Sime Darby Property Carbon Footprint Project (CFP)

Guidelines for CFP Data Collection (Revision 3.0)
For Property Development
18 February 2021











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1. Objectives



- 1 To guide all contractors and PICs during data collection process, especially for the case where document/record is not available
- **2** To ensure standardized procedure on calculation and estimation of data throughout Sime Darby Property.
- **3** To obtain accurate and complete data, and ultimately to obtain accurate results
- **4** To ensure all contractors and PICs have a clear understanding of data requirements in CFP

3

2. Types of Emission Sources for SD Property



A. PROCESS:

- 1. Purchased electricity
- 2. Electricity generation
- 3. Boilers
- 4. Agricultural machinery
- 5. Heavy machinery
- 6. Welding & oxygen-cutting
- 7. Refrigerants fugitive emissions
- 8. Stoves

B. TRANSPORT (controlled vehicles):

- 1. Cars
- 2. Light good vehicles
- 3. Heavy good vehicles
- 4. Motorcycles

C. BUILDINGS:

- 1. Purchased electricity
- 2. Back-up electricity generation

D. BUSINESS TRAVEL:

1. Car & air travel



Excluded in CFP since 2010 onwards

Included in CFP for SD Property

3. Methodologies (1/2)



Step 1

Identify type of emission sources that may require calculation/ estimation e.g. heavy machinery, generatorset

Step 2

Identify
emission
sources to be
estimated
e.g. fuel
consumption,
kWh,
refrigerant
capacity, etc.

Step 3

Identify potential data source e.g. invoice, record tracking as well as possible issue/ case in obtaining the data

Step 4

Identify
formula and
process for
estimation/
calculation
(including
any
assumptions)

3. Methodologies (2/2)



Step 1 Step 2 Step 3 Step 4

No.	Type of Emission Sources	Emission Sources	Potential data source(s)	Case/ Issue	Calculations/ Process	Assumptions/ Remarks			
1.	Purchased electricity	Electricity consumption (kWh)	1. TNB/ utility bills	Data is in kWh	Extract data (in kWh) directly from bills	Data is complete from 1 st to 30th/ 31 st every month			
			2. TNB/ utility bills EXAM	Data is in RM	Convert data from RM to kWh based on current electricity tariff: Estimated electricity usage (kWh) = [Electricity usage (RM) / current electricity tariff (RM/kWh)]	Please refer <u>Appendix</u> <u>3</u> for electricity tariff (based on types)			
			3. TNB/ utility bills	Record/bills are incomplete	Extrapolate data based on existing monthly bills Estimated electricity usage (kWh) = [Average electricity usage per month (kWh/mth) x (12-n)] + total electricity usage of n months n denotes the number of months data is available	Electricity usage does not vary substantially from month to month			

4. General Guidelines



- Data reported in Carbon Calculator Template shall be strictly within the reporting period only:
 - a. Quarter 1 (Jan-March)
 - b. Quarter 2 (Apr-June)
 - c. Quarter 3 (July-Sept)
 - d. Quarter 4 (Oct-Dec)
- Please email supporting documents/ evidences upon data submission (COMPULSORY)
- Please keep and document all calculations/ workings that were made during estimation/ consolidation of data for minimum of 5 years and filed properly to avoid discrepancy. (Please refer Appendix 5 for details).
- Please ensure *estimation is made on rationale and proper justification,* and properly documented refer this document: 'SDP Carbon Inventory Guideline' as guidance to make estimation
- All data reported shall be in the unit as specified in the Data Collection Form and Carbon Calculator Template.
- Please ensure correct data are filled-in and data are filled-in at the right section and categories to avoid misleading reporting

Data Requirements for CFP- Types of Emission Source



A. PROCESS:

- 1. Purchased electricity
- 2. Electricity generation
- 3. Boilers
- 4. Agricultural machinery
- 5. Heavy machinery
- 6. Welding & oxygen-cutting
- 7. Refrigerants fugitive emissions
- 8. Stoves

Any of these activities that took place at the construction sites

Data Requirements for CFP



A. PROCESS: PURCHASED ELECTRICITY

A. P	A. PROCESS												
No.	Emission Sources	Definition of Emission Sources	Types	Total Consumption	Units		Status (please tick) O NOT LEAVE BLANK	(pi	ata Origin lease tick) DO NOT LEAVE BLANK	Data Source (e.g. IFCA system,bill, invoice) DO NOT LEAVE BLANK	fr (pi	Data vailability equency ease tick) DO NOT LEAVE BLANK	Steps to obtain data
		Total electricity					Actual data					Yearly	
		that is bought						From	From			Twice a	
		from the local					Converted data		online		\vdash	year Quarterly	
		power supplier						System	System			Once	1
1.	Purchased electricity	(e.g. TNB)	_		kWh		Estimated data					every 2	
1.	Purchased electricity	For example:	-		KVVII			<u> </u>			⊢	months Monthly	
		Electricity used				\vdash	Noncondo	1	Manual		\vdash	Every 2	
		in the powering					No records		(e.g.		<u> </u>	weeks	
		welding					Not applicable		invoice, bills)		<u> </u>	Weekly	
		equipment, etc.					Not applicable		uilis)			As and when	



- Electricity usage from local supplier only (i.e. TNB)
- E.g. electricity used in contractor's site office, powering welding equipment
- Do not include generated electricity from gen-set usage



A. PROCESS: PURCHASED ELECTRICITY

No	Type of Emission Sources	Emission Sources	Potential data source(s)	Case/ Issue	Calculations/ Process	Assumptions/ Remarks		
1.	Purchased electricity	Electricity consumption (kWh)	1. TNB/ utility bills	Data is in kWh	Extract data (in kWh) directly from bills	Data is complete from 1 st to 30th/ 31 st every month		
					2. TNB/ utility bills Data is i		Convert data from RM to kWh based on current electricity tariff: Estimated electricity usage (kWh) = [Electricity usage (RM) / current electricity tariff (RM/kWh)]	Please refer <u>Appendix</u> <u>4</u> for electricity tariff (based on types)
			3. TNB/ utility bills	Record/bills are incomplete	Extrapolate data based on existing monthly bills Estimated electricity usage (kWh) = [Average electricity usage per month (kWh/mth) x (12-n)] + total electricity usage of n months n denotes the number of months data is available	Electricity usage does not vary substantially from month to month		

Data Requirements for CFP



A. PROCESS: ELECTRICITY GENERATION (GEN-SETS)

A. PI	A. PROCESS																
No.	Emission Sources	Definition of Emission Sources	Types	Total Consumption	Units		Status please tick) D NOT LEAVE BLANK	(pl	ease tick) OO NOT LEAVE BLANK	Data Source (e.g. IFCA system,bill, invoice) DO NOT LEAVE BLANK	ava fre (ple D(Data iilability quency ase tick) O NOT EAVE	Steps to obtain data				
							Actual data				П	Yearly					
							Converted data		From online System		Щ	Twice a year Quarterly					
		Fuel used for the generation of electricity for operations purposes. For example:	Diesel		L		Estimated data		,,,,,,,,			Once every 2 months					
							No records		Manual (e.g.			Monthly Every 2 weeks					
2.	Electricity generation						Not applicable	bills)	invoice, bills)			Weekly As and when					
-	(Generator sets)	generator sets					Actual data		From		-	Yearly					
		to power welding					Converted data		online System		Ш	Twice a year					
		equipment, natural gas used in power plants.	Natural gas						m3		Estimated data		Manual			Quarterly Once every 2 months Monthly	
							No records		(e.g. invoice,			Every 2 weeks					
							Not applicable	bills)	bills)			Weekly As and when					

- Fuel used for generating electricity for operation at construction site
- E.g. diesel used in back-up gen sets for contractor's site office



A. PROCESS: ELECTRICITY GENERATION (GEN-SETS)

No.	Type of Emission Sources	Emission Sources	Potential data source(s)	Case/ Issue	Calculations/ Process	Assumptions/ Remarks				
2.	Electricity generation	Fuel consumpti on	1. Fuel usage record/ inventory	Data is recorded through fuel usage inventory	Extract data (in litre or m³) on gen-set usage from fuel usage record/ inventory	Please use "Fuel Usage Tracking" template (Appendix 1)				
							2. Invoice from fuel purchase	Fuel is used for different activities e.g. gen-sets, heavy machinery etc) No breakdown of fuel usage for different activities	 Identify list if machinery/activities that are also using this fuel Estimate percentage breakdown of how much fuel was used for this activity (e.g. 20% was used for gen-sets) Estimated fuel usage for gen-set (in litre or m³) = (% breakdown for gen-set x total amount of fuel) 	Note: 1. Litre refers to fuel usage for diesel 2. m³ refers to fuel usage for natural gas
			3. Machinery specification and running hours	Fuel usage record or invoice are not available	 Identify no. of machinery used for this activity Identify machinery capacity & running hours Identify average hourly fuel consumption for gen-sets from the "Estimation Guidelines" Estimated fuel usage for gen-set = [Estimated hourly fuel consumption based on gen-set capacity (refer table) x Running hours x No. of machinery with similar capacity] 	Please refer "Estimation Guidelines" for estimation of hourly fuel consumption (Appendix 2) For unknown gen-set load, please assume it is half loading				

Data Requirements for CFP



A. PROCESS: BOILERS

										Yearly			
		Fuel consumed by equipment						Actual data		F		Twice a year	
		that utilises hot				Converted data		From online System		Quarterly			
3.	3. Boilers	to provide heating or	Diesel		L	Estimated data		- 1	Once every 2 months				
		power.								Monthly			
		For evample:				No records		Manual (e.g.		Every 2 weeks			
		For example: Boiler sets					inv	invoice,		Weekly			
		Doner sets				Not applicable		bills)		As and when			

- Fuel used to run boilers which will provide heating or power
- Maybe not applicable for contractor's site



A. PROCESS: BOILERS

No.	Type of Emission Sources	Emission Sources	Potential data source(s)	Case/ Issue	Calculations/ Process	Assumptions/ Remarks
3.	Boilers	Fuel consumption	1. Fuel usage record/ inventory	Data is recorded through fuel usage inventory	Extract data (in litre) on boiler usage from fuel usage record/inventory	Please use "Fuel Usage Tracking" template (Appendix 1)
			2. Invoice from fuel purchase	Fuel is used for different activities e.g. gen-sets, heavy machinery, etc) No breakdown of fuel usage for different activities	 Identify list if machinery/activities that are also using this fuel Estimate percentage breakdown of how much fuel was used for this activity (e.g. 10% was used for boiler) Estimated fuel usage for boiler (in litre) = % breakdown of fuel for boiler x total amount of fuel (litre) 	

Data Requirements for CFP



A. PROCESS: AGRICULTURAL MACHINERY

A. PF	A. PROCESS													
No.	Emission Sources	Definition of Emission Sources	Types	Total Consumption	Units		Status please tick) D NOT LEAVE BLANK	(pl	ta Origin ease tick) OO NOT LEAVE BLANK	Data Source (e.g. IFCA system,bill, invoice) DO NOT LEAVE BLANK	fre (ple	Data ailability equency ease tick) OO NOT LEAVE BLANK	Steps to obtain data	
			Petrol		L		Actual data Converted data Estimated data No records Not applicable		From online System Manual (e.g. invoice, bills)			Yearly Twice a year Quarterly Once every 2 months Monthly Every 2 weeks Weekly As and when		
	Agricultural Machineries	Fuel consumed by operating agricultural machinery. For example: Tractors used for agricultural purposes, spading machine	by operating agricultural					Actual data Converted data		From online System			Yearly Twice a year Quarterly	
4.			xample: Diesel ors used gricultural oses, ing		L		Estimated data	Manual				Once every 2 months Monthly		
							No records Not applicable		(e.g. invoice, bills)			Every 2 weeks Weekly As and when		
			machine					Actual data		From			Yearly Twice a year	
			Compressed natural gas		scf		Converted data Estimated data		online System			Quarterly Once every 2 months		
							No records		Manual (e.g. invoice,			Monthly Every 2 weeks Weekly		
							Not applicable Actual data		bills)			As and when Yearly		
	Agricultural	Fuel consumed by operating agricultural					Converted data		From online System			Twice a year Quarterly		
4.	Machineries (cont'd)	machinery. For example: Tractors used for agricultural	Liquefied petroleum gas		L		Estimated data					Once every 2 months Monthly		
						\Box	No records		Manual		\Box	Every 2 weeks		
	purposes,	purposes,					Not applicable		invoice,			Weekly As and		
		spading machine				reot applicab						when		

- Fuel used to operate agricultural machinery
- Maybe not applicable for contractor's site



A. PROCESS: AGRICULTURAL MACHINERY

No.	Type of Emission Sources	Emission Sources	Potential data source(s)	Case/ Issue	Calculations/ Process	Assumptions/ Remarks
4.	Agricultural machinery	Fuel consumption	1. Fuel usage record/ inventory	Data is recorded through fuel usage inventory	Extract data (in litre or scf) on agricultural machinery usage from fuel usage record/inventory	Please use "Fuel Usage Tracking" template (Appendix 1)
			2. Invoice from fuel purchase	Fuel is used for different activities e.g. gen-sets, heavy machinery, etc) No breakdown of fuel usage for different activities	 Identify list if machinery/activities that are also using this fuel Estimate percentage breakdown of how much fuel was used for this activity (e.g. 30% was used for agricultural machinery) Estimated fuel usage for ag. machineries (in litre or scf) = % breakdown of fuel for ag. machinery x total amount of fuel (litre or scf) 	 Note: Litre refers to fuel usage for diesel, petrol or LPG Scf refers to fuel usage for compressed natural gas
			3. Size of land area of agricultural work (for cutting grass only)	Size of land that the agricultural work is done is available	 Identify size of land area (in hectare) that is used for this activity Estimated fuel usage for ag. machineries = [Average Fuel Consumption x land size used for the activity (in hectare)] Estimated fuel usage for ag. machinery = [4.4 litres/ha x land size used for the activity (in hectare)] 	This estimation is for grass cutting activity only 'Average Fuel Consumption for Agricultural Machinery' (for grass cutting) is 4.4 litres/ha

Data Requirements for CFP



A. PROCESS: HEAVY MACHINERY

A. PI	ROCESS									
No.	Emission Sources	Definition of Emission Sources	Types	Total Consumption	Units	Status (please tick) DO NOT LEAVE BLANK	Data Origin (please tick) DO NOT LEAVE BLANK	Data Source (e.g. IFCA system,bill, invoice) DO NOT LEAVE BLANK	Data availability frequency (please tick) DO NOT LEAVE BLANK	Steps to obtain data
						Actual data	From	DEATH	Yearly	
		Fuel consumed				Converted data	online System		Twice a year Quarterly	
		by operating heavy machinery. DO NOT include trucks, heavy goods vehicles or agricultural machineries For example: Backhoe, bulldozers, cranes, skidloaders, forklifts, tractors (used for construction purposes).	Petrol		L	Estimated data	Manual		Once every 2 months Monthly	
						No records	(e.g.		Every 2 weeks	
						Not applicable	bills)		Weekly As and when	
5.	Heavy Machineries								Yearly	
						Actual data	From		Twice a year	
			difts, Diesel		L	Converted data	online System		Quarterly	
						Estimated data			Once every 2 months	
						No records	Manual (e.g.		Monthly Every 2 weeks	
						Not applicable	invoice, bills)		Weekly As and	
\ 		! 		1		Actual data]		when Yearly	
		Fuel consumed				Converted data	From online		Twice a year	
		by operating heavy machinery. DO	Compressed		scf	Estimated data	System		Once every 2 months	
		NOT include trucks,	natural gas		SCI		Manual		Monthly Every 2	
		heavy goods vehicles or				No records	(e.g.		weeks Weekly	
5.	Heavy Machineries	agricultural				Not applicable	bills)		As and when	
	(cont'd)	machineries For example:				Actual data	From		Yearly Twice a	
		Backhoe, bulldozers,				Converted data	online System		year Quarterly	
		cranes, skid- loaders, forklifts, tractors	Liquefied		L	Estimated data			Once every 2 months	
		(used for construction	petroleum gas				Manual (e.g.		Monthly Every 2	
		purposes).				No records	invoice, bills)		weeks Weekly	
						Not applicable			As and when	

- Fuel used to operate heavy machinery
- E.g. backhoe, bulldozers, cranes, forklift etc
- Do not include <u>trucks</u>, <u>agricultural</u> <u>machinery</u>, lorries



A	A. PROCESS: HEAVY MACHINERY											
No.	Type of Emission Sources	Emission Sources	Potential data source(s)	Case/ Issue	Calculations/ Process	Assumptions/ Remarks						
5.	Heavy machinery	Fuel consumption	1. Fuel usage record/ inventory	Data is recorded through fuel usage inventory	Extract data (in litre or scf) on heavy machinery usage from fuel usage record/ inventory	Please use "Fuel Usage Tracking" template (Appendix 1)						
					2. Invoice from fuel purchase	Fuel is used for different activities e.g. gen-sets, heavy machinery, etc) No breakdown of fuel usage for different activities	 Identify list if machinery/activities that are also using this fuel Estimate percentage breakdown of how much fuel was used for this activity (e.g. 30% was used for heavy machinery) Estimated fuel usage for heavy machinery (in litre or scf) = % breakdown of fuel for heavy machinery x total amount of fuel (litre or scf) 	Note: 1. Litre refers to fuel usage for diesel, petrol or LPG 2. Scf refers to fuel usage for compressed natural gas				
			3. Machine-ry' specifica-tion and running hours	Fuel usage record or invoice are not available OR Machineries are rented and was filled with unknown amount of fuel	 Identify no. of machinery used for this activity Identify machinerys' capacity & running hours Identify average hourly fuel consumption for heavy machinery from the "Estimation Guidelines" Estimated fuel usage for heavy machineries = [Estimated hourly fuel consumption based on capacity (refer table) x Running hours x No. of machinery with similar capacity] 	Please refer "Estimation Guidelines" for estimation of hourly fuel consumption (Appendix 3) For unknown heavy machineries load, please assume it is half loading						

Data Requirements for CFP



A. PROCESS: WELDING & OXYGEN-CUTTING

A. PI	ROCESS											
No.	Emission Sources	Definition of Emission Sources	Types	Total Consumption	Units	Status (please tick) DO NOT LEAVE BLANK		eta Origin ease tick) OO NOT LEAVE BLANK	Data Source (e.g. IFCA system,bill, invoice) DO NOT LEAVE BLANK	Data availability frequency (please tick) DO NOT LEAVE BLANK		Steps to obtain data
		Fuel and shielding gas used in the				Actual data		From		Yearly Twice year	a	
6.	Welding & oxygen- cutting (gases)	process of welding and oxygen cutting.	Acetylene		m3	Converted data Estimated data		online System		Once every monti	2	
		Should another fuel type be used, indicate in				No records		Manual (e.g. invoice,		Monti Every weeks	nly 2	
		the additional comments field				Not applicable		bills)		As and when	i	
						Actual data Converted data		From online System		Yearly Twice year Quart	a	
		Fuel and shielding gas	CO2 (shielding gas)		kg	Estimated data			Once every 2 months Monthly	15		
	Welding & oxygen-	used in the process of				No records		Manual (e.g. invoice,		Every weeks Week		
6.	cutting (gases)	welding and oxygen cutting.				Not applicable Actual data		bills)		As and when Yearly	i	
	(cont'd)	Should another fuel type be				Converted data		From online System		Twice year Quart	a	
		used, indicate in the additional comments field	Liquefied petroleum gas		L	Estimated data		Manual		Once every month Monti	2	
						No records	(e.g. invoice, bills)			Every weeks		
						Not applicable				As and when		

 Fuel and shielding gas used in welding & oxygen cutting



A. PROCESS: WELDING & OXYGEN-CUTTING

No.	Type of Emission Sources	Emission Sources	Potential data source(s)	Case/ Issue	Calculations/ Process	Assumptions/ Remarks
6.	Welding & oxygen-cutting	Fuel consumption	1. Fuel usage record/ inventory	Data is recorded through fuel usage inventory	Extract data (in litre or m³) from fuel usage record/ inventory	Please use "Fuel Usage Tracking" template (Appendix 1)
			2. Invoice from fuel purchase	Fuel is used for different activities e.g. gen-sets, heavy machinery, etc) No breakdown of fuel usage for different activities	 Identify list if machinery/activities that are also using this fuel Estimate percentage breakdown of how much fuel was used for this activity (e.g. 5% was used for welding & O₂-cutting) Estimated fuel usage for welding & O₂-cutting (in litre or m³) = % breakdown of fuel for welding & O₂-cutting x total amount of fuel (litre or m³) 	Note: 1. Litre refers to fuel usage for carbon dioxide (shielding gas) and LPG 2. m³ refers to fuel usage for acetylene

Data Requirements for CFP



A. PROCESS: REFRIGERANTS FUGITIVE EMISSIONS

A. Pf	Emission Sources	Definition of Emission Sources	Types	Total Consumption	Units	Status (please tick) DO NOT LEAVE BLANK	Data Origin (please tick) DO NOT LEAVE BLANK	Data Source (e.g. IFCA system,bill, invoice) DO NOT LEAVE BLANK	Data availability frequency (please tick) DO NOT LEAVE BLANK	Steps to obtain data
				Please fill in		Actual data			Yearly	8.
				Total Refrigerant Recharge		Converted data	From online System		Twice a year Quarterly	
	Medium and large commercial		Please indicate refrigerant gas type (e.g. HFC-	Recharge	kg	Estimated data	3730011		Once every 2 months	
	refrigeration / industrial		23, HFC- 32, R-		807.0		W. W. C.		Monthly	Ĵ
	refrigeration	Medium and large commercial refrigeration: reach-in refrigerators that may be	22 etc)			No records	Manual (e.g.		Every 2 weeks	
						0 - 3	invoice, bills)		Weekly	5. 3.
						Not applicable	Dills)		As and when	
			OR, If amount of r	echarge is unavaila	ble, please	fill in the refrigerar	t capacity below	/		
				Please fill in Total Refrigerant	in the second	Actual data	From		Yearly	Į.
						Converted data	online		Twice a vear	
			Please indicate	Capacity		Convented data	System		Quarterly	į.
7.	Medium and large commercial	used for storing food and	refrigerant gas type (e.g. HFC-	Capacity	kg	Estimated data			Once every 2 months	
	refrigeration	beverages	23, HFC- 32, R-				Manual		Monthly	J
		Industrial	22 etc)			No records	(e.g. invoice,		Every 2 weeks	
		refrigeration:					bills)		Weekly	Ĩ.
		used for				Not applicable			As and	î
	9:	chemical processing, cold		Please fill in		00 - 31	3. 20		when Yearly	
		storage, heating		Total		Actual data			Twice a	
		and cooling		Refrigerant		2	From		year	ķ.
		purposes	Please indicate	Capacity		Converted data	online System		Quarterly	
	Industrial		refrigerant gas			censors and com-	3,300		Once	
	refrigeration		type (e.g. HFC-		kg	Estimated data			every 2 months	
			23, HFC- 32, R-			9 4	3. 25		Monthly	į.
			22 etc)			No records	Manual		Every 2 weeks	
							(e.g. invoice,		Weekly	ř.
						Not applicable	bills)		As and	Ť.
				1	L				when	

- Medium, large & commercial refrigeration at construction site e.g. contractor's site office
- Please fill-in
 EITHER refrigerant
 recharge OR
 refrigerant capacity
 only
- Maybe not applicable for contractor's site



A. PROCESS: REFRIGERANTS FUGITIVE EMISSIONS

No.	Type of Emission Sources	Emission Sources	Potential data source(s)	Case/ Issue	Calculations/ Process	Assumptions/ Remarks
7.	Refrigerants fugitive emissions	i) Refrigerant capacity	Product catalogue Refrigeration capacity specification	Refrigeration capacity is available	 Extract data (in kg) from product specification on total refrigerant capacity If you have few units of airconditioning: Total refrigerant capacity (kg): Σ [No. of air-conditioning units with refrigerant type A x capacity of one unit (kg)] + [No. of airconditioning units with refrigerant type B x capacity of one unit (kg)] 	Please submit data based on refrigerant type e.g. R12, R22, etc.
		ii) Refrigerant recharge volume	2. Maintenance invoices for refrigerant recharge	There is invoice/record on recharge volume	Extract data (in kg) from invoice/record on the amount of refrigerant gas recharge	Please submit data based on refrigerant type e.g. R12, R22, etc.



A	PROCESS : 9	STOVES				
No.	Type of Emission Sources	Emission Sources	Potential data source(s)	Case/ Issue	Calculations/ Process	Assumptions/ Remarks
8.	Stoves	Fuel consumption (natural gas)	1. Fuel usage record/ inventory	Data is recorded through fuel usage inventory	Extract data (in m³) on stove usage from fuel usage record/inventory	Please use "Fuel Usage Tracking" template (Appendix 1)
			Invoice from fuel purchase	Fuel is used for different activities e.g. gen-sets, heavy machinery, etc) No breakdown of fuel usage for different activities	 Identify list if machinery/activities that are also using this fuel Estimate percentage breakdown of how much fuel was used for this activity (e.g. 40% was used for stoves) Estimated fuel usage for stove (in litre or m³) = (% breakdown for stove x total amount of fuel) 	

Data Requirements for CFP- Types of Emission Source



B. TRANSPORT (controlled vehicles):

- 1. Cars
- 2. Light good vehicles
- 3. Heavy good vehicles

- **1. For contractors:** Any contractors' vehicles which is used for the project
- 2. For SDP's Site Coordinator: Sime Darby's vehicles (project site vehicles)

Data Requirements for CFP



B. TRANSPORT: CARS

No.	Emission Sources	Definition of Emission Sources	Types	Total Consumption	Units	Status (please tick) DO NOT LEAVE BLANK	Data Origin (please tick) DO NOT LEAVE BLANK	Data Source (e.g. IFCA system,bill, invoice) DO NOT LEAVE BLANK	Data availability frequency (please tick) DO NOT LEAVE BLANK	Steps to obtain data
						Actual data			Yearly	8.
						Converted data	From online System		Twice a year Quarterly	
			Petrol		L	Estimated data			Once every 2 months	
						No records	Manual (e.g.		Monthly Every 2 weeks	
						Not applicable	invoice, bills)		As and when	
		Fuel consumption of				Actual data	From		Yearly	Į.
		cars that are controlled by Sime Darby or operated in accordance to Sime Darby's operating policies For example:	Diesel			Converted data	online System		Twice a year Quarterly	
8.	Cars				L	Estimated data			Once every 2 months Monthly	
						No records	(e.g. invoice, bills)		Every 2 weeks	
						Not applicable	bills)		As and when	
		Project site car				Actual data		3	Yearly Twice a year	ō.
						Converted data	From online System		Quarterly	
			Compressed natural gas		scf	Estimated data			Once every 2 months	
						No records	Manual (e.g.		Monthly Every 2 weeks	
						Not applicable	invoice, bills)		Weekly As and when	
		Fuel	ĺ	ĺ	Í I	Actual data	i i i		Yearly	
		consumption of cars that are				Converted data	From online		Twice a year Quarterly	
	Cars	controlled by Sime Darby or operated in	Liquefied			Estimated data	System		Once every 2 months	
8.	(cont'd)	accordance to SD's operating	petroleum gas		L	No records	Manual		Monthly Every 2	
		policies					(e.g. invoice, bills)		Weekly	
		For example: Project site car				Not applicable	Unis)		As and when	

- Fuel usage <u>for cars</u> <u>ONLY</u>
- Fuel usage either from petrol, diesel, compressed natural gas or LPG

Data Requirements for CFP



B. TRANSPORT: LIGHT GOOD VEHICLES

B. TF	ANSPORT (for contro	lled vehicles/ pro	ject sites vehicle)									
No.	Emission Sources	Definition of Emission Sources	Types	Total Consumption	Units		Status (please tick) D NOT LEAVE BLANK	Data Origin (please tick) DO NOT LEAVE BLANK	Data Source (e.g. IFCA system,bill, invoice) DO NOT LEAVE BLANK	fre (ple	Data ailability equency ease tick) OO NOT LEAVE BLANK	Steps to obtain data
							Actual data	F	BEANN	Ή	Yearly	
		51					Converted data	From online System			Twice a year Quarterly	
		Fuel consumption of light goods	Petrol		L		Estimated data				Once every 2 months Monthly	
		vehicles that are controlled by					No records	Manual (e.g.			Every 2	
		Sime Darby or						invoice, bills)			weeks Weekly	
	Light good vehicles	operated in accordance to					Not applicable				As and when	
9.	(e.g. vans; between 1.25 and 3.5 tonnes)	Sime Darby's operating policies. For example: Project site trucks weighing					Actual data				Yearly Twice a	
	1.25 and 5.5 tonnes,		Diesel				Actual Guta	From online System			year	
					L		Converted data				Quarterly	
							Estimated data		ual		Once every 2 months	
		between 1.25						Manual (e.g.			Monthly	
		and 3.5 tonnes					No records				Every 2 weeks	
							Not applicable	invoice, bills)			Weekly As and when	
							Actual data				Yearly Twice a	
		Fuel					Converted data	From online System		\vdash	year Quarterly	
		consumption of light goods vehicles that are	Compressed natural gas		scf		Estimated data				Once every 2 months Monthly	
		controlled by Sime Darby or					No records	Manual (e.g.			Every 2 weeks	
	Light good vehicles (e.g. vans; between	operated in accordance to					Not applicable	invoice, bills)			Weekly As and	
9.	1.25 and 3.5 tonnes)	Sime Darby's operating					Actual data	From			When Yearly	
	(cont'd)	policies.					Converted data	online System			Twice a year Quarterly	
		For example: Project site trucks weighing	Liquefied petroleum gas		L		Estimated data				Once every 2 months	
		between 1.25 and 3.5 tonnes					No records	Manual (e.g. invoice,			Monthly Every 2 weeks	
							Not applicable	bills)			Weekly As and	
l					L	<u> </u>					when	

- Fuel usage <u>for light</u> good vehicles ONLY
- E.g. lorries/ trucks between 1.25-3.5 tonnes
- Fuel usage either from petrol, diesel, compressed natural gas or LPG

Data Requirements for CFP



B. TRANSPORT: HEAVY GOOD VEHICLES

No.	Emission Sources	Definition of Emission Sources	Types	Total Consumption	Units		Status please tick) D NOT LEAVE BLANK	Data Origin (please tick) DO NOT LEAVE BLANK		Data Source (e.g. IFCA system,bill, invoice) DO NOT LEAVE BLANK	fr (pl	Data vailability requency lease tick) DO NOT LEAVE BLANK	Steps to obtain data
		Fuel consumption of heavy goods					Actual data		From			Yearly Twice a year	
		vehicles controlled by SD					Converted data		online System			Quarterly Once	
10.	Heavy goods vehicles (e.g. trucks; 3.5 tonnes and above)	or operated in accordance to SD's operating	Petrol		L		Estimated data					every 2 months	
	tornes and above)	policies.					No records		Manual (e.g.			Monthly Every 2 weeks	
		E.g: Project site trucks weighing 4 tonnes.					Not applicable		invoice, bills)			Weekly As and when	
- 33		4 tolliles.					Actual data	9 9				Yearly	N.
			Diesel		L		Converted data		From online System		3 16	Twice a year Quarterly	
							Estimated data			1		Once every 2 months Monthly	86
							No records	(E)	Manual (e.g. invoice,			Every 2 weeks Weekly	
		20 20 20					Not applicable		bills)			As and when	5. J
		Fuel consumption of					Actual data	88	From			Yearly	80
		heavy goods vehicles					Converted data		online System			Twice a year Quarterly	
	Heavy goods vehicles (e.g. trucks; 3.5 tonnes and above)	or operated in accordance to	Compressed natural gas		scf		Estimated data		Manual	3		Once every 2 months Monthly	*
10.	(cont'd)	SD's operating policies.					No records	22	(e.g.	1		Every 2 weeks	
		E.g: Project site trucks weighing					Not applicable		bills)			Weekly As and when	
		4 tonnes.					Actual data					Yearly Twice a year	
						300 32	Converted data		From online System		0 0	Quarterly	S.
			Liquefied petroleum gas		E		Estimated data					Once every 2 months	() (*
							No records	5.	Manual (e.g.			Monthly Every 2 weeks	
							Not applicable	invoice,				As and when	85

- Fuel usage <u>for heavy</u> good vehicles ONLY
- E.g. lorries/ trucks weighing 4 tonnes
- Fuel usage either from petrol, diesel, compressed natural gas or LPG

Data Requirements for CFP



B. TRANSPORT: ALL TYPES (OTHER OPTIONS)

No.	Emission Sources	Definition of Emission Sources	Types	Total Consumption	Units	Status (please tick) DO NOT LEAVE BLANK	Data Origin (please tick) DO NOT LEAVE BLANK	Data Source (e.g. IFCA system,bill, invoice) DO NOT LEAVE BLANK	Data availability frequency (please tick) DO NOT LEAVE BLANK	Steps to obtain data
				(Please fill in		Actual data		3	Yearly	87
				total mileage)		Converted data	From online System	¥	Twice a year Quarterly	
	Cars		Average car (fuel type		km	Estimated data	System	80 8	Once every 2 months	
			unknown)			No records	Manual (e.g.	4	Monthly Every 2 weeks	
		If fuel consumption				Not applicable	invoice, bills)	100	Weekly As and when	
	**	data for cars,		(Please fill in		Actual data			Yearly	
	Light goods vehicles	light goods vehicles and heavy goods vehicles is not available, insert total mileage for		total mileage)		Converted data	From online System	8	Twice a year	
10.			Average vehicle (fuel type unknown)		vehicle -km	Estimated data	Manual	S. 3	Quarterly Once every 2 months Monthly	
		each of the vehicles.	dikilowij			No records	(e.g. invoice,	4	Every 2 weeks	
		This does not include mileage				Not applicable	bills)	8	As and when	e:
		from personal cars.		(Please fill in total mileage)		Actual data		3	Yearly Twice a year	
						Converted data	From		Quarterly	
	Heavy goods vehicles		Average vehicle (fuel type		vehicle -km	Estimated data	System	N.	Once every 2 months	
			unknown)		337453	No records	Manual (e.g.	33 4	Monthly Every 2 weeks	
						Not applicable	invoice, bills)	8	Weekly As and when	

OR

- If you don't have fuel usage, please fill-in total mileage for these vehicles
- Please fill-in either fuel usage OR total mileage only – do not fill-in both section



B. TRANSPORT (CONTROLLED VEHICLES)

No.	Type of Emission Sources	Emission Sources	Potential data source(s)	Case/ Issue	Calculations/ Process	Assumptions/ Remarks
1.	i) Heavy goods vehicles ii) Light goods	Fuel consumption	1. Fuel receipt/ invoice for the vehicle	Data is in litre or scf and fuel is used for that vehicle only	Extract data (in litre or scf) directly from receipt/invoice	
	vehicles iii)Cars iv)Motorcycles		2. Fuel receipt/ invoice for the vehicle	Data is in RM and fuel is used for that vehicle only	Convert data from RM to litre or scf, based on current fuel price: Estimated fuel usage (litre or scf) = [Fuel purchased (RM) / current fuel price (RM/litre or scf)]	Fuel prices (as at 31/12/15): i. Petrol: RM 1.95/ L ii. Diesel: RM 1.90/ L
			3. Mileage/ distance travelled by vehicles	Only distance- travelled data is available OR Fuel receipt/invoice is not available	 Record mileage used for vehicles at the start of project (if possible, record the mileage at 1st Jan AND 1st July) Monitor and track mileage for each activity and each vehicle Consolidate mileage/ distance travelled for all controlled vehicles at the end of each reporting period (30th June AND 31st Dec) 	

5. Guidelines for Data Collection (10/12)



В.	TRANSPORT	(CONTROLLED	VEHICLES)			
No.	Type of Emission Sources	Emission Sources	Potential data source(s)	Case/ Issue	Calculations/ Process	Assumptions/ Remarks
1.	i) Heavy goods vehicles ii) Light goods vehicles iii) Cars iv) Motorcycles	Fuel consumption	4. Invoice from general fuel purchase	 Fuel receipt/invoice specifically for that vehicle is not available Fuel is used for different activities as well e.g. gensets, heavy machineries, etc) No breakdown of fuel usage for different activities, including the controlled vehicles 	 Identify list if machineries/activities that are also using this fuel Estimate percentage breakdown of how much fuel was used for this activity (e.g. 30% was used for light goods vehicles) Estimated fuel usage for light goods vehicles (in litre or scf) = % breakdown of fuel for light goods vehicles x total amount of fuel (litre or scf) 	Note: 1. Litre refers to fuel usage for diesel, petrol or LPG 2. Scf refers to fuel usage for compressed natural gas

Data Requirements for CFP- Types of Emission Source



Type of Emission Sources

C. BUILDINGS:

- i. Purchased electricity
- ii. Back-up electricity generation

For SDP's Site Coordinator: Any electricity usage or generation for buildings outside construction site e.g. main administrative buildings and sales gallery

Data Requirements for CFP



C. BUILDINGS: PURCHASED ELECTRICITY

C. BU	ILDINGS												
No.	Emission Sources	Definition of Emission Sources	Types	Total Consumption	Units		Status (please tick) DO NOT LEAVE BLANK		ata Origin ease tick) DO NOT LEAVE BLANK	Data Source (e.g. IFCA system,bill, invoice) DO NOT LEAVE BLANK	fr (pl	Data vailability equency lease tick) DO NOT LEAVE BLANK	Steps to obtain data
							Actual data					Yearly	
		Total electricity that is bought from the local					Converted data		From online System			Twice a year Quarterly	
11.	Purchased electricity	power supplier (e.g. TNB)	-		kWh		Estimated data		,			Once every 2 months	
		For example:				<u> </u>			Manual		<u> </u>	Monthly Every 2	
		Electricity used					No records		(e.g.			weeks	
		in the project					Non-confluence		invoice, bills)		$ldsymbol{ld}}}}}}$	Weekly	
		site office					Not applicable		unisj			As and when	

- Electricity usage from local supplier only (i.e. TNB)
- E.g. electricity used in main administrative office
- Do not include generated electricity from gen-set usage

5. Guidelines for Data Collection (11/12)



C. BUILDINGS: PURCHASED ELECTRICITY

No.	Type of Emission Sources	Emission Sources	Potential data source(s)	Case/ Issue	Calculations/ Process	Assumptions/ Remarks
1.	Purchased electricity	Electricity consumption (kWh)	1. TNB/ utility bills	Data is in kWh	Extract data (in kWh) directly from bills	Data is complete from 1st to 30th/ 31st every month
2.		2. TNB/ utility bills	Data is in RM	Convert data from RM to kWh based on current electricity tariff: Estimated electricity usage (kWh) = [Electricity usage (RM) / current electricity tariff (RM/kWh)]	Please refer <u>Appendix</u> <u>4</u> for electricity tariff (based on types)	
			3. TNB/ utility bills	Record/bills are incomplete	Extrapolate data based on existing monthly bills Estimated electricity usage (kWh) = [Average electricity usage per month (kWh/mth) x (12-n)] + total electricity usage of n months n denotes the number of months data is available	Electricity usage does not vary substantially from month to month

Data Requirements for CFP



C. BUILDINGS: BACK-UP ELECTRICITY GENERATION

C. BU	C. BUILDINGS												
No.	Emission Sources	Definition of Emission Sources	Types	Total Consumption	Units	Status (please tick) DO NOT LEAVE BLANK		Data Origin (please tick) DO NOT LEAVE BLANK		Data Source (e.g. IFCA system,bill, invoice) DO NOT LEAVE BLANK	Data availability frequency (please tick) DO NOT LEAVE BLANK		Steps to obtain data
							Actual data		From			Yearly	
	Back-up electricity generation (Generator sets)	ration purposes. For example:							online System			Twice a	
							Converted data				\vdash	year Quarterly	
						Estimated data		\vdash				Once	
12.					L		Manual			every 2 months			
12.					-			Manual		\vdash	Monthly		
		Diesel used in site buildings'					No records		(e.g. invoice,		Every 2 weeks		
		back-up]	bills)			Weekly		
		generators					Not applicable					As and when	

- Fuel used for generating electricity for buildings outside construction site
- E.g. diesel used in back-up gen sets for main administrative building

5. Guidelines for Data Collection (12/12)



C. BUILDINGS: BACK-UP ELECTRICITY GENERATION

No.	Type of Emission Sources	Emission Sources	Potential data source(s)	Case/ Issue	Calculations/ Process	Assumptions/ Remarks
2.	Electricity generation	Fuel consumption	1. Fuel usage record/ inventory	Data is recorded through fuel usage inventory	Extract data (in litre or m³) on gen-set usage from fuel usage record/ inventory	Please use "Fuel Usage Tracking" template (Appendix 1)
			2. Invoice from fuel purchase different activities e.g. gen-sets, heavy 1. Identify list if machinery/activities that are also using this fuel 2. Estimate percentage breakdown of how		Note: 1. Litre refers to fuel usage for diesel 2. m3 refers to fuel usage for natural gas	
			3. Machinery specification and running hours	Fuel usage record or invoice are not available	 Identify no. of machinery used for this activity Identify machinerys' capacity & running hours Identify average hourly fuel consumption for gen-sets from the "Estimation Guidelines" Estimated fuel usage for gen-set = [Estimated hourly fuel consumption based on gen-set capacity (refer table) x Running hours x No. of machinery with similar capacity] 	Please refer "Estimation Guidelines" for estimation of hourly fuel consumption (Appendix 2) For unknown gen-set load, please assume it is half loading



Appendix

Fuel Usage Tracking Template

APPENDIX 1



Where the fuel is stored? Sime Darby Property Carbon Footprint Project Fuel Usage Tracking E.g. behind Project Site Office PROPERTY Tracking is for what Site Profile Information : 1) Township/Development name: period? E.g. 1 – 31 Jan 2) Project/Phase ID: 19 3) Contractor and Data owner name: 4) Data Owner Telephone: 5) Data Owner email: Tracking sheet is for 6) Location of fuel storage: what type fuel? 7) Tracking Period: Type(s) of fuel: e.g., petrol, diesel,LPG, natural Please make sure amount is in litres for petrol, diesel Fuel for what use and LPG. Natural gas is in Amount (litres / m3) Date (dd/mm/yy) & AM /PM Remarks * (type of machineries) m3 What is the fuel used for? Please specify type of machinery *e.g, back hoe, bulldozers, crane, generator sets, bar bending machine, forklifts Please ensure to submit the fuel receipt and Deliver Order (DO) together with this template **CFP Guidelines** One Data Sheet per phase/Location

Fuel Consumption Estimation Guidelines for Gen-Sets (1/2) APPENDIX 2



-To be used to estimate average hourly fuel consumption (litre/hour) for gen-sets

OPTION 1: Unknown Rated Power AND Load

Average hourly fuel consumption (litre/hour): 127.85 litre/hour

OPTION 2: Known Gen-set Specification

Fuel usage for each gen-set: Gen-set specification (kg/min) x Time of usage (minute)

Density of fuel (kg/litre)

NOTE:

If density of fuel is not known, please use the following average fuel density:

Diesel: 0.832 kg/litrePetrol: 0.74 kg/litre

Fuel Consumption Estimation Guidelines for Gen-Sets (2/2) APPENDIX 2



To be used to estimate average hourly fuel consumption (litre/hour) for gen-sets

OPTION 3: Known Rated Power OR Load

Range of rated power	Average hourly fuel consumption (litre/ hour)							
	1/4 Load	1/2 Load	3/4 Load	Full Load	Unknown load			
Range 1 (less than 300 kW)	11.66	18.75	26.46	34.40	22.82			
Range 2 (between 300 kW and below 1000 kw)	40.38	67.54	96.58	130.47	83.74			
Range 3 (1000 kW and above)	131.73	222.08	318.47	435.65	276.98			
Range unknown	61.26	102.79	147.17	200.17	127.85			

Fuel Consumption Estimation Guidelines for Heavy Machineries APPENDIX 3



To be used to estimate average hourly fuel consumption (litre/hour) for heavy machineries

OPTION 1: Unknown Type, Rated Power AND Model

Average hourly fuel consumption (litre/hour): 40.1 litre/hour

OPTION 2: Known Type BUT Unknown Rated Power and Model

Type Of Machinery	Average hourly fuel consumption (litre/ hour)
Track-type Tractors	58.3
Pipelayers	16.2
Motor Grader	30.6
Skid Steer Loader, Multi Terrain Loader And Compact Track Loader	10.0
Excavator	24.8
Shovels	220.0
Wheel Tractor-scrapers	70.0
Backhoe Loaders	15.6
Forest Products	22.5
Telehandlers	11.7
Wheel Dozer And Soil Compactor	49.8
Compaction Equipment	12.1
Utility Compactor	4.4
Asphalt Pavers	15.3
Cold Planers	43.7
Road Reclaimer And Soil Stabiliser	54.0
Track Loaders	27.3
Wheel Loaders And Integrated Toolcarriers	35.5

TNB Electricity Tariff – as at 1 Jan 2018 (1/2)



APPENDIX 4

Domestic Consumer

	TARIFF CATEGORY	UNIT	CURRENT RATE (1 JAN 2018)
	Tariff A - Domestic Tariff		
	For the first 200 kWh (1 - 200 kWh) per month	sen/kWh	21.80
	For the next 100 kWh (201 - 300 kWh) per month	sen/kWh	33.40
1.	For the next 300 kWh (301 - 600 kWh) per month	sen/kWh	51.60
	For the next 300 kWh (601 - 900 kWh) per month	sen/kWh	54.60
	For the next kWh (901 kWh onwards) per month	sen/kWh	57.10
	The minimum monthly charge is RM3.00		

Source: https://www.tnb.com.my/residential/pricing-tariffs/

TNB Electricity Tariff – as at 1 Jan 2014 (2/2)

APPENDIX 4



Commercial Tariffs

TARIFF CATEGORY	CURRENT RATES(1 JAN 2014)		
TARIFF B - LOW VOLTAGE COMMERCIAL TARIFF			
For the first 200 kWh (1 -200 kWh) per month	43.5 sen/kWh		
For the next kWh (201 kWh onwards) per month	50.9 sen/kWh		
The minimum monthly charge is RM7.20			
TARIFF C1 - MEDIUM VOLTAGE GENERAL COMMERCIAL TARIFF			
For each kilowatt of maximum demand per month	30.3 RM/kW		
For all kWh	36.5 sen/kWh		
The minimum monthly charge is RM600.00			
TARIFF C2 - MEDIUM VOLTAGE PEAK/OFF-PEAK COMMERCIAL TARIFF			
For each kilowatt of maximum demand per month during the peak period	45.1 RM/kW		
For all kWh during the peak period	36.5 sen/kWh		
For all kWh during the off-peak period	22.4 sen/kWh		
The minimum monthly charge is RM600.00			

Source: https://www.tnb.com.my/commercial-industrial/pricing-tariffs1/

Filling System and Maintenance

APPFNDIX 5



This guidelines is to ensure record management process and storage facilities are effective.

- 1. Establish the filling system indicating the:
 - a. File name
 - b. File code number
 - c. Year
 - d. Volume
- 2. Establish the filing index for carbon by Operating Units:
 - a. Carbon calculator template/data
 - b. Supporting evidences.
 - i. Copy of Electricity bills
 - ii. Copy of Delivery Order (DO), fuel
 - iii. Fuel tracking usage/template.
 - iv. Others. i.e copy of log book, summary of yearly energy consumption and working calculation.
- 3. File according to establish filing index for easy filing and retrieval of records.
- 4. Identify the location of storage and maintenance of records/file. Ensure that the locations selected for storage of suitable environment which prevents damage, deterioration or loss of records.
- 5. All carbon data record shall be kept for a minimum of 5 years.
- 6. Please ensure proper handing over for carbon data record, if there is a changes on carbon PIC. This is to prevent damage or loss of carbon data records.



Thank you

