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Justifying the Alternatives Analysis Methodology through “What If” Scenarios

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OUTLINE

Background

Alternatives Analysis Approach

“What If” Scenarios

Results

Key Takeaways

BACKGROUND



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RESEARCH QUESTION

- How to justify the alternatives analysis approach?
- How to align alternatives analysis with local plans and public sentiment?

Preliminary &
Long-Range
Planning

Project
Scoping &
Public Input

Traffic,
Engineering, &
Environmental
Studies

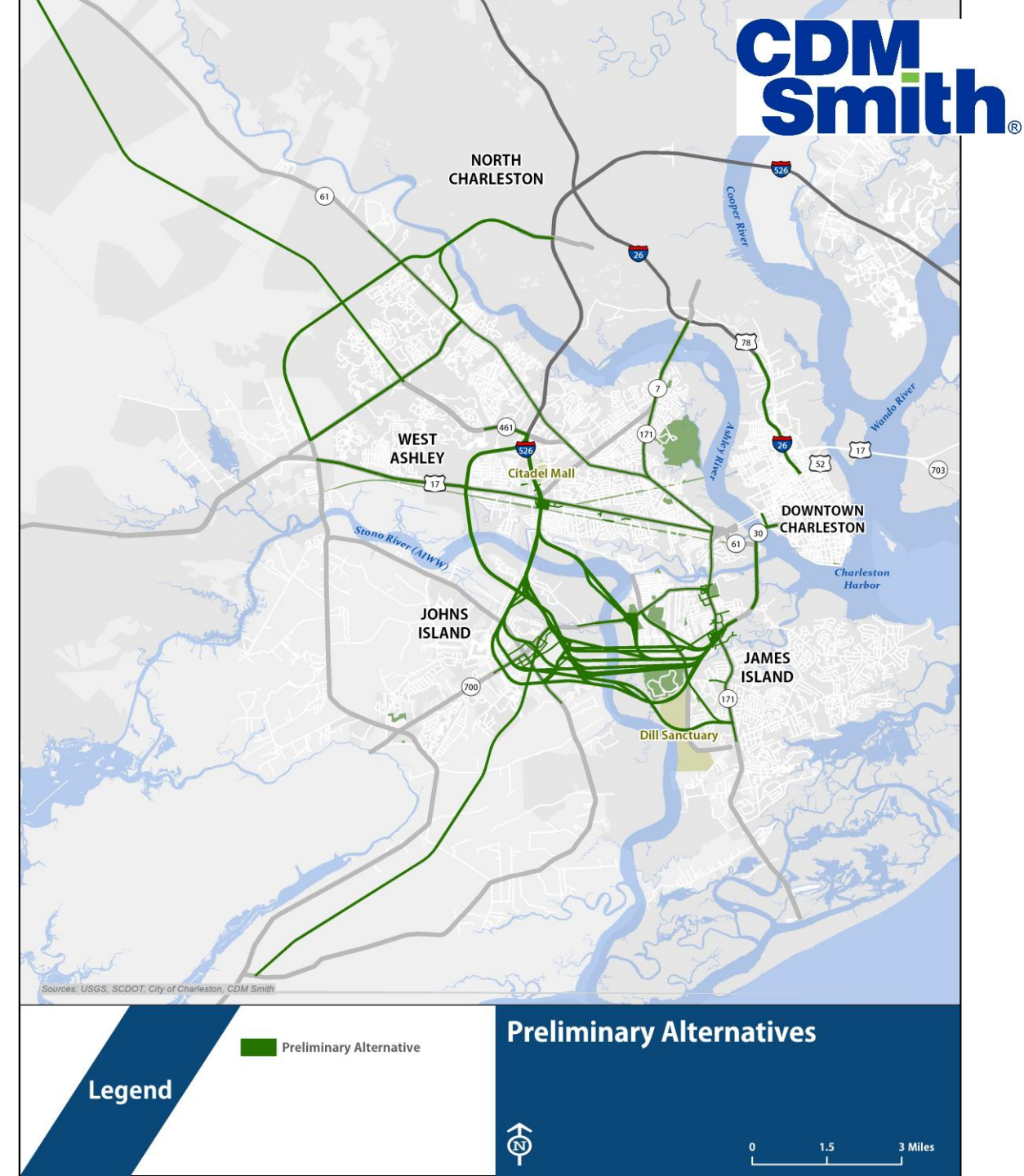
Draft
Environmental
Document

Public
Hearing &
Public Input

Select
Preferred
Alternative

PROJECT APPLICATION

- Mark Clark Extension Supplemental Environmental Impact Statement (SEIS)
- Located in Charleston, SC and conducted by South Carolina DOT
- 39 preliminary alternatives including
 - no-build alternative
 - new alignment alternatives
 - mass transit alternative
 - transportation systems management alternative



ALTERNATIVES ANALYSIS APPROACH



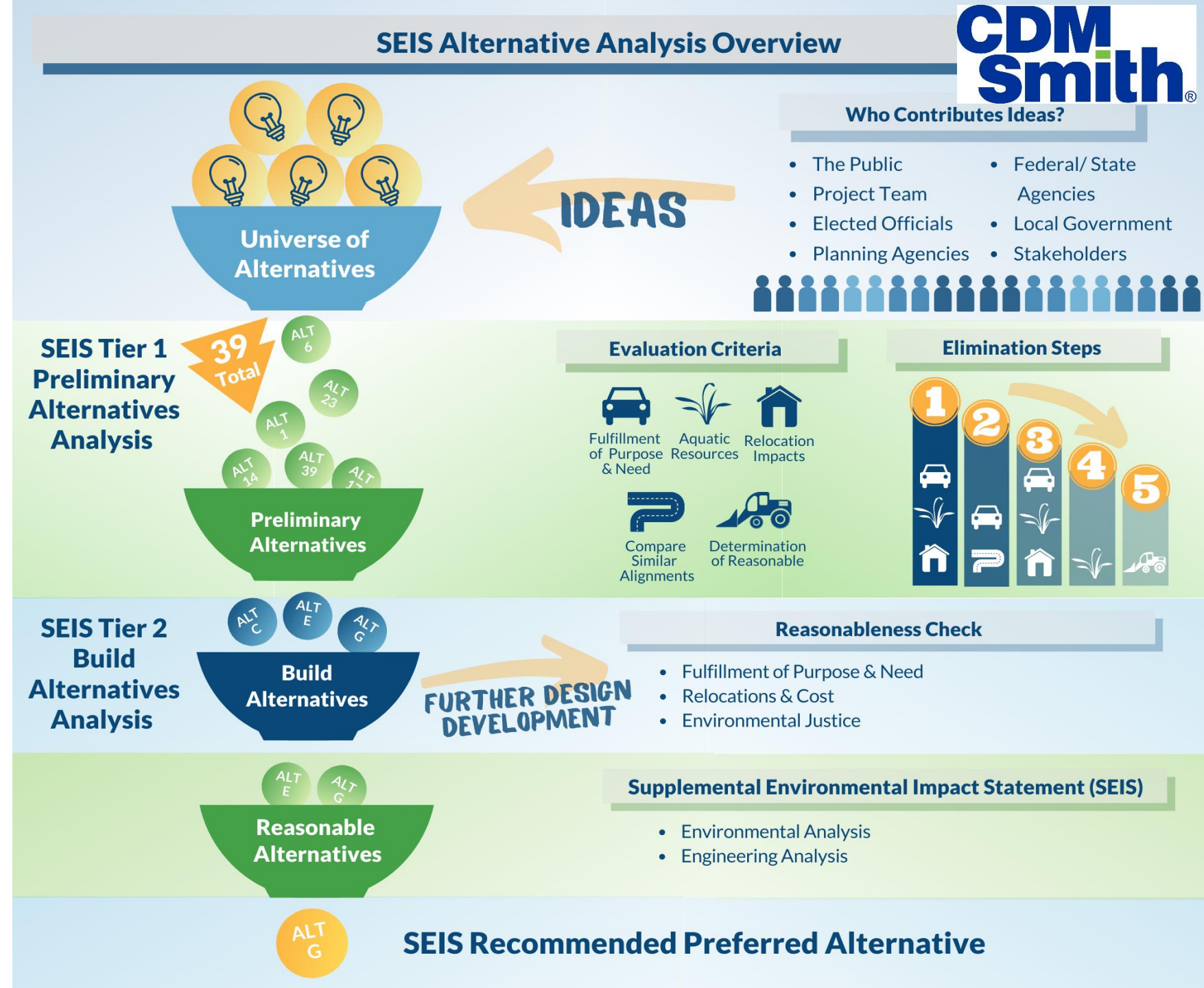
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ALTERNATIVES ANALYSIS OVERVIEW



MODELING APPROACH

- 2019 CHATS Regional Travel Demand Model
- Reviewed, verified, and modified for the SEIS project
- Updated to year 2050
- Summarized for VMT, VHT, Delay, and Trip Length

Purpose and Need Criteria	Units of Measurement
Ability to improve congestion on existing roads	Change in VHT and delay versus the No-Build Alternative
Ability to improve regional mobility and system linkage	Change in VMT and VHT, delay, and trip length between West Ashley, Johns Island, and James Island versus the No-Build Alternative
Potential relocations	Number of residential, commercial, and civic buildings potentially relocated
Aquatic resources	Acres of aquatic resources impacted



“WHAT IF” SCENARIOS



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WHAT IF SCENARIOS – NO BUILD

What if the project is not built, will the planned land use development still occur?

What if the planned land use is developed?

What if the planned land use is not developed?



WHAT IF SCENARIOS – BUILD

IF the project is built, will it result in induced land use development?

What if the land use is built?
What if the land use is not developed?

IF the project is built, would different alternatives result in different travel patterns?

What if they are different?
What if they are the same?



RESULTS



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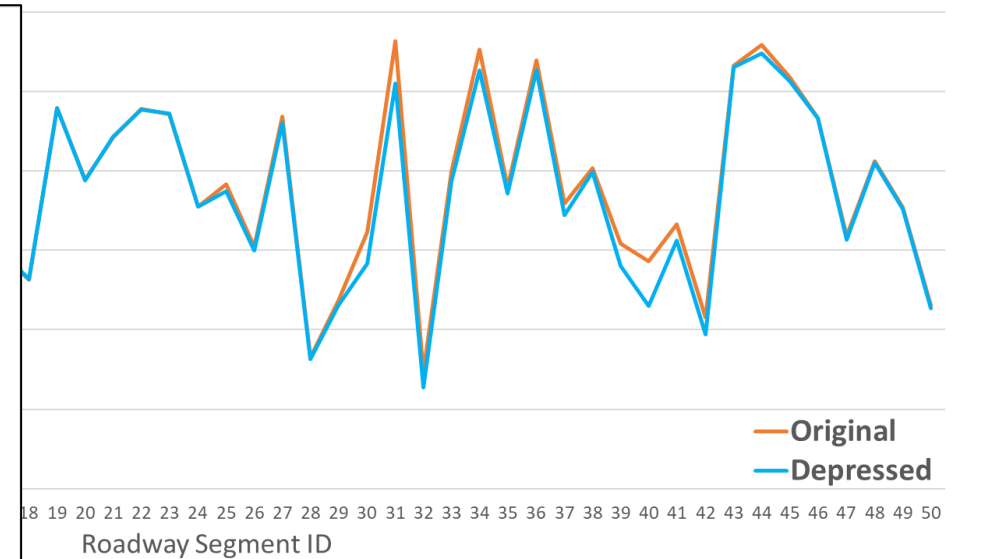
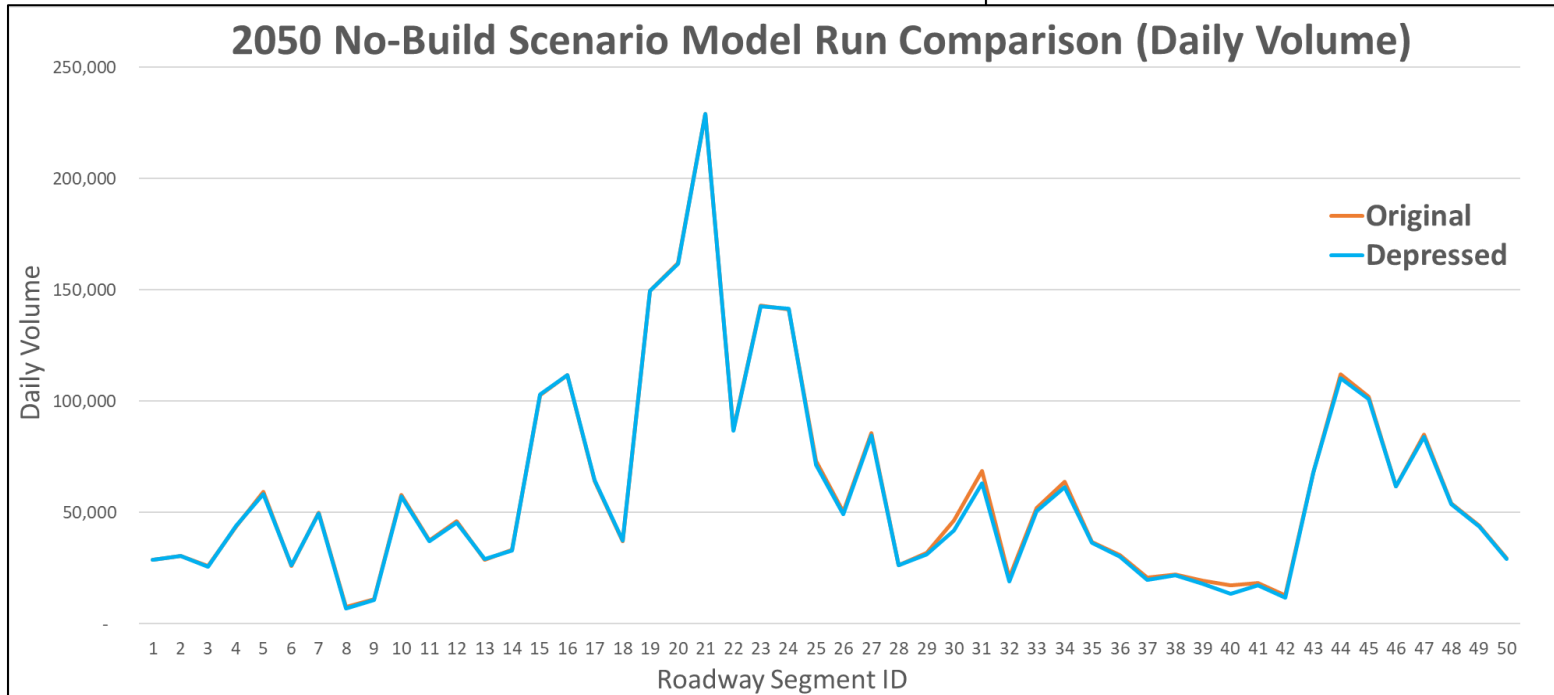
RESULTS – NO BUILD

- Planned land use developed (original) vs not developed (depressed)
- Community Impact Assessment report
- Result: Only slight differences in assignment results at localized locations

1.40

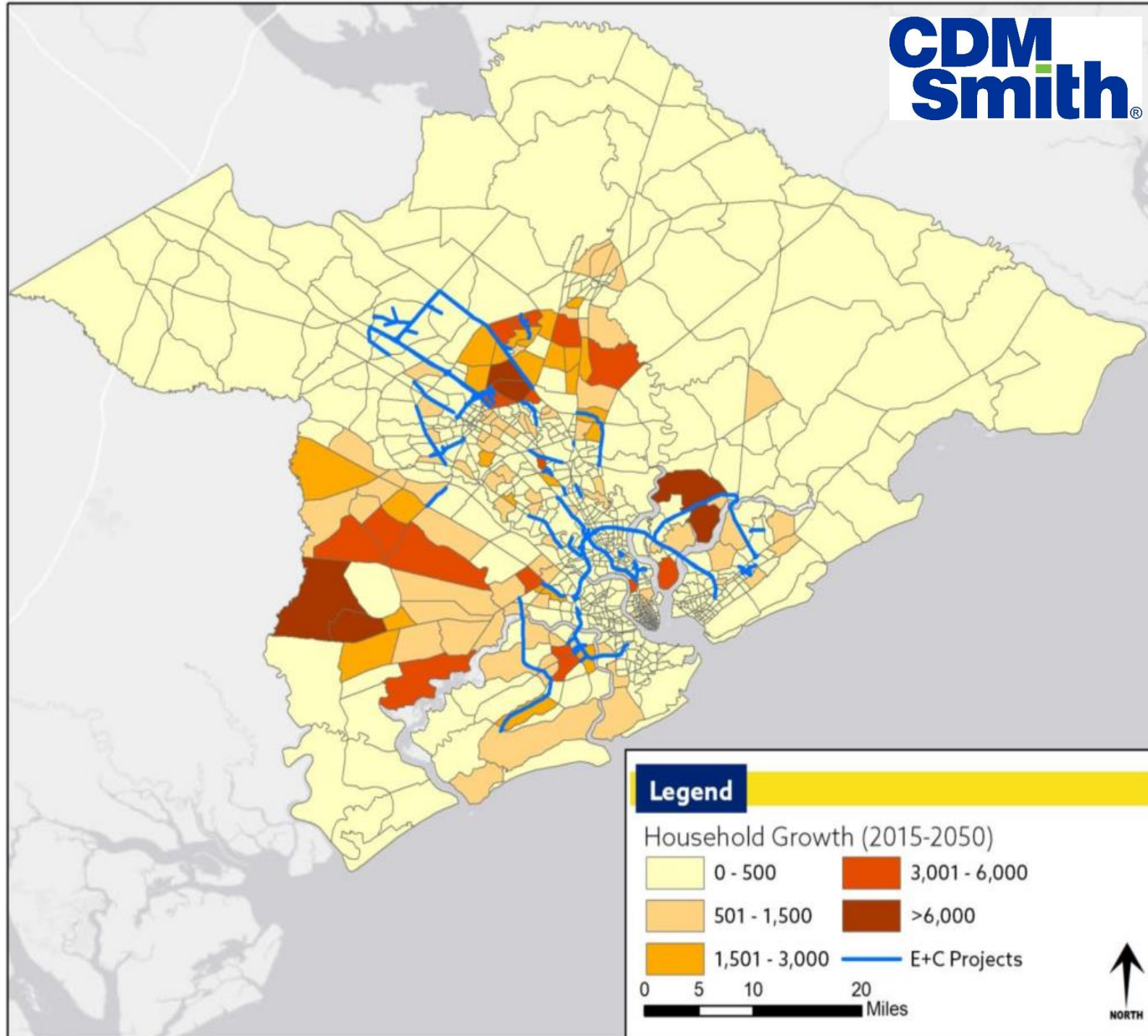
2050 No-Build Scenario Model Run Comparison (V/C Ratios)

2050 No-Build Scenario Model Run Comparison (Daily Volume)



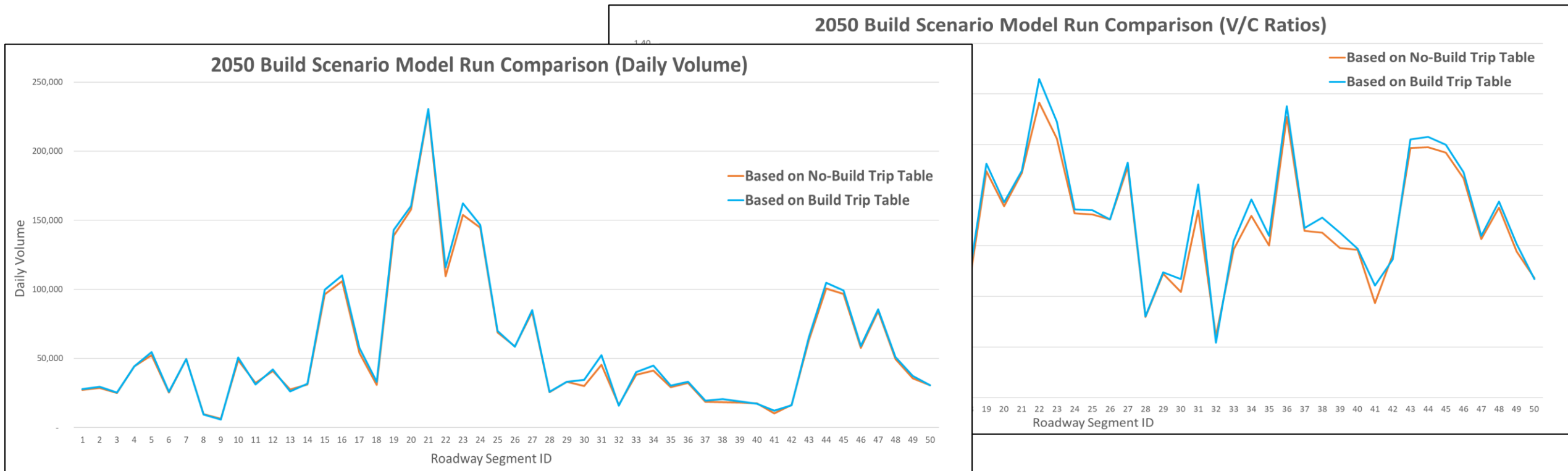
RESULTS - BUILD

- Induced land use?
 - Local plans
 - Land use policies
 - Spatial correlation between land use growth and E+C projects
- Result: Areas with the highest growth do not necessarily align with locations of the E+C projects, and vice versa



RESULTS – BUILD

- Origin-destination trips fixed (No-Build) vs dynamic (Build)
- District level and assignment level comparisons
- Result: fixed trip table would not yield any significant difference in the results that impact on the alternatives analysis



KEY TAKEAWAYS



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KEY TAKEAWAYS



- For the CHATS model area, the same land use forecasts can be used for No-Build and Build scenarios within the alternatives analysis
- For this SEIS project, a fixed trip table can be used for all alternatives using the approved land use forecasts developed for the CHATS TDM
- A more comprehensive vetting and justification approach is needed to promote a smoother progression of the study and to minimize any legal issues, such as challenges in court

KEY TAKEAWAYS – FURTHER RESEARCH



- Approaches to integrate land use and transportation planning



- Consult local planning departments on how transportation projects may influence land use decisions



- Conduct surveys of the development community on the role transportation investments make in such land use related projects



- Conduct backcasting to compare current land use forecasts with future census data

THANK YOU

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Charlene Cassidy

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Federal Highway Administration

Berkeley-Charleston-Dorchester Council of Governments

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QUESTIONS

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