5.10 NOISE

The purpose of this section of the Draft Environmental Impact Report (EIR) is to evaluate noise source impacts to onsite and surrounding land uses as a result of project implementation. This section evaluates short-term construction-related impacts, as well as future buildout conditions. Information in this section was obtained from the *Dignity Health Mercy Medical Center North State Pavilion Noise Study*, prepared by j.c. brennan & associates, Inc., (March 2019) and included in Appendix 15.10, NOISE ANALYSIS. The analysis of the potential environmental impacts related to noise is derived from the following sources available for review at the City of Redding Development Services Department, Planning Division:

- City of Redding. *2000 - 2020 General Plan.* October 2000.
- City of Redding. *Redding Municipal Code Title 18, Noise Standards.* March 2018.

This section describes the affected environment and regulatory setting for noise. It also describes the noise impacts that would result from implementation of the proposed project and mitigation measures that would reduce these impacts.

5.10.1 ENVIRONMENTAL SETTING

NOISE SCALES AND DEFINITIONS

Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second or Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 decibels (dB). Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels, but are expressed as dB, unless otherwise noted.

The decibel scale is logarithmic, not linear. In other words, two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70 dBA sound is half as loud as an 80 dBA sound, and twice as loud as a 60 dBA sound.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool is the average, or equivalent, sound level (Leq), which corresponds to a steady-state A weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The Leq is the foundation of the composite noise descriptor, L_{dn}, and shows very good correlation with community response to noise.

The day/night average level (L_{dn}) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 PM to 7:00 AM) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment. Table 5.10-1, TYPICAL NOISE LEVELS, lists several examples of the noise levels associated with common situations.

Table 5.10-1
TYPICAL NOISE LEVELS

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	– 110 –	Rock Band
Jet fly-over at 1,000 feet		
	– 100 –	
Gas lawnmower at 3 feet		
	– 90 –	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	– 80 –	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower, 100 feet	**– 70 –**	Vacuum cleaner at 10 feet
Commercial area		Normal Speech at 3 feet
Heavy traffic at 300 feet	**– 60 –**	
		Large business office
Quiet urban daytime	**– 50 –**	Dishwasher in next room
Quiet urban nighttime	**– 40 –**	Theater, large conference room (background)
Quiet suburban nighttime		
	– 30 –	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	– 20 –	
		Broadcast/recording studio
	– 10 –	
Lowest threshold of human hearing	**– 0 –**	Lowest threshold of human hearing

Note:
dBA = A-weighted decibels; mph = miles per hour.

Source: California Department of Transportation. *Technical Noise Supplement to the Traffic Noise Analysis Protocol*. September 2013.

Numerous methods have been developed to measure sound over a period of time. Refer to Table 5.10-2, NOISE DESCRIPTORS, below.

Table 5.10-2
NOISE DESCRIPTORS

Term	Definition
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micropascals (or 20 micronewtons per square meter), where 1 pascal is the pressure resulting from a force of 1 newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micropascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and ultrasonic sounds are above 20,000 Hz.
A-Weighted Decibel (dBA)	The sound pressure level in decibels as measured on a sound level meter using the A weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Sound Level (L_{eq})	The average acoustic energy content of noise for a stated period of time. Thus, the Leq of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Community Noise Equivalent Level (CNEL)	A 24-hour average Leq with a 5 dBA "weighting" during the hours of 7:00 PM to 10:00 PM and a 10 dBA "weighting" added to noise during the hours of 10:00 PM to 7:00 AM to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA 24-hour Leq would result in a measurement of 66.7 dBA CNEL.
Day/Night Average (L_{dn})	A 24-hour average Leq with a 10 dBA "weighting" added to noise during the hours of 10:00 PM to 7:00 AM to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour Leq would result in a measurement of 66.4 dBA L_{dn}.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends on its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Cyril M. Harris. *Handbook of Noise Control*. 1979.

Addition of Decibels

The decibel scale is logarithmic, not linear, and therefore sound levels cannot be added or subtracted through ordinary arithmetic. Two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70 dBA sound is half as loud as an 80 dBA sound and twice as loud as a 60 dBA sound. When two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. Under the decibel scale, three sources of equal loudness together would produce an increase of 5 dB.

Sound Propagation and Attenuation

Sound spreads (propagates) uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dB for each doubling of distance from a stationary or point source. Sound from a line source, such as a highway, propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately 3 dB for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics.

No excess attenuation is assumed for hard surfaces like a parking lot or a body of water. Soft surfaces, such as soft dirt or grass, can absorb sound, so an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. For line sources, an overall attenuation rate of 3 dB per doubling of distance is assumed.

Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The manner in which older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units is generally 30 dBA or more.

HEALTH EFFECTS OF NOISE

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction.
- Interference with activities such as speech, sleep, and learning.
- Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10 dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate of approximately 6 dB per doubling of distance from the source, depending on environmental conditions (i.e., atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

GROUND-BORNE VIBRATION

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. The peak particle velocity (PPV) or the

root mean square (RMS) velocity is usually used to describe vibration amplitudes. PPV is defined as the maximum instantaneous peak or vibration signal, while RMS is defined as the square root of the average of the squared amplitude of the signal. PPV is typically used for evaluating potential building damage, whereas RMS is typically more suitable for evaluating human response. Typically, ground-borne vibration, generated by man-made activities, attenuates rapidly with distance from the source of vibration. Man-made vibration issues are therefore usually confined to short distances (i.e., 500 feet or less) from the source.

Both construction and operation of development projects can generate ground-borne vibration. However, vibrations associated with construction are the most likely to result in perceptible vibrations to surrounding use. Most development projects do not include sources of vibration which are likely to be perceptibly at offsite uses. Construction equipment such as vibratory compactors or rollers, pile drivers, and pavement breakers can generate perceptible vibration during construction activities. Heavy trucks can also generate ground-borne vibrations that vary depending on vehicle type, weight, and pavement conditions.

SENSITIVE RECEPTORS

Human response to noise varies widely depending on the type of noise, time of day, and sensitivity of the receptor. The effects of noise on humans is discussed above. Noise, or the lack thereof, is a factor in the aesthetic perception of some settings, particularly those with religious or cultural significance. Residences, hospitals, schools, guest lodging, libraries, and churches are treated as the most sensitive to noise intrusion and therefore have more stringent noise exposure targets than do other uses, such as manufacturing or agricultural uses that are not subject to impacts such as sleep disturbance. Residential areas are also considered noise sensitive, especially during the nighttime hours. Existing sensitive receptors within the project vicinity include existing single-family residential uses to the south and west across the Sacramento River; refer to Table 5.10-3, DISTANCE TO SENSITIVE RECEPTORS. North and east of the site are existing office and commercial uses.

Table 5.10-3
DISTANCE TO SENSITIVE RECEPTORS

Land Use Type	Distance from Project Site (feet)	Direction from Project Site
Residential	1,085	West
	1,125	East
	100	South
	3,000	North

Note:
1. Distances are measured from the exterior project boundary only and not from individual activity areas within the interior of the project site.

Source: j.c.brennan & associates, Inc. *Dignity Health Mercy Medical Center North State Pavilion Noise Analysis.* March 2019.

AMBIENT NOISE MEASUREMENTS

The dominant noise environment in the project area is defined by traffic noise, primarily Cypress Avenue located adjacent to the northern boundary of the project site. To quantify the existing ambient noise environment in the project vicinity noise measurements were collected at three locations around the project site. The noise level measurements were conducted on December 19, 2016 between 12:11 PM and 4:17 PM.

The noise measurements were conducted using a Larson Davis Laboratories (LDL) Model 824 precision integrating sound level meter. The meter was calibrated before and after use with an LDL Model CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4). The sound level meters were programmed to record the maximum (L_{max}), median (L_{50}), and average (L_{eq}) noise levels at each site during the survey.

The noise measurement locations are shown on Figure 5.10-1, NOISE MEASUREMENT LOCATIONS. The noise level measurement survey results are provided in Table 5.10-4, NOISE MEASUREMENTS. Refer to Appendix 5.10, NOISE ANALYSIS, for the for the complete 24-hour noise measurement results.

Table 5.10-4
NOISE MEASUREMENTS

Measurement Location	Date	Time	Measured Noise Levels		
			L_{eq}	L_{50}	L_{max}
1	12/19/2016	12:11 PM	66	64	83
		3:33 PM	66	64	79
2	12/19/2016	12:34 PM	65	63	81
		3:54 PM	66	65	80
3	12/19/2016	1:05 PM	49	47	65
		4:17 PM	49	47	67

Source: j.c.brennan & associates, Inc. *Dignity Health Mercy Medical Center North State Pavilion Noise Analysis.* March 2019.

Airport Noise

The Benton Airpark is a public-use airport located approximately two-miles west of the proposed project site. Redding Municipal Airport is located approximately six miles southeast of the project site. The proposed project site is located approximately 8,500 feet outside the 65 dBA CNEL noise contour for the Benton Airpark. At this distance, it is estimated that aircraft noise levels would be 45 dBA L_{dn} or less at the project site. In addition, the project is not located within the Redding Airport Land Use Plan or within two miles of a public or private airport or airstrip.

MOBILE SOURCES

Existing and future noise levels due to traffic are calculated using the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108). The model is used in conjunction with the California Vehicle Noise Reference Energy Mean Emission Levels (CALVENO REMELS) reference noise emission curves, and accounts for vehicle volume and speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the project site. CALVENO references noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site.

The FHWA Model was developed to predict hourly L_{eq} values for free-flowing traffic conditions. To calculate L_{dn}, average daily traffic (ADT) volume data is adjusted based on the assumed day/evening/night distribution of traffic on the project roadways.

Dignity Health North State Pavilion Project

Noise Measurement Locations

Figure 5.10-1

ADT volumes and peak hour turning movement volumes for existing conditions were obtained from the *Dignity Mercy Medical Center Redding Traffic Impact Analysis Report*, prepared by GHD (October 2018) (refer to Appendix 15.11, TRAFFIC ANALYSIS REPORT). Truck usage and vehicle speeds on the local area roadways were estimated from field observations. The predicted increases in traffic noise levels on the local roadway network for existing and future (Year 2040) conditions which would result from the project are provided in terms of L_{dn}.

Traffic noise levels were predicted at the sensitive receptors located at the closest typical setback distance along each project area roadway segment. A conservative adjustment of -5 dB is assumed where noise barriers are located adjacent to sensitive receptors. In some locations sensitive receptors may not receive full shielding from noise barriers, or may be located at distances which vary from the assumed calculation distance. However, the traffic noise analysis is believed to be representative of the majority of sensitive receptors located closest to the project area roadway segments analyzed in this report. In some cases, a standard distance of 100 feet is used where no obvious sensitive receptors are located along a specific roadway segment (i.e., commercial areas). Table 5.10-5, EXISTING TRAFFIC NOISE, summarizes the modeled traffic noise levels at the nearest sensitive receptors along each roadway segment in the project area.

Table 5.10-5
EXISTING TRAFFIC NOISE

Roadway	Segment	Existing Noise Levels[1]
Bechelli Lane	North of Cypress Avenue	53
Bechelli Lane	Cypress Avenue to Hartnell Avenue	64
Bechelli Lane	South of Hartnell Avenue	66
Cypress Avenue	West of Hartnell Avenue	66
Cypress Avenue	Hartnell Avenue to Bechelli Lane	63
Cypress Avenue	Bechelli Lane to Hilltop Drive	66
Cypress Avenue	East of Hilltop Drive	65
Hartnell Avenue	Cypress Avenue to Henderson Road	61
Hartnell Avenue	Henderson Road to Parkview Avenue	61
Hartnell Avenue	Parkview Avenue to Shotwick Trail	58
Hartnell Avenue	Shotwick Trail to Bechelli Lane	58
Hartnell Avenue	Bechelli Lane to Northwoods Way	63
Hartnell Avenue	Northwoods Way to Churn Creek Road	58
Hartnell Avenue	East of Churn Creek Road	68
Henderson Road	North of Parkview Avenue	38
Henderson Road	South of Parkview Avenue	48

Note:
1. Predicted Exterior Noise Level (dBA L_{dn}) at Closest Sensitive Receptors- 1st Floor Outdoor Activity Areas.

Source: j.c.brennan & associates, Inc. *Dignity Health Mercy Medical Center North State Pavilion Noise Analysis.* March 2019.

5.10.2 REGULATORY SETTING

This section summarizes the laws, ordinances, regulations, and standards that are applicable to the project. Regulatory requirements related to environmental noise are typically promulgated at the local level. However, federal and State agencies provide standards and guidelines to the local jurisdictions. A discussion of the various noise descriptors and definitions can be found in Subsection 5.10.1, *Environmental Setting*, above.

FEDERAL

Federal Noise Control Act

In response to the Federal Noise Control Act of 1972, the Environmental Protection Agency (EPA) has identified noise levels requisite to protect public health and welfare against hearing loss, annoyance and activity interference. The Act identifies a 24-hour exposure level of 70 dB as the level of environmental noise which would prevent any measurable hearing loss over a lifetime. Likewise, levels of 55 dB outdoors and 45 dB indoors are identified as preventing activity interference and annoyance. These levels of noise are considered those which will permit spoken conversation and other activities such as sleeping, working and recreation, which are part of the daily human condition. The levels are not single event or peak levels. Instead, they represent averages of acoustic energy over periods of time such as 8 or 24 hours and over even longer periods (e.g., years).

STATE

California Government Code

California Government Code Section 65302 (f) mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of "normally acceptable", "conditionally acceptable", "normally unacceptable", and "clearly unacceptable" noise levels for various land use types. Single-family homes are "normally acceptable" in exterior noise environments up to 60 CNEL and "conditionally acceptable" up to 70 CNEL. Multiple-family residential uses are "normally acceptable" up to 65 CNEL and "conditionally acceptable" up to 70 CNEL. Schools, libraries, and churches are "normally acceptable" up to 70 CNEL, as are office buildings and business, commercial, and professional uses.

Title 24 - Building Code

The state's noise insulation standards are codified in the California Code of Regulations, Title 24: Part 1, Building Standards Administrative Code, and Part 2, California Building Code. These noise standards are applied to new construction in California for the purpose of interior noise compatibility from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are located near major transportation noise sources, and where such noise sources create an exterior noise level of 65 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL.

LOCAL

City of Redding General Plan

The City of Redding *General Plan* Noise Element establishes goals, policies and criteria for determining land use compatibility with major noise sources within the community. The following provides the applicable goals, policies and criteria for evaluating the feasibility and potential noise impacts associated

with the proposed project. The project's compliance with applicable goals and policies is further discussed under Subsection 5.10.4, *Potential Impacts and Mitigation Measures*, below.

GOAL N1 PROTECT RESIDENTS FROM THE HARMFUL AND ANNOYING EFFECTS OF EXPOSURE TO EXCESSIVE NOISE.

Policy N1C Require an acoustical analysis for new development in locations where exterior and/or interior noise levels will likely exceed the City's noise standards to determine appropriate mitigation measures.

Policy N1D Encourage the use of site planning and building materials/design as primary methods of noise attenuation.

Policy N1F Discourage use of noise barriers and walls constructed exclusively for noise attenuation purposes, where possible. In instances where noise barriers cannot be avoided, require the use of site planning and building material/design features in conjunction with barriers to mitigate visual impacts and reduce the size of barriers.

GOAL N2 PROTECT RESIDENTS FROM EXPOSURE TO EXCESSIVE TRANSPORTATION-RELATED NOISE

Policy N2B Prevent development of new projects which contain noise sensitive land uses in areas exposed to existing or projected levels of noise from transportation sources which exceed the levels specified in Table 5-4 (refer to Table 5.10-6, MAXIMUM ALLOWABLE NOISE EXPOSURE TRANSPORTATION NOISE SOURCES), unless the project design includes effective mitigation measures to reduce exterior noise and noise levels in interior spaces to the levels specified in that table.

Table 5.10-6
MAXIMUM ALLOWABLE NOISE EXPOSURE TRANSPORTATION NOISE SOURCES

Land Use	Outdoor Activity Areas[1] L_{dn}/CNEL, dB	Interior Spaces	
		L_{dn}/CNEL, dB	L_{eq}, dB[2]
Residential	60[3]	45	--
Transient Lodging	60[4]	45	--
Hospitals, Nursing Homes	60[3]	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls	60[3]	--	40
Office Buildings	--	--	45
Schools, Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

Notes:
1. The exterior noise level standard shall be applied to the outdoor activity area of the receiving land use. Outdoor activity areas are normally located near or adjacent to the main structure and often occupied by porches, patios, balconies, etc.
2. As determined for a typical worst-case hour during periods of use.
3. Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, higher noise levels may be allowed provided that practical exterior noise level reduction measures have been implemented and that interior noise levels are in compliance with this table.

Source: City of Redding. *2000 – 2020 General Plan, Noise Element*, *Table 5-4, Maximum Allowable Noise Exposure Transportation Noise Sources.* October 2000.

Policy N2D Consider the significance of noise level increases associated with roadway improvement projects needed to accommodate buildout of the *General Plan*. Since it may be impractical to reduce increased traffic noise to levels in Table 5-4 (refer to Table 5.10-6), the following criteria may be used as a test of significance for roadway improvement projects:

- Where existing traffic noise levels are less than 60 dB L_{dn} in the outdoor- activity areas of noise sensitive uses, roadway improvement projects which increase noise levels to 60 dB L_{dn} will not be considered significant.

- Where existing traffic noise levels range between 60 and 65 dB L_{dn} in the outdoor activity areas of noise sensitive uses, a +3 dB L_{dn} increase in noise levels due to a roadway improvement project will be considered significant.

- Where existing traffic noise levels are greater than 65 dB L_{dn} in the outdoor activity areas of noise sensitive uses, a +1.5 dB L_{dn} increase in noise levels due to a roadway improvement project will be considered significant.

Policy N2E Require acoustical analysis for noise sensitive land uses proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table 5-4 (refer to Table 5.10-6) or the performance standards of Table 5-5 (refer to Table 5.10-7, NOISE LEVEL PERFORMANCE STANDARDS FOR NEW PROJECTS AFFECTED BY OR INCLUDING NON-TRANSPORTATION SOURCES) to determine mitigation for inclusion in the project design. Single-family dwellings on existing lots are excluded from this review.

GOAL N3 PROTECT THE ECONOMIC BASE OF THE CITY OF REDDING BY PREVENTING INCOMPATIBLE LAND USES FROM ENCROACHING UPON EXISTING OR PLANNED NOISE PRODUCING USES. PREVENT THE INTRODUCTION OF NEW FIXED NOISE SOURCES IN NOISE-SENSITIVE AREAS.

Policy N3B Mitigate noise created by new proposed non-transportation sources consistent with the noise-level standards of Table 5-5 (refer to Table 5.10-7) as measured immediately within the property line of lands designated for noise-sensitive land uses. Noise level standards for non-noise-sensitive uses will generally be 10 dB higher before mitigation is required.

Policy N3C Require acoustical analysis of new nonresidential land uses and the expansion of existing nonresidential land uses if likely to produce noise levels exceeding the performance standards of Table 5-5 (refer to Table 5.10-7) within the property line of existing or planned noise sensitive uses.

Policy N3H Require the installation of noise-buffering or reduction mechanisms, where appropriate, for major fixed noise sources throughout the City prior to the approval, amendment, and/or issuance of conditional use permits for these facilities.

Table 5.10-7
NOISE LEVEL PERFORMANCE STANDARDS FOR NEW PROJECTS AFFECTED BY OR INCLUDING NON-TRANSPORTATION SOURCES

Noise Level Descriptor	Daytime (7:00 AM to 10:00 PM)	Nighttime (10:00 PM to 7:00 AM)
Hourly L_{eq}, dB	55	45

Notes:
Each of the noise levels specified above shall be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises (e.g., humming sounds, outdoor speaker systems). These noise level standards do not apply for residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings). The City can impose noise level standards which are more restrictive than those specified above based upon determination of existing low ambient noise levels.

Industrial, light industrial, commercial, and public service facilities which have the potential for producing objectionable noise levels at nearby noise sensitive uses are dispersed throughout the City. Fixed-noise sources which are typically of concern include, but are not limited to, the following:

HVAC Systems	Cooling Towers/Evaporative Condensers
Pump Stations	Lift Stations
Emergency Generators	Boilers
Steam Valves	Steam Turbines
Generators	Fans
Air Compressors	Heavy Equipment
Conveyor Systems	Transformers
Pile Drivers	Grinders
Drill Rigs	Gas or Diesel Motors
Welders	Cutting Equipment
Outdoor Speakers	Blowers

The types of uses which may typically produce the noise sources described above include, but are not limited to: industrial facilities including lumber mills, trucking operations, tire shops, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works projects, batch plants, bottling and canning plants, recycling centers, electric generating stations, race tracks, landfills, sand and gravel operations, and athletic fields.

Source: City of Redding. *2000 – 2020 General Plan, Noise Element Table 5-5, Noise Level Performance Standards for New Projects Affected by or including Non-Transportation Sources*. October 2000.

City of Redding Municipal Code

Redding Municipal Code (RMC) §18.40.100, *Noise Standards*, specifies additional noise regulations pertaining to the allowable exterior noise levels based upon the time of day. The City's Noise Ordinance was established in order to control unnecessary, excessive and annoying noise, protect the public health, safety and welfare, and to declare that creating, maintaining or causing noise in excess of the limits prescribed by this section, is a public nuisance and is punishable as such. The ordinance is provided below:

A. Purpose. The purpose of this chapter is to:

1. Control unnecessary, excessive and annoying noise;
2. Protect the public health, safety and welfare;
3. Declare that creating, maintaining or causing noise in excess of the limits prescribed by this chapter is a public nuisance and shall be punishable as such.

B. General Noise Regulations. Notwithstanding any other provision of this chapter and in addition thereto, it is unlawful for any person to willfully or negligently make or continue or cause to be made or continued, any loud, unnecessary or unusual noise which disturbs the peace and quiet of any neighborhood or which causes any discomfort or annoyance to any reasonable person of

normal sensitiveness residing in the area. Noncommercial public speaking and public assembly activities conducted on any public space or public right-of-way shall be exempt from the operation of this section.

C. Factors of Determination. The factors which will be considered in determining whether a violation of the provisions of this chapter exists shall include, but not be limited to, the following:

1. The sound level of the alleged objectionable noise;
2. The sound level of the ambient noise;
3. The nature and zoning of the area within which the noise emanates;
4. The time of day or night the noise occurs;
5. Whether the noise is continuous, recurrent or intermittent.

D. Noise Measurement. Noise shall be measured utilizing the hourly energy-equivalent noise level (L_{eq}).

E. Noise Limits. The provisions of this section address noise intrusions over and above the noise normally associated with a given location (intrusions over the ambient level). The ambient noise varies throughout the community, depending upon proximity to streets and the type of area land uses. The maximum sound levels shall be determined as follows:

1. Exterior Noise Limits.

a. The noise standards for the various categories of land use as set forth in Schedule 18.40.100-A (Table 5.10-8, EXTERIOR NOISE STANDARDS), unless otherwise specifically indicated, shall apply to all such property within a designated zone.

Table 5.10-8
EXTERIOR NOISE STANDARDS

Land Use Category	Noise Level (Hourly L_{eq}/dB)	
	Daytime (7:00 AM – 10:00 PM)	Nighttime (10:00 PM – 7:00 AM)
Residential	55	45
Office/Commercial	65	55
Industrial	N/A[1]	N/A[1]

Note:
1. Industrial noise shall be measured at the property line of any nonindustrial district.

Source: City of Redding. *Redding Municipal Code*, *Schedule 18.40.100-A, Exterior Noise Standards.*

No person shall operate or cause to be operated, any source of sound at any location within the incorporated city or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person which causes the noise level when measured on any other property, either incorporated or unincorporated, to exceed the noise standard for that land use specified in Schedule 18.40.100-A.

b. If the measured ambient level is above that permissible, the allowable noise exposure standard shall be increased to reflect the actual ambient noise level.

F. Prohibited Acts. The following acts are hereby prohibited:

1. Loading and Unloading. Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials or similar objects between the hours of 10:00 PM and 7:00 AM in such a manner as to cause a noise disturbance across a residential real property line.

2. Construction or Demolition.

   a. Operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work in or within five hundred feet of a residential district such that the sound creates a noise disturbance across a property line during the following times:
      i. May 15th through September 15th: Between the weekday hours of 7:00 PM and 6:00 AM and weekends and holidays between 8:00 PM and 9:00 AM.
      ii. September 16th through May 14th: Between the weekday hours of 7:00 PM and 7:00 AM and weekends and holidays between 8:00 PM and 9:00 AM.

3. Domestic Power Tools and Equipment. Operation or permitting the operation, of any mechanically powered saw, lawn or garden tool or similar outdoor tool between 10:00 PM and 7:00 AM on weekdays (or 9:00 PM and 8:00 AM on weekends and legal holidays) so as to create a noise disturbance across a residential or commercial real property line.

G. Emergency Exemptions. The provisions of this chapter shall not apply to:

1. The emission of sound for the purpose of alerting persons to the existence of an emergency;
2. The emission of sound in the performance of emergency work.

H. Miscellaneous Exemptions.

1. Warning Devices. Warning devices necessary for the protection of the public safety, such as police, fire and ambulance sirens, shall be exempted from the provisions of this chapter.
2. Outdoor Activities. The provisions of this chapter shall not apply to occasional outdoor gatherings, public dances, shows, and sporting and entertainment events provided that such events are conducted pursuant to a permit or license issued by the city relative to the staging of such events.
3. Churches and Other Similar Organizations. Any churches or other similar organization which use unamplified bells, chimes or other similar devices are exempt from the provisions of this chapter so long as the church or other similar organizations play such between the time period of seven a.m. and ten p.m. and the playing period does not exceed thirty minutes in any one hour.
4. Municipal Solid Waste Collection. Collection of solid waste, vegetative waste and recyclable materials by the city of Redding shall be exempt from the provisions of this chapter.
5. Public Works Construction Projects. Street, utility and similar construction projects undertaken by or under contract to the city of Redding, county of Shasta or state of California or a public utility regulated by the California Public Utilities Commission.
6. Public Utility Facilities. Facilities including, but not limited to, sixty-cycle electric power transformers and related equipment, sewer lift stations, municipal wells and pumping stations.

I. Federal and State Preempted Activities. Any other activity shall be exempt from the provisions of this chapter to the extent regulation thereof has been preempted by State or federal laws.

Section 18.40.110, Performance Standards-Citywide, of the City's Noise Ordinance specifies the following performance standards that shall apply to all use classifications in all zoning districts.

A. Noise. No use shall create noise levels which exceed the standards of §18.40.100 of this chapter.

1. Director May Require Acoustic Study. For new uses that, in the opinion of the director, may not meet the standards of the noise element, the director may require that an acoustical analysis be prepared. The analysis shall, at a minimum, conform to the following standards:

    a. Analysis shall be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics.
    b. Noise levels shall be documented with sufficient sampling periods and locations to adequately describe local noise conditions and noise sources.
    c. Existing and projected noise levels shall be estimated in terms of L_{eq} and L_{dn} or CNEL. Levels shall be compared to the existing ambient noise levels.
    d. Mitigation shall be recommended, giving preference to site planning and design rather than noise barriers, where feasible.
    e. Noise exposure after the prescribed mitigation measures have been implemented shall be estimated.

2. Noise Attenuation Measures. The approving authority may require the incorporation into a project of any noise attenuation measures deemed necessary to ensure that noise standards are not exceeded, including, but not limited to, noise walls exceeding maximum height limits and minimum setbacks of the zoning district.

B. Vibration. No use, activity or process shall produce vibrations that are perceptible without instruments at one or more property lines of a site.

Caltrans Criteria for Acceptable Vibration

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that in that noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to the vibration will depend on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating. Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of PPV in inches per second (in/sec). Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of PPV. The City does not have specific policies pertaining to vibration levels. However, perceptible vibrations at the property line of a site are prohibited by §18.40.110.B of the RMC.

Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Table 5.10-9, EFFECTS OF VARIOUS VIBRATION LEVELS, which was developed by

Caltrans, shows the vibration levels which would normally be required to result in damage to structures. The vibration levels are presented in terms of PPV in in/sec. Table 5.10-9 indicates that the threshold for architectural damage to structures is 0.20 in/sec PPV and continuous vibrations of 0.10 in/sec PPV, or greater, would likely cause annoyance to sensitive receptors.

Table 5.10-9
EFFECTS OF VARIOUS VIBRATION LEVELS

Predicted Noise Levels, L_{max} dB		Human Reaction	Effect on Buildings
mm per second	inches per second		
0.15 – 0.30	0.006 – 0.019	Threshold of perception; possibility of intrusion.	Vibrations unlikely to cause damage of any type.
2.0	0.08	Vibrations readily perceptible.	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected.
2.5	0.10	Level at which continuous vibrations begin to annoy people.	Virtually no risk of "architectural" damage to normal buildings.
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations).	Threshold at which there is a risk of "architectural" damage to normal dwelling - houses with plastered walls and ceilings Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage.
10 – 15	0.4 – 0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges.	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage.

Source: Caltrans. *Transportation Related Earthborne Vibrations, Technical Advisory: TAV-02- 01-R9601*. February 2002.

5.10.3 STANDARDS OF SIGNIFICANCE

SIGNIFICANCE CRITERIA

In accordance with State *CEQA Guidelines*, the effects of a project are evaluated to determine whether they would result in a significant adverse impact on the environment. An EIR is required to focus on these effects and offer mitigation measures to reduce or avoid any significant impacts that are identified. The criteria used to determine the significance of impacts may vary depending on the nature of the project. The following significance thresholds related to noise have been derived from Appendix G of the State *CEQA Guidelines*:

- *Expose persons to, or generate, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.* Refer to Impact 5.10-1 and Impact 5.10-4, below.

- *Expose persons to or generate excessive ground borne vibration or ground borne noise levels.* Refer to Impact 5.10-2, below.

- *Result in a substantial temporary or periodic increase in noise levels in excess of standards permitted in the general plan or noise ordinance.* Refer to Impact 5.10-3, below.

- *Result in a substantial permanent increase in ambient noise levels in excess of standards permitted in the general plan or noise ordinance.* Impact 5.10-4, below.

- *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.* Refer to AREAS OF NO PROJECT IMPACT, below.

- *For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.* Refer to AREAS OF NO PROJECT IMPACT, below.

AREAS OF NO PROJECT IMPACT

In June 2018, the City conducted an Initial Study to determine significant effects of the proposed project. In the course of this evaluation, certain impacts of the proposed project were found to not to be significant because of the inability of a project of this scope to create such impacts or the absence of project characteristics producing effects of this type. The effects determined not to be significant are not required to be included in primary analysis sections of the Draft EIR. As such, the following impacts either are not applicable to the proposed project or are not reasonably foreseeable and are not addressed further within this section (refer to Section 10.0, EFFECTS FOUND NOT TO BE SIGNIFICANT):

- *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.*

- *For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.*

5.10.4 POTENTIAL IMPACTS AND MITIGATION MEASURES

METHODOLOGY

The California Environmental Quality Act (CEQA) requires a determination of the significance of noise impacts associated with proposed projects. The process of assessing the significance of noise impacts associated with a project involves establishing thresholds at which significant impacts on noise-sensitive uses may occur (refer to Subsection 5.10.3, *Standards of Significance*, above). Noise levels associated with activities related to the proposed project were predicted and compared with the significance thresholds. Where a noise level is predicted to exceed a threshold, the impact is considered significant, and mitigation measures are proposed as applicable. The following impact analysis is based on the *Dignity Health Mercy Medical Center North State Pavilion Noise Analysis*, prepared by j.c. brennan & associates, Inc., (October 2018) and included in Appendix 15.10, NOISE ANALYSIS.

Noise Impact Criteria

Significance of Changes in Traffic Noise Levels

Generally, a project may have a significant effect on the environment if it will substantially increase the ambient noise levels for adjoining areas or expose people to severe noise levels. In practice, more specific professional standards have been developed. These standards state that a noise impact may be considered significant if it would generate noise that would conflict with local project criteria or ordinances, or substantially increase noise levels at noise sensitive land uses. The potential increase in

traffic noise from the project is a factor in determining significance. Research into the human perception of changes in sound level indicates the following:

- A 3-dB change is barely perceptible,
- A 5-dB change is clearly perceptible, and
- A 10-dB change is perceived as being twice or half as loud.

A limitation of using a single noise level increase value to evaluate noise impacts is that it fails to account for pre-project noise conditions. Table 5.10-10, SIGNIFICANCE OF CHANGES IN NOISE EXPOSURE is based upon recommendations made by the Federal Interagency Committee on Noise (FICON) to provide guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been accepted that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the L_{dn}.

Table 5.10-10
SIGNIFICANCE OF CHANGES IN NOISE EXPOSURE

Ambient Noise Level Without Project (L_{dn})	Increase Required for Significant Impact
<60 dB	+5.0 dB or more
60 – 65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more

Sources: j.c.brennan & associates, Inc. *Dignity Health Mercy Medical Center North State Pavilion Noise Analysis.* March 2019.

Based on Table 5.10-10, an increase in the traffic noise level of 3.0 dB or more would be significant where the existing noise levels are within 60-65 dB L_{dn}. Extending this concept to higher noise levels, an increase in the traffic noise level of 1.5 dB or more may be significant where the pre-project traffic noise level exceeds 65 dB L_{dn}. The rationale for the Table 5.10-10 criteria is that, as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause annoyance. It should be noted that this methodology was adopted by the City in *General Plan* Noise Policy N2-D which applies specifically to transportation projects with one exception. Based upon Policy N2-D, the City does not consider an increase up to 60 dB L_{dn} to be significant where existing noise levels are less than 60 dB L_{dn}. For example, based upon this policy, an increase in ambient noise levels from 50 dB L_{dn} to 59 dB L_{dn} would be less than significant. Therefore, *General Plan* Policy N2-D as the threshold to assess the significance of noise level increases due to project related traffic noise.

Significance of Changes in Onsite or Non-Transportation Noise Levels

For onsite or "non-transportation" noise sources (parking lots, mechanical noise, child play areas, etc.), it is recommended that a permanent increase exceeding 5 dB over existing average ambient noise levels should be applied as the test of significance.

Based on the above standards, the effects of the proposed project have been categorized as either a less than significant impact or a potentially significant impact. Mitigation measures are recommended for potentially significant impacts. If a potentially significant impact cannot be reduced to a less than significant level through the application of mitigation, it is categorized as a significant and unavoidable impact.

IMPACT 5.10-1 ***Implementation of the proposed project would not expose persons to, or generate, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.***

Significance: Less Than Significant Impact.

Impact Analysis: Traffic noise levels were predicted at the sensitive receptors located at the closest typical setback distance along each project area roadway segment. In some locations, sensitive receptors may receive shielding from noise barriers and/or buildings, or may be located at distances which vary from the assumed calculation distance. However, the traffic noise analysis is representative of the majority of sensitive receptors located closest to the proposed project area roadway segments. Table 5.10-11, PREDICTED TRAFFIC NOISE LEVEL AND PROJECT-RELATED TRAFFIC NOISE LEVEL INCREASES, provides the modeled *Existing No Project*, *Existing Plus Project*, *Future No Project*, and *Future Plus Project* traffic noise levels including project related traffic noise level increases. Table 5.10-11 reflects the proposed project's incremental noise contribution under *Existing Plus Project* and *Future Plus Project* (cumulative) conditions. Also refer to Impact 5.10-5, below,

Table 5.10-11
PREDICTED TRAFFIC NOISE LEVEL AND PROJECT-RELATED TRAFFIC NOISE LEVEL INCREASES

Roadway	Roadway Segment	Existing No Project	Existing + Project	Change	Future No Project	Future + Project	Change
Bechelli Lane	North of Cypress Avenue	53	53	0	54	54	0
Bechelli Lane	Cypress to Hartnell Avenue	64	64	0	64	64	0
Bechelli Lane	South of Hartnell Avenue	66	66	0	66	66	0
Cypress Avenue	West of Hartnell Avenue	66	66	0	66	67	+1
Cypress Avenue	Hartnell Avenue to Bechelli Lane	63	63	0	64	64	0
Cypress Avenue	Bechelli Lane to Hilltop Drive	66	66	0	66	66	0
Cypress Avenue	East of Hilltop Drive	65	65	0	65	65	0
Hartnell Avenue	Cypress Avenue to Henderson Road	61	62	+1	62	63	+1
Hartnell Avenue	Henderson Road to Parkview Avenue	61	62	+1	62	63	+1
Hartnell Avenue	Parkview Avenue to Shotwick Trail	58	58	0	59	59	0
Hartnell Avenue	Shotwick Trail to Bechelli Lane	58	58	0	59	59	0
Hartnell Avenue	Bechelli Lane to Northwoods Way	63	63	0	64	64	0
Hartnell Avenue	Northwoods Way to Churn Creek Road	58	58	0	59	59	0
Hartnell Avenue	East of Churn Creek Road	68	68	0	69	69	0
Henderson Road	North of Parkview Avenue	38	52	+14	41	52	+11
Henderson Road	South of Parkview Avenue	48	48	0	49	49	0

Notes:
1. Predicted Exterior Noise Level (dBA L_{dn}) at Closest Sensitive Receptors- 1st Floor Outdoor Activity Areas.
2. dBA = A-weighted decibels; CNEL = community noise equivalent level.

Source: j.c.brennan & associates, Inc. *Dignity Health Mercy Medical Center North State Pavilion Environmental Noise Analysis.* March 2019.

Existing residential areas within the vicinity of the project site are located primarily along Henderson Road and portions of Hartnell Avenue. As noted above in Table 5.10-11, there would be a 1 dBA increase between the *Existing No Project* and *Existing Plus Project* conditions for the majority of roadway segments analyzed. One roadway segment, Henderson Road north of Parkview Avenue, would experience an increase of 14 dBA under *Existing Plus Project* conditions. *Existing Plus Project* noise levels

are not predicted to cause exterior noise levels to exceed the City's 60 dBA L_{dn} exterior noise level standard at any existing residential areas.

Under both *Future No Project* and *Future Plus Project* conditions, area roadway segments would experience an increase in 1 dBA, with the exception of the analyzed segment of Henderson Road that would experience an increase of approximately 11 dBA. Similar to the *Existing Plus Project* condition, the *Future Plus Project* condition would not exceed the City's 60 dBA L_{dn} exterior noise level standard at any existing residential areas.

As shown in Table 5.10-11 the project would not cause significant increases in traffic noise levels exceeding ambient noise level thresholds under either *Existing Plus Project* or *Future Plus Project* conditions. Therefore, traffic related noise impacts would be *less than significant*.

Onsite Traffic Noise Levels

Table 5.10-12, PREDICTED ONSITE TRAFFIC NOISE LEVEL, shows the proposed buildings, distance to nearest roadway segment, and the predicted traffic noise level. Building 'C' as sited is the nearest to a roadway with noise levels of approximately 65 dBA L_{dn}.

Table 5.10-12
PREDICTED ONSITE TRAFFIC NOISE LEVEL

Location	Distance	Predicted Traffic Noise Level, L_{dn}
Building 'A' Exterior	350 feet	59 dBA
Building 'B' Exterior	815 feet	54 dBA
Building 'C' Exterior	125 feet	65 dBA

Note:
1. dBA = A-weighted decibels.

Source: j.c.brennan & associates, Inc. *Dignity Health Mercy Medical Center North State Pavilion Environmental Noise Analysis.* March 2019.

Based upon a typical 25 dB exterior-to-interior noise level reduction achieve by modern building construction, future onsite interior noise levels of between 29 and 40 dBA L_{dn} would be expected. Therefore, traffic noise exposure inside the buildings would be lower than the City's 45 dBA L_{dn} interior noise level standard for hospital uses and noise control measures beyond adherence to building code requirements and the requirements of the RMC §18.40.100, *Noise Standards*, would not be required. Therefore, noise impacts to Buildings 'A', 'B', and 'C' resulting from adjacent vehicular traffic would be *less than significant*.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No mitigation measures are required. Impacts would be *less than significant*.

IMPACT 5.10-2 ***Implementation of the proposed project would not expose persons to or generate excessive ground borne vibration or ground borne noise levels.***

Significance: Less Than Significant Impact.

Impact Analysis: Construction vibration impacts include human annoyance and building structural damage. Human annoyance occurs when construction vibration rises significantly above the threshold of perception. Building damage can take the form of cosmetic or structural.

Short-Term Construction

Increases in groundborne vibration levels attributable to the proposed project would be primarily associated with construction-related activities. Construction on the project site would have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and the operations involved. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Groundborne vibrations from construction activities rarely reach levels that damage structures.

The Federal Transit Administration (FTA) has published standard vibration velocities for construction equipment operations. In general, depending on the building category of the nearest buildings adjacent to the potential pile driving area, the potential construction vibration damage criteria vary. For example, for a building that is constructed with reinforced concrete with no plaster, the FTA guidelines show that a vibration level of up to 0.50 inch per second (in/sec) peak particle velocity (PPV) is considered safe and would not result in any construction vibration damage. The types of construction vibration impact include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet.

Construction related ground vibration is normally associated with impact equipment such as pile drivers, jackhammers, and the operation of some heavy-duty construction equipment, such as dozers and trucks. Since there are no established vibration standards in the City, this evaluation uses the FTA (2006) recommended standard of 0.2 inches per second peak particle velocity with respect to the prevention of structural damage for normal buildings. This measurement is also the level at which vibrations may begin to annoy people inside buildings (Caltrans 2013). In general, the FTA architectural damage criterion for continuous vibrations (i.e., 0.2 in/sec) appears to be conservative. The types of construction vibration impacts include human annoyance and building damage. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 25 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment.

Onsite construction activities have the potential to generate low levels of groundborne vibration. Table 5.10-13, VIBRATION LEVELS FOR VARYING CONSTRUCTION EQUIPMENT, identifies the typical vibration levels produced by construction equipment.

Table 5.10-13
VIBRATION LEVELS FOR VARYING CONSTRUCTION EQUIPMENT

Equipment	Approximate peak particle velocity at 25 feet (inches/second)	Approximate peak particle velocity at 50 feet (inches/second)	Approximate peak particle velocity at 100 feet (inches/second)
Large bulldozer	0.089	0.031	0.011
Loaded trucks	0.076	0.027	0.010
Small bulldozer	0.003	0.001	0.000
Auger/Drill rigs	0.089	0.031	0.011
Jackhammer	0.035	0.012	0.004
Vibrator Hammer	0.070	0.025	0.009
Vibratory Compactor/roller	0.210	0.074	0.026

Source: j.c.brennan & associates, Inc. *Dignity Health Mercy Medical Center North State Pavilion Environmental Noise Analysis.* March 2019.

Table 5.10-13 provides that construction vibration levels anticipated for the project are less than the 0.2 in/sec PPV threshold of damage to buildings and less than the 0.1 in/sec threshold of annoyance criteria at distances of 50 feet. Sensitive receptors which could be impacted by construction related vibrations, especially vibratory compactors/rollers, are located approximately 100 feet, or further, from the project site construction areas. At these distances construction vibrations are not predicted to exceed acceptable levels. Additionally, construction activities would be temporary in nature and would likely occur during normal daytime working hours.

Because construction vibrations are not predicted to cause damage to existing buildings or cause annoyance to sensitive receptors, implementation of the proposed project would not expose persons to or generate excessive ground borne vibration or ground borne noise levels. Therefore, construction vibrations are not anticipated to cause damage to existing buildings or cause annoyance to sensitive receptors. Vibration impacts associated with construction are considered to be *less than significant* and no mitigation measures are required.

Long-Term Operational

The proposed project would not generate groundborne vibration that could be felt at surrounding uses. The project would not involve railroads or substantial heavy truck operations, with the exception of delivery vehicles to the project site once facilities are operational. As a result, impacts from vibration associated with project operation would be *less than significant* and no mitigation measures are required.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No mitigation measures are required. Impacts would be *less than significant*.

IMPACT 5.10-3 ***Implementation of the proposed project may result in a substantial temporary or periodic increase in noise levels in excess of standards permitted in the general plan or noise ordinance.***

Significance: Potentially Significant Impact.

Impact Analysis: Phase 1 of the project includes demolition and removal of an existing 7,500 square-foot building and approximately 64,000 square feet of pavement. Phase 1 also includes mass grading of the entire 10.55-acre project site, and construction of Building 'A', interior roads and 338 parking spaces. Phase 1 construction would commence in 2020 and be complete by 2022. It is anticipated that Phase 1 construction would occur for 2 years. Phase 2 construction is assumed to commence in 2022, after completion of Phase 1. Phase 2 would include construction of Buildings 'B' and 'C' and the remaining 211 parking spaces. It is anticipated that Phase 2 construction would occur for 2 years.

Noise impacts resulting from construction depend on the noise generated by various pieces of construction equipment, the timing and duration of noise generating activities, and the distance between construction noise sources and noise-sensitive areas. Noise levels from construction equipment are shown in Table 5.10-14, CONSTRUCTION EQUIPMENT NOISE.

Table 5.10-14
CONSTRUCTION EQUIPMENT NOISE

Type of Equipment	Maximum Level, dBA at 50 feet
Auger Drill Rig	84
Backhoe	78
Compactor	83
Compressor (air)	78
Concrete Saw	90
Dozer	82
Dump Truck	76
Excavator	81
Generator	81
Jackhammer	89
Pneumatic Tools	85

Source: j.c.brennan & associates, Inc. *Dignity Health Mercy Medical Center North State Pavilion Noise Analysis.* March 2019.

The proposed project construction includes roads, water and sewer lines, and related infrastructure, and building construction. Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., land clearing, grading, excavation, paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Noise levels typically attenuate (or drop off) at a rate of 6 dB per doubling of distance from point sources, such as industrial machinery.

Grading and excavation phases of project construction tend to be the shortest in duration and create the highest construction noise levels due to the operation of heavy equipment required to complete these activities. It should be noted that only a limited amount of equipment can operate near a given location at a particular time. Equipment typically used during this stage includes heavy-duty trucks, backhoes, bulldozers, excavators, front-end loaders, and scrapers. Operating cycles for these types of construction equipment may involve one or two minutes of full-power operation followed by three to four minutes at lower power settings. Other primary sources of noise would be shorter-duration incidents, such as dropping large pieces of equipment or the hydraulic movement of machinery lifts, which would last less than one minute.

Typical construction activities are predicted to generate maximum noise levels in the range of 63-68 dBA L_{max} depending on the exact location of construction activity and the type of equipment being used. Existing maximum noise levels at the nearest sensitive receptors was found to be in the range of 65-67

dBA L_{max}. Therefore, typical maximum construction noise levels would be within the range of existing maximum ambient noise levels. The Federal Highway Administration's Roadway Construction Noise Model indicates that maximum noise levels from the typical construction equipment will occur between 20 percent and 40 percent of an hour. Therefore, the predicted hourly Leq is expected to be approximately 66 dBA at the nearest residences during construction activities. Based upon background noise levels conducted at the nearest residences, the existing typical background noise levels are 49 dBA Leq. Therefore, the predicted noise levels due to construction activities could be up to 17 dBA Leq higher than the measured existing noise levels.

The predicted construction noise levels at the nearest residences would exceed the exterior noise level standards contained in the City's Noise Ordinance. In addition, although maximum noise levels due to construction activities would be consistent with those which were measured at the nearest residences, the hourly Leq noise levels would be considerably higher than existing background noise levels. This is considered to be a *significant* impact.

As noted above, the RMC does not establish quantitative construction noise standards, but instead establishes allowable hours of construction, of which the proposed project would adhere. Per RMC §18.40.100.F.2, the City states requirements regarding construction activities for construction, drilling, repair, alteration, or demolition work within 500 feet of a residential area.

Construction activities would be subject to compliance with RMC §18.40.100, *Noise Standards*, with respect to hours of operation. As mandated by RMC §18.40.100, from May 15th through September 15th, construction activities shall take place during weekdays between the hours of 6:00 AM and 7:00 PM and during weekends and holidays between 9:00 AM and 8:00 PM from September 16th through May 14th, construction shall take place during weekdays between the hours of 7:00 AM and 7:00 PM and weekends and holidays between 9:00 AM and 8:00 PM.

Implementation of **MM 5.10-1a** and **MM 5.10-1b** would further reduce project construction noise at sensitive receptors; however, this impact would remain *significant and unavoidable*.

Mitigation Measures:

MM 5.10-1a: In addition to permitted hours of operation, project grading and construction plans shall note the following noise control measures to be implemented by the project contractor throughout the duration of onsite and offsite construction activities. The plans shall be subject to the review and concurrence of the City of Redding Development Services Department:

- Fixed construction equipment such as compressors and generators shall be placed the greatest possible distance from sensitive receptors, but no closer than 200 feet from existing residences.

MM 5.10-1b: In addition to permitted hours of operation, project grading and construction plans shall note the following with regards to construction vehicle traffic. The plans shall be subject to the review and concurrence of the City of Redding Development Services Department and implemented by the project contractor throughout the duration of onsite and offsite construction activities:

- During all project related construction activities, construction vehicle parking, material delivery trucks, and heavy trucks used for soil or materials hauling shall be required to avoid local residential streets, including but not limited to, Parkview Avenue and Wilshire Drive.

Level of Significance After Mitigation: Impacts are considered *significant and unavoidable* with implementation of mitigation.

IMPACT 5.10-4	***Implementation of the proposed project may result in a substantial permanent increase in ambient noise levels in excess of standards permitted in the general plan or noise ordinance.***

Significance: Potentially Significant Impact.

Impact Analysis: As discussed above in Subsection 5.10.3, *Standards of Significance*, a "significant increase" regarding noise exposure is generally when there is a substantial increase in the ambient noise levels for adjoining areas or expose people to severe noise levels. A 3 dB change is barely perceptible, a 5 dB change is clearly perceptible, and a 10 dB change is perceived as being twice or half as loud. Stationary noise sources, including parking lot operations, mechanical equipment noise, and backup generator equipment were evaluated and modeled to determine if there would be an impact to offsite noise sensitive uses.

Traffic Noise Sources

As discussed in Impact 5.10-1, Henderson Avenue north of Parkview Avenue would experience a 14 dBA L_{dn} increase in traffic noise levels due to the proposed project. However, the resulting noise level would be 52.0 dBA L_{dn} at the nearest sensitive receptor and therefore complies with the City's 60 dBA L_{dn} exterior noise level standard for residential uses. The proposed project would not cause increases of 3 dBA L_{dn} where existing noise levels are in the range of 60-65 dBA L_{dn}, or 1.5 dBA L_{dn} increases where existing noise levels exceed 65 dBA L_{dn}. As concluded under Impact 5.10-1, traffic related noise sources are considered to *be less than significant* and no mitigation measures are required.

Onsite Stationary Noise Sources

The project area consists of mostly undeveloped vacant land between an existing shopping center and the Sacramento River. The primary sources of stationary noise in the project vicinity are associated with the existing residential uses to the south and the commercial uses to the east. The primary sources of stationary noise in the project vicinity are urban-related activities (e.g. mechanical equipment, conversations, and recreational areas). The noise associated with these sources may represent a single-event or a continuous occurrence and are further described and evaluated below.

Onsite Parking Lot Noise. Parking lot noise levels generally result of vehicles arriving or departing, car doors slamming, or people talking. Noise level data for parking lot activities indicate that a typical sound exposure level of 71 dBA at a distance of 50 feet characterizes a typical vehicle arrival and departure. The traffic analysis prepared found weekday peak hour trips to be 311 AM peak hour and 330 PM peak hour trips. Based on these trips the peak hour L_{eq} at a distance of 50 feet would be 61 dBA L_{eq}.

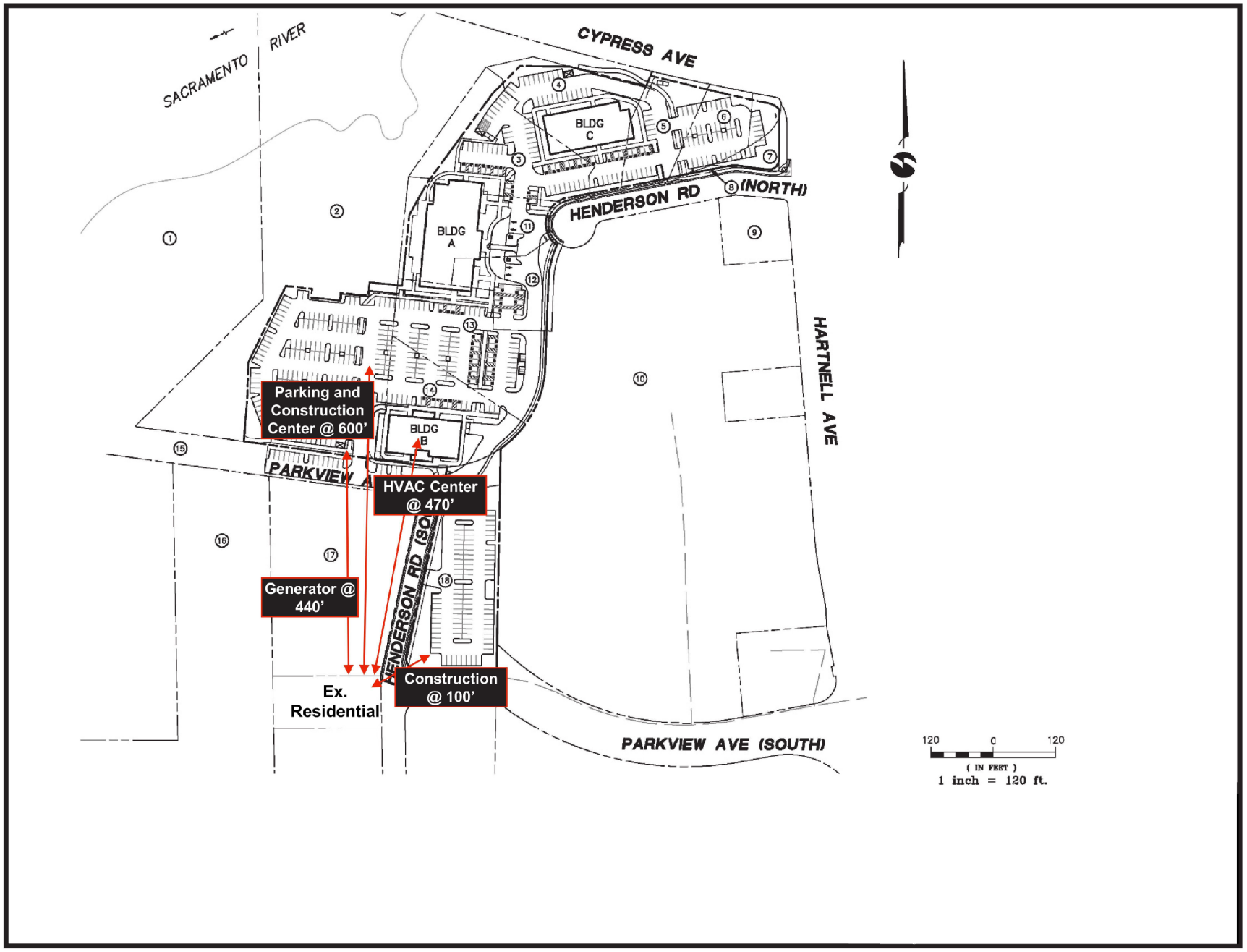
The center of the Building 'B' parking lot would be located approximately 600 feet from the nearest residential property line to the south. At this distance, parking lot noise levels would average 39 dBA Leq, assuming that all parking lot activity were centered around this 600-foot distance. While some parking lot activity would occur closer than 600 feet from the nearest residential uses (parking lot on Parcel 18), much of the parking lot activity would occur further than 600 feet away (parking lots for Buildings 'A' and 'C'). Therefore, the 600-foot distance is a conservative assumption. Refer to Figure 5.10-2, PROJECT GENERATED NOISE DISTANCES, for measured distances used in calculation of project-generated noise at the nearest residential receptors.

Delivery vehicles will primarily be associated with large vans, which are similar to UPS delivery vehicles. The deliveries will occur at each of the buildings, and can be expected to be between 3 and 4 deliveries during a peak hour, and will occur during the daytime hours. A typical SEL associated with a delivery truck is 78 dBA at a distance of 50 feet. The typical peak hour Leq is calculated to be 48 dBA at a distance of 50 feet.[1] The Leq for deliveries at the nearest residences is expected to be less than 30 dBA.

Backup Generator Noise. The proposed project includes the potential for three backup generators. The generators for Building 'A' and 'C' would be located over 1,000 feet from the nearest residences and are therefore not evaluated. The backup generator for Building 'B' would be located approximately 440 feet from the nearest sensitive receptor located near the intersection of Parkview Avenue and Henderson Road. Based upon similar project, this analysis estimates that the generator would be sized in the range of approximately 125 kilowatts (kW) and would be housed in a sound attenuating enclosure. Based upon these assumptions, a typical noise level would be 75 dBA at distance of 23 feet during operation at rated power. Based upon the 440-foot distance, noise levels would be approximately 49 dBA Leq at the nearest residential receptors. Mitigation Measure **MM 5.10-2a** is required to ensure that backup generator noise levels would not exceed the levels assumed in the above analysis. Additionally, **MM 5.10-2b** would ensure that generators are operated during daytime hours only.

Mechanical Equipment. Regarding mechanical equipment, the proposed project would generate stationary source noise associated with heating, ventilation, and air conditioning (HVAC) units. The proposed project would include rooftop mechanical equipment consisting of HVAC units. Typical rooftop equipment would likely include on to two 75-ton packaged rooftop units and have a sound power rating of 102 dBA each, for a total of about 105 dBA for two units operating simultaneously. Based on the project site plan, the mechanical units for Building 'B' would be located approximately 470 feet from the nearest residential property line to the south. Based upon this distance and screening due to the proposed mechanical screen wall, HVAC noise levels are predicted to be 44 dBA L_{eq}. The Noise Analysis assumes that all equipment will be shielded by rooftop building parapets or mechanical screen walls. Therefore, implementation of **MM 5.10-2c** is required to ensure that parapets or mechanical screen walls are incorporated into the project design.

[1] 71 is the mean sound exposure levels (SEL) for an automobile arrival and departure, and 10 * log (330) is 10 times the logarithm of the number of vehicle trips per hour, and 35.6 is 10 times the logarithm of the number seconds in an hour.



Dignity Health North State Pavilion Project

Project Generated Noise Distances

Figure 5.10-2

Emergency Vehicle Siren Noise Levels. The project is considered an ambulatory medical facility, where there will be occasions where ambulances will bring patients/pick up patients from the facility. Although this is not a regular occurrence, it is expected to occur. Generally, when the ambulances arrive the sirens are turned off once they arrive onsite, when departing, the sirens are activated on the street system. Sirens generally produce noise levels of approximately 90 dBA Lmax at a distance of 100-feet. Emergency sirens for fire engines or ambulances are considered a part of any urban noise environment. Based upon the short period of time that sirens occur (no more than 30 to 60 seconds out of the hour), and the fact that they are used only in emergency situations, this is not considered to be a significant noise source.

Summary of Site Generated Noise Levels. Table 5.10-15, SITE GENERATED (NON-TRANSPORTATION) NOISE LEVELS, shows the individual project related noise levels at the nearest sensitive receptors – residence south of the project site. Table 5.10-15 also provides the estimated total project noise exposure assuming operation of all noise sources simultaneously.

Table 5.10-15
SITE GENERATED (NON-TRANSPORTATION) NOISE LEVELS

Noise Source	Distance	Predicted Peak Hour Noise Level, L_{eq}
Parking Lots	600 feet	39 dBA
Mechanical Equipment	470 feet	44 dBA
Building 'B' Backup Generator	440 feet	49 dBA, or less depending on final generator selection
	Total:	**51 dBA, or less**

Note:
1. dBA = A-weighted decibels.

Source: j.c.brennan & associates, Inc. *Dignity Health Mercy Medical Center North State Pavilion Environmental Noise Analysis.* March 2019.

As indicated in Table 5.10-15, implementation of the proposed project would not impact offsite sensitive receptors as the combined stationary noise sources would not exceed City noise standards. Implementation of **MM 5.10-2a** through **MM 5.10-2c** would ensure that impacts related to a substantial permanent increase in ambient noise levels associated with onsite sources of noise would be reduced to *less than significant* levels.

Offsite Improvements

Several offsite intersection improvements have been identified for the proposed project (refer to **MM 5.14-1, MM 5.14-3**, and **MM 5.14-4** in Section 5.14, TRAFFIC AND CIRCULATION). These improvements would generally occur at-grade similar to existing roadway elevations within previously improved City roadway right-of-way and would be constructed in accordance with City design criteria. Similar to onsite construction activities, implementation of RMC requirements related to short-term construction noise would ensure that impacts associated with offsite improvements would be *less than significant*.

Mitigation Measures:

MM 5.10-2a: Prior to issuance of a building permit, the project applicant shall provide to the satisfaction of the City of Redding Development Services Department, either an acoustical analysis that demonstrates that operational noise levels from the use of emergency generators do not exceed 75 dBA Leq, or manufacturer's data that

demonstrates that the emergency generators do not exceed 75 dBA Leq, as measured at a distance of 23 feet from the generator.

MM 5.10-2b: As a condition of project approval, all onsite generators shall be exercised during daytime hours only; weekdays between 7:00 AM and 10:00 PM.

MM 5.10-2c: Prior to issuance of an occupancy permit, the City of Redding Development Services Department shall verify through final plan check that all HVAC equipment are roof-mounted and screened by parapets or other acceptable mechanical screening.

Level of Significance After Mitigation: Impacts would be *less than significant* with mitigation incorporated.

5.10.5 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

The analysis of cumulative impacts focuses on those effects that, when combined together with other similar activities or projects could result in a large enough effect or impact that would be considered cumulatively significant. If the individual project's contribution is substantial enough, it may be considered cumulatively significant. In some instances, a project-specific impact may not combine with effects from other activities, in which case, the project's contribution to a cumulative effect would be less than considerable.

The geographic extent of the cumulative setting for stationary noise sources consists of the project area and the surrounding areas within the City, since noise is a localized phenomenon. Relative to transportation-related noise sources, the cumulative setting includes Bechelli Lane, Cypress Avenue, Hartnell Avenue, and Henderson Road. These roadways are consistent with primary roadways addressed in the project's traffic impact analysis report, including the cumulative traffic modeling projections for *Year 2040*.

IMPACT 5.10-5	***Implementation of the proposed project, combined with other past, present, and reasonably foreseeable future development, may potentially increase the ambient noise levels in the project vicinity.***

Significance: Potentially Significant Impact.

Impact Analysis: Implementation of the proposed project would allow for the development of a medical center campus within the area. Future development would generate increased construction noise, stationary noise, and mobile noise impacts within the area surrounding the proposed project.

Short-Term Construction

Cumulative construction noise impacts could result if construction of more than one of the planned projects occurred in the same vicinity at the same time. If this occurred some adjacent receptors could be subject to additive noise from more than one construction project at the same time. Therefore, the proposed project's incremental contribution to cumulative short-term noise impacts is cumulatively considerable.

The timing of construction activities associated with this or other development projects would overlap minimally, if at all with the project. The project would be required to implement **MM 5.10-1a** and **MM 5.10-1b** to minimize construction noise; however, the predicted noise levels due to construction activities could be up to 17 dBA Leq higher than the measured existing noise levels at the nearest residence, these temporary impacts are considered *significant and unavoidable* at the project level.

From a cumulative standpoint because construction noise is a highly localized, even if construction activities did overlap in time with the project, the intervening distance between projects would diminish any additive effects. Construction activities at other planned and approved projects would be required to take place during daytime hours, and the City and project applicants would be required to evaluate construction noise impacts and implement mitigation, if necessary, to minimize noise impacts. Given these distances, topography and the intervening structures, cumulative construction noise impacts would be cumulatively *less than significant*.

The project's construction vibration levels would not exceed annoyance thresholds therefore, the project's incremental contribution is not cumulatively considerable. Given that vibration propagates in waves through the soil, multiple pieces of equipment operating simultaneously would each produce vibration waves in different phases that typically would not increase the magnitude of the vibration. Furthermore, vibration is a localized phenomenon, and tends to dissipate to insignificant levels within dozens of feet, as discussed in Impact 5.10-2. Thus, there would be no possibility for vibration associated with the project to combine with vibration from other projects because of their distances from the project site. Therefore, the cumulative vibration impacts would be cumulatively *less than significant*.

Traffic Noise Sources

When calculating future traffic impacts, the project's *Traffic Impact Analysis Report* modeled related projects, including background growth as represented in the SCTDM model. Thus, the future traffic results without and with the proposed project already account for the cumulative impacts from these other projects. Table 5.10-11, above, presents the cumulative increase in future traffic noise levels at intersections. Under both *Future No Project* and *Future Plus Project* conditions, area roadway segments would experience an increase in 1 dBA, with the exception of the analyzed segment of Henderson Road that would experience an increase of approximately 11 dBA. The *Future No Project* nor *Future Plus Project* condition exceeds the City's 60 dBA L_{dn} exterior noise level standard at any existing residential areas. Therefore, the project's incremental increase related to transportation noise is not considered cumulatively considerable.

As shown in Table 5.10-11 the project would not cause significant increases in traffic noise levels exceeding ambient noise level thresholds under *Future Plus Project* conditions and no mitigation measures are required. Therefore, traffic related noise impacts would be cumulatively *less than significant*.

Stationary Sources

Stationary noise sources of the proposed project would result in an incremental increase in non-transportation noise sources in the project vicinity. This incremental increase, although minor, is considered cumulatively considerable. However, stationary sources of noise at new and existing receptors were analyzed and appropriate mitigation measures (refer to **MM 5.10-2**, above) have been

outlined where required to achieve compliance with the applicable City exterior and interior noise level standards. As a result, impacts related to stationary noise sources would be *less than significant*.

Similar to the proposed project, other planned and approved projects would be required to mitigate for stationary noise impacts at nearby sensitive receptors. Stationary noise sources are generally localized, although there is a limited potential for other projects to contribute to cumulative noise impacts. With implementation of **MM 5.10-2**, stationary noise from the proposed project would not produce noise levels that would exceed City standards. Consequently, the proposed project would result in cumulatively *less than significant* impacts related to stationary noise.

Mitigation Measures: Implement **MM 5.10-1** and **MM 5.10-2**.

Level of Significance After Mitigation: Through implementation and compliance with **MM 5.10-1** and **MM 5.10-2**, the proposed project's incremental contribution to short-term construction noise and non-transportation (stationary) noise sources would be *less than cumulatively considerable*. Successful implementation of mitigation measures identified for this proposed project, combined with individual environmental reviews and adherence with applicable City of Redding design and development standards related to noise on a project-by-project basis, would result in cumulatively *less than significant* impacts.