CEQA GHG Guidance
Project Scope Subcommittee

Conclusions and Recommendations Regarding Characterization of Greenhouse Gas Emissions

January 7, 2009

The District has actively sought input from the ad hoc committee and the following document is still under development. The District is still receiving comments from the committee, which will be considered before finalizing this draft document.

Ad Hoc Committee Members:

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see appendix A

Introduction

During the Greenhouse Gas (GHG) CEQA Guidance Technical Workgroup meeting an ad hoc committee was formed to evaluate GHG emissions resulting from one industrial and one non-industrial project. Key objectives were to identify and quantify potential direct sources of GHG emissions, to the extend feasible, identify and quantify potential indirect GHG emissions, and to report back to the Technical Workgroup, providing guidance/recommendations regarding the scope of GHG emissions to be considered during the CEQA environmental review process.

The industrial project selected by the committee consists of adding a 14.6 MMBtu/hr natural gas fired powdered milk spray dryer operation increasing throughput of an existing milk processing facility by 1,200 tons of milk per day. The mixed-use development project consists of 201,000 sq ft commercial, 278,000 sq ft of office space, plus 24 residential units, all situated on 40 acres. Both projects are actual projects submitted to the District. When possible, GHG emissions were calculated using project specific information, otherwise, assumptions were made using best available information.

Emission sources were categorized as either Direct or Indirect. Direct emissions consist of emissions resulting from an activity occurring on-site under the control of the project proponent. Examples of direct emissions are operational emissions (emissions from activities occurring on-site), mobile source emissions (vehicular emissions resulting from delivery of operational materials to the facility, shipment of finished goods, and vehicular emissions resulting from employee, customer, or residential traffic), and emissions from on-site construction activities . Direct emission sources are traditionally considered during the CEQA review process. Indirect emissions consist of emissions resulting from an activity occurring off-site, which is not under the control of the project proponent. Examples of indirect emissions include emissions resulting from the generation of electricity to meet project related energy demands, and transportation emissions resulting from off-site delivery of raw materials for fabrication and delivery of the finished goods to the project site. Details of emissions sources are presented in attached Table-1 and Table-2.

Industrial Project Emissions – Determinations

The following statistics pertain to the industrial project described above:

- Stationary source emissions account for about 70% of direct emissions
- Mobile source emissions account for about 26% of direct emissions
- Construction emissions account for about 1% of direct emissions
- Electrical power consumption account for about 95% of indirect emissions
- Shipment of steel and boiler account for about 5% of indirect emissions
- Total indirect emissions account for about 12% of combined total direct and indirect emissions

Mixed-Use Project Emissions – Determinations

The following statistics pertain to the mixed-use project described above:

- Mobile source emissions account for about 75% of direct emissions
- Refrigerant loss account for about 10% of direct emissions
- Construction emissions account for about 7% of direct emissions
- Natural gas consumption account for about 6% of direct emissions
- Aerosol emissions account for about 4% of direct emissions
- Electrical power consumption account for about 97% of quantifiable indirect emissions
- Total indirect emissions account for about 19% of combined total direct and indirect emissions
- It was not feasible to estimate indirect emissions associated with transportation of raw materials and finished goods

Indirect Emissions from Electrical Power Consumption - Determinations
The following points represent the committee's majority opinion on this topic:

- For both industrial and non-industrial projects it is feasible to estimate potential electrical consumption and the associated indirect GHG emissions
- Decreasing electrical power consumption would reduce GHG emissions and concomitantly have a positive impact on global climatic change
- Estimating emissions from electrical power consumption is speculative because the actual source of generation (wind, fossil fuel, nuclear, hydroelectric, etc) and location of generation (within or outside California) is unknown
- Traditionally, indirect emissions associated with production of electrical power are not attributed to a development or industrial project
- Emissions resulting from electrical power generation have already been attributed to the power production facility and the power production facility has already been required to mitigate the impacts of its emissions
- Power generating facilities are subject to AB32 emission reduction targets and thus, will be required to mitigate their GHG emissions
- Including indirect emissions associated with electrical power consumption likely double counts GHG emissions associated with electrical power generation. Thus, overstating a project's environmental impacts

Indirect Emissions from Raw Materials and Finished Goods (Lifecycle Emissions) - Determinations
The following points represent the committee's majority opinion on this topic:

- Within limits, it was feasible to estimate potential emissions associated with transportation of raw materials and delivery of finished goods for industrial projects.
- It was not feasible to estimate indirect emissions associated with transportation of raw materials and finished goods for non-industrial projects.
- Estimation of potential emissions associated with transportation of raw materials and delivery of finished goods is highly speculative.
- Knowing emissions resulting from manufacturing and transportation of finished goods could influence decisions on sourcing products and consumer consumption.
- Reducing emissions associated with manufacture and transportation of finished goods would have a positive impact on global climatic change.
- Emissions associated with transportation of raw materials and delivery of finished goods is a minor percentage of direct project emissions.

Discussion:
Pursuant to the California Environmental Quality Act (CEQA) Guidelines Section 15064(d), "in evaluating the significance of the environmental effect of a project, the Lead Agency shall consider direct physical changes in the environment which may be caused by the project and reasonably foreseeable indirect physical changes in the environment which may be caused the by project." The CEQA Guidelines clearly states that a physical change that is speculative or unlikely to occur is not reasonably foreseeable (CEQA Guidelines Section 15064[d][3]).

While use of raw materials for construction and operation is an indirect consequence of a project, the emissions and potential environmental impacts associated with the production and transportation of raw materials is unknown and estimation of said emissions is highly speculative. The quantification of emissions associated with raw material usage is likely to be double-counted when developing emission inventories for industrial sources. The source of the raw materials and/or manufacturing processes associated with raw material usage may occur outside the state and is not included in the emissions inventory for the state and therefore should not be included in the emissions inventory for the project for the purposes of CEQA.

Substantial research would be required to minimize the speculative nature of trying to characterize indirect emissions for each project. Project proponents would have to determine the origin of the materials used during the construction and/or operation of the project. Additional research would be necessary to gather emission rates for the international vehicles (ship, aircraft, trains, trucks, etc.), global energy production, global industrial processes, and other GHG emitting processes. Even if this information is compiled, the resulting estimates represent an insignificant percentage, as compared to direct project emission.

While indirect emissions from electrical power consumption can be estimated, the estimate is speculative because actual emissions are determined by the source of power used to generate the electricity (wind, fossil fuel, nuclear, hydroelectric, etc), which is largely unknown for the power being consumed by a specific project. Furthermore, the source of power generation is unknown and may occur outside the boundaries of the air basin or the borders of California. Estimates of indirect emissions from electrical power consumption would be speculative and estimates may not be accurate.

Furthermore, traditionally, indirect emissions associated with production of electrical power are not attributed to a development or industrial project. Emissions of criteria pollutants resulting from electrical power generation have already been attributed to the power production facility and the power production facility has already been required to mitigate the impacts of its criteria pollutants emissions. The same logic applies to GHG emissions. Power generating facilities are subject to AB32 emission reduction targets and thus, will be required to mitigate their GHG emissions. Including indirect emissions associated with electrical power consumption would likely double count GHG emissions associated with electrical power generation and overstate a project's environmental impacts.

Indirect emissions associated with waste disposal can be estimated. However, as with indirect emissions associated with electrical power generation, criteria pollutants emissions resulting from waste disposal have already been attributed to the waste disposal facility. Indeed, the waste disposal facility has already been required to mitigate its operational environmental impacts. As with power generating facilities, waste disposal facilities are subject to AB32 emission reduction targets and thus, will be required to mitigate their GHG emissions. Including indirect emissions associated with waste disposal would likely double count GHG emissions and overstate a project's environmental impacts.

Recommendations:
After extensive discussion, the subcommittee makes the following recommendations:

- The scope of a project should not be expanded beyond traditional project boundaries.
- GHG emissions should be characterized for all direct project emission sources (stationary sources, mobile sources, combustion sources).
- GHG emissions from indirect sources should not be included in the scope of a project.
- Lifecycle emissions should not be included in the scope of a project.

Appendix A: List of Ad Hoc Committee Members

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Table 1 - Estimated MT CO2e for Industrial Project

Greenhouse Gas Emissions for a Powdered Milk Spray Dryer Operation															
CAT		Emission Source	Process Rate units/year	Units	Emission Factors lb-CO2 (eq) /unit			Annual Emissions ton-CO2 (eq) /year				% Emission Category		% Total Emissions (Direct and Indirect)	
					CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	Total	% of Total	Cum. %	% of Total	Cum. %
DIRECT		**Direct Emissions - Stationary Source**													
	1	Stationary Combustion	127,896	MMBtu	116.7	0.27	0.068	7,463	17	4	**7,484**	72.7%	72.7%	64.1%	64.1%
	2	Onsite Mobil Equipment	6,751	Gallons-LPG	12.7	0.00037	0.005467	43	0	0	**43**	0.4%	73.2%	0.4%	64.5%
		Direct Emissions - Construction													
	3	Site Construction						115	0	0	**115**	1.1%	74.3%	1.0%	65.5%
		Direct Emissions - Offsite Vehicle Travel													
	4	Milk Delivery	774,551	Heavy Truck Miles	3.72	0.000236	0.00328	1,441	0	1	**1,442**	14.0%	88.3%	12.4%	77.8%
	5	Powdered Milk Delivery	589,011	Heavy Truck Miles	3.72	0.000236	0.00328	1,096	0	1	**1,097**	10.7%	99.0%	9.4%	87.2%
	6	Employee Vehicles	182,910	Vehicle Miles	1.08	0.0012	0.0219	99	0	2	**101**	1.0%	99.9%	0.9%	88.1%
	7	Delivery of Supplies and Consumables	3,704	Heavy Truck Miles	3.72	0.000236	0.00328	7	0	0	**7**	0.1%	100.0%	0.1%	88.2%
		Total Direct Emissions						**10,264**	**17**	**8**	**10,289**	**100.0%**			
INDIRECT		**Indirect Emissions - Electric Power**													
	8	Operations	2,653	MWh	878.71	0.15	1.1	1,166	0	1	**1,167**	84.4%	84.4%	10.0%	98.2%
	9	Miscellaneous	219	MWh	878.71	0.15	1.1	96	0	0	**96**	6.9%	91.4%	0.8%	99.0%
		Indirect Emissions - Miscellaneous													
	10	Steel Shipment	1,151,100	ton-miles	0.071	7.37E-05	1.50E-05	41	0	0	**41**	3.0%	94.4%	0.4%	99.3%
	11	Spray Dryer Shipping	2,190,000	ton-miles	0.071	7.37E-05	1.50E-05	78	0	0	**78**	5.6%	100.0%	0.7%	100.0%
		Total Indirect Emissions						**1,381**	**0**	**1**	**1,382**	**100.0%**			
		Total Emissions						**11,645**	**17**	**9**	**11,671**			**100.0%**	

Table 2 - Estimated MTCO2e for the Mixed-Use Development

CATEGORY	Source	Annual Emissions	% Emission Category		% Total Emissions (Direct and Indirect)	
		Metric tons CO2e	% of Total	Cum. %	% of Total	Cum. %
DIRECT	Motor Vehicles	10,991.0	74.7%	74.7%	60.7%	60.7%
	Refrigerants	1,422.0	9.7%	84.3%	7.8%	68.5%
	Construction	977.9	6.6%	91.0%	5.4%	73.9%
	Natural Gas	811.0	5.5%	96.5%	4.5%	78.4%
	Aerosols	514.0	3.5%	100.0%	2.8%	81.2%
	Landscape	1.0	0.0%	100.0%	0.0%	81.2%
	Hearth	0.0	0.0%	100.0%	0.0%	81.2%
		14,717	**100.0%**			
INDIRECT	Indirect Elect	2,927.0	86.0%	86.0%	16.2%	97.4%
	Steel Transportation	398.5	11.7%	97.7%	2.2%	99.6%
	Water Transport (Elect)	46.0	1.4%	99.0%	0.3%	99.8%
	Waste Disposal	33.0	1.0%	100.0%	0.2%	100.0%
	Lumber Transportation	0.0	0.0%	100.0%	0.0%	100.0%
		3,404	**100.0%**			
	TOTAL	**18,121**			100.0%	

The project consists of:

40 acres	
201,000 sqft	commercial
278,000 sqft	office
24 units	residential

NOTES: (1) The sources and emissions are based on project specific data already available.
(2) Emissions for waste disposal were obtained using EPA's Waste Reduction Model (WARM).
http://epa.gov/climatechange/wycd/waste/calculators/Warm_home.html
(3) Data for residential and businesse waste disposal rate was obtained from the California Integrated Waste Management Board
http://www.ciwmb.ca.gov/Profiles/
(4) URBEMIS 2007 was used to estimate emissions from construction.