should be installed at the newly designated stops along US 52, with flag stops not being allowed. Sidewalks should be installed to encourage residents and employees along US 52 to walk to bus stops. The frequency and span of the feeder routes remaining (i.e., not converted to demand response service) are assumed to stay as they are now.

Table 5-2 shows the suggested changes for each of the routes that would feed into the BRT Lite corridor. For simplicity, the new route designations have been identified by a simple numbering system as shown in column 1 and also shown in **Figure 5-3**.

Table 5-2: Summary of Growth Management Scenario Route Modifications

New Route Number	Former Route Number	Description	BRT Transfer Location	Service Type
1	B102	Moncks Corner to Jedburg via Jedburg Road and Cooper Store Road	Santee Cooper, Old Highway 52	AM/PM Rush (limited)
2	B102	Jedburg to Goose Creek via US 176 Peak service via Old Mt. Holly Road and to Naval Base	Old Mt Holly	Local (hourly), AM/PM Rush (limited)
3	CS1	BRT Lite	N/A	BRT Lite Service
4	B102	Goose Creek to Hanahan via Red Bank Road and Rhett Avenue	US 178	Local (hourly)
5 ⁸	CS4	Moncks Corner via St. Stephen and Pineville	Santee Cooper, Old Highway 52	Local (hourly)

Source: TranSystems

⁸ Not shown on map due to routing being unchanged from the current routing

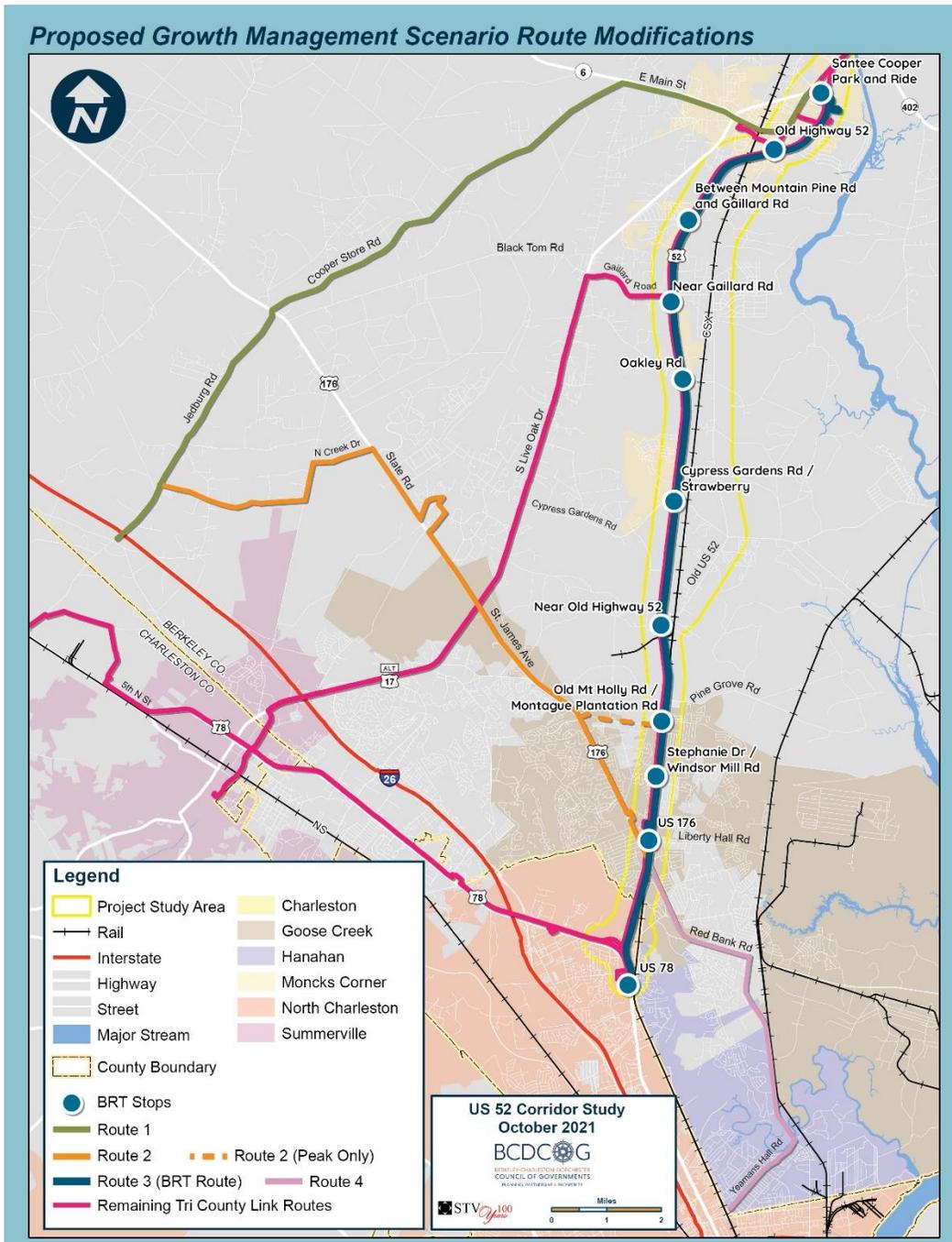


Figure 5-3: Proposed Growth Management Scenario Route Modifications⁹

⁹ Only routes with routing modifications (from the current service) are shown.

5.1.3 TOD SCENARIO

The TOD scenario envisions a further intensity of development around the three TOD nodes—Santee Cooper Park and Ride (Moncks Corner), Cypress Gardens/Strawberry Road (Berkeley County) and US 176 (Goose Creek). It is thought that this scenario could support a BRT service on a dedicated transitway. Similar to BRT Lite proposed in the Growth Management Scenario, the station areas would have platform level boarding, shelters, and other pedestrian amenities. High-capacity vehicles would operate along the transitway. The service and stations would have prominent branding or identity. Intersection treatments would be required.

To serve additional development and the potential transit riders in the vicinity of these three TOD nodes, micro transit zones are proposed covering from two to four square miles around each zone. The micro transit zones would be served by a demand response service using a smaller transit vehicle (e.g. a van) that would carry anyone within that area with an advance reservation within an hour or less. Most reservations would be expected to be made through a phone app; regular riders would be able to subscribe and would only need to cancel/change on days they do not plan to ride their regular trip. One stop would anchor the micro transit zone (likely the BRT stop within the TOD), where a person would not need to make a reservation to ride; the vehicle would wait there on a set schedule and frequency coordinated with the mainline BRT schedule.

In addition to these three nodes, the proposed neighborhood/town center node at US 78 area will be an important connection with the proposed Lowcountry Rapid Transit. CARTA and TCL can collaborate to increase frequency on routes serving the US 78 development node to serve the population near this park and ride, which is also a proposed LCRT station. The potential for BRT trips in the US 52 corridor to be through-routed between Moncks Corner and downtown Charleston along the proposed Lowcountry Rapid Transit (LCRT) right of way should be considered. This is the operating plan that has been assumed for BRT routes in the corridor in previous studies, such as the I-26 ALT and the Regional Transit Framework Plan.

Table 5-3 and **Figure 5-4** show proposed additional changes to enhance service in the corridor above what was proposed in the Growth Management Scenario (**Table 5-2**). The changes for each of the routes that would feed into the BRT route in the corridor under the TOD Scenario are listed on the next page.

Table 5-3: Summary of TOD Scenario Route Modifications

Route	Description	Change from Growth Management Scenario
1	Moncks Corner to Jedburg via Jedburg Road and Cooper Store Road	Increase in trips/frequency
2	Peak service via Old Mt. Holly Road and to Naval Base	Increase in trips/frequency
3	BRT	Increase in trips/frequency
4	Goose Creek to Hanrahan via Red Bank Road and Rhett Avenue	Increase in trips/frequency
5	Moncks Corner via St. Stephen and Pineville	Route extended south via Old US 52 to Roper St Francis Berkeley Hospital
CS8 ¹⁰	Link to Lunch-Moncks Corner	Route eliminated and replaced by Moncks Corner micro transit service
N/A	Moncks Corner Micro transit	N/A--New micro transit service
N/A	Strawberry Micro transit	N/A--New micro transit service
N/A	Goose Creek Micro transit	N/A--New micro transit service

Source: TranSystems

¹⁰ This route was not present in **Table 5-2**, as no changes were proposed at that time.

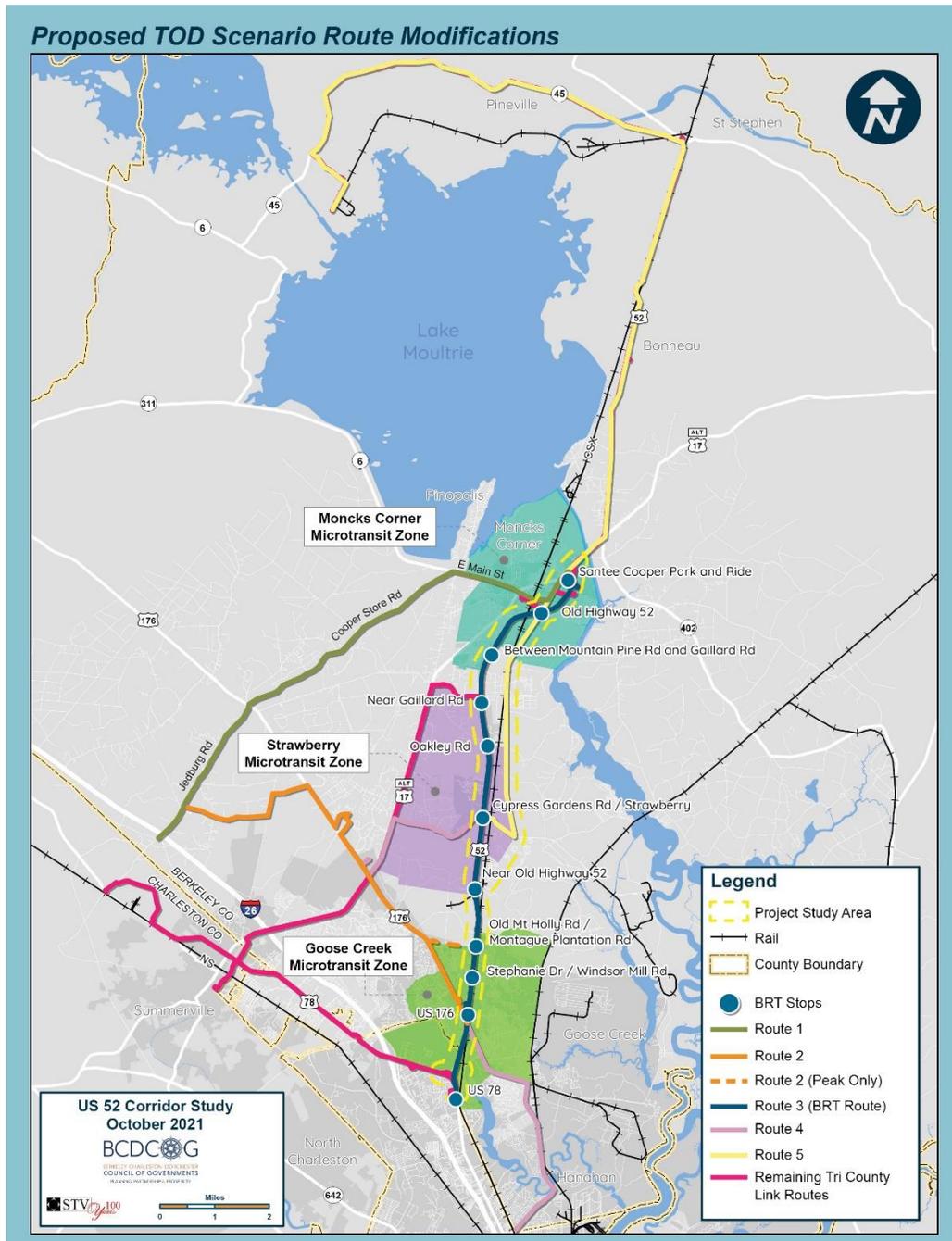


Figure 5-4: Proposed TOD Scenario Route Modifications¹¹

¹¹ Only routes with routing modifications (from the current service) are shown

5.2 Application of Performance Measures

In order to evaluate each of the transit service scenarios, transit performance measures have been identified as follows:

- Number of additional routes, trips and stations from current TCL service
- Improved transit access to jobs
 - Measured by number of jobs within ½ mile of a BRT Lite/BRT stop, ¼ mile from a fixed route, and five miles for park and ride stops
- Improved transit access for people
 - Measured by number of people within ½ mile of a stop of a BRT Lite/BRT stop, a ¼ mile from a fixed route, and five miles for park and ride stops

Each of the performance measures were applied to the three transit service scenarios. **Table 5-4** summarizes the comparison of each performance measure to each transit service scenario.

Table 5-4: Summary of Transit Performance Measure Metric for Each Scenario

Performance Measure	Base Scenario	Growth Management Scenario	TOD Scenario
Number of additional routes from current TCL service ¹²	-4	-3	-1
Number of additional trips from current TCL service ¹³	22	81	167
Number of additional stations from current TCL service	Minimal (0+)	7	7
Improved transit access to jobs in 2040 (number of jobs shown) ¹⁴	227,133	227,316	227,523
Improved transit access for people in 2040 (projected population shown)	342,077	344,176	346,242

As **Table 5-4** indicates, the number of fixed routes decreases from the baseline (current) service for all scenarios as low performing, infrequent routes are replaced by general public demand response service.

¹² A one directional loop route is considered 2 trips

¹³ Assumes an equivalent of 8 trips a day on the deviated fixed routes replaced by general public demand response service on routes north of Moncks Corner; number of current trips is 59

¹⁴ Refer to Section 3 Performance Measures for reference on estimating jobs and population

However, service coverage will either remain the same or improve with the introduction of the general demand response service.

The number of current daily trips on routes serving the US 52 corridor is estimated at 59. This number increases in all scenarios with the ultimate number of trips increasing by over 250 percent as the system is built out around the US 52 BRT service. See **Table 5-5** for the assumptions used to estimate trip changes. Improved transit access metrics were calculated by using projected jobs and population numbers from Census Bureau Traffic Analysis Zones (TAZ) that were developed for the land use scenario planning analysis.

5.3 Scenario Evaluation and Comparison

Improved transit access metrics were calculated by using projected jobs and population numbers from Travel Demand Model (TDM) TAZ zones that were developed for the land use scenario planning analysis. Using this data and looking at each scenario’s relationship to each other, a conclusion can be drawn that there is no difference between scenarios. However, route quality should be taken into consideration. As the frequency of the routes in the region increases, the “accessibility” to jobs increases as more shift times are met and the utility of using transit to get those jobs also increases. Similarly, although a route running only a few times a day is technically “accessible” to the population living along the route, it is much more convenient and feasible to use transit when the frequency and span of service better meets the population’s travel needs. Subsequently, the more frequent the service, the more access people living in the corridor will have to jobs and to activity centers.

Table 5-5: Summary of Estimated Trip Changes

Route	No. of Current Trips	Assumed Number of Trips for Respective Scenario					
		Base		Growth Management		TOD	
B101	4	8	Demand response trips more available/frequent than fixed route	8	No change	8	No change
B102	4	14	One bus operates on one route, leading to 1.5 hour service frequency	44	Route is split into three routes; service is now hourly off peak, half hour peak between Jedburg and Goose Creek	66	50% increase in trips
B104	3	8	Demand response trips more available/frequent than fixed route	8	No change	8	No change
B105	4	8	Demand response trips more available/frequent than fixed route	8	No change	8	No change
CS1	11	11	No change	24	Midday trips added	36	50% increase in trips

CS3	9	16	Trip number matches D105 trips	16	No change	24	50% increase in trips
CS4	8	8	No change	24	Changes to all day service (from peak only)	36	50% increase in trips
D105	16	8	Demand response trips more available/frequent than fixed route	8	No change	8	No change
Microtransit	N/A	N/A		N/A		32	Assumes 12 trips a day in each microtransit zone (Lunch shuttle trips no longer operating - subtracted out)

6 Traffic

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.

6.1 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 12 selected roadway links within the study area along US 52, Old US 52, and Rembert C Dennis Boulevard.

Peak Period Volume

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

Table 6-1: 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 6-2 below provide the model results for Daily Traffic.

Table 6-2: 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 6-3.

Table 6-3: 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 6-4** through **Table 6-9**, 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 6-4 summarizes the results for the predicted average speed (in miles per hour) in the morning and afternoon peak periods.

Table 6-4: 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 6-5**. 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 6-5: 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 6-6**. 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 6-6: 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 6-7**. 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 6-7: 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 6-8**. The results are similar to the results in **Table 6-6** and **Table 6-7** 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 6-8: 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 6-9**. 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 6-9: 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	-	-	-	-

6.2 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.

7 Next Steps

This Scenario Briefing Report, along with comments received from the Steering Committee and the Public will provide the basis for selection of a Preferred Land Use Scenario to be evaluated in greater detail in the next phase of the study. The subsequent Summary Report on the Preferred Scenario will evaluate impacts throughout the study area to provide mid- and long-term improvement recommendations to accommodate mobility for all modes. A Draft Corridor Plan and Funding Forum will follow, leading to a Final Corridor Plan to be presented to the CHATS Study Team and CHATS Policy Committee for adoption.