

# 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

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- 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

## 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

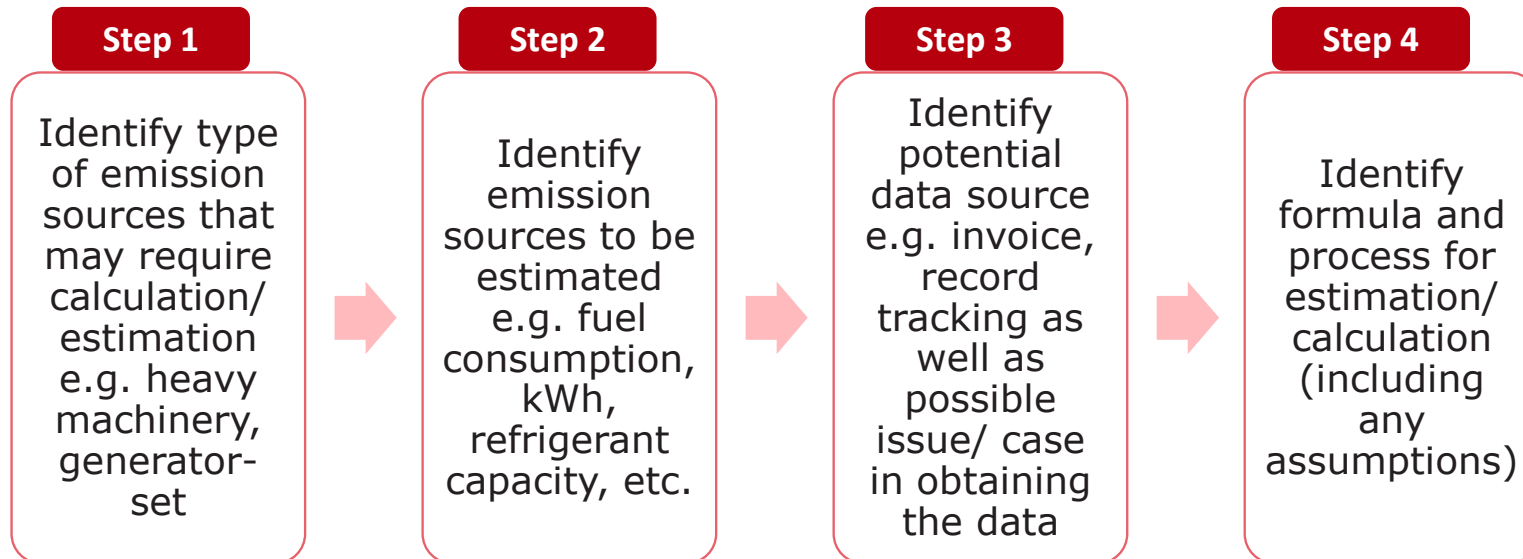


Excluded in CFP since 2010  
onwards



Included in  
CFP for SD  
Property

### 3. Methodologies (1/2)



### 3. Methodologies (2/2)



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 <sup>st</sup> to 30 <sup>th</sup> / 31 <sup>st</sup> every month
			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 <b>Appendix 3</b> 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

**EXAMPLE**

## 4. General Guidelines

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- **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

# 5. Guidelines for Data Collection

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**



# 5. Guidelines for Data Collection

Data Requirements for CFP



## A. PROCESS: PURCHASED ELECTRICITY

A. PROCESS										
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
1.	Purchased electricity	Total electricity that is bought from the local power supplier (e.g. TNB)  For example: Electricity used in the powering welding equipment, etc.	-		kWh	Actual data	From online System		Yearly	
						Converted data			Twice a year	
						Estimated data			Quarterly	
						No records	Once every 2 months			
						Not applicable	Monthly			
						Manual (e.g. invoice, bills)	Every 2 weeks			
							Weekly			
							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**

## 5. Guidelines for Data Collection (1/12)

### 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 <sup>st</sup> to 30 <sup>th</sup> / 31 <sup>st</sup> every month
			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 <b>Appendix 4</b> 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- <i>n</i> )] + total electricity usage of <i>n</i> months  <i>n</i> denotes the number of months data is available	Electricity usage does not vary substantially from month to month

# 5. Guidelines for Data Collection

Data Requirements for CFP



## A. PROCESS: ELECTRICITY GENERATION (GEN-SETS)

A. PROCESS										
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
2.	Electricity generation (Generator sets)	Fuel used for the generation of electricity for operations purposes.  For example: Diesel used in generator sets to power welding equipment, natural gas used in power plants.	Diesel		L	Actual data	From online System		Yearly	
						Converted data			Twice a year	
						Estimated data			Quarterly	
						No records			Once every 2 months	
						Not applicable			Monthly	
						Manual (e.g. invoice, bills)	Every 2 weeks			
							Weekly			
							As and when			
							Yearly			
							Twice a year			
Natural gas	m3	Actual data	From online System	Quarterly						
		Converted data		Once every 2 months						
		Estimated data		Monthly						
		No records		Every 2 weeks						
		Not applicable		Weekly						
	Manual (e.g. invoice, bills)	As and when								
		Yearly								
		Twice a year								
		Quarterly								
		Once every 2 months								

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

## 5. Guidelines for Data Collection (2/12)

### 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 consumption	1. Fuel usage record/ inventory	Data is recorded through fuel usage inventory	Extract data (in litre or m <sup>3</sup> ) on gen-set usage from fuel usage record/ inventory	Please use "Fuel Usage Tracking" template <b>(Appendix 1)</b>
			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	<ol style="list-style-type: none"> <li>1. Identify list if machinery/activities that are also using this fuel</li> <li>2. Estimate percentage breakdown of how much fuel was used for this activity (e.g. 20% was used for gen-sets)</li> <li>3. Estimated fuel usage for gen-set (in litre or m<sup>3</sup>) = (% breakdown for gen-set x total amount of fuel)</li> </ol>	Note: <ol style="list-style-type: none"> <li>1. Litre refers to fuel usage for diesel</li> <li>2. m<sup>3</sup> refers to fuel usage for natural gas</li> </ol>
			3. Machinery specification and running hours	Fuel usage record or invoice are not available	<ol style="list-style-type: none"> <li>1. Identify no. of machinery used for this activity</li> <li>2. Identify machinery capacity &amp; running hours</li> <li>3. Identify average hourly fuel consumption for gen-sets from the "Estimation Guidelines"</li> <li>4. 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]</li> </ol>	Please refer "Estimation Guidelines" for estimation of hourly fuel consumption <b>(Appendix 2)</b>  For unknown gen-set load, please assume it is half loading

# 5. Guidelines for Data Collection

## Data Requirements for CFP

### A. PROCESS: BOILERS

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



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

## 5. Guidelines for Data Collection (3/12)

### 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 <b>(Appendix 1)</b>
			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	<ol style="list-style-type: none"> <li>1. Identify list if machinery/activities that are also using this fuel</li> <li>2. Estimate percentage breakdown of how much fuel was used for this activity (e.g. 10% was used for boiler)</li> <li>3. Estimated fuel usage for boiler (in litre) = % breakdown of fuel for boiler x total amount of fuel (litre)</li> </ol>	

# 5. Guidelines for Data Collection

Data Requirements for CFP



## A. PROCESS: AGRICULTURAL MACHINERY

A. PROCESS																		
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	Converted data			Estimated data	No records		Not applicable	Yearly	Twice a year	Quarterly	Once every 2 months	Monthly
4.	Agricultural Machineries	Fuel consumed by operating agricultural machinery. For example: Tractors used for agricultural purposes, spading machine	Petrol		L	<input type="checkbox"/>	<input type="checkbox"/>	From online System			<input type="checkbox"/>	<input type="checkbox"/>						
						<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>			
						<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>			
						<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>			
			Diesel		L	<input type="checkbox"/>	<input type="checkbox"/>	Manual (e.g. invoice, bills)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
						<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
						<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
			Compressed natural gas		scf	<input type="checkbox"/>	<input type="checkbox"/>	From online System		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
						<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
						<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.	Agricultural Machineries (cont'd)	Fuel consumed by operating agricultural machinery. For example: Tractors used for agricultural purposes, spading machine	Liquefied petroleum gas		L	<input type="checkbox"/>	<input type="checkbox"/>	From online System		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
						<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
						<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
						<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

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

## 5. Guidelines for Data Collection (4/12)

### 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 <b>(Appendix 1)</b>
			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	1. Identify list if machinery/activities that are also using this fuel 2. Estimate percentage breakdown of how much fuel was used for this activity (e.g. 30% was used for agricultural machinery) 3. 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: 1. Litre refers to fuel usage for diesel, petrol or LPG 2. 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	1. Identify size of land area (in hectare) that is used for this activity 2. Estimated fuel usage for ag. machineries = [Average Fuel Consumption x land size used for the activity (in hectare)] 3. Estimated fuel usage for ag. machinery = [4.4 litres/ha x land size used for the activity (in hectare)]	<i>This estimation is for grass cutting activity only</i>  'Average Fuel Consumption for Agricultural Machinery' (for grass cutting) is <b>4.4 litres/ha</b>



# 5. Guidelines for Data Collection

Data Requirements for CFP



## A. PROCESS: HEAVY MACHINERY

A. PROCESS												
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		
5.	Heavy Machineries	Fuel consumed by operating heavy machinery. DO NOT include trucks, heavy goods vehicles or agricultural machineries For example: Backhoe, bulldozers, cranes, skid-loaders, forklifts, tractors (used for construction purposes).	Petrol		L	Actual data	From online System		Yearly			
						Converted data			Twice a year			
						Estimated data			Quarterly			
						No records			Once every 2 months			
						Not applicable			Monthly			
									Every 2 weeks			
			Diesel		L	Actual data	From online System		Yearly			
						Converted data			Twice a year			
						Estimated data			Quarterly			
						No records			Once every 2 months			
						Not applicable			Monthly			
									Every 2 weeks			
Compressed natural gas		scf	Actual data	From online System		Yearly						
			Converted data			Twice a year						
			Estimated data			Quarterly						
			No records			Once every 2 months						
			Not applicable			Monthly						
						Every 2 weeks						
5.	Heavy Machineries (cont'd)	Fuel consumed by operating heavy machinery. DO NOT include trucks, heavy goods vehicles or agricultural machineries For example: Backhoe, bulldozers, cranes, skid-loaders, forklifts, tractors (used for construction purposes).	Liquefied petroleum gas		L	Actual data	From online System		Yearly			
						Converted data			Twice a year			
						Estimated data			Quarterly			
						No records			Once every 2 months			
						Not applicable			Monthly			
									Every 2 weeks			
									Actual data	Manual (e.g. invoice, bills)		Yearly
									Converted data			Twice a year
									Estimated data			Quarterly
									No records			Once every 2 months
									Not applicable			Monthly
												Every 2 weeks

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

## 5. Guidelines for Data Collection (5/12)

### 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 <b>(Appendix 1)</b>
			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	<ol style="list-style-type: none"> <li>1. Identify list if machinery/activities that are also using this fuel</li> <li>2. Estimate percentage breakdown of how much fuel was used for this activity (e.g. 30% was used for heavy machinery )</li> <li>3. Estimated fuel usage for heavy machinery (in litre or scf) = % breakdown of fuel for heavy machinery x total amount of fuel (litre or scf)</li> </ol>	<p>Note:</p> <ol style="list-style-type: none"> <li>1. Litre refers to fuel usage for diesel, petrol or LPG</li> <li>2. Scf refers to fuel usage for compressed natural gas</li> </ol>
			3. Machinery' specification and running hours	Fuel usage record or invoice are not available  OR  Machineries are rented and was filled with unknown amount of fuel	<ol style="list-style-type: none"> <li>1. Identify no. of machinery used for this activity</li> <li>2. Identify machineries' capacity &amp; running hours</li> <li>3. Identify average hourly fuel consumption for heavy machinery from the "Estimation Guidelines"</li> <li>4. 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]</li> </ol>	<p>Please refer "Estimation Guidelines" for estimation of hourly fuel consumption <b>(Appendix 3)</b></p> <p>For unknown heavy machineries load, please assume it is half loading</p>

# 5. Guidelines for Data Collection

Data Requirements for CFP



## A. PROCESS: WELDING & OXYGEN-CUTTING

A. PROCESS																				
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									
6.	Welding & oxygen-cutting (gases)	Fuel and shielding gas used in the process of welding and oxygen cutting.  Should another fuel type be used, indicate in the additional comments field	Acetylene		m3		Actual data	From online System			Yearly									
							Converted data				Twice a year									
							Estimated data				Quarterly									
							No records	Manual (e.g. invoice, bills)			Once every 2 months									
							Not applicable				Monthly									
6.	Welding & oxygen-cutting (gases)  (cont'd)	Fuel and shielding gas used in the process of welding and oxygen cutting.  Should another fuel type be used, indicate in the additional field	CO2 (shielding gas)		kg		Actual data	From online System			Yearly									
							Converted data				Twice a year									
							Estimated data				Quarterly									
							No records	Manual (e.g. invoice, bills)			Once every 2 months									
							Not applicable				Monthly									
								Liquefied petroleum gas					L		Actual data	From online System			Yearly	
															Converted data				Twice a year	
															Estimated data				Quarterly	
															No records	Manual (e.g. invoice, bills)			Once every 2 months	
															Not applicable				Monthly	
										Every 2 weeks										
										Weekly										
										As and when										

- Fuel and shielding gas used in welding & oxygen cutting

## 5. Guidelines for Data Collection (6/12)

### 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 m <sup>3</sup> ) from fuel usage record/ inventory	Please use "Fuel Usage Tracking" template <b>(Appendix 1)</b>
			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	1. Identify list if machinery/activities that are also using this fuel 2. Estimate percentage breakdown of how much fuel was used for this activity (e.g. 5% was used for welding & O <sub>2</sub> -cutting) 3. Estimated fuel usage for welding & O <sub>2</sub> -cutting (in litre or m <sup>3</sup> ) = % breakdown of fuel for welding & O <sub>2</sub> -cutting x total amount of fuel (litre or m <sup>3</sup> )	Note: 1. Litre refers to fuel usage for carbon dioxide (shielding gas) and LPG 2. m <sup>3</sup> refers to fuel usage for acetylene

# 5. Guidelines for Data Collection

Data Requirements for CFP



## A. PROCESS: REFRIGERANTS FUGITIVE EMISSIONS

A. PROCESS										
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
7.	Medium and large commercial refrigeration / industrial refrigeration	Medium and large commercial refrigeration: reach-in refrigerators that may be used for storing food and beverages	Please indicate refrigerant gas type (e.g. HFC-23, HFC- 32, R-22 etc)	Please fill in <b>Total Refrigerant Recharge</b>	kg	<input type="checkbox"/> Actual data <input type="checkbox"/> Converted data <input type="checkbox"/> Estimated data <input type="checkbox"/> No records <input type="checkbox"/> Not applicable	<input type="checkbox"/> From online System  <input type="checkbox"/> Manual (e.g. invoice, bills)	<input type="checkbox"/>	Yearly	
									Twice a year	
									Quarterly	
									Once every 2 months	
									Monthly	
	Medium and large commercial refrigeration	Industrial refrigeration: used for chemical processing, cold storage, heating and cooling purposes	Please indicate refrigerant gas type (e.g. HFC-23, HFC- 32, R-22 etc)	Please fill in <b>Total Refrigerant Capacity</b>	kg	<input type="checkbox"/> Actual data <input type="checkbox"/> Converted data <input type="checkbox"/> Estimated data <input type="checkbox"/> No records <input type="checkbox"/> Not applicable	<input type="checkbox"/> From online System  <input type="checkbox"/> Manual (e.g. invoice, bills)	<input type="checkbox"/>	Yearly	
									Twice a year	
									Quarterly	
									Once every 2 months	
									Monthly	
	Industrial refrigeration	Please indicate refrigerant gas type (e.g. HFC-23, HFC- 32, R-22 etc)	Please fill in <b>Total Refrigerant Capacity</b>	kg	<input type="checkbox"/> Actual data <input type="checkbox"/> Converted data <input type="checkbox"/> Estimated data <input type="checkbox"/> No records <input type="checkbox"/> Not applicable	<input type="checkbox"/> From online System  <input type="checkbox"/> Manual (e.g. invoice, bills)	<input type="checkbox"/>	Yearly		
								Twice a year		
								Quarterly		
								Once every 2 months		
								Monthly		

- 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

## 5. Guidelines for Data Collection (7/12)

### 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	1. Product catalogue 2. Refrigeration capacity specification	Refrigeration capacity is available	1. Extract data (in kg) from product specification on total refrigerant capacity  1. If you have few units of air-conditioning:  Total refrigerant capacity (kg): $\Sigma$ [No. of air-conditioning units with refrigerant type A x capacity of one unit (kg)] + [No. of air-conditioning 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.

## 5. Guidelines for Data Collection (8/12)

### A. PROCESS : 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 m <sup>3</sup> ) on stove usage from fuel usage record/ inventory	Please use "Fuel Usage Tracking" template <b>(Appendix 1)</b>
			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	<ol style="list-style-type: none"> <li>1. Identify list if machinery/activities that are also using this fuel</li> <li>2. Estimate percentage breakdown of how much fuel was used for this activity (e.g. 40% was used for stoves)</li> <li>3. Estimated fuel usage for stove (in litre or m<sup>3</sup>) = (% breakdown for stove x total amount of fuel)</li> </ol>	


# 5. Guidelines for Data Collection

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)



# 5. Guidelines for Data Collection

Data Requirements for CFP



## B. TRANSPORT: CARS

B. TRANSPORT (for controlled vehicles/ project sites vehicle)												
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		
8.	Cars	Fuel consumption of cars that are controlled by Sime Darby or operated in accordance to Sime Darby's operating policies  For example: Project site car	Petrol		L	Actual data	From online System		Yearly			
						Converted data			Twice a year			
						Estimated data			Quarterly			
						No records			Once every 2 months			
			Not applicable			Manual (e.g. invoice, bills)	Monthly					
						Every 2 weeks						
						Weekly						
						As and when						
			Diesel				L		Actual data		From online System	Yearly
									Converted data		Twice a year	
									Estimated data		Quarterly	
									No records		Once every 2 months	
Not applicable	Manual (e.g. invoice, bills)	Monthly										
	Every 2 weeks											
	Weekly											
	As and when											
Compressed natural gas		scf	Actual data	From online System	Yearly							
			Converted data		Twice a year							
			Estimated data		Quarterly							
			No records	Manual (e.g. invoice, bills)	Once every 2 months							
			Not applicable	Monthly								
	Every 2 weeks											
	Weekly											
	As and when											
8.	Cars (cont'd)	Fuel consumption of cars that are controlled by Sime Darby or operated in accordance to SD's operating policies  For example: Project site car	Liquefied petroleum gas		L	Actual data	From online System		Yearly			
						Converted data			Twice a year			
						Estimated data			Quarterly			
						No records	Manual (e.g. invoice, bills)		Once every 2 months			
						Not applicable	Monthly					
	Every 2 weeks											
	Weekly											
	As and when											

- Fuel usage **for cars ONLY**
- Fuel usage either from petrol, diesel, compressed natural gas or LPG

# 5. Guidelines for Data Collection

Data Requirements for CFP



## B. TRANSPORT: LIGHT GOOD VEHICLES

B. TRANSPORT (for controlled vehicles/ project sites vehicle)										
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
9.	Light good vehicles (e.g. vans; between 1.25 and 3.5 tonnes)	Fuel consumption of light goods vehicles that are controlled by Sime Darby or operated in accordance to Sime Darby's operating policies.  For example: Project site trucks weighing between 1.25 and 3.5 tonnes	Petrol		L	Actual data	From online System		Yearly	
						Converted data			Twice a year	
						Estimated data			Quarterly	
						No records			Once every 2 months	
						Not applicable			Monthly	
			Diesel		L	Actual data	From online System		Yearly	
						Converted data			Twice a year	
						Estimated data			Quarterly	
						No records			Once every 2 months	
						Not applicable			Monthly	
9.	Light good vehicles (e.g. vans; between 1.25 and 3.5 tonnes) (cont'd)	Fuel consumption of light goods vehicles that are controlled by Sime Darby or operated in accordance to Sime Darby's operating policies.  For example: Project site trucks weighing between 1.25 and 3.5 tonnes	Compressed natural gas		scf	Actual data	From online System		Yearly	
						Converted data			Twice a year	
						Estimated data			Quarterly	
						No records			Once every 2 months	
						Not applicable			Monthly	
			Liquefied petroleum gas		L	Actual data	From online System		Yearly	
						Converted data			Twice a year	
						Estimated data			Quarterly	
						No records			Once every 2 months	
						Not applicable			Monthly	

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

# 5. Guidelines for Data Collection

Data Requirements for CFP



## B. TRANSPORT: HEAVY GOOD VEHICLES

B. TRANSPORT (for controlled vehicles/ project sites vehicle)																
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	Converted data			Estimated data	No records		Not applicable	Yearly	Twice a year	Quarterly
10.	Heavy goods vehicles (e.g. trucks; 3.5 tonnes and above)	Fuel consumption of heavy goods vehicles controlled by SD or operated in accordance to SD's operating policies.  E.g: Project site trucks weighing 4 tonnes.	Petrol		L	<input type="checkbox"/>	<input type="checkbox"/>	From online System		<input type="checkbox"/>	<input type="checkbox"/>					
						<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>					
						<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>					
						<input type="checkbox"/>	<input type="checkbox"/>	Manual (e.g. invoice, bills)		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		
						<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>			
10.	Heavy goods vehicles (e.g. trucks; 3.5 tonnes and above) (cont'd)	Fuel consumption of heavy goods vehicles controlled by SD or operated in accordance to SD's operating policies.  E.g: Project site trucks weighing 4 tonnes.	Diesel		L	<input type="checkbox"/>	<input type="checkbox"/>	From online System		<input type="checkbox"/>	<input type="checkbox"/>					
						<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>					
						<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>					
						<input type="checkbox"/>	<input type="checkbox"/>	Manual (e.g. invoice, bills)		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		
						<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>					
			Compressed natural gas		scf	<input type="checkbox"/>	<input type="checkbox"/>	From online System		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>					
						<input type="checkbox"/>	<input type="checkbox"/>			Manual (e.g. invoice, bills)	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										
			Liquefied petroleum gas		L	<input type="checkbox"/>	<input type="checkbox"/>	From online System		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>					
						<input type="checkbox"/>	<input type="checkbox"/>			Manual (e.g. invoice, bills)	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>										

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

OR, if amount of fuel consumed is unavailable, please fill in mileage of controlled vehicles:

# 5. Guidelines for Data Collection

Data Requirements for CFP



## B. TRANSPORT: ALL TYPES (OTHER OPTIONS)

B. TRANSPORT (for controlled vehicles/ project sites vehicle)													
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	Converted data	From online System	Manual (e.g. invoice, bills)				
10.	Cars	If fuel consumption data for cars, light goods vehicles and heavy goods vehicles is not available, insert total mileage for each of the vehicles.  This does not include mileage from personal cars.	Average car (fuel type unknown)	(Please fill in total mileage)	km	<input type="checkbox"/>	<input type="checkbox"/>	From online System			<input type="checkbox"/>	Yearly	
						<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	Twice a year	
						<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	Quarterly	
						<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	Once every 2 months	
						<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	Monthly	
	<input type="checkbox"/>		<input type="checkbox"/>	Manual (e.g. invoice, bills)	Every 2 weeks								
	<input type="checkbox"/>		<input type="checkbox"/>		Weekly								
	<input type="checkbox"/>		<input type="checkbox"/>		As and when								
	<input type="checkbox"/>		<input type="checkbox"/>		Yearly								
	<input type="checkbox"/>		<input type="checkbox"/>		Twice a year								
	Light goods vehicles		Average vehicle (fuel type unknown)	(Please fill in total mileage)	vehicle -km	<input type="checkbox"/>	<input type="checkbox"/>	From online System			<input type="checkbox"/>	Yearly	
						<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	Twice a year	
						<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	Quarterly	
						<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	Once every 2 months	
						<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	Monthly	
<input type="checkbox"/>	<input type="checkbox"/>	Manual (e.g. invoice, bills)	Every 2 weeks										
<input type="checkbox"/>	<input type="checkbox"/>		Weekly										
<input type="checkbox"/>	<input type="checkbox"/>		As and when										
<input type="checkbox"/>	<input type="checkbox"/>		Yearly										
<input type="checkbox"/>	<input type="checkbox"/>		Twice a year										
Heavy goods vehicles	Average vehicle (fuel type unknown)	(Please fill in total mileage)	vehicle -km	<input type="checkbox"/>	<input type="checkbox"/>	From online System			<input type="checkbox"/>	Yearly			
				<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	Twice a year			
				<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	Quarterly			
				<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	Once every 2 months			
				<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	Monthly			
<input type="checkbox"/>	<input type="checkbox"/>	Manual (e.g. invoice, bills)	Every 2 weeks										
<input type="checkbox"/>	<input type="checkbox"/>		Weekly										
<input type="checkbox"/>	<input type="checkbox"/>		As and when										
<input type="checkbox"/>	<input type="checkbox"/>		Yearly										
<input type="checkbox"/>	<input type="checkbox"/>		Twice a year										

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

## 5. Guidelines for Data Collection (9/12)

### 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 vehicles iii) Cars iv) Motorcycles	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	
			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	1. Record mileage used for vehicles at the start of project (if possible, record the mileage at 1 <sup>st</sup> Jan AND 1 <sup>st</sup> July) 2. Monitor and track mileage for each activity and each vehicle 3. Consolidate mileage/ distance travelled for all controlled vehicles at the end of each reporting period (30 <sup>th</sup> June AND 31 <sup>st</sup> Dec)	

## 5. Guidelines for Data Collection (10/12)

### B. TRANSPORT (CONTROLLED VEHICLES)

No.	Type of Emission Sources	Emission Sources	Potential data source(s)	Case/ Issue	Calculations/ Process	Assumptions/ Remarks
1.	<ul style="list-style-type: none"> <li>i) Heavy goods vehicles</li> <li>ii) Light goods vehicles</li> <li>iii) Cars</li> <li>iv) Motorcycles</li> </ul>	Fuel consumption	4. Invoice from general fuel purchase	<ul style="list-style-type: none"> <li>1. Fuel receipt/invoice specifically for that vehicle is not available</li> <li>2. Fuel is used for different activities as well e.g. gen-sets, heavy machineries, etc)</li> <li>3. No breakdown of fuel usage for different activities, including the controlled vehicles</li> </ul>	<ul style="list-style-type: none"> <li>1. Identify list if machineries/activities that are also using this fuel</li> <li>2. Estimate percentage breakdown of how much fuel was used for this activity (e.g. 30% was used for light goods vehicles )</li> <li>3. 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)</li> </ul>	<p>Note:</p> <ul style="list-style-type: none"> <li>1. Litre refers to fuel usage for diesel, petrol or LPG</li> <li>2. Scf refers to fuel usage for compressed natural gas</li> </ul>

# 5. Guidelines for Data Collection

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

# 5. Guidelines for Data Collection

Data Requirements for CFP



## C. BUILDINGS: PURCHASED ELECTRICITY

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
11.	Purchased electricity	Total electricity that is bought from the local power supplier (e.g. TNB)  For example: Electricity used in the project site office	-		kWh	Actual data	From online System		Yearly	
						Converted data			Twice a year	
						Estimated data			Quarterly	
						No records	Once every 2 months			
						Not applicable	Monthly			
						Manual (e.g. invoice, bills)	Every 2 weeks			
							Weekly			
							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 1 <sup>st</sup> to 30 <sup>th</sup> / 31 <sup>st</sup> every month
			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 <b>Appendix 4</b> 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) × (12- <i>n</i> )] + total electricity usage of <i>n</i> months  <i>n</i> denotes the number of months data is available	Electricity usage does not vary substantially from month to month

# 5. Guidelines for Data Collection

Data Requirements for CFP



## C. BUILDINGS: BACK-UP ELECTRICITY GENERATION

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	
12.	Back-up electricity generation (Generator sets)	Fuel used for the generation of electricity for operations purposes. For example: Diesel used in site buildings' back-up generators	Diesel		L	Actual data	From online System		Yearly		
						Converted data					Twice a year
						Estimated data	Manual (e.g. invoice, bills)				Quarterly
						No records					Once every 2 months
						Not applicable					Monthly
	Every 2 weeks										
	Weekly										
	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 m <sup>3</sup> ) on gen-set usage from fuel usage record/ inventory	Please use "Fuel Usage Tracking" template <b>(Appendix 1)</b>
			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	1. Identify list if machinery/activities that are also using this fuel 2. Estimate percentage breakdown of how much fuel was used for this activity (e.g. 20% was used for gen-sets) 3. Estimated fuel usage for gen-set (in litre or m <sup>3</sup> ) = (% breakdown for gen-set x total amount of fuel)	Note: 1. Litre refers to fuel usage for diesel 2. m <sup>3</sup> refers to fuel usage for natural gas
			3. Machinery specification and running hours	Fuel usage record or invoice are not available	1. Identify no. of machinery used for this activity 2. Identify machinery's capacity & running hours 3. Identify average hourly fuel consumption for gen-sets from the "Estimation Guidelines" 4. 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 <b>(Appendix 2)</b>  For unknown gen-set load, please assume it is half loading

# Appendix

# Fuel Usage Tracking Template

## APPENDIX 1



Where the fuel is stored?  
E.g. behind Project Site Office

Tracking is for what period? E.g. 1 – 31 Jan 19

Tracking sheet is for what type fuel?

Please make sure amount is in litres for petrol, diesel and LPG. Natural gas is in m3

What is the fuel used for? Please specify type of machinery

Sime Darby Property Carbon Footprint Project  
Fuel Usage Tracking

Site Profile Information :

1) Township/Development name:	
2) Project/Phase ID:	
3) Contractor and Data owner name:	
4) Data Owner Telephone:	
5) Data Owner email:	
6) Location of fuel storage:	
7) Tracking Period:	
8) Type(s) of fuel: e.g., petrol, diesel,LPG, natural gas,etc	

No	Amount (litres / m3)	Date (dd/mm/yy) & AM /PM	Fuel for what use * (type of machineries)	Remarks

Notes: \*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

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: 
$$\frac{\text{Gen-set specification (kg/min)} \times \text{Time of usage (minute)}}{\text{Density of fuel (kg/litre)}}$$

NOTE:

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

- Diesel: 0.832 kg/litre
- Petrol: 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)
<b>Tariff A - Domestic Tariff</b>		
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

<b>TARIFF CATEGORY</b>	<b>CURRENT RATES(1 JAN 2014)</b>
<b>TARIFF B - LOW VOLTAGE COMMERCIAL TARIFF</b>	
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	
<b>TARIFF C1 - MEDIUM VOLTAGE GENERAL COMMERCIAL TARIFF</b>	
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	
<b>TARIFF C2 - MEDIUM VOLTAGE PEAK/OFF-PEAK COMMERCIAL TARIFF</b>	
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/>

# Filing System and Maintenance

## APPENDIX 5



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

1. Establish the filing 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.



Property

# Thank you

