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Chapter 4 – California Environmental Quality Act Evaluation

4.1 Determining Significance under CEQA

The proposed project is a joint project by Caltrans and FHWA and is subject to State and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both CEQA and NEPA. Caltrans is the lead agency under CEQA and the FHWA is the lead agency under NEPA.

One of the primary differences between NEPA and CEQA is the way significance is determined. Under NEPA, significance is used to determine whether an EIS, or some lower level of documentation, will be required. NEPA requires that an EIS be prepared when the proposed federal action (project) *as a whole* has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision is made regarding the need for an EIS, it is the magnitude of the impact that is evaluated and no judgment of its individual significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents.

CEQA, on the other hand, does require Caltrans to identify each "significant effect on the environment" resulting from the project and ways to mitigate each significant effect. If the project may have a significant effect on any environmental resource, then an EIR must be prepared. Each and every significant effect on the environment must be disclosed in the EIR and mitigated if feasible. In addition, the CEQA Guidelines list a number of mandatory findings of significance, which also require the preparation of an EIR. There are no types of actions under NEPA that parallel the findings of mandatory significance of CEQA. This chapter discusses the effects of this project and CEQA significance**.**

4.2 Less than Significant Effects of the Proposed Project

The following impacts would have a less than significant effect on the environment based on implementation of design measures and/or routine monitoring efforts during construction:

- Air Quality
- Energy
- Farmlands/Agricultural Lands
- Floodplains
- Geology and Soils
- Growth
- Hydrology and Water Quality
- Land Use
- Parks and Recreational Facilities
- Pedestrian and Bicycle
- Traffic and Transportation
- Utilities and Emergency Services

For a full discussion of environmental consequences for the above issues, please see related sections in *Chapter 3*.

4.3 Less than Significant Impacts with Mitigation and/or Minimization

The following resources have specific mitigation and/or minimization measures to reduce or avoid impacts that could occur during construction (cultural and paleontological resources, and hazardous materials) or operations (noise). These measures would reduce potential impacts to less than significant levels under CEQA, as described below.

4.3.1 Cultural Resources

As detailed in *Section 3.8, Cultural Resources*, no substantial change to any historical resource would occur. There is a potential for currently unknown sites to be located during project construction. If unanticipated discoveries are made, consultation with the SHPO would occur, as appropriate. This coordination, combined with implementation of proposed mitigation and minimization measures identified in *Section 3.8* of this Final EIR/EIS, ensures that there would not be significant cultural resources impacts to historical resources.

4.3.2 Paleontological Resources

As detailed in *Section 3.11, Paleontology*, direct impacts to paleontological resources could occur when mass grading cuts extend into geological deposits containing fossils. Although the precise types, depths, and locations of various construction activities are not known at this time, unearthing of paleontological resources is anticipated.

If anticipated discoveries occur, implementation of proposed mitigation measures identified in *Section 3.11* of this Final EIR/EIS would reduce paleontological resources impacts to less than significant levels.

4.3.3 Hazards and Hazardous Materials

As detailed in *Section 3.13, Hazardous Waste/Materials*, construction of the proposed project has the potential to disturb soils and other materials containing hazardous materials, such as aerially deposited lead, petroleum hydrocarbons, pesticides, herbicides, and other contamination due to historic uses in and around the project areas.

Wherever possible, the *I-5 NCC Project* would use the existing I-5 alignment to avoid and/or minimize impacts from hazards and hazardous materials. Where avoidance is not possible, the project incorporates measures to avoid potential disturbances of contamination areas, as described in *Section 3.13* of this Final EIR/EIS. Compliance with the applicable regulations pertaining to the safe handling and removal of hazardous waste/materials would reduce impacts pertaining to emission and handling of hazardous waste/materials within one quarter-mile of a school to less than significant levels.

4.3.4 Noise

Determination for noise impact under CEQA is based on a comparison between the existing noise levels and the build noise levels without soundwalls, as identified in *Section 3.15, Noise*. CEQA differs from NEPA in the assessment of the noise. Under CEQA, the assessment entails looking at the setting of the noise impact and then how large or perceptible a noise increase would be in the given area under future build and no-build conditions.

For the purposes of *Section 4.3.4* and *Section 3.15*, a Noise Sensitive Area (NSA)/Receptor Site is an area involving regular human use or activities that would be susceptible to adverse impacts due to highway traffic-generated noise. NSAs typically include residences, churches, schools, parklands, or hospitals, and may include individual sites, groups of sites, or an entire community. Individual analysis sites within the NSA are called Noise Receptor Sites. For the purposes of analysis, a single-family residence (SFR), multi-family residence (MFR), mobile home (MH), school (SCH), hotel or motel (HM), office, church (CHR), and recreational area (REC), are development types that are identified as units. Several units may be represented by a receptor.

A significant environmental effect under CEQA generally is defined as a substantial or potentially substantial adverse change in the physical environment. The increase in traffic noise caused by a project is the primary factor considered by Caltrans in assessing the significance of noise impacts under CEQA. Key considerations when determining a significant traffic noise impact under CEQA include whether there is an increase between existing and projected noise levels, the uniqueness of the setting, the sensitive nature of the noise receptors, the magnitude of the noise increase, the number of noise receptors affected, and the absolute noise level. The CEQA noise analysis is different from, but related to, the NEPA 23 CFR 772 analysis discussed in *Chapter 3*, which is centered on noise abatement criteria. Although the conclusions may vary, the decibel data addressed in this chapter are the same as those addressed in *Chapter 3*, and remain the same as those disclosed in the Draft EIR/EIS.

The Noise Study Report assesses the potential noise impacts associated with the *I-5 NCC Project.* Noise impacts are presented in *Section 3.15*, where tables for each segment show the existing traffic noise levels and predicted noise levels for all alternatives, including the future no-build. L_{eq} is used per the Caltrans' Traffic Noise Analysis guidance and is the equivalent steady-state sound level, which in a stated period of time contains the same acoustic energy as the time-varying sound level.

The noise measurement sites, or representative noise receptors, are locations where noise measurements are taken in order to determine existing noise levels and to verify or calibrate computer noise models. Locations that are expected to receive the greatest noise impacts, such as the first row of houses from the noise source, are generally chosen. These sites are chosen as being representative of similar sensitive sites in the area. Noise measurements were conducted in frequent outdoor human-use areas and indoor classroom locations. All noise measurement sites were selected so that there would be no unusual noises from sources such as dogs, pool pumps, or children that could affect the measured noise levels. To the extent feasible, sites that were free of major obstructions or noise contamination were selected.

The proposed build alternatives would increase noise levels between 1 dBA and 5 dBA from existing conditions in most locations of the I-5 North Coast Corridor by 2030,[1] with some areas potentially experiencing an increase as high as a 12 dBA change. Changes of 3 dBA or less are generally not detectable by the average healthy human ear and the difference in noise would not be expected to be perceptible. Changes of 5 dBA, however, are readily perceptible. The relationship between noise level change and perceived change is summarized as follows, based on the Caltrans Technical Noise Supplement (November 2009).

- 0 – 3 dBA change: Barely perceptible
- 5 dBA change: Readily perceptible
- 10 dBA change: Twice as loud

The recommended soundwalls in *Section 3.15* would not mitigate the noise impact to a level below CEQA significance for each individual soundwall.

The noise receptors identified along the *I-5 NCC Project* have been divided into 22 segments; information discussing noise impacts along these segments is provided below.

Segment 1 (La Jolla Village Drive to Genesee Avenue) – The 13 units, located within an existing, noisy and urban environment along this segment of the I-5 corridor, are represented by seven noise receptors. Based on the build alternatives (without a soundwall), noise receptors at Segment 1 would experience a projected noise level increase between 3 dBA and 4 dBA. A 3 dBA increase is barely perceptible to the human ear. A 4 dBA increase is perceptible to the human ear. Only two of the seven noise receptors within this segment would experience a projected noise level increase of 4 dBA with the build alternatives. The remaining five noise receptors would experience a projected noise level increase of only 3 dBA. The increase between existing noise levels and the build alternatives would not result in a significant noise impact under CEQA and no mitigation is required. The build alternatives would not significantly contribute to the existing noise levels. Noise levels along Segment 1 are currently loud and would remain loud.

Segment 2 (Genesee Avenue to Carmel Mountain Road) – There are five noise receptors, which represent 30 units, located within this segment of the I-5 corridor. This segment is an existing, noisy and urban environment. Based on the build alternatives (without a soundwall), noise receptors at Segment 2 would experience a projected noise level increase of between 1 dBA and 2 dBA. This range of a 1 to 2 dBA increase between existing noise levels and the build alternative is barely perceptible to the human ear. Therefore, under CEQA, no significant noise impact would occur as a result of the project and no mitigation is required. The build alternatives would not significantly contribute to the existing noise levels. Noise levels along Segment 2 are currently loud and would remain loud,

Segment 3 (Carmel Mountain Road to Carmel Valley Road) – There are 16 noise receptors, which represent 47 units, located within this segment of the I-5 corridor. This segment consists of an existing, dense residential environment. Based on the build alternatives (without a soundwall), noise receptors at Segment 3 would experience a projected noise level increase between 1 and 4 dBA. A 3 dBA increase is barely perceptible to the human ear. A 4 dBA increase is perceptible to the human ear. One noise receptor (R3.10A, representing three units) would experience a noise reduction of 2 dBA. Only 4 of the 16 noise receptors would

[1] The Noise Study uses year 2030, but the traffic discussion in *Section 3.6* clarified that the use of 2030 traffic analysis is equally relevant through 2042 based on the Series 10, 11 and 12 analysis; that is the basis for determining the traffic volume for the noise level.

experience a projected noise level increase of 4 dBA; therefore, most of the noise receptors (11 of 16) would experience a projected noise level increase of 1 dBA to 3 dBA. This range of a 1 to 3 dBA increase between existing noise levels and the build alternative would be barely perceptible to the human ear. A 4 dBA increase is perceptible to the human ear. Under CEQA, no significant noise impact would occur as a result of the project and no mitigation is required. The build alternatives would not significantly contribute to the existing noise levels. Noise levels along Segment 3 are currently loud and would remain loud.

Segment 4 (Carmel Valley Road to Del Mar Heights Road) – There are 25 noise receptors, which represent 111 units, located within this segment of the I-5 corridor. This segment is an existing, noisy, dense residential environment. Based on the build alternatives (without a soundwall), noise receptors at Segment 4 would experience a projected noise level increase between 0 dBA and 3 dBA. A 3 dBA increase is barely perceptible to the human ear. A 4 dBA increase is perceptible to the human ear. One noise receptor (R4.9, representing four units) would experience a noise reduction of 1 dBA. The increase between existing noise levels and the build alternatives would not result in a significant noise impact under CEQA and no mitigation is required. The build alternatives would not significantly contribute to the existing noise levels. Noise levels along Segment 4 are currently loud and would remain loud.

Segment 5 (Del Mar Heights Road to Via de la Valle Undercrossing) – The 135 units along this segment of the I-5 corridor, represented by 29 noise receptors, are located within an existing noisy, and primarily residential and urban environment. Based on the build alternatives (without a soundwall), noise receptors at Segment 5 would experience a projected noise level increase between 0 dBA and 6 dBA. However, only one of the noise receptors (R5.14, with two represented units) would experience a projected noise level increase of 6 dBA. The projected future noise level at this receptor is 68 dBA, which is consistent with other noise receptors in the vicinity. The other 28 noise receptors would experience a projected noise level increase between 0 dBA and 5 dBA. This range between existing noise levels and the build alternative would be between barely perceptible to readily perceptible to the human ear. Therefore, under CEQA, no significant noise impact would occur as a result of the project and no mitigation is required. The build alternatives would not significantly contribute to the existing noise levels. Noise levels along Segment 5 are currently loud and would remain loud.

Segment 6 (Via de la Valle Undercrossing to Lomas Santa Fe Drive) – The 135 units, represented by 34 noise receptors, are located within an existing noisy, residential and urban environment along this segment of the I-5 corridor. Based on the build alternatives (without a soundwall), noise receptors at Segment 6 would experience a projected noise level increase between 0 dBA and 10 dBA. However, only one noise receptor would experience a projected noise level increase of 10 dBA (R6.5, with one represented unit); one noise receptor would experience a projected noise level increase of 9 dBA (R6.4, with six represented units); one noise receptor would experience a projected noise level increase of 8 dBA (R6.6, with five represented units); and one noise receptor would experience a projected noise level increase of 7 dBA (R6.7, with five represented units). These receptors, representing 17 units, would perceive noise increases that are considered above readily perceptible to two times as loud as the current condition. Receptors R6.6 and R6.7 would experience a potentially significant impact under CEQA due to the combination of: the location of these receptors; the adjacent receptors noise levels; the number of units represented; the resulting potential absolute noise level between 69 and 71 dBA; and a 7 to 8 dBA projected noise level increase. There are no soundwalls planned for these receptors due to the retention of the coastal view. A soundwall (S603A) is planned for the potentially significant impact to these noise receptors R6.4 and

R6.5 due to the combination of: the location of these receptors; the adjacent receptors noise levels; number of units represented; the resulting potential absolute noise level between 69 and 80 dBA; and a 7 to 10 dBA projected noise level increase. One noise receptor (R6.11, representing seven frontage units) would experience a noise reduction of 1 dBA. The remaining 29 receptors, representing 111 units, would experience a noise increase change between 0 and 6 dBA. Three noise receptors would experience a projected noise level increase of 6 dBA (R6.9A, with four represented units; R6.21, with three represented units; and R6.23, representing a school). The remaining 26 noise receptors, representing 103 units, would experience a projected noise level increase between 0 dBA and 5 dBA. This range of a 0 dBA to 5 dBA increase between existing noise levels and the build alternative would be barely perceptible to readily perceptible to the human ear.

The noise receptors where sound levels would increase by between 6 and 9 dBA would experience a difference that is readily perceptible, but less than twice as loud. The resulting absolute noise level would be consistent with the other noise receptors and the general noisy conditions along this segment of the I-5 North Coast Corridor. For this segment overall, under CEQA, no significant noise impact would occur as a result of the project after the proposed mitigation and no additional mitigation is required. The build alternatives would not significantly contribute to the existing noise levels. Noise levels along Segment 6 are currently loud and would remain loud.

Segment 7 (Lomas Santa Fe Drive to Manchester Avenue) – The 67 units, represented by 33 noise receptors, are located within an existing, noisy, and urban environment along this segment of the I-5 corridor. Based on the build alternatives (without a soundwall), noise receptors at Segment 7 would experience a projected noise level increase between 0 dBA and 4 dBA. A 3 dBA increase is barely perceptible to the human ear. A 4 dBA increase is perceptible to the human ear. Only 2 of the 33 noise receptors would experience a projected noise level increase of 4 dBA; therefore, the vast majority of the noise receptors (31 of 33) would experience a noise increase of 0 dBA to 3 dBA. The increase between existing noise levels and the build alternatives would not result in a significant noise impact under CEQA. The build alternatives would not significantly contribute to the existing noise levels. Therefore, under CEQA, no significant noise impact would occur as a result of the project and no mitigation is required.

Segment 8 (Manchester Drive to Birmingham Drive) – The 152 units, represented by 32 noise receptors, are located within an existing, noisy, urban, and residential environment along this segment of the I-5 corridor. Based on the build alternatives (without a soundwall), noise receptors at Segment 8 would experience a projected noise level increase between 0 and 11 dBA. The 11 dBA projected noise level increase at one noise receptor (R8.7, representing four units) is unique in this segment with a projected noise increase considered over two times as loud as existing noise levels. A soundwall (S635) is planned for the potentially significant impact of noise receptor R8.7 due to the combination of: the location of this receptor; the adjacent receptors noise levels; the number of units represented; and an 11 dBA projected noise level increase. One noise receptor (R8.19, representing six units) would experience a noise reduction of two dBA. The other 30 noise receptors (representing 142 units) would experience a projected noise level increase between 0 dBA and 6 dBA (only 3 noise receptors increasing at 6 dBA: R8.1, R8.5, and R8.6, representing 4, 12, and 8 units respectively). Seven of these 22 noise receptors would experience a projected noise level increase of 0 dBA. Most of the noise receptors (28 of 32) would experience a projected noise level increase of 0 dBA to 4 dBA. A 3 dBA increase is barely perceptible to the human ear. A 4 dBA increase is perceptible to the human ear.

The resulting absolute noise level would be consistent with the other noise receptors and the general noisy conditions along this segment of the I-5 North Coast Corridor. For this segment overall, under CEQA, a less than significant noise impact would occur as a result of the project after the proposed mitigation and no additional mitigation is required. The build alternatives would not significantly contribute to the existing noise levels. Noise levels along Segment 8 are currently loud and would remain loud.

Segment 9 (Birmingham Drive to Santa Fe Drive) – The 67 units, represented by 19 noise receptors, are located within an existing, noisy, urban, and residential environment along this segment of the I-5 corridor. Based on the build alternatives (without a soundwall), noise receptors at Segment 9 would experience a projected noise level increase between 2 dBA and 10 dBA. Ten of the 19 noise receptors would experience a projected noise level increase of 5 dBA or less. One noise receptor (R9.14, representing six units) would experience a substantial projected noise level increase of 10 dBA. A 10 dBA increase is considered two times as loud as the existing noise level. In the context of its baseline setting, however, R9.14 would change from a slightly noisy level (57 dBA) to a noisy level (67 dBA) in an overall corridor that is already noisy. Other noise receptors (R9.2, R9.3, R9.4, R9.4A, R9.15, and R9.15A; representing a total of 28 units) would experience an increase of between 7 to 9 dBA, which would be a readily perceptible increase, but less than two times as loud to the human ear. There are no soundwalls planned for these receptors due to the economic cost of building a soundwall that would cause a perceptible noise reduction. These receptors would experience a potentially significant impact under CEQA due to the combination of: the location of these receptors; the adjacent receptors noise levels; the number of units represented; the resulting potential absolute noise level between 66 and 77 dBA; and a 7 to 10 dBA projected noise level increase. The remaining eight receptors, representing 28 units, are expected to experience a projected noise level increase of 2 dBA to 6 dBA, which is barely perceptible to above readily perceptible to the human ear.

The resulting absolute noise level at the noise receptors that would experience a projected noise level increase of 7 to 10 dBA, would be consistent with the other noise receptors and the general noisy conditions along this segment of the I-5 North Coast Corridor. For this segment overall, under CEQA, a potentially significant noise impact may occur at noise receptors R9.2, R9.3, R9.4, R9.4A, R9.14, R9.15, and R9.15A as a result of the project. Noise levels along Segment 9 are currently loud and would remain loud.

Segment 10 (Santa Fe Drive to Encinitas Boulevard) – The 86 units, represented by 24 noise receptors, are located within an existing dense, residential environment along this segment of the I-5 corridor. Based on the build alternatives (without a soundwall), noise receptors at Segment 10 would experience a projected noise level increase between 0 and 8 dBA. The 8 dBA increase at 1 noise receptor (R10.6, representing 10 units) is unique, because the other 23 noise receptors (representing 76 units) would experience a projected noise level increase between 0 dBA and 5 dBA. The receptor representing 10 units would perceive noise increases that are considered between readily perceptible and two times as loud to the human ear. This is a potentially significant impact at noise receptor R10.6 due to the combination of: the location of these receptors; the adjacent receptors noise levels; the number of units represented; the resulting potential absolute noise level between 76 dBA; and an 8 dBA projected noise level increase. There are no soundwalls planned for receptor R10.6 due to the economic cost of the soundwall when compared to the benefit received by the represented units. The remaining 23 receptors, representing 76 units, would experience a noise increase change between 0 and 5 dBA. This range of a 0 dBA to 5 dBA increase between existing noise levels and the build alternative would be barely perceptible to readily perceptible to the human ear.

The resulting absolute noise level would be consistent with the other noise receptors and the general noisy conditions along this segment of the I-5 North Coast Corridor. For this segment overall, under CEQA, no significant noise impact would occur as a result of the project and no mitigation is required. The build alternatives would not significantly contribute to the existing noise levels. Noise levels along Segment 10 are currently loud and would remain loud.

Segment 11 (Encinitas Boulevard to Leucadia Boulevard) – The 132 units, represented by 40 noise receptors, are located within an existing urban, and primarily residential, environment along this segment of the I-5 corridor. Based on the build alternatives (without a soundwall), noise receptors at Segment 11 would experience a projected noise level increase between 1 and 7 dBA. However, only one noise receptor (R11.27, representing two units), would experience the projected noise level increase of 7 dBA. A 7 dBA increase is considered between readily perceptible and two times as loud to the human ear. This receptor, representing two units, would perceive noise increases that are considered above readily perceptible to two times as loud. A soundwall (S686A) is planned for the potentially significant impact of this noise receptor (R11.27) due to the combination of: the location of these receptors; the adjacent receptors' noise levels; the number of units represented; the resulting potential absolute noise level of 77 dBA; and a 7 dBA projected noise level increase. The remaining 39 receptors, representing 130 units, would experience a noise increase change between 0 and 6 dBA. Three noise receptors would experience a projected noise level increase of 6 dBA (R11.29, R11.31, and R11.32, representing one, three, and two units, respectively). A 6 dBA increase is considered readily perceptible increase to the human ear. All other 36 noise receptors would experience a projected noise level increase between 0 dBA and 5 dBA. The range of 5 dBA to 6 dBA increase between existing noise levels and the build alternative is readily perceptible to the human ear. The range of a 0 dBA to 3 dBA increase between existing noise levels and the build alternative would be barely perceptible to the human ear.

For the noise receptor that would experience a projected noise level increase of 7 dBA, the resulting absolute noise level would be consistent with the other noise receptors and the general noisy conditions along this segment of the I-5 North Coast Corridor. For the segment overall, under CEQA, mitigation is being incorporated into the project to lessen the environmental impacts and no significant noise impact would occur as a result of the project and no additional mitigation is required. The build alternatives would not significantly contribute to the existing noise levels. Noise levels along Segment 11 are currently loud and would remain loud.

Segment 12 (Leucadia Boulevard to La Costa Avenue) – The 104 units, represented by 52 noise receptors, are located within an existing urban, and primarily residential, environment along this segment of the I-5 corridor. Based on the build alternatives (without a soundwall), noise receptors at Segment 12 would experience a projected noise level increase between 1 dBA and 6 dBA. However, only three noise receptors would experience a projected noise level increase of 6 dBA (R12.34, R12.46, and R12.48, representing one, three, and one units, respectively) and nine noise receptors would experience a projected noise level increase of 5 dBA. A 5 to 6 dBA increase is considered readily perceptible increase to the human ear. One noise receptor (R12.40, representing two units) would experience a noise reduction of 1 dBA. All other 39 noise receptors (representing 97 units) would experience a projected noise level increase between 0 dBA and 4 dBA. A 3 dBA increase is barely perceptible to the human ear. A 4 dBA increase is perceptible to the human ear. Under CEQA, no significant noise impact would occur as a result of the project and no mitigation is required. The build

alternatives would not significantly contribute to the existing noise levels. Noise levels along Segment 12 are currently loud and would remain loud.

Segment 13 (La Costa Avenue to Poinsettia Lane) – The 161 units, represented by 30 noise receptors, are located within an existing dense, and primarily residential, environment along this segment of the I-5 corridor. Based on the build alternatives (without a soundwall), noise receptors at Segment 13 would experience a projected noise level increase between 1 dBA and 7 dBA. However, the 7 dBA increase at 1 noise receptor (R13.8, representing four units) is unique, because the other 29 noise receptors would experience a projected noise level increase between 1 dBA and 5 dBA. Receptor R13.8 would perceive noise increases that are considered between readily perceptible and two times as loud. A soundwall is not planned for the potentially significant impact of noise receptor R13.8. In the context of its baseline setting, R13.8 would change from an urban quiet level (51 dBA) to a slightly noisy level (61 dBA) in an overall corridor that is already noisy. However, receptor R13.8 is potentially significant under CEQA due to the combination of: the location of these receptors; the adjacent receptors' noise levels; the number of units represented; and a 7 dBA projected noise level increase. One noise receptor (R13.20, representing one unit) would experience a noise reduction of 1 dBA. The remaining 28 receptors, representing 96 units, would experience a noise increase between 0 and 6 dBA. This range of a 1 dBA to 6 dBA increase between existing noise levels and the build alternatives would be between barely perceptible and readily perceptible to the human ear.

The resulting absolute noise level would be consistent with the other noise receptors and the general noisy conditions along this segment of the I-5 North Coast Corridor. For the segment overall, under CEQA, no significant noise impact would occur as a result of the project and no additional mitigation is required. The build alternatives would not significantly contribute to the existing noise levels. Noise levels along Segment 13 are currently loud and would remain loud.

Segment 14 (Poinsettia Lane to Palomar Airport Road) – The 170 units, represented by 31 noise receptors, are located within an existing dense, and primarily residential, environment along this segment of the I-5 corridor. Based on the build alternatives (without a soundwall), noise receptors at Segment 14 would experience a projected noise level increase between 1 dBA and 8 dBA. However, the 8 dBA increase at 1 noise receptor (R14.6 representing 16 units) is unique, because the other 30 noise receptors would experience a projected noise level increase between 1 dBA and 4 dBA. An 8 dBA increase is considered between a readily perceptible increase and two times as loud to the human ear. A soundwall is not planned for the potentially significant impact of this noise receptor R14.6 due to the economic cost of building a soundwall that would cause a perceptible reduction. Receptor R14.6 is potentially significant under CEQA due to the combination of: the location of these receptors; the adjacent receptors noise levels; the number of units represented; and an 8 dBA projected noise level increase. The remaining 30 receptors representing 154 units would experience a noise increase change between 0 and 6 dBA. This range of a 1 dBA to 3 dBA increase between existing noise levels and the build alternative would be barely perceptible to the human ear. The range from 4 dBA to 6 dBA is readily perceptible to the human ear.

The resulting absolute noise level would be consistent with the other noise receptors and the general noisy conditions along this segment of the I-5 North Coast Corridor. For the segment overall, under CEQA, no significant noise impact would occur as a result of the project and no additional mitigation is required. The build alternatives would not significantly contribute to the

existing noise levels. Noise levels along Segment 14 are currently loud and would remain loud.

Segment 15 (Palomar Airport Road to Cannon Road) – The two units, represented by two noise receptors (R15.1 and R15.2), are located north of Cannon Road and within an existing noisy, urban environment along this segment of the I-5 corridor. Based on the build alternatives (without a soundwall), noise receptors at Segment 15 would experience a projected noise level increase between 2 dBA and 3 dBA. This range of a 2 dBA to 3 dBA increase between existing noise levels and the build alternative would be barely perceptible to the human ear. Therefore, under CEQA, no significant noise impact would occur as a result of the project and no mitigation is required. The build alternatives would not significantly contribute to the existing noise levels. Noise levels along Segment 15 are currently loud and would remain loud.

Segment 16 (Cannon Road to Tamarack Avenue) – The 82 units, represented by 21 noise receptors, are located within an existing noisy, and primarily residential and urban environment, along this segment of the I-5 corridor. Based on the build alternatives (without a soundwall), noise receptors at Segment 16 would experience a projected noise level increase between 1 dBA and 5 dBA. However, only one of the noise receptors (R16.1, representing three units) would experience the projected noise level increase of 5 dBA. Twenty noise receptors would experience a projected noise level increase between 1 dBA and 4 dBA. A 3 dBA increase is barely perceptible to the human ear. A 4 dBA increase is perceptible to the human ear. Therefore, under CEQA, no significant noise impact would occur as a result of the project and no mitigation is required. The build alternatives would not significantly contribute to the existing noise levels. Noise levels along Segment 16 are currently loud and would remain loud.

Segment 17 (Tamarack Avenue to Carlsbad Village Drive) – The 195 units, represented by 35 noise receptors, are located within an existing dense, urban, and primarily residential environment along this segment of the I-5 corridor. Based on the build alternatives (without a soundwall), noise receptors at Segment 17 would experience a projected noise level increase between 1 dBA and 7 dBA. Two noise receptors (R17.11 and R17.13, representing 10 and 1 units, respectively) would experience a projected noise increase of 7 dBA, to levels consistent with the loudness of the corridor. Receptors R17.11 would perceive noise increases that are considered above readily perceptible. A soundwall (S603) is planned for the potentially significant impact of this noise receptor due to the combination of: the location of these receptors; the adjacent receptors' noise levels; the number of units represented; the resulting potential absolute noise level between 71 dBA; and a 7 dBA projected noise level increase. One noise receptor (R17.19, representing 21 units) would experience a noise reduction of 1 dBA. The remaining 29 receptors (representing 97 units) would experience a noise increase between 0 and 6 dBA. Four noise receptors would experience an increase of 6 dBA (R17.12, R17.14, R17.15 and R17.16, representing four, one, one, and one units, respectively). A 6 dBA increase is considered a readily perceptible increase. A soundwall (S810) is, however, planned for noise receptor R17.12 (Holiday Park) due to the combination of uniqueness of the outdoor recreational use, resulting potential absolute noise level of 72 dBA, and a 6 dBA projected noise level increase. All other 29 noise receptors (representing 177) units would experience a projected noise level increase between 1 dBA and 5 dBA. This range of a 1 dBA to 5 dBA increase between existing noise levels and the build alternative would range from barely perceptible to readily perceptible to the human ear.

For noise receptors that would experience a projected noise level increase of six dBA, the noise level increase would be over readily perceptible. However, the resulting absolute noise level would be consistent with the other noise receptors and the general noisy conditions along this segment of the I-5 North Coast Corridor. Under CEQA and for the segment overall, other than the mitigation requirement to construct a soundwall (S810) for noise receptors R17.11 through R17.13, no significant noise impact would occur as a result of the project and no additional mitigation is required. The build alternatives would not significantly contribute to the existing noise levels. Noise levels along Segment 17 are currently loud and would remain loud.

Segment 18 (Carlsbad Village Drive to Vista Way [SR-78]) – The 95 units, represented by 30 noise receptors, are located within an existing urban, and primarily residential, environment along this segment of the I-5 corridor. Based on the build alternatives (without a soundwall), noise receptors at Segment 18 would experience a projected noise level increase between 2 dBA and 12 dBA. One receptor (R18.22, representing three units) would experience an increase of 12 dBA. Receptor R18.22 would experience a potentially significant impact under CEQA. This potentially significant impact is based on the location, magnitude of noise increase of 12 dBA, and a predicted absolute noise level of 82 dBA. A 12 dBA increase is perceived over two times as loud to the human ear. A 14-ft-high soundwall (S821) is planned for this noise receptor (residence located at 1148 Knowles Avenue in Carlsbad) to mitigate the potential noise impacts at this noise receptor.

There are two receptors that would experience an increase of nine dBA (R18.7, representing one unit, and R18.8, representing six units). A 9 dBA increase is perceived as almost two times as loud to the human ear. There are five receptors that would experience an increase of 8 dBA: R18.2, representing five units; R18.11, representing one unit; R18.19, representing two units; R18.20, representing one unit; and R18.24, representing one unit. There are 13 receptors that would experience an increase of 7 dBA: R18.1, representing 3 units; R18.1A, representing 1 unit; R18.2, representing 5 units; R18.3, representing 8 units; R18.4, representing 1 unit; R18.5, representing 1 unit; R18.6, representing 1 unit; R18.7, representing 1 unit; R18.7A, representing 1 unit; R18.8, representing 1 unit; R18.9, representing 1 unit; R18.5, representing 34 units; and R18.27, representing 1 unit. A 7 and 8 dBA increase is considered between a readily perceptible increase and two times as loud to the human ear. The remaining 9 receptors, representing 16 units, would experience a noise increase change between 0 and 6 dBA.

There is no soundwall planned for receptor R18.1 due to the economic cost of the soundwall when compared to the benefit received by the represented units. Receptor 18.1, representing three units, is potentially significant under CEQA due to the combination of: the location of these receptors; the adjacent receptors noise levels; the number of units represented; the resulting potential absolute noise level of 73 dBA; and a 7 dBA projected noise level increase. A soundwall is not planned for the potentially significant impact at noise receptors R18.8, R18.9, and R18.27 due to the economic cost of building a soundwall that would cause a perceptible reduction. Receptors R18.8, and R18.9 are potentially significant under CEQA due to the combination of: the location of these receptors; the adjacent receptors noise levels; number of units represented; and a 7 dBA projected noise level increase.

Soundwalls (S821, S822, S826, and S827) are planned for the potentially significant impact for noise receptors R18.1A, R18.2, R18.2A, R18.3, R18.4, R18.5, R18.6, R18.7, R18.7A, R18.8, R18.9, R18.11, R18.17, R18.18, R18.19, R18.20, R18.22, R18.24, R18.25, and R18.27 due to

the combination of: the location of these receptors; the adjacent receptors noise levels; the number of units represented; the resulting potential absolute noise level between 65 and 82 dBA; and a 7 to 12 dBA projected noise level increase.

For this segment overall, under CEQA, a potentially significant noise impact may occur for these noise receptors as a result of the project. The build alternatives would not significantly contribute to the existing noise levels. Noise levels along Segment 18 are currently loud and would remain loud.

Segment 19 (Vista Way [SR-78] to Oceanside Boulevard) – The 178 units, represented by 54 noise receptors, are located within an existing urban, and primarily residential, environment along this segment of the I-5 corridor. Based on the build alternatives (without a soundwall), noise receptors at Segment 19 would experience a projected noise level increase between 0 dBA and 9 dBA. An existing soundwall at varying heights at three noise receptors (R19.6A, R19.7, and R19.8, representing 12 units) would be partially removed and replaced with a new soundwall as a project feature at these noise receptors.

One noise receptor (R19.44, representing 3 units) would experience a projected noise level increase of 9 dBA; 6 noise receptors would experience a projected noise level increase of 8 dBA (R19.7 with 5 units, R19.8 with 4 units, R19.15 with 5 units, R19.26 with 4 units, R19.27 with 8 units, and R19.43 with 2 units); and 10 noise receptors would experience a projected noise level increase of 7 dBA (R19.1 with 1 unit, R19.2 with 1 unit, R19.12 with 2 units, R19.13 with 1 unit, R19.14 with 3 units, R19.25 with 1 unit, R19.28 with 2 units, R19.35 with 4 units, R19.36 with 1 unit, and R19.45 with 6 units). A 9 dBA increase is considered to be almost two times as loud to the human ear; while 7 and 8 dBA increases are considered between readily perceptible and two times as loud to the human ear. These 17 receptors (representing 53 units) would perceive noise increases that are considered above readily perceptible to two times as loud.

The remaining 37 receptors (representing 125 units) would experience a noise change between less than 0 and 6 dBA. One noise receptor (R19.37, representing five units) would experience a noise reduction of 3 dBA. Two noise receptors (R19.49 and R19.50, representing one unit each) would experience a noise reduction of 2 dBA. Three noise receptors would experience a projected noise level increase of six dBA (R19.30, R19.39, and R19.40, representing three, three, and two units, respectively). A six dBA increase is considered a readily perceptible increase. Although these increases may be perceptible, this is a noisy corridor that would remain noisy. Thirty-four noise receptors along Segment 19 would experience a projected noise level increase between 1 dBA and 5 dBA, and this range of increase between existing noise levels and the build alternative would be between barely perceptible and readily perceptible to the human ear.

Soundwalls (S841, S835, S836, S845, and S846) are planned for the potentially significant impact to these noise receptors R19.1, R19.2, R19.12, R19.13, R19.14, R19.15, R19.25, R19.26, R19.27, R19.28, R19.35, R19.36, R19.43, R19.44, and R19.45; due to the combination of: the location of these receptors; the adjacent receptors noise levels; the number of units represented; the resulting potential absolute noise level between 75 and 82 dBA; and a 7 to 9 dBA projected noise level increase.

There are no soundwalls planned for R19.7 and R19.8 due to the economic cost of the soundwall when compared to the benefit received by the represented units. However the

existing soundwall would be replaced for these receptors. Receptors 19.7and 19.8 are potentially significant under CEQA due to the combination of: the location of these receptors; the adjacent receptors noise levels; the number of units represented; the resulting potential absolute noise level between 74 and 75 dBA; and an 8 dBA projected noise level increase.

The resulting absolute noise level would be consistent with the other noise receptors and the general noisy conditions along this segment of the I-5 North Coast Corridor. For this segment overall, under CEQA, no significant noise impact would occur for these noise receptors as a result of the project and no additional mitigation is required. The build alternatives would not significantly contribute to the existing noise levels. Noise levels along Segment 19 are currently loud and would remain loud.

Segment 20 (Oceanside Boulevard to Mission Avenue) – The 123 units, represented by 27 noise receptors, are located within an existing urban environment along this segment of the I-5 corridor. Based on the build alternatives (without a soundwall), noise receptors at Segment 20 would experience a projected noise level increase between 0 dBA and 8 dBA. An 8 dBA increase is considered to be between a readily perceptible increase and two times as loud to the human ear. However, only one noise receptor (R20.2, representing three units at Ron Ortega Recreation Park) would experience a potentially significant impact under CEQA. Because of the uniqueness of recreational use, a projected noise level increase of 8 dBA, and resulting potential absolute noise level of 77 dBA, a soundwall (S862) would be constructed at Ron Ortega Recreation Park. One noise receptor (R20.4, representing one unit) would experience a noise reduction of 3 dBA. Another noise receptor (R20.26, representing one unit) would experience a noise reduction of 6 dBA. The remaining 25 noise receptors, representing 119 units, would experience a projected noise level increase between 0 dBA and 4 dBA. This range of a decreasing noise level to a four dBA increase between existing noise levels and the build alternative would be barely perceptible to readily perceptible to the human ear.

The resulting absolute noise level would be consistent with the other noise receptors and the general noisy conditions along this segment of the I-5 North Coast Corridor. Therefore, under CEQA, no significant noise impact would occur as a result of the project and no additional mitigation is required for these 27 noise receptors. The build alternatives would not significantly contribute to the existing noise levels. Noise levels along Segment 20 are currently loud and would remain loud.

Segment 21 (Mission Avenue to SR-76) – The 60 units, represented by 21 noise receptors, are located within an existing developed and urban environment along this segment of the I-5 corridor. Based on the build alternatives (without a soundwall), noise receptors at Segment 21 would experience a projected noise level increase between 1 dBA and 6 dBA, and a noise reduction of 4 dBA at receptor R21.5, representing 2 units. Only 1 of the 21 noise receptors would experience a projected noise level increase of 6 dBA (R21.39, representing one unit). This 6 dBA increase between existing noise levels and the build alternative would be readily perceptible to the human ear. The remaining 19 noise receptors, representing 118 units, would experience a projected noise level increase between 1 dBA and 5 dBA, which is barely perceptible to readily perceptible to the human ear. Therefore, under CEQA, no significant noise impact would occur as a result of the project and no mitigation is required. The build alternatives would not significantly contribute to the existing noise levels. Noise levels along Segment 21 are currently loud and would remain loud.

Segment 22 (SR-76 to Wire Mountain Road) – The 54 units, represented by 15 noise receptors, are located within an existing noisy, urban and primarily residential environment along this segment of the I-5 corridor. Based on the build alternatives (without a soundwall), noise receptors at Segment 22 would experience a projected noise level increase between 0 dBA and 3 dBA. This range of a 0 dBA to 3 dBA increase between existing noise levels and the build alternative would barely be perceptible to the human ear. Therefore, under CEQA, no significant noise impact would occur as a result of the project and no mitigation is required. The build alternatives would not significantly contribute to the existing noise levels. Noise levels along Segment 22 are currently loud and would remain loud.

Corridor Noise Impacts CEQA Finding

At the 27-mile project level, the project includes soundwalls for a number of noise receptors (see *Section 3.15*) that are not required under a CEQA analysis. These soundwalls or other noise mitigation elements were incorporated into the project. The mitigation incorporated into the project for both CEQA and NEPA would effectively provide noise mitigation for a large number of locales and receptors along the *I-5 NCC Project*.

At the project segment level, for 20 of the 22 segments analyzed, soundwalls have been incorporated into the project and they would effectively provide noise mitigation. Two segments of the 27-mile project have been determined to be significant after mitigation. Segment 9 identifies receptors R9.2, R9.3, R9.4, R9.4A, R9.14, R9.15, and R9.15A that would be significantly impacted as a result of the project; there are no soundwalls planned for these receptors due to the economic cost of building a soundwall that would result in a perceptible noise reduction. Segment 18 identifies receptors R18.1, R18.8, R18.9, and R18.27 that would be significantly impacted as a result of the project. A soundwall is not planned for these receptors due to the economic cost of building a soundwall that would result in a perceptible reduction.

At the individual receptor level, soundwalls and/or other mitigation alternatives have been incorporated into the project and they would effectively provide noise mitigation. As to those individual receptors that would not receive noise mitigation (receptors R6.6, R6.7, R10.6, R13.8, and R14.6), there are specific economic, legal, social, technological, or other benefits of the project which outweigh the potentially significant effects on the environment.

The receptors identified in *Table 4.1, Receptors Identified as Potentially Significant,* are within the corridor and may be considered potentially significant impacts. Mitigation was considered for these receptors upon balancing, as applicable, the economic, legal, social, technological, or other benefits of the proposed project against its unavoidable environmental risks when determining whether to approve these soundwalls for mitigation. In addition, soundwalls proposed off Caltrans right-of-way are subject to the approval of the property owner. The following receptors were identified as potentially significant and many are eligible for a soundwall as identified in *Table 4.1*.

Table 4.1: Receptors Identified as Potentially Significant

Receptor #	Soundwall #	Location
R6.4	S603A	804 Ida Avenue
R6.5	S603A	828 Ida Avenue
R6.6	--	708 Castro Street
R6.7	--	709 Ida Avenue
R8.7	S635	2433 Caminito Ocean Cove
R9.2	--	1815 MacKinnon Avenue
R9.3	--	1725 MacKinnon Avenue
R9.4	--	1633 MacKinnon Avenue
R9.4A	--	1606 MacKinnon Avenue
R9.14	--	1551 Villa Cardiff Drive
R9.15	--	1511 Villa Cardiff Drive
R9.15A	--	1511 Villa Cardiff Drive
R10.6	--	611 Stratford Drive
R11.27	S686A	Saxony Condominiums - Park
R13.8	--	7452 Neptune Drive
R14.6	--	Poinsettia Station Apartment Homes - Embarcadero Lane
R17.11	S810	3300 Eureka Place
R17.12	S810	Holiday Park
R17.13	S810	1144 Pine Avenue
R18.1	--	1192 Laguna Drive
R18.1A	S822	1239 Knowles Avenue
R18.2	S822	1220 Knowles Avenue
R18.2A	S822	Park - Pio Pico Drive
R18.3*	S822	1255 Cynthia Lane
R18.4*[K]	S822	Buena Vista Elementary School
R18.5	S822	Buena Vista Elementary School - Baseball Field
R18.6*	S822	1291 Las Flores Drive
R18.7	S822	1277 Las Flores Drive
R18.7A	S826	1288 Las Flores Drive
R18.8*	--	2351 Pio Pico Drive
R18.9	--	2347 Pio Pico Drive
R18.11	S827	2380 Jefferson Street
R18.17	S821	2443 Tuttle Street
R18.18	S821	1111 Buena Vista Way
R18.19[,K]	S821	2501 Davis Avenue
R18.20	S821	2530 Davis Avenue
R18.22	S821	1148 Knowles Avenue
R18.24	S821	1088 Laguna Dr - Carlsbad Retirement Community
R18.25	S821	1088 Laguna Dr - Carlsbad Retirement Community
R18.27	--	1022 Grand Avenue
R19.1	S836	1504 Kelly Street
R19.2	S836	1501 Krim Place
R19.7	Existing Soundwall Replaced	1613 Lopez Street
R19.8	Existing Soundwall Replaced	1601 Lopez Street

Table 4.1 (cont): Receptors Identified as Potentially Significant

Receptor #	Soundwall #	Location
R19.12	S846	1504 California Street
R19.13	S846	1516 California Street
R19.14	S846	1463 Belleare Street
R19.15	S846	1431 Belleare Street
19.25	S845	1246 Laguna Street
19.26	S845	1426 Moreno Street
19.27	S845	1464 Moreno Street
19.28	S845	1474 Moreno Street
19.35	S841	1637 Griffin Street
19.36	S841	1256 Alderney Court
19.43	S835	1250 Kirmar Place
19.44	S835	1250 Kirmar Place
19.45	S835	1824 Moreno Street
R20.2	S863	Ron Ortega Recreation Park

Construction Impacts

Construction activities, including utility relocations, would likely generate a temporary, short term increase in noise. Because this increase would be temporary and limited to the immediate area surrounding construction and utility relocations activities, it would be a less than significant impact. A combination of attenuation techniques with equipment noise control and administrative measures would be selected to minimize noise disturbances during construction and utility relocation activities. See *Section 3.15* for additional details.

4.3.5 Biological Resources

Natural Communities

As described in *Section 3.17*, the proposed project would result in impacts to riparian, wetland, and eelgrass habitat for natural communities. Impacts to all upland communities would range from 1295.16 ac under the 10+4 Barrier alternative to 1244.92 ac under the refined 8+4 Buffer alternative (Preferred Alternative). The 10+4 Buffer alternative and 8+4 Barrier alternative would result in impacts to 1269.07 ac and 1281.79 ac, respectively.

Impacts to 18.43 ac to 25.55 ac of riparian and wetland habitat, depending on the selected alternative, would be considered significant. Impacts to sensitive upland habitats would total between 63.72 ac and 69.43 ac, depending on the selected alternative, and would also be considered significant.

In addition, permanent impacts to eelgrass for each of the alternatives range from 0.08 ac impacted by the refined 8+4 Buffer alternative to 0.24 ac impacted by the 10+4 Barrier alternative. Temporary impacts to eelgrass would range from 0.22 ac for the refined 8+4 Buffer alternative to 0.37 ac for the 10+4 Barrier alternative. Impacts to eelgrass would be considered significant.

Mitigation provided as part of the *I-5 NCC Project* REMP would reduce these significant impacts to less than significant levels. Additional details regarding mitigation are provided in *Section 3.17*.

Wetlands and Other Waters

As described in *Section 3.18* of this document, net impacts to wetlands and other waters of the U.S. would range from 11.61 ac under the refined 8+4 Buffer alternative (Preferred Alternative) to 17.17 ac of USACE resources under the 10+4 Barrier alternative. Net impacts to State jurisdictional wetlands would range from 15.92 ac under the refined 8+4 Buffer alternative to 23.03 ac under the 10+4 Barrier alternative. Impacts to jurisdictional waters would be considered significant under CEQA.

Mitigation provided as part of the *I-5 NCC Project* REMP would reduce these significant impacts to less than significant levels. Additional details regarding mitigation are provided in *Sections 3.17* and *3.18*. Information about the REMP's relationship to regional lagoon restoration also is addressed therein, and in *Section 3.25*.

Plant, Animal, and Threatened and Endangered Species

The North Coast Corridor contains a number of sensitive (including threatened and endangered) plant and animal species, whose ranges and numbers have been reduced due to past disturbance by urban development and related infrastructure, including I-5.

As discussed in detail in *Sections 3.19* and *3.20* of this Final EIR/EIS, the proposed project could generate impacts to certain sensitive plant and animal species. Because of the status of such sensitive species, the *I-5 NCC Project* would take precautions to avoid construction-period impacts. Avoidance, minimization, and mitigation measures for the proposed project specify that seed would be collected or plants would be salvaged to the extent practicable in the impact areas. Habitat removals would be minimized and mitigated, as discussed in *Sections 3.17* through *3.22* of this document. Implementation of these measures would reduce impacts to sensitive plant and animal species to less than significant levels.

As discussed in detail in *Section 3.21* of this Final EIR/EIS, the proposed project could generate impacts to certain species, including designated critical habitat for the least Bell's vireo, southwestern willow flycatcher, tidewater goby, and the California gnatcatcher. Sensitive bird species that forage and nest within the lagoons at certain times of the year could experience adverse effects on breeding behaviors. Potential temporary impacts could occur to steelhead trout habitat within the San Luis Rey River. Designated critical habitat for several threatened or endangered bird species (i.e., least Bell's vireo and coastal California gnatcatcher) would be removed. In all cases, the *I-5 NCC Project* would minimize and/or mitigate for impacts to sensitive wildlife, wildlife movement, and/or nursery sites. Avoidance, minimization, and mitigation measures identified in *Sections 3.17* through *3.22* would reduce impacts to these species to less than significant levels.

Conformance with Local Policies, Ordinances, and Conservation Plans

Conformance of the *I-5 NCC Project* with local policies and ordinances addressing biological resources is discussed in *Section 3.1* and detailed in *Table 3.1.1*. The analysis and mitigation relevant to the applicable protected resources are provided in *Sections 3.17* through *3.22* of this Final EIR/EIS. Although Caltrans and FHWA are not signatory agencies to the local HCP, MSCP, and/or MHCP efforts, Caltrans has coordinated with the cities and wildlife agencies to ensure that potential impacts to species or habitats protected under local conservation plans would be minimized and/or mitigated to less than significant levels (see discussion of the project REMP in *Section 3.17* of this Final EIR/EIS). Additionally, the project REMP, which addresses impacts and mitigation requirements for a number of transportation improvements

(highway, rail, local street, etc.) throughout the North Coast Corridor, provides a regional approach similar to the MSCP/MHCP plans.

Conclusion

As detailed above, measures to avoid or substantially lessen impacts have been incorporated into the project. These measures would reduce impacts to below a level of significance. The measures are incorporated into the ECR, which comprises a program for reporting on or monitoring implementation of the measures, pursuant to CEQA Guidelines Section 15091(d).

4.4 Unavoidable Significant Environmental Effects

Impacts to Visual/Aesthetics (for all four build alternatives) and Community Character and Cohesion (for the 10+4 barrier alternative) would remain significant after mitigation identified in *Chapter 3*.

4.4.1 Visual/Aesthetics

I-5 already constitutes a transportation feature within the viewscape for viewers who see it from community locations to the east or west. The portion of I-5 that is designated as scenic highway is not affected. I-5 does not extend over large blocks of land in an east-west direction (which would support increased visibility) but is a relatively narrow visual element in a much larger viewscape. A scenic vista is being enhanced by the project, just north of Manchester Avenue on the west side. Given the varying topography of the North Coast Corridor and the amount of other built elements, I-5 is not the predominant visual feature, which generally would be expected to be the Pacific Ocean, or nearby hillsides.

Visually, when considered in the context of (1) most community views being focused toward the ocean, as well as (2) existing North Coast Corridor development density, (3) existing topographic or manmade features that intervene between the viewer and I-5 throughout most of the North Coast Corridor communities, and (4) the presence of the existing eight-lane facility, I-5 improvements are not expected to substantially change the visual experience of the larger communities surrounding it.

Viewers along the corridor would continue to be exposed to a mix of open vistas, including views of the ocean and lagoons, and views that are blocked by development or changed due to implementation of project landscaping (similar to existing conditions). Specific to ocean views, view impacts from the project to the coastline, lagoons, and river valleys would be avoided or minimized as a matter of project design. These resources are typically most visible across or below the corridor's large lagoon and river bridges, and these views would be maintained.

As described in *Section 3.7*, however, all four build alternatives would result in highly adverse changes to the existing visual environment along the I-5 right-of-way, primarily related to construction of retaining walls and potential sound barriers. While impacts to visual resources would be similar for all four build alternatives, the 10+4 Barrier alternative would result in the greatest change to the existing visual environment because this alternative would require the greatest amount of additional pavement. Conversely, the refined 8+4 Buffer alternative (Preferred Alternative) would result in the least amount of change to the existing visual

environment, because it would require the least amount of additional pavement. The increase in build elements could be considered to substantially degrade the existing visual character of the I-5 right-of-way. Potentially significant CEQA impacts to I-5 views range from moderate visual impact to high visual impact.

No new source of substantial light or glare would be generated, since the project addresses the widening of an existing facility; impacts would be less than significant.

Conclusion

As detailed in *Section 3.7*, measures to avoid or substantially lessen impacts have been incorporated into the project. These measures are incorporated into the ECR, which comprises a program for reporting on or monitoring implementation of the measures, pursuant to CEQA Guidelines Section 15091(d). Nonetheless, impacts would remain significant. Additional measures or alternatives that would reduce impacts to below a level of significance would be infeasible due to the nature of widening an existing interstate in a scenic area.

4.4.2 Community Character and Cohesion

The 10+4 Barrier alternative would displace a 47-unit apartment complex in northern Carlsbad within an area identified as exhibiting traits of elevated community cohesion: namely, a relatively high concentration of linguistically isolated Spanish-speaking households, as well as a high proportion of minority populations. As discussed in *Section 3.4*, displaced residents living in these 47 units may be difficult to relocate within a similar community as the availability of apartments within Carlsbad with similar rental rates is not adequate. If relocation is not feasible in Carlsbad and up to 47 families are relocated outside of the community, this may adversely impact community cohesion in the area, which would be considered a significant impact. The refined 8+4 Buffer alternative, which has been identified as the Preferred Alternative, would avoid impacts to this apartment complex. If the 10+4 Barrier alternative is ultimately selected for implementation, findings regarding the infeasibility of the 8+4 Buffer alternative would be required.

4.5 Significant Irreversible Environmental Changes

Implementation of the project would involve a commitment of natural, physical, human, and fiscal resources. Land used in the construction of the proposed facilities is considered an irreversible commitment during the time period that the land would be used for the highway facility. Although the land can be converted to another use if a greater need arises for use of the land or if the facilities are no longer needed, at present, there is no reason to believe such a conversion would ever be necessary or desirable. The following land uses and environmental resources would be committed: wetlands, sensitive species, natural communities, farmlands, residences, business locations, floodplains, cultural resources, and visual resources. Please refer to relevant sections of *Chapter 3* of this Final EIR/EIS, as well as *Section 3.24*, for additional discussion.

Although such resources are generally not retrievable, their commitment is based on the concept that individuals in the immediate area, region, and State would benefit from the improved quality of the transportation system. These benefits would consist of improved accessibility and safety, savings in time and fuel, and the provision of a dependable

transportation system; these benefits are expected to outweigh the commitment of these resources.

4.6 Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gas (GHG) emissions, particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization in 1988, has led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs generated by human activity including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF_6), HFC-23 (fluoroform), HFC-134a (s, s, s, 2-tetrafluoroethane), and HFC-152a (difluoroethane).

In the U.S., the main source of GHG emissions is electricity generation, followed by transportation. In California, however, transportation sources (including passenger cars, light duty trucks, other trucks, buses, and motorcycles make up the largest source (second to electricity generation) of GHG emitting sources. The dominant GHG emitted is CO_2, mostly from fossil fuel combustion.

There are typically two terms used when discussing the impacts of climate change. "Greenhouse Gas Mitigation" is a term for reducing GHG emissions in order to reduce or "mitigate" the impacts of climate change. "Adaptation," refers to the effort of planning for and adapting to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels).[2]

There are four primary strategies for reducing GHG emissions from transportation sources: (1) improving the transportation system and operational efficiencies, (2) reducing the growth of vehicle miles traveled (VMT), (3) transitioning to lower GHG emitting fuels, and (4) improving vehicle technologies. To be most effective all four strategies should be pursued cooperatively. The following *Section 4.6.1, Regulatory Setting,* outlines State and federal efforts to comprehensively reduce GHG emissions from transportation sources.

4.6.1 Regulatory Setting

State

With the passage of several pieces of legislation including State Senate and Assembly Bills (SBs, ABs) and Executive Orders (EOs), California launched an innovative and pro-active approach to dealing with GHG emissions and climate.

AB 1493, Pavley, Vehicular Emissions: Greenhouse Gases, 2002: requires the California Air Resources Board (CARB) to develop and implement regulations to reduce automobile and

[2] http://climatechange.transportation.org/ghg_mitigation/

light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year. In June 2009, the United States Environmental Protection Agency (USEPA) Administrator granted a Clean Air Act waiver of preemption to California. This waiver allowed California to implement its own GHG emission standards for motor vehicles beginning with model year 2009. California agencies will be working with federal agencies to conduct joint rulemaking to reduce GHG emissions for passenger cars model years 2017-2025.

EO S-3-05 (signed on June 1, 2005, by former Governor Arnold Schwarzenegger): the goal of this EO is to reduce California's GHG emissions to: (1) year 2000 levels by 2010, (2) year 1990 levels by 2020, and (3) 80 percent below the year 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of AB 32.

AB 32, the Global Warming Solutions Act of 2006, Núñez and Pavley: sets the same overall GHG emissions reduction goals as outlined in EO S-3-05, while further mandating that CARB create a scoping plan (which includes market mechanisms) and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases."

Senate Bill 375 (SB 375), Chapter 728, 2008 Sustainable Communities and Climate Protection: requires CARB to set regional emissions reduction targets from passenger vehicles. The Metropolitan Planning Organization for each region must then develop a "Sustainable Communities Strategy" (SCS) that integrates transportation, land use, and housing policies to plan for achievement of the emissions target for their region.

Senate Bill 391 (SB 391), Chapter 913, 2009: requires the State's long-range transportation plan to meet California's climate change goals under AB 32.

EO S-20-06 (signed on October 18, 2006 by former Governor Arnold Schwarzenegger): further directs State agencies to begin implementing AB 32, including the recommendations made by California's Climate Action Team.

EO S-01-07 (signed on January 18, 2007 by former Governor Arnold Schwarzenegger): set forth the low carbon fuel standard for California. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by the year 2020.

SB 97, Chapter 185, 2007: required the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the CEQA Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.

Caltrans Director's Policy 30 (DP-30) Climate Change (approved June 22, 2012): is intended to establish a Caltrans policy that will ensure coordinated efforts to incorporate climate change into Caltrans decisions and activities. This policy contributes to Caltrans' stewardship goal to preserve and enhance California's resources and assets.

Federal

Although climate change and GHG reduction is a concern at the federal level; currently there are no regulations or legislation that have been enacted specifically addressing GHG emissions reductions and climate change at the project level. Neither the USEPA nor the FHWA has promulgated explicit guidance or methodology to conduct project-level GHG analysis. As stated on FHWA's climate change website (http://www.fhwa.dot.gov/hep/climate/index.htm), climate

change considerations should be integrated throughout the transportation decision-making process–from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will facilitate decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of project level decision-making. Climate change considerations can easily be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

The four strategies outlined by FHWA to lessen climate change impacts correlate with efforts that the State is undertaking to deal with transportation and climate change; these strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and a reduction in travel activity.

Climate change and its associated effects are being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the "National Clean Car Program" and EO 13514 - *Federal Leadership in Environmental, Energy and Economic Performance*.

EO 13514 is focused on reducing GHGs internally in federal agency missions, programs and operations, but also direct federal agencies to participate in the Interagency Climate Change Adaptation Task Force, which is engaged in developing a national strategy for adaptation to climate change.

On April 2, 2007, in *Massachusetts v. EPA*, 549 U.S. 497 (2007), the Supreme Court found that GHGs are air pollutants covered by the Clean Air Act and that the USEPA has the authority to regulate GHG. The Court held that the USEPA Administrator must determine whether or not emissions of GHGs from new motor vehicles cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision.

On December 7, 2009, the USEPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the Clean Air Act:

- **Endangerment Finding:** The Administrator found that the current and projected concentrations of the six key well-mixed GHGs—carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6)—in the atmosphere threaten the public health and welfare of current and future generations.

- **Cause or Contribute Finding:** The Administrator found that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare.

Although these findings did not themselves impose any requirements on industry or other entities, this action was a prerequisite to finalizing the USEPA's Proposed Greenhouse Gas Emission Standards for Light-Duty Vehicles, which was published on September 15, 2009.[3] On May 7, 2010 the final Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards was published in the Federal Register.

[3] http://www.epa.gov/oms/climate/regulations.htm#1-1

USEPA and the National Highway Traffic Safety Administration (NHTSA) are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced GHG emissions and improved fuel efficiency from on-road vehicles and engines. These next steps include developing the first-ever GHG regulations for heavy-duty engines and vehicles, as well as additional light-duty vehicle GHG regulations. These steps were outlined by President Obama in a Presidential Memorandum on May 21, 2010.[4]

The final combined USEPA and NHTSA standards that make up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards require these vehicles to meet an estimated combined average emissions level of 250 grams of carbon dioxide (CO_2) per mile, (the equivalent to 35.5 miles per gallon [MPG] if the automobile industry were to meet this CO_2 level solely through fuel economy improvements). Together, these standards will cut GHG emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016).

On November 16, 2011, USEPA and NHTSA issued their joint proposal to extend this national program of coordinated GHG and fuel economy standards to model years 2017 through 2025 passenger vehicles.

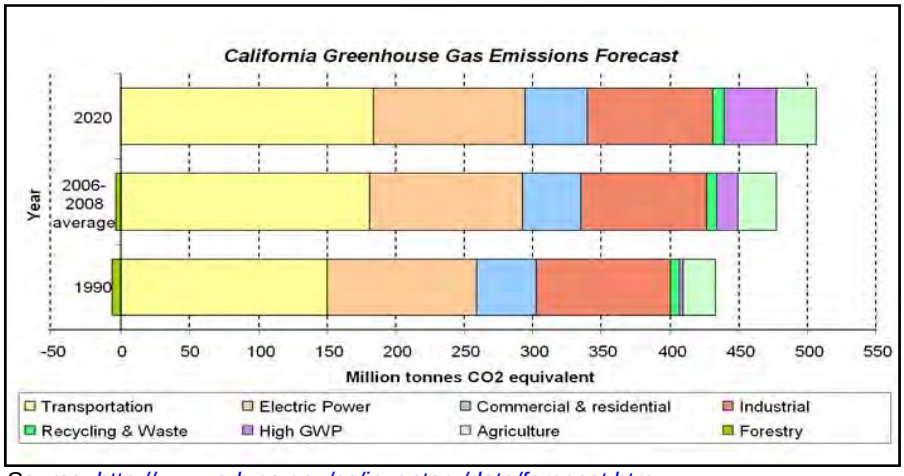
4.6.2 Project Analysis

Transportation, particularly motor vehicles, is a large source of GHG emissions. Transportation (including cars, trucks, trains, planes, and ships) is estimated to be responsible for 38 percent of California GHG emissions in 2009.[5]

An individual transportation project does not generate enough GHG emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may contribute to a potential impact through its *incremental* change in emissions when combined with the contributions of all other sources of GHG.[6] In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (CEQA Guidelines sections 15064(h)(1) and 15130). To make this determination the incremental impacts of the project must be compared with the effects of past, current, and probable future projects.

The AB 32 Scoping Plan mandated by AB 32 contains the main strategies California will use to reduce GHG emissions. As part of its supporting documentation for the Draft Scoping Plan, CARB released the GHG inventory for California (forecast last updated: October 28, 2010). The forecast is an estimate of the emissions expected to occur in the year 2020 if none of the foreseeable measures included in the Scoping Plan were implemented. The base year used for forecasting emissions is the average of statewide emissions in the GHG inventory for 2006, 2007, and 2008.

[4] http://epa.gov/otaq/climate/regulations.htm
[5] http://www.arb.ca.gov/cc/inventory/pubs/reports/ghg_inventory_00-09_report.pdf
[6] This approach is supported by the AEP: *Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents* (March 5, 2007), as well as the South Coast Air Quality Management District (Chapter 6: The CEQA Guide, April 2011) and the US Forest Service (Climate Change Considerations in Project Level NEPA Analysis, July 13, 2009).



Source: http://www.arb.ca.gov/cc/inventory/data/forecast.htm

Figure 4-1: California Greenhouse Gas Inventory

Caltrans has created and is implementing the "Climate Action Program" that was published in December 2006[7] and has taken an active role in directly addressing GHG emission reductions, mainly through two of the primary GHG reducing strategies mentioned at the beginning of this section: (1) improving the transportation system and operational efficiencies and (2) reducing the growth of VMT.

One of the main strategies in the Caltrans' Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of carbon dioxide from mobile sources, such as automobiles, occur at stop-and-go speeds (0-25 mph) and speeds over 55 mph; the most severe emissions occur from 0-25 mph (see *Figure 4-2*). To the extent that a project relieves congestion by enhancing operations and improving travel times in high congestion travel corridors GHG emissions, particularly CO_2, may be reduced.

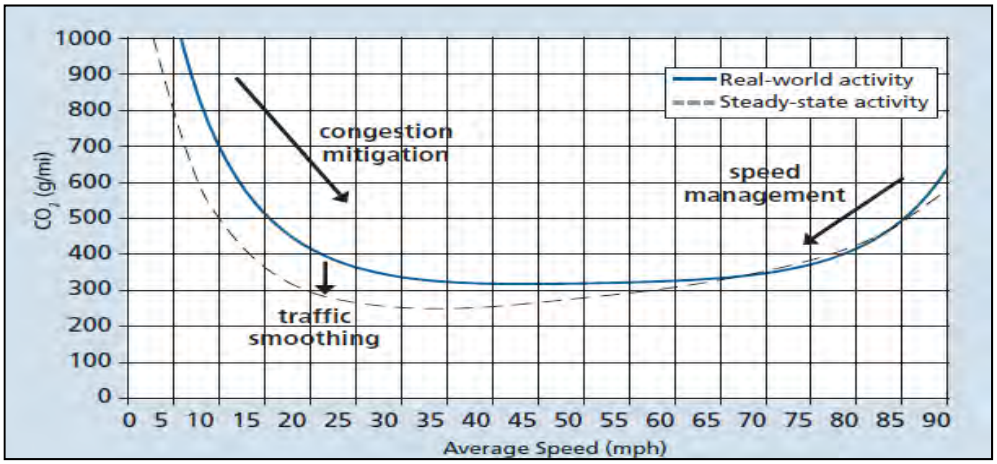


Figure 4-2: Possible Effect of Traffic Operation Strategies in Reducing On-Road CO_2 Emission[8]

[7] Caltrans Climate Action Program is located at the following web address: http://www.dot.ca.gov/hq/tpp/offices/ogm/key_reports_files/State_Wide_Strategy/Caltrans_Climate_Action_Program.pdf

[8] Traffic Congestion and Greenhouse Gases**:** Matthew Barth and Kanok Boriboonsomsin (TR News 268 May-June 2010) <http://onlinepubs.trb.org/onlinepubs/trnews/trnews268.pdf>

In *Chapter 1* of this document, it is written that the purpose of the proposed project is to maintain or improve the existing and future traffic operations in the I-5 North Coast Corridor in order to improve the safe and efficient regional movement of people and goods for the planning design year of 2030.[9] The proposed HOV/Managed Lanes project is designed to reduce congestion and/or vehicle time delays, as evidenced in *Section 1.3.2* of this document, by better matching traffic demand with a transportation system that can efficiently handle traffic volumes. This project includes two DARs that provide access for HOV/Managed Lanes users directly on to the HOV/Managed Lanes. Multimodal and TDM elements have been incorporated into each build alternative (*Section 2.2.3*).

Travel time and congestion are indicators of the efficiency of the system. In 2006, it took an average of 23–25 minutes to drive the 27 miles in either direction on I-5 between Harbor Drive at the north end of the corridor and La Jolla Village Drive at the south end. During the peak periods in 2006, average southbound travel time increased to 32 minutes in the afternoon (PM peak hour) and 35 minutes in the morning (AM peak hour). Northbound average travel time increased to 30 minutes during the afternoon peak period (PM peak hour). The corridor also experiences consistent southbound weekend congestion, resulting in a corridor travel time of up to 30 minutes, approximately 6 minutes longer than free-flow travel times, which is approximately 24 minutes. The peak-period congestion and travel-time degradation are compounded by the multi-purpose trip nature of this highway that serves not only high volumes of commute trips, but also recreational, regional, interregional, and short-distance local trips.

By 2030, traffic studies show that with no improvements to I-5, congestion is predicted to expand significantly as compared to 2006 conditions, to the extent that the entire length of the corridor in both directions is projected to experience severe congestion and traffic delay during the peak periods (Series 10 traffic model, 2030). In addition, if no improvements are made to I-5, forecasts indicate that the projected increases in average daily traffic will extend the time duration of congestion in both the northbound and southbound directions. In 2006, congestion lasted on average five hours in both the northbound and southbound directions. Without project improvements, as early as 2030, travel time is projected to increase to 53 to 54 minutes in the AM peak period and 40 to 48 minutes in the PM peak period. The period of time for which drivers would experience this congestion also would increase for both AM and PM peak travel periods, from five hours in 2006 to six hours in the future. By 2030, if no improvements are made to I-5, congested travel hours would more than double, with northbound congestion forecast to extend to 9-10 hours and southbound congestion to extend to 13 hours.

Caltrans uses VMT data to analyze the existing and future predicted demand on a particular transportation facility, corridor, or system, to assess the present use of and the predicted future needs for the facility, corridor, or system. This same factor (VMT) is also used to assess the current and future emissions generated from motor vehicles burning fossil fuels, and is generally viewed as a direct relationship: an increase in VMT equals increased air emissions. It should be noted, however, that freeway VMT is only one component of the air quality analysis; vehicle speeds and associated changes in VMT on local roadways are also important factors.

[9] The GHG analysis uses year 2030, but the traffic discussion in *Section 3.6* clarified that the use of 2030 traffic analysis is equally relevant through 2042 based on the Series 10, 11 and12 analysis.

Studies conducted for the *I-5 NCC Project* show the corridor would experience significant growth in travel demand, with the growth of VMT occurring regardless of whether highway capacity improvements are made. In other words, the planned improvements to I-5 would not significantly induce travel on the highway; rather, they would make already occurring travel more efficient and reliable. Forecasts show, that with no improvements, VMT would increase by between 20.1 percent (Series 11 traffic model, 2030) and 29.6 percent (Series 12 traffic model, 2040). These percentages indicate that without any improvements, the highway would be unprepared to meet future traffic demand.

However, the results are different with the addition of the proposed four HOV/Managed Lanes (managed for carpools, vanpools, transit, and paying single-occupancy vehicles [SOVs]). With these lanes, the travel forecasts project only an additional 4.0 percent (Series 10 and Series 11 traffic models, 2030) to 5.9 percent (Series 12 traffic model, 2040).

Policies, plans, and programs to reduce transportation emissions are evaluated on a regional and State level, with San Diego County regional policies being implemented through the regional transportation planning and the Regional Transportation Program (RTP) made up of proposed improvement projects, such as the *I-5 NCC Project*. The improvements proposed in the *I-5 NCC Project* are intended to not only implement the regional transportation planning, but also to implement key strategies for reducing GHG emissions by improving the transportation system and operational efficiencies, and reducing the growth of VMT. The purpose of the transportation improvements proposed in the *I-5 NCC Project* are to efficiently move more people, and not necessarily more vehicles, to maintain or improve the existing and future traffic operations in the I-5 North Coast Corridor in order to improve the safe and efficient regional movement of people and goods for the planning design year of 2050, which would therefore reduce regional VMT growth. Specifically, the 8+4 Barrier/Buffer alternatives include only new HOV lanes, with no new general purpose lanes. If determined to be a regional goal in the future, these lanes could be converted to be used only by transit operators.

The composition of transportation projects in San Diego County and the design of the transportation network in the 2050 RTP are heavily influenced by the GHG goals set in SB 375 and targets set in CARB for cars and light trucks. SANDAG has determined that the best way to meet the GHG reductions is to provide the general public and those who move goods with convenient multimodal travel options that maximize productivity and reduce the costs and time associated with travel. The *I-5 NCC Project* would assist in the achievement of this goal by providing incentives for people to carpool and use the HOV/Managed Lanes to help reduce overall growth in VMT. There would be community and regional enhancements that encourage bicycle and pedestrian travel and the project design would accommodate a future BRT. In accordance with SB 375, the building blocks of the SCS include the following:

- A land use pattern that accommodates the region's future employment and housing needs, and that protects sensitive habitats and resource areas.

- A transportation network of public transit and Express Lanes, and highways, local streets, bikeways, and walkways built and maintained with available funds.

- Managing demands on the transportation system (also known as transportation demand management [TDM]) in a way that reduces or eliminates traffic congestion during peak periods of demand.

- Managing the transportation system (also known as transportation system management [TSM]) through measures that maximize the efficiency of the transportation network.

- Innovative pricing policies and other measures designed to reduce VMT and traffic congestion during peak periods of demand.

The 2050 RTP and SCS guide the San Diego region toward a more sustainable future by focusing housing and job growth in urbanized areas, protecting sensitive habitat and open space, and investing in a transportation network that provides residents and workers with transportation options that will help reduce GHG emissions. It is anticipated that with each RTP (every four years) there will be new opportunities to help reduce GHG emissions. The region-wide 2050 RTP/SCS reduces energy consumption and GHG emissions with the following key achievements:

- Meets state GHG reduction mandates.
- Funds $2.7 billion for regional and local bicycle and pedestrian projects and programs.
- Provides 156 new miles of trolley service and a new trolley tunnel in downtown San Diego.
- Expands and speeds up COASTER service in the North Coast Corridor.
- More than doubles the transit service miles and increases transit frequency in key corridors.
- Creates 130 miles of Express Lanes to facilitate carpools, vanpools, and premium bus service and creates new carpool and telework incentive programs to reduce solo driving.
- Doubles the number of homes and jobs within one-half mile of transit.

The 2050 RTP includes a network that integrates many modes of transportation, with a mix of projects and a wide variety of transportation choices distributed across the region. This multimodal network is expected to promote a substantial increase in carpooling, demands for public transit, and bicycling and walking for work trips both during peak hours and at other times. The 2050 RTP contains the largest investment in bicycle and pedestrian infrastructure of any San Diego RTP to date. These investments are expected to dramatically increase bicycle and walking trips (a 120 percent increase, compared with the No Build Alternative). Carpooling—expressed as a percentage of all modes of transportation used to get to work—is expected to increase by 48 percent. The implementation of the *I-5 NCC Project* is a highway component of this plan and supports the bicycle and pedestrian infrastructure.

The 2050 RTP's transportation infrastructure, including the *I-5 NCC Project* improvements, will also help reduce congestion for autos, trucks, and public transit. The percentage of peak-period auto travel occurring during congested periods is projected to drop from 27.7 percent with no improvements to 17.2 percent under the 2050 RTP. Similarly, congested conditions for peak-period transit travel are projected to drop by nearly half (from 9.1 percent to 5.1 percent) under the 2050 RTP. The number of hours of delay per day for trucks will also be cut in half (from 32,300 hours to 16,000 hours) with the implementation of the 2050 RTP.

This project is included in the 2007 FSTIP as amended in 2009 and 2011, and included in SANDAG's 2050 Regional RTP/SCS and the 2012 RTIP. Traffic conditions projected for 2030 in the 2010 Draft EIR/EIS are consistent with current projections (see discussion of this topic in *Sections 1.3.2* and *3.6* of this Final EIR/EIS).

4.6.3 Quantitative Analysis

To estimate the potential beneficial or negative effect of the proposed project on San Diego regional GHG levels, the CARB EMFAC 2007 vehicle emissions model for the SDAB was used to calculate CO_2 emissions for the San Diego metropolitan area with and without the proposed project.

In order to determine regional GHG emissions, the I-5 Northcoast Series 11 GHG Regional Effects travel demand models were utilized for the build and no build scenarios. Regional fuel consumption and CO_2 emissions were modeled with and without the build scenario for each respective time horizon.

The results of the regional fuel consumption and CO_2 emissions models are shown in *Table 4.2*.

Table 4.2: Average Difference in Regional CO_2 Emissions

Alternative	2006 Existing	2030 No Build	2030 10+4 w/DARs	2030 8+4 w/DARs
Model Year	**2006**	**2030**	**2030**	**2030**
Fuel Consumption (gallons/day)	4,139,840	5,866,570	5,829,250	5,830,190
Efficiency Fuel Savings (gallons/day)	N/A	N/A	37,320	36,380
Diesel Fuel Consumption (gallons/day)	497,950	655,770	657,040	657,150
Efficiency Fuel Savings (gallons/day)	N/A	N/A	-1,270	-1,380
Regional CO_2 Annual Average Emissions (tons/day)	44,940	64,260	63,910	63,920
Efficiency CO_2 Savings (tons/day)	N/A	N/A	350	340

Compared to the No Build alternative, implementation of the 10+4 Barrier/Buffer alternatives is estimated to reduce 2030 CO_2 emissions in the San Diego Region by up to 350 tons per day. Compared to the No Build alternative, implementation of the 8+4 Barrier/Buffer alternatives is estimated to reduce 2030 CO_2 emissions in the San Diego Region by up to 340 tons per day. These decreases would be due to the decreased congestion along the corridor and improved travel times along the corridor. Therefore, it is concluded that regional transportation efficiency would be increased and overall CO_2 emission would be reduced.

Currently, the emissions modeling software is limited to generating output only for freeway mainlines, and not local streets. Therefore, the above analysis does not reflect any reduction in GHG emissions that could result from reduced queue lengths at ramp meters and intersections. Because the proposed project would reduce delay at these locations, there is the potential for further reduction in GHG emissions from vehicles spending less time idling.

4.6.4 Construction Emissions

GHG emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction GHG emissions include emissions produced as a result of material processing, emissions produced by on-site construction equipment, and emissions arising from traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events.

Air Quality measures to minimize emissions for construction equipment include:

- Use low-emission on-site mobile construction equipment where feasible.
- Maintain equipment in tune per manufacturer's specifications.
- Retard diesel engine injection timing by two to four degrees unless not recommended by manufacturer (due to lower emission output in-place).
- Use reformulated, low-emission diesel fuel.
- Substitute electric and gasoline-powered equipment for diesel-powered equipment where feasible.
- Use catalytic converters on gasoline-powered equipment.
- Do not leave inactive construction equipment idling for prolonged periods.

Traffic and Transportation measures to minimize energy consumption and GHG emissions include the following:

- Construction phasing plan to identify sequence of construction and to help minimize traffic delays.

- Traffic delays controlled to the extent feasible during periods of many simultaneous construction operations.

- Comprehensive TMP to further minimize delays during construction. TMP is designed to increase driver awareness, ease congestion, and minimize delay during construction. Components include:
  - Public Awareness Program including changeable message signs, public service announcements via media, and 800 number.
  - Traffic Operations Strategies Program, which includes ongoing evaluation of traffic operations and provides incident response during construction, CHP construction zone speed reduction enforcement, and alternate route strategies.

Construction of the proposed project would result in GHG emissions, which are primarily associated with use of off-road construction equipment and vehicles, with a smaller contribution from on-road construction and worker vehicles. The numbers reported in *Table 4.3* below are estimated annual GHG construction emissions using Sacramento Metropolitan Air Quality District (SMAQMD) Road Construction Model - Version 6.3.2 to calculate emissions for the proposed bridge construction and roadway widening. Assumptions are made by the model for the relative mix of CO_2, CH_4, and N_2O emissions from diesel fuel used in off-road and on-road vehicles as reported in the California Climate Action registry's (CCAR) General Reporting Protocol.

Table 4.3: Estimated Annual Construction GHG Emissions

Improvement	Tons CO_2	MT CO_2E
Bridge Construction	399	365
Roadway Widening	1,938	1,764
TOTAL	**2,337**	**2,129**

Source: Dudek Draft Greenhouse Gas Assessment, October 2011
CO_2E = Carbon Dioxide Equivalent; MT = metric tons.

When considered on a global scale and amortized over the life of the proposed improvements, the projected construction emissions are relatively minor. In addition, as previously stated, the *I-5 NCC Project* improvements are included in the 2050 RTP/SCS transportation network improvements phased project list; therefore, the *I-5 NCC Project* improvements and associated emissions were analyzed in the 2050 RTP/SCS EIR. The 2050 RTP/SCS EIR estimated annual construction emissions from construction activities, including worker vehicle trips, transport of materials to and from the construction site, and operation of construction equipment.

Conclusion

While construction would result in a slight increase in GHG emissions during construction, the project would result in a decrease in operational GHG emissions when comparing the future build to the future no-build conditions. Operational improvements are projected to result in a decrease of approximately 124,000 tons per year of CO_2, relative to construction emissions of less than 3,000 tons per year. As a result, the net impact would be beneficial and, therefore, less than significant. Caltrans is firmly committed to implementing measures to help reduce GHG emissions. These measures are outlined in the following section.

4.6.5 AB 32 Compliance

Caltrans continues to be actively involved on the Governor's Climate Action Team as CARB works to implement the Governor's EOs S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. Many of the strategies Caltrans is using to help meet the targets in AB 32 come from the California Strategic Growth Plan, which is updated each year. Former Governor Arnold Schwarzenegger's Strategic Growth Plan calls for a $222 billion infrastructure improvement program to fortify the State's transportation system, education, housing, and waterways, including $100.7 billion in transportation funding during the next decade The Strategic Growth Plan targets a significant decrease in traffic congestion below today's level and a corresponding reduction in GHG emissions. The Strategic Growth Plan proposes to do this while accommodating growth in population and the economy. A suite of investment options has been created that combined together yield the promised reduction in congestion. The Strategic Growth Plan relies on a complete systems approach to attain CO_2 reduction goals: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements as depicted in *Figure 4-3*.