CAROLINA CROSSROADS

Noise Advisory Board Meeting #1

March 15, 2016

SCDOT South Carolina Department of Transportation

U.S. Department of Transportation Federal Highway Administration

01 Project Overview

02 Noise Advisory Board Goals & Objectives

03 What is Noise and How is it Measured?

04 Noise Data Collection Overview

05 Determining if a Noise Wall Will Be Used

01 Project Overview

Project Team

Brian Klauk
SCDOT
Special Programs Manager

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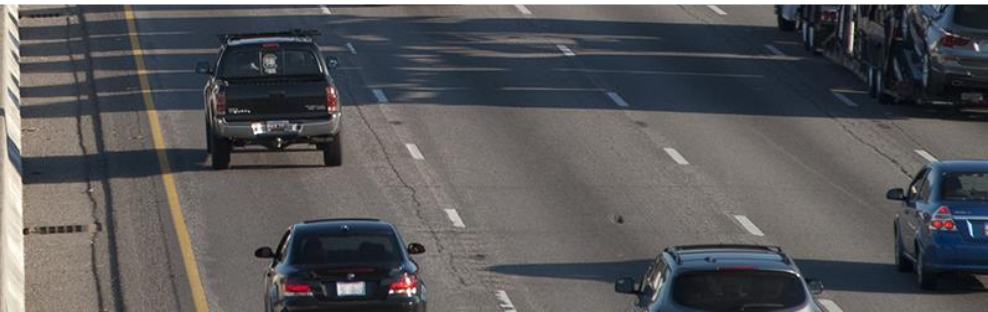
SCDOT
Director of Environmental Services

3 + **12** =

INTERSTATES **KEY INTERCHANGES**

CAROLINA
CROSSROADS



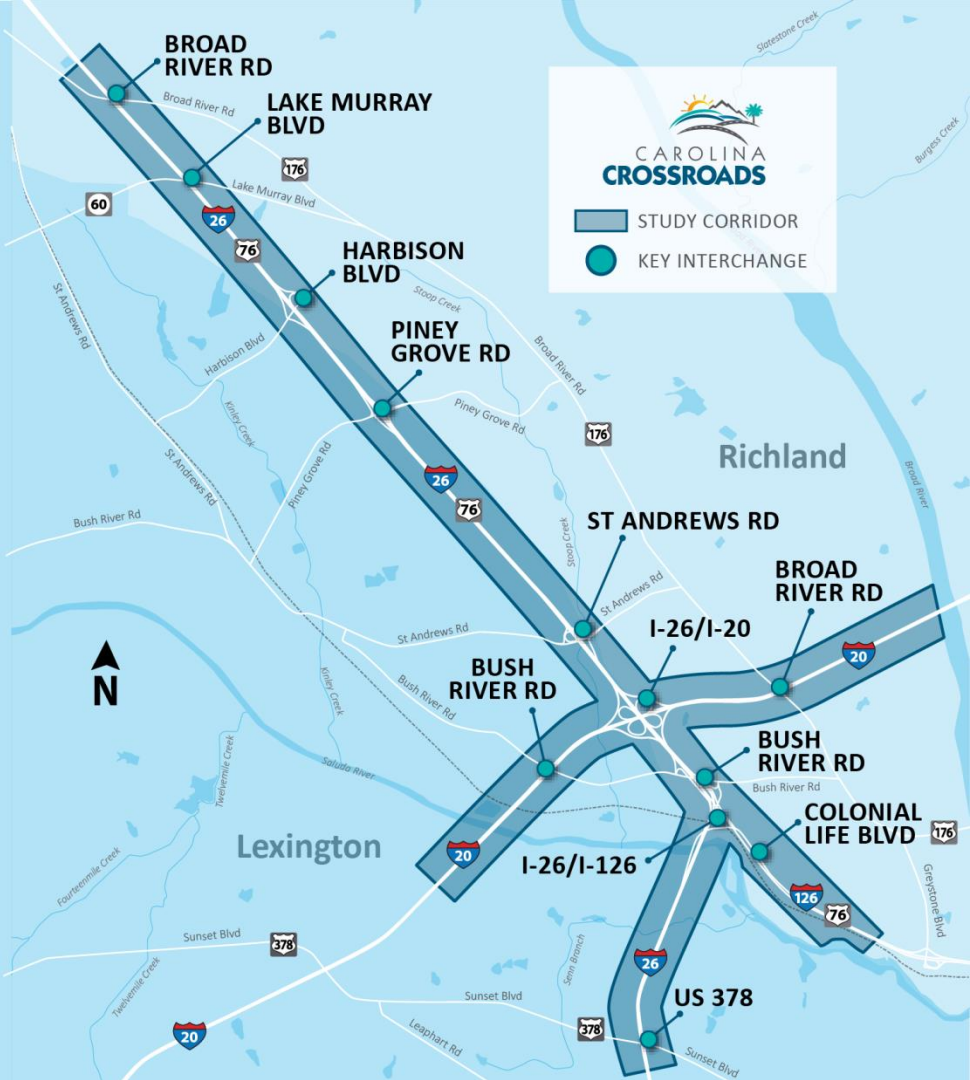
19 **Bridges**

12 **Interchanges**

14 **Interstate**
(miles)

166 **Roadway**
(lane miles)

134k **AADT**
(Between St. Andrews and I-20)



WE ARE HERE

Phase 1:

Notice of Intent (NOI) to prepare an EIS and Scoping (July 24, 2015)

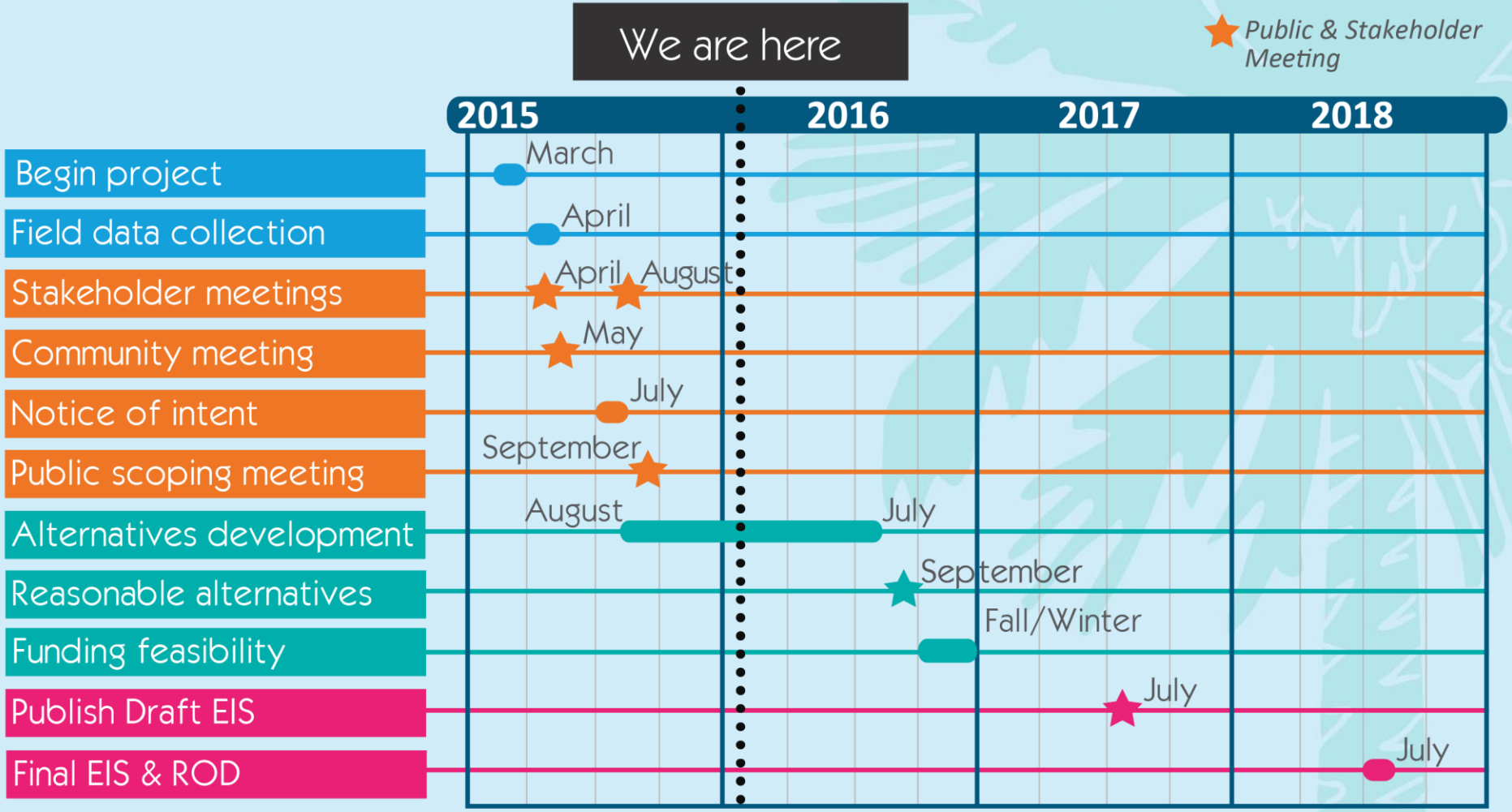
Phase 2:

Compare alternatives and prepare a Draft EIS and a Final EIS

Phase 3:

Project Delivery

36 Months


We are here
Public & Stakeholder Meeting
2015
2016
2017
2018
Begin project
March
Field data collection
April
Stakeholder meetings
April
August
Community meeting
May
Notice of intent
July
Public scoping meeting
September
Alternatives development
August
July
Reasonable alternatives
September
Funding feasibility
Fall/Winter
Publish Draft EIS
July
Final EIS & ROD
July

02 Noise Advisory Board Goals & Objectives

NAB Goals & Objectives

To provide...

Better Understanding
of the noise evaluation process.

To provide...

Two-Way Communication
between the community and the Project Team.

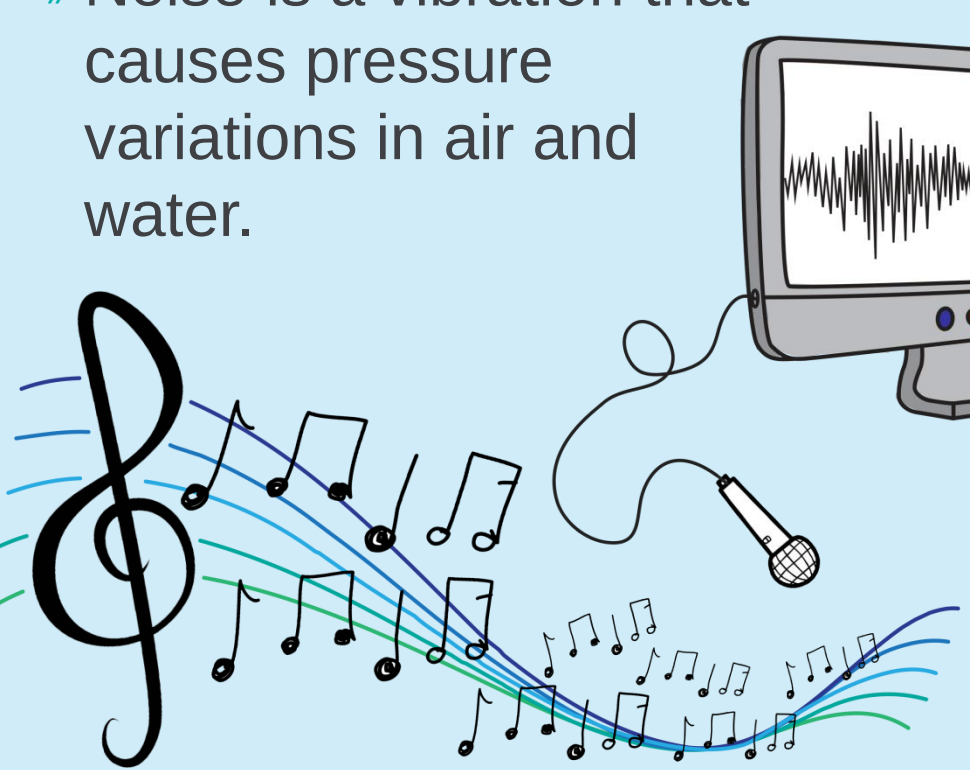
To...

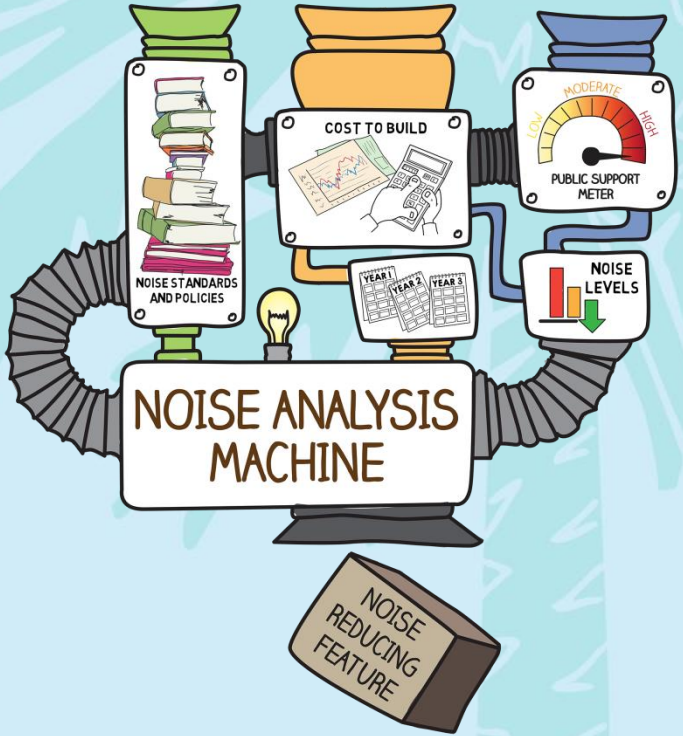
Review Outcome
of noise data collection.

03 What is noise and how is it measured?

What is noise?

- Noise is a vibration that causes pressure variations in air and water.





South Carolina Department of Transportation

Measuring Noise

- Special equipment is used to measure the noise levels at noise-sensitive sites throughout a project area.

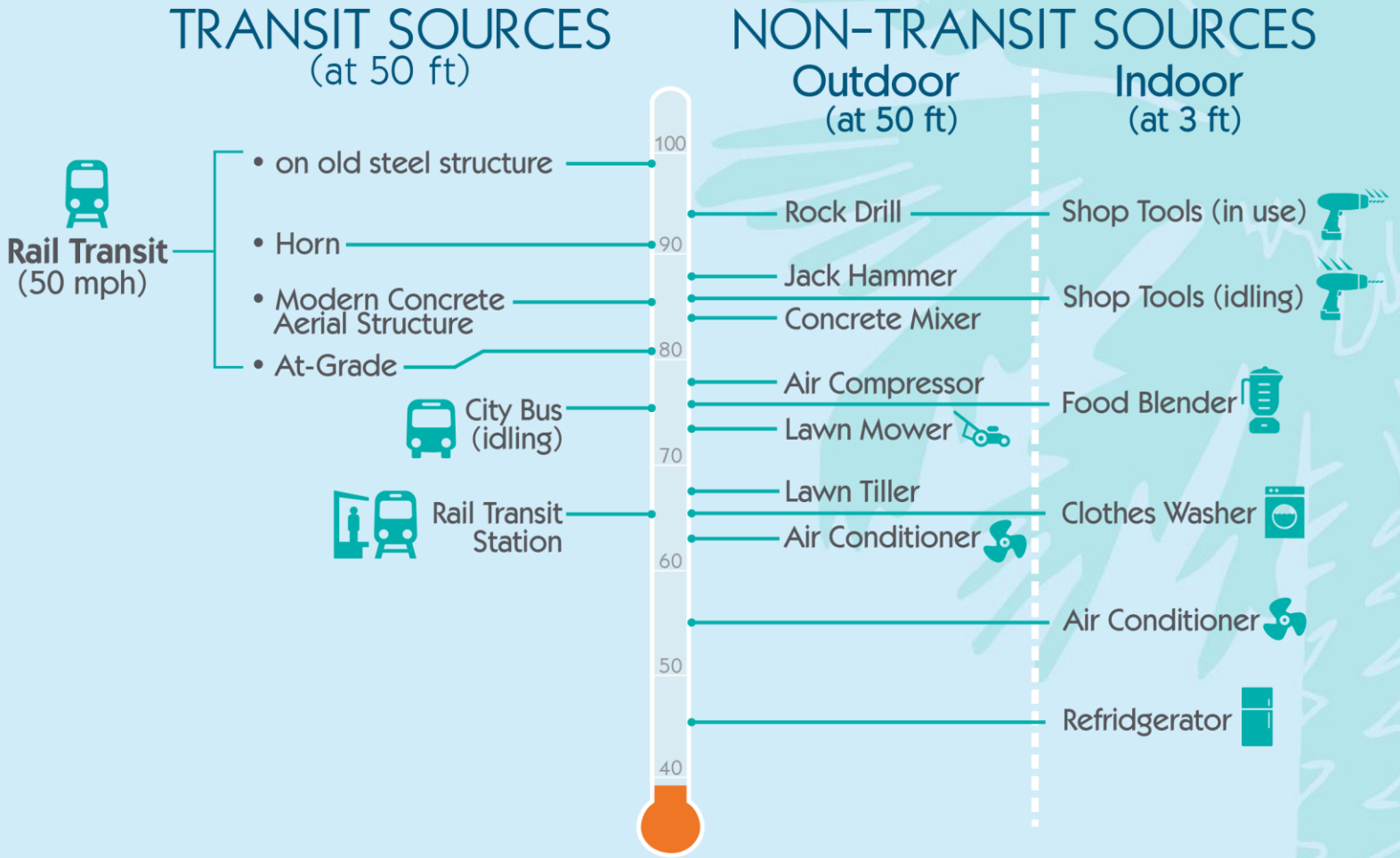
Measuring Noise Continued

Sound

is measured in units called decibels (dBA)

Decibels

gives a scale for noise levels that are experienced or perceived by the human ear.


TRANSIT SOURCES
(at 50 ft)
NON-TRANSIT SOURCES
Outdoor
(at 50 ft)
Indoor
(at 3 ft)
Rail Transit
(50 mph)
• on old steel structure
• Horn
• Modern Concrete Aerial Structure
• At-Grade
City Bus
(idling)
Rail Transit
Station
100
90
80
70
60
50
40
Rock Drill
Jack Hammer
Concrete Mixer
Air Compressor
Lawn Mower
Lawn Tiller
Air Conditioner
Shop Tools (in use)
Shop Tools (idling)
Food Blender
Clothes Washer
Air Conditioner
Refridgerator

FHWA Noise Abatement Criteria & SCDOT Traffic Noise Abatement Policy

- *FHWA Noise Abatement Criteria*
- *SCDOT Traffic Noise Abatement Policy*

04 Noise Data Collection Overview

Comparing Results to the FHWA Traffic Noise Model

Validation Required

to verify accuracy of noise models used to predict existing or future noise levels.

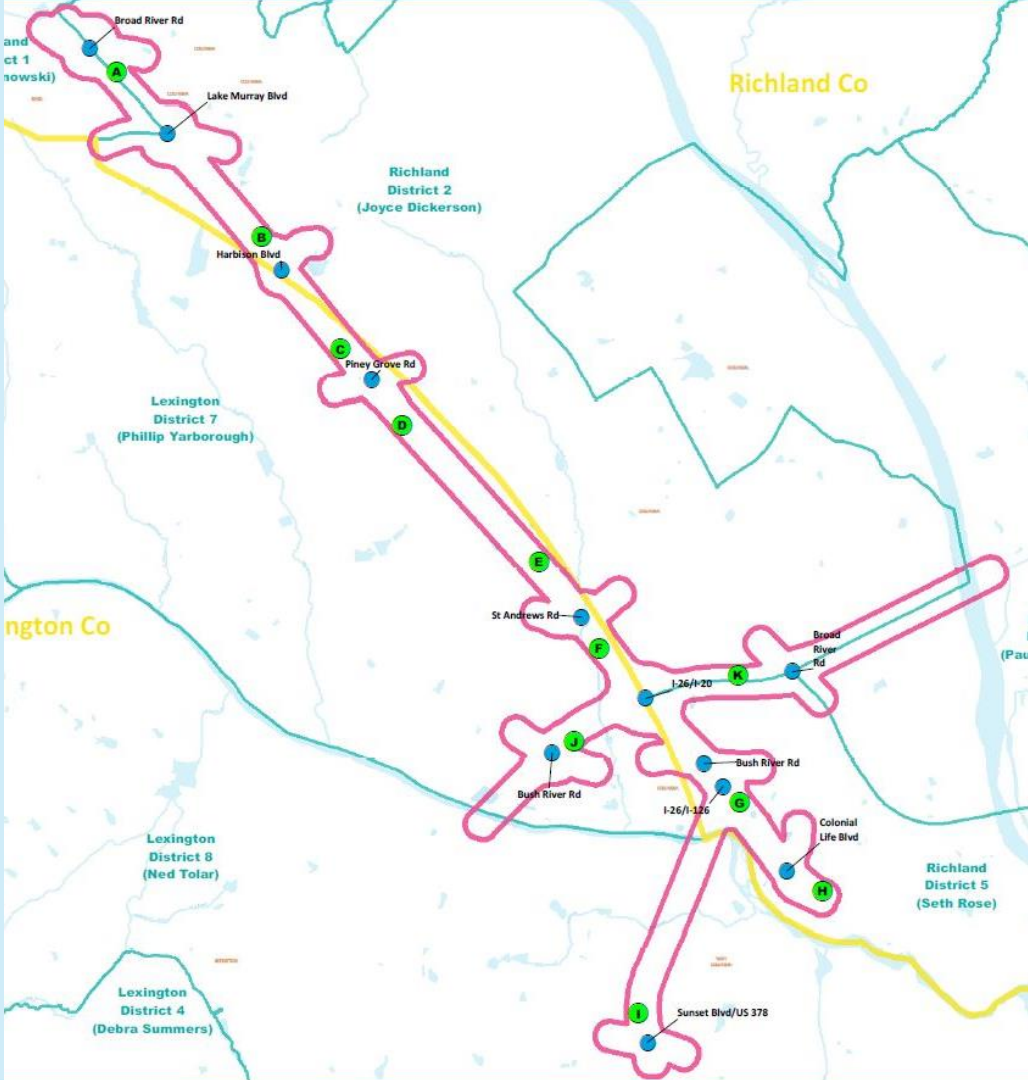
Validation Occurs

when existing highway traffic noise levels and predicted noise levels are within +/- three dBA of one another at all receptor sites.

Verified Accuracy

of the traffic noise model was achieved when existing traffic noise levels were measured and compared against TNM results.

Noise Measurement Locations



TNM Noise Model

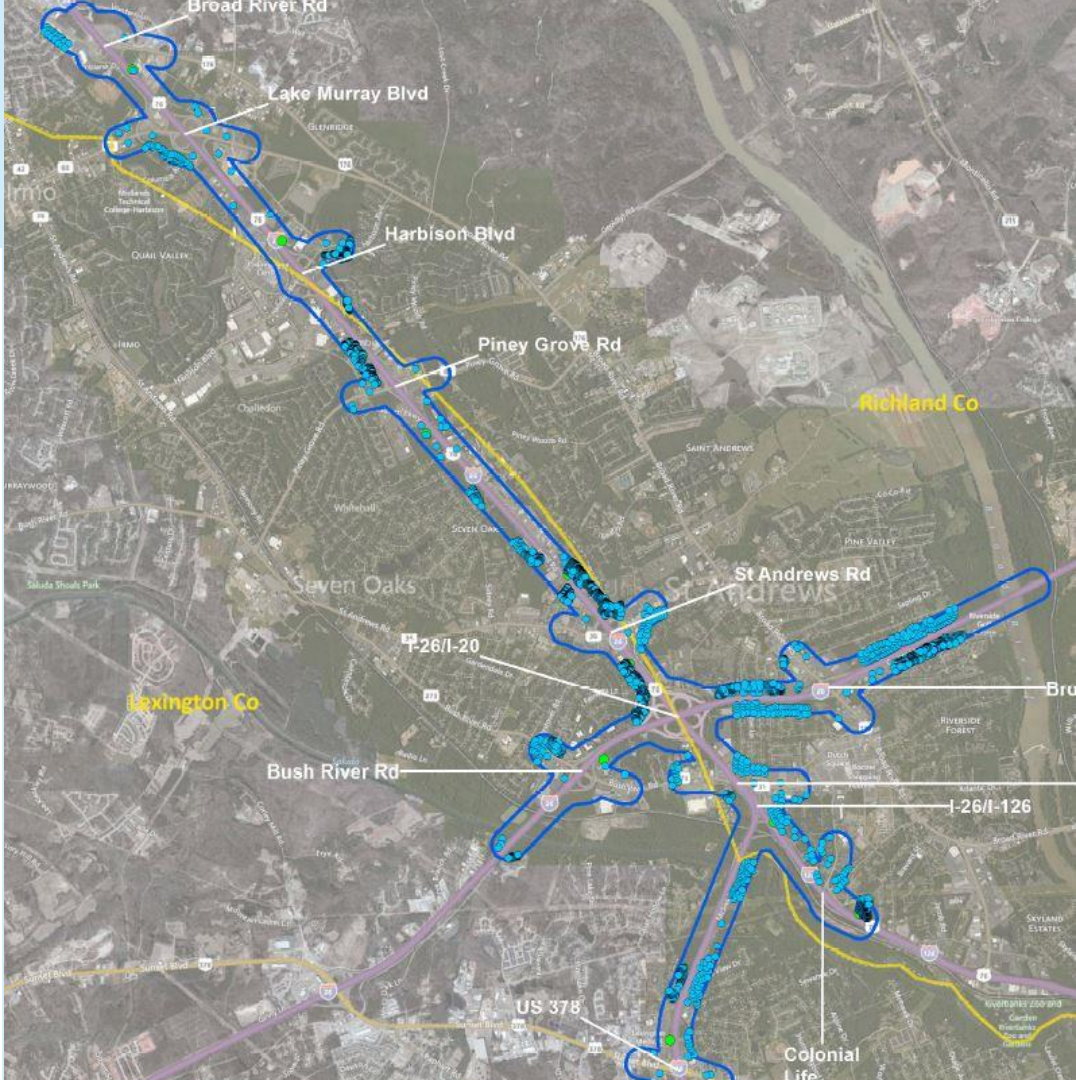
Noise Results

Measurement Location	Leq(h) (dBA)		
	Measured	Predicted	Difference
A: East of Broad River Road off-ramp near Southland Log Homes	72.1	73.0	+0.9
B: East of Harbison Boulevard on-ramp near Love Chevrolet	71.3	72.0	+0.7
C: West of Piney Grove Road off-ramp near Country Walk Apartments	69.3	72.2	+2.9
D: West of Piney Grove on-ramp near 490 Jamil Road	68.0	69.3	+1.3
E: East of I-26 near Raintree Apartments	74.7	71.9	-2.8
F: West of I-26 near Stoney Creek Apartments	69.1	72.0	+2.9
G: East of I-126 near 164 Morninghill Drive	67.2	69.4	+2.2
H: Northeast of I-126 near Three Rivers Apartments	62.3	64.2	+1.9
I: West of Sunset Boulevard off-ramp near 198 East Medical Lane	67.8	70.8	+3.0
J: Southwest of Bush River Road off-ramp near Double Tree by Hilton	65.7	68.1	+2.4
K: North of I-20 near Briargate Condominiums	65.5	68.4	+2.9

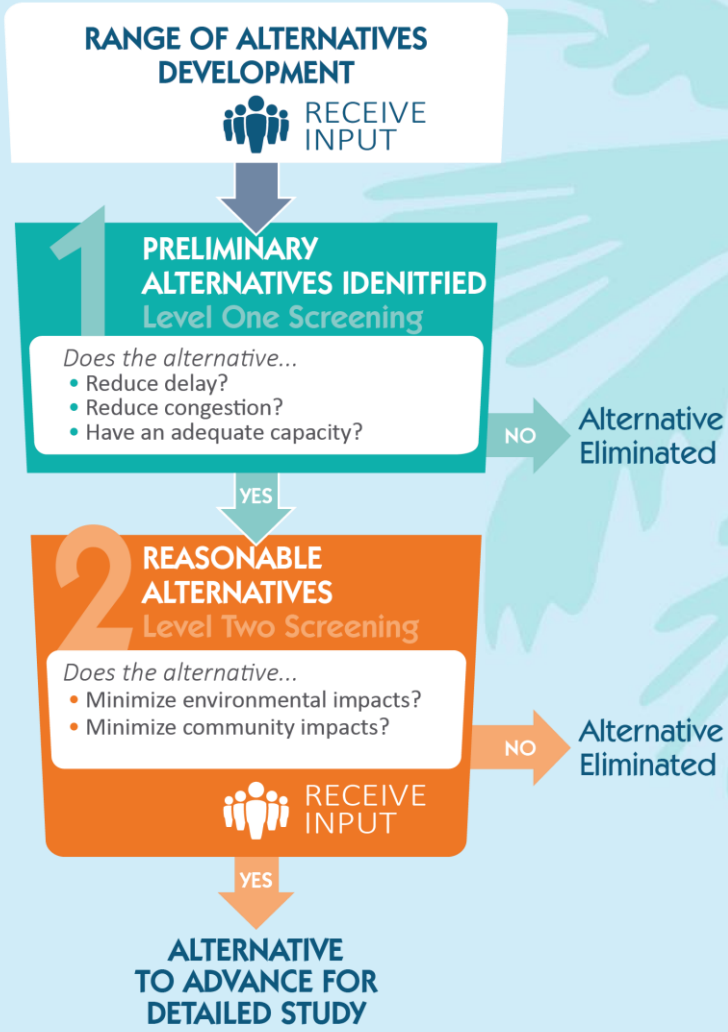
Noise Receptor Sites

- A total of 2,491 individual noise receptor sites were identified.

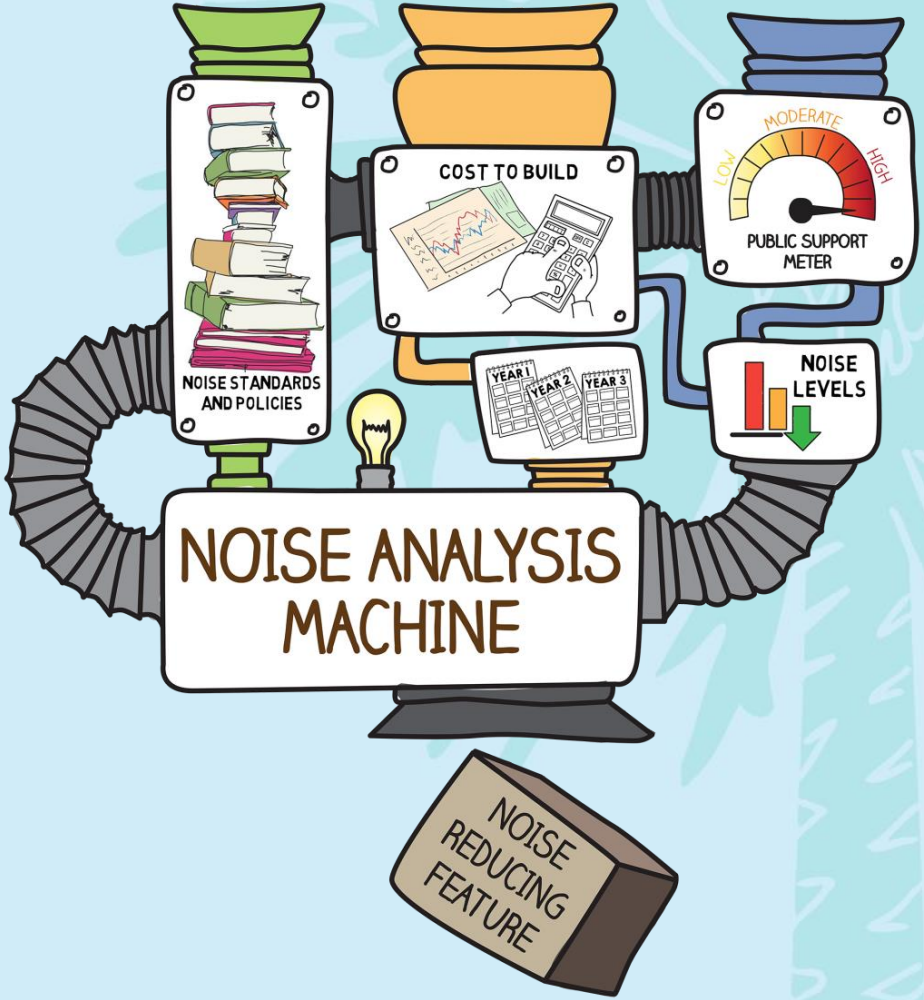
- Sites were within approximately 500 feet of the project centerline and were identified using parcel map information.



Next Steps

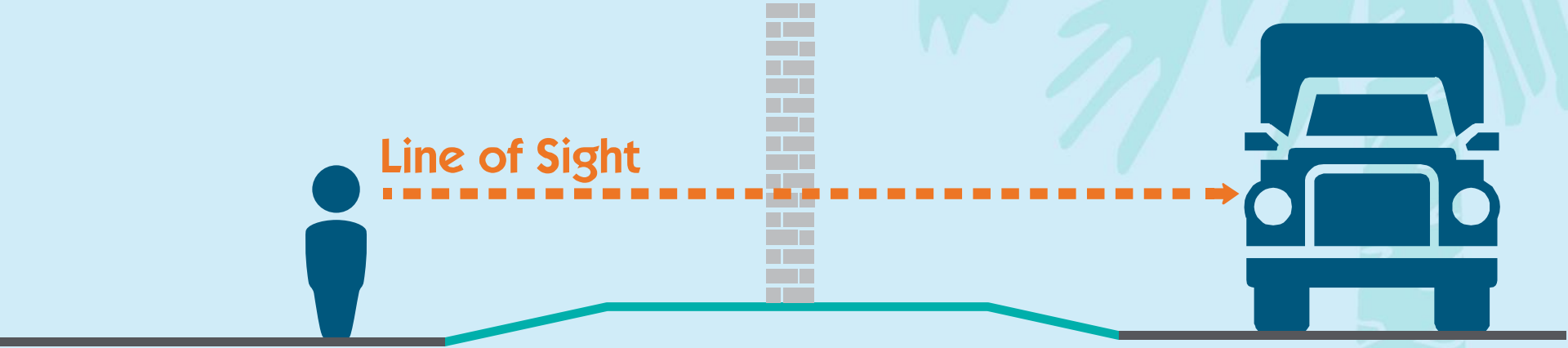

RANGE OF ALTERNATIVES DEVELOPMENT
RECEIVE INPUT
1
PRELIMINARY ALTERNATIVES IDENITFIED
Level One Screening
Does the alternative...
• Reduce delay?
• Reduce congestion?
• Have an adequate capacity?
NO
Alternative Eliminated
YES
2
REASONABLE ALTERNATIVES
Level Two Screening
Does the alternative...
• Minimize environmental impacts?
• Minimize community impacts?
NO
Alternative Eliminated
RECEIVE INPUT
YES
ALTERNATIVE TO ADVANCE FOR DETAILED STUDY

What happens if there is a Traffic Noise Impact?



How do Noise Walls Work?

- Block the direct path of sound waves from the highway to adjacent residences
- High enough and long enough to block line of sign between highway and residences
- Important to remember that not all noise will be blocked or eliminated.



05 Determining if a Noise Wall Will be Used

Feasibility and Reasonability

“Feasibility”
is determined by physical and/or engineering constraints

Engineering Feasibility
Could a noise barrier feasibly be constructed on the site

Acoustic Feasibility
5 dBA reduction at 75% of impacted receptors for the noise abatement measure to be acoustically feasible

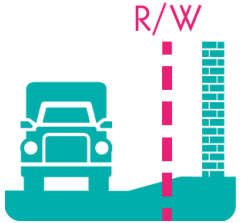
“Reasonability”
is based on several factors including:

Noise Reduction Design Goal
8 dBA must be achieved for 80% of those receptors determined to be in the first two building rows and considered benefited

Cost-effectiveness
SCDOT’s cost-effectiveness criteria

Opinion of benefited residents and owners

Feasibility Considerations

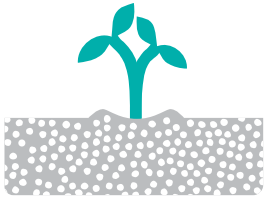


Right-of-way

Safety concerns

Buried utilities or utility relocation

Drainage impacts



Soil types or wetland areas

Reasonability

Noise Reduction

A reduction of 8 dBA must be achieved for **80%** of those receptors determined to be in the first two building rows and considered benefited

SCDOT's cost-effectiveness

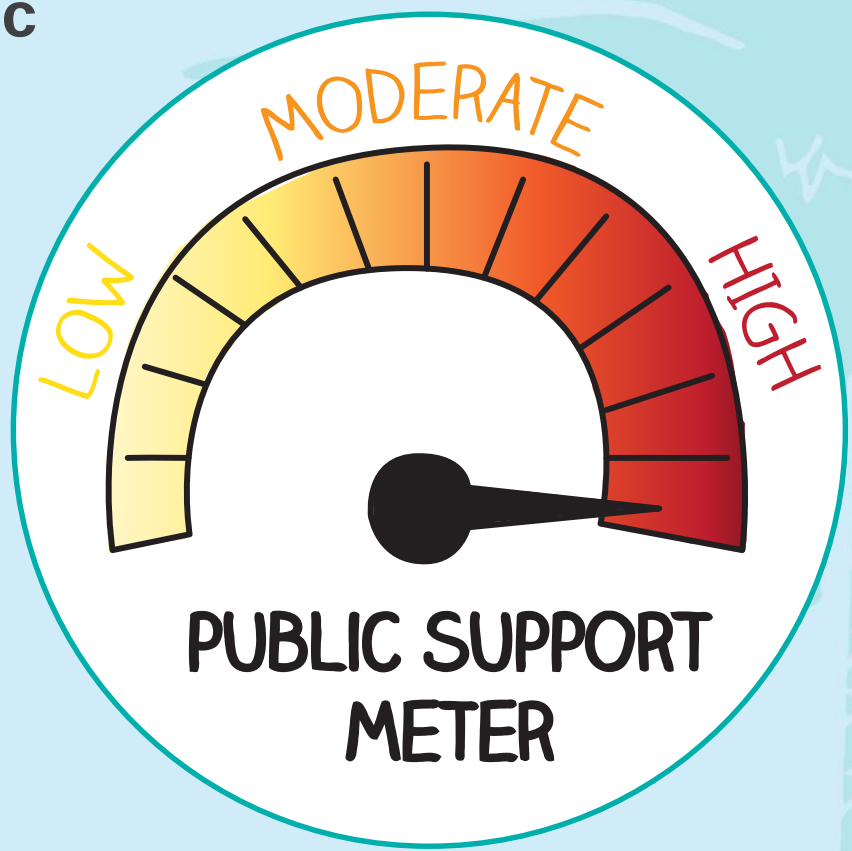
Does it align with this criteria?

Additional Costs

Such As:

Guard rails, rub rail, utility relocation, etc. must be included in the cost

Noise Walls and the Public



Questions?

Contact Us

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Look for us on social media!