

Appendix A: Evaluation of CEQA Significance Thresholds and Regional Planning Emission Inventory

The purpose of an emission inventory is to identify what extent various sources are responsible for air pollutant production and quantify the amounts of emissions from each source within the region. Emission sources are divided into four major categories; stationary sources, area-wide sources, mobile sources, and non-anthropogenic sources. *Stationary sources* include large and fixed point sources of air pollution such as power plants, refineries, and factories along with aggregated point sources which are many small point sources or devices that have not been inventoried individually, but estimated as a group and reported as a single source category. *Area-wide sources* include source categories associated with human activity resulting in emissions that take place over a wide geographic area. Consumer products and residential combustion such as water heaters are examples of area-wide sources. Mobile sources are the emission category that can be attributed to both on-road vehicles and off-road equipment. On-road mobile sources include gas, diesel, and electrically powered passenger cars, light, medium and heavy duty trucks, motorcycles, school and transit buses, and motor homes. Off-road mobile sources include agricultural and construction vehicles and equipment, trains, aircrafts, lawn and garden equipment, and off-road recreation equipment. CARB has the primary responsibility for developing on-road and off-road mobile source emissions inventories in California. **EMFAC** and **OFFROAD** are two models used by CARB to estimate the existing emissions and project changes in future inventories of on-road and off-road mobile source emissions, respectively.

Currently, the Sacramento region is classified as nonattainment for the federal and state ozone standards. The Sacramento region is responsible for preparing the regional air quality management plan, known as the State Implement Plan (SIP) for ozone. The SIP planning process includes the development of the emission inventory for future years, the analysis of computer modeling to forecast the ozone concentration at the target year, and the evaluation of reduction strategies to demonstrate when and how the region is able to meet the ozone standards. In order to assess when and how the region is able to meet the federal and state ozone standards, establishing emission inventory for ozone precursors is a very important component for a long-term planning effort in the region. In the plan, the baseline emission inventory will be established and the inventory is projected into the future based on expected growth rates of population, housing, industrial/commercial activity, energy use, and motor vehicle travel. Accordingly, the potential emissions from new land use development are “budgeted” into the planning inventory. In addition to growth, the emission projections also estimate the anticipated emission reduction effects from existing control measures. The projected emission inventories will be used in the modeling analysis to forecast the ozone concentration in future target years.

Since the emissions from the expected growth is “budgeted” into the future emission projection, the evaluation of significance thresholds for CEQA review would need to take into account the budgeted emissions from the growth in the inventory. The CEQA significance threshold is used

to determine whether the proposed project would contribute substantially considerable air quality impacts. Therefore, the level of significance threshold should be evaluated by emissions forecasted in the inventory for the future growth. The evaluation shall ensure that the significance threshold will accordingly address the proposed project related air quality impacts, the appropriate mitigation measures which can be identified to mitigate the project related air quality impacts, and how the proposed project's implementation will not jeopardize the regional goal to attain the federal and state ozone standards.

In order to extract the land use related emissions in the inventory, District staff uses the source categories identified by CalEEMod for land use emission estimation. CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutants and greenhouse gas emissions from a variety of land use projects. In addition, staff reviews the emissions projection for future years until 2025 since it could be the target year for Sacramento Region to attain 2015 8-hour ozone standard (0.070 part per million). Staff reviews the emission projections from 2015 to 2025 identifying the budgeted emissions for the growth in this 10-year period.

The evaluation of the proposed CEQA thresholds with the regional emission inventory involves a comprehensive 5 step process, summarized below:

Step 1 Identify the proposed CEQA significance thresholds for ozone precursors emissions

District staff proposes 55 lbs/day as the CEQA significance threshold for reactive organic gas (ROG) and nitrogen oxides (NOx). It is derived from the emission offset requirement in the District's new source review (NSR) rule. The current District's recommended CEQA threshold for ROG and NOx is 82 lbs/day from the previously emission offset requirement adopted in 1994. On December 9 2004 the District amended the NSR emission offset requirement to 10 tons per year to fulfill the State Ozone Transport Mitigation Regulation¹ requirement. Staff believes that the foundation of the NSR requirement is interchangeable with regard to the appropriate level of significance for the air quality impacts resulting either from a stationary source or a land use project. Therefore, staff proposes to amend the CEQA significance thresholds from 82 lbs/day to 55 lbs/day for ROG and NOx thereby making them consistent with the latest District's regulatory action for the NSR requirement.

¹ <http://www.arb.ca.gov/regact/trans03/trans03.htm>

Step 2 Recognize the source categories in CalEEMod analysis

In CalEEMod, consumer products, architectural coating, asphalt pavement and operation, residential/commercial combustion, landscaping, and on-road mobiles are the sources analyzed for land use development related operational emissions. Within these sources, asphalt operation, residential/commercial combustion, landscaping, and on-road mobiles would result in both ROG and NOx emissions while consumer products and architectural coating are associated with ROG emissions only. District staff will identify their associated emission estimation in the inventory for Placer County.

Step 3 Assess the land use related emissions from the planning inventory

District staff downloads the entire Placer County planning inventory prepared by CARB for the Sacramento regional ozone plan development². The planning inventory uses 2012 emission data as the baseline to project the future year based on the forecasted growth rate and control factors until 2025. There are approximately 500 emission source categories within the inventory; staff groups the consumer products, architectural coating, asphalt pavement and operation, residential/commercial combustion, and landscaping as non-mobile land use related sources and extracts the ROG and NOx projected emissions represented as a summer seasonal average day in units of tons per year from the planning inventory. The on-road mobile emissions are generated from the CARB EMFAC2014 web database³. The EMFAC emissions model is developed and used by CARB to assess emissions from on-road vehicles including cars, trucks, and buses in California. The model can generate special data for Placer County including vehicle population, vehicle-miles traveled (VMT), and associated emissions for each type of vehicle classification.

Step 4 Calculate the budgeted emissions for new land use development

In general, ROG and NOx emissions show increases for non-mobile land use related sources since these emissions are estimated on the growth forecasts for population, housing, and energy demand in the future. Therefore, the emissions associated with non-mobile land use related sources for new land use development can be identified based on the increase between years.

The on-road mobile emissions from new land use development are determined by the increased VMT as VMT is the factor used in CalEEMod to estimate the on-road mobile emissions for the proposed projects. If assuming business as usual for existing development,

² CARB CEPAM 2016 Baseline Emission Projection Version 1.04 for Placer County, May 26, 2016, for average summer day.

³ CARB EMFAC 2014 Web Database. <http://www.arb.ca.gov/emfac/2014/>

the annual growth of VMT could be considered the result from the new land use development. The emissions associated with the VMT growth can be presented as the on-road mobile emissions from future projects. Therefore, the on-road mobile emissions for future land use development are calculated based on the increased VMT in the year with its corresponding emission factors in Placer County. Figures A-1 and A-2 shows the VMT forecast and expected VMT growth in Placer County between 2015 and 2025 from EMFAC2014.

Figure A-1

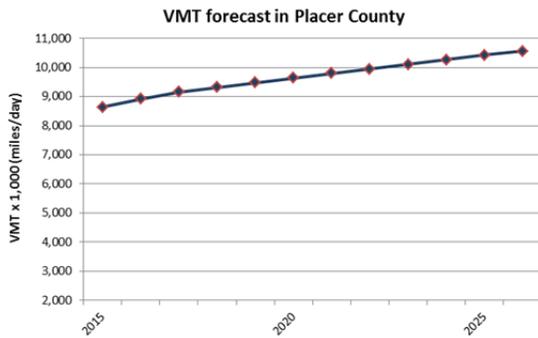
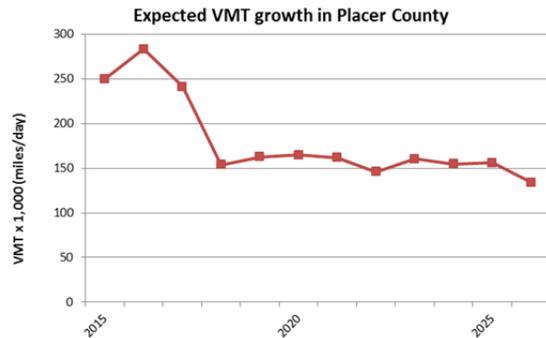


Figure A-2



Step 5 Evaluate the proposed CEQA thresholds with average land use related emissions

According to above steps, District staff is able to calculate the land use related emissions which are budgeted in the planning inventory for future projects in Placer County. The average land use related emissions for the 10 year period (2015 to 2025) would be used to evaluate the proposed CEQA significance thresholds and determine if the significance threshold will accordingly address the proposed project related air quality impacts and therefore, appropriate mitigation measures will be identified to mitigate the project related air quality impacts to promote the regional goal for attaining the federal and state ozone standards.

Summary of land use related emisisions in planning inventory

According to the above 5 steps, District staff identified the future emissions from the planning inventory which are associated with new land use developments in Placer County. These future land use related emissions are from two groups of sources: the non-mobile land use related sources which are consumer products, architectural coating, asphalt pavement/operation, residential/commercial combustion, and landscaping activities and on-road mobile sources which are passenger cars, trucks, and buses and are used by CalEEMod to estimate emissions from land use development. The non-mobile land use related emissions are extracted from the planning inventory. The VMT forecast and on-road mobile emissions are generated from CARB EMFAC2014.

Figures A-3 to A-6 shows the land use related ROG and NOx emissions in the planning inventory. Emissions are presented as tons per day (tons/day).

Figure A-3

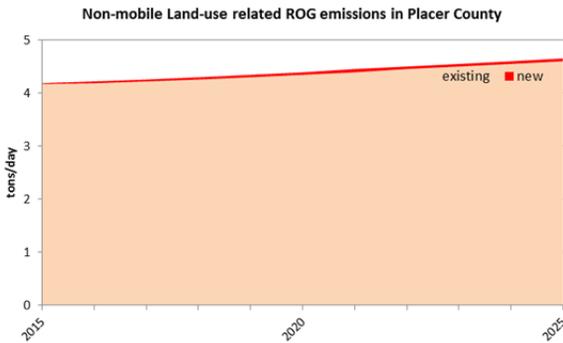


Figure A-4

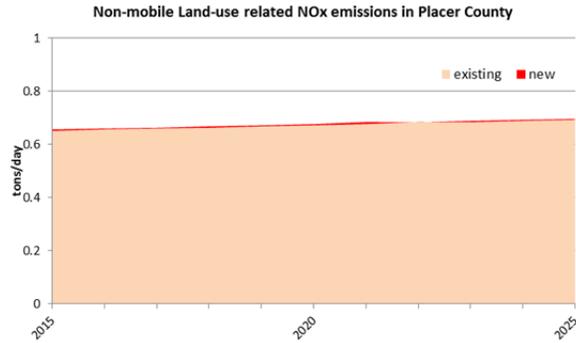


Figure A-5

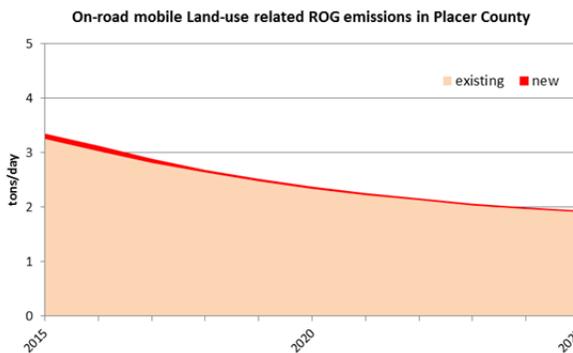
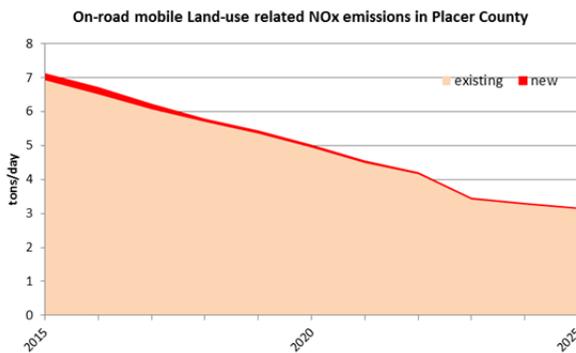


Figure A-6



As the previous discussion, the planning inventory includes the expected growth for population, housing, energy usage, and motor vehicle travel. The expected growth is allied with future land use developments which would result in additional emissions in Placer County. The above four charts present the non-mobile and on-road mobile land use related emissions budgeted in the planning inventory for existing development (colored as light tan) and new development (colored as red) on the ROG and NOx inventory from 2015 to 2025, respectively. Both ROG and NOx emissions from non-mobile land use related sources are increased because of a rise in population and housing units anticipated for the future. On-road mobile emissions show a declining trend of both ROG and NOx emissions due to overall vehicle technology improvement, and engine standards and fuel requirements from statewide regulations. The charts also illustrates that emissions from existing development are substantial higher than emissions from new development.

Figures A-7 and A-8 shows the total ROG and NOx emissions (tons/day) from land use related sources in the planning inventory. The charts show the declining trend of both ROG and NOx

emissions between 2015 and 2025. The overall ROG emissions reduction is about 12% and NOx emissions reduction is about 50%. Most of these reductions are from on-road mobile sources due to the statewide mobile source regulations.

Figure A-7

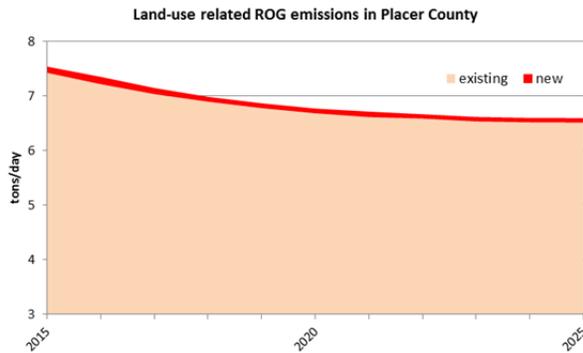
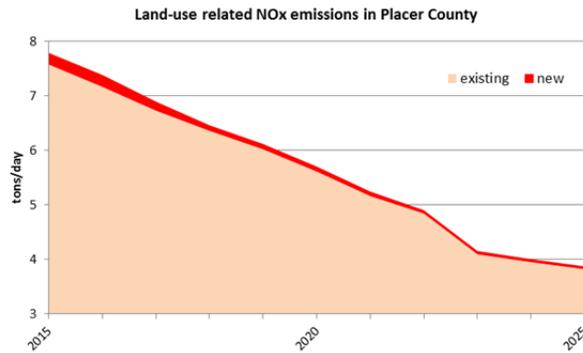


Figure A-8



Figures A-9 and A-10 shows the future emissions forecasted in the planning inventory from new land use developments in Placer County. The unit for emissions is presented as pounds per day (lbs/day). Both figures show that ROG and NOx overall emissions from new land use development are higher than the proposed CEQA thresholds for ROG and NOx. The proposed CEQA thresholds should be applicable in addressing the air quality impacts from new land use development in Placer County.

Figure A-9

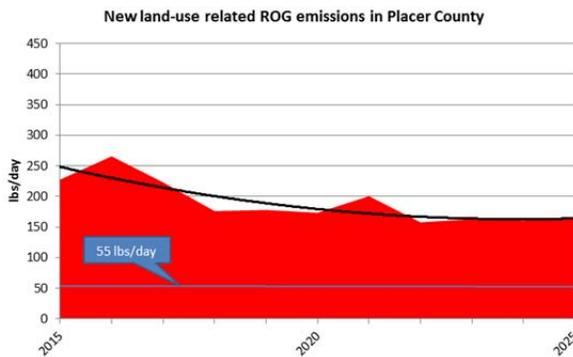


Figure A-10

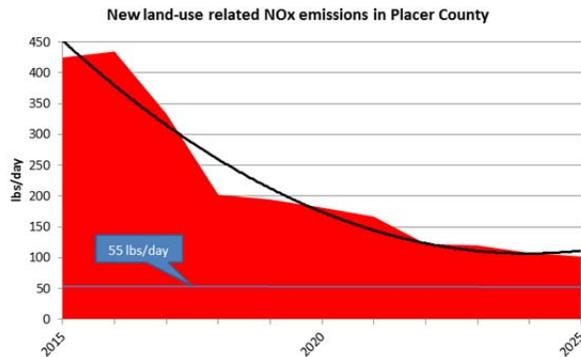


Table A-1 shows a comparison of the average land use related emissions and proposed CEQA thresholds for ROG and NOx. Between 2015 and 2025, the average land use related emissions from new land use development is approximate 190 lbs/day and 217 lbs/day for ROG and NOx, respectively. If a proposed land use project would potentially emit 55 lbs/day or more of ROG or NOx emissions, its related emissions would be equivalent to about 29% of ROG and 25% of NOx emissions in the planning inventory for future land use development. District staff believes the result in Table A-1 supports the proposed CEQA threshold (55 lbs/day) as a reasonable level to address the significance of the project related air quality impacts. According to the proposed

CEQA threshold, appropriate mitigation measures can be identified for the project to mitigate its related air quality impacts, where the proposed project’s implementation will not jeopardize the regional goal to attain the federal and state ozone standards.

Table A-1

	ROG	NOx
average of future land use emissions (lbs/day)	190	217
proposed CEQA threshold (lbs/day)	55	55
% to the average of future land use emissions	28.9%	25.3%

The following attachments are the detailed calculations for land use related emissions from the planning inventory and EMFAC2014 database along with the list of related emission source categories from the planning inventory.