

Table 1: GHG Emissions Categories

Category	Definition	Examples
Scope 1	All direct GHG emissions with the exception of direct CO2 from biogenic sources.	<ul style="list-style-type: none"> • Stationary combustion: To produce electricity, steam, heat or power using equipment in a fixed location. • Mobile combustion: Fuels used in transportation e.g. cars, trucks, marine, aviation; and emissions from non-road equipment such as equipment used in construction, agriculture and forestry. • Physical and chemical processes: Other than fuel combustion (e.g. the manufacture of cement, aluminum, adipic acid, ammonia etc. • Fugitive sources Releases for the production, processing, transmission, storage, and use of fuels and other substances that do not pass through a stack, chimney, vent exhaust pipe or other functionally-equivalent opening (such as releases of sulfur hexafluoride from electrical equipment; hydrofluorocarbon releases during the use of refrigeration and air condition equipment; and methane leakage from natural gas transport.
Scope 2	Indirect GHG emissions associated with the consumption of purchased or acquired electricity, heating, cooling or steam.	This category typically represents one of the largest sources of emissions for an entity; therefore, it represents a significant opportunity for GHG management and reduction.
Scope 3	All indirect emissions not covered in Scope 2.	Upstream and downstream emissions, emissions resulting from the extraction and production of purchased materials and fuels; transport related activities in vehicles not owned or controlled by the entity; use of sold products and services; outsourced activities; recycling of used products, waste disposal etc.
Biomass	Emissions from the combustion of biomass.	Includes biomass and biomass-based fuels such as wood, wood waste, landfill gas, ethanol etc. where the carbon is of biogenic origin.
Agriculture	Direct and indirect emissions	Agriculture soil management which include direct and indirect emissions of nitrous oxide; enteric fermentation and manure management.
Land Use, Land-Use Change, Forestry	CO2 flux	Emissions of greenhouse gases to the atmosphere and removal of C from the atmosphere.

Sources: The GHG Protocol: <http://www.ghgprotocol.org>; The Climate Registry: <http://www.theclimateregistry.org/>; US EPA GHG Emissions: <http://www.epa.gov/climatechange/emissions/>; Local Government Operations Protocol, <http://www.arb.ca.gov/cc/protocols/localgov/localgov.htm>

Table 2: SEPA GHG Emission Categories¹

GHG Emissions 6 Kyoto Gases (CO₂, CH₄, N₂O, HFCs, PFCs, SF₆) *	Category	Comment
Construction	Scope 1	Non-road equipment used in construction. Fuels used in transportation e.g. trucks (if contracted then Scope 3)
Mobile Sources	Scope 1 or 3	Scope 1 – mobile source emissions under control of project entity Scope 3 – mobile source emissions not under control of project entity
Stationary Sources	Scope 1	On site stationary combustion or physical / chemical processes. Includes direct emissions from maintenance activities.
Fugitive Emissions	Scope 1	Emissions that do not pass through a stack, chimney, vent exhaust pipe or other functionally equivalent opening.
Energy Use	Scope 1 or 2	Combustion to produce electricity, steam, heat or power; and/ or the consumption of purchased electricity, heating, cooling or steam.
Agricultural Emissions	Direct or Indirect Emissions	GHG emissions from enteric fermentation, manure management and nitrous oxide emissions from soils.
Forestry Conversion and other land or Aquatic Vegetation Disturbance (LULUCF)	CO ₂ flux	The IPCC <i>Good Practice Guidance for Land Use, Land-Use Change and Forestry</i> recommends reporting fluxes according to changes within and conversions between certain land use types, forest land, cropland, grassland and settlements (as well as wetlands). <i>US EPA</i>
Materials Extraction	Scope 3	
Processing of materials	Scope 1 or 3	Specific physical and chemical processes release GHGs or could also include combustion GHG emissions associated with materials processing. Scope 1 to processing entity; Scope 3 to purchasing entity
Transportation of materials	Scope 1 or 3	Scope 1 to transporter entity or scope 3 if vehicles not owned or controlled by entity.
Other Indirect VMT	Scope 3	Transportation patterns not under direct control of entity or project.
Water Use	Scope 1, 2 or 3	Category depends on source of energy consumption to provide water; off site waste water contracting; wastewater emissions.
Solid Waste	Scope 1, 2 or 3	Category depends on energy consumption and whether waste management is under direct control of project or entity.
End-use emissions from product use	Scope 3	

¹ The categories in this table are generally the same categories in the 4th Draft “Source of GHG Emissions that SEPA Can Address,” with the exception that the category “direct emissions from maintenance” category has been combined with “stationary sources” in this table. Most of the categories in this table are recognized by existing GHG reporting protocols, but “forestry conversion and other land or aquatic disturbance” and “end use emissions from product use” are not currently recognized under existing protocols.

Table 3: Mitigation Strategies for Different Emission Categories²

	Mitigation Strategies	Emissions Category		
		Scope 1	Scope 2	Scope 3
Site Design	Provide permanent protection for open space on the project site.			•
	Conserve and restore natural areas on-site.			•
	Plant trees and vegetation near structures to shade buildings and reduce energy requirements for heating/cooling.		•	
	Encourage infill, redevelopment, and higher density development, whether in incorporated or unincorporated settings.	•	•	•
	Minimize building footprint.	•	•	
	Design project to support alternative transportation to site including transit, walking, and bicycling.	•		•
	Use low impact development for stormwater design.		•	•
	Design water efficient landscaping.			•
	Minimize energy use through building orientation.	•	•	
	Preserve or replace onsite trees (that are removed due to development) as a means of providing carbon storage.	sink		

² This table uses the mitigation strategies from the “Climate Change Mitigation Strategies” memo, distributed for the July 8, 2008, IWG meeting. The table then identifies the emissions categories (scopes 1, 2, or 3) that the strategy addresses.

	Mitigation Strategies	Emissions Category		
		Scope 1	Scope 2	Scope 3
Building Design & Operation	Encourage public and private construction of LEED (Leadership in Energy and Environmental Design) certified (or equivalent) buildings.	•	•	
	Purchase Energy Star equipment and appliances for public agency use.		•	
	Incorporate on-site renewable energy production, including installation of photovoltaic cells or other solar options.	•	•	
	Construct green roofs.	•	•	
	Use high-albedo roofing materials.	•	•	
	Install high-efficiency HVAC systems.	•	•	
	Eliminate or reduce use of refrigerants in HVAC systems.	•		
	Reduce energy demand using peak shaving or load shifting strategies.		•	
	Maximize interior day lighting through floor plates, increased building perimeter and use of skylights, celestories and light wells.		•	
	Incorporate window glazing to balance and optimize day lighting, heat loss, and solar heat gain performance.	•	•	
	Incorporate super insulation to minimize heat loss.	•	•	
	Incorporate motion sensors and lighting and climate control.	•	•	
	Use efficient, directed exterior lighting.		•	
	Incorporate on-site renewable energy sources into project including solar, wind, geothermal, low-impact hydro, biomass, and bio-gas strategies.	•	•	

	Mitigation Strategies	Emissions Category		
		Scope 1	Scope 2	Scope 3
Building Design & Operation	Incorporate combined heat and power (CHP) technologies.	•	•	
	Use water conserving fixtures that exceed building code requirements.	•	•	
	Re-use gray water and/or collect and re-use rainwater.	•	•	
	Provide for storage and collection of recyclables (including paper, corrugated cardboard, glass, plastic, and metals) in building design.			•
	Re-use building materials and products.			•
	Use building materials with recycled content.			•
	Use building materials that are extracted and/or manufactured within the region.			•
	Use rapidly renewable building materials.			•
	Use wood that is certified in accordance with the Forestry Stewardship Council's Principles and Criteria.			•
	Use low-VOC adhesives, sealants, paints, carpets, and wood.			•
	Conduct 3rd party building commissioning to ensure energy performance.	•	•	
	Track energy performance of building and develop strategy to maintain efficiency.	•	•	
	Provide construction and design guidelines to facilitate sustainable design for build-out by tenants.			•

	Mitigation Strategies	Emissions Category		
		Scope 1	Scope 2	Scope 3
Transportation	Locate new buildings in or near areas designated for transit-oriented development (TOD) and, where possible, incorporate TOD principles in employee and customer activity patterns.			•
	Purchase alternative fuel and/or fuel efficient vehicles for fleet.	•	•	
	Where feasible, include in new buildings facilities to support the use of low/zero carbon fueled vehicles, such as the charging of electric vehicles from green electricity sources.	•	•	
	Join or form a transportation management association.	•		•
	Provide new transit service or support extension/expansion of existing transit (buses, trains, shuttles, water transportation).			•
	Support expansion of parking at Park-n-Ride lots and/or transit stations.			•
	Develop or support multi-use paths to and through site.			•
	Size parking capacity to meet, but not exceed, local parking requirements and, where possible, seek reductions in parking supply through special permits or waivers.			•
	Pursue opportunities to minimize parking supply through shared parking or banked parking.			•
	Develop a parking management program to minimize parking requirements such as parking cash-out, parking charges, preferential carpool or vanpool parking, limiting parking available to employees.			•
	Develop and implement a marketing/information program that includes posting and distribution of ridesharing/transit information.			•
	Subsidize transit passes.			•
	Use of pre-tax dollars for non-single occupancy vehicle (SOV) commuting costs.			•

	Mitigation Strategies	Emissions Category		
		Scope 1	Scope 2	Scope 3
Transportation	Reduce employee trips during peak periods through alternative work schedules, telecommuting, and/or flex-time.			•
	Provide a guaranteed ride home program.			•
	Provide on-site amenities such as banks, dry cleaning, food service, childcare.			•
	Provide bicycle storage and showers/changing rooms.			•
	Traffic signalization and coordination to improve traffic flow and support pedestrian and bicycle safety.	•		•
	Replace traffic lights, street lights, and other electrical uses to energy efficient bulbs and appliances.		•	
	Implement land use strategies to encourage jobs/housing proximity, promote transit-oriented development, and encourage high density development along transit corridors. Encourage compact, mixed-use projects, forming urban villages designed to maximize affordable housing and encourage walking, bicycling, and the use of public transit systems.			•
	Encourage new developments to integrate housing, civic, and retail amenities (jobs, schools, parks, shopping opportunities) to help reduce VMT resulting from discretionary automobile trips.			•
	Apply advanced technology systems and management strategies to improve operational efficiency of transportation systems and movement of people, goods, and services.			•
	Incorporate features into project design that would accommodate the supply of frequent, reliable, and convenient public transit.			•
	Implement street improvements that are designed to relieve pressure on a region's most congested roadways and intersections.	•		•
	Limit idling time for commercial vehicles, including delivery and construction vehicles.	•		•
	Develop shuttle systems around business district parking garages to reduce congestion and create shorter commutes.			•

	Mitigation Strategies	Emissions Category		
		Scope 1	Scope 2	Scope 3
Transportation	Create an online ridesharing program that matches potential carpoolers immediately through email.			•
	Encourage large businesses to develop commute trip reduction plans that encourage employees who commute alone to consider alternative transportation modes.			•
	Develop a Safe Routes to School program that allows and promotes bicycling and walking to school.			•
Energy Conservation Policies & Actions	Recognize and promote energy saving measures beyond Title 24 requirements for residential and commercial projects	•	•	
	Educate the public, schools, other jurisdictions, professional associations, business, and industry about reducing GHG emissions.			•
	Execute an Energy Savings Performance Contract with a private entity to retrofit public buildings. This type of contract allows the private entity to fund all energy improvements in exchange for a share of the energy savings over a period of time.	•	•	
	Design, build, and operate schools that meet the Collaborative for High Performance Schools (CHPS) best practices.		•	
	Retrofit municipal water and wastewater systems with energy efficient motors, pumps and other equipment, and recover wastewater treatment methane for energy production.		•	•
	Convert landfill gas into energy sources for use in fueling vehicles, operating equipment, and heating buildings.	•		•
	Purchase government vehicles and buses that use alternatives fuels or technology, such as electric hybrids, biodiesel, and ethanol. Where feasible, require fleet vehicles to be low emission vehicles. Promote the use of these vehicles in the general community.	•	•	
	Offer government incentives to private businesses for developing buildings with energy and water efficient features and recycled materials. The incentives can include expedited plan checks and reduced permit fees.	•	•	•
	Offer rebates and low-interest loans to residents that make energy-saving improvements on their homes.	•	•	•

	Mitigation Strategies	Emissions Category		
		Scope 1	Scope 2	Scope 3
Energy Conservation Policies & Actions	Create incentives to increase recycling and reduce generation of solid waste by residential users.	•		•
	Implement a Construction and Demolition Waste Recycling Ordinance to reduce the solid waste created by new development.	•		•
	Add residential/commercial food waste collection to existing greenwaste collection programs.	•		•
	Offer government employees financial incentives to carpool, use public transportation, or use other modes of travel for daily commutes.			•