US 278 Corridor Improvements

Beaufort County Council
June 24, 2019

US 278 CORRIDOR IMPROVEMENTS
Casting a Light on the Community's Transportation Future

U.S. Department of Transportation Federal Highway Administration

SCDOT

Meet the Team

Craig Winn, PE, CFM
SCDOT Project Manager

Megan Groves, EIT
SCDOT Assistant Project Manager

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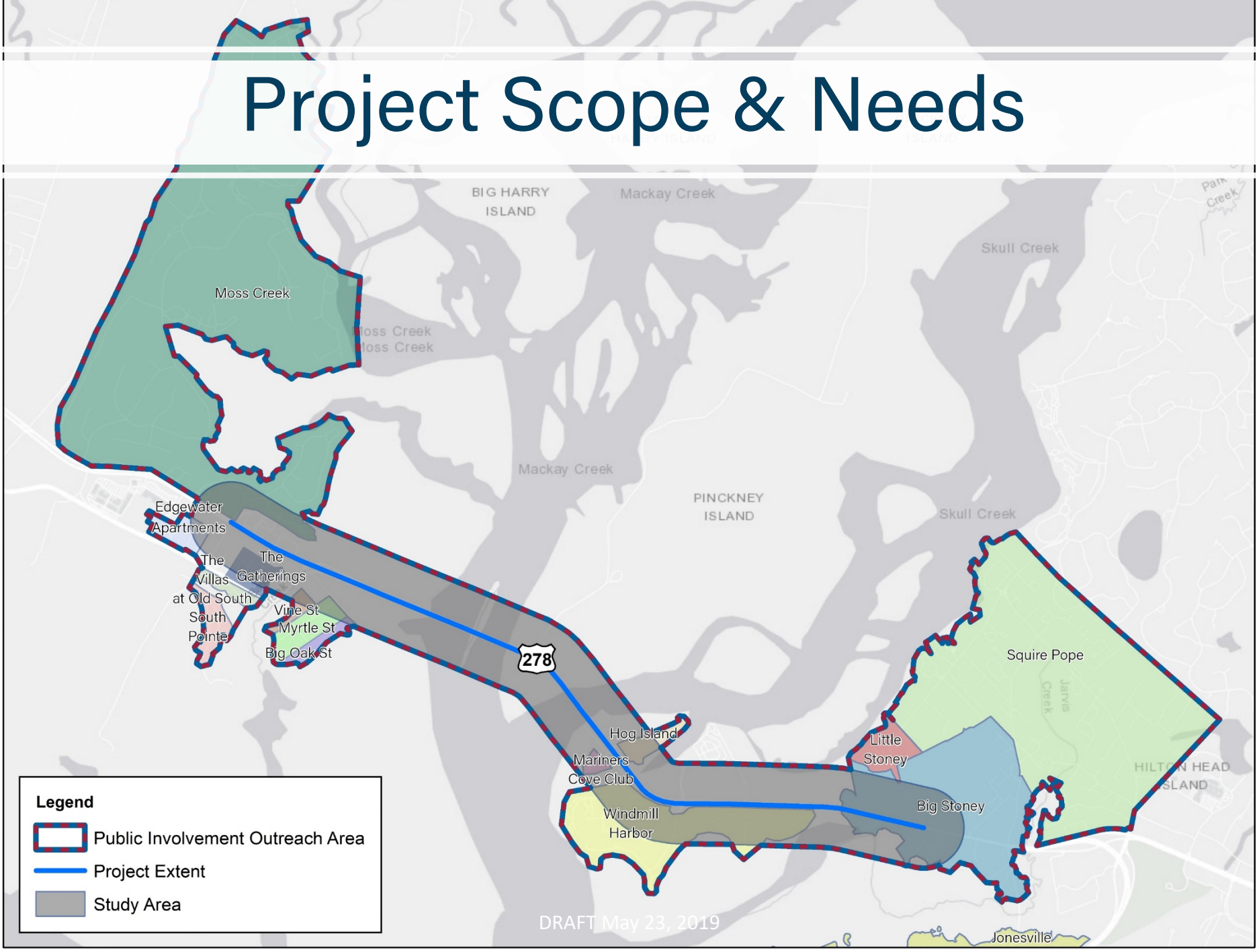
Project Scope & Needs



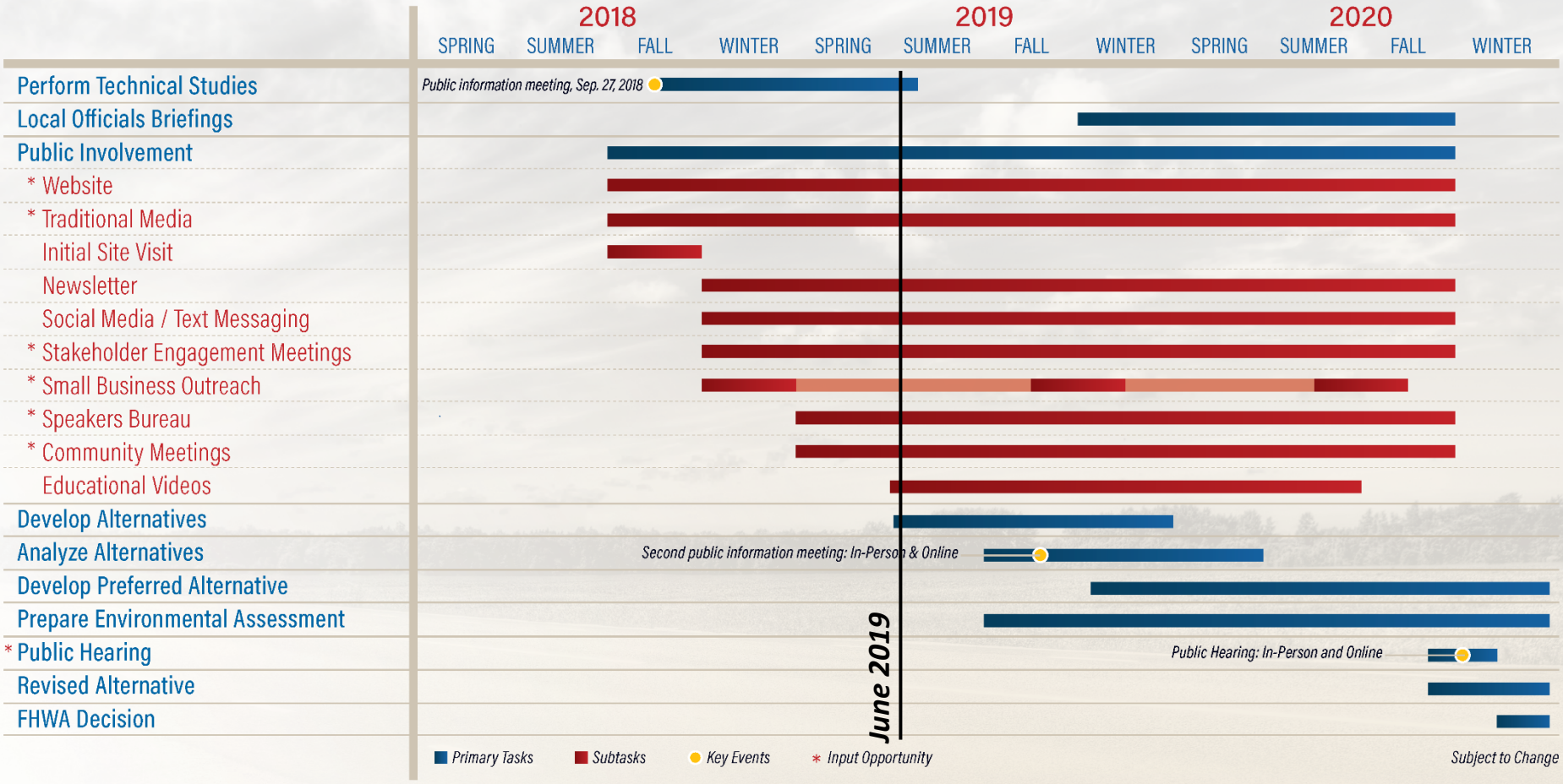
DRAFT May 23, 2019

THE DEVELOPMENT PROCESS FOR HIGHWAYS

This graphic demonstrates the general project development process for planning and building highways.

*Process depicted on this graphic is for projects being developed under an Environmental Assessment or Environmental Impact Statement; smaller projects developed under a Categorical Exclusion do not require a Public Hearing.

ANTICIPATED NEPA SCHEDULE



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Tasks: Environmental

Completed

- ✓ Developed an environmental base map to identify significant human & natural features
- ✓ Identified wetlands using aerial photography, topographic maps, soil surveys, LIDIR, NWI mapping, & Remote Sensing Data
- ✓ Completed ambient noise measurements for the upcoming noise analysis
- ✓ Presented the project to state & federal agencies for input
- ✓ Met with Pinckney Island National Wildlife Refuge

Tasks: Environmental

A Look Ahead

- Noise analysis

- Following the alternatives analyses, wetland/stream field work will begin

- Based on specific survey windows for threatened & endangered (T&E) species, will complete field work Spring 2019

Tasks: Engineering

Completed

- ✓ Survey work in the field
- ✓ Existing Bridge Inspections & Assessments
  - ✓ *Including seismic assessments on Mackay Creek*
- ✓ Land & Water-based Geotechnical Exploration for the Bridge Design needs
- ✓ Traffic: Traffic Counts & Analysis of Existing Traffic Conditions; Crash Studies; Origin-Destination Studies
- ✓ Developed range of alternatives

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Tasks: Engineering

A Look Ahead

- Preliminary Stormwater exploration – May/June 2019
  - *Identifying pipe inlets & outlets with elevation data*
- Survey crews complete - June 2019
- Perform traffic analysis on proposed conditions
- Identify Reasonable Alternatives (Present to public Fall 2019)

Purpose & Need

The purpose of this project is to **address structural deficiencies** at the existing eastbound Mackay Creek bridge, as well as **increase capacity** and **reduce congestion** along US 278 from Moss Creek Drive to Spanish Wells Road.

Structural Deficiencies | **Capacity** | **Congestion**

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Alternatives Development

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Public Meeting

Preliminary Range of Alternatives

- No-Build
- Existing US 278
- New Alignment
- TSM/TDM*
- Mass Transit*

*These are stand-alone alternatives. During Alternative Development, elements of these may be included with the Reasonable Alternatives and/or the Proposed Preferred Alternative.

Evaluation Criteria

- GIS Wetlands
- Protected Lands
- Right-of-way
- Neighborhoods

Proposed Alternatives Eliminated

Public Meeting

Proposed Reasonable Alternatives

Evaluation Criteria

- Purpose & Need
- Delineated Wetlands
- Structures
- Environmental Justice
- T&E Species
- Cultural Resources
- Noise
- Hazardous Materials
- Utilities
- Costs
- Traffic

Public Hearing

Proposed Preferred Alternative

Traffic Analysis Work Flow

Environmental Analysis & Development of Alternatives

- Purpose and Need
- Development of Alternatives
- Evaluation of Alternatives
- Concept Plans for Recommended Preferred Alternative

Final Design of the Recommended Preferred Alternative

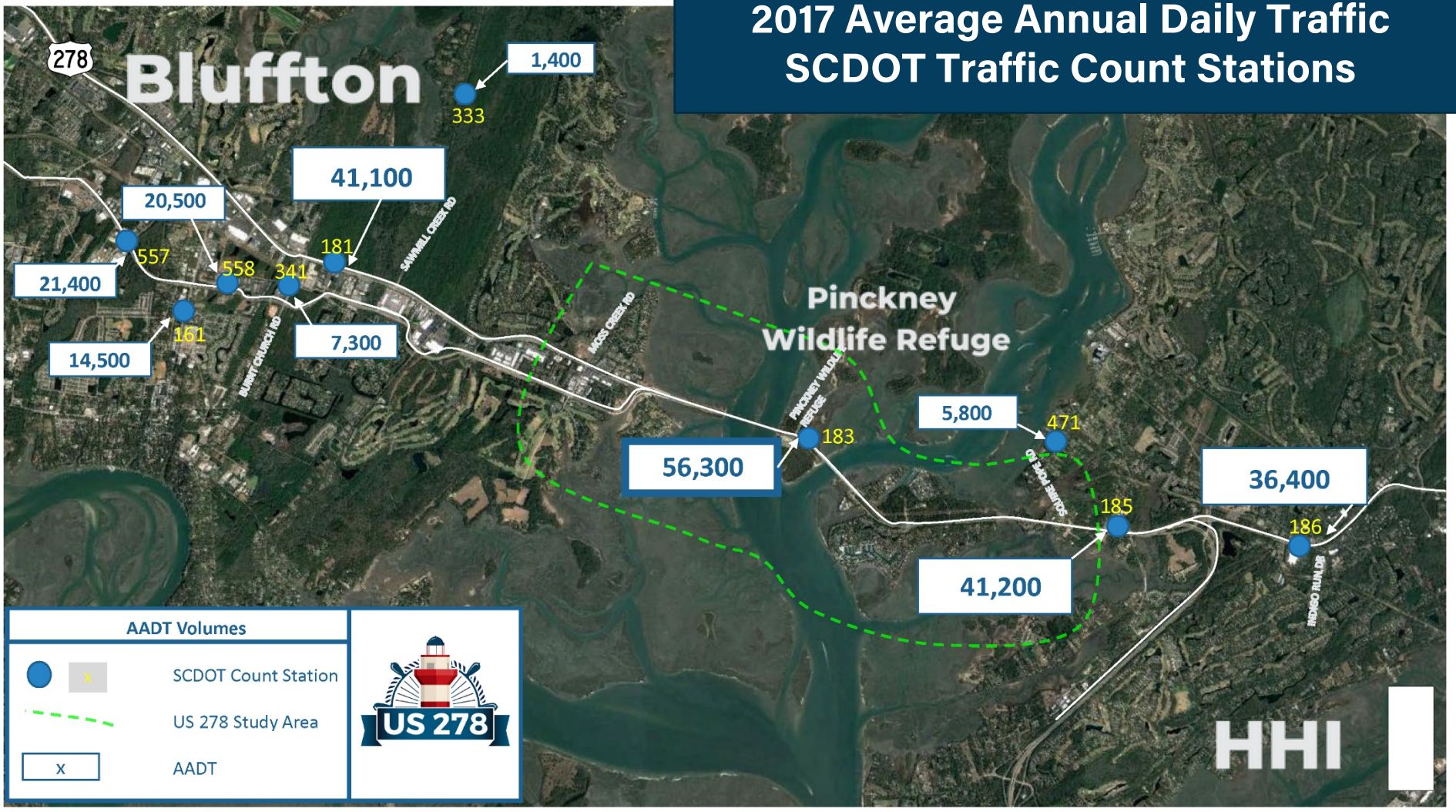
- Mainline Capacity
- Intersection Design
- Access Management
- Traffic Operations and Signalization
- Wayfinding

Environmental Analysis & Development of Alternatives: STEP 1

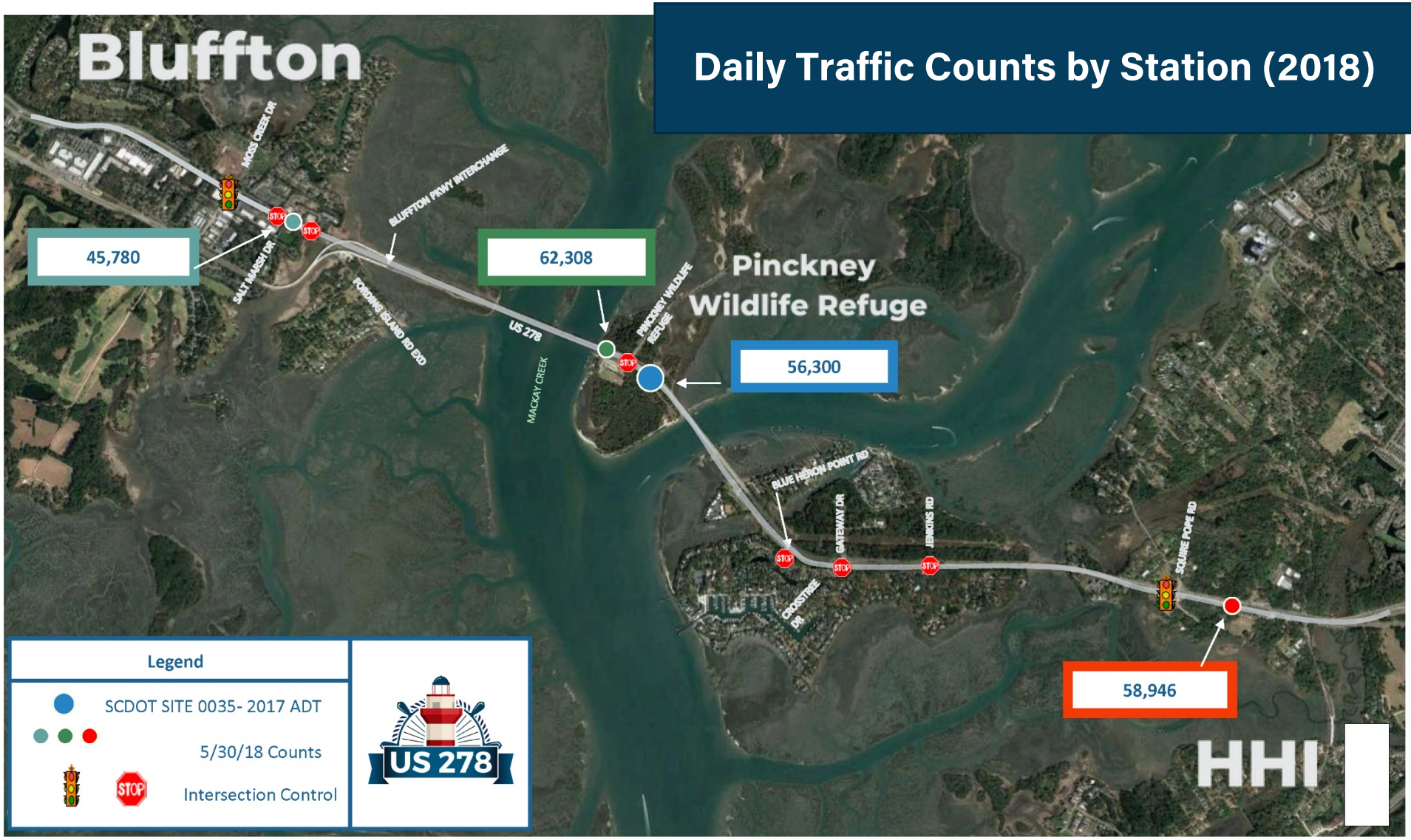
Purpose & Need Statement

- ***Existing Conditions***
  - Traffic Count Program
  - Safety Analysis
- ***Forecast Conditions - "No Build"***
  - Regional Travel Demand Model
  - Land Use Data
  - SYNCHRO Level Traffic Modeling

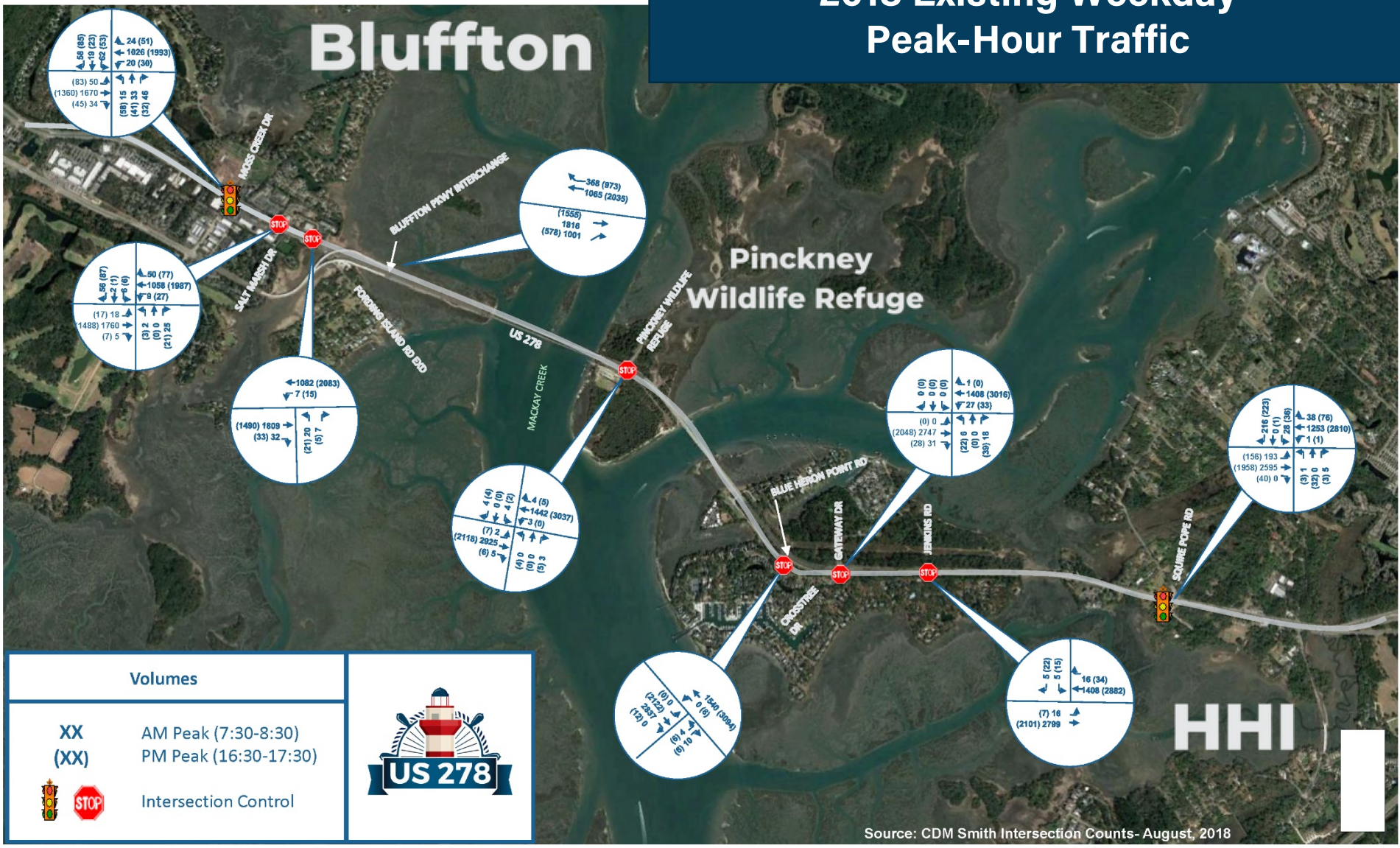
2017 Average Annual Daily Traffic
SCDOT Traffic Count Stations



Daily Traffic Counts by Station (2018)



2018 Existing Weekday Peak-Hour Traffic



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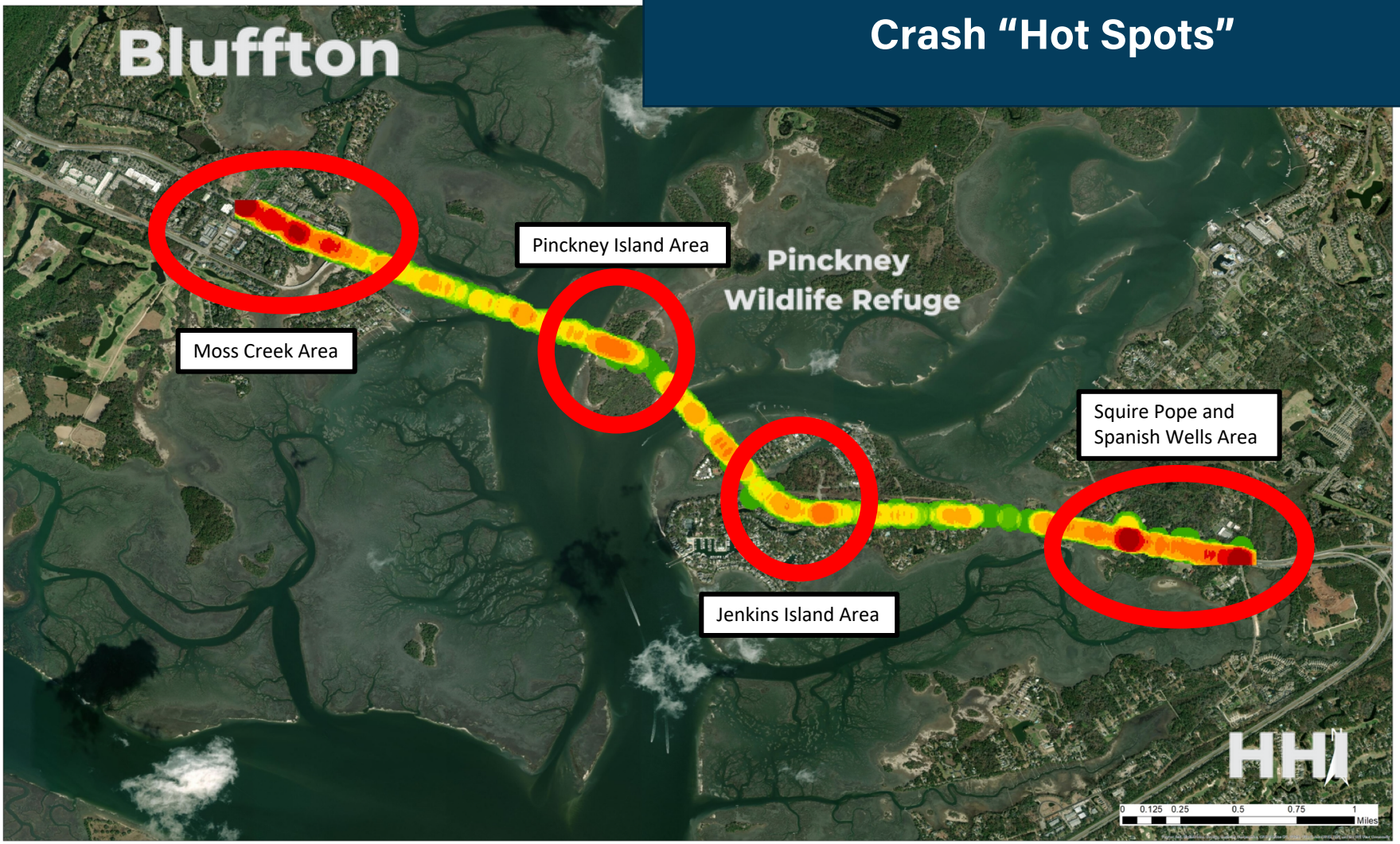
Crash "Hot Spots"



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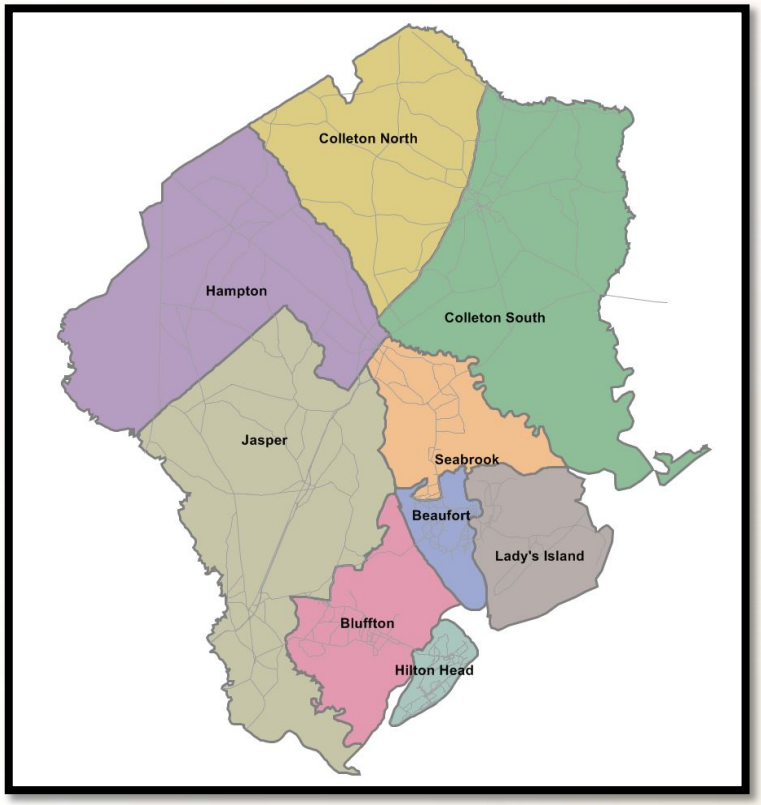
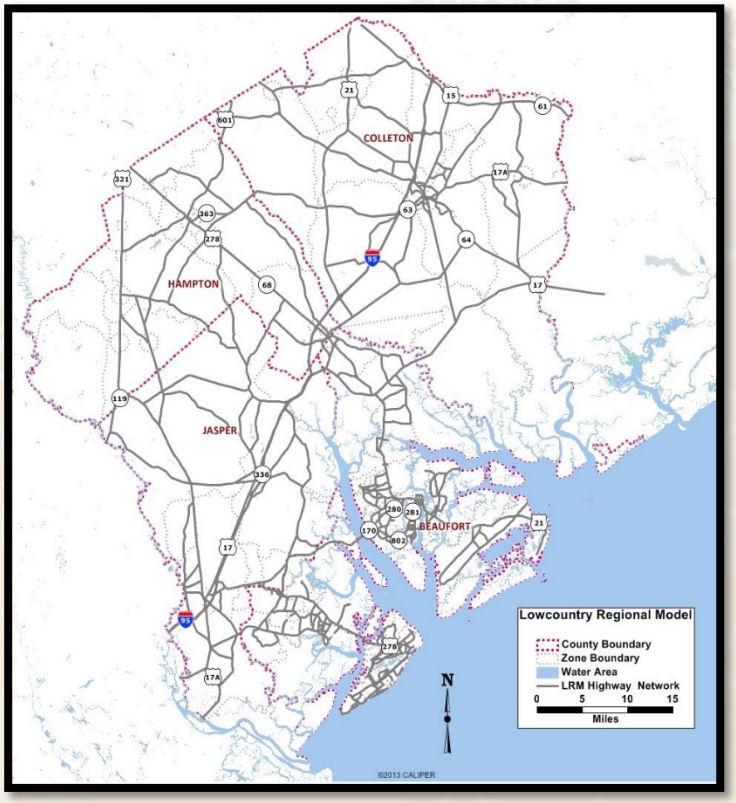
Lowcountry Area Transportation Study (LATS) Model





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Environmental Analysis and Development of Alternatives: STEP 2

Development & Evaluations of Alternatives

- *Traffic Growth Rates*
- *Design Hour Volumes*
- *Mainline Capacity Needs*
- *Performance of Alternatives*

Design Hour Volume Development

- Continuous Count Station ATR 35 on US 278
- Yellow: 30th & 100th highest AM & PM hours
- Green: AM & PM peak hour from turning movement count date
- Orange: 30th highest SUMMER AM & PM hours

US-278 AM Peak Hours						
Date	Time	EB	WB	Total	Rank	Day of Week
4/6/2018	8:00 - 9:00	2939	1821	4760	1st	Friday
4/16/2018	8:00 - 9:00	2927	1764	4691	2nd	Monday
2/21/2017 *	8:00 - 9:00	2925	1741	4666	3rd	Tuesday
5/15/2018	7:00 - 8:00	3070	1451	4521	30th	Tuesday
2/2/2018	7:00 - 8:00	3050	1378	4428	100th	Friday
8/8/2018	7:30 - 8:30	2932	1449	4381	147th	Wednesday
6/5/2018	7:00 - 8:00	2997	1369	4366	159th	Tuesday
US-278 PM Peak Hours						
Date	Time	EB	WB	Total	Rank	Day of Week
4/5/2018	17:00 - 18:00	2415	3271	5686	1st	Thursday
4/5/2018	16:00 - 17:00	2533	3135	5668	2nd	Thursday
4/4/2018	16:00 - 17:00	2448	3197	5645	3rd	Wednesday
7/26/2018	17:00 - 18:00	2075	3295	5370	30th	Thursday
8/8/2018	16:30 - 17:30	2125	3042	5167	95th	Wednesday
6/6/2018	17:00 - 18:00	2025	3138	5163	97th	Wednesday
5/29/2018	17:00 - 18:00	1947	3213	5160	100th	Tuesday

Development of Growth Rates

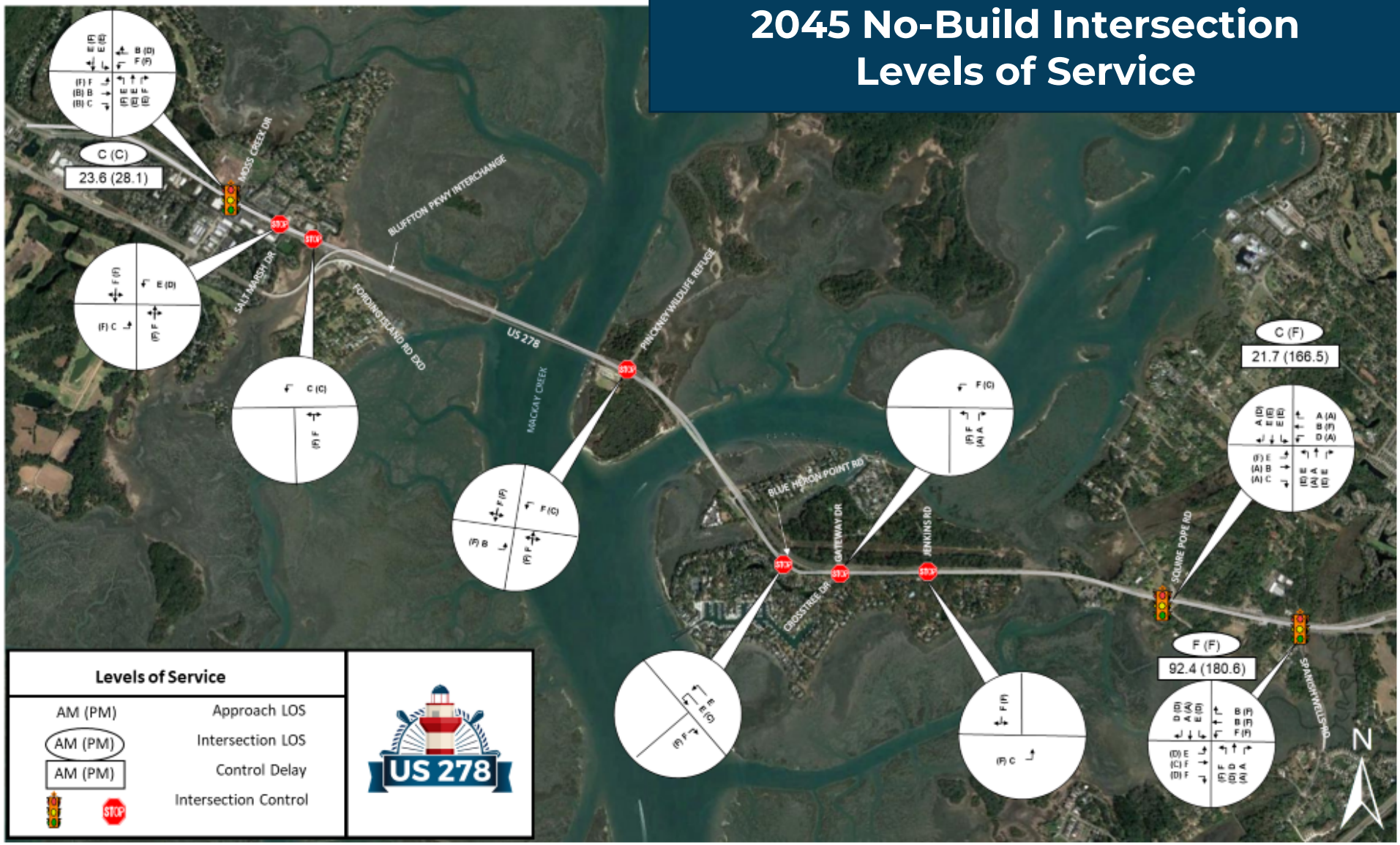
	2010 AADT (Observed)	2010 AADT (Modeled)	2017 AADT (Observed)	2040 AADT (Baseline Model)	2040 AADT (Adjusted Model)	Resulting Annual Growth Rate
US 278	49,600	48,318	56,300	53,864	65,621	1.19%

Comes from SCDOT Count Station **183**

Comes directly from Model

$$Growth\ Rate = \frac{\frac{65{,}621}{48{,}318} - 1}{(2040 - 2010)}$$

2045 No-Build Intersection Levels of Service



Traffic Next Steps...

Final Design of the Recommended Preferred Alternative

- Mainline Capacity
- Intersection Design
- Access Management
- Traffic Operations and Signalization
- Wayfinding

Public Involvement: *June Update*

Public Involvement Plan

Public Info. Meeting
September 2018

Community Interviews
December 2018

Social Media
December 2018

Gullah Celebration
February 2019

Newsletter
March 2019

Stakeholder Meeting
March 2019

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Public Involvement:
Upcoming

Stakeholder Meeting
June 25, 2019

Public Information Meeting/ Virtual Public Information Meeting
September 19, 2019 (tent.)

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Contact

www.SCDOT278Corridor.com

info@SCDOT278Corridor.com

Facebook.com/SCDOT278Corridor

@SCDOT278Corridor

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Project Manager
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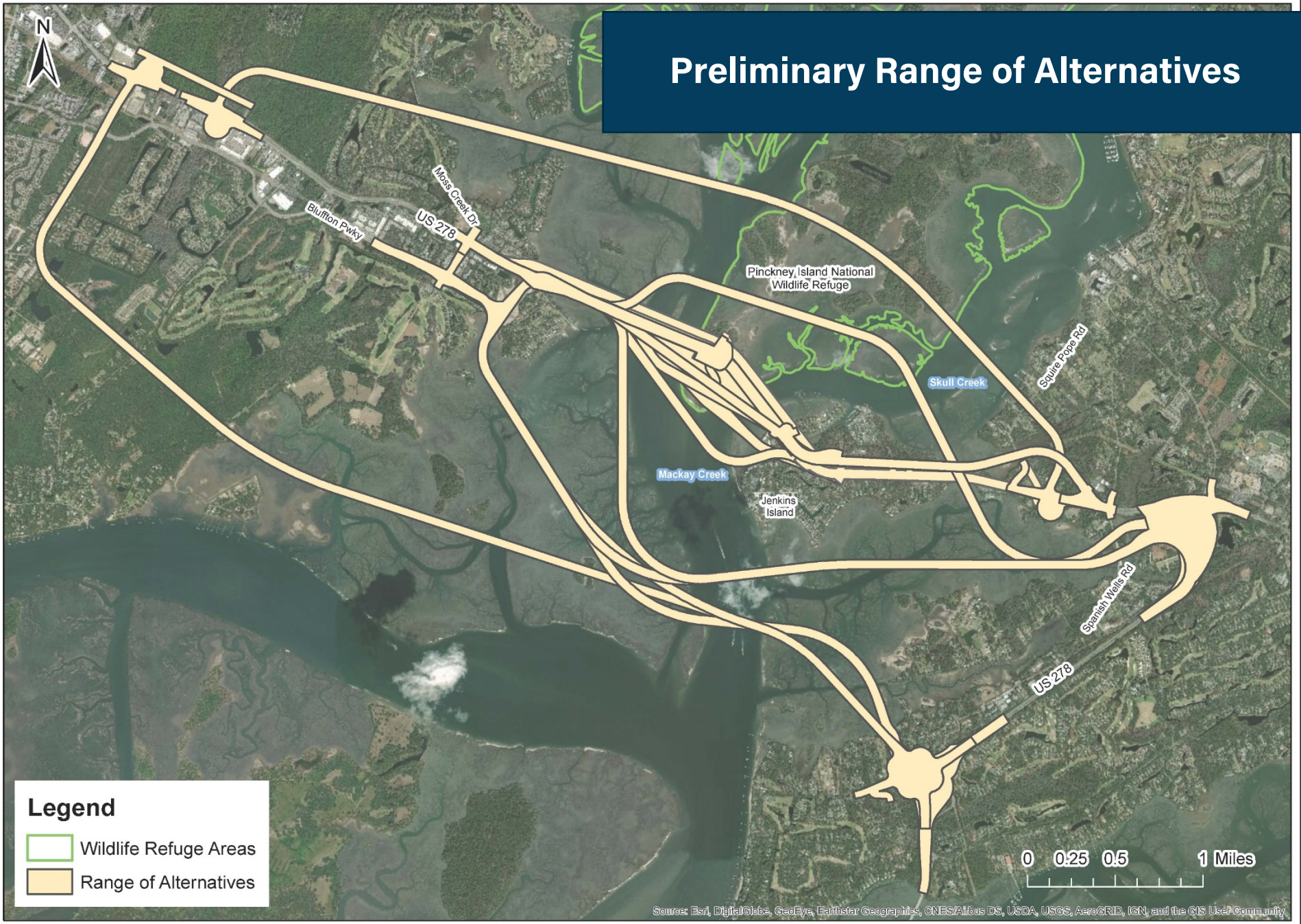
Preliminary Range of Alternatives