

SIERRA BUSINESS COUNCIL

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RECEIVED

AUG 30 2012

ENVIRONMENTAL COORDINATION SERVICES

August 30, 2012

To: The Placer County Planning Commission
Re: Cabin Creek Biomass Facility

To the Members of the Placer County Planning Commission:

Please accept these comments regarding the DEIR for the proposed Cabin Creek Biomass Facility. Sierra Business Council has reviewed the DEIR for the proposed Cabin Creek Biomass Facility and offers the following comments in support of the project and offers the following recommendations for mitigation that may minimize conflicts with adjacent jurisdictions:

Sierra Business Council is supportive of the public-private partnership formed to promote the Cabin Creek biomass project and sees the project and the partnership as a means to promote improved forest health in our region. Improved forest health will likely result in reduced risk of wildfire, therefore reducing potential negative impacts to air quality and regional economic activities. In addition to the economic and health-related benefits of improving forest health and reducing the risk of wildfire, Sierra Business Council also sees improved habitat for species endemic to our area as an important benefit of improved forest management in our region. We are also supportive of this project and its ability to create and maintain year-round employment for some of our region's residents. Sierra Business Council is also supportive of the proposed facility and site for its use of an existing logistical network and for its placement outside a scenic corridor and outside high density residential areas.

11-1

While overall Sierra Business Council is supportive of this proposal, we do recommend the following additional mitigation:

- Sierra Business Council recognizes the enduring proactive efforts of the Town of Truckee to improve air quality and comply with federal air quality standards, especially regarding PM 2.5 emissions. Because the Town of Truckee is threatened with non-compliance in part due to particulates from the Interstate 80, idling rail cars and other sources of particulates not originating in the Town of Truckee, and because the Town has gone to extraordinary lengths to assure its compliance with federal air quality standards, and because the Cabin Creek Biomass Facility proposed has the potential to emit particulates, some portion of which will likely be carried on air currents into the Town of Truckee, Sierra Business Council recommends a requirement that operation of the facility be tied to assuring regular monitoring located at an appropriate location within the Town of Truckee.

11-2

Printed on 100% post-consumer waste

- Should air quality emissions from the biomass facility impact the Town of Truckee's ability to meet federal compliance standards, Sierra Business Council recommends a flexible facility management plan that would allow hours or days of operation at the biomass facility to match hours or days when emissions are less likely to negatively impact the Town of Truckee and its ability to reach attainment of federal air quality standards.
- While Sierra Business Council feels it likely that PM10 emissions from the gasification biomass facility are not likely to impact the Town of Truckee's air quality, it is our understanding there are no longer air quality monitoring devices within the Town of Truckee which measure the presence of PM 10 emissions. The Sierra Business Council recommends that operators of this facility work closely with the Town of Truckee to assure an adequate air quality baseline has been established and, should the Town of Truckee request installation of PM10 emission monitors within its boundaries, that the project partners comply with the request to assist in establishing a baseline for PM10 emissions prior to start of operations at the facility.
- The Cabin Creek Biomass Facility is proposed with an expected 40-year span of service. Sierra Business Council recommends a secession strategy, or reclamation strategy, for that time at which the biomass facility is no longer operational in order to avoid the blight often associated with industrial facilities that have run their course.
- Sierra Business Council understands state mandates require annual net emitters of more than 25,000 metric tons of carbon dioxide to report emissions to the State. The Cabin Creek Biomass Facility has the potential to contribute to Placer County's overall carbon emissions, and in the event those emission exceed 25,000 metric tons annually, may require mitigation within the California Cap and Trade program. The project also has the potential to reduce net carbon emissions should future law credit local governments with reductions due to forest management practices. Sierra Business Council requests a review of the benefits of this project in consideration of the County's potential need to report carbon dioxide emissions to the State along with associated costs in the hope that a determination can still be made that the benefits of the Cabin Creek Biomass Facility will offset the impacts of exceeding 25,000 metric tons of carbon dioxide in Placer County.
- Should Placer County be required to apply mitigation measures to offset impacts of this proposed project to reduce carbon emissions or in the course of its carbon emission management program, Sierra Business Council recommends that those mitigations be focused locally (as opposed to Cap and Trade eligible projects that have no local mitigating effects).
- Lastly, Sierra Business Council recognizes that the end-product of the biomass gasification process, biochar, may provide benefits beyond carbon capture that include sediment source control, heavy metal capture and as a beneficial soil amendment, yet further study needs to be conducted to assure these benefits and to assess potential negative impacts of biochar application. For this reason, Sierra Business Council recommends that operations of this biomass facility in part fund further implementation study of biochar application as a soil amendment, method of capturing heavy metals, means of improving infiltration and as a sediment source control measure. Sierra Business Council recommends retention of the facility's biochar byproduct within the local region for its carbon capture potential but recommends also that should future study reveal unforeseen negative impacts of biochar application in our region, a flexible

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management plan should be adopted to mitigate negative impacts and to dispose of the byproduct with the least possible impacts to our region.

11-7
Cont'd

Sierra Business Council appreciates the opportunity to comment on this project. Our organization is supportive of biomass as an alternative fuel source with the potential to help stabilize local energy supplies, create local jobs, reduce the risk of catastrophic wildfire and reduce the need for open-air combustion of forest fuels. We are adamant, however, that new biomass facilities such as this proposed project provide net positive impact to the communities in which they are situated. We believe this project and the gasification method proposed, when adapted with the mitigation recommended, will result in net positive impact to the community, both in the near and long-term. With the mitigation proposed, we support this project. Thank you.

11-8



Anne Grogan
Manager of Development
Sierra Business Council

**Letter 11
Response**

**Sierra Business Council
Anne Grogan, Manager of Development
August 30, 2012**

- 11-1 The comment of support for the benefits of the project is noted. The Placer County Planning Commission will consider this comment at the time it considers project approval.
- 11-2 The commenter expresses concern about whether particulate emission generated by the proposed biomass facility would contribute to PM_{2.5} concentrations in Truckee. The commenter also suggests that the facility be required to operate an air quality monitoring station at an appropriate location in Truckee. See the responses to comments 5-2, 5-3, and 8-3.
- 11-3 The commenter recommends a flexible facility management plan that would allow the biomass facility to operate at times (i.e., days or hours) when its emissions are less likely to negatively impact the Town of Truckee and its ability to attain national ambient air quality standards. As explained in the responses to comments 5-2 and 8-3, it is not anticipated that emissions from the biomass facility would contribute substantially to exceedences of ambient air quality standards for PM_{2.5} in Truckee. Also refer to the response to comment 5-2 for a summary of how PM₁₀ and PM_{2.5} emissions generated by the proposed biomass facility were evaluated in the Draft EIR. While no significant air emission impacts were identified, the Placer County Planning Commission will consider the commenter's recommendation for a management plan at the time it considers project approval.
- 11-4 The commenter states that it is her understanding that there are no longer any monitoring devices within the Town of Truckee that measure ambient PM₁₀ concentrations. In response to this comment, it indeed appears that PM₁₀ concentrations are no longer being monitored in the Town of Truckee. According to the Air Quality Data Statistics published by the California Air Resources Board at <http://www.arb.ca.gov/adam>, PM_{2.5} concentrations have been monitored at the Truckee Fire Station since 1999 and PM₁₀ was monitored at the same site through 2006.
- The commenter recommends that the operator of the biomass facility work closely with the Town of Truckee to identify an adequate air quality baseline prior to operations and install PM₁₀ monitors if the Town requests them. Refer to the responses to comments 5-2, 5-3, and 8-3.
- 11-5 The commenter notes that the proposed plant's expected service life-span is 40 years and recommends a reclamation strategy be put in place to address closure once the plant is no longer operational.
- It is not customary for Placer County to require closure plans for development projects, including industrial projects. It is expected that if the proposed facility were closed and no longer operational, Placer County or the private operator would identify alternate uses for the facility. If those proposed uses would result in substantial alterations to the site (physical or operational), separate and independent environmental review of those activities would occur consistent with Placer County requirements. It is too speculative at this time to identify alternate uses or other decommissioning activities that would occur in the future.
- 11-6 The commenter states that the biomass facility would have the potential to contribute to a net increase in Placer County's overall GHG emissions. This comment is supported by the analysis under Impact 10-1, which begins on page 10-13 of the Draft EIR. The net change in GHG

emissions associated with operation of the proposed biomass facility is summarized in Table 10-3 on page 10-14 of the Draft EIR.

The commenter states that the biomass facility may be required to report its GHG emissions to the State if it emits more than 25,000 metric tons (MT) of carbon dioxide equivalent per year (CO₂e). The commenter is correct that the biomass facility may generate more than 25,000 MT CO₂e/year. However, the State's reporting threshold is 10,000 MT CO₂e/year. As shown in Table 10-3 of the Draft EIR, operation of the biomass facility, when considered as a stand-alone stationary source, could emit up to 26,526 MT CO₂e/year. The commenter is correct that the biomass facility is projected to be required to report its GHG emissions to the State under the Mandatory Reporting Requirement program that is part of the implementation of AB 32 because it would exceed the reporting thresholds of 10,000 MT CO₂e/year and electricity generating capacity of 1 MW.

The commenter states that the biomass facility would "require (GHG) mitigation within the Cap and Trade program." The biomass facility would have no (i.e., zero) obligation to hold GHG compliance allowances to meet the State Cap and Trade program requirements. The biomass facility would strictly limit fuels to biomass wastes that are the byproduct of forest management projects that meet all federal, State, and local forest practice laws and regulations. This type of biomass fuel is considered carbon neutral and does not require compliance obligations under the Cap and Trade program. Specifically, Cap and Trade Regulation Section 95852.2(a) specifies that biomass emissions do not have a GHG compliance obligation if the biomass is tree trimmings or wood wastes harvested for the purpose of forest fire fuel reduction or forest stand improvement, or under an approved timber management plan or other locally or nationally approved plan. Further, the biomass facility would be considered a renewable energy project – and as such, power generated by the project would carry Renewable Energy Credits that represent the GHG benefits from avoided/displaced fossil fuels.

The commenter requests a review of the GHG benefits and disbenefits of the proposed biomass facility. The commenter also recommends that any mitigation or GHG offsets are required of the proposed biomass facility "be focused locally (as opposed to Cap and Trade eligible projects that have no local mitigating effects." The net change in GHG emissions associated with the proposed biomass facility is analyzed under Impact 10-1, which begins on page 10-13 of the Draft EIR. Table 10-3 on page 10-14 of the Draft EIR provides a summary of the operational emissions, support emissions (e.g., equipment, truck trips, electricity consumption), and avoided emissions associated with the proposed biomass facility. Based on this analysis, the proposed project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs in the electricity sector and it would not generate levels of GHG emissions, either directly or indirectly, that may have a significant impact on the environment. Therefore, the project's contribution of GHGs would not be cumulatively considerable and no mitigation is required.

11-7

The commenter recommends that the biomass operation be used to fund studies of beneficial uses of biochar and possible negative effects of biochar applications. The commenter further recommends that the facility's biochar byproduct be retained within the local region.

There is already a considerable amount of research available on biochar that address: its history, practical applications, research and guidelines for appropriate use of biochar related to effectiveness, sustainability, and protection and enhancement of the environment. A variety of

educational and nonprofit institutions are conducting research on biochar including the following:

- ▲ University of California at Davis Environmental Soil Chemistry Lab (<http://parikh.lawr.ucdavis.edu/Research.html>),
- ▲ Cornell University, Department of Crop and Soil Sciences (<http://www.css.cornell.edu/faculty/lehmann/research/biochar/biocharmain.html>),
- ▲ the International Biochar Initiative (<http://www.biochar-international.org/research/education>), and
- ▲ the UK Biochar Research Centre (<http://biochar.org.uk>).

It is clear from the magnitude of information and research available about biochar that a requirement for additional research into impacts of local use of biochar to be attached to the proposed Cabin Creek Biomass Facility would be both unnecessary and an undue burden on the owner/operator of the facility. At the present time, the ultimate fate and feasibility of reuse of biochar in the region is unknown. Therefore, for purposes of the technical analyses included in the Draft EIR (e.g., air quality, transportation), it is assumed that all biochar would be hauled to Lockwood Regional Landfill in Nevada for disposal.

11-8

The commenter expresses appreciation for the opportunity to comment on the project, and notes that the SBC is generally supportive of biomass as an alternative energy source in the region. However, the SBC is adamant that biomass facilities such as the proposed project provide a net benefit to the communities in which they are situated. The SBC's recommended mitigation measures would result in positive impacts to the community.

As explained above and in the responses to comments 5-2, 5-3, and 8-3, it is not anticipated that emissions from the biomass facility would contribute substantially to exceedences of ambient air quality standards in Truckee, nor would the proposed project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs in the electricity sector and it would not generate levels of GHG emissions, either directly or indirectly, that may have a significant impact on the environment. Therefore, no additional mitigation measures are required other than those described in the Draft EIR.

2.4.5 INDIVIDUALS/BUSINESSES

12

From: [Jesse Boeri](#)
To: [Placer County Environmental Coordination Services;](#)
Subject: Biomass plant
Date: Friday, August 31, 2012 1:20:02 PM

Staff,
 After reading the latest proposal I wish to inquire as to the verbiage changes regarding the source of the material to be utilized. Originally this material was stated to be Forest Service origination. I am confused by the change to "*such as U. S. Forest Service [USFS] fuels reduction sites*" this seems vague. Am I to believe that the proposal now includes local community material as well. Please correct me if I am wrong, local material is currently being trucked to other locations in the state for similar uses. I dialed Gerry Hass as instructed by the Placer County email notification for more information but received a message to the extent that this line has not been setup yet. As you may have deduced, I feel that a perhaps larger project with a combined USFS and local community material feeding this proposed plant would better suit our community's interests. I look forward to hearing from someone regarding what I can do to help with this proposed project. Thank you,
 Jesse Boeri

12-1

**BOERI DESIGN
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**Letter 12
Response****Jesse Boeri, Boeri Design Architecture and Planning
August 31, 2012**

12-1

The commenter asks if the source of the biomass material has been broadened to include material from local communities. The commenter is supportive of the broader source of materials and believes it would be beneficial to the community. The sources of woody biomass fuel are described in Section 3.4.3 of the Draft EIR. In addition to material obtained from National Forest System lands, material from defensible space practices in local communities conducted by local fire districts would also be used. The comment of support for the project is noted. The Placer County Planning Commission will consider this comment at the time it considers project approval.

13



September 10, 2012

Maywan Krach
 Placer County Community Development Resource Agency
 Environmental Coordination Services
 3091 County Center Drive, Suite 190
 Auburn, CA 95603

Subject: Cabin Creek Biomass Project DEIR Noise Analysis

Dear Ms. Krach:

The noise and vibration consulting firm of j.c. brennan & associates, inc. is providing a review and comments with regards to the noise and vibration analysis conducted for the Cabin Creek Biomass Project DEIR.

1. The EIR consulting firm of Ascent Environmental conducted the noise and vibration analysis for the project site. The ambient noise environment is described as follows: *The existing noise environment in the project area is primarily influenced by transportation noise from vehicle traffic on the roadway system (i.e., Cabin Creek Road). Other noise sources that contribute to the existing noise environment include existing activities on the Eastern Regional MRF and Transfer Station site.* However, ambient noise measurements were only conducted at one noise measurement location, which includes directly adjacent to the project site. No noise measurements were conducted off-site at the nearest residence along S.R. 89. The nearest off-site residence is not primarily affected by noise from Cabin Creek Road. In fact, a visit to the project site indicates that the primary noise source at the noise monitoring location is not Cabin Creek Road traffic, but is primarily dominated by operations of the MRF and Transfer Station. In addition, large equipment traversing the service road from the disposal and waste chipping site located to the north and east also is a major contributor the noise environment.

13-1

The California Energy Commission states noise analyses for energy facilities should conduct the following when evaluating existing land uses and conducting background noise measurements:

- (A) *A land use map which identifies residences, hospitals, libraries, schools, places of worship, or other facilities where quiet is an important attribute of the environment within the area impacted by the proposed project. The area potentially impacted by the proposed project is that area where, during either*

13-2

construction or operation, there is a potential increase of 5 dB(A) or more over existing background levels.

13-2
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(B) A description of the ambient noise levels at those sites identifies under subsection (g)(4)(A) which the applicant believes provide a representative characterization of the ambient noise levels in the project vicinity, and a discussion of the general atmospheric conditions, including temperature, humidity, and the presence of wind and rain at the time of the measurements. The existing noise levels shall be determined by taking noise measurements for a minimum of 25 consecutive hours at a minimum of one site. Other sites may be monitored for a lesser duration at the applicant's discretion, preferably during the same 25-hour period. The results of the noise level measurements shall be reported as hourly averages in Leq (equivalent sound or noise level), Ldn (day-night sound or noise level) or CNEL (Community Noise Equivalent Level) in units of dB(A). The L10, L50, and L90 values (noise levels exceeded 10 percent, 50 percent, and 90 percent of the time, respectively shall also be reported in units of dB(A).

13-3

2. The Methods and Assumptions discussion indicates that: "the assessment of long-term operational noise impacts was based upon reconnaissance data, existing documentation, reference noise emission levels, and standard attenuation rates for modeling techniques. As stated above, reference levels are noise emissions for specific equipment or activity types that are well documented and the usage thereof common practice in the field of acoustics". However at no place in the document does the analysis describe the reference noise levels, or where they came from, or what standard attenuation rates were used. Previously in the EIR, there is a discussion on similar facilities in the area, including Yolo County. A common practice is to go to a similar facility, and conduct noise measurements of the activities, and equipment, so that reasonable assumptions can be made for noise emission data. This would include a table in the document which describes the equipment noise measurement data collected at the site, distances from the noise sources and characteristics of the noise emission data.

13-4

3. Under Impact 11-1 (Short-term Construction Noise Impacts), the analysis uses a statement that seems to prevail throughout the document. The statement is as follows: - accounting for typical useage factors of individual pieces of equipment and activity types along with typical attenuation rates" At no point in the analysis does it provide what the typical useage factors are, or what pieces of equipment are assumed, what the activity types are, what pieces of equipment are assumed, and what the attenuation rates are. The analysis goes on to provide a predicted noise level at 50 feet, and at the caretaker residence. It is not possible to follow the logic in calculating the predicted noise impacts.

13-5

4. Page 11-17 provides a discussion on the Fuel-Delivery impacts. Once again the last sentence states that: Based on reference noise values such activities could result in noise levels of 60 dBA Leq and 85 dBA Lmax, at a distance of 50 feet.

13-6

<p>The analysis needs to provide what the reference noise values used in the analysis are.</p>	<p>13-6 Cont'd</p>
<p>5. Page 11-17 provides a discussion on On-Site Fuel Handling and Storage. The comment is the same as provided in Comment 4 above. There is no way for the reader to determine how the impact was derived.</p>	<p>13-7</p>
<p>6. Page 11-17 provides a discussion on the Mechanical Equipment associated with the Biomass Facility. By far, this is the most glaring inadequate discussion of potential noise impacts in the document. This analysis of a complex facility with numerous potential noise sources, is a two sentence analysis as follows: <i>As discussed in the project description, other mechanical equipment onsite would include two internal combustion engines, a transformer, water pumps a fuel dryer, fuel conveyor system, and exhaust fans. Based on reference noise values and accounting for typical usage factors of individual pieces of equipment and activity types, such activities could result in noise levels of approximately 74 dB Leq at a distance of 50 feet from the center of the project site. The operation of this stationary mechanical equipment would not be limited to the less noise-sensitive daytime hours.</i></p>	<p>13-8</p>
<p>The California Energy Commission would require the following for evaluating the noise impacts associated with an energy facility:</p>	<p>13-9</p>
<p><i>(C) A description of the major noise sources of the project, including the range of noise levels and the tonal and frequency characteristics of the noise emitted.</i></p>	<p>13-9</p>
<p><i>(D) An estimate of the project noise levels, during both construction and operation, at residences, hospitals, libraries, schools, places of worship, or other facilities where quiet is an important attribute of the environment, within the area impacted by the proposed project.</i></p>	<p>13-10</p>
<p>Our experience in evaluating these types of projects indicates that the equipment associated with the project will include transformer units, combustion turbines, a cooling tower, combustion turbine generators, exhaust stacks, cooling pumps, a gas compressor station. In addition, there may be a heat recovery steam generator (HRSG) associated with the project. Many of these pieces of equipment may be located inside of buildings, but those buildings require ventilation openings. Unless noise reduction features are included in the design, a simple building will not necessarily reduce the overall noise levels. Once again, noise measurement data could have been collected at other representative sites to quantify potential noise impacts. There is no practical analysis to determine noise impacts at the nearest residences, particularly during the noise-sensitive hours. A noise analysis should include modeling using a three dimensional model such as CadnaA. These models include noise source information including frequency data as inputs to the model. The model assigns noise source heights for each noise source and</p>	<p>13-10</p>

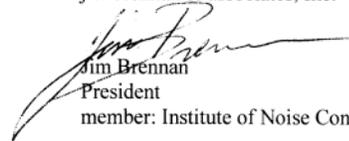
develops noise contours which include topographical shielding, atmospheric conditions including wind, and locations of noise-sensitive receivers.

13-10
Cont'd

If you or any other County staff have questions, please contact me at (530) 823-0960.

Respectfully submitted,

j.c. brennan & associates, Inc.


Jim Brennan
President
member: Institute of Noise Control Engineering

**Letter 13
Response****Jim Brennan, President, J.C. Brennan & Associates
September 10, 2012**

13-1

The commenter states that no noise monitoring was conducted at the sensitive receptors along State Route (SR) 89. This is correct. Ambient noise levels were measured near the closest sensitive receptor, 775 feet from where the biomass facility would be located.

As stated on page 11-5 of the Draft EIR, the caretaker residence that would not be removed as part of the project is located approximately 775 feet northwest of the 3.7-acre area where the biomass facility would be located. Also on the same page, the Draft EIR discloses the residences located approximately 1,500 feet to the east, across SR 89 and on the west side of the Truckee River. A long-term noise measurement was taken near the entrance of the project site and nearby the existing temporary caretaker residences located to the north and south of Cabin Creek Road (see Exhibit 11-1) (see page 11-5). The object of the measurement was to characterize ambient sound levels at the closest sensitive receptor to the proposed location for the biomass facility. The residences along SR 89 are more distant and topographically separated from the site with intervening heavily vegetated land that acts as a natural sound barrier and, therefore, less likely to be affected by noise associated with project-related construction and operation. More specifically, noise levels generally are reduced by 3 decibels (dB) with a doubling of distance from the source and therefore reported noise levels in the analysis would be further reduced at off-site receptors due to distance, topography, and vegetation separating the project site from those residences. Also, the existing dominant noise source at the off-site sensitive receptors is due to traffic along SR 89, which is predominantly a function of the volume of traffic using the roadway and modeled existing traffic noise levels are shown in Table 11-4 on page 11-8 of the Draft EIR. The ambient noise environment at the off-site sensitive receptors along SR 89 would not change in comparison to existing conditions with implementation of the project. Traffic noise along SR 89 would continue to be the dominant noise source for those residences.

The commenter also asserts that the primary noise sources in the project area were not described accurately. With regards to the description of the existing noise environment, the commenter asserts that the dominant noise sources at the project site are related to activities at the MRF and Transfer Station and large equipment traversing the service road on the project site. In Chapter 11, Noise, the Draft EIR described all of the noise sources as observed at the time the noise monitoring was conducted and are based on field observations and the ambient noise measurement, which occurred at a time when the MRF and Transfer Station was in full operation and included the inert and wood waste operations in the northern part of the site referenced in this comment.

13-2

The commenter states that the noise analysis conducted did not follow specific criteria required by the California Energy Commission (CEC)—specifically, a land use map showing sensitive receptors in the project vicinity was not included in the Draft EIR. The CEC has specific requirements listed in Appendix B of CEC-140-2007-003 that a noise analysis must comply with in order to obtain a Power Plant Certification. These regulations, however, apply to power plants larger than 50 MW. The proposed project is a 2 MW biomass facility and is not required to obtain Power Plant Certification from the CEC. Nonetheless, Exhibit 11-1 in Chapter 11, Noise, displays the project area and existing sensitive receptors in the project vicinity. Also, the CEC is not the lead agency for the proposed project.

- 13-3 The commenter provides the CEC requirements to be included in a noise analysis for power plant certification regarding the description of the existing ambient noise levels and ambient noise measurements. As described above in the response to comment 13-2, these regulations do not apply to the proposed project. Nonetheless, Section 11.1, Environmental Setting, of the Draft EIR includes a description of the atmospheric conditions at the time of the measurement, a summary of existing ambient noise level measurements (Table 11-3 and Exhibit 11-2), and generally characterizes all of the noise sources based on field observations and the measurements conducted.
- 13-4 The commenter states that reference noise levels and attenuation rates used for the noise modeling are not described in the Draft EIR. Reference noise levels for typical construction equipment are provided in Table 11-9. Reference vibration levels for typical construction equipment are provided in Table 11-10. Noise levels for all stationary noise sources that would be operated by the proposed project are discussed under Impact 11-3. Reference noise level data, and the sources of these data, are provided in Appendix E of the Draft EIR. The attenuation rates used to estimate noise levels are based on the Federal Transit Association Transit Noise and Vibration Impact Assessment, as indicated in Appendix E. All assumptions and modeling methods are cited and included in Appendix E.
- The commenter also states that a noise measurement should have been conducted at a similar facility so that reasonable assumptions could be developed as the basis for the noise analyses. The EIR consultant considered this approach but, in consultation with Placer County and its technical consultants, was unable to identify another existing facility of similar capacity using gasification technology and forest-sourced biomass feed stock that would be representative of the proposed facility. Other facilities that use biomass material are either smaller or much larger than the proposed facility. Also, many of the other biomass facilities use a direct combustion technology.
- The commenter mentions a 25 MW facility that utilizes an internal combustion system (not a gasification system) in Yolo County; however this is not comparable to the proposed project because of its size and the technology used. The stationary equipment used at a facility of this size, or other larger facilities, would not be representative of the proposed project and, therefore, a measurement at another facility would not have been relevant to this analysis.
- 13-5 The commenter states that Impact 11-1 does not disclose the usage factors for construction equipment, describe construction activities or construction equipment that would be used, and does not indicate what standard attenuation rates were used. However, page 11-15 explicitly describes what construction activities would occur and what equipment would be used. Table 11-9 includes reference noise levels for typical construction equipment. Reference noise levels and the sources of these noise levels are included in Appendix E of the Draft EIR. Attenuation rates were based on the Federal Transit Association Transit Noise and Vibration Impact Assessment, which is also indicated in Appendix E of the Draft EIR. Usage factors for construction equipment are also indicated in Appendix E.
- 13-6 The commenter states that the discussion of noise associated with fuel deliveries does not disclose the reference noise levels used in the analysis. See the response to comment 13-4.

- 13-7 The commenter states that the discussion of noise associated with on-site fuel handling and storage does not disclose the reference noise levels used in the analysis. See the response to comment 13-4.
- 13-8 The commenter asserts that the discussion of stationary equipment noise on page 11-17 is inadequate because of its brevity, but offers no specific details as to why it is inadequate. See the response to comment 13-4 for a discussion of reference noise levels and details of the analyses. Detailed noise calculations, reference noise levels for each piece of stationary mechanical equipment, attenuation calculations, Community Noise Equivalent Level (CNEL) calculations, and combined noise levels, with all appropriate reference sources are all provided in Appendix E of the Draft EIR. No further response is necessary.
- 13-9 The commenter states that the CEC requires a description of major noise sources, including the range of noise levels and the tonal and frequency characteristics of the noise emitted. As described in the responses to comments 13-2 and 13-3, the CEC has specific requirements listed in Appendix B of CEC-140-2007-003 that a noise analysis must comply with in order to obtain a Power Plant Certification. These regulations, however, apply to power plants larger than 50 MW. The proposed project is a 2 MW biomass facility and is not required to obtain Power Plant Certification from the CEC. Nonetheless, Impacts 11-1 through 11-4 discuss all potential noise sources associated with the proposed project.
- 13-10 The commenter references CEC regulations and states that the noise analysis should include an estimate of noise levels during construction and operation at hospitals, libraries, schools, places of worship, or other facilities where quiet is an important attribute of the environment, within the area impacted by the proposed project. As described in the response to comment 13-9, CEC's regulations do not apply to the proposed project. Nonetheless, Impact 11-1 evaluates short-term construction noise. Impact 11-2 evaluates short-term construction related vibration. Impact 11-3 evaluates all operational stationary noise sources and Impact 11-4 evaluates traffic noise associated with operations at the Cabin Creek Biomass Facility. Noise impacts were evaluated at the nearest resident which is the only sensitive receptor within the area impacted by the proposed project.
- The commenter also restates that another noise measurement could have been taken at another facility. Regarding this statement, see the response to comment 13-4. No further response is necessary.
- The commenter also asserts that a three dimensional model such as CadnaA should have been used but does not substantiate this assertion. The analysis conducted complies with all federal, state, and local requirements which do not require the use of such modeling software. The analysis uses approved and widely accepted noise modeling techniques. The commenter also suggests the types of noise-generating equipment that would be operated at the biomass facility. Noise impacts from the stationary-noise sources operated at the proposed biomass facility were analyzed under Impact 11-3, beginning on page 11-17 of the Draft EIR. This analysis estimated the combined resultant noise level at the nearest sensitive receptor, the caretaker residence located approximately 775 feet away, from all noise generating equipment and activities associated with project operation. All calculations used to support this analysis are provided in Appendix E of the Draft EIR. The types of noise-generating equipment included in this analysis were based on information provided in the project description, by the project engineers, and manufacturer specifications.

14

From: [Steve](#)
To: [Placer County Environmental Coordination Services;](#)
Subject: Questions about Biomass Project at cabin creek
Date: Sunday, September 02, 2012 4:32:50 PM

Hello,

I am a 22 year local from the Truckee Tahoe area and a happy home owner in Truckee. I do have a few questions and concerns and also some comments. First I think this is a good direction to deal with the huge amount of dead fuel in are forests, the current way of burning piles in the fall after the first rains of the year have come, is a huge polluter, and ruins some of the best condition in Tahoe for getting out and using the trails. The smoke from these fires regularly files Tahoe and Truckee with smoke and ruins the air. So a better plan in needed in my view.

14-1

Some of my question about the Cabin Creek Project are first the transporting of the wood from around the area. How much can one big truck care to the facility and how much fuel is being burned by the trucks to get the fuel to the site, how much diesel particulate does this add to are air, what does this do to are roads as far as truck traffic and ware and tare to the road way?

Another concern of mine is the constant flow of particulates coming from cabin creek. This area around cabin creek is a regularly used backcountry skiing and mountain bike area, will we be breathing constant particulates deep into are lungs as we exercise and play in are own back yard?

To sum it up I think this is a good plan to deal with the dangerous amount of dead wood, but will it come out even if the pollution from the trucks and the constant flow of particulates out of the plant, and the amount of diesel being burned in the trucks to get the fuel from all around Lake Tahoe and Truckee to the site. And what does this do to are air quality on a year round basis, this is a big sporting area for many people and I worry about particulates in the air when we are breathing deep and hard. Thank you for taking my comments and questions into account and also for working on a solution to the amount of dead wood in are forests and they huge fire danger it presents. Steve Kerby

14-2

**Letter 14
Response****Steve Kerby
September 2, 2012**

14-1

The commenter states that he is generally supportive of the project because it would reduce slash pile burning. The commenter asks questions about transportation of the wood: (1) how much can a truck carry and how much fuel is being consumed by the trucks; and (2) how much diesel particulate does this add to the air and what does this do to area roads?

Section 3.4.4 (page 3-15) of the Draft EIR describes the capacity and type of truck, and estimated number of truck trips per day associated with the proposed project as follows: "The Applicant has evaluated a variety of truck types that could haul materials to the site. Each BDT of wood chips is approximately equivalent to 200 cubic feet or 7.41 cubic yards....All biomass material would be hauled out of the forests in chip vans, which have a capacity of 12.5 BDT or 93 cubic yards and forest material would only be recovered from locations that are accessible by chip vans using existing roads. Based on the volume of material required to fuel the facility and the number of days that material could be delivered, it is estimated that up to 1,360 truckloads would be delivered per year or a maximum of 22 truck loads per day." Table 8-7 on page 8-13 of the Draft EIR provides additional detail delivery truck trip generation associated with the project. Trucks used for hauling would not exceed weight limits established by the California Vehicle Code (CVC Weight Sections 35550-35558), and as such would not create unique wear on area roadways.

Impact 9-2, beginning on page 9-18 of the Draft EIR analyzes long-term operational emissions of air pollutants, including particulate matter, some of which is derived from diesel exhaust associated with truck hauling. The analysis concludes that operational emission of particulate matter (PM₁₀) would be less than the applicable air district thresholds. Additionally, it is not anticipated that project operations would result in concentrations of small diameter particulate matter (PM_{2.5}) that would violate or substantially contribute to a violation of the ambient air quality standards for PM_{2.5}. Also, the total maximum daily emissions of PM₁₀, PM_{2.5}, and other criteria area pollutants and precursors would not occur at any single location due to the dispersed nature of associated truck trips and chipping activity.

14-2

The commenter expresses concern about the particulate emissions that would be generated by the biomass facility. See response to comment 5-2 regarding emissions of PM₁₀ and PM_{2.5} associated with construction and operation of the biomass facility.

The commenter also asks what the net change in emissions would be given that the proposed project would result in less open burning but more truck activity along with operation of the plant. As shown in Table 9-7 of the Draft EIR, operation of the biomass facility would generate up to 14.4 lb/day of PM₁₀ and up to 14.4 lb/day of PM_{2.5}. Assuming the plant operates at full capacity 365 days per year, it would emit approximately 2.6 tons/year of PM₁₀ and 2.6 tons/year of PM_{2.5}. Estimated levels of avoided emissions of PM₁₀ and PM_{2.5} associated with the open burning of forest-sourced biomass are provided in Table 9-8 on page 9-21. As shown in Table 9-8, approximately 167 tons of PM₁₀, and 142 tons of PM_{2.5} would be avoided annually. Based on these values, operation of the biomass facility would result in a net decrease of 164 ton/year of PM₁₀ and a net decrease of 139 ton/year of PM_{2.5} and an overall beneficial effect to ambient air quality in the region.

15

From: [Larry Lawrence](#)
To: [Maywan Krach;](#)
Subject: Comments for Draft EIR for Cabin Creek Biomass Facility Project
Date: Sunday, September 02, 2012 9:21:31 AM
Attachments: [image003.png](#)
[Biomass.pdf](#)

Hello:

I attended the public hearing last Thursday and feel that I would like to hear why this project needs to go into the Tahoe Basin Area. Please see attached article in the Wall Street Journal. I am a property owner of multiple properties in Olympic Valley and Martis Camp do not wish to have the county supervisors approve a project which will cause year around releases into the air. Please research this article and the article referred to the previous month and then let me know what you think.

15-1

Larry



Roland C. "Larry" Lawrence
 P.O. Box 2365 Olympic Valley, Ca. 96146
 Ph: 530.583.1529 Fax:530.583.2509

Larry@LawrenceRealty.com
<http://www.LawrenceRealty.com>
<http://www.LuxurySkiEstates.com>

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Friday August 17th, 2012

THE WALL STREET JOURNAL.

U.S. NEWS

Massachusetts Tightens Rules on Biomass Plants

By JUSTIN SCHECK

Massachusetts is expected to disqualify many wood-fired power plants from certain green-energy programs, starting Friday, because of concerns about their emissions.

Many U.S. biomass facilities, which burn wood and other plant matter to generate electricity, have received grants and other state and federal benefits aimed at encouraging alternative energy sources.

The new rules seek to ensure that biomass plants produce less net greenhouse gas than plants that burn fossil fuels.

Biomass, like solar, hydroelectric and wind power, has long been considered by many government agencies to be renewable, based on the fact that wood can be regrown. But there has been debate over some biomass plants because of their emission of smoke and other pollutants.

The Massachusetts Department of Energy Resources plans to implement the new regulations Friday, said Krista Selmi, a spokeswoman for the department. The new rules would no longer treat biomass plants as "greener" than plants burning fossil fuels if they don't achieve new efficiency standards. Massachusetts would be the first state to take this step.

The state plans to exclude plants with efficiency rates of

less than 50%—that is, plants that turn less than half of the energy created from burning into electricity—from the renewable-energy certificate program. Many biomass plants now turn only about 25% of the energy released by burning into electricity. The wood used in these plants comes from logging and mill waste, and also, in some cases, from whole trees.

The long-debated rules are a setback for the biomass-power industry, which relies on federal and state subsidies and beneficial power-purchasing rules to operate profitably, according to the Biomass Power Association.

As many as 20 plants in New England and New York state that can sell power in Massachusetts could be affected by the new rules, which will require them to boost their efficiency if they want to claim state renewable-energy credits, says Bob Cleaves, president of the Biomass Power Association, a trade group. Mr. Cleaves says none of the currently operating biomass plants in New England would qualify as renewable under the new rules, and some might have to close.

The new rules are a result of a study Massachusetts commissioned in 2009 from the Manomet Center for Conservation Sciences, a Maine nonprofit that promotes sustainable environmental policy. Manomet concluded in 2010 that in the short

term, most New England biomass plants were no more efficient than coal-burning plants, in terms of net greenhouse gas emissions per megawatt of electricity produced.

Roughly three-fourths of the potential energy in the wood is "lost right through the smokestack," said John Gunn, who co-authored the Manomet study.

The study sparked an outcry from power and timber producers, who questioned its science and argued that new efficiency requirements could make it impractical to burn wood waste.

Many biomass plants have already been struggling to make money. In some cases, plants have been fined for environmental reasons. The Wall Street Journal reported last month that 85 of the 107 U.S. biomass plants in operation in January 2012 have been cited for pollution violations over the past five years.

In other cases, low power rates forced some to temporarily stop production. Gallop Power in Greenville, Maine, which qualifies under Massachusetts's current renewable-energy rules, went offline last year, said plant manager Paul Anderson, in part because of low prices for its power. Prices have since gone up, but the plant, which filed for bankruptcy protection in June, remains offline now that it will no longer qualify for those credits, Mr. Anderson said.

U.S. WATCH



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**Letter 15
Response****Larry Lawrence, Lawrence Realty
September 2, 2012**

15-1

The commenter states he attended the public hearing and wants to know why the project has to go in the Tahoe Basin Area. The commenter is concerned about the year round releases of air emissions associated with the project. The comment letter also includes an article from the Wall Street Journal regarding rules for biomass plants in the state of Massachusetts.

With regard to the project location, the Cabin Creek site is located outside of the Tahoe Basin near the Town of Truckee. The facility was sited in an area that is located in close proximity to the source of the woody biomass material, which would be areas within the Tahoe Basin.

The Wall Street Journal article that the commenter cites refers to a recent State of Massachusetts rule that would require biomass power plants to achieve greater than 50% efficiency to be considered as renewable. The rule was based on a study from the Manomet Center for Conservation Sciences (Manomet Study) which concluded that “in the short term, most biomass plants in New England were no more efficient than coal-burning in terms of greenhouse gas emissions”.

The Manomet Study results are not applicable to the Cabin Creek Biomass Facility operations. The Manomet Study considers biomass that is harvested solely for the purpose of use as fuel. Alternatively, the proposed Cabin Creek Biomass Facility would not use any biomass which is harvested for the purpose of fuel. Instead, the facility would only use woody biomass material that is a byproduct of forest fuel hazardous reduction and thinning activities which are conducted for the purpose of forest and ecological sustainability and health. The facility would use biomass wastes from forest management activities critically necessary due to the high wildfire risk and heavy fuel load from decades of fire suppression in the semi-arid Sierra Nevada Tahoe region forests. These forest conditions and management objectives in the forested landscapes around the proposed facility are entirely different than those in Massachusetts, which is the basis of Manomet Study. Biomass used by the facility would be a waste product that would be generated independently from, and in spite of, any potential fuel value. Biomass wastes that the facility would use would have been open pile burned in the vicinity of the site of generation, which is the common and necessary practice in the region, absent a biomass plant option.

The Wall Street Journal article also reports that “85 of the 107 U.S. biomass plants in operation have been cited for pollution violations over the past five years,” and refers to an earlier article of July 24, titled “Wood Fired Plants Generate Violations,” which discusses violations at some biomass plants in the U.S. The operating history and experience of these plants has no relationship to the proposed biomass facility, and provides no relevant indication as to the anticipated operation of the facility. There is very little in common between the proposed facility and biomass facilities discussed in the article. In particular, the biomass facilities discussed in the article are examples of units built in the 1980s, and which have distinctively different biomass fuel feedstocks (urban wood wastes, and allegedly, building debris and plastics and rubber), design and controls (steam fired boilers), and scale (order of magnitude larger).

16

From: [Eric Perlman](#)
To: [Placer County Environmental Coordination Services;](#)
Subject: yes
Date: Monday, July 30, 2012 8:58:14 PM

I vote yes to a biomass plant. Make sure that you have room to expand it to 4 or even 6 megawatts if the forests need that much material removed.

1. Thin the biomass fire hazard.
2. Generate local renewable energy.
3. Create long-term high-tech and low-tech local employment.

Thank you,
Eric Perlman,
Truckee

16-1

**Letter 16
Response****Eric Perlman
July 30, 2012**

16-1

The commenter is supportive of the biomass project and recommends that provisions are made for expansion of the generation capacity of the plant to 4 or even 6 megawatts. See the summary notes for comment PH-1 from the public hearing on August 30, 2012 regarding future expansion of the proposed biomass facility. The comment of support for the benefits of the project is noted. The Placer County Planning Commission will consider this comment at the time it considers project approval.

From: [Shearer, Steve](#)
To: [Placer County Environmental Coordination Services;](#)
[Brett Storey;](#)
cc: robynk@caterkelly.com; [Boyles, Michael J.;](#)
Subject: Placer County (Co-Gen) introduction to Butler Mfg.
Date: Tuesday, August 21, 2012 9:23:31 AM
Attachments: [LightBrochure.pdf](#)

17

Good Day Ms. Krach and Mr. Storey,

It is with interest that I noted Placer County is currently developing plans for a new biomass-fired cogeneration facility planned for the Truckee area. My name is Steve Shearer and I represent Butler Manufacturing™ with corporate accounts within the western states. Butler Manufacturing™, a division of BlueScope Buildings North America, Inc., is the industry leader for engineered building systems and the delivery of related construction services.

Construction services are addressed through a network of over 1,200 affiliated Butler Builders® in North America and abroad. We are pleased to be represented in your project area by Carter-Kelly, Inc in Placerville. Our Butler Builders provide local construction expertise while delivering enhanced value and efficiencies by utilizing Butler building systems for the structural, roof and wall requirements. Our individualized design approach to specific project criteria and facility development needs also allows us to encompass a wide variety of conventional wall materials if desired.

For your review, I have included in my e-mail a digital copy of a brochure titled "Open to a World of Possibility" which addresses our value proposition from an overview perspective. As demonstrated by the projects noted, our building capabilities extend from small simple structures to large complex industrial facilities and hangars. Our reputation is based on performance and exceeding our clients' expectations on diverse facility needs. Butler's MR-24 standing seam roof, with over 2 billion square feet in place, is one of the hallmarks of the value we have provided to building owners. I hope you will have an interest in learning more about Butler, our products and services and visit our web site: www.butlermfg.com.

We would like to learn more about your facility development process and our opportunities to address your building needs. My contact information

17-1

is listed below. I have taken the liberty to copy Robyn Kelly of Carter Kelly on my e-mail. Robyn can be reached at 530-621-0950. Also copied is Michael Boyles, our Butler area manager for Northern California. We await your response and look forward to further information about your new facility. Carter-Kelly will contact you directly in the near future as well. Thank you for your consideration.

17-1
Cont'd

Regards,
Steve Shearer

Steven J. Shearer
Senior Global Corporate Accounts Manager
Butler Manufacturing
A Division of BlueScope Steel
1540 Genessee St. Kansas City, MO 64102, USA
E-Mail: sjshearer@butlermfg.com
Phone: (816) 591-5510
www.butlermfg.com

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Letter 17
Response **Steven Shearer, Butler Manufacturing**
August 21, 2012

- 17-1 The commenter provides information to the County regarding construction services offered by Butler Manufacturing. The comment does not raise any issues regarding the environmental analysis in the Draft EIR. Consistent with the requirements of CEQA, no further response is required.

18

From: [Michael Theroux](#)
To: [Placer County Environmental Coordination Services](#);
cc: [Robert Miller](#);
Subject: Notice of Media Coverage
Date: Saturday, August 11, 2012 10:28:38 PM

Maywan Krach, DEIR Project Manager
Placer County Community Development Resource Agency,
Environmental Coordination Services,

Robert Miller, Placer County Public Information Office

We are pleased to have provided media coverage for the release of the Placer County DEIR on the Cabin Creek Biomass Facility. See: <http://www.terutalk.com/August-2012.html#0811-1>. This item circulates broadly in our next free e-newsletter due out early Monday; please review, and contact me directly with any questions or clarifications.

Teru Talk web service www.terutalk.com is focused on the clean conversion of waste and biomass to energy, fuels and other commodities. We have built a detailed profile for tracking Placer County's efforts. Please add us to your media advisory list for receipt of future press releases related to our industrial sector and to this project in particular.

Michael Theroux, Editor
PO Box 7751
Auburn, CA 95604-7751
530-823-7300; cell: 530-613-1712
email: mtheroux@terutalk.com
Web Service: www.terutalk.com
Corporate Site: www.jdmt.net
Skype: michael_theroux; Twitter: @TeruTalk

18-1

Letter 18
Response **Michael Theroux, Editor, Teru Talk**
August 11, 2012

18-1

The commenter requests to be added to the County's media advisory list related to the biomass energy industrial sector. The comment does not raise any issues regarding the environmental analysis in the Draft EIR. Consistent with the requirements of CEQA, no further response is required.

From: swesley@mpbiomass.com
To: [Maywan Krach;](#)
Subject: We Might Be Able To Help You!
Date: Tuesday, September 04, 2012 9:13:39 AM

19

MP Biomass can provide a Zero Emissions System from our technology partners in Italy. We are the "exclusive manufacturers representative," for a technology that can take any pollutant and eliminate it, and create three renewable energy sources from the flue gases, MSW, sludge, coal ash, fly ash, CO₂, sewage, animal waste, medical waste, lawn and tree debris, and petroleum, oil, lubricant waste streams and even old tires. Notice we stated we collect CO₂? We can collect and reform that CO₂ to renewable energy in great abundance that we will guarantee a ROI in 5 years or less.

This technology has an international patent and we are proud to offer this technology to any corporations, municipalities, or organizations that might have a background or need in environment, construction, engineering, energy, or similar fields. Yes, we can capture Carbon Emissions from coal plants and any other manufacturer for that matter. We capture 100% of any pollutant and reform it.

Because we can support this manufacturer and assist in eliminating pollution in any country, state, or territory, with ZERO EMISSIONS! Our international patented system was first put into place in 2003. Feel free to visit our website: www.mpbiomass.com If you are not interested, we say, no problem here, we already have many all over the world who are! A favorite group of mine once said, "So often times it happens, we all live our life in chains, and yet we never even know we have the key!" -Eagles, Already Gone.

Respectfully,

Scott W. Wesley

Principle

MP BioMass

www.mpbiomass.com

Direct: 480-290-9601



19-1

Letter 19
Response **Scott Wesley, MP Biomass**
September 4, 2012

19-1

The commenter provides information to the County about emissions control technology available from MP Biomass. The comment does not raise any issues regarding the environmental analysis in the Draft EIR. Consistent with the requirements of CEQA, no further response is required.

20

Maywan Krach

From: Matt Woodward [mwoodward@tntindustrial.com]
Sent: Tuesday, August 21, 2012 9:50 AM
To: Placer County Environmental Coordination Services
Cc: 'randy'
Subject: Project: CA 120722 Biomass - Fired Cogen Facility.
Attachments: image001.png; image002.jpg

Ms. Krach,

We are very interested in this project and would like to get on the approved contractors list. If you could send us any information or application on this matter , that would be great!

20-1

Have a great day!

Regards,

Matt Woodward



*Project Supervisor / Estimator
Mechanical Division*

3600 51st Ave.
 Sacramento, Ca. 95823
 Office: 916-395-8400
 Fax: 916-395-8429
 Cell: 916-803-6852



**Letter 20
Response** **Matt Woodward, Industrial Contractors
August 21, 2012**

20-1

The commenter requests to be added to the County's approved contractors list. The comment does not raise any issues regarding the environmental analysis in the Draft EIR. Consistent with the requirements of CEQA, no further response is required.

2.4.6 PUBLIC HEARINGS

**Placer County Planning Commission
Public Hearing Notes on the Cabin Creek Biomass Facility Draft EIR**



August 30, 2012
1:09 PM – 1:45 PM

Gerry Haas, Senior Planner, provided an overview of project details and purpose of today’s meeting.

Comment By	Comment Summary	Staff Response Provided at Meeting (where applicable)
Planning Commission – Clarifying Questions		
Larry Sevison	<p>Is there power lines to the site?</p> <p>Would the plant utilize the material already being generated at the site?</p> <p>Could you easily incrementally increase the size of the facility?</p>	<p>Yes, existing lines can take power from the site.</p> <p>No. Only during wintertime some material from the site may be used. Project is designed to take material that is otherwise being burned.</p> <p>The transmission line is constrained. If greater than 2 MW, the transmission line would need to be upgraded and there are known environmental constraints (e.g., cultural resources) to upgrading the line.</p>
Public Comments		
Al Bolf, Retired SMUD employee	<p>Identified role in study for I-80 to electrify that corridor.</p> <p>The biomass plant should be located adjacent to a sewage plant. Some of the CO₂ emissions from the biomass plant could be used to accelerate the growth of algae produced in the sewage effluent to create biodiesel.</p> <p>Re: transportation costs. Around the time of World War II, the Germans developed a wood gas system that pelletized wood. Wood pellets would be burned with a controlled amount of oxygen in boilers on vehicles. They built 600,000 4.5 ton trucks with this technology. A similar application</p>	NA

PH-1

PH-2

Comment By	Comment Summary	Staff Response Provided at Meeting (where applicable)
	<p>for the project would solve the transportation cost, because you could make your own fuel. Checked with a local welder “Black Bart” welding facility in Nevada City that indicated they could make a similar system – the system would require a particulate filter. Would reduce fuel cost by creating the fuel for transportation.</p> <p>Advocates putting two things together. Referenced “The Race for What’s Left” by Emerald Clar.</p> <p>Described the electric rail link he is working on with the Chinese government – would cut the cost of hauling material to the plant. Could transfer biomass material to the site in hoppers.</p> <p>Provided information on biomass successes globally.</p> <p>Discussed the importance of the fuels work in the Basin in diversifying the forest denuded by logging.</p> <p>Experience with nuclear, fossil-fueled, geothermal, and other types of power plants.</p>	
Anne Grogen, Sierra Business Council	<p>With mitigation, the Sierra Business Council (SBC) supports the project. Specifically, SBC supports the following:</p> <ol style="list-style-type: none"> 1. Biomass as an alternative energy source 2. Diversifying sources of energy in our region 3. Job creation in our region, especially year round jobs 4. Strongly supports the forest health initiatives that this project supports 5. Forest fuels and open burning reduction will have health benefits and reduce risk of catastrophic wildfire, and resultant economic benefits <p>Read into the record the recommended mitigations measures in the comment letter from SBC dated August 30, 2012.</p>	NA
1:45 PM: HEARING CLOSED		

PH-2
Cont'd

PH-3

PH-4

Response PH	Placer County Planning Commission Public Hearing, August 30, 2012
PH-1	Placer County Planning Commission members asked clarifying questions of staff. All questions were answered at the public hearing and the responses are summarized in the table above.
PH-2	The commenter suggests co-locating the facility adjacent to a sewage treatment plant, transportation fuel options, and potential future rail opportunities for biomass material transport. The comment does not raise any issues regarding the environmental analysis in the Draft EIR. Consistent with the requirements of CEQA, no further response is required.
PH-3	The comment of support for the benefits of the project is noted. The Placer County Planning Commission will consider this comment at the time it considers project approval.
PH-4	See responses to comments 11-2 through 11-7.

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3 REVISIONS AND CORRECTIONS TO THE DRAFT EIR

3.1 INTRODUCTION

This chapter includes revisions to the text in the Draft EIR following its publication and public review. The changes are presented in the order in which they appear in the original Draft EIR and are identified by Draft EIR page number. The changes shown in this chapter are the result of comments received on the Draft EIR that resulted in text modifications or corrections that occurred after circulation of the Draft EIR for public review and comments, and Placer County staff-initiated text changes. Revisions are shown as excerpts from the Draft EIR text, with strikethrough (~~strikethrough~~) text for deletions and underline (underline) text for additions.

3.2 REVISIONS AND CORRECTIONS TO THE DRAFT EIR

Chapter 2, Executive Summary, on page 2-1, the fourth full paragraph is revised as follows:

The proposed project would include construction of an approximately 11,000 square-foot, two-story structure that would house the power generating and emissions control equipment, ~~two, a~~ a 400 square-foot pads to ~~potentially accommodate a generator step-up transformer and phase-shifting equipment (if final design deemed necessary),~~ and an approximately one-acre material storage area. The storage area would include a 7,000 square-foot open air pole barn structure to allow materials to dry before use in the energy generation process. Additional onsite improvements would include eight parking spaces, a paved vehicle circulation area that includes new driveways on Cabin Creek Road and the access road to Tahoe Area Regional Transit (TART) and County Department of Public Works (DPW) facilities located on the site, a paved haul road south of the material storage area, stormwater treatment facilities (including an infiltration trench and detention basin), retaining walls, and utility improvements/extensions.

Chapter 2, Executive Summary, on page 2-24, the text of Impact 13-3 in Table 2-1 is revised as follows:

Impact 13-3. Potential Long-Term Degradation of Water Quality. Operation of the project would increase the intensity of use on the site, which could introduce new storm water pollutant sources. These pollutant sources could include oils and greases, petroleum hydrocarbons (gas and diesel fuels), nitrogen, phosphorus, and heavy metals. Pesticides, herbicides, and other landscape maintenance products could also be present and could adversely affect the quality of the site's storm water discharges. Additionally, there may be need for pretreatment of gasification-created wastewater prior to discharge to the regional sewer system. Compliance with the pre-treatment requirements of T-TSA would prevent significant environmental impacts to water quality from any wastewater discharged to T-TSA's system. However, ~~the~~ potential water quality degradation associated with polluted stormwater runoff and the resultant effect on water quality would be considered **potentially significant.**

Chapter 2, Executive Summary, on page 2-26, the text of Impacts 15-1 and 15-2 in Table 2-1 is revised as follows:

Impact 15-1. Water Supply Impacts. Water supply on the site is limited to the capacity of the existing well and pump. The Applicant would select a vendor whose gasification technology could conform to water supply capabilities of the well and water supply system serving the site. Additionally, the project includes construction of a second well to provide redundant supply and reliability in the remote event the existing well would fail. The new well would be required to meet water quality and quantity criteria of the Placer County Environmental Health Department. Water used for plant operation would also be charged against California's water allocation under TROA, if and when it goes into effect. The additional water consumed by the plant would not be at a level that would cause California's TROA allocation to be exceeded. Because adequate well capacity and redundant

water supply would be provided with implementation of the project, the project's water supply impacts would be **less than significant**.

Impact 15-2. Wastewater Conveyance and Treatment Capacity Impacts. The T-TSA advanced water reclamation plant has a permitted available capacity, on a first-come, first-served basis, of approximately 3.2 mgd. At maximum peak use flow, the biomass facility would discharge 14,400 gpd, which would be less than 0.5 percent of the T-TSA's available capacity. Therefore, adequate treatment capacity is available to serve the proposed biomass facility and no new facilities would be required. This impact would be **less than significant**.

Chapter 2, Executive Summary, on page 2-29, the text of the first paragraph of Mitigation Measure 16-4 is revised as follows:

Mitigation Measure 16-4. The Applicant shall regularly compact the fuel piles to minimize fire risk in storage piles. The Applicant shall also prepare detailed written procedures for the management of biomass piles to prevent inadvertent combustion and fires, and that minimize vectors, odors, litter, and human contact with, inhalation, ingestion, and transportation of dust, particulates, and pathogenic organisms. The written procedures shall outline the specific measures that would be implemented to reduce the total pile storage area, and to prevent potential pile fires due to spontaneous combustion. The written procedures shall be subject to review and input by the County LEA ~~that oversees the SWFP for the site~~, PCAPCD, and the Truckee Fire Protection District prior to initiating operations at the site. These measures shall include at a minimum the following:

Chapter 3, Project Description, on page 3-11, the text of Section 3.4.3 is revised as follows:

3.4.3 WOODY BIOMASS FUEL SUPPLY

The fuel supply for the proposed project would be solely woody biomass, derived from a variety of sources including forest-sourced material (hazardous fuels residuals [i.e., woody biomass material that poses a substantial fire threat to human or environmental health], forest thinning and harvest residuals [i.e., woody biomass generated from forest maintenance and restoration activities], and clean Wildland Urban Interface (WUI; generally areas within ¼-mile of urban centers where materials would otherwise be piled and burned)-sourced waste materials from ~~residential and commercial property~~ defensible space clearing and ~~property management~~ activities; materials that would otherwise be piled and burned, which would include brush and yard clippings, tree trimmings and pine needles). The facility would be certified as a renewable energy facility by the CEC based on California Public Resources Code (PRC) Section 25740, 25741 et seq. ~~the proposed sole use of renewable woody biomass as its only fuel source.~~ As stated in California Public Resources Code (PRC) Section 25743(f), the CEC categorizes facilities generating electricity from biomass energy as in-state renewable electricity generation facilities if they report to the CEC the types and quantities of biomass fuels used and certify to the satisfaction of the Commission that the fuel utilization meets certain requirements including:

- ~~▲ have been harvested pursuant to an approved timber harvest plan prepared in accordance with the Z'berg-Nejedly Forest Practice Act of 1973 (Chapter 8 [commencing with Sec. 4511] of Part 2 of Division 4, California PRC);~~
- ~~▲ have been harvested for the purpose of forest fire fuel reduction or forest stand improvement; and~~
- ▲ do not transport or cause the transportation of species known to harbor insect or disease nests outside zones of infestation or current quarantine zones, as identified by the California Department of Food and Agriculture or CAL FIRE, unless approved by those agencies.

Chapter 3, Project Description, on page 3-13, the text of the fourth full paragraph is revised as follows:

The fuel blend for the facility assumes that 75 percent of the facility’s fuel usage would be sourced from hazardous fuels treatment activities, with the balance being made up of forest thinning residuals and WUI-sourced materials (primarily tree trimmings and pine needles) (Placer County Planning Department 2011).

Chapter 3, Project Description, on page 3-14, the text under the heading “WUI-Sourced Material Specifications” is revised as follows:

WUI-SOURCED MATERIAL SPECIFICATIONS

WUI waste would include primarily wood waste from tree trimming and yard clean up (pine needles) for from defensible space activities purposes. WUI-sourced material used at the facility would be required to meet the following fuel specifications developed by the Applicant (Placer County Planning Department 2010):

Chapter 3, Project Description, on page 3-21, the text of the fourth full paragraph is revised as follows:

The project would also require a connection using underground conduit to the existing power line to bring power generated at the site to the Calpeco’s transmission system (Hutton, pers. comm., 2011). Based on discussions with representatives of Calpeco (which owns and maintains the lines), the existing power line would have capacity to accommodate electricity generated at the project site such that offsite power line improvements (e.g., new poles and lines) would not be necessary (Carson, pers. comm., 2011). The proposed project may require the construction of a generator step-up transformer and phase shifting pads and equipment that would be used to transfer power at the correct voltage to the grid and visible disconnect switches, but no offsite electrical improvements (i.e., power line extensions) would be required. During latter phases of design, interconnection studies would be required to verify the adequacy of the capacity of the distribution line. If the interconnection studies determined that offsite improvements are indeed necessary, those improvements would be subject to separate and subsequent environmental review prior to construction of the biomass facility.

Chapter 3, Project Description, on pages 3-23 and 3-24, the text of Section 3.5.2 is revised as follows to clarify permitting details:

3.5.2 OTHER AGENCIES USING THE EIR, AND PERMITTING AND CONSULTATION REQUIREMENTS

Other potential permits and/or approvals that may be required by agencies other than Placer County for development of the proposed project include, but are not limited to, the following:

- ▲ Funding authorization (DOE) (DOE’s separate NEPA process documentation is described in Chapter 1, Introduction)
- ▲ Sewer Connection Permit (TCPUD/T-TSA)
- ▲ Construction/Industrial Storm Water Permit (Lahontan Regional Water Quality Control Board)
- ▲ Fire Protection Agency Pre-Approval (Truckee Fire Protection District)
- ▲ ~~Timberland Conversion Permit~~ Notice of Conversion Exemption to filing a Timber Harvest Plan (California Department of Forestry and Fire Protection)
- ▲ ~~Solid Waste Facility Permit (SWFP) or an~~ Amendment to the existing Solid Waste Facility Permit (SWFP) permit for the Eastern Regional MRF and Transfer Station ~~SWFP~~ (see below) (California Integrated Waste Management Board/CalRecycle and Local Enforcement Agency)

While the issuance of the above permits and/or approvals is not contingent upon EIR certification, the applicable permitting agencies may review information contained in the EIR as part of the approval process.

The proposed Cabin Creek Biomass Facility ~~would~~ may be exempt from the requirement for a SWFP (Tornatore, pers. comm., 2012) that would be issued by the Placer County Local Enforcement Agency (LEA) (in this case the Placer County Department of Health and Human Services is the agency that implements CalRecycle's regulations). According to PRC Section 40201, the proposed biomass gasification plant would not be considered a "waste-to-energy" or "co-generation" plant and would not be subject to permitting as a solid waste facility (CIWMB 2007). Additionally, the proposed facility would be exempt from solid waste permitting requirements as it would pass CalRecycle's "Three-Part Test". In order to qualify for this exclusion from CalRecycle's SWFP permitting requirements, (1) the site must be receiving material that has been source separated (by the generator) or separated for reuse (at a centralized facility – such as a MRF) prior to receipt at the site; (2) less than 1 percent of the material must be putrescible and not causing a nuisance; and, (3) less than 10 percent of the residual leaving the site is being sent to disposal. The proposed biomass facility would meet the requirements of the "Three-Part Test" and therefore would be excluded from SWFP permitting.

~~However,~~ The proposed facility would be located within the boundaries of an existing SWFP for the Eastern Regional MRF and Transfer Station and an administrative amendment to that SWFP may be needed to recognize the proposed biomass plant and operations. Because the gasification facility may receive separated wood waste from the Eastern Regional MRF and Transfer Station, a Report of Facility Information (RFI) amendment for the MRF may be needed. While the biomass facility is not within the permitted boundaries of the closed landfill, it is within 1,000 feet of the landfill and may require a revision to the Closure/Postclosure Maintenance Plan (CPCMP) for the landfill.

~~Additionally, because the proposed biomass facility would use a gasification process (not a direct combustion process), it would be subject to notification requirements under Title 14, Natural Resources Division 7, California Integrated Waste Management Board, Chapter 3.1, Compostable Materials Handling Operations and Facilities Regulatory Requirements (Loane, pers. comm. 2012). ("Biomass conversion", which is an excluded activity under Section 17855, Excluded Activities (17855(a)(5)(C)), is defined under PRC 40106 as controlled combustion. Notification requirements include written notification to the LEA from the operator describing the facility's eligibility under Section 18103 and the facility's operations, documentation that the local planning department has been notified of the intent to commence operations, and proof of compliance with CEQA.~~

Chapter 5, Biological Resources, on page 5-19, the text of the last paragraph is revised as follows:

The proposed biomass facility would use woody biomass derived from forest sources and clean urban sources. The forest sources would include forest residuals generated from hazardous fuel reduction, forest thinning for stand-level management, wildlife habitat enhancement, or other forest management activities conducted by the Tahoe National Forest (TNF) and Lake Tahoe Basin Management Unit (LTBMU) of USFS. Placer County's intention is to primarily use biomass generated from these USFS projects especially in light of the substantial sources of these materials to meet the facilities needs over the next 10 to 15 years; ~~however, over its lifetime, the biomass facility may use clean urban sources of fuels, such as tree trimmings, pine needles, and clean (untreated) construction and demolition wood (e.g., pallets), and forest sources on state or private land as well. The facility would not accept any urban wood waste from building materials or other potential sources that have been treated (e.g., painted or pressure-treated wood).~~

Chapter 9, Air Quality, on page 9-3, the text of the last sentence is revised as follows:

Note that although the Truckee monitoring station indicates that the local Truckee area is in attainment for ozone, the western portion of Nevada County, including Truckee, is classified as non-attainment for ozone according to the ARB (ARB 2011; ARB no date). ~~the MCAB is classified as non-attainment for ozone as a result of ozone levels measured at other monitoring stations throughout the MCAB.~~

Chapter 13, Hydrology and Water Quality, on page 13-12, the text of Impact 13-3 is revised as follows:

Impact 13-3	Potential Long-Term Degradation of Water Quality. Operation of the project would increase the intensity of use on the site, which could introduce new storm water pollutant sources. These pollutant sources could include oils and greases, petroleum hydrocarbons (gas and diesel fuels), nitrogen, phosphorus, and heavy metals. Pesticides, herbicides, and other landscape maintenance products could also be present and could adversely affect the quality of the site's storm water discharges. Additionally, there may be need for pretreatment of gasification-created wastewater prior to discharge to the regional sewer system. <u>Compliance with the pre-treatment requirements of T-TSA would prevent significant environmental impacts to water quality from any wastewater discharged to the T-TSA system.</u> However, the potential water quality degradation associated with polluted stormwater runoff and the resultant effect on water quality would be considered potentially significant .
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Chapter 13, Hydrology and Water Quality, on page 13-13, the text of the last sentence of the third full paragraph is revised as follows:

Prior to discharge, this water would be pre-treated to the standards required by ~~T-TSA~~~~TSD~~ through the use of activated charcoal filters.

Chapter 13, Hydrology and Water Quality, on pages 13-13 and 13-14, the text of the last full paragraph starting on page 13-13 is revised as follows:

Preliminary calculations of pre-and post-project flows were calculated by Wood Rodgers (April 2012). Pre-project flows are estimate to be ~~13.3~~12.9 cubic feet per second (cfs) for the 10-year event and ~~10~~22.4 cfs for the 100-year event. The 10-year and 100-year post project flows are estimated to result in a 3% and 1% increase respectively, in flows from pre-development levels. This results in an approximate post-development increase in flow of 0.4 cfs for the 10-year event and 0.3 cfs for the 100-year event.

Chapter 15, Public Services and Utilities, on page 15-2, the text of the first full paragraph is revised as follows:

The Tahoe City Public Utility District (TCPUD) provides sanitary sewer service to the existing MRF and Transfer Station. Placer County owns the collection system that serves the existing MRF and Transfer Station. The boundaries of the District lie within both Placer and El Dorado Counties, extending from Emerald Bay to Dollar Hill, and along the Truckee River to the Nevada County line. Sewage collected from the site discharges into a TCPUD collection manhole, and then into the Tahoe-Truckee Sanitation Agency (T-TSA) Truckee River Interceptor, both of which are located in the Truckee River corridor near SR 89. The T-TSA Truckee River Interceptor ranges in size from 24 inches to 42 inches and supplies sewage to T-TSA advanced water reclamation plant located in Truckee. ~~Sewage collected from the site flows in a 36" pipe along the Truckee River corridor to the Tahoe-Truckee Sanitation Agency (T-TSA) wastewater treatment plant located on the eastern side of Truckee. The Tahoe-Truckee Sanitation Agency (T-TSA) was founded in 1972 in response to the Porter Cologne Water Quality Control Act, promulgated to protect Lake Tahoe and Truckee River water quality. T-TSA provides regional wastewater treatment service to several Tahoe-area communities through the Agency's five-member sewage collection districts. The member agencies served by T-TSA facilities include:~~

Chapter 15, Public Services and Utilities, on page 15-4, the text of Section 15.2.1 is revised as follows:

15.2.1 FEDERAL

~~There are no federal plans or policies addressing public services and utilities that pertain to the project.~~

TRUCKEE RIVER OPERATING AGREEMENT

The Truckee River Operating Agreement (TROA), signed on September 6, 2008, was developed to formalize, regulate, and monitor water rights and water use within the Tahoe Region, the Truckee River Watershed, and the final outflow areas of Pyramid Lake and the Carson River. TROA was signed by: the U.S. Department of the Interior; the U.S. Department of Justice; the states of California and Nevada; the cities of Fernley, Sparks, and Reno; the Pyramid Lake Paiute Tribe; Washoe County; Sierra Pacific Power Company, and seven public utility and/or water districts. This agreement, which represents the culmination of 18 years of negotiation, was designed to establish minimum storage volumes for and improve the operational flexibility of the Truckee River reservoirs. Under TROA, the interstate allocation caps total groundwater pumping in California at 32,000 acre-feet per year in the Truckee River Basin, less whatever surface water is diverted (surface water is currently limited to 10,000 acre-feet per year) (U.S. Bureau of Reclamation and Department of Water Resources 2008: p. 3-130). Implementation of TROA will involve hydrologic and water accounting data and tracking. While TROA has been signed, it is not yet in effect. Several actions, including court approvals in California and Nevada and approval of water rights change petitions, must be completed before TROA can be implemented.

Chapter 15, Public Services and Utilities, on pages 15-7 and 15-8, the text of Impact 15-1 is revised as follows:

Impact 15-1	Water Supply Impacts. Water supply on the site is limited to the capacity of the existing well and pump. The Applicant would select a vendor whose gasification technology could conform to water supply capabilities of the well and water supply system serving the site. Additionally, the project includes construction of a second well to provide redundant supply and reliability in the remote event the existing well would fail. The new well would be required to meet water quality and quantity criteria of the Placer County Environmental Health Department. <u>Water used for plant operation would also be charged against California's water allocation under TROA, if and when it goes into effect. The additional water consumed by the plant would not be at a level that would cause California's TROA allocation to be exceeded.</u> Because adequate well capacity and redundant water supply would be provided with implementation of the project, the project's water supply impacts would be less than significant .
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It is estimated that the maximum (peak use) flow for the facility would be 10 gpm (14,400 gpd). The existing maximum water demand at the site (without the project) is approximately 60,000 gpd. When added to the proposed project maximum demand, a total of approximately 74,400 gpd would be required. The frequency with which this rate of water would be required would be rare and would require that peak demands from several onsite facilities (Eastern Regional MRF, Transfer Station, TART facilities) occur simultaneously.

In order to install a second well for the water supply system, the Domestic Water Supply Permit for the existing water system would require amendment. The permit amendment requires the following steps: 1) obtaining a well construction permit; 2) testing the new well to make a determination that the new well can provide adequate quantity and quality; and 3) applying for an amendment to the Water Supply Permit (Ramsey, pers. com. 2012).

The quantity of water used and treated would also be charged against the California allocation for the Truckee River Basin under TROA, when and if it goes into effect. In California, as of 2008 groundwater use in the Truckee River Basin was 10,370 acre-feet per year (of which 2,800 acre-feet was surface water use) (U.S. Bureau of Reclamation and Department of Water Resources 2008). Under TROA, the interstate allocation caps the total groundwater pumping volume in the Truckee River Basin for California at 32,000 acre-feet per year, less whatever surface water is diverted. Water consumption on an annual basis for the proposed project has not been calculated. Peak demand estimates described above are included for informational purposes and to determine the adequacy of the well and pump to accommodate the proposed project. Depending on vendor selection, average water use would be well below the projected peak use. Therefore, it is difficult to predict the annual water usage of the proposed biomass facility at the site and the project's effect on California's TROA allocation for the Truckee River Basin, if and when it goes into effect. For comparative purposes, even under an unrealistic scenario whereby the plant were to operate at a continuous peak level (up to 14,400 gpd for 365 days of the year, which is equivalent to 15.8 acre-feet per year), the proposed project would add incrementally (0.05 percent of the total allocation, and 0.07 percent of the remaining allocation as of 2008) to groundwater pumping against the TROA allocation, but would not cause the allocation cap to be exceeded.

As described in the project description, the County would select a vendor whose gasification technology could conform to water supply capabilities of the well and water supply system serving the site. Additionally, the project includes construction of a second well to provide redundant supply and reliability in the remote event the existing well would fail. Further, the new well would be required to meet water quality and quantity criteria of the Placer County Environmental Health Department. Because adequate well capacity and redundant water supply would be provided with implementation of the project, the project's water supply impacts would be **less than significant**.

Chapter 15, Public Services and Utilities, on page 15-8, the text of Impact 15-2 is revised as follows:

Impact 15-2	Wastewater Conveyance and Treatment Capacity Impacts. The T-TSA advanced water reclamation plant has a permitted <u>available</u> capacity, <u>on a first-come, first-served basis</u> , of approximately 3.2 mgd. At maximum peak use flow, the biomass facility would discharge 14,400 gpd, which would be less than 0.5 percent of the T-TSA's available capacity. Therefore, adequate treatment capacity is available to serve the proposed biomass facility and no new facilities would be required. This impact would be less than significant .
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An existing sanitary sewer collection system serves the existing Eastern Regional MRF and Transfer Station operations and TART and DPW facilities adjacent to the southern portion of the site. This collection system, which is owned by Placer County, would be extended to the site to serve the project. Currently, the site's sanitary sewer collection system connects with the NTPUD discharges into a TCPUD collection manhole, and then into T-TSA's Truckee River Interceptor, both of which are located in the Truckee River corridor near SR 89. ~~sewer main, which runs along SR 89. Wastewater is conveyed via NTPUD main and the T-TSATCPUD sewer main to the T-TSA WRP located east of the Town of Truckee.~~ As part of the project, the existing sewer line would be extended to the site within the existing road alignment. The impacts of this improvement are evaluated throughout this EIR. No additional wastewater conveyance improvements would be required to convey project wastewater to the T-TSA reclamation plant.

Chapter 16, Hazardous Materials and Hazards, on page 16-15, the text of the first paragraph of Mitigation Measure 16-4 is revised as follows:

Mitigation Measure 16-4

The Applicant shall regularly compact the fuel piles to minimize fire risk in storage piles. The Applicant shall also prepare detailed written procedures for the management of biomass piles to prevent inadvertent combustion and fires, and that minimize vectors, odors, litter, and human contact with, inhalation, ingestion, and transportation of dust, particulates, and pathogenic organisms. The written procedures shall outline the specific measures that would be implemented to reduce the total pile storage area, and to prevent potential pile fires due to spontaneous combustion. The written procedures shall be subject to review and input by the County LEA that oversees the SWFP for the site, PCAPCD, and the Truckee Fire Protection District prior to initiating operations at the site. These measures shall include at a minimum the following:

Chapter 18, Other CEQA Sections, on page 18-26, the text of the last two paragraphs is revised as follows:

~~Adoption and implementation of the proposed project would only result in one potentially significant and unavoidable impact associated with cumulative toxic air contaminant (TAC) concentrations. While the project would not result in significant impacts related to TAC concentrations in and of itself, it is possible that the levels of health risk exposure from the proposed project, in combination with health risk exposure of other nearby TAC emitting facilities, could exceed acceptable levels which would be considered a significant cumulative impact. No additional feasible mitigation would be available to reduce this impact or the project's contribution to this impact. Therefore, the project's contribution would be cumulatively considerable.~~

All other environmental impacts of the project would be less than significant or less than significant with mitigation.

Chapter 18, Other CEQA Sections, on page 18-38, the text of the last paragraph is revised as follows:

Air districts in California develop air quality attainment plans designed to reduce emissions of ozone precursors enough to attain the federal ozone standard by the earliest practicable date. Air quality attainment plans include a multitude of air pollution control strategies. When developing air quality attainment plans, air districts account for the emissions from all present and future development in the region by relying on city and county general plans. Because the proposed project would be consistent with the land use designation in the Placer County General Plan, emissions associated with development of the project are accounted for in PCAPCD's air quality attainment plan. Also, project-related construction and operational emissions would not exceed the applicable mass emission thresholds established by PCAPCD, NSAQMD, and EDCAPCD. Though operational emissions of ROG and NO_x would exceed PCAPCD's cumulative impact thresholds of 10 lb/day, PCAPCD has confirmed that all feasible reduction measures were incorporated into the project description, as listed among the Environmental Commitments in Section 3.4.8 of the EIR, and the proposed facility would be regulated by District Rule 502 (New Source Review), which requires that the project shall meet the Best Available Control Technology (BACT) requirement to reduce emissions of ROG and NO_x (Chang, pers. comm., 2012). Moreover, the quantitative analysis in Section 9, Air Quality does not account for levels of emissions associated with the open burning of forest thinning debris and hazardous fuels in area forests that would be avoided by the operation of the biomass plant. Thus, the contribution of short-term construction and long-term operational emissions of NO_x and ROG by the proposed project, combined with other cumulative sources of ozone precursors in the region, would ~~be~~ not be cumulatively considerable.

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Appendix A

Mitigation Monitoring and Reporting Program

MITIGATION MONITORING AND REPORTING PROGRAM

The following Mitigation Monitoring and Reporting Program (MMRP) was prepared in compliance with the requirements of California Public Resources Code Section 21081.6 and Section 15097 of the California Environmental Quality Act (CEQA) Guidelines. This MMRP identifies specific funding, timing, and monitoring requirements for implementation of all mitigation measures identified in the Final EIR for the Cabin Creek Biomass Facility Project.

STANDARD MITIGATION MONITORING PROGRAM

Placer County has adopted a standard mitigation monitoring program (Section 18.28.030 of the Placer County Environmental Review Ordinance) in order to implement California Public Resources Code Section 21081.6. This program requires that mitigation measures recommended for discretionary projects, such as the Cabin Creek Biomass Facility Project, be included in the conditions of approval monitored by the County through a variety of permit processes as listed below.

- ▲ Development Review Committee
- ▲ Improvements Plan Approval
- ▲ Improvements Construction Inspection
- ▲ Encroachment Permit
- ▲ Final Map Recordation
- ▲ Acceptance of Project as Complete
- ▲ Building Permit Approval
- ▲ Certificate of Occupancy

The issuance of any of the listed permits or County actions must be preceded by verification by County staff that certain conditions of approval/mitigation measures have been met. This verification shall serve as the required monitoring for those conditions of approval/mitigation measures. All of the mitigation measures for the Cabin Creek Biomass Facility Project included in the Final EIR would be monitored through the County's Standard Mitigation Monitoring Program. As indicated in the text of each mitigation measure, compliance with each would be verified by County staff prior to issuance of required approvals and permits. Table 1 identifies each mitigation measure that would be monitored through the County's Standard Mitigation Monitoring Program. In addition, some mitigation measures require ongoing implementation and would require monitoring after the point at which Certificates of Occupancy are issued. Table 1 also identifies the mitigation measures that require ongoing implementation, the party(ies) responsible for funding implementation, the necessary timing of implementation that would occur outside the scope of the County's Standard Mitigation Monitoring Program, and the mechanisms for monitoring compliance with each mitigation measure.

Table 1 Mitigation Monitoring and Reporting Program			
Mitigation Measure	Individual Responsible for Monitoring and Verifying Compliance	Timing of Initial Action	Frequency and Duration of Monitoring
<p>Mitigation Measure 5-1: To avoid impacts to nesting birds, trees and other vegetation shall be removed from the project site during the non-breeding season (September 1 to March 30) to the extent feasible.</p> <p>If vegetation removal is scheduled to occur during the nesting season (April 1 to August 31), the Applicant shall retain a qualified biologist to conduct preconstruction surveys in suitable habitat on the project site. The surveys will be conducted no less than 14 days and no more than 30 days before the beginning of construction. Survey results shall be sent immediately to Placer County Planning Services Division and to the California Department of Fish and Game (CDFG). If active nests are present on or immediately adjacent to the project site, Planning Services Division staff shall initiate consultation with CDFG to determine appropriate avoidance measures. If no nests are found, no further mitigation is required.</p>	Placer County Planning Services Division	Prior to any vegetation removal or earthwork activities	At onset of vegetation removal or earthwork activities
<p>Mitigation Measure 5-2:</p> <p>a) To reduce the loss of Jeffrey pine forest and protect individual trees on the project site, the Applicant shall conduct a tree survey to determine the number and size of trees to be removed. The number of trees to be removed shall be minimized to the extent feasible.</p> <p>b) The Applicant shall obtain a tree permit from the County, as per the County’s Tree Ordinance. As stated in the Tree Ordinance (12.16.080 Replacement program and penalties), the County may condition any tree permit or discretionary approval involving removal of a protected tree upon (a) the replacement of trees in kind, (b) implementation of a revegetation plan, or (c) payment into the County’s Tree Preservation Fund. Because the project site would not support replacement trees or the implementation of a revegetation plan, the Applicant shall either replace trees at an offsite location or contribute to the County’s Tree Preservation Fund; this will be determined by the County.</p> <p>The replacement requirement may be calculated based upon an inch for an inch replacement of the removed tree(s) and may require minimum 15 gallon size trees. The total of replacement trees may be required to have a combined diameter of the tree(s) removed. A minimum of 50% of replacement trees shall be of a similar native tree. Replacement trees may be planted onsite or in other areas to the satisfaction of the County Planning Services Division. Such replanting must not result in the over-planting of a site such that an unsafe fire condition is created.</p> <p>The County may decide that if the project site is not capable of supporting all of the replacement trees, the Applicant shall pay the County the current market value, as established by an arborist, forester, or registered landscape architect, of the replacement trees, including cost of installation, to go into a Tree Preservation Fund.</p>	Placer County Planning Services Division	Prior to any tree removal activities	All activities completed prior to approval of Improvement Plans

Table 1 Mitigation Monitoring and Reporting Program			
Mitigation Measure	Individual Responsible for Monitoring and Verifying Compliance	Timing of Initial Action	Frequency and Duration of Monitoring
Before Improvement Plans are approved, the Applicant shall provide proof to the County that one, or a combination, of the mitigation options described above has been completed and/or funded. Proof of mitigation fulfillment will also be provided to DFG.			
Mitigation Measure 6-1: If an inadvertent discovery of cultural materials (e.g., unusual amounts of shell, animal bone, glass, ceramics, structure/building remains) is made during construction activities at the project site, ground disturbances in the area of the find shall be halted and a qualified professional archaeologist shall be notified regarding the discovery. The archaeologist will determine whether the resource is potentially significant per the California Register of Historic Resources (CRHR) and CEQA Guidelines Section 15064.5 and will develop appropriate mitigation to protect the integrity of the resource and ensure that no additional resources are affected. Mitigation could include but would not necessarily be limited to preservation in place, archival research, subsurface testing, or contiguous block unit excavation and data recovery.	Placer County Planning Services Division	During earthwork activities	Continuously during earthwork activities
Mitigation Measure 6-2: The County shall implement Mitigation Measures 6-1 and 6-4.	Placer County Planning Services Division	During earthwork activities	Continuously during earthwork activities
Mitigation Measure 6-3: Before the start of grading and/or excavation, the Applicant shall retain a qualified paleontologist or archaeologist to train all construction personnel involved with earthmoving activities, regarding the possibility of encountering paleontological resources at the site, the appearance and types of paleontological resources likely to be seen during project construction, and proper notification procedures should such resources be encountered. In the event that paleontological resources are discovered during ground disturbing activities, grading and construction work within 100 feet of the find shall be suspended until the significance of the features can be determined by a qualified professional paleontologist as appropriate. A qualified professional paleontologist shall then make recommendations for measures necessary to protect the find, or to undertake data recovery, excavation, analysis, and curation of paleontological materials as appropriate.	Placer County Planning Services Division	Prior to earthwork activities conduct training; during earthwork activities monitor for resources	Continuously during earthwork activities
Mitigation Measure 6-4. In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, potentially damaging excavation in the area of the burial shall be halted and the Applicant shall contact the Placer County Coroner and a professional archaeologist to determine the nature and extent of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code, Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the Native American Heritage Commission (NAHC) by phone within 24 hours of making that	Placer County Planning Services Division	Monitor during site construction activities	Continuously during site construction activities

Table 1 Mitigation Monitoring and Reporting Program			
Mitigation Measure	Individual Responsible for Monitoring and Verifying Compliance	Timing of Initial Action	Frequency and Duration of Monitoring
<p>determination (Health and Safety Code, Section 7050(c)).</p> <p>If the remains are determined to be those of a Native American, then the following shall occur:</p> <p>(a) The State Historic Preservation Office (SHPO), the Applicant, an archaeologist, and the NAHC-designated Most Likely Descendant (MLD) shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed. The responsibilities for acting upon notification of a discovery of Native American human remains are identified in Section 5097.9 of the California Public Resources Code.</p> <p>(b) The SHPO shall ensure that the immediate vicinity (according to generally accepted cultural or archaeological standards and practices) is not damaged or disturbed by further development activity until consultation with the MLD has taken place. The MLD shall have 48 hours to complete a site inspection and make recommendations after being granted access to the site. A range of possible treatments for the remains, including nondestructive removal and analysis, preservation in place, relinquishment of the remains and associated items to the descendants, or other culturally appropriate treatment may be discussed. Assembly Bill (AB) 2641 suggests that the concerned parties may extend discussions beyond the initial 48 hours to allow for the discovery of additional remains. AB 2641(e) includes a list of site protection measures and states that the Applicant shall implement one or more of the following measures:</p> <ul style="list-style-type: none"> i. record the site with the NAHC or the appropriate Information Center, ii. utilize an open space or conservation zoning designation or easement, and/or iii. record a document with the county in which the property is located. <p>(c) The County or its authorized representative will rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance if the NAHC is unable to identify a MLD, or if the MLD fails to make a recommendation within 48 hours after being granted access to the site. The County may also reinter the remains in a location not subject to further disturbance if the County rejects the recommendation of the MLD, and mediation by the NAHC fails to provide measures acceptable to the County.</p>			
<p>Mitigation Measure 7-3: The Applicant shall ensure that exterior lighting installed at the facility will conform to an approved lighting plan. The exterior lighting plan shall be prepared prior to the issuance of a building permit, and submitted to the County with Improvement Plans for approval. Exterior lighting shall be limited to lighting required for safe operations and security purposes. The exterior lighting plan shall require at a minimum the following:</p>	Placer County Planning Services Division	Prepare lighting plan prior to issuance of building permit	None

Table 1 Mitigation Monitoring and Reporting Program			
Mitigation Measure	Individual Responsible for Monitoring and Verifying Compliance	Timing of Initial Action	Frequency and Duration of Monitoring
<ul style="list-style-type: none"> › Identification of location of lighting, height, and positioning of all light fixtures, and type and style of light fixtures; › Lighting shall be directed downward using fully shielded fixtures or fixtures otherwise designed to prevent light trespass or projection of light above the horizontal, except as needed for safe operations and security; › The height of light poles shall be limited to 20 feet except as needed for operational and safety purposes. Light fixtures are not to exceed the height of adjacent structures. › Ground level illumination levels shall not exceed two foot candles at the project property line. 			
<p>Mitigation Measure 12-1. The Improvement Plan submittal shall include a geotechnical engineering report produced by a California Registered Civil Engineer or Geotechnical Engineer. The report shall address and make recommendations on the following:</p> <ul style="list-style-type: none"> A) Road, pavement, and parking area design; B) Structural foundations, including retaining wall design (if applicable); C) Grading practices; D) Erosion/winterization; E) Special problems discovered on-site, (i.e., groundwater, expansive/unstable soils, etc.); and F) Slope stability. <p>If the soils report indicates the presence of critically expansive or other soils problems that, if not corrected, could lead to structural defects, a certification of completion of the requirements of the soils report shall be required prior to approval of the Improvement Plans. It is the responsibility of the Applicant to provide for engineering inspection and certification that earthwork has been performed in conformity with recommendations contained in the report.</p>	Placer County Engineering and Surveying Department	Submit geotechnical report prior to issuance of building permit	Continuously during earthwork activities
<p>Mitigation Measure 12-2: The Applicant shall implement Mitigation Measure 12-1 above.</p>	Placer County Engineering and Surveying Department	Submit geotechnical report prior to issuance of building permit	Continuously during earthwork activities
<p>Mitigation Measure 13-1. Final design of the detention facilities shall be included in the Final Drainage Report submitted with the Improvement Plans for the project. The final improvement plans shall contain the following information regarding stormwater drainage.</p>	Placer County Engineering and Surveying	Submit improvement plans, including	Periodically during site construction

Table 1 Mitigation Monitoring and Reporting Program			
Mitigation Measure	Individual Responsible for Monitoring and Verifying Compliance	Timing of Initial Action	Frequency and Duration of Monitoring
<p>a) The Applicant shall prepare and submit Improvement Plans, specifications and cost estimates (per the requirements of Section II of the Land Development Manual [LDM] that are in effect at the time of submittal) to the County for review and approval. The plans shall show all physical improvements as required by the conditions for the project as well as pertinent topographical features both on and off site. All existing and proposed utilities and easements, onsite and adjacent to the project, which may be affected by planned construction, shall be shown on the plans. All landscaping and irrigation facilities within the public right-of-way (or public easements), or landscaping within sight distance areas at intersections, shall be included in the Improvement Plans. The Applicant shall pay plan check and inspection fees with the first Improvement Plan submittal. (NOTE: Prior to plan approval, all applicable recording and reproduction costs shall be paid). The cost of the above-noted landscape and irrigation facilities shall be included in the estimates used to determine these fees. It is the Applicant’s responsibility to obtain all required agency signatures on the plans and to secure department approvals. If the Design/Site Review process and/or Development Review Committee (DRC) review is required as a condition of approval for the project, said review process shall be completed prior to submittal of Improvement Plans. Record drawings shall be prepared and signed by a California Registered Civil Engineer at the Applicant’s expense and shall be submitted to the County in both hard copy and electronic versions in a format to be approved by the County prior to acceptance by the County of site improvements.</p> <p>Conceptual landscape plans submitted prior to project approval may require modification during the Improvement Plan process to resolve issues of drainage and traffic safety.</p>	<p>Department</p>	<p>drainage report, prior to issuance of building permit; revegetate site prior to issuance of certificates of occupancy;</p>	<p>activities</p>
<p>b) The Improvement Plans shall show all proposed grading, drainage improvements, vegetation and tree removal and all work shall conform to provisions of the County Grading Ordinance (Ref. Article 15.48, Placer County Code) and Stormwater Quality Ordinance (Ref. Article 8.28, Placer County Code) that are in effect at the time of submittal. No grading, clearing, or tree disturbance shall occur until the Improvement Plans are approved and all temporary construction fencing has been installed and inspected by the County. All cut/fill slopes shall be at a maximum of 2:1 (horizontal: vertical) unless a soils report supports a steeper slope and the County concurs with said recommendation. Fill slopes shall not exceed 1.5:1 (horizontal: vertical)</p> <p>The Applicant shall revegetate all disturbed areas. Revegetation, undertaken from April 1 to October 1, shall include regular watering to ensure adequate growth. A winterization plan shall be provided with project Improvement Plans. It is the Applicant’s responsibility to ensure proper installation and maintenance of erosion control/winterization before, during, and after project construction. Soil</p>			

Table 1 Mitigation Monitoring and Reporting Program			
Mitigation Measure	Individual Responsible for Monitoring and Verifying Compliance	Timing of Initial Action	Frequency and Duration of Monitoring
<p>stockpiling or borrow areas, shall have proper erosion control measures applied for the duration of the construction as specified in the Improvement Plans. Provide for erosion control where roadside drainage is off of the pavement, to the satisfaction of the County.</p> <p>The Applicant shall submit to the County a letter of credit or cash deposit in the amount of 110 percent of an approved engineer’s estimate for winterization and permanent erosion control work prior to Improvement Plan approval to guarantee protection against erosion and improper grading practices. Upon the County’s acceptance of improvements, and satisfactory completion of a one-year maintenance period, unused portions of said deposit shall be refunded to the Applicant or authorized agent.</p> <p>If, at any time during construction, a field review by County personnel indicates a significant deviation from the proposed grading shown on the Improvement Plans, specifically with regard to slope heights, slope ratios, erosion control, winterization, tree disturbance, and/or pad elevations and configurations, the plans shall be reviewed by the County for a determination of substantial conformance to the project approvals prior to any further work proceeding. Failure of the County to make a determination of substantial conformance may serve as grounds for the revocation/modification of the project approval by the appropriate hearing body.</p> <p>c) The Improvement Plan submittal shall include a drainage report in conformance with the requirements of Section 5 of the Land Development Manual that are in effect at the time of submittal, to the County for review and approval. The report shall be prepared by a Registered Civil Engineer and shall, at a minimum, include: A written text addressing existing conditions, the effects of the improvements, all appropriate calculations, a watershed map, increases in downstream flows, proposed on- and off-site improvements and drainage easements to accommodate flows from this project. The report shall identify water quality protection features and methods to be used both during construction and for long-term post-construction water quality protection. “Best Management Practice” measures shall be provided to reduce erosion, water quality degradation, and prevent contamination.</p> <p>d) Water quality Best Management Practices (BMPs), shall be designed according to the California Stormwater Quality Association Stormwater Best Management Practice Handbooks for Construction, for New Development / Redevelopment, and/or for Industrial and Commercial, (and/or other similar source as approved by the County.</p> <p>Storm drainage from on- and offsite impervious surfaces (including roads) shall be collected and routed through specially designed catch basins, vegetated swales, vaults, infiltration basins, water quality basins, filters, etc. for entrapment of sediment, debris and oils/greases or other identified pollutants, as approved by the County. BMPs shall be designed at a minimum in accordance with the Placer County</p>			

Table 1 Mitigation Monitoring and Reporting Program			
Mitigation Measure	Individual Responsible for Monitoring and Verifying Compliance	Timing of Initial Action	Frequency and Duration of Monitoring
<p>Guidance Document for Volume and Flow-Based Sizing of Permanent Post-Construction Best Management Practices for Stormwater Quality Protection. No water quality facility construction shall be permitted within any identified wetlands area, floodplain, or right-of-way, except as authorized by project approvals.</p> <p>All BMPs shall be maintained as required to insure effectiveness. The Applicant shall provide for the establishment of vegetation, where specified, by means of proper irrigation. Proof of on-going maintenance, such as contractual evidence, shall be provided to County upon request.</p> <p>e) Prior to Improvement Plan approval, the Applicant shall obtain a State Regional Water Quality Control Board National Pollutant Discharge Elimination System (NPDES) construction stormwater quality permit and shall provide to the County evidence of a state-issued Waste Discharge Identification (WDID) number or filing of a Notice of Intent and fees.</p>			
<p>Mitigation Measure 13-3: The Applicant shall implement Mitigation Measures 13-1a through e.</p>	Placer County Engineering and Surveying Department	Submit improvement plans, including drainage report, prior to issuance of building permit; revegetate site prior to issuance of certificates of occupancy;	Periodically during site construction activities
<p>Mitigation Measure 16-1: If during site preparation and construction activities, previously undiscovered or unknown evidence of hazardous materials contamination is observed or suspected through either obvious or implied measures (e.g., stained or odorous soil, unknown storage tanks, etc.), construction activities in the area of the find shall immediately cease. Placer County Environmental Health Division staff shall be immediately consulted and a qualified consultant registered in DTSC’s Registered Environmental Assessor Program will be contracted to assess the situation. Based on the assessment, the Applicant shall implement necessary remediation activities including but not limited to removal of soil and debris, treatment of contaminated groundwater, and capping the site prior to development. All required remediation shall include a DTSC Remedial Action Work Plan or equivalent. Based on consultation between the Registered Environmental Assessor and DTSC, remediation of the site shall be conducted consistent with all applicable regulations.</p>	Placer County Environmental Health Services	Monitor during site construction activities	Continuously during site construction activities

Table 1 Mitigation Monitoring and Reporting Program			
Mitigation Measure	Individual Responsible for Monitoring and Verifying Compliance	Timing of Initial Action	Frequency and Duration of Monitoring
<p>Mitigation Measure 16-4. The Applicant shall regularly compact the fuel piles to minimize fire risk in storage piles. The Applicant shall also prepare detailed written procedures for the management of biomass piles to prevent inadvertent combustion and fires, and that minimize vectors, odors, litter, and human contact with, inhalation, ingestion, and transportation of dust, particulates, and pathogenic organisms. The written procedures shall outline the specific measures that would be implemented to reduce the total pile storage area, and to prevent potential pile fires due to spontaneous combustion. The written procedures shall be subject to review and input by the County LEA, PCAPCD, and the Truckee Fire Protection District prior to initiating operations at the site. These measures shall include at a minimum the following:</p> <ul style="list-style-type: none"> a) A schedule for periodic and random load checks of incoming biomass truckloads; b) Restricted public access to the facility (e.g., fencing); c) Fire prevention, protection, and control measures, including, but not limited to temperature monitoring of piles at least weekly, adequate water supply for fire suppression, and the isolation of potential ignition source from the biomass piles; d) Fire lanes between piles shall be provided to allow fire control equipment access to all operational areas; e) Daily visual inspections of the storage piles to observe whether temperature-related effects are occurring (e.g., steam); and f) Leachate shall be controlled to prevent contact with the public. <p>As necessary, measures such as moisture management (e.g., wetting), pile aeration, tarping, among others could be implemented to optimally manage the storage piles.</p>	Placer County Environmental Health Services	Monitor during facility operations	Periodically during facility operations
<p>Mitigation Measure 18-1. Prior to the issuance of any building permits, the Applicant shall pay County traffic impact fees that are in effect for the Tahoe Resorts area pursuant to applicable Ordinances and Resolutions. Fees shall be paid to Placer County DPW. Final determination of the fees will be made once the final site plans are submitted and approved by DPW.</p>	Placer County Department of Public Works	Prior to the issuance of any building permits	Completion prior to the issuance of any building permits

Appendix B

**Attachments to the
Center for Biological Diversity's
Comment Letter
on the Draft EIR**

4.3 AIR QUALITY

The purpose of the Air Quality section is to address the impacts of the project on ambient air quality and the exposure of people, particularly sensitive individuals, to odors and hazardous pollutant concentrations, including toxic air contaminants. This section evaluates the significance of the increased emissions and exposures associated with the proposed project, and recommends mitigation measures to reduce the emissions and exposures to acceptable levels. The following analysis is derived from the *Air Quality Analysis for the Panorama Planned Development Project* (Tetra Tech EC, Inc., 2008).

This EIR also considers the potential effects of the project on climate change. Emissions of carbon dioxide, an important greenhouse gas, have been calculated and are presented below for the various components of the proposed project (construction, traffic-related emissions, operational emissions). A more detailed analysis of the project's contribution to greenhouse gas emissions is included in Section 5.1: Cumulative Impacts.

Project construction and operation could both result in exceedances of the County's Level "A" thresholds for NO_x and possibly VOCs. In addition, future residents could be exposed to odors, dust, and other air pollutants from nearby agricultural and industrial operations. A number of measures are available to minimize construction-related emissions. Operational emissions can be substantially reduced by eliminating use of wood-burning fireplaces and wood stoves; the passive solar design criterion to be implemented as part of the project proposal would further limit operational emissions. With implementation of these measures, neither short-term nor long-term emissions are considered significant.

The reaction to odors varies from individual to individual. No measures are available to the project proponents to control off-site odor or dust generation. However, provided prospective purchasers of the residences are notified of the potential for off-site odor and dust generation, the potential for impacts would be reduced to an acceptable level.

4.3.1 ENVIRONMENTAL SETTING

CLIMATE AND METEOROLOGY

Shasta County is located at the northern end of the Sacramento Valley Air Basin (SVAB). The SVAB consists of all or part of eleven counties. The SVAB is bounded on the north and west by the Coast Range, and on the east by the southern end of the Cascade Range and the northern end of the Sierra Nevada. These mountain ranges represent a substantial physical barrier to locally created pollution, as well as that transported northward on prevailing winds from the Sacramento metropolitan area.

The climate of the Sacramento Valley Air Basin is dominated by the strength and location of a semi-permanent, subtropical, high-pressure cell over the northeastern

Pacific Ocean, with terrain variations creating various microclimates. The existence of mountains and hills within the basin is responsible, in large part, for the wide variations of rainfall, temperatures, and localized winds that occur throughout the region. Airflow patterns in the basin are predominantly northwesterly in the spring and summer; however, seasonal variations do occur. Calm conditions dominate the winter months. Regional airflow patterns affect air quality by directing pollutants downwind of sources. Localized meteorological conditions, such as light winds and shallow vertical mixing, as well as topographical features, such as surrounding mountain ranges, create areas of high pollutant concentrations by hindering dispersal. Figure 4.3.1: Redding Airport Reporting Station Wind Rose Data shows the wind rose data for the Redding Airport reporting station.

Precipitation is highly variable seasonally. Summer months are often dry, averaging less than one inch in total precipitation per month. Rainfall is most abundant during the winter months and increases with elevation. Annual rainfall is lowest in the valleys, higher in the foothills, and highest in the mountains. Summary climate statistics for the Redding Airport, which lies to the north of the project site, are presented in Table 4.3.1.

**Table 4.3.1
Climate Data Summary for the Redding Airport**

Mean Maximum Temperature, F	75.3
Highest Mean Maximum Temperature, F	103.4
Lowest Mean Maximum Temperature, F	48.9
Mean Minimum Temperature, F	47.9
Highest Mean Minimum Temperature, F	68.7
Lowest Mean Minimum Temperature, F	26.9
Mean Annual Precipitation, in.	33.52
Predominate Wind Direction ²	N to NW
Annual Average Wind Speed, mph ²	7.1
% of Calm Conditions ²	15.55

Source: Tetra Tech EC, Inc., 2008.

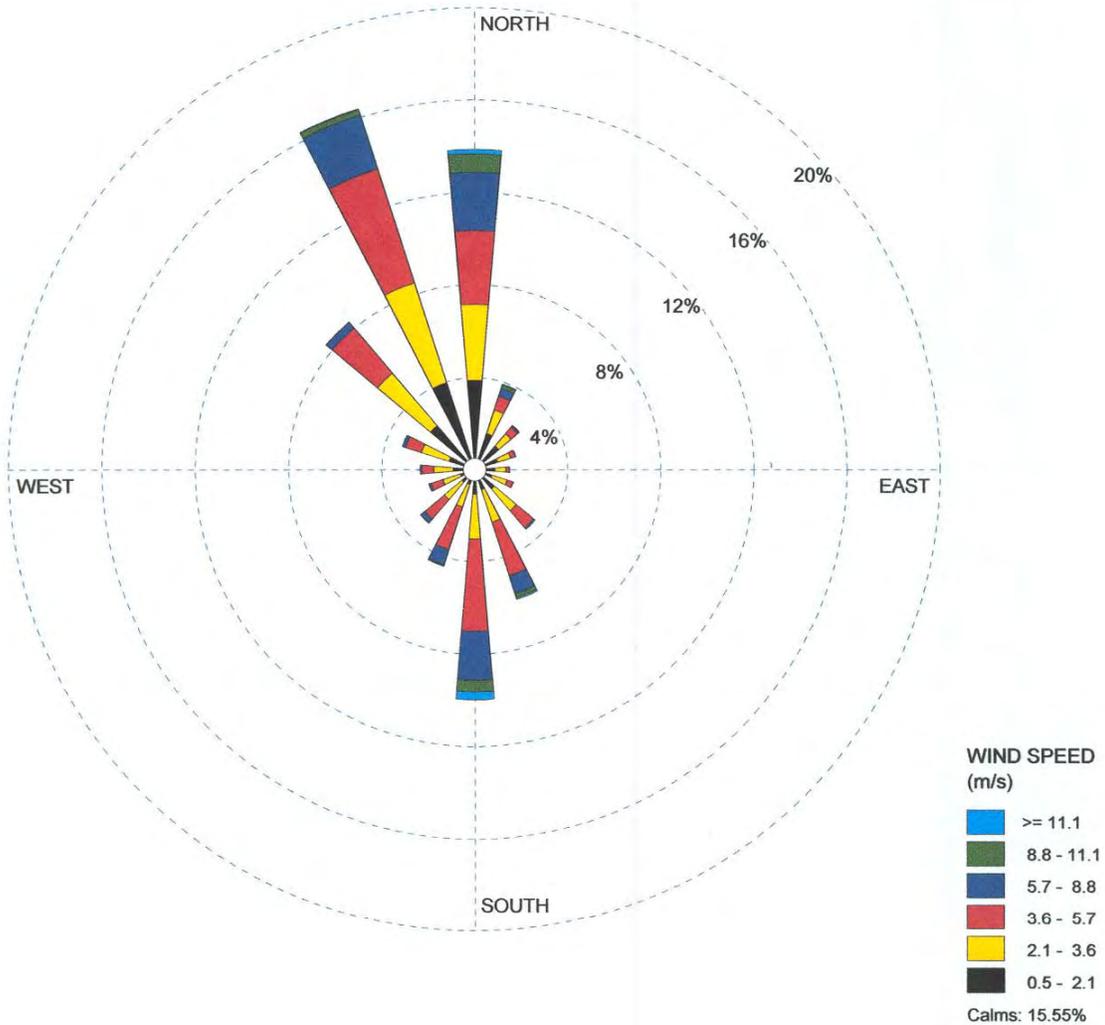
¹ NCDC 1971-2000 Monthly Normal Data, Western Regional Climatic Center

² Redding Airport wind data for 1988-1991

The valley is frequently subjected to inversions that, coupled with geographic barriers and high summer temperatures, create a high potential for air pollution problems. Generally, areas below 1,000 feet in elevation within Shasta County experience a moderate to poor capability to disperse pollutants in both the horizontal and vertical wind fields. This is, in large measure, due to relatively stable atmospheric conditions which act to suppress vertical air movement. Extremely stable atmospheric conditions referred to as "inversions" act as barriers to the dispersal of pollutants. In valley locations, at or below 1,000 feet in elevation, such as the project area, inversions create a "lid" under which pollutants are trapped. Dust and other pollutants trapped within these inversion layers will not disperse until atmospheric conditions become unstable. This situation creates concentrations of pollutants at or near the ground surface, and as a result may pose significant health risks for plants, animals, and people.

WIND ROSE PLOT:
Station #24257 - REDDING/AAF, CA

DISPLAY:
Wind Speed
Direction (blowing from)



COMMENTS:	DATA PERIOD: 1988 1989 1990 1991 Jan 1 - Dec 31 00:00 - 23:00	COMPANY NAME:	
	CALM WINDS: 15.55%	MODELER:	
	AVG. WIND SPEED: 3.17 m/s	TOTAL COUNT: 35064 hrs.	PROJECT NO.:
		DATE: 5/3/2004	

WRPLOT View - Lakes Environmental Software

Figure 4.3.1
Redding Airport Reporting Station Wind Rose Data
 (Source: Tetra Tech EC, Inc., 2008)

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REGULATORY SETTING

An overview of existing and proposed *Shasta County General Plan* land use classifications and *Shasta County Zoning Plan* designations for the project site is provided in Section 3.4: Panorama Planned Development Regulatory Setting. A discussion of federal, state, and local regulations related to air quality, as well as objectives and policies in the *Shasta County General Plan* that are pertinent to the air quality analysis for the project, are included below.

Federal Regulations

Environmental Protection Agency. At the federal level, the U.S. Environmental Protection Agency (EPA) has been charged with implementing national air quality programs. The U.S. EPA air quality mandates are derived from the federal Clean Air Act (CAA), which was signed into law in 1970. Congress amended the CAA in 1977 and again in 1990. The CAA required the EPA to establish the national ambient air quality standards (NAAQS), and to also establish deadlines for their attainment. Two types of NAAQS have been established: primary standards, which protect public health, and secondary standards, which protect public welfare from non-health-related adverse effects, such as visibility limitations.

The CAA Amendments of 1990 made major changes in deadlines for attaining NAAQS and in the actions required of areas of the nation that exceed these standards. Under the CAA, state and local agencies in areas that exceed the NAAQS are required to develop and implement air pollution control plans designed to achieve and maintain the NAAQS established by EPA. States may also establish their own standards, provided that state standards are at least as stringent as the NAAQS. California has established California ambient air quality standards (CAAQS) pursuant to California Health and Safety Code.

The CAA required states to develop an air quality control plan referred to as the State Implementation Plan (SIP). The SIP contains the strategies and control measures that California uses to attain the NAAQS. The EPA approved the California SIP in September 1996. The SIP became effective on February 7, 1997. Pursuant to the SIP, the State of California will strive for compliance with federal ozone standards by the year 2010. This will be accomplished using a combination of performance standards and market-based programs that will speed the introduction of cleaner technology and expand compliance flexibility.

State Regulations

California Air Resources Board. The California Air Resources Board (CARB) is the agency responsible for coordination and oversight of state and local air pollution control programs and for implementing the California Clean Air Act (CCAA) of 1988. The CCAA requires that all air districts in the state endeavor to achieve and maintain CAAQS by the earliest practical date. The CCAA mandates that districts focus particular attention on reducing emissions from transportation and area-wide emission sources, and the Act provides districts with the authority to regulate indirect sources.

Each district is to achieve a five percent annual reduction, averaged over consecutive three-year periods, in district-wide emissions of each nonattainment pollutant or its precursors. Air districts in violation of CAAQS are required to prepare an Air Quality Attainment Plan (AQAP) that includes measures for attaining the CCAA mandates.

California's Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24). The Energy Efficiency Standards for Residential and Nonresidential Buildings were established in 24 CCR Part 6 in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The current California Energy Commission standards were adopted in January 2008 (California Energy Commission, 2008), and implemented in January 2010.

Local Regulations

Shasta County Air Quality Management District. The project site is located in the jurisdiction of the Shasta County Air Quality Management District (AQMD). The AQMD is designated by law to adopt and enforce regulations to achieve and maintain ambient air quality standards. The AQMD, along with other air districts in the Sacramento Valley Air Basin (SVAB), has committed to jointly prepare the SVAB Air Quality Attainment Plan for the purpose of achieving and maintaining healthful air quality throughout the air basin. The Plan was initially adopted in 1994 and is intended to be updated on a triennial basis. The most recent update occurred in 2006. The triennial updates of the SVAB Air Quality Attainment Plan address the progress made in implementing the AQAP and propose modifications to the strategies necessary to attain the California ambient air quality standard for the 1-hour ozone standard at the earliest practicable date. Like previous updates of the Air Quality Attainment Plan, the 2006 AQAP focuses on adoption and implementation of control measures for stationary sources, area-wide sources, and indirect sources, and addresses public education and information programs. The 2006 AQAP also addresses the effect that pollutant transport has on the north valley area's ability to meet and attain the State standards. Specific AQMD rules or programs applicable to the proposed project include the following.

- Rule 3:16 – Fugitive, Indirect, or Non-Traditional Sources
- Protocol for Review – Land Use Permitting Activities
- Environmental Review Guidelines – Procedures for Implementing CEQA

Shasta County General Plan. The *Shasta County General Plan* includes various objectives and policies to help protect and improve the County's air quality and to help the County attain and maintain federal and state ambient air quality standards. The objectives and policies most applicable to the proposed project are summarized as follows:

Objectives

- AQ-1 To protect and improve the County's air quality in accordance with Federal and State clean air laws in order to: (1) safeguard human health, and (2) minimize crop, plant, and property damage.
- AQ-2 To meet the requirements of the: (1) Federal Clean Air Act, and (2) the California Clean Air Act as soon as feasible.
- AQ-3 To integrate air quality, land use, housing, transportation, and energy planning efforts to achieve the most efficient use of public resources and to create a healthier and more livable environment through reductions in air pollution contaminants.
- AQ-4 To reduce traffic congestion, vehicle trips, vehicle miles traveled, and increase average vehicle ridership through more efficient use of infrastructure and support for trip reduction programs.
- AQ-6 To promote site designs that encourage walking, cycling, and transit use.
- AQ-8 To reduce emissions related to energy consumption and area sources.

Policies

- AQ-1a The County shall require builders/developers to limit fireplace installations in new development to low-emitting fireplaces conforming to a maximum emission limit of 7.5 grams per hour of total particulate matter by being equipped with a EPA-certified insert or by being individually certified to meet the above emission standard.
- AQ-1b The County will encourage the development of local programs to minimize emissions from residential wood burning.
- AQ-1d The County shall require residential development projects and projects categorized as sensitive receptors to be located an adequate distance from existing and potential sources of toxic emissions such as freeways, major arterials, industrial sites, and hazardous material locations.
- AQ-2b The County will work to accurately determine and fairly mitigate the local and regional air quality impacts of projects proposed in the unincorporated portions of Shasta County.
- AQ-2c Land use decisions, where feasible, should contribute to the improvement of air quality. New projects shall be required to reduce their respective air quality impacts to below levels of significance, or proceed as indicated in Policy AQ-2e.
- AQ-2d Shasta County shall ensure that air quality impacts identified during CEQA review are: (1) consistently and fairly mitigated, and (2) mitigation measures are feasible.
- AQ-2e Shasta County will cooperate with the AQMD in assuring that new projects with stationary sources of emissions of non-attainment pollutants or their precursors

that exceed 25 tons per year shall provide appropriate emission offsets. A comparable program which offsets indirect emissions of these pollutants exceeding 25 tons per year from development projects shall also be utilized to mitigate air pollution impacts. An Environmental Impact Report will be required for all projects that have unmitigated emissions of non-attainment pollutants exceeding 25 tons per year.

- AQ-2f Shasta County shall require appropriate Standard Mitigation Measures and Best Available Mitigation Measures on all discretionary land use applications as recommended by the AQMD in order to mitigate both direct and indirect emissions of non-attainment pollutants.
- AQ-2g Significance thresholds as proposed by the AQMD for emissions shall be utilized when appropriate for: (1) Reactive Organic Gases (ROG) and Oxides of Nitrogen (NO_x), both of which are precursors of ozone, and (2) inhalable particulate matter (PM₁₀) in determining mitigation of air quality impacts.
- AQ-2j The County shall work toward measures to reduce particulate emissions from construction, grading, excavation, and demolition to the maximum extent feasible.
- AQ-3a The County shall consider potential air quality impacts when planning the land uses and transportation systems needed to accommodate expected growth.
- AQ-3b The County shall work towards creating a land use pattern that encourages people to walk, bicycle, or use public transit for a significant number of their daily trips.
- AQ-3c The County shall encourage projects proposing pedestrian- or transit-oriented designs at suitable locations.
- AQ-3f Existing town centers and rural community centers should be recognized among the primary pedestrian-oriented commercial and service centers as major contributors in promoting air quality goals in the unincorporated portions of the County.
- AQ-3h The County will encourage higher residential densities in areas served by the full range of urban services.
- AQ-4b The County's development standards shall require the paving of roads as a part of new development permits to the extent necessary to meet access and air quality objectives. These requirements shall be designed to help mitigate potentially significant adverse air quality impacts created by particulate emissions on both an individual and cumulative basis.
- AQ-4c The County will encourage and publicize the use of public transit; ridesharing and van pooling; shortened and combined motor vehicle trips for work, shopping and services; use of bicycles; "pedestrian friendly" design criteria and walking.
- AQ-4f The County shall consult as appropriate with transit providers to determine potentially significant project impacts on long-range transit plans to ensure that impacts are adequately mitigated.

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- AQ-5b The Shasta County Department of Resource Management will consult with the AQMD, where appropriate, when conducting CEQA reviews for all discretionary development applications.
- AQ-6a The County shall encourage project sites designed to increase the convenience, safety, and comfort of people using transit, walking, or cycling.
- AQ-6b The County shall review all subdivision street and lot designs, commercial site plans and multi-family site plans to identify design changes that can improve access by transit, bicycle, or walking.
- AQ-8a The County will encourage new development projects to reduce air quality impacts from area sources and energy consumption requirements for heating and cooling.
- AQ-8b The County will encourage use of energy conservation features and low-emission equipment for all new residential and commercial development.

BACKGROUND AIR QUALITY

Pollutants of concern include both criteria pollutants and toxic air contaminants. Criteria pollutants are those regulated by federal and State laws since the 1970s pursuant to the federal and State Clean Air Acts: e.g., ozone, carbon monoxide, suspended particulate matter, oxides of nitrogen, and sulfur dioxide. Toxic air contaminants are identified by State regulation: e.g., particulate matter from diesel-fueled engines, asbestos, chlorinated organic compounds, metals, radon and iodine gas, and other contaminants.

Criteria Pollutants

To date, the national ambient air quality standards (NAAQS) have been established for seven criteria pollutants, as follows: sulfur dioxide (SO₂), carbon monoxide (CO), ozone (O₃), nitrogen dioxide (NO₂), sub 10-micron particulate matter (PM₁₀), sub 2.5-micron particulate matter (PM_{2.5}), and lead (Pb). The criteria pollutants are those that have been demonstrated historically to be widespread and have a potential for adverse health impacts. The State of California has also established ambient air quality standards (CAAQS) that further limit the allowable concentrations of certain criteria pollutants.

Each federal or state ambient air quality standard is comprised of two basic elements: (1) a numerical limit expressed as an allowable concentration, and (2) an averaging time that specifies the period over which the concentration value is to be measured. Table 4.3.2 presents the current federal and state ambient air quality standards.

**Table 4.3.2
Ambient Air Quality Standards**

Pollutant	Averaging Time	California Standards Concentration	National Standards Concentration
Ozone	1 hour	0.09 ppm (180 µg/m ³)	-
	8 hour	0.07 ppm (137 µg/m ³)	0.075 ppm (147 µg/m ³) (3-year average of annual 4th-highest daily maximum)
Carbon monoxide	8 hour	9.0 ppm (10000 ug/m ³)	9 ppm (10000 ug/m ³)
	1 hour	20 ppm (23000 ug/m ³)	35 ppm (40000 ug/m ³)
Nitrogen dioxide	Annual Average	.030 ppm	0.053 ppm (100 µg/m ³)
	1 hour	0.18 ppm (338 µg/m ³)	-
Sulfur dioxide	Annual Average	-	0.03 ppm (80 µg/m ³)
	24 hour	0.04 ppm (105 µg/m ³)	0.14 ppm (365 µg/m ³)
	3 hour	-	0.5 ppm (1300 µg/m ³)
	1 hour	0.25 ppm (655 µg/m ³)	-
Respirable particulate matter (10 micron)	24 hour	50 µg/m ³	150 µg/m ³
	Annual Arithmetic Mean	20 µg/m ³	-
Fine particulate matter (2.5 micron)	Annual Arithmetic Mean	12 µg/m ³	15 µg/m ³ (3-year average)
	24 hour	-	35 µg/m ³ (3-year average of 98th percentiles)
Sulfates	24 hour	25 µg/m ³	-
Lead	30 day	1.5 µg/m ³	-
	Calendar Quarter	-	1.5 µg/m ³

Source: Tetra Tech EC, Inc., 2008.
ppm = parts per million
µg/m³ = micrograms per cubic meter

Brief descriptions of health effects for the main criteria pollutants are as follows.

Ozone. Ozone is a reactive pollutant that is not emitted directly into the atmosphere; rather, it is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving precursor organic compounds (POC) and oxides of nitrogen (NO_x). Significant ozone production generally requires POC and NO_x to be present in a stable atmosphere with strong sunlight for approximately three hours. Ozone is a regional air pollutant because it is not emitted directly by sources, rather is formed downwind of sources of POC and NO_x under the influence of wind and sunlight. Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. In addition to causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

Carbon Monoxide. Carbon monoxide is a non-reactive pollutant that is a product of incomplete combustion. Ambient carbon monoxide concentrations generally follow the spatial and temporal distributions of vehicular traffic, and are also influenced by meteorological factors such as wind speed and atmospheric mixing. Under inversion conditions, carbon monoxide concentrations may be distributed more uniformly over an area, out to a particular distance, from vehicular sources. When inhaled at high concentrations, carbon monoxide combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the

brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses.

Particulate Matter (PM₁₀ and PM_{2.5}). PM₁₀ consists of particulate matter that is 10 microns or less in diameter (a micron is one-millionth of a meter). Fine particulate matter, PM_{2.5}, consists of particulate matter 2.5 microns or less in diameter. Both PM₁₀ and PM_{2.5} represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, combustion, and atmospheric photochemical reactions. Some of these operations, such as demolition and construction activities, contribute to increases in local PM concentrations, while others, such as vehicular traffic, affect regional PM concentrations.

Several studies conducted by the U.S. EPA have shown an association between exposure to particulate matter, both PM₁₀ and PM_{2.5}, and respiratory ailments or cardiovascular disease. Other studies have related particulate matter to increases in asthma attacks. In general, these studies have shown that short-term and long-term exposure to particulate matter can cause acute and chronic health effects. PM_{2.5}, which can penetrate deep into the lungs, causes more serious respiratory ailments. These studies, along with information provided by the U.S. EPA in a 1996 staff report, were used as the basis for evaluating the impacts of the proposed project emissions of PM₁₀ and PM_{2.5} on public health.

Nitrogen Dioxide and Sulfur Dioxide. Nitrogen dioxide (NO₂) and sulfur dioxide (SO₂) are two gaseous compounds within larger groups of compounds, oxides of nitrogen (NO_x) and sulfur oxides (SO_x), respectively, that are products of the combustion of fuel. NO_x and SO_x emission sources can elevate local NO₂ and SO₂ concentrations, and both are regional precursor compounds to particulate matter. As described above, NO_x is also an ozone precursor compound and can affect regional visibility. Elevated concentrations of these compounds are associated with increased risk of acute and chronic respiratory disease. Sulfur dioxide and nitrogen oxides emissions can be oxidized in the atmosphere to eventually form sulfates and nitrates, which contribute to acid rain.

Lead. Gasoline-powered automobile engines used to be the major source of airborne lead in urban areas. Excessive exposure to lead concentrations can result in gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. The use of lead additives in motor vehicle fuel has been eliminated in California, and lead concentrations have declined substantially as a result.

Toxic Air Contaminants

"Toxic air contaminants" are air pollutants that are believed to have carcinogenic or adverse non-carcinogenic effects but do not have a corresponding ambient air quality

standard. There are hundreds of different types of toxic air contaminants, with varying degrees of toxicity. Sources of toxic air contaminants include industrial processes such as petroleum refining, electric utility and chrome-plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust.

Toxic air contaminants are regulated under both state and federal laws. Federal laws use the term "Hazardous Air Pollutants" (HAPs) to refer to the same types of compounds referred to as "Toxic Air Contaminants" (TACs) under State law. Both terms encompass essentially the same compounds. For the sake of simplicity, this section will use TACs when referring to these compounds rather than HAPs. Under the 1990 Clean Air Act Amendments, approximately 190 substances are regulated under a two-phase strategy. The first phase involves requiring facilities to install Maximum Achievable Control Technology (MACT); EPA has established MACT standards for a wide variety of industries that emit toxic air contaminants and will develop MACT standards for others over the next several years. Even if MACT is established for a given source category, a facility in that category is subject to MACT only if the TAC emissions are 10 tons per year or more for any substance or 25 tons per year or more for any combination of TACs.

The second phase of control involves determining the residual health risk represented by TAC emissions sources after implementation of MACT standards. The EPA will determine residual risks within eight years after MACT standards for a source category are set. Results of this analysis will be used to determine if the residual risks allow for a reasonable margin of safety for public health.

With respect to State law, in 1983 the State legislature adopted Assembly Bill 1807 (AB 1807), which established a process for identifying toxic air contaminants and provided the authority for developing retrofit air toxics control measures on a statewide basis. In 1992, the State legislature adopted Assembly Bill 2728 to provide a legal framework for the integration of the existing State air toxics programs, including those developed under AB 1807, with the new federal program discussed above. Air toxics in California may also be regulated because of another state law, the Air Toxics "Hot Spots" Information and Assessment Act of 1987, Assembly Bill 2588 (AB 2588). Under AB 2588, toxic air contaminant emissions from individual facilities are required to be quantified by the facility and reported to the local air pollution control agency. The facilities are prioritized by the local agencies based on the quantity and toxicity of these emissions, and their proximity to areas where the public may be exposed. High priority facilities are required to perform a health risk assessment, and if specific risk thresholds are exceeded, they are required to communicate the results to the public in the form of notices and public meetings. Depending on the health risk levels, emitting facilities can be required to implement varying levels of risk reduction measures.

Organic Gases

Volatile Organic Compounds (VOCs) are organic chemical compounds that are in a gaseous form under normal conditions, and readily react with other chemicals, often contributing to the formation of smog. A wide range of carbon-based molecules, such

as aldehydes, ketones, and other light hydrocarbons are VOCs. As defined by the U.S.EPA, VOCs are any volatile compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and exempt compounds. Common artificial VOCs include paint thinners, dry cleaning solvents, and some constituents of petroleum fuels (e.g., gasoline and natural gas). Many VOCs found around the house, such as paint strippers and wood preservatives, contribute to sick building syndrome.

Reactive Organic Gases (ROG) are, for the most part, the same group of compounds as VOC, with some species being VOC and not ROG and vice versa. Total Organic Gases (TOG) consist of both ROG and VOC.

Air Quality Monitoring Data

The nearest criteria pollutant air quality monitoring sites to the proposed project site are in Redding and Anderson. Ambient monitoring data for these sites for the most recent three-year period is summarized in Table 4.3.3. Exceedances of the state and federal standards for both ozone and PM₁₀ have been recorded at the Shasta County monitoring stations during the period noted in Table 4.3.3.

Table 4.3.3
Air Quality Monitoring Data Summary (Highest Monitored Values)

Pollutant	Site	Avg. Time	2005	2006	2007
Ozone, ppm	Redding	8 Hr (4 th High)	.084	.08	.07
	Anderson		.08	.073	.075
	Redding	1 Hr	.102	.107	.089
	Anderson		.105	.092	.084
PM ₁₀ , ug/m ³	Redding	24 Hr	30	54	35
	Anderson		47	53	46
PM ₁₀ , ug/m ³	Redding	Annual Arithmetic Mean	14.9	17.5	15.2
	Anderson		22.3	23.3	20.1
PM _{2.5} , ug/m ³	Redding	24 Hr	20.0	31.0	18.9
PM _{2.5} , ug/m ³	Redding	Annual Arithmetic Mean	7.3	8.7	5.6
CO, ppm	-	8 Hr	nd	nd	
CO, ppm	-	1 Hr	nd	nd	
NO ₂ , ppm	-	1 Hr	nd	nd	
NO ₂ , ppm	-	Annual	nd	nd	
SO ₂ , ppm	-	Annual	nd	nd	
SO ₂ , ppm	-	24 Hr	nd	nd	
Sulfate, ug/m ³	-	24 Hr	nd	nd	

Source: Tetra Tech EC, Inc., 2008.

Table 4.3.4 presents a summary of historical air quality data for the air basin for the period 1985 through 2004.

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**Table 4.3.4
Historical Air Quality Summary**

<i>Sacramento Valley Air Basin</i>																					
County: Shasta																					
OZONE (ppm)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
Peak 1-Hour Indicator	0.115	0.115	0.121	0.122	0.119	0.129	0.119	0.117	0.111	0.111	0.105	0.114	0.118	0.127	0.126	0.125	0.110	0.100	0.118	0.112	
Peak 8-Hour Indicator	0.108	0.102	0.105	0.106	0.104	0.107	0.103	0.102	0.098	0.100	0.097	0.102	0.100	0.111	0.110	0.110	0.097	0.088	0.099	0.095	
4th High 1-Hr. in 3 Yrs	0.100	0.110	0.120	0.120	0.120	0.110	0.110	0.110	0.110	0.110	0.101	0.110	0.110	0.120	0.120	0.120	0.111	0.098	0.107	0.107	
Avg. of 4th High 8-Hr. in 3 Yrs	0.077	0.080	0.091	0.088	0.085	0.093	0.091	0.090	0.083	0.084	0.080	0.087	0.086	0.095	0.095	0.093	0.082	0.078	0.075	0.087	
Maximum 1-Hr. Concentration	0.120	0.120	0.130	0.120	0.090	0.130	0.110	0.110	0.110	0.113	0.099	0.110	0.119	0.140	0.116	0.102	0.087	0.098	0.114	0.131	
Max. 8-Hr. Concentration	0.105	0.097	0.108	0.105	0.083	0.110	0.095	0.091	0.088	0.105	0.084	0.100	0.107	0.126	0.098	0.087	0.079	0.084	0.096	0.098	
Days Above State Standard	10	8	25	5	0	13	12	10	1	7	3	16	8	40	23	3	0	4	9	3	
Days Above Nat. 1-Hr. Std.	0	0	2	0	0	1	0	0	0	0	0	0	0	3	0	0	0	0	0	1	
Days Above Nat. 8-Hr. Std.	9	9	21	3	0	13	11	10	1	8	0	14	6	45	12	1	0	0	6	2	
PM ₁₀ (ug/m ³)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
Max. 24-Hr. Concentration (State)				60	91	80	83	86	91	64	55	51	63	52	75	53	71	58	52	74	
Max. 24-Hr. Concentration (Nat)				60	91	80	83	86	91	64	55	51	63	61	81	49	66	60	53	76	
Annual Average (State)							28.7		20.1	24.4	25.1	24.3				24.3	24.1	20.8	21.7	23.6	
Annual Average (Nat)				26.4		24.9	28.7		20.1	24.4	25.2	24.3	22.2	23.5		23.7	23.7	25.9	21.5	23.5	
Calc Days Above State 24-Hr Std							50		7	12	13	6				6	6	6	12	6	
Calc Days Above Nat 24-Hr Std				0		0	0		0	0	0	0	0	0	0	0	0	0	0	0	
PM _{2.5} (ug/m ³)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
Max. 24-Hr. Concentration (State)														50.0	57.0	45.0	49.0	40.0	34.0	26.0	
Max. 24-Hr. Concentration (Nat)														50.0	57.0	45.0	49.0	40.0	34.0	26.0	
98th Percentile of 24-Hr Conc.																55.0	29.0	38.0	16.0	18.0	
Annual Average (State)															12.9		9.2		7.5		
Avg. of Qtrly. Means (Nat)															12.9		9.2	10.5	7.5	7.2	
CARBON MONOXIDE (ppm)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
Peak 8-Hr. Indicator	1.1	3.1	3.1		2.4	2.3	2.3	2.7	2.0	2.0											
Max. 1-Hr. Concentration	2.0	5.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0	4.5											
Max. 8-Hr. Concentration	1.1	2.8	2.5	1.8	2.5	2.3	2.0	1.9	2.1	1.7											
Days Above State 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0											
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	0	0	0	0	0											
NITROGEN DIOXIDE (ppm)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
Peak 1-Hr. Indicator		0.091	0.093	0.093	0.090	0.081	0.069	0.069													
Max. 1-Hr. Concentration	0.020	0.090	0.100	0.100	0.080	0.070	0.070	0.050													
Max. Annual Average			0.015				0.012														
SULFUR DIOXIDE (ppm)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
Peak 1-Hr. Indicator	<i>No Monitoring Data Available</i>																				
Max. Annual Average	<i>No Monitoring Data Available</i>																				
Max. 24-Hr. Concentration	<i>No Monitoring Data Available</i>																				

Source: Tetra Tech EC, Inc., 2008.

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Table 4.3.5 shows the background air quality values based upon the data presented in Table 4.3.4. The background values represent the average of all the highest values reported for all sites during the most recent three-year period.

**Table 4.3.5
Background Air Quality Values**

Pollutant and Averaging Time	Background Value, ug/m3
Ozone – 8 Hour	164
Ozone – 1 Hour	214
PM ₁₀ – 24 Hour	55
PM ₁₀ – Annual	23.3
PM _{2.5} – 24 Hour	31
PM _{2.5} – Annual	8.7
CO – 8 Hour	nd
CO – 1 Hour	nd
NO ₂ – 1 Hour	nd
NO ₂ – Annual	nd
SO ₂ – 1 Hour	nd
SO ₂ – 3 Hour	nd
SO ₂ – 24 Hour	nd
SO ₂ - Annual	nd

Source: Tetra Tech EC, Inc., 2008.

SHASTA COUNTY AIR QUALITY INFLUENCES

Air quality in Shasta County is influenced by two primary mechanisms: pollutant transport and localized emissions. Transport of pollutants from other areas or regions can have a significant effect on localized air quality. Such transport is especially important with respect to ozone impacts. The northern portion of the SVAB is a recognized transport “couplet”, as defined by the State Air Resources Board. The ARB report identifies the transport “couplet” between the broader Sacramento area to the Upper Sacramento Valley as ranging from “inconsequential” to “overwhelming.”

Table 4.3.6 presents a summary of the most current emissions inventory for Shasta County.

**Table 4.3.6
2006 Emissions Inventory Data for Shasta County (Tons/day)**

Source Category	TOG	VOC	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}
Total Stationary Sources	3.82	2.01	24.97	7.88	0.28	2.15	1.56
Total Area Sources	23.41	8.46	90.85	1.04	0.15	29.1	10.99
Total Mobile Sources	15.32	14.12	99.41	30.61	0.39	1.59	1.32
Total Natural Sources	177.76	166.89	49.47	1.65	0.51	5.09	4.32
County Total	220.3	191.5	264.7	41.2	1.3	37.9	18.2

Source: Tetra Tech EC, Inc., 2008.

4.3.2 THRESHOLDS OF SIGNIFICANCE

Criteria for determining the significance of impacts related to air quality were based on the Environmental Checklist Form in Appendix G of the State CEQA Guidelines (Cal. Code Regs., Title 14, Section 15000 et seq.). An impact related to air quality was considered significant if it would:

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.

For the purposes of environmental review, Shasta County has defined a substantial contribution to an existing or projected air quality violation as generation of air pollutants in excess of the thresholds shown in Table 4.3.7.

**Table 4.3.7
AQMD Air Quality Emission Thresholds (lbs/day)**

Level	NO _x	ROG (VOC)	PM ₁₀
A	25	25	80
B	137	137	137

Source: Tetra Tech EC, Inc., 2008.

Table Footnotes:

- Apply Standard Mitigation Measures (SMM) to all projects based on potential air quality impacts.
- Apply SMM and appropriate Best Available Mitigation Measures (BAMM) when a project exceeds Level "A" thresholds. The appropriate type and number of BAMM applied to a project will be based on the unique characteristics of the project. BAMM will be selected from a list of measures kept updated by the Shasta County Planning Division (SCPD) and the Shasta County Air Quality Management District (AQMD).
- Apply SMM, BAMM, and special BAMM (when project exceeds Level "B" thresholds) based on their emission reduction potential to lower project emissions below Level "B" thresholds. The AQMD will advise the SCPD of the efficiency of proposed emission measures as part of the effort to reduce project emissions below Level "B" thresholds.
- If application of the above procedures results in reducing project emissions below Level "B" thresholds, the project can proceed with an environmental determination of a Mitigated Negative Declaration assuming other project impacts do not require more extensive environmental review.
- If project emissions cannot be reduced to below Level "B" thresholds, emission offsets will be required. The SCPD may seek the assistance of the AQMD regarding other efforts and measures that could be used to reduce unmitigated emissions exceeding the 137 lbs. per day. If, after applying the emissions offsets, the project emissions still exceed the Level "B" threshold, an EIR will be required before the project can be considered for action by the reviewing authority.

4.3.3 ENVIRONMENTAL IMPACTS AND MITIGATION

Impact AQ-4.3-1 Conflict With or Obstruct Implementation of the Applicable Air Quality Plan (*Less-than-Significant Impact with Mitigation Incorporated*)

Air quality impacts from the proposed residential subdivision project can be categorized as follows:

- Temporary impacts during the construction phases from exhaust emissions from construction-related equipment; fugitive dust due to grading, trenching, and surface preparation activities; and volatile organic gases from painting and road paving activities;
- Traffic-related emissions resulting from vehicle uses as the project phases are sold and occupancy is established; and
- Occupancy-related emissions from fuel use, most notably natural gas use, fireplace and wood stove uses, etc.

Generally, these emissions activities are not subject to the permitting regulations of the AQMD, but are subject to the CEQA review guidelines, and indirect source review provisions of the AQMD rules.

Construction Emissions

For the purposes of this analysis, it was assumed that project construction would extend from 2009 through 2019 (delay of project initiation and/or completion by one to several years would result in the actual air emissions being slightly lower than projected, due to improving engine technologies and more stringent air quality standards). Table 3.6.1: Project Construction Phasing and Corresponding Areas of Disturbance in Section 3.6: Project Construction, presents data with regard to the specific project phases and corresponding areas of disturbance. Phases correspond with the *Tentative Site Plans* (SDS, 2007), included on the Appendices Compact Disc. Two types of emissions are of particular concern during construction: fugitive dust emissions and combustion emissions.

Fugitive dust. Fugitive dust emissions from the construction of the project will result from:

- Dust entrained during site preparation, finish grading/excavation, road bed preparation, etc., at the construction site; and
- Dust entrained during construction equipment travel on paved and unpaved surfaces.

Estimated fugitive dust emissions (PM₁₀ and PM_{2.5}) are presented in Table 4.3.8.

Combustion emissions. Combustion emissions during construction will result from:

- Exhaust from the diesel construction equipment used for site preparation, grading, excavation, and construction of on-site structures;

- Exhaust from water trucks used to control construction dust emissions;
- Exhaust from diesel-powered welding machines, electric generators, air compressors, and water pumps;
- Exhaust from pickup trucks and diesel trucks used to transport workers and materials around the construction site;
- Exhaust from diesel trucks used to deliver concrete, fuel, and construction supplies to the construction site; and
- Exhaust from automobiles used by workers to commute to the construction site.

Table 4.3.8 presents the results of the construction emissions analysis for each phase (per Table 3.6.1) in terms of lbs/day, including fugitive dust. Combustion emissions are based on a typical mix of equipment used on a daily basis, while fugitive dust emissions are based on the acreage of land disturbance. CO₂ data is presented in units of tons for each construction phase. The *Air Quality Analysis for the Panorama Planned Development Project* (Appendices Compact Disc: Air Quality) contains detailed emissions calculations and the support data and assumptions for each phase.

The following mitigation measures have been included as an integral part of the project construction emissions calculations.

Fugitive dust emissions.

- Use either water application or chemical dust suppressant application to control dust emissions from active construction areas (including on-site roads);
- Use vacuum sweeping and/or water flushing of paved road surfaces to remove buildup of loose material to control dust emissions from travel on the paved access road (including adjacent public streets impacted by construction activities) and paved parking areas; and
- Limit traffic speeds on all unpaved or active site construction areas to 5 mph.

Based on review of the AQMD's Standard Mitigation Measures and Best Available Mitigation Measures and other available technologies, implementation of the following emission controls is recommended:

Fugitive dust emissions.

- Implement all adequate dust control measures in a timely and effective manner during all phases of project development and construction;
- Water all excavated, stockpiled, or graded material to prevent fugitive dust from leaving property boundaries and causing a public nuisance or a violation of an ambient air standard. Watering shall occur at least twice daily with complete site coverage, preferably in the mid-morning and after work is completed each day;

-
- During initial grading, earth moving, or site preparation, construct a paved (or dust palliative treated) apron, at least 100 feet in length, onto the project site from the adjacent paved road(s);
 - Sweep adjacent paved streets (recommend water sweeper with reclaimed water) at the end of each day if substantial volumes of soil materials have been carried onto adjacent public paved roads from the project site;
 - Install sandbags or other erosion control measures to prevent silt runoff to roadways;
 - Apply Department of Public Works approved non-toxic soil stabilizers (according to manufacturer's specifications) to all inactive construction areas (previously graded areas which remain inactive for 96 hours), in accordance with the Shasta County Grading Ordinance;
 - Replant vegetation in disturbed areas as quickly as possible;
 - Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard;
 - Use wheel washers or wash off tires of all trucks exiting the construction site; and
 - Mitigate fugitive dust emissions from wind erosion of areas disturbed from construction activities (including storage piles) by application of either water or chemical dust suppressant.

Exhaust emissions from the diesel heavy equipment.

- Shut down equipment when not in use to limit engine idling time. Idling time shall be limited to no more than 3 minutes. This idling limit does not apply to circumstances as stated in the California Environmental Protection Agency Air Resources Board Advisory Number 377 (2008) and in Mitigation Measure AQ-4.3-1b;
- Provide regular preventive equipment maintenance to prevent emission increases due to engine problems;
- Use low sulfur and low aromatic fuels meeting California standards for motor vehicle diesel fuel; and
- Use low-emitting gas and diesel engines meeting state and federal emissions standards (Tier I, II, III) for construction equipment.

Other miscellaneous emissions.

- Use low VOC coatings for the architectural coating phase of construction. All coatings must meet the VOC limits per AQMD Rule 3-31;
- Use asphalt mixtures appropriate for the time of year of application, while maintaining compliance with County road design and construction standards;

- Use alternatives to open burning of vegetative material on the project site, unless otherwise deemed infeasible by the AQMD. Among suitable alternatives are chipping, mulching, or conversion to biomass fuel;
- Provide for temporary traffic control as appropriate during all phases of construction to improve traffic flow as deemed appropriate by the Department of Public Works and/or Caltrans; and
- Schedule construction activities that direct traffic flow to off-peak hours as much as practicable.

**Table 4.3.8
Construction Emissions Summary**

Phase	NO _x (lbs/day)	CO (lbs/day)	VOC ¹ (lbs/day)	SO _x (lbs/day)	PM ₁₀ ² (lbs/day)	PM _{2.5} ² (lbs/day)	CO ₂ (tons per const period)
1	31.7	41.1	22.5	0.04	2.2/2.9	2.2/0.42	1240
2	31.7	41.1	22.5	0.04	2.2/3.46	2.2/0.54	830
3	31.7	41.1	24.6	0.04	2.2/8.45	2.2/1.41	830
4	31.7	41.1	24.3	0.04	2.2/8.82	2.2/1.67	830
5	31.7	41.1	25.0	0.04	2.2/10.35	2.2/1.81	830
6	31.7	41.1	21.9	0.04	2.2/2.17	2.2/0.27	830
7	31.7	41.1	21.7	0.04	2.2/2.17	2.2/0.27	830
8	31.7	41.1	22.0	0.04	2.2/3.6	2.2/0.40	830

Source: Tetra Tech EC, Inc., 2008.

¹ VOC includes asphalt off-gassing and structure coating VOC losses.

² For PM₁₀ and PM_{2.5}, two values are presented as V1/V2. V1 is PM from equipment exhaust, while V2 is PM from fugitive dust sources.

Comparison to significance criteria. NO_x emissions are projected to exceed the Level “A” significance thresholds during all phases of construction. VOC emissions are projected to reach but not exceed the Level “A” significance threshold during Phase 3. However, the projections reflect “worst-case” assumptions, and the following should be noted:

- It is highly unlikely that all of the predicted construction equipment would be used each and every day, nor would all of the equipment listed be used for the listed hourly rates each day;
- It is highly unlikely that all of the workers would be on site each and every day, nor would this occur on a supposed “worst case” day; and
- It is highly unlikely that all delivery and support traffic emissions would occur each and every day, nor would all of this activity occur on a supposed “worst case” day.

Nonetheless, without mitigation, the emission thresholds are likely to be exceeded on at least some days. With appropriate mitigations applied, construction emissions are not

expected to result in short- or long-term violations of any current ambient air quality standard. In addition, the State Implementation Plan (South Coast Air Quality Management District, 2003), which includes the Shasta County Air Quality Management District, incorporates an emissions allowance for construction projects. This project will be included in the emissions allowance, as will other similar projects within the AQMD boundaries.

Vehicular Emissions

Vehicular emissions resulting from project-generated trips are based upon the following:

- The average single-family dwelling generates 9.57 one-way trips per day (Institute of Transportation Engineers, 2007);
- The average one-way trip travel distance will be 8.25 miles (KD Anderson & Associates, Inc., 2008);
- Composite vehicle emissions factors generated by EMFAC, for the beginning and ending phase years have been averaged to estimate emissions for each phase; and
- Composite vehicle emissions factors generated by EMFAC for the build-out year have been used to estimate emissions upon final build-out.

Table 4.3.9 presents data based on the calculated average travel distances for vehicles entering and leaving the project, as well as vehicle emissions. Results are presented by phase and for the project build-out configuration. Emissions are based on the maximum distance traveled by phase and for full build-out.

Table 4.3.9
Vehicle Travel and Emissions Summary

Phase	Trips/day	Total VMT ¹ /day	Vehicle Emissions Summary (lbs/day)						
			NO _x	CO	VOC	SO _x	PM ₁₀	PM _{2.5} ²	CO ₂
1	345	2846	2.96	31.4	5.9	0.03	0.11	0.11	2669
2	565	4461	4.85	51.4	9.67	0.05	0.19	0.19	4371
3	1330	10973	11.41	120.9	22.8	0.11	0.44	0.44	10289
4	565	4461	4.85	51.4	9.67	0.05	0.19	0.19	4371
5	699	5767	6.0	63.6	12	0.06	0.23	0.23	5408
6	153	1262	1.31	13.9	2.6	0.01	0.05	0.05	1183
7	163	1345	1.4	14.7	2.8	0.01	0.05	0.05	1261
8	297	2450	2.55	27	5.1	0.02	0.10	0.10	2297
Build-out	4117	33965	18.7	196	22.8	0.34	0.34	0.34	31654
Build-out (tons/yr):			3.4	35.8	4.2	0.06	0.06	0.06	5777

Source: Tetra Tech EC, Inc., 2008.

¹ VMT = vehicle miles traveled

² CARB-CEIDARS Updated PM_{2.5} fraction inventory indicates that PM_{2.5} is 0.998 of PM₁₀ for gasoline fuel vehicles.

Vehicle emissions do not exceed the Level “A” significance levels on a phase or build-out basis, and are therefore not considered as a significant impact. Likewise, carbon monoxide “hotspot” emissions are not expected to be significant. Carbon monoxide

concentrations in Shasta County (Redding/Anderson/Cottonwood region) have historically been very low, and well within compliance with both state and federal ambient air quality standards. Historical CO data over the period 1985-1994 showed that the average annual 1-hour CO concentration in the Redding urban (downtown) area was 3.75 ppm which is 19 percent and 11 percent of the state and federal CO standards, respectively. The 8-hour average concentration during the same period was 2.1 ppm, which represents 23 percent of the current state and federal CO standards. Over the ensuing years, a number of industries in the southern Shasta County area that were significant CO sources have closed and ceased operations. These closures have most likely been offset by increases in traffic-related CO emissions. However, the overall effect in the County is that CO concentrations remain relatively low, and it is not anticipated that CO from project traffic would generate a CO “hotspot.”

Operational Emissions

Operational emissions from the proposed residential development would consist of those from natural gas consumption, wood-burning stoves and fireplaces, landscaping equipment such as lawnmowers, and consumer products. Emissions from each of these sources are discussed individually below, and a summary of overall operational emissions is also presented.

Natural Gas Consumption. Natural gas would be used for home heating and food preparation. Table 4.3.10 presents a summary of estimated emissions from residential natural gas use.

**Table 4.3.10
Residential Natural Gas Emissions Summary**

Pollutant	EF*	Emissions by Phase (lb/day)								Build-out (lb/dy)	Build-out (tons/yr)
		1	2	3	4	5	6	7	8		
NO _x	80	0.596	0.98	2.3	0.98	1.21	0.27	0.28	0.513	7.12	1.3
CO	20	0.149	0.24	0.58	0.24	0.30	0.066	0.07	0.128	1.78	0.325
VOC	5.3	0.04	0.065	0.152	0.065	0.08	0.018	0.019	0.034	0.472	0.086
SO _x	0.6	0.0045	0.0073	0.029	0.0073	0.0091	0.0020	0.0021	0.0039	0.0534	0.00975
PM ₁₀	0.2	0.0015	0.0024	0.0058	0.0024	0.003	0.0007	0.0007	0.0013	0.0178	0.00325
PM _{2.5}	0.2	0.0015	0.0024	0.0058	0.0024	0.003	0.0007	0.0007	0.0013	0.0178	0.00325
CO ₂	120,000	894	1465	3452	1465	1812	398	422	797	10678	1949

Source: Tetra Tech EC, Inc., 2008.

*EF = Emission Factor (lbs/million standard cubic feet)

The emissions noted in Table 4.3.10 assume the use of currently approved energy saving home heating and cooking systems. Emissions for future phases may be lower due to changes in the design and emissions signatures of such devices. Emissions from the use of natural gas would not exceed the Level “A” significance thresholds on a phase or build-out basis. Therefore, there would be a less-than-significant impact with regard to residential natural gas emissions.

Wood-burning Stoves and Fireplaces. It is possible that a percentage of the homes proposed would supplement their annual heating needs by installing wood stoves or utilizing built-in fireplaces. For purposes of estimating potential emissions from such a scenario, it was assumed that 45 percent of the homes would supplement heating with wood stoves/fireplaces, with fireplaces being used in 22 percent of these residences, and woodstoves in the remaining 78 percent of the residences (Tetra Tech EC, Inc., 2008). An average of 1.48 cords of wood per year would be burned by each user (using Urbemis 9.2.4 (Rimpo and Associates, Inc., 2008)). Table 4.3.11 presents a summary of the estimated emissions from residential wood combustion sources for the purposes of home heating.

**Table 4.3.11
Residential Wood Stove/Fireplace Emissions Summary**

Phase	NO _x (lbs/day)	CO (lbs/day)	VOC (lbs/day)	SO _x (lbs/day)	PM ₁₀ (lbs/day)	PM _{2.5} ¹ (lbs/day)	CO ₂ ² (lbs/day)
1	0.35	20.89	7.89	0.05	2.89	2.6	0
2	0.57	34.24	12.93	0.08	4.74	4.3	0
3	1.34	80.66	30.46	0.19	11.17	10.1	0
4	0.57	34.24	12.93	0.08	4.74	4.3	0
5	0.70	42.36	16.0	0.10	5.87	5.3	0
6	0.15	9.28	3.51	0.02	1.29	1.2	0
7	0.16	9.87	3.73	0.02	1.37	1.2	0
8	0.30	17.99	6.79	0.04	2.49	2.2	0
Build-out	4.15	249.53	94.24	0.60	34.55	31.1	0
Build-out, tons/yr	0.76	45.54	17.20	0.11	6.39	5.75	0

Source: Tetra Tech EC, Inc., 2008.

¹ PM_{2.5} is 90% of PM₁₀, per CARB-CEIDARS fractionation listing.

² CO₂ emissions are carbon neutral for this source category, i.e., carbon uptake in the fuel equals carbon release upon combustion.

Given the above assumptions, VOC emissions would exceed the Level “A” significance threshold during Phase 3, as well as on through final build-out. The VOC emissions for all phases and build-out are significantly influenced by the use of fireplaces, which release more emissions than wood stoves. The above calculations are based on the assumption that all wood stoves and fireplaces will meet District Rule 3:23 (EPA Phase II) emissions standards, therefore the only available mitigation measure is to withhold approval of residential designs that includes the use of fireplaces or other similar inefficient wood or biomass combustion devices for home heating purposes. Implementation of Mitigation Measure AQ-4.3-1d would reduce emissions from this source category to zero.

Landscaping Equipment. Estimates of emissions from residential landscaping equipment use are presented in Table 4.3.12. Emissions from residential landscape equipment use would not exceed the Level “A” significance thresholds.

**Table 4.3.12
Residential Landscaping Equipment Emissions Summary**

Phase	NO_x (lbs/day)	CO (lbs/day)	VOC (lbs/day)	SO_x (lbs/day)	PM₁₀ (lbs/day)	PM_{2.5}¹ (lbs/day)	CO₂ (lbs/day)
1	0.02	1.61	0.29	0.0001	0.004	0.004	2.58
2	0.03	2.63	0.48	0.0001	0.007	0.007	4.23
3	0.07	6.20	1.12	0.0003	0.016	0.016	9.96
4	0.03	2.63	0.48	0.0001	0.007	0.007	4.23
5	0.04	3.26	0.59	0.0001	0.009	0.009	5.23
6	0.01	0.71	0.13	0.0	0.002	0.002	1.15
7	0.01	0.76	0.14	0.0	0.002	0.002	1.22
8	0.02	1.38	0.25	0.0001	0.004	0.004	2.22
Build-out	0.22	19.20	3.48	0.0009	0.051	0.050	30.82
Build-out, tons/yr	0.039	3.5	0.635	0.0002	0.009	0.009	5.625

Source: Tetra Tech EC, Inc., 2008.

¹ PM_{2.5} fraction is 0.998 of PM₁₀, per CARB-CEIDARS fractionation listing.

Consumer Products. Estimated emissions for VOCs from the use of consumer products such as aerosols are presented in Table 4.3.13. Emissions from consumer product use would not exceed the Level “A” significance thresholds for VOCs.

**Table 4.3.13
Summary of Project-Related Consumer VOC Emissions**

Phase	lbs/day	tons/yr
1	1.76	0.32
2	2.89	0.53
3	6.8	1.24
4	2.89	0.53
5	3.57	0.65
6	0.78	0.14
7	0.83	0.15
8	1.52	0.28
Build-out	20.04	3.84

Source: Tetra Tech EC, Inc., 2008.

Total Estimated Operational Emissions. Table 4.3.14 presents a summary of the estimated operational emissions (including vehicle emissions), for the build-out scenario.

Table 4.3.14
Post-Construction Emissions Summary

Component	NO_x (lbs/day)	CO (lbs/day)	VOC (lbs/day)	SO_x (lbs/day)	PM₁₀ (lbs/day)	PM_{2.5} (lbs/day)	CO₂ (lbs/day)
Vehicle Travel	18.70	196.00	22.80	0.34	0.34	0.34	31,654
Natural Gas Consumption	7.12	1.78	0.472	0.0534	0.0178	0.0178	10,678
Wood Stoves/ Fireplaces	4.15	249.53	94.24	0.60	34.55	31.10	0
Landscaping Equipment	0.22	19.20	3.48	0.0009	0.051	0.05	30.82
Consumer Products	--	--	20.04	--	--	--	--
TOTAL:	30.2	466.5	141.0	1.0	35.0	31.5	42,363

Source: Tetra Tech EC, Inc., 2008.

As shown above, VOC and NO_x would exceed the Level “A” threshold criteria when considering operational and vehicular emissions together. No pollutant emissions would exceed the Level “B” significance threshold. The VOC emissions are primarily influenced by wood stove/fireplace usage, vehicle travel, and consumer product use, while NO_x emissions are primarily influenced by vehicle travel, natural gas consumption, and wood stove/fireplace usage.

With respect to potential mitigation strategies, the following should be noted.

- Rural and semi-rural areas, such as Shasta County (including the small Redding-Anderson urban area), are generally considered to be “NO_x-limited” regions, i.e., regions where the concentrations of ozone depend on the amount of NO_x in the atmosphere. In NO_x-limited regions, controlling NO_x is the preferred strategy to reduce ozone concentrations.
- The lower elevations of Shasta County are probably the most affected by transport of pollutants from the lower Sacramento Valley areas, most notably the Sacramento metropolitan area, as noted above. The Sacramento metropolitan area, like most large urbanized areas, is a VOC-limited area, i.e., an area in which the concentrations of ozone depend upon the amount of VOCs in the atmosphere. Consequently, controlling VOCs in these areas would reduce ozone. In all likelihood, transport from the Sacramento metropolitan area is highly enriched with VOCs, which when mixed with the local contribution of VOCs, results in a much more NO_x-limited environment.

Considering the above analysis, a balanced strategy of controlling both NO_x and VOCs would most likely be the best approach for Shasta County, with an emphasis placed on

NO_x reduction strategies. Further, as stated in the *Shasta County General Plan*, new innovative strategies to reduce travel demand need to be considered. Allowing and encouraging mixed-use centers at major arterial intersections or transit stations, increasing residential densities allowed in the Suburban Residential and Urban Residential General Plan designations in areas served by transit, and promoting alternative modes choices for travel are among ways the County can address air quality impacts created by vehicles.

The following mitigation measures are recommended for the above potentially significant construction- and operation-related impacts:

MM AQ-4.3-1a. The following airborne dust control measures shall be required during all construction operations, the grading of roads, and the clearing of land.

- Use either water application or chemical dust suppressant application to control dust emissions from active construction areas (including on-site roads);
- Use vacuum sweeping and/or water flushing of paved road surfaces to remove buildup of loose material to control dust emissions from travel on the paved access road (including adjacent public streets impacted by construction activities) and paved parking areas;
- Limit traffic speeds on all unpaved or active site construction areas to 5 mph;
- Implement all adequate dust control measures in a timely and effective manner during all phases of project development and construction;
- Water all excavated, stockpiled, or graded material to prevent fugitive dust from leaving property boundaries and causing a public nuisance or a violation of an ambient air standard. Watering shall occur at least twice daily with complete site coverage, preferably in the mid-morning and after work is completed each day;
- During initial grading, earth moving, or site preparation, construct a paved (or dust palliative treated) apron, at least 100 feet in length, onto the project site from the adjacent paved road(s);
- Sweep adjacent paved streets (recommend water sweeper with reclaimed water) at the end of each day if substantial volumes of soil materials have been carried onto adjacent public paved roads from the project site;
- Install sandbags or other erosion control measures to prevent silt runoff to roadways;
- Apply Department of Public Works approved non-toxic soil stabilizers (according to manufacturer's specifications) to all inactive construction areas (previously graded areas which remain inactive for 96 hours), in accordance with the Shasta County Grading Ordinance;
- Replant vegetation in disturbed areas as quickly as possible;
- Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard;

-
- Use wheel washers or wash off tires of all trucks exiting the construction site; and
 - Mitigate fugitive dust emissions from wind erosion of areas disturbed from construction activities (including storage piles) by application of either water or chemical dust suppressant.

MM AQ-4.3-1b. The following mitigation measures shall be implemented to control exhaust emissions from the diesel heavy equipment used during construction of the project phases.

- Provide regular preventive equipment maintenance to prevent emission increases due to engine problems;
- Use low sulfur and low aromatic fuels meeting California standards for motor vehicle diesel fuel;
- Use low-emitting gas and diesel engines meeting state and federal emissions standards (Tier I, II, III) for construction equipment; and
- Shut down equipment when not in use to limit engine idling time. Idling time shall be limited to no more than 3 minutes. This idling limit does not apply to circumstances as stated in the California Environmental Protection Agency Air Resources Board Advisory Number 377 (2008), such as:
 - Idling when queuing;
 - Idling to verify that the vehicle is in safe operation condition;
 - Idling for testing, servicing, repairing, or diagnostic purposes;
 - Idling necessary to accomplish work for which the vehicle is designed (such as operating a crane);
 - Idling required to bring the machine system to operating temperature; and
 - Idling necessary to ensure safe operation of the vehicle.

MM AQ-4.3-1c. The following mitigation measures shall be implemented to control other miscellaneous emissions during construction of the project phases.

- Use low VOC coatings for the architectural coating phase of construction. All coatings must meet the VOC limits per AQMD Rule 3-31;
- Use asphalt mixtures appropriate for the time of year of application, while maintaining compliance with County road design and construction standards;
- Use alternatives to open burning of vegetative material on the project site, unless otherwise deemed infeasible by the AQMD. Among suitable alternatives are chipping, mulching, or conversion to biomass fuel;
- Provide for temporary traffic control as appropriate during all phases of construction to improve traffic flow as deemed appropriate by the Department of Public Works and/or Caltrans; and

- Schedule construction activities that direct traffic flow to off-peak hours as much as practicable.

MM AQ-4.3-1d. To control VOC and PM₁₀ emissions during project operation, the use of fireplaces, wood stoves, or other similar wood- or biomass-combustion devices for home heating purposes shall not be authorized.

With implementation of MM AQ-4.3-1 (a-d), the above potentially significant impacts would be reduced to less-than-significant levels.

Impact AQ-4.3-2 Violate an Air Quality Standard or Contribute to an Existing or Projected Air Quality Violation (*Less-than-Significant Impact with Mitigation Incorporated*)

See analysis under Impact AQ-4.3-1.

With implementation of MM AQ-4.3-1, this potentially significant impact would be reduced to less than significant.

Impact AQ-4.3-3 Result in a Cumulatively Considerable Net Increase of any Criteria Pollutant for which the Project Region is in Non-Attainment (*Less-than-Significant Impact with Mitigation Incorporated*)

Impacts related to greenhouse gases are addressed in Section 5: Additional CEQA-Mandated Impact Analyses.

The residual impacts from the construction phases of the proposed project are not expected to be significant since the emissions, with the exception of NO_x, would be below the Level "A" thresholds, and the mitigation measures proposed are anticipated to result in off-site impacts well below state and federal ambient air quality standards.

The residual impacts from long-term occupancy of the planned development would be in the areas of traffic-related emissions, use of woodstoves/fireplaces for supplemental home heating, and the use of consumer products by the residents of the project. Impacts in these categories are dominated by woodstove/fireplace emissions, which can be mitigated by eliminating the use of wood-burning stoves and fireplaces, as recommended in Mitigation Measure AQ-4.3-1. This would substantially limit both VOC and PM₁₀/PM_{2.5} emissions in the long term. In addition, the project would adhere to the California Energy Commission Efficiency Standards for Residential and Nonresidential Buildings (Title 24), including the incorporation of passive solar design. Design of project buildings shall include features to ensure that project buildings provide 15 percent greater energy efficiency than required under the Title 24 regulations (California Energy Commission) in effect at the time of construction.

MM AQ-4.3-3. Design of project buildings shall include features to ensure that project buildings provide 15 percent greater energy efficiency than required under

the Title 24 regulations (California Energy Commission) in effect at the time of construction.

As stated earlier, the County emissions inventory, as well as the SIP emissions inventory, includes current and future year emissions estimates or growth allowance emissions for construction and operation of the planned development (based on population growth, etc.). Therefore, these emissions are accounted for in the normal growth cycle of the County, and are not considered to be cumulatively significant.

With implementation of MM AQ-4.3-1 and MM AQ-4.3-3, impacts resulting in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment are considered to be less than significant; no additional mitigation is necessary.

Impact AQ-4.3-4 Expose Sensitive Receptors to Substantial Pollutant Concentrations (*Less-than-Significant Impact*)

The property surrounding the proposed development is sparsely populated. The community of Cottonwood lies to the south of the project. The Interstate 5 corridor lies due west of the project site. To the north lies the south-Anderson industrial area. It is highly unlikely the proposed development would be exposed to significant concentrations of toxic air contaminants generated in the Cottonwood town center or along the I-5 corridor. However, emissions of both criteria and toxic pollutants could come from a wide range of sources located in the Anderson industrial area. These pollutants can be generated from sources such as biomass power production, sand and gravel processing operations, lumber processing operations, metal fabricating sources, etc.

The Wheelabrator Shasta Energy Company, Inc., located approximately one-half-mile north of the proposed residential development, is one of the largest stationary sources of criteria pollutants in Shasta County. Wheelabrator Shasta is a biomass energy production facility rated at approximately 50 MW. The primary fuels are biomass wood wastes and mill wood wastes. In 2006, this facility was listed by the Shasta County AQMD in the Top Ten Sources for pollutants such as PM₁₀, NO_x, VOCs, CO, and SO_x. Annual pollutant emissions for 2006 are tabulated in Table 4.3.15.

Table 4.3.15
Wheelabrator Shasta Energy Company, Inc.,
Annual Pollutant Emissions for 2006

Pollutant	Tons/Year
PM ₁₀	176.2
CO	2395.3
VOC (ROG)	27.2
NO _x	587.3
SO _x	4.5

Source: Tetra Tech LC, Inc., September 2008.

The emissions noted above (for 2006) are well below the allowable or permitted emissions levels. Impact analyses conducted on the allowable or potential emissions during the original facility siting analysis, as well as follow-on permit modification analyses, clearly indicated that the facility emissions would not cause a violation of any state or federal ambient air quality standard, nor would the emissions cause a worsening of any violation of an existing ambient air quality standard. It is therefore not expected that actual emissions, which are less than permitted emissions, would cause any violations of any current state or federal air quality standard or adversely affect residents of the proposed residential development.

With respect to toxic and/or hazardous air pollutants, the risk prioritization values for Wheelabrator Shasta (for 2003) per the AB 2588 Hot Spots program are as follows: (1) carcinogenic score of 3.97, (2) chronic health effects score of 0.48, and (3) acute health effects score of 0.08. These values are compared to the air district prioritization threshold values which range from 0 to 100, with a score of 0 being the lowest, and a score approaching 100 being the highest. Scores less than 10 are considered to represent low priority sources that do not require public notification of risks under the AB 2588 program guidelines. Residents of the proposed development are not expected to be exposed to significant concentrations of toxic or hazardous air pollutants from the Wheelabrator Shasta facility.

In conclusion, there is no evidence that any single source or group of sources would expose project residents to pollutants concentrations that would be above the normal exposures seen elsewhere in the lower elevation areas of Shasta County. The potential for exposure of sensitive receptors to substantial pollutant concentrations would not be significant.

No mitigation is necessary for the above less-than-significant impact.

Impact AQ-4.3-5 Create Objectionable Odors Affecting a Substantial Number of People *(Less-than-Significant Impact)*

The proposed project, as with most residential developments, is not expected to result in generation of objectionable odors. However, there are two existing odor sources in the vicinity that could affect future residents of the project area: the Wheelabrator Shasta Energy Company and the Shasta Livestock Auction Yard.

Wheelabrator Shasta Energy Company, Inc.

Typically, fuels for biomass facilities are stored outside and are rotated into the energy production (combustion) process on a schedule that matches fuel needs with fuel storage times. Odors from outside storage of biomass fuels are generally rare, with the typical odor resembling that of recently cut wood, sawdust, or wood chips. Fuel management practices rarely result in fuel being kept on-site for a duration of time where rotting or malodor production can occur; thus, typically, odors from facilities are not anticipated to result in a significant odor impacts. However, data obtained from the Shasta County AQMD indicates that numerous complaints (including odor complaints) have been received concerning the Wheelabrator Shasta facility (period 5-10-93

through 6-9-08). The complaints regarding odor generation possibly indicate a situation where fuel may not be properly stored, managed, or rotated to the energy process. However, it is not the responsibility of the EIR to mitigate for sources that are currently operating beyond permit conditions and standards.

Given the potential for on-going odor generation, purchasers of the proposed residential lots should be clearly informed of the potential for odor impacts from the energy facility. Such notification can be achieved by placing a notice on the deeds of the residential parcel, as recommended under Mitigation Measure AGR-4.2-3. Although this measure would not reduce odor production or exposure, it would serve as an advisory to odor-sensitive prospective purchasers and minimize the potential for future land use conflicts.

Shasta Livestock Auction Yard

The Shasta Livestock Auction Yard is located on the west side of Locust Street, north of Cattleman Drive. Lands owned by the auction yard extend to within approximately 600 feet of the southwest corner of the proposed residential development. However, livestock are kept only on a small portion of the overall site, in the northwest corner. The livestock holding pens are located approximately 1,500 feet or greater from the closest proposed residential lot.

Odors from livestock operations (all varieties) are primarily generated from the anaerobic decomposition of manure and urine. Recent studies have identified up to 200 different gases produced by livestock operations. The primary odiferous compounds are hydrogen sulfide, methane, and ammonia. Generation of these compounds is highly dependent on the following: (1) moisture content, (2) temperature, (3) pH, (4) oxygen concentrations, and (5) environmental conditions such as season of the year, wind patterns, and precipitation patterns. For large operations, odor and gaseous emissions can be controlled by utilizing ventilation systems, management or “housekeeping” practices, on-site waste management systems, or waste application systems. For large or small operations, location of the facility with established buffer zones between other land uses is also a very effective odor management technique. For small sites such as the Shasta Livestock Auction Yard, buffering, waste management, and housekeeping practices are the most viable options.

The use of buffer zones has been studied extensively as applicable to both large and small operations. As an example, the State of Missouri requires buffer zone distances for animal feeding operations as shown in Table 4.3.16.

Table 4.3.16
Recommended Buffer Distances from Animal Feeding Operations

Facility Class	Size Category Definition	Recommended Buffer Distance (ft.)
Class 1A	≥ 7000 AUEs	3000
Class 1B	3000 – 6999 AUEs	2000
Class 1C	1000 – 2999 AUEs	1000

Source: Missouri Department of Natural Resources, 2008.

AIR QUALITY

An AUE (animal unit equivalent) equals the following: 1 beef cow, 0.5 horse, 0.7 dairy cow, 2.5 swine weighing over 55 lbs., 15 swine weighing less than 55 lbs., 10 sheep, 30 laying hens, 55 turkeys, or 100 broiler chickens. The AUE is evaluated on an annual basis, i.e., 1 beef cow held on site for one year is 1 AUE, whereas 1 beef cow held on site for 1 month is 0.083 AUE.

Data obtained from the management of the Shasta Livestock Auction Yard indicates that a total of approximately 80,000 animals flow through the auction yard in a typical year, and that the average animal hold time on site is 2-3 days (0.00822 AUE per head). For purposes of a conservative analysis, it is assumed that all animals are equivalent to beef cattle; auction yard staff estimates that 99 percent of all the animals held on site are cattle. This results in approximately 660 AUEs, which is synonymous with a Class 1C or smaller facility. Therefore, an appropriate buffer zone would be 1,000 feet. It is unlikely that odors from the auction yard will result in significant impacts to residents of the proposed residential development since the distance to the development boundary is approximately 1,500 feet from the animal holding facility, and no odor-generating activities are conducted on auction yard lands within 1,000 feet of the proposed residential development.

Although odor-related impacts from the Wheelabrator Shasta facility and Shasta Livestock Auction Yard are not considered to be significant, implementation of Mitigation Measure AGR-4.2-3, which calls for a notice on the deeds of all residential lots advising potential purchasers of the proximity of industrial and agricultural uses, would further reduce the potential for conflict. Impacts related to odors are considered to be less than significant.

4.3.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

With implementation of the above mitigation measures (Mitigation Measure AQ-4.3-1 and Mitigation Measure AGR-4.2-3), air quality impacts associated with the proposed project would be less than significant.

End of Section.

The Emissions Gap Report

Are the Copenhagen Accord pledges sufficient to limit global warming to 2° C or 1.5° C?

A preliminary assessment

November 2010

ADVANCE COPY

Foreword

Achim Steiner,
UN Under-Secretary-General, UNEP Executive Director

Climate change represents one of the greatest challenges but also an inordinate opportunity to catalyse a transition to a low carbon, resource-efficient Green Economy.

This report informs Governments and the wider community on how far a response to climate change has progressed over the past 12 months, and thus how far the world is on track to meet wider goals.

The pledges associated with the Copenhagen Accord of 2009 are the point of departure for this report. What might be achieved in terms of limiting a global temperature rise to 2° C or less in the twenty-first century and in terms of setting the stage for a Green Economy?

And what remains to be done—what is the gap between scientific reality and the current level of ambition of nations? The analysis focuses on where global emissions need to be in around 10 years time to be in line with what the science says is consistent with the 2° C or 1.5° C limits, and where we expect to be as a result of the pledges.

If the highest ambitions of all countries associated with the Copenhagen Accord are implemented and supported, annual emissions of greenhouse gases could be cut, on average, by around 7 gigatons (Gt) of CO₂ equivalent by 2020.

Without this action, it is likely that a business-as-usual scenario would see emissions rise to an average of around 56 Gt of CO₂ equivalent by around 2020. Cuts in annual emissions to around 49 Gt of CO₂ equivalent would still however leave a gap of around 5 Gt compared with where we need to be—a gap equal to the total emissions of the world's cars, buses and trucks in 2005.

That is because the experts estimate that emissions need to be around 44 Gt of CO₂ equivalent by 2020 to have a likely chance of pegging temperatures to 2° C or less.

However, if only the lowest ambition pledges are implemented, and if no clear rules are set in the negotiations, emissions could be around 53 Gt of CO₂ equivalent in 2020—not that different from business as usual—so the rules set in the negotiations clearly matter.

This report, the result of an unprecedented partnership between UNEP and individuals from 25 leading research centres, underlines the complexity of various scenarios.

The Emissions Gap Report emphasizes that tackling climate change is still manageable, if leadership is shown. In Cancun action on financing, mitigation and adaptation need to mature and move forward—supported perhaps by action on non-CO₂ pollutants such as methane from rubbish tips to black carbon emissions.

Above all, Cancun must demonstrate to society as a whole that Governments understand the gaps left by Copenhagen. But at the same time remain committed to counter climate change while meeting wider development goals.

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Three online appendices accompany this report

Appendix 1: Further detail on the four pledge cases and the differences between estimates

Appendix 2: Detailed information about countries' pledges

Appendix 3: Detailed information about the studies reviewed

Available at www.unep.org/publications/ebooks/emissionsgapreport

Glossary

Annex I Target	For the purpose of this report, the quantified economy-wide emission reduction targets submitted by UNFCCC Annex I countries to the Copenhagen Accord's Appendix I.
Conditional Pledge	Pledges made by some countries that are contingent on the ability of national legislatures to enact the necessary laws, ambitious action from other countries, realization of finance and technical support, or other factors.
Copenhagen Accord	The 15th Conference of the Parties to the UNFCCC took note of this agreement in Copenhagen, Denmark in December 2009. The Accord includes two appendices listing Annex I and non-Annex I pledges, which are analysed in this report.
Cumulative Emissions	Sum of annual global greenhouse gas emissions over a period of time. Because many greenhouse gases persist in the atmosphere for a long time, cumulative emissions greatly influence concentrations and therefore temperature.
Double Counting	In the context of this report, double counting refers to a situation in which the same emission reductions are counted towards meeting two countries' pledges.
Emission Pathway	The trajectory of annual global greenhouse gas emissions over time.
Energy and Industry CO ₂ Emissions	CO ₂ emissions from the energy and industry sectors. These are often referred to in this report when describing emission reduction rates and negative emissions
Feasible Rates of Emission Reduction	The average annual rate of emission reductions assumed feasible given assumptions about technological development, economic costs, and/or socio-political factors.
Global (total) Greenhouse Gas Emissions	Emissions from all sectors and all greenhouse gases
Integrated Assessment Models	Models of climate change that seek to combine knowledge from multiple disciplines in formal integrated representations. As such they describe the full chain of climate change, including relevant linkages and feedbacks between socio-economic and biophysical processes.
Likely Chance	A greater than 66 per cent likelihood. Used to convey the probabilities of meeting temperature limits.
Lenient LULUCF Credits	Credits given for carbon removals from existing forests or other sinks that would have occurred without policy intervention.
Lenient Rules	Pledge cases with maximum Annex I "lenient LULUCF credits" and surplus emissions units.
Medium Chance	A 50 to 66 per cent likelihood. Used to convey the probabilities of meeting temperature limits.

Negative Emissions	Either globally or for a particular sector, the emissions that could occur if, in a given period, the removal of greenhouse gases from the atmosphere as a result of anthropogenic activities is greater than the addition of anthropogenic emissions into it.. Note that in this report negative energy and industry CO ₂ emissions are often mentioned.
Non-Annex I Action	For the purpose of this report, those emission reduction actions submitted to the UNFCCC by non-Annex I countries and listed in the Copenhagen Accord's Appendix II.
Offsets	A general term referring to credits that offset the need to reduce emissions elsewhere.
Overshoot Pathway	An emission pathway wherein a selected target (concentration or temperature) is exceeded for a period of time, but is eventually met.
Pledge	For the purpose of this report, pledges include Annex I targets and non-Annex I actions as included in Appendix I and Appendix II, respectively, to the Copenhagen Accord.
Scenario	A description of how the future may unfold based on 'if-then' propositions. A scenario in the context of this report consists typically of a representation of an initial socio-economic situation and a description of the key driving forces and future changes in emissions, temperature or other climate change-related variables.
Strict Rules	Pledge cases in which the impact of "lenient LULUCF credits" (see definition above) and surplus emissions units are set to zero.
Stylized Pathways	These are results from carbon cycle and climate models that are designed to better understand the relationships between emissions and temperatures, but do not explicitly incorporate assumptions about technological, economic or socio-political feasibility of emission reductions.
Surplus Emission Units	After the first commitment period of the Kyoto Protocol (2008-2012), according to Article 3, paragraph 13, Parties holding emission units not required for compliance with their commitments are able to carry over these units for future use or sale. These are called "surplus emission units". There is also the possibility that new surplus emission units will be created in the second commitment period, when targets are set below business-as-usual expectations.
Temperature Limits	Targets for maximum global average temperature increase above pre-industrial levels.
20th-80th percentile range	Results that fall within the 20-80 per cent range of the frequency distribution of results in this assessment.
Unconditional Pledges	Pledges made by countries without conditions attached.

Acronyms

AAU	Assigned Amount Unit
BECCS	Bioenergy combined with Carbon Capture and Storage
CCS	Carbon Capture and Storage
CDM	Clean Development Mechanism
CO ₂ e	Carbon dioxide equivalent For the purpose of this report, greenhouse gas emissions (unless otherwise specified) are the sum of the basket of greenhouse gases listed in Annex A of the Kyoto Protocol, expressed as carbon dioxide equivalent. The carbon dioxide equivalent of the various gases is computed by using the global warming potentials published in the Second IPCC Assessment Report.
COP	Conference of the Parties to the UN Framework Convention on Climate Change
GDP	Gross Domestic Product
Gt	Gigatonne (1 billion metric tonnes)
IAM	Integrated Assessment Model
IPCC	Intergovernmental Panel on Climate Change
LULUCF	Land Use, Land-Use Change and Forestry
Mt	Megatonne (1 million metric tonnes)
RCPs	Representative Concentration Pathways. RCPs form an important element of the new scenarios used for assessment of climate change.
UNFCCC	UN Framework Convention on Climate Change