



City of Ferndale

General Plan

Noise & Air Quality Elements



Public Draft

April 2016

City of Ferndale
General Plan
NOISE & AIR QUALITY ELEMENTS

Public Draft April 2016

City Council:

Don Hindley, Mayor
Ken Mierzwa
Michael Sweeney
Daniel Brown
Doug Brower

Planning Commission:

Jorgen Von Frausing-Borch, Chair
Michael Warner
Dean Nielsen
Paul Gregson
Ellin Beltz

City Staff:

Jay Parrish, City Manager
Jennifer Church, City Clerk
Kristene Tavares, Deputy City Clerk

Prepared by:



City of Ferndale, California

General Plan

Noise & Air Quality Elements

Table of Contents

<i>Chapter 1 – Introduction</i>	<i>1-1</i>
<i>Chapter 2 – Definitions</i>	<i>2-1</i>
<i>Chapter 3 – Setting and Context</i>	<i>3-1</i>
<i>Chapter 4 – Noise Characteristics and Sources</i>	<i>4-1</i>
<i>Chapter 5 – Air Quality Characteristics</i>	<i>5-1</i>
<i>Chapter 6 – Goals, Policies and Implementation Programs</i>	<i>6-1</i>
<i>Chapter 7 – References</i>	<i>7-1</i>

List of Figures

<i>Figure 1 – Perception of Sound</i>	<i>3-2</i>
<i>Figure 2 – Community Noise Exposure</i>	<i>4-5</i>
<i>Figure 3 – Noise Exposure Adjustment Factors.....</i>	<i>4-6</i>
<i>Figure 4 – Noise Contour Map</i>	<i>4-7</i>
<i>Figure 5 – Government Operations CO₂ Emissions by Sector and Source.....</i>	<i>5-9</i>

List of Photographs

<i>Main Street, Ferndale</i>	<i>Front Cover</i>
<i>Ferndale’s Connick Ranch</i>	<i>3-4</i>
	https://commons.wikimedia.org/wiki/File%3AConnick_Ranch_Ferndale_CA.jpg
<i>State Route 211 Sign</i>	<i>4-1</i>
	https://commons.wikimedia.org/wiki/File:California_State_Route_211.jpg
<i>Morning on the Lost Coast</i>	<i>5-1</i>
	https://commons.wikimedia.org/wiki/File%3AMorning_on_the_Lost_Coast.jpg
<i>Sitka Spruce on the Mattole Road</i>	<i>5-3</i>
	https://commons.wikimedia.org/wiki/File%3ASitkaSpruseOnWildcatRoad.jpg

All photographs used with permission: Ellin Beltz, Ferndale, California

This page intentionally left blank

1.0 Introduction

Noise

The City of Ferndale is interested in reducing the effects of excessive and harmful noise and is updating the General Plan Noise Element. Noise is a quality of life issue of significant community interest. It is one of seven mandated General Plan elements per the State Office of Planning and Research (OPR) General Plan Guidelines (2015). The previous Ferndale Plan Noise Element was a part of the 1975 Public Safety and Scenic Highway Element. Updated Element goals, policies and implementation measures will help minimize the community's exposure to current noise issues. Additionally these can shield the community from noise created by community activity and development. Identifying existing and projected noise sources is also an effective way to guide decisions on land use patterns.

Land use decisions can result in noise increases both directly (e.g., from zoning of additional community noise sources) and indirectly (e.g., from vehicle trips associated with future uses). Transportation improvements (such as road widening and extensions) can bring sources of traffic noise closer to existing or planned receptors. Sensitive receptors such as schools and health and senior care facilities are more vulnerable to noise impacts.

The OPR Guidelines require that the Noise Element provide a basis for comprehensive local programs that control and abate environmental noise to protect citizens from excessive exposure. This Element is required to identify and appraise noise in the community and follow guidelines adopted by the Office of Noise Control in the State Department of Health Services. Local governments must analyze and quantify noise levels and the extent of noise exposure through actual measurements or the use of noise modeling. The Noise component of the Element defines types of noise including mobile and stationary sources and uses projections, contour mapping and analysis to ensure that City noise standards are met.

Air Quality

Although an Air Quality Element is not required, in recognition of the significant value the community places on clean air the City has chosen to include one. It is among the most common optional General Plan elements throughout California, with state level guidance found in the OPR General Plan Conservation Element Guidelines. Several mandatory elements also regulate emissions to achieve air quality benefits, including the Land Use, Circulation, Conservation and Open Space. These elements will be updated at a later date and including an Air Quality Element now will facilitate the updating of these elements.

The Air Quality component of this Element is a focus for General Plan air quality policy, integrating related land use, transportation and circulation, transit, safety, and energy issues. The Air Quality component's policies and programs are intended to improve air quality and encourage cooperation with other jurisdictions involved in regional air quality improvement efforts.

In addition to general air quality issues, this component discusses climate change. The potential effects of climate change are extensive, have been well publicized, and are generally accepted

by the scientific community. Although actions taken on a local level cannot resolve this global issue, the Noise & Air Quality Element contains policies that address energy and resource conservation and compact community design. These policies reduce greenhouse gas emissions, counteract global warming, and help reduce potential adverse effects of global warming.

The air quality data and analysis includes an Emissions Reduction Plan to reduce greenhouse gas emissions. Signed in to law in 2006, Assembly Bill (AB) 32 calls for rollbacks that can be accomplished by reducing both stationary and mobile emission levels. AB 32 doesn't require cities to complete Climate Action or Emissions Reduction Plans but the Attorney General's Office has confirmed that such plans constitute acceptable mitigation for cities conducting General Plan Updates. When prepared in conjunction with a General Plan Update and incorporated into each Element, Climate Action or Emission Reduction Plans can expedite California Environmental Quality Act (CEQA) review.

Public involvement is an integral part of the General Plan update process. Prior to the preparation of this Element, both the Planning Commission and City Council held study sessions and public hearings. General Plan consultation is an important part of element preparation and the City contacted Native American governments soliciting input on the Noise & Air Quality Element.

During Element preparation, the City collaborated with agencies, districts, and organizations including the North Coast Unified Air Quality Management District (NCUAQMD), California Department of Transportation (Caltrans) and the Redwood Coast Energy Authority (RCEA). The Element was reviewed for consistency with relevant plans such as the NCUAQMD's Particulate Matter Attainment Plan and Humboldt County Noise Element and Air Quality Element updates. The RCEA and NCUAQMD may have funding opportunities for projects identified in this element. The element makes extensive use of web links and Internet source references to maximize the utility of the element while keeping it as concise as possible.

It is the overall goal of the Noise & Air Quality Element to protect the health and welfare of the community by promoting development that is compatible with noise and air quality standards, and which reflects the City's commitment to sustainable practices. This Element's noise and air quality goals and policies address the provisions for maintaining acceptable community noise levels and continued improvement to air quality in Ferndale and the surrounding air basin.

Relationship to other General Plan Elements

All General Plan element goals and policies must be internally consistent and are interdependent and related to each other. No single element of the plan should be used in isolation without consideration of all other component elements as an integrated General Plan. The Noise & Air Quality Element directly correlates to the Land Use, Circulation, and Housing Elements, and was reviewed for consistency with all Ferndale General Plan Elements.

Land Use Element - The Land Use Element includes policies that are intended to promote efficient land use patterns, preserve open space, and provide adequate services. These policies support sustainability. When updated, the Land Use Element will show acceptable land uses in relation to existing and projected noise contours.

Circulation Element - The updated Circulation Element may include policies to reduce congestion and encourage bicycle and pedestrian travel. These measures help ensure that greenhouse gas emissions from vehicle sources are reduced or minimized. Noise exposure data will also influence the location and design of transportation facilities.

Open Space and Conservation Element - The updated Open Space and Conservation Element may include policies that support open space acquisition, emphasizing an interconnected open space system including bicyclist and pedestrian connections between residential development and schools, employment, and commercial areas.

Public Facilities Element - The updated Public Facilities Element may include policies that address energy-efficiency and renewable energy, water conservation, maximizing the use of recycled water, solid waste source reduction and recycling.

Safety Element - The safety element includes policies intended to minimize the potential for loss of life and property due to flooding, which has been identified as a potential impact of climate change.

Housing Element - The Housing Element includes policies to promote energy conservation educational programs and sustainable building techniques such as construction waste recycling and energy efficient retrofits, as well as to explore ways to incorporate energy saving features and materials, and energy efficient systems and designs into residential development and retrofits. These policies support sustainable development. Noise exposure information provided in the Noise component must be considered when planning the location of new housing.

Historic & Cultural Resources Element- The Historic & Cultural Resources Element includes policies to maintain and enhance the historic character and nature of the city including those structures on the National Register of Historic Places as well as contributing buildings and neighborhoods.

This page intentionally left blank

2.0 Definitions

This section provides definitions of terms used throughout the Element.

ADT: Average daily trips (vehicles).

AADT: Annual average daily trips (vehicles)

Ambient Noise: The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Attenuation: A decrease in sound level. The most common cause of attenuation is increased distance between a source and receiver (typically, sound decreases by 3 to 6 dB per doubling of distance). Barriers (e.g., walls, hills, and dense vegetation) located between a source and receiver can also cause attenuation.

A-Weighted Level: See dBA.

Best Management Practices (BMP): Methods or techniques found to be the most effective and practical means in achieving an objective (such as preventing or minimizing pollution) while making the optimum use of resources.

CAPCOA: California Air Pollution Control Officers Association; represents all 35 local air quality agencies in the state including the North Coast Unified Air Quality Management District.

CARB: California Air Resources Board, a department within the California Environmental Protection Agency.

CNEL: Community Noise Equivalent Level. The average equivalent A-weighted sound level during a 24-hour period, obtained after addition of five decibels to evening (7 to 10 p.m.) sound levels, and addition of 10 decibels to night (10 p.m. to 7 a.m.) sound levels.

dBA: A-weighted sound level. 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 sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.

Decibel (dB): A unit of measurement 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, which is 20 micropascals (20 micronewtons per square meter).

Greenhouse Gas: Any of various gaseous compounds (such as carbon dioxide and methane) that absorb infrared radiation, trap heat in the atmosphere and contribute to the greenhouse effect.

Intrusive Noise: Any noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence, and tonal or informational content as well as the prevailing noise level.

Ldn: Day-Night Average Level. The average equivalent A-weighted sound level during a 24-hour day, obtained after the addition of 10 decibels to sound levels in the night after 10 p.m. and before 7 a.m. (Note: CNEL and Ldn represent daily levels of noise exposure averaged on an annual or daily basis, while Leq represents the equivalent energy noise exposure for a shorter time period, typically one hour.)

Leq: Equivalent energy level. The sound level corresponding to a steady-state sound containing the same total energy as a time-varying signal measured over a given sample period. Leq is typically computed over 1-, 8-, and 24-hour sample periods.

Noise: Unwanted sound.

Noise Contours: Lines drawn on a map around a noise source indicating equal levels of noise exposure. CNEL and Ldn are the metrics utilized herein to describe annoyance due to noise and to establish land use planning criteria for noise.

Noise Contour Bands: The area between Noise Contours measured in Ldn illustrating how quickly sound diminishes as it travels away from the source.

Noise Impacted Areas: Land areas that are located on the Noise Contour Map within the Noise Contour Bands of 60 Ldn or greater.

Noise Measurement: The measurement of noise at a given location. It is usually desirable to indicate both the intensity of the noise at the given location, and the distance between the noise source and the location at which the measurement is made. For example, one would report that a diesel truck generates 88 dBA of noise, as measured at a distance of 50 feet.

3.0 Setting and Context

The City of Ferndale is located on the Eel River Valley's alluvial plain, roughly 4½ miles from the Pacific Ocean. This marine influenced environment has prevailing northerly ocean winds, carrying cool, moist air across the alluvial plain in summer. In the winter, the prevailing winds are from the south.

Considered the northern gateway to California's Lost Coast, the City is surrounded by forested mountains to the south and flat agricultural lands to the west, north and east. State Highway 211 connects Ferndale and U.S. 101. It passes directly through the middle of town (Main Street) providing a connection to Petrolia and the Lost Coast via the Mattole Road.

General Noise Characteristics and Regulation

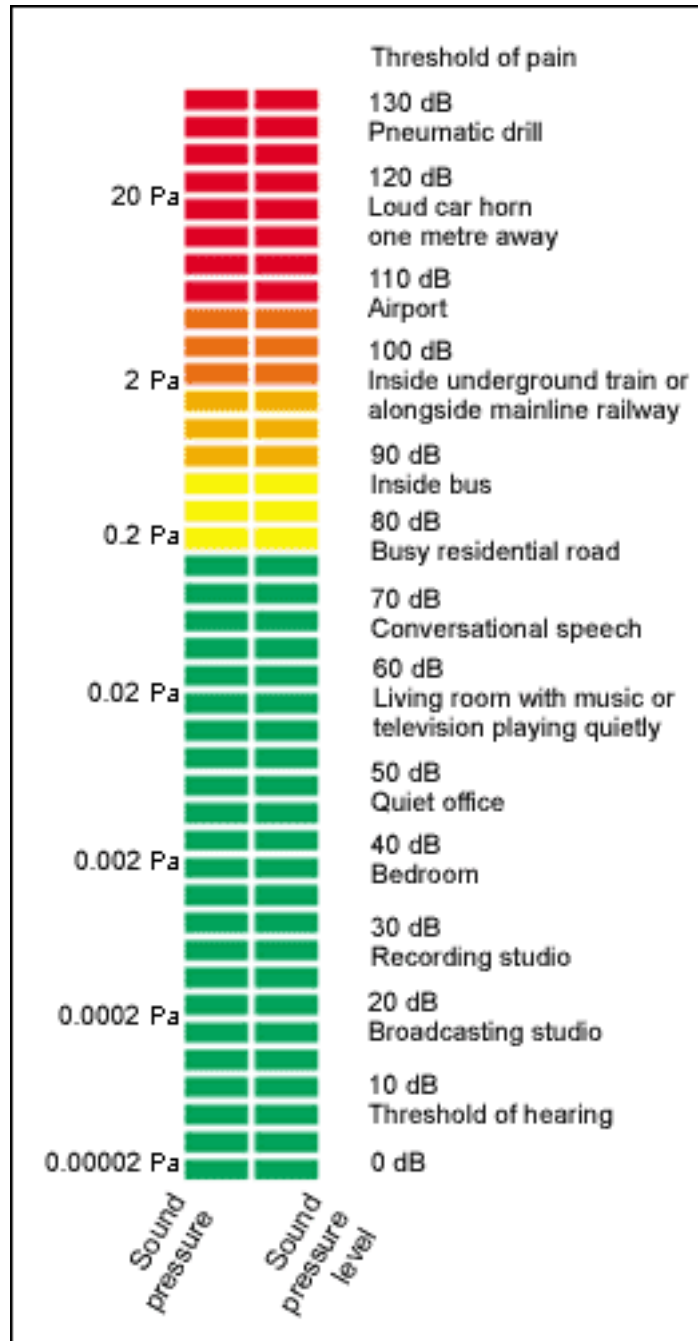
Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Sound is characterized by various parameters that include the oscillation rate of sound waves, the speed of propagation, and the pressure level or energy content. Sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The unit of sound pressure expressed as a ratio to the faintest sound detectable by a human ear is called a decibel (dB). The U.S. Environmental Protection Agency (EPA) has established 70 dB as the point at which noise begins to harm hearing ([EPA 1974](#)).

The dB scale is used to quantify sound intensity. Because sound pressure can vary enormously within the range of human hearing, noise measurements are weighted more heavily within those frequencies of maximum human sensitivity in a process called "A-weighting," referred to as dBA. In general, a difference of more than 3 dBA is a perceptible change in environmental noise; people perceive an increase of 10 dBA as a doubling of loudness ([EPA 1974](#)). Figure 1 compares some common sounds and how the average human perceives them.



Because sound levels can vary markedly over time, several methods for describing the average character of sound have been devised. A commonly used noise metric is the Community Noise Equivalent Level (CNEL). The CNEL penalizes noise levels during periods of greater noise sensitivity to create an artificially weighted 24-hour exposure. It is calculated by adding a 5-decibel penalty to sound levels in the evening (7:00 p.m. to 10:00 p.m.), and a 10-decibel penalty to sound levels in the night (10:00 p.m. to 7:00 a.m.) to compensate for the increased sensitivity to noise during the quieter late evening and nighttime periods. Thus, the CNEL noise metric provides a 24-hour average of A-weighted noise levels at a particular location, with an evening and a nighttime adjustment, which reflects increased sensitivity to noise during these times of the day. The Day Night Level (Ldn) similarly averages sound levels over 24 hours, with 10dB added to nighttime sound levels. Ldn and CNEL values rarely differ by more than 1 dB. As a matter of practice, Ldn and CNEL values are considered to be equivalent and are treated as such in this assessment.

Figure 1: Perception of Sounds



Dept. of Labor OSHA Appendix I:A-3. Sound Propagation

Noise is commonly defined as unwanted sound. In general, noise is not a significant issue in Ferndale. The primary noise source affecting sensitive receptors (homes, schools) in the City is traffic on State Route 211. Some commercial and agricultural uses are also identified as noise contributors, although such sources have not generally been identified as significant noise problems. Potential noise sources affecting development in the City are described in more detail in Chapter 4.0 Noise Characteristics and Sources.

According to OPR's General Plan Guidelines, the fundamental goals of a noise element are:

- To provide sufficient information concerning the community noise environment so that noise may be effectively considered in the land use planning process. In so doing, the necessary groundwork will have been developed so that a community noise ordinance may be utilized to resolve noise complaints.
- To develop strategies for abating excessive noise exposure through cost-effective mitigating measures in combination with zoning, as appropriate, to avoid incompatible land uses.
- To protect those existing regions of the planning area whose noise environments are deemed acceptable and also those locations throughout the community deemed "noise sensitive."
- To utilize the definition of the community noise environment in the form of Community Noise Equivalent Level (CNEL) or Day Night Average Level (Ldn) noise contours as provided in the noise element for local compliance with the State Noise Insulation Standards. These standards require specified levels of outdoor to indoor noise reduction for new multifamily residential constructions in areas where the outdoor noise exposure exceeds CNEL (or Ldn) 60 decibels (dB) ([OPR 2003](#)).

Government Code Section 65302(f) requires that noise elements identify and appraise noise problems in the community. The noise element must recognize the guidelines established by the State Department of Health Services Office of Noise Control and analyze and quantify, to the extent practicable, as determined by the legislative body, current and projected noise levels for each of the following:

- Highways and freeways.
- Primary arterials and major local streets.
- Passenger and freight on-line railroad operations and ground rapid transit systems.
- Commercial, general aviation, heliport, helistop, and military airport operations, aircraft overflights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operation.
- Local industrial plants, including, but not limited to, railroad classification yards.
- Other ground stationary sources identified by local agencies as contributing to the community noise environment.

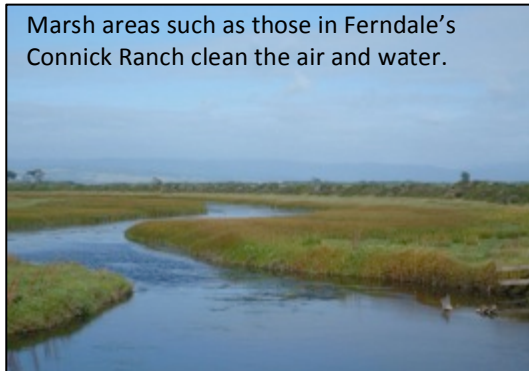
Noise contours must be shown for each of these sources and stated in terms of community noise equivalent level (CNEL) or day-night average level (Ldn) ([OPR 2003](#)). Chapter 4.0 Noise Characteristics and Sources presents the noise contour map and guidelines for noise-compatible land use. Chapter 6 (Goals, Policies and Implementation) presents mitigation to reduce noise impacts to the community.

General Air Quality Characteristics and Regulations

Ferndale is located within the North Coast Unified Air Quality Management District (NCUAQMD), which consists of Del Norte, Humboldt, and Trinity Counties. The California and Federal Clean Air Acts establish air quality standards for several pollutants, including particulate matter, carbon monoxide, ozone, nitrogen dioxide, sulfur dioxide, and lead, and require jurisdictions for areas that violate these standards to prepare and implement plans to achieve the standards. The NCUAQMD meets all federal air quality standards, but exceeds the maximum limits for state standards relating to particulate matter smaller than or equal to 10 microns in diameter (PM₁₀). Significant sources of PM₁₀ include motor vehicle exhaust, road dust, construction and demolition activities, and wood-burning stoves and fireplaces.

According to the Environmental Protection Agency (EPA), the federal agency regulating air quality, particulate pollution consists of microscopic solids or liquid droplets small enough to pass through the nose and throat and penetrate deep into the lungs, causing serious health problems. Scientists have linked particulate matter to a variety of health issues including asthma, decreased lung function, irregular heartbeat and increased respiratory symptoms ([EPA 2013](#)). Particulate matter has a greater effect on people with heart or lung diseases, children and older adults ([EPA 2013](#)).

The California Clean Air Act of 1988 places primary responsibility for improving Humboldt County's air quality on the NCUAQMD. In 1995, the NCUAQMD prepared a Particulate Matter (PM₁₀) Attainment Plan draft report to identify major sources of PM₁₀ in the District and strategies to reduce particulate pollution and achieve the state standard for PM₁₀. These include strategies to reduce emissions from both stationary and mobile sources.



Marsh areas such as those in Ferndale's Connick Ranch clean the air and water.

The California Environmental Quality Act (CEQA) requires cities to identify the potentially significant effects on the environments of projects over which the city has discretionary authority. A city approving a project is also required to mitigate significant effects whenever feasible. To determine whether a project would have a potentially significant effect on air quality, the project's potential effects are compared to the local air district's thresholds of significance. The NCUAQMD has not formally adopted significance thresholds; the District instead uses the Best Available Control Technology (BACT) emission rates for stationary sources and recommends the use of the latest version of the California Air Pollution Control Officer's Association (CAPCOA)'s "Health Risk Assessments for Proposed Land Use Project" for new development ([NCUAQMD 2013](#)).

Global Climate Change

Global climate change is defined as the long-term change in Earth's climate, which has multiple effects. One of these is global warming, a progressive gradual rise of the Earth's average surface temperature thought to be caused in part by increased concentrations of

greenhouse gases (GHGs) in the atmosphere. The change in the average weather of the earth can be measured by wind patterns, storms, precipitation, and temperature. It is exacerbated by GHGs, which trap heat in the atmosphere (thus the “greenhouse” effect). GHGs include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydroflourocarbons (HFCs), perflourocarbons (PFCs), and sulfur hexafluoride (SF₆), and are emitted by both natural processes and human activities.

The projected effects of climate change cover a broad spectrum of impact areas:

Human health:

- Exposure to air pollution
- Exposure to infectious diseases due to changing ecosystems and climate
- Weather-related mortality (flooding)

Water Resources:

- Changing rainfall and snow pack issues
- Hydrology change in rivers and Delta
- Increasing sea level:
- Changing habitat and species distribution

Chapter 5.0 *Air Quality Characteristics* includes a description of local and regional air quality conditions, a discussion of the area’s current air quality designation, a summary of applicable federal and state standards and laws, a summary of air pollution sources in the Planning Area, and an emissions inventory.

This page intentionally left blank

4.0 Noise Characteristics and Sources

Noise Sources

The main noise source in Ferndale is from vehicular traffic travelling State Route (SR) 211. This two-lane roadway with shoulders connects Ferndale to US Highway 101 at Fernbridge, and becomes Main Street within City limits. For traffic entering Ferndale, the 55 mph speed limit is lowered to 35 mph just outside of easterly City limits, and again to 25 mph approximately a quarter mile later at the high school. Highway speeds are established by Caltrans using the *California Manual for Setting Speed Limits* (2014).

Classified as a Rural Major Collector, SR 211 primarily provides transportation to and from the City of Ferndale, although Petrolia, Capetown, and Honeydew residents and visitors also use the route to travel from the Mattole Road to Highway 101. According to the most recent Route Concept Report, Caltrans does not plan to increase the capacity of the route ([Caltrans 2014](#)).

Many residences are within two blocks of SR 211 and, in a generally quiet community, are disproportionally affected by road noise from traffic.

Within the City Limits, Rural Major Collectors include Arlington Ave, 5th Street, Ocean Ave, Wildcat Ave, Bluff Street, and Grant Ave. There are no roads classified as Arterials in Ferndale. Market Street, Herbert Street, Shaw Ave and Rose Ave are classified as Minor Collectors; all other roads within the City are classified as Local Roads. See Figures 2 and 3.



Traffic noise volume depends primarily on traffic speed, volume and vehicle type. The main motor vehicle noise source is tire noise, which increases with speed. Trucks and older automobiles also produce engine and exhaust noise, and trucks generate wind noise. The California State Vehicle Code states that all vehicles must be equipped with an adequate muffler to prevent excessive exhaust system noise. It also prohibits the operation of a passenger vehicle (other than a motorcycle), or a truck with a Gross Vehicle Weight Rating (GVWR) of less than 6,000 pounds, with an exhaust noise level greater than 95 decibels. A noise limit of 92 decibels applies to any motorcycle manufactured before 1970, and a noise limit of 80-88 decibels applies to motorcycles manufactured after 1970, depending on the year of manufacture.

Within the city, noise abatement, related to truck noise specifically, is enforced by the City of Ferndale Traffic Ordinance 04-01, which states that motor truck travel for vehicles exceeding a maximum gross weight limit of three tons, are restricted to the following truck route: beginning on Ocean Avenue where the Wildcat Road intersects Ocean Avenue; thence easterly to where Ocean Avenue intersects Main Street; thence along Main Street to the easterly boundary line of the City of Ferndale. This limits truck related noise exclusively to the aforementioned route through town.

In actuality, there are at least three different ambience conditions in Ferndale. The first ambience level is during peak morning and late afternoon traffic. The second ambience level is during the remaining daylight hours of the day. Field measurements of ambience were taken, and it was found that the ambient level on Main Street is about 52 dB(A), which is at least 20 dB(A) lower than during the peak traffic flow. At 5th and Shaw Streets the reading was 45 dB(A) - about 15 dB(A) lower than the peak traffic period ambience level. In outlying areas, the peak traffic and normal daytime levels differ very little. Developing contours of the usual daytime ambience would be difficult because the lowest and highest readings were 45 and 52 decibels respectively; very quiet for a community during the day. The third ambience level is during the night when ambience levels are approximately 10 dB(A) lower than the usual daytime levels. The very low level of background noise in the community increases the contrast with loud single event noises and single event noise is consequently more noticeable and objectionable.

Stationary sources of noise within City limits are limited. The Humboldt County Fairgrounds generates noise during events, but is not a constant source of noise. The nearest airport is Rohnerville Airport, a one-runway airport located about 6.5 miles southeast of Ferndale; airport sounds are not audible within the City. Other minor or infrequent stationary sources of noise include high school sporting events, farm equipment repair, the Noon and emergency siren and the Kinetic Sculpture Race and parades.

Single Event Noise occasionally occurs within the city of Ferndale. Diesel delivery trucks generate the loudest single event noises in the planning area. At 50 feet, a truck generates a noise level of 88 decibels and at 100 feet the level is 82 decibels. Single event sounds in the 75 to 85 decibel range are distracting to most people and sounds over 85 decibels are often disturbing and can cause hearing loss if exposure is frequent. For persons inside a building, these noise levels would be perceived at about 20 decibels less with the windows closed and 10 decibels less with them open. Single event impacts from other sources that generate noises of above 75 decibels, such as chain saws, lawn mowers and barking dogs, are not mapped because they occur at random or in scattered locations. Field measurements of a chain saw that registered 108 dB (A) at the operator and a tractor that registered at 93 dB (A) at the driver suggest that Ferndale experiences the usual occurrences of loud single event noises. In recent years there has been considerable reduction of truck noise on Main Street as a result of reduced logging activity and as a result of State and Federal requirements for quieter trucks.

According to conversations with Chief of Police Bret Smith, noise complaints are uncommon in Ferndale and are not tracked separately from other service calls.

Sensitive Receptors

Sensitive receptors are land uses or users that are interrupted (rather than simply impacted) by relatively low levels of noise. Such receptors include hospitals, convalescent homes, schools, churches, and sensitive wildlife habitat.

Ferndale's sensitive receptors include Ferndale Elementary and High Schools, Ferndale Community Church, St. Mary's Episcopal Church, Assumption Catholic Church, Our Savior's Lutheran Church, St. Mark's Lutheran Church, and Living Waters Foursquare Church. There

are no hospitals, convalescent homes, or sensitive wildlife habitats within the City. However, Russ Park includes 105 acres of closed canopy forest deeded to the City, “as a refuge and breeding place for birds” (Z. Patrick Russ (Mrs.) deed).

Noise Standards

The EPA has concluded that maintaining environmental noise below a 24-hour exposure level of 70 decibels will prevent any measurable hearing loss over a lifetime. Likewise, levels of 55 decibels outdoors and 45 decibels indoors are identified as preventing activity interference and annoyance. These levels of noise permit spoken conversation and other activities such as sleeping, working and recreation, which are part of the daily human condition.

Figure 4 presents the California Department of Health, Office of Noise Control noise compatibility guidelines for various land uses. The table illustrates the ranges of community noise exposure in terms of what is “normally acceptable,” “conditionally acceptable,” “normally unacceptable,” and “clearly unacceptable.” These guidelines may be used to assess whether or not noise poses a conflict with land development. Figure 5 provides adjustment factors to correct for seasonal variations in noise source levels, existing outdoor ambient noise levels, previous exposure to the source, community attitudes, and tonal characteristics of the source. Adjusting the noise exposure values provides an accurate assessment of locally acceptable noise exposure.

In 2006, the City of Ferndale adopted Nuisance Ordinance 06-04, with Section 7.04 designated specifically for Noise. It outlines restrictions for noise, both vehicular and non-vehicular, within the city limits. A noise-based curfew is set for the hours of 10:00 p.m. through 7:00 a.m., and a construction-related noise-based curfew is set for the hours of 7 a.m. and 7 p.m. on weekdays, or between 8 a.m. and 7 p.m. on Saturday and Sunday ([Ferndale Nuisance Ordinance 06-04 §7.04](#)).

Analysis of Local Noise Environment

Estimated existing noise contours from SR 211 are shown on Figure 6. It should be noted that the contours presented are outdoor noise levels and only account for attenuation due to distance, not from sound wall structures or other noise barriers. The contours are intended to show generally where higher noise levels expressed in Annual Average Daily Traffic (AADT) may occur.

Future Conditions

Community noise levels can increase with development. With a static rate of growth experienced over the past 13 years, Ferndale’s development trends have remained equally static. According to the 2012 General Plan Housing Element, three new subdivisions were approved between 2004 and 2009. There are 13 new buildable parcels. These are all located in single-family zones. There is limited land available in Ferndale because the City has maintained its one square mile of land within the city limits. At this time, the City does not plan to annex additional land. Noise levels within the City are not expected to increase significantly due to development.

Attenuation

Existing and potentially incompatible noise levels in problem areas can be reduced through land use planning, subdivision review, building code enforcement, and other administrative means. Chapter 6 Goals, Policies and Implementation Programs contains attenuation measures to reduce noise impacts to the Ferndale community.

Figure 2: Community Noise Exposure

Ldn or CNEL, dB

Land Use Category	50	55	60	65	70	75	80	Maximum Interior Noise Levels*
Residential – Low Density Single Family, Duplex, Mobile Home								45
Residential – Multi-Family								45
Transient Lodging – Motel/Hotel								45
Schools, Libraries, Churches, Hospitals, Nursing Homes								45
Auditorium, Concert Hall, Amphitheaters								35
Sports Arena, Outdoor Spectator Sports								-
Playgrounds, Neighborhood Parks								-
Golf Courses, Riding Stables, Water Recreation, Cemeteries								-
Office Buildings, Business, Commercial and Professional								50
Industrial, Manufacturing, Utilities, Agriculture								50

	NORMALLY ACCEPTABLE – Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
	CONDITIONALLY ACCEPTABLE – New construction/development should be undertaken only after a detailed analysis of noise reduction requirements is made and noise insulation features are included in the design. Conventional construction but with closed windows and fresh air supply system will normally suffice.
	NORMALLY UNACCEPTABLE – New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and need noise insulation features included in the design
	CLEARLY UNACCEPTABLE – New construction or development should generally not be undertaken.

*Due to exterior sources. Source: Office of Planning and Research. 2003. [State of California General Plan Guidelines](#)

Figure 3: Noise Exposure Adjustment Factors

Type of Correction	Description	Amount of Correction to be Added to Measured CNEL in dB
Seasonal Correction	Summer (or year-round operation).	0
	Winter only (or windows always closed).	-5
Correction for Outdoor Residual Noise Level	Quiet suburban or rural community (remote from large cities and from industrial activity and trucking).	+10
	Quiet suburban or rural community (not located near industrial activity).	+5
	Urban residential community (not immediately adjacent to heavily travelled roads and industrial areas).	0
	Urban residential community near relatively busy roads of industrial areas.	-5
	Very noisy urban residential community.	-10
Correction for Previous Exposure and Community Attitudes	No prior experience with the intruding noise.	+5
	Community has had some previous exposure to noise intruding but little effort is being made to control the noise. This correction may also be applied in a situation where the community has not been exposed to the noise previously, but the people are aware that bona fide efforts are being made to control the noise.	0
	Community has had considerable previous exposure to the intruding noise and the noisemaker's relations with the community are good.	-5
	Community aware that operation-causing noise is very necessary and it will not continue indefinitely. This correction can be applied for an operation of limited duration and under emergency circumstances.	-10
Pure Tone or Impulse	No pure tone or impulsive character.	0
	Pure tone or impulsive character present.	+5

Source: Office of Planning and Research. 2003. [State of California General Plan Guidelines](#)

Figure 4: Ferndale's Noise Contour Map



AADT = Annual Average Daily Traffic

This page intentionally left blank

5.0 Air Quality Characteristics

This section includes a description of local and regional air quality conditions, a discussion of the area's current air quality designation, a summary of applicable federal and state standards and laws, a summary of air pollution sources in the Planning Area, and an emissions inventory and reduction plan.

Overall Air Quality

The Humboldt County General Plan Update Background *Natural Resources and Hazards* Report (2002) [Chapter 9 Air Quality](#) describes the overall countywide climate, regulatory setting, and air quality conditions and trends. The report also examines climate and atmospheric conditions impacts on the air pollutants movement and dispersal.



Morning mist on the Lost Coast
south of Centerville Beach

Ferndale's climate and wind patterns are typical of the low-lying coastal areas of Humboldt County. In general, the Background Report characterizes the coastal climate as having cool summers with frequent fog and mild winters with lots of rain. Proximity to the ocean moderates coastal temperatures while inland areas tend to experience the extremes of hot, dry summers and mild, wet winters.

Winds control the rate and dispersion of local pollutant emissions. Horizontal air movement spreads pollutants over a wider area. Coastal Humboldt County winds exhibit a seasonal pattern. In the summer, strong north to northwesterly winds are common. During the winter, winds are from southerly quadrants. Offshore and onshore flows are also common along the coast and are associated with pressure systems in the area. Onshore flows frequently bring foggy cool weather to the coast, while offshore flows often blow fog away from the coast and bring sunny warm days.

Vertical air movement spreads pollutants through a thicker layer of air. Upward dispersion of pollutants is hindered when the atmosphere is stable; that is, when warm air overlies cooler air below. This situation is known as an inversion. Inversions affect the dispersion of pollutants by altering the vertical depth of the atmosphere through which pollutants can be mixed. The County General Plan Update Background Report discusses inversions and their effects on pollutant dispersal in greater detail.

Unlike more urban areas, Humboldt County's air quality concerns tend to focus on industrial emission sources. The California Air Resources Board (CARB) operates a regional network of air pollution monitoring stations that provide information on ambient concentrations of criteria air pollutants and toxic air contaminants. NCUAQMD measures PM₁₀ at sites in Crescent City, Eureka, and Weaverville. Data for Humboldt County is collected at an air quality station in Eureka that also monitors for PM₁₀ and PM_{2.5}. Monitoring station data indicates that Eureka's air quality is improving, and that PM levels have been reduced almost to attainment levels.

Ferndale's air quality is similar to that of the rest of rural Humboldt County. The nearest air quality monitoring station to Ferndale is located on Humboldt Hill. The station monitors CO, NO₂, SO₂, PM₁₀, PM_{2.5}, and ozone. According to the EPA, since 2009 lead has been measured and

reported in Total Suspended Particulates and PM₁₀ locally ([EPA 2013](#)). The County General Plan Update background report on air quality contains an in-depth look at existing levels and regulation of these pollutants, as well as toxic air contaminants, within the county.

Air Basin Requirements

The North Coast Air Basin must be targeted to meet standards outlined in the NCUAQMD [Air Quality Control Rules](#) covering visible emissions, particulate matter, fugitive dust emissions, sulfur oxide and sulfides, and geothermal emissions. Emissions are also subject to General Plan policies and programs if the project requires discretionary City approval. Environmental review of such projects requires coordination between NCUAQMD and the City to ensure that the project will be carried out in a manner consistent with state air quality laws and reduce any project impacts to below levels of significance. NCUAQMD also requires coordination on projects involving demolition of commercial structures containing asbestos and for surface mining and grading in areas containing naturally occurring asbestos.

Climate Change Legislation

Executive Order S-3-05 (2005)

Executive Order S-3-05 (EO-S-3-05) states that California is vulnerable to the effects of climate change, including reduced snowpack in the Sierra Nevada Mountains, exacerbation of California's existing air quality problems, and sea level rise. To address these concerns, the executive order established statewide targets to reduce greenhouse gas emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80% below 1990 levels by 2050.

AB 32 (2006)

California Assembly Bill 32 (AB 32), the Global Warming Solutions Act, required the state Air Resources Board (ARB) to adopt regulations by January 1, 2008 for the reporting and verification of statewide greenhouse gas emissions and to monitor and enforce compliance with that program. The bill requires the adoption of rules and regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emissions reductions, and adoption of a "Scoping Plan" that provides a detailed pathway to achieve by 2020 of statewide greenhouse gas emissions limit equivalent to 1990 emissions.

AB 811 (2007)

AB 811 authorizes all local governments in California, if they so choose, to establish special districts that can be used to finance energy efficiency, solar, or other renewable energy improvements to homes and businesses in their jurisdiction. As a result of opposition by Fannie Mae and Freddie Mac, federal regulators have effectively put most of the local programs dealing with residential properties on hold. It may take additional federal legislation to get residential programs fully back on track, although programs designed for commercial properties face no similar roadblocks. A handful of programs in California are continuing but at the time of publication, uncertainty remains.

SB 97 (2007)

Senate Bill (SB) 97 acknowledges that climate change is a prominent environmental issue that requires analysis under the California Environmental Quality Act (CEQA). Pursuant to SB 97, the State CEQA Guidelines were updated in 2010 to include provisions for mitigating greenhouse gas emissions and/or the effects of greenhouse gas emissions. The amended CEQA Guidelines (Section 15183.5) allow jurisdictions to analyze and mitigate the significant effects of greenhouse gases at a programmatic level by adopting a Climate Action Plan (CAP) for the reduction of greenhouse gas emissions. Later, as individual projects are proposed, project specific environmental documents may tier from and/or incorporate by reference that existing programmatic review in their cumulative impacts analysis. This CAP has been developed specifically for this purpose.

SB 375 (2008)

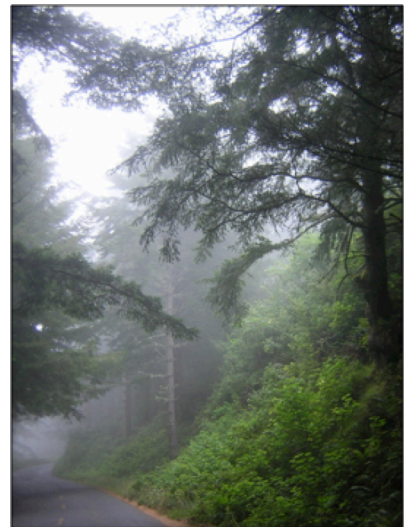
Senate Bill 375 aligns regional transportation planning efforts, regional greenhouse gas reduction targets, and land use and housing allocations to reduce vehicle emissions. This effort was not applicable to Humboldt County. The State assigned passenger vehicle per capita greenhouse gas reduction targets to each Metropolitan Planning Organization (MPO). For example, within the Sacramento Area Council of Governments (SA COG) region, these targets are a 7% reduction by 2020 and a 16% reduction by 2030 compared to 2005 baseline levels of 23.0 lbs of CO₂ per capita per weekday.

California Environmental Quality Act (CEQA)

CEQA requires public agencies to evaluate whether a project that requires discretionary approval may have significant environmental effects and, if so, to impose feasible mitigation measures. In general, when it determines in the first instance that a project may have a significant effect on the environment, the public agency must prepare an environmental impact report (EIR). While air quality modeling software (URBEMIS 2007) provides a methodology for estimating a project's carbon dioxide emissions, there are no established thresholds or standards for determining whether a project's greenhouse gas emissions are significant.

Attenuation

Area-wide and mobile source emissions may be reduced through policies that target specific sources. Transportation policies may be designed to reduce area-wide PM₁₀ levels by reducing both the number of vehicle miles traveled and the number of vehicle trips. Grading and road maintenance policies may reduce particulates in dust. Incentives for energy efficient building construction may help reduce emissions related to residential and commercial energy consumption, including woodstove emissions. Maintaining efficient and timely procedures for project referral to the NCUAQMD for review and consultation will help reduce emissions caused by demolition.



Sitka Spruce trees on the Mattole Road absorb CO₂, a greenhouse gas.

Chapter 6 *Goals, Policies and Implementation Programs* contains attenuation measures to improve air quality and reduce greenhouse gas emissions in the City.

Greenhouse Gas Emissions

The Redwood Coast Energy Authority (RCEA) is a Joint Powers Authority whose members include the County of Humboldt, the Cities of Arcata, Blue Lake, Eureka, Ferndale, Fortuna, Rio Dell and Trinidad, and the Humboldt Bay Municipal Water District. RCEA's purpose is to develop and implement sustainable energy initiatives that reduce energy demand, increase energy efficiency, and advance the use of clean, efficient and renewable resources available in the region ([RCEA 2013](#)).

RCEA produced the Humboldt County Comprehensive Energy Action Plan, consisting of implementation measures specific to the functions of RCEA as the regional energy authority for the County, including working with local jurisdictions to complete greenhouse gas inventories, set greenhouse gas reduction targets, and developing climate action plans ([RCEA 2013](#)).

Local government operations, including facilities, vehicle fleets, street lights, traffic signals, water systems, wastewater plants, and solid waste generation release greenhouse gases into the atmosphere.

Following California mandates to address climate change and tackle greenhouse gas emissions, the Redwood Coast Energy Authority also helps local government agencies calculate greenhouse gas emissions, create climate action plans, and carry plans into action.

In 2005 and 2010, RCEA, in conjunction with International Council for Local Environmental Initiatives' (ICLEI) Institute for Local Governments, completed a Greenhouse Gas Inventory for Ferndale. RCEA produced these documents for the City's benefit as a planning resource. The cost was entirely covered by RCEA through its PG&E partnership program. This document is a primary resource used in this Air Quality Element. The inventory measures greenhouse gas emissions resulting specifically from Ferndale's government operations, and addresses where and what quantity of emissions are generated through various government activities.

The intent of the analysis enables Ferndale to tailor effective greenhouse gas emission reduction strategies. Potential strategies identified by RCEA include increasing energy efficiency in facilities and vehicle fleets, renewable energy sources, reducing waste, and supporting alternative modes of transportation for employees. In performing these actions, the City would benefit from lower energy bills, improved air quality, and more efficient government operations. The City would also be mitigating local and global climate change impacts while saving taxpayer money through more efficient government operations (RCEA 2012).

The following Emissions Reduction Plan is based largely on the Ferndale 2005 Government Operations Greenhouse Gas Emissions Inventory. The 2010 inventory was not released by RCEA until August 10, 2015, after the Air Quality Element was prepared.

Emissions Inventories and Reduction Target

The six internationally recognized greenhouse gases (Carbon Dioxide, Methane, Nitrous Oxide, Hydro fluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride) are combined in a unit called carbon dioxide equivalent (CO₂e). Since equal quantities of each greenhouse gas have more or less influence on the greenhouse effect, converting all emissions to a standard metric allows for

apples-to-apples comparisons amongst quantities of all six emissions types (RCEA 2012). Greenhouse gas emissions are reported in this inventory as metric tons of CO₂e (MTCO₂e).

In 2005, Ferndale's annual government operations greenhouse gas emissions totaled 320 metric tons of CO₂e. The majority of greenhouse gases emitted by government operations come from the Wastewater Treatment Facility, followed by vehicles, buildings and facilities, and employee commute, and water and wastewater transport. Public lighting and solid waste contribute a small portion of CO₂e by sector (Figure 5). The biggest source of CO₂e emissions is the wastewater treatment process, followed by electricity, gasoline, propane, diesel, and finally solid waste processing (Figure 5). Although the EPA cites cattle and cow manure in holding ponds as a source of methane, there are too few dairy cows within the City limits to be a contributing factor.

The City of Ferndale 2005 Government Operations Greenhouse Gas Emission Inventory prepared by RCEA contains a more detailed breakdown of emissions, a discussion of the methodology, and an in-depth analysis of emissions by sector and source. This inventory provides an emissions baseline that can be used to set emissions reduction targets for Ferndale's municipal operations.

A greenhouse gas emissions reduction target is established to reduce emissions to a certain percentage below base year levels by a chosen planning horizon year (e.g., a reduction to 1990 levels by 2020 or 80 percent below 1990 levels by 2050). The reduction target provides both an objective toward which to strive and a baseline against which to measure progress. It allows the City to quantify its commitment to reducing its contribution to global greenhouse gases while becoming more efficient. An emissions reduction target should strike a balance between scientific necessity, ambition, and what is realistically achievable (RCEA 2012).

The International Council for Local Environmental Initiatives (ICLEI) is a worldwide non-governmental organization. ICLEI developed software to quantify greenhouse gas emission reduction efforts, providing tools to inventory, categorize, and quantify past, present and future conditions. Humboldt County has used ICLEI software to develop a greenhouse gas emissions baseline for 1990 and to assess the current level of greenhouse gas emissions for compliance with AB 32.

ICLEI recommends that Ferndale establish short term and long-range emissions reduction targets. A long-term target will allow the City sufficient time to implement emissions reduction measures. Short-term interim targets for every two- to three-year period will facilitate additional support and accountability and ensure continued momentum. ICLEI recommends that interim targets be guided by the long-range goal of reducing emissions by 80 percent to 95 percent from the 2005 baseline level by the year 2050, noting that this won't be possible without the assistance of state and federal policy changes that create new incentives and new sources of funding for emissions reduction projects and programs (RCEA 2012).

An integral component of the State of California's climate protection approach has been the creation of three core emissions reduction targets at the community level. While these targets are specific to the community-scale, they can be used to inform emissions targets for government operations as well. On June 1, 2005, California Governor Schwarzenegger signed Executive Order S-3-05 establishing climate change emission reductions targets for California.

These targets are an example of near, mid and long-term targets:

- Reduce emissions to 2000 levels by 2010
- Reduce emissions to 1990 levels by 2020
- Reduce emissions to 80 percent below 1990 levels by 2050
-

The AB 32 Scoping Plan also provides guidance on establishing targets for local governments; specifically the Plan suggests creating an emissions reduction objective of 15 percent below then existing levels by 2020. This target has guided many local government's emission reduction targets for municipal operations—most local governments in California with adopted targets have targets of 15 to 25 percent reductions under 2005 levels by 2020 (RCEA 2012).

Using this guidance and ICLEI's recommendations, Ferndale has set the following targets for greenhouse gas emissions due to government operations:

- Reduce emissions to 10% below 2005 levels by 2020
- Reduce emissions to 80% below 2005 levels by 2050

Emission Reduction Measures and Implementation Timeline

Ferndale's greenhouse gas inventory identifies major sources of emissions from government operations. Sectors and sources responsible for the highest emissions should be targeted for emissions reductions activities in order to make significant progress toward the short-term emission reduction target. Utilities currently generate the major portion of their electricity by burning fossil fuels. Therefore reducing electricity consumption will reduce emissions and it may be possible for the City to meet its 2020 target by implementing a few major actions on the City's electricity consumers. RCEA notes that, although Ferndale's Wastewater Treatment Facility is a major emissions source, the vast majority of CO₂e emissions are from methane emissions; emissions reduction options for the facility are likely extremely expensive. Long-range (2050) targets will require major reductions in all sectors.

Given the results of the inventory, ICLEI recommends that Ferndale focus on the following tasks in order to significantly reduce emissions from its government operations:

- Comprehensive municipal retrofit of City Hall, Community Center and Public Works facilities targeting reduction in both electricity and propane
- Modify the procurement policy to specify high fuel efficiency when purchasing public works vehicles
- Increase office recycling, e.g. paper, cardboard, cans, toner cartridges
- Encourage PG&E to switch their outdoor lights energy efficient lighting.

Ferndale is already planning to reduce energy consumption. In 2013, the City prepared an Energy Assurance Plan (EAP) in conjunction with the California Energy Commission sponsored California Local Energy Assurance Planning project. The aim of the EAP is to help Ferndale become more resilient to energy supply interruptions during an emergency, ensuring that critical facilities within the community continue to function.

The energy profile in the EAP provides a basic understanding of the sources of energy supplies and how they are consumed in the Ferndale community as well as for specific city-owned

facilities. This information guided policies and actions the city can take to protect its key assets from extended energy disruptions, as well as several energy-reducing actions, that were incorporated in the Humboldt Operational Area Multi-Agency Multi-Hazard Mitigation Plan 2013 Update (HMP), which was in turn incorporated into the General Plan 2013 Safety Element Update. These actions included the following:

Initiative #F5—Investigate the viability of renewable and distributed generation technologies that can be city-owned and serve a dual purpose of primary and stand-by power/energy. Work with the California Energy Commission and other sources to identify advanced technologies, systems, and financing options.

Initiative #F6— Investigate low-no cost energy efficiency and conservation measures and innovative technologies for key assets and other city-owned/operated assets in order to decrease their energy footprint, thus reducing energy bills and the scale of needed back-up power. Also look into higher cost, advanced technologies such as micro-grids.

Using these initiatives as well as strategies recommended by ICLEI, Ferndale has outlined the following overall emissions reductions strategy.

Emissions Reduction Measures and Timeline

Measure 1	Establish data collection systems for GHG data as part of normal City operations.
<i>Timeline:</i>	Establish by 2015; ongoing
Measure 2	Investigate the viability of renewable and distributed generation technologies that can be city-owned and serve a dual purpose of primary and stand-by power/energy. Work with the California Energy Commission and other sources to ID advanced technologies, systems, and financing options.
<i>Timeline:</i>	Initiate discussions with RCEA in 2016
Measure 3	Investigate low-no cost energy efficiency and conservation measures and innovative technologies for city-owned/operated assets in order to decrease their energy footprint thus reducing energy bills and the scale of needed back-up power. Also consider looking into higher cost, advanced technologies such as micro-grids.
<i>Timeline:</i>	Initiate by 2017
Measure 4	Comprehensive municipal retrofit of existing buildings including City Hall and the Community Center targeting reduction in both electricity and propane
<i>Timeline:</i>	Research grant opportunities in 2016; ongoing
Measure 5	Change procurement policy to specify high fuel efficiency for vehicles purchased for public works and other departments.
<i>Timeline:</i>	Prepare by 2017
Measure 6	Increase office recycling, e.g. paper, cardboard, cans, toner cartridges
<i>Timeline:</i>	Ongoing
Measure 7	Encourage PG&E to switch their outdoor lights other energy efficient lighting.
<i>Timeline:</i>	Initiate by 2018
Measure 8	Develop renewable energy options for the City's Wastewater Treatment Plant
<i>Timeline:</i>	Establish by 2018

Greenhouse Gas Reduction Monitoring and Verification

As emissions reduction measures are implemented, regular emissions monitoring is required to ensure that the City is on track to meet its objectives. ICLEI recommends that Ferndale re-inventory its emissions every three to five years and has created various tools to assist the City towards this goal. RCEA plans to conduct a greenhouse gas inventory based on 2012 data, and may assist the City with future inventories (RCEA 2012).

During the RCEA inventory process, Ferndale staff identified the following gaps in data:

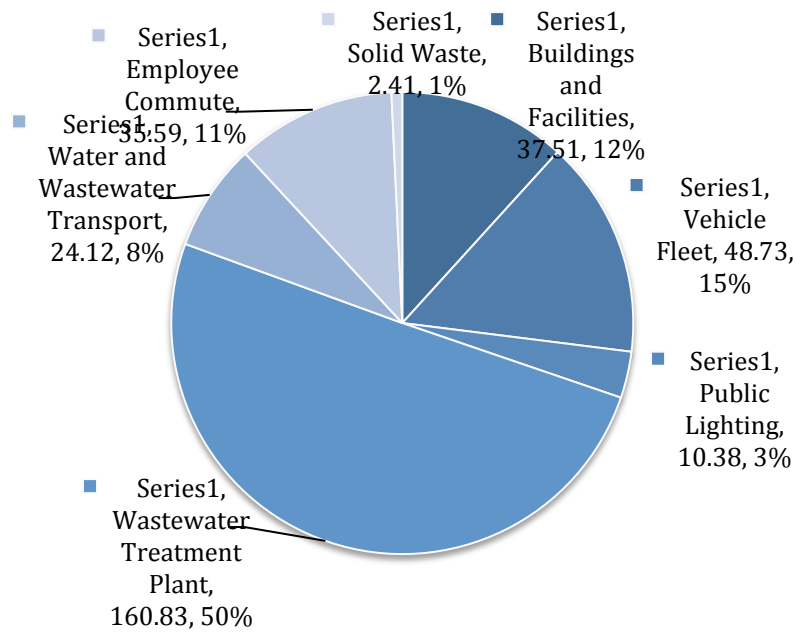
- Direct tracking of refrigerants recharged into HVAC and refrigeration equipment
- Direct tracking of fire suppressants recharged into fire suppression equipment
- Clear labeling of vehicle make and model in gas logs
- Odometer readings of individual vehicles
- Fuel consumption by mobile equipment make and model
- Refrigerants recharged into vehicles in the vehicle fleet
- Tracking of propane consumption by facility and by volume
- Tracking and inventorying of contracted services

ICLEI advises that Ferndale establish data collection systems for this data as part of normal operations. In this way, when staff are ready to re-inventory for a future year, they will have the proper data to make a more accurate emissions estimate. This has been incorporated into the emissions reduction strategy.

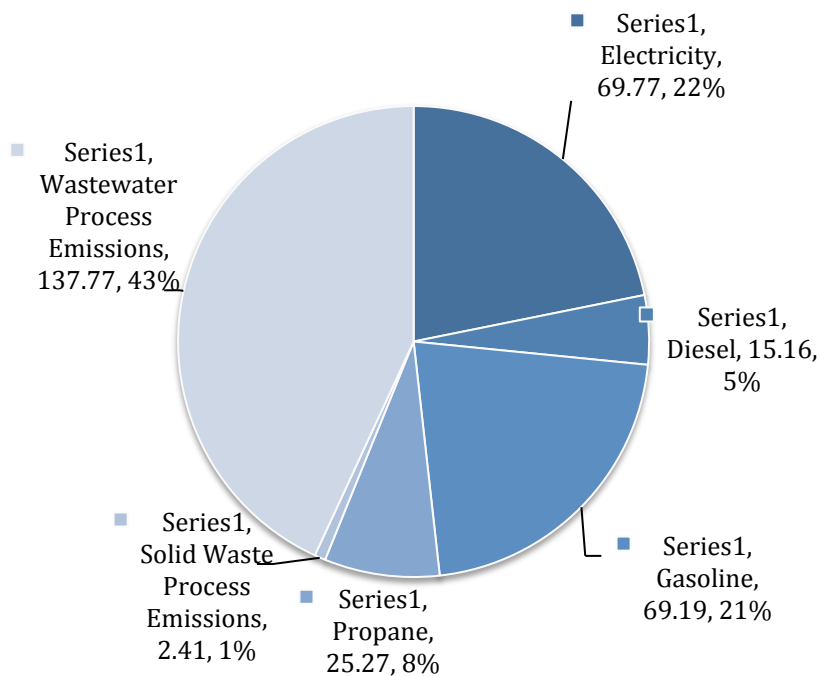
Measures from the emissions reduction strategy, along with attenuation for general air quality issues, have been incorporated into Chapter 6. Goals, Policies and Objectives as actions the City will take to improve air quality and to limit future impacts of climate change.

Figure 5: Summary of Government Operations CO₂e Emissions

2005 Government Operations CO₂e Emissions by Sector



2005 Government Operations CO₂e Emissions by Source



Source: 2005 City Of Ferndale Government Operations Greenhouse Gas Emissions Inventory, page 7.

This page intentionally left blank

6.0 Goals, Policies and Implementation Programs

The Noise & Air Quality Element includes goals and policy to moderate noise and improve air quality, supported by community measures targeting noise level reductions and harmful emissions.

Goals are broad statements of community values or aspirations. They define the ends toward which the City will address its efforts.

Policies are more precise expressions of the community's position on particular issues, or how particular goals can be reached. Policies may include guidelines, standards, measurable objectives, maps, diagrams, or a combination of these components.

Programs are specific actions that the City will undertake to implement policy in order to realize community goals. This includes ongoing City sponsored programs that are time-specific and measurable.

NOISE: GOALS, POLICIES AND IMPLEMENTATION

Goals

- 1.1 *Prevent excessive point source and ambient noise levels throughout the community.*
- 1.2 *Realize overall noise reduction through land use, design review, construction, transportation, and monitoring methods.*
- 1.3 *Promote noise mitigation techniques in noise receptor and noise generator through design.*

Policies

- 1.1 **Stationary and Mobile Sources.** The City will apply appropriate average and short-term noise level standards during the permit review process and during subsequent monitoring to minimize stationary noise sources and noise emanating from temporary activities.
- 1.2 **Noise Compatibility Standards.** The City shall ensure compatibility with adjacent and noise-sensitive land uses by adopting noise standards by land use type.
- 1.3 **New Construction.** Amend the Noise Ordinance for residential uses, to limit exterior noise levels to 60 dBA Ldn and interior noise levels of 45 dBA Ldn.
- 1.4 **Noise Attenuation.** If all other practical design-related mitigation measures do not attenuate noise to established standards, the City will consider the use of noise barriers.
- 1.5 **Noise Reduction Design.** The City shall incorporate buffers, screening, routing coordination, and other traffic control measures at time of street upgrades and extensions. The City will encourage the use of berms and increased building setbacks

in the design of noise-sensitive land uses that are adjacent to collector roads and commercial or industrial areas.

Implementation Programs

- 1.a **Ferndale Nuisance Ordinance 06-04 Section 7.04.** The City shall protect individuals from existing or future excessive noise levels that can interfere with sleep, communication, relaxation, health or the legally permitted use of property by regulating noise sources through the implementation of Nuisance Ordinance 06-04, Section 7.04.
- 1.b **Land Use/Noise Compatibility Matrix.** The City shall develop Noise Standards to ensure that adjoining land uses are compatible. Development may occur if design or mitigation measures will reduce indoor noise to “Maximum Interior Noise Levels” and outdoor noise levels to the maximum “Normally Acceptable” values.
- 1.c **Noise Compatibility Implementation.** The City will only permit new land uses that meet noise compatibility standards as measured from either existing adjacent land uses or nearby noise-sensitive receptors.
- 1.d **Noise Source Isolation.** The City shall require adequate shielding or distance for permitted uses that generate high noise levels and ground-borne vibration to protect sensitive receptors, such as:
 - single and multi-family residential homes,
 - schools and other learning institutions,
 - libraries, places of worship or public assembly, and
 - similar uses as may be determined by the City.
- 1.e **California Residential Code.** The City should apply the Building Code as adopted for California (CCR, Title 24, Appendix Chapter 12) for determining building separation requirements.
- 1.f **Highways Noise Contours.** The City will request Caltrans trip-count data for SR 211 and make recommendations and work with the City to reduce noise as it relates to noise contours.
- 1.g **Environmental Review Process.** The City shall utilize the environmental review process required by the California Environmental Quality Act (CEQA) to generate an analysis and determine appropriate mitigation measures per City and state standards for noise sensitive locations where noise contours do not exist.
- 1.h **Noise Study Requirements.** The City should utilize the U.S. Department of Housing and Urban Development Noise Guidebook, or its equivalent, to guide analysis and mitigation recommendations for proposed projects. When a discretionary project has the potential to generate noise levels in excess of General Plan standards, a noise study together with acceptable mitigation plans to assure compliance with the noise level standards will be required. The noise study should measure Community Noise Equivalent Level (CNEL) and Maximum Noise Level (Lmax) levels at property lines and, if feasible, nearby sensitive receptor locations. Noise studies shall be prepared by

qualified individuals using calibrated equipment under currently accepted professional standards and include an analysis of the characteristics of the project in relation to noise levels, all feasible mitigations, and projected noise impacts.

AIR QUALITY GOALS, POLICIES AND IMPLEMENTATION PROGRAMS

Goals

- 2.1 *Improve Ferndale and surrounding air basin air quality.*
- 2.2 *Improve Ferndale and surrounding air basin air quality by reducing particulate emissions through to achieve and then maintain attainment of California Ambient Air Quality Standards for particulate matter.*
- 2.3 *Reduce Criteria Pollutants.*
- 2.4 *Achieve Overall Emissions Reduction by mitigating impacts to air quality from, Land Use, Energy Conservation, Transportation, Hazardous Materials, Temporary Measures Pertaining to Construction, and Monitoring.*

Policies

- 2.1 **Reduce Localized Concentrated Air Pollution.** The City shall not permit the creation of "hot spots" or localized places of concentrated emissions.
- 2.2 **Buffering Land Uses.** The City shall reduce the exposure of existing land uses to air pollution from new sources of emissions by requiring the use of buffers.
- 2.3 **Energy Conservation Incentives.** The City should consider local, state and federal incentive programs to minimize energy usage in Ferndale, including programs to reduce PM10 emissions and increase solar-electric capacity in residential, commercial and industrial sectors.
- 2.4 **Vehicle Trip Length and Frequency Reduction** The City shall encourage mixed-use projects and compact development concepts, and encourage active modes of travel as one way to reduce the length and frequency of vehicle trips.
- 2.5 **Alternative Fuel Vehicle Accommodations.** The City shall encourage and may provide incentives for commercial and residential design that supports the maintenance of electric, natural gas, bio-diesel and hydrogen powered vehicles.
- 2.6 **Interagency Coordination.** The City will coordinate with the North Coast Unified Air Quality Management District (NCUAQMD) early in the permit review process to identify expected regulatory outcomes and minimize delays for projects involving:
 - a. CEQA;
 - b. Building demolition projects that may involve removal of material containing asbestos and subject to National Emission Standards for Hazardous Air Pollutants (NESHAP); and

- c. Grading and mining operations subject to State Airborne Toxic Control Measures (ATCM) for naturally occurring asbestos.

The City should rely on the air quality standards, permitting processes and enforcement capacity of the NCUAQMD to define thresholds of significance and set adequate mitigations under CEQA to the maximum extent allowable.

- 2.7 **Mitigate Impacts from New Construction.** The City shall mitigate impacts to air quality from new construction by implementing measures for dust control, energy efficient building standards, preservation of on-site trees, etc.
- 2.8 **Develop a Monitoring Program for Air Quality.** The City should develop a monitoring program for Air Quality in conjunction with NCUAQMD standards, and enlist RCEA for assistance in the monitoring process.

Implementation Programs

- 2.a **North Coast Air Quality Management Permitting Coordination.** The City shall adopt, utilize and maintain efficient and timely procedures when referring project applications to the North Coast Air Quality Management District for review and consultation.
- 2.b **Land Use Buffers.** When conducting an environmental review of discretionary permit applications for commercial and industrial projects, the City will require the use of appropriate buffers between new sources of emissions and adjacent land uses that minimize exposure to air pollution.
- 2.c **Fireplace and Woodstove PM10 Emissions.** The City should promote incentives to minimize PM10 emissions from fireplaces and woodstoves, such as the NCUAQMD's Wood Stove Incentive Replacement Program and other State or federal incentive programs.
- 2.d **Alternative Fuel Vehicle Accommodations.** The City will encourage and provide incentives for public, commercial and residential design that supports the charging of electric vehicles, or refueling of alternative fuel vehicles (ethanol, biodiesel, hydrogen, etc.).
- 2.e **Reduce Air Quality Impacts from Surface Mining.** The City shall develop procedures to reduce air quality impacts from airborne pollutants and refer all discretionary review actions for rock quarries and other surface mining activities to the North Coast Air Quality Management District for review and recommendations.
- 2.f **Construction and Grading Dust Control.** The City shall require Best Management Practices (BMP) for dust control at construction and grading sites in compliance with NCUAQMD fugitive dust emission standards.
- 2.g **Air Quality Impacts from New Development.** For new commercial and industrial projects that are subject to CEQA, the City shall require feasible mitigation measures to reduce emissions of air pollutants and to achieve the standards of the NCUAQMD.

- 2.h **Energy Efficient Building Design.** The City should encourage and provide incentives for construction of buildings with Leadership in Energy and Environmental Design (LEED) Standards and energy saving measures beyond Title 24 requirements for residential and commercial projects.
- 2.i **Preservation and Replacement of On-site Trees.** The City should consider a site review standard that preserves large trees where possible and require mitigation for carbon storage losses attributable to significant removal of trees.
- 2.j **Air Quality Monitoring Program.** The City should work with Redwood Coast Energy Authority (RCEA) and NCUAQMD to develop a monitoring program for citywide Air Quality.

GREENHOUSE GAS EMISSIONS GOALS, POLICIES AND IMPLEMENTATION PROGRAMS

Goals

- 3.1 *Reduce Greenhouse Gases according to the following targets:*
 - *Reduce emissions to 10% below 2005 levels by 2020*
 - *Reduce emissions to 80% below 2005 levels by 2050*
- 3.2 *Implement successful mitigation of greenhouse gas emissions to levels of non-significance as established by the Global Warming Solutions Act and subsequent implementing legislation and regulations.*

Policies

- 3.1 **Greenhouse Gas Emission Reductions.** The City will work to reduce its governmental operations greenhouse gas emissions, consistent with the state Global Warming Solutions Act, implementing legislation and regulations.
- 3.2 **Review of Projects for Greenhouse Gas Emission Reductions.** The City should evaluate the GHG emissions of new residential, commercial and industrial projects, and require feasible emissions reduction measures.

Implementation Programs

- 3.a **City Government Greenhouse Gas Emission Reductions.** The City should seek grant funding to prepare a Climate Action Plan for its governmental operations consistent with the Countywide Climate Action Plan that seeks emission reductions in the following areas:
 - A. Energy Efficiency and Conservation
 - B. Green Building
 - C. Waste Reduction and Recycling
 - D. Climate-Friendly Purchasing
 - E. Renewable Energy and Low-Carbon Fuels
 - F. Efficient Transportation

G. Offsetting Carbon Emissions

H. Promoting Community and Individual Action

- 3.b **Establish data collection systems for GHG data as part of normal City operations.** The City should re-inventory its emissions every three to five years per ICLEI recommendations, and coordinate with RCEA for the inventory process.
- 3.c **Greenhouse Gas Emissions Standards.** The City shall update the General Plan and Land Use Ordinances as appropriate to reflect the Climate Action Plan and Emissions Reduction Plan, and new state laws and regulations for greenhouse gas emissions when they become available.
- 3.d **Review of Greenhouse Gas Emissions Impacts of New Development.** The City will consider modifying the Zoning and Subdivision Ordinances to require an assessment for GHG emissions of large scale residential, commercial and industrial projects, and require feasible mitigation.
- 3.e **Investigate the viability of renewable and distributed generation technologies.** The City should consider renewable and distributed generation technologies that can be city-owned and serve a dual purpose of primary and stand-by power/energy. The City should work with the California Energy Commission and other sources to identify advanced technologies, systems and financing options.
- 3.f **Investigate low-cost and no-cost energy efficiency and conservation measures.** The City should consider innovative technologies for key assets and other city-owned/operated assets in order to decrease their energy footprint, thus reducing energy bills and the scale of needed back-up power. The City should also research the feasibility of higher cost, advanced technologies such as micro-grids.
- 3.g **Reduce Electricity and Propane Use.** The City should consider including a comprehensive municipal retrofit of existing buildings targeting reduction in both electricity and propane in the Capital Improvement Plan.
- 3.h **Obtain High Fuel Efficiency Vehicles.** The City shall modify its procurement policy to specify high fuel efficiency for each vehicle class for City Government vehicles.
- 3.i **Increase office recycling.** The City should work with Eel River Disposal to implement programs for the business community and City Hall that increase the recycling of paper, cardboard, cans, toner cartridges, etc.
- 3.j **Energy Reduction Efforts.** The City will switch from incandescent bulbs to more energy efficient lighting in City-owned and operated infrastructure.
- 3.k **Collaborate with PG&E in Energy Reduction Efforts.** The City should work with and encourage PG&E to switch outdoor street lights from incandescent bulbs to more energy efficient lighting.

7.0 References

California Department of Transportation (Caltrans). 1999. Route 211 Concept Report. Approved January 1999. Available: <http://www.dot.ca.gov/dist1/d1transplan/r211.pdf> Retrieved 30 October 2013

California Department of Transportation (Caltrans). 2012. California Road System Map 1D33. Approved 09/26/2012. http://www.dot.ca.gov/hq/tsip/hseb/crs_map/01d33.pdf Retrieved 7 November 2103

California Department of Transportation (Caltrans). 2013. California Road System Map 1D43. Approved 04/23/2013. http://www.dot.ca.gov/hq/tsip/hseb/crs_map/01d43.pdf Retrieved 7 November 2103.

[City of Ferndale Greenhouse Gas Emissions Report \(2005\)](http://www.redwoodenergy.org/index.php/planning/climate-action-planning)
<http://www.redwoodenergy.org/index.php/planning/climate-action-planning>

Governor's Office of Planning and Research (OPR). 2003. State of California General Plan Guidelines. https://www.google.com/?gws_rd=ssl#q=opr+general+plan+guidelines+2003 Retrieved 1 November 2013.

Humboldt County. 2002. General Plan Update Background Reports. Available from: <http://co.humboldt.ca.us/gpu/documentsbackground.aspx> Retrieved 13 December 2013.

Humboldt County. 2012. General Plan Planning Commission Approved Draft Chapter 15 Air Quality Element. <http://co.humboldt.ca.us/gpu/documentsplan.aspx> Retrieved 6 December 2013.

Humboldt County. 2012. General Plan Draft Noise Element. Available from: <http://www.humboldt.gov/677/Preliminary-Planning-Commission-Draft>

North Coast Unified Air Quality Management District. 1998. Regulation 1 Air Quality Control Rules, readopted 25 September 1998, Rule 104: <http://www.ncuaqmd.org/index.php?page=rules.regulations>

North Coast Unified Air Quality Management District (NCUAQMD). 2013. Air Quality Planning and CEQA. Available from: <http://www.ncuaqmd.org/index.php?page=aqplanning.ceqa> Retrieved: 1 November 2013

Redwood Coast Energy Authority (RCEA) 2012. Humboldt County Comprehensive Action Plan for Energy Adopted September 2012. Retrieved 15 October 2013. Available from: <http://www.redwoodenergy.org/images/Files/CAPE/CAPE-Final-9-2012.pdf>

Redwood Coast Energy Authority (RCEA). 2013. Programs>>County General Plan – CAPE. Available from: <http://www.redwoodenergy.org/index.php/planning/cape> Retrieved 6 December 2013.

U.S. Environmental Protection Agency (EPA). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Available from: <http://www.epa.gov/aboutepa/epa-identifies-noise-levels-affecting-health-and-welfare> Retrieved 6 November 2013

U.S. Environmental Protection Agency (EPA). 2013. AirData>>Interactive Map. Available from: http://www.epa.gov/airdata/ad_maps.html.

U.S. Environmental Protection Agency (EPA). 2013. Health/Particulate Matter/Air & Radiation/US EPA. Available from: <http://www.epa.gov/pm/health.html> Retrieved 30 October 2013

Z. Patrick Russ (Mrs.) deed reference to October 31, 1920, deed of Russ Park dedication. Available from: <http://ci.ferndale.ca.us/facilities.html> Retrieved 18 January 2016

City of Ferndale
Noise and Air Quality Elements

