

4. Methodology

The objective of this noise analysis is to identify noise sensitive sites adjacent to the project corridor and compare and evaluate traffic noise levels at these sites with and without the Preferred Alternative to determine where noise impacts are expected.

4.1 Noise Sensitive Sites

A noise sensitive site is any property (i.e., owner occupied, rented, or leased) where frequent exterior human use occurs and where a lowered noise level would be of benefit. An evaluation of the project corridor revealed that noise sensitive sites are primarily comprised of single-family residences along Plymouth Sorrento Road in Orange County and SR 46 in Lake and Seminole Counties. There are also some noise sensitive sites along the Connector to the SR 417/I-4 interchange in Seminole County.

4.2 Noise Impact Evaluation

The *Noise Study Report* for the Wekiva Parkway/SR 46 Realignment PD&E Study has been prepared in accordance with the requirements of 23 Code of Federal Regulations (CFR), Part 772 - *Procedures for Abatement of Highway Traffic Noise and Construction Noise* and Part 2, Chapter 17 of the Florida Department of Transportation's (FDOT's) *PD&E Manual*. The Category B land use activity criterion in 23 CFR 772 applies to residences, churches, schools, recreation areas, and similar uses and is an hourly sound level that approaches or exceeds 67 dBA hourly equivalent sound level (Leq). The above-described noise abatement criteria (NAC) are determined at the exterior of structures during peak noise conditions.

FHWA and FDOT consider traffic noise impacts to occur based on two criteria. If the predicted noise levels approach or exceed the NAC, or if the predicted noise levels substantially exceed existing noise levels, then a noise impact will occur and noise abatement shall be considered. FDOT defines the term "approach" as noise levels within 1 dBA of the FHWA NAC. For Activity Category B, which applies to the noise sensitive sites along the project study area, this translates to 66 dBA. A substantial noise increase is defined as 15 or more decibels above the existing noise level as a direct result of the transportation improvement project in question. **Table 4-1** presents the FHWA and FDOT NAC used for determining the noise standard for specific land uses (e.g., residential and commercial).

TABLE 4-1
FHWA and FDOT Noise Abatement Criteria

Noise Abatement Criteria			
(Hourly A-Weighted Sound Level-decibels (dBA))			
Activity Category	Abatement Level (in L_{Aeq1h})		Description of Activity Category
	FHWA	FDOT	
A	57	56 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is continue to serve its intended purpose.
B	67	66 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, RV parks, day care centers and hospitals.
C	72	71 (Exterior)	Developed lands, properties, or activities not included in Categories A and B above.
D	--	--	Undeveloped lands.
E	52	51 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

(Based on Table 1 of 23 CFR Part 772)

Note: FDOT defines that a substantial noise increase occurs when the existing noise level is predicted to be exceeded by 15 decibels or more as a result of the transportation improvement project. When this occurs, the requirement for abatement consideration will be followed.