



**Monitoring report form
(Version 04.0)**

Complete this form in accordance with the Attachment "Instructions for filling out the monitoring report form" at the end of this form.

MONITORING REPORT

Title of the project activity	Orb Energy Solar Project, India	
Reference number of the project activity	GS 696	
Version number of the monitoring report	Version 2.1	
Completion date of the monitoring report	29/12/2014	
Registration date of the project activity	12/09/2012	
Monitoring period number and duration of this monitoring period	2 nd Monitoring Period, from 01/01/13 to 31/12/14	
Project participant(s)	Orb Energy Private Limited	
Host Party(ies)	India	
Sectoral scope and selected methodology(ies), and where applicable, applied standardized baseline(s)	Sectoral Scope 1:Energy industries (renewable - / non-renewable sources) AMS – I.A. Electricity generation by the user, version 14 AMS – I.C. Thermal energy production with or without electricity, version 19	
Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD	Year	Emission Reductions (tCO₂e)
	2013	14,526
	2014	14,526
	Total	29,052
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period	Year	Emission Reductions (tCO₂e)
	2013	13,120
	2014	13,396
	Total	26,516
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period up to 31 December 2012(if applicable)	Not applicable	
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period from 1 January 2013 onwards (if applicable).	Year	Emission Reductions (tCO₂e)
	2013	13,120
	2014	13,396
	Total	26,516

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

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The purpose of Gold Standard project activity is dissemination of solar thermal and lighting systems in rural and semi-urban areas in Karnataka. The proposed project through dissemination of solar thermal heater and photovoltaic will utilize the energy from the sun and convert it into thermal and electrical energy respectively to replace the fossil fuel that would have been used otherwise to meet equivalent energy demands. Thus, replacement of fossil fuel usage shall contribute towards reducing equivalent GHG emissions.

The project involves two technologies

1. Solar Water Heating System (SWH): These systems use the thermo-siphoning principle whereby water circulates from the hot water storage tank to the glass tubes by gravity. Since hot water is lighter than cold water, the lighter hot water in the glass tubes rises into the hot water storage tank while the cold water flows in to fill the space left by hot water in the glass tubes. The rate of water movement is determined by how bright and strong the sunshine is. The thermal glass tube or flat plate is placed facing south position for maximum sunlight. Once the system is fully configured, the user can achieve a water temperature of up to 65°C. There are two main categories of the SWH systems i.e. the flat plate and the glass tube systems. These are available in various sizes and capacities according to the varying customer needs. The specifications of the same are mentioned below:

a. Flat Plate type system specifications

System	Sunstream 100C	Sunstream 200C	Sunstream 500C	Sunstream 100CPR	Sunstream 200CPR	Sunstream 300CPR	Sunstream 500CPR
Litres per day	100	200	500	100	200	300	500
Shadow free floor area required	2.5mtrs x 1.2mtrs	2.5mtrs x 2.4mtrs	2.5mtrs x 4.8mtrs	2.5mtrs x 1.2mtrs	2.5mtrs x 2.4mtrs	2.5mtrs x 3.6mtrs	2.5mtrs x 4.8mtrs
Number of collectors	1	2	4	1	2	3	4
Tank operating pressure (max)	1 kgf/cm ² [atmospheric] pressure			2.5 kgf/cm ² pressure			
Water hardness - maximum	200 PPM						
Collector type	Copper tube with fins, coated with selective-black chrome (9 fins in each collector)						
Collector frame	Aluminum with anodised finish / pure polyester powder coating						
Glass	4 mm toughened, low iron, high transmission of energy > 85%						
Inner tank material and type	Stainless steel 304						
Thermal insulation material	PUF, 50mm thickness						
<i>Specifications are subject to change without notice</i>							

b. Glass tube type system specifications

Models	Inner Tank Material	Outer Tank Material	Water Hardness	Water Capacity
Sunstream GV	SS-304 / 0.8mm	SS-430	Less than 200 PPM	100LPD, 150LPD, 200LPD
Sunstream GH	SS-304 / 1mm	SS-430	Less than 800 PPM	100LPD, 150LPD, 200LPD
Sunstream GM	MS / 1.5mm	Coated steel / 0.4mm	Less than 800 PPM	100LPD, 150LPD, 200LPD
<i>Specifications are subject to change without notice</i>				

System	Sunstream 1000	Sunstream 2500	Sunstream 5000	Sunstream 10000	Sunstream 15000
Litres per day	1000	2500	5000	10000	15000
Water temperature	60°C - 65°C on normal sunny conditions				
Tube size	47mm outer dia, 37mm inner dia, 1500mm length				
Number of tubes	128	320	640	1280	1920
Tubes made of	Borosilicade glass				
Impact resistance / hail resistant	<25mm dia				
Collector frame	MS - Powder Coated				
Glass sealing	Silicon rubber ring				
Tilt angle	Fixed				
Hot water tank material	Stainless steel SS-304 / 316				
Thermal insulation	Rockwool insulation at site				
Tank insulation thickness	100mm				
Tank cladding	Aluminum				
Overnight heat loss	5°C - 7°C				
Tank design	Suitable to with stand 1kg / cm ² atmospheric pressure				
Electrical heater	3 nos of 2kW heater with thermostat	3 nos of 3kW heater with thermostat	Boiler Backup		
Hard water tolerance	+ 300 PPM for SS304 and < 800 PPM for SS316				

Specifications are subject to change without notice. Performance conditional on following company's recommended installation procedure

2. Solar Photovoltaic System (SPV): Solar PV systems include direct current (DC) units or alternating current (AC) units. For DC units, the solar unit come with the photovoltaic module, battery and charge controller while the AC units, come with a solar photovoltaic module, console battery and inverter. All these units come in different sizes based on user needs. There are two main categories of the PV systems i.e. solectric (inside lighting) and solite (Street lighting). These are available in various sizes and capacities according to the varying customer needs. The specifications of the same are mentioned below:

a. Solectric DC

Specifications **	Solectric 60	Solectric 90	Solectric 120	Solectric 150	Solectric 180
Example of application and use	1 x 7w and 1 x 11w for 3.5 hours	2 x 7w and 1 x 11w for 3.5 hours	1 x 7w, 1 x 11w and 1 x 18w DC fan for 3.5 hours	1 x 7w, 2 x 11w and 1 x 18w DC fan for 3 hours	2 x 7w, 2 x 11w and 1 x 18w DC Fan for 3 hours
Energy per day (Whrs)	60	90	120	150	180
System voltage (Volts)	12	12	12	12	12
PV module capacity (Wp)	20	30	40	50	60
Charge controller (A)	3	5	5	10	10
Maximum load (Watts)	20	35	55	70	80

*** Specifications are subject to change without notice*

b. Solectric AC

Solectric AC Systems	225	330	440	440U	660	1000	1300	1800	2200	3000
Energy per Day (Watt-hours)	225	330	440	440	660	1000	1300	1800	2200	3000
PV Module Capacity (Wp)	80	120	160	160	240	360	480	640	800	1080
Inverter Capacity (VA)	350	350	350	1300	1300	1300	1300	1300	1300	2200
Maximum Load (Watts)	140	150	150	250	400	450	600	700	900	1000

c. Solectric higher capacity systems

System	Solectric 1000	Solectric 3000	Solectric 4000	Solectric 6000
Energy per Day [Whrs]	1000	3000	4000	6000
System Voltage [Volts]	24	24	24	24
PV Module Capacity [Wp]	360	1120	1440	2160
Charge Controller [A]	20	40	40	40
Inverter Capacity [VA]	1300	1300	2200	2200
Max Load [Watts]	550	1000	1600	1600

System	Solectric 8000	Solectric 10000	Solectric 12000	Solectric 14000
Energy per Day [Whrs]	8000	10000	12000	14000
System Voltage [Volts]	48	48	48	48
PV Module Capacity [Wp]	2880	3840	4320	5120
Charge Controller [A]	80	80	80	80
Inverter Capacity [VA]	4000	4000	6000	6000
Max Load [Watts]	2300	3500	5000	5000

*Specifications are subject to change without notice

d. Solite lighting systems

Specifications *	Solite 75L	Solite 120	Solite 120L	Solite 150L	Solite 180	Solite 240
Available energy per day [Whrs]	75	120	120	150	180	240
System voltage [Volts]	12	12	12	12	12	12
PV module capacity [Wp]	25	40	40	50	60	80
Dusk to dawn charge controller [A]	5	5	5	5	5	10
Battery capacity [Ah]	12V, 40Ah	12V, 40Ah	12V, 40Ah	12V, 60Ah	12V, 60Ah	12V, 100Ah
Light [Watts]	6	9	9	11	11	18 (9 x 2)
Light type	LED	CFL	LED	LED	CFL	CFL
Light output [Lumens]	480	600	720	950	850	1200
Light colour	Cool white	Cool white	Cool white	Cool white	Cool white	Cool white
Luminaires						

* Specifications are subject to change without notice

Total GHG emission reductions achieved in this monitoring year are: 26,516

A.2. Location of project activity

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The project boundary is the geographical area where the SWH and SPV systems are installed and in use. The units included in the project activity are spread across various districts of Karnataka as mentioned in the SWH and SPV installation records. All the units are confined within the project boundary i.e. geographical boundary of Karnataka. Each unit installed under the project activity is uniquely identifiable through a unique serial number.



A.3. Parties and project participant(s)

Party involved ((host indicates a host Party)	Private and/or public entity(ies)project participants(as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (Host)	Orb Energy Private Limited	No

A.4. Reference of applied methodology and standardized baseline

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The project falls under Type I: Renewable Energy category and applies the following approved small scale methodologies:

AMS – I.A. Electricity generation by the user, version 14 and,

AMS – I.C. Thermal energy production with or without electricity, version 19

A.5. Crediting period of project activity

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Renewable Crediting Period (7*3 years)

A.6. Contact information of responsible persons/ entities

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Damian Miller
 CEO
 Orb Energy Pvt. Ltd.
Damian.miller@orbenergy.com
 Project Participant

Rohit Lohia
 Principal Advisor
 Climate-Secure Services
rohit.lohia@climate-secure.com
 Responsible entity for completing the CDM-MR-FORM

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

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The project start date is 28th November 2007 when the first solar unit under the project activity was installed for use. The detail of units installed under the project activity is follows:

Year	Solar Water Heating Systems	Solar Photovoltaic Systems
2007	120	63
2008	1,802	1,099
2009	2,919	2,283
2010	3,411	3,950
2011	4,760	3,851
2012	5,902	2,314
2013	2,493	1,085
Total	21,407	14,645
Installed Capacity (MW)	14.25	0.74
Total Installed capacity (MW)	15	

The Solar based thermal/PV systems have been in continued operation since installation. Ex-post sampling survey was conducted to determine the fraction of installed units that were not operational during the monitoring period. The results of same have been discussed in Annex 1 below and have been used accordingly to determined emission reductions achieved in this monitoring period.

B.2. Post registration changes

B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

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None

B.2.2. Corrections

>>
None

B.2.3. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

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None

B.2.4. Changes to project design of registered project activity

>>
None

B.2.5. Changes to start date of crediting period

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None

B.2.6. Types of changes specific to afforestation or reforestation project activity

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Not applicable as this is not an afforestation or reforestation project activity.

SECTION C. Description of monitoring system

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The Project involves two stage monitoring system

Stage 1: Installation records – at the time of installation, used for determination of number of units sold under the project activity

Data Generation /Aggregation and recording: Orb and its technicians are responsible for sales and installation of SWH and SPVs. Local sales team members book the order and hand over the order copy to local Operations Executive. The operations executive feeds the order information into Orb Energy's in-house CRM software (BITS) at branch. As a control measure this information is checked and processed by the Operations Head at Head Office. After approval, the sales data is fed into Orb Energy SAP. Thereafter, the Accounts Department checks the stocks and generate invoice based on the SAP. The invoice number is re-updated in BITS against respective sale. Subsequently, the Logistics department dispatches the installation kits based on invoice to the concerned branch. Branch receives the installation kits and the branch technicians install the system.

Each unit is assigned a unique serial number for easy identification and avoidance of double counting. Orb ensures successful installation of solar units by having the technician doing the installation to complete Installation Form (IF). A IF form contains relevant information of the project household including the unique serial number and the installation date for the given unit(s). The form is signed by both the technician and the customers as proof of successful installation of the unit. Data captured in the IF is fed into BITS by the branch team which also sends the hard copy of the invoice, installation report to Head office. At the Head Office, the customer care team checks the received documents (hard-copies) from branch and compares with the updated record in BITS and acknowledges it to ensure that the recorded information is correct. The updated documents after verification by the customer care team are archived in the head office. The centralized database contains the following information, besides others:

- Name of customer
- Solar unit type and size
- Date of installation
- Location of the user and Orb Energy branch where the unit was bought from

This aforesaid data management process started from 1st Sep 2011 onwards. Prior to that, the only exception to the above was, the recording of data into soft format was completely managed at the head office. The documents like invoice, installation report etc., were sent directly to the head office customer care team. The customer care executive use to feed all the information available in the hard copies and save the record in the in-house MS access based software. As a best practice, this process was changed in September 2011 to provide access to the branches to update the BITS at local level and adequate data quality controls have been introduced at head office level where each sales record is crosschecked against original hard-copies as explained in paragraph above.

Data Calculation and reporting: The centralize database is transferred to Climate-Secure Services for quality check. The database records are screened by Climate-Secure Services to eliminate any double counted and/or incomplete, invalid entries.

Stage 2: Sampling Surveys – During SWH/SPV operation, used for determination of number of units not operating

Data Generation and Aggregation: On-site, ex-post surveys have been conducted by Orb to determine Unit Operating fraction (UOF) on a sampling basis. Simple random sample of SWH and SPV from the centralized database were picked in accordance with the monitoring frequency (biennial) and confidence/margin of error (95/5). A questionnaire survey to determine UOF were carried out on the selected samples. In practice, 180 customers (90 solar thermal and 90 solar PV) were selected through automated random sampling software (raosoft sample size calculator¹ and stattrek random number generator²). Subsequently, a survey was administered by Orb Energy's technical staff. For details of the sampling refer Annex 1.

¹<http://www.raosoft.com/samplesize.html>, using 95% response distribution

²<http://stattrek.com/statistics/random-number-generator.aspx>

Data Recording: The results from the sampling survey were recorded (annex 1) by surveyors and submitted to Orb. The same were converted to electronic format by Orb and forwarded to Climate-Secure Services for assessment and statistical compliance. The hardcopy reports are archived at Orb head-office.

Data Calculation and reporting: Climate-Secure Services has checked the compliance of the sampling results for 95% confidence and 5% precision (margin of error) as required in case of biennial monitoring. The margin of error obtained on monitored samples is less than 5% and hence the sampling results are acceptable with desired confidence. For calculations refer ER calculator.

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante or at renewal of crediting period

(Copy this table for each piece of data and parameter.)

Data / Parameter:	Sunshine days in a year
Unit:	Days
Description:	Annual sunshine days for the area where the solar units will be in operation
Source of data:	Registered PDD
Value(s) applied:	300 ³
Purpose of data:	Baseline calculations
Additional comment:	Although the number of sunshine days is more than 300, this figure is used to be conservative.

Data / Parameter:	Daily bulb usage
Unit:	Hours/day
Description:	Daily bulb usage
Source of data:	Registered PDD
Value(s) applied:	3.5
Purpose of data:	Baseline calculations
Additional comment:	-

Data / Parameter:	EF _{C, MGrid, y}
Unit:	tCO ₂ /MWh
Description:	Emission factor for the Southern Grid
Source of data:	Registered PDD
Value(s) applied:	0.852
Purpose of data:	Baseline calculations
Additional comment:	This value will be fixed ex ante for the current crediting period and will be revised at the renewal of crediting period.

Data / Parameter:	Specific heat capacity of water
Unit:	KJ/(Kg °C)
Description:	Specific heat capacity of water
Source of data:	Registered PDD
Value(s) applied:	4.187
Purpose of data:	Baseline calculations
Additional comment:	This value is fixed ex ante for the current crediting period and will be revised at the renewal of crediting period.

Data / Parameter:	ΔT
Unit:	°C
Description:	Temperature increase for solar thermal heating

³[http://mnre.gov.in/pdf/Solar%20\(Lantern%20&%20heater\)%20Eng.pdf](http://mnre.gov.in/pdf/Solar%20(Lantern%20&%20heater)%20Eng.pdf), and <http://mnre.gov.in/spv-intro.htm>

Source of data:	Registered PDD
Value(s) applied:	40
Purpose of data:	Baseline calculations
Additional comment:	-

Data / Parameter:	NCV _{fossil fuel}
Unit:	TJ/t
Description:	Net calorific value of baseline fossil fuels
Source of data:	PDD
Value(s) applied:	Kerosene: 0.0438 Diesel: 0.043 LPG: 0.0473
Purpose of data:	Baseline calculations
Additional comment:	This value is fixed ex ante for the current crediting period and will be revised at the renewal of crediting period..

Data / Parameter:	EF _{fossil fuel}
Unit:	tCO ₂ /TJ
Description:	Carbon dioxide emission factor for the baseline fossil fuels
Source of data:	Registered PDD
Value(s) applied:	Kerosene: 71.9 Diesel: 74.1 LPG: 63.1
Purpose of data:	Baseline calculations
Additional comment:	This value is fixed ex ante for the current crediting period and will be revised at the renewal of crediting period.

Data / Parameter:	Average number of bulbs per household
Unit:	Number
Description:	Average number of bulbs per household
Source of data:	Registered PDD
Value(s) applied:	5
Purpose of data:	Baseline calculations
Additional comment:	-

Data / Parameter:	Average mass of fossil fuel for water heating
Unit:	Kg/day
Description:	Average mass of fossil fuel used to heat water per day (for households with fossil fuel baseline)
Source of data:	Registered PDD
Value(s) applied:	Kerosene: 0.15 LPG: 0.28
Purpose of data:	Baseline calculations
Additional comment:	-

Data / Parameter:	Average mass of fossil fuel for lighting
Unit:	Kg/day
Description:	Average mass of fossil fuel used to lighting per day (for households with fossil fuel baseline)
Source of data:	Registered PDD
Value(s) applied:	Kerosene: 0.153, LPG: 0.20 and Diesel: 0.617
Purpose of data:	Baseline calculations
Additional comment:	-

Data / Parameter:	Volume of water heated
Unit:	Litres per day
Description:	Volume of water heated per day per unit (for households with grid electricity baseline)
Source of data:	Registered PDD
Value(s) applied:	50% of thermal capacity
Purpose of data:	Baseline calculations
Additional comment:	-

D.2. Data and parameters monitored

(Copy this table for each piece of data and parameter.)

Data / Parameter:	Thermal units Sales
Unit:	Number of units
Description:	Number of Thermal units by size
Measured/ Calculated / Default:	Monitored
Source of data:	SWH Installation Records
Value(s) of monitored parameter:	21,407
Monitoring equipment:	NA
Measuring/ Reading/ Recording frequency:	Continuous
Calculation method (if applicable):	NA
QA/QC procedures:	The installation records are checked by Climate-Secure Services for elimination of double counting and incomplete / incorrect entries.
Purpose of data:	Baseline calculations
Additional comment:	The revised MR now states that the data archiving is done both manually and electronically as per the stipulated period after end of crediting period. The data is collected as a part of business operations of the PP. No separate monitoring process is required.

Data / Parameter:	Photo voltaic units sales
Unit:	Number of units
Description:	Number of Photo voltaic units by size
Measured/ Calculated / Default:	Monitored
Source of data:	SWH Installation Records
Value(s) of monitored parameter:	14,645
Monitoring equipment:	NA
Measuring/ Reading/ Recording frequency:	Continuous

Calculation method (if applicable):	NA
QA/QC procedures:	The installation records are checked by Climate-Secure Services for elimination of double counting and incomplete / incorrect entries. The installation records may be cross-checked against IF on a sampling basis
Purpose of data:	Baseline calculations
Additional comment:	The revised MR now states that the data archiving is done both manually and electronically as per the stipulated period after end of crediting period. The data is collected as a part of business operations of the PP. No separate monitoring process is required.

Data / Parameter:	Number of units not operating
Unit:	% fraction
Description:	% fraction Solar PV and Thermal systems not operating
Measured/ Calculated / Default:	Calculated
Source of data:	Field survey
Value(s) of monitored parameter:	SWH – 1.00 SPV – 0.943
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Biennial with 95% confidence, 5% margin of error
Calculation method (if applicable):	Number of units not operating is determined based on percentage fraction of units found not operating on a sampling basis through field survey.
QA/QC procedures:	The sample size determination, random sampling and the monitoring questionnaire template were prepared by Climate-Secure Services as external expert assistance. Besides, Lower bound values of confidence intervals are used in case the desired precision is not met in lieu of repeating the sampling and surveys again.
Purpose of data:	Baseline Calculations
Additional comment:	Data archiving is done both manually and electronically as per the stipulated period.

Gold Standard sustainable development indicators:

As outlined in the Gold Standard Passport, the below mentioned Gold Standard sustainability indicators are monitored periodically to track the impact of the project, as in line with the PDD. The variables are as follows:

Data / Parameter:	Quality of employment			
Unit:	Number			
Description:	Type of jobs created (permanent or temporary)			
Measured/ Calculated / Default:	Measured			
Source of data:	Orb employment database			
Value(s) of monitored parameter:	Number of Job created by Type		Year	Total
	Department		2013	
	Accounts	1	--	1
	Admin	1	--	1
	Operations	36	15	51
	Product Development	3	--	3
	Production	3	4	7
	Sales	99	62	161
	Technical	58	9	67
	Grand Total		201	90
The aforesaid table provides the number of permanent jobs created by Orb Energy during the monitoring period. As a conservative measure, employees leaving before three months of their joining date have not been included in the above compilation.				
Monitoring equipment:	-			
Measuring/ Reading/ Recording frequency:	Annually			
Calculation method (if applicable):	-			
QA/QC procedures:	-			
Purpose of data:	SD Monitoring			
Additional comment:	The data archiving is done both manually and electronically as per the stipulated period after end of crediting period. The data is collected as a part of business operations of the PP. No separate monitoring process is required.			

Data / Parameter:	Quantitative employment and income generation
Unit:	Number
Description:	Number of jobs created mainly jobs for local people and income level
Measured/ Calculated / Default:	Measured
Source of data:	Orb employment database

Value(s) of monitored parameter:	<table border="1"> <thead> <tr> <th>Year</th> <th>Number of jobs created</th> </tr> </thead> <tbody> <tr> <td>2013</td> <td>201</td> </tr> <tr> <td>2014</td> <td>90</td> </tr> <tr> <td>Grand Total</td> <td>291</td> </tr> </tbody> </table>		Year	Number of jobs created	2013	201	2014	90	Grand Total	291
	Year	Number of jobs created								
	2013	201								
	2014	90								
Grand Total	291									
As a conservative measure, employees leaving before three months of their joining date have not been included in the above compilation.										
Monitoring equipment:	-									
Measuring/ Reading/ Recording frequency:	Annually									
Calculation method (if applicable):	-									
QA/QC procedures:	-									
Purpose of data:	SD Monitoring									
Additional comment:	The data archiving is done both manually and electronically as per the stipulated period after end of crediting period. The data is collected as a part of business operations of the PP. No separate monitoring process is required.									

Data / Parameter:	Access to affordable clean energy services														
Unit:	Number														
Description:	Number of units installed by type														
Measured/ Calculated / Default:	Measured														
Source of data:	Orb Installation records														
Value(s) of monitored parameter:	SPV – 14,645 SWH – 21,407														
	<table border="1"> <thead> <tr> <th>Year</th> <th>Net New Branches opened</th> <th>Total number of branches</th> </tr> </thead> <tbody> <tr> <td>2013</td> <td>7</td> <td>89</td> </tr> <tr> <td>2014</td> <td>8</td> <td>97</td> </tr> <tr> <td>Grand Total</td> <td>15</td> <td>97</td> </tr> </tbody> </table>			Year	Net New Branches opened	Total number of branches	2013	7	89	2014	8	97	Grand Total	15	97
	Year	Net New Branches opened	Total number of branches												
	2013	7	89												
2014	8	97													
Grand Total	15	97													
Monitoring equipment:	-														
Measuring/ Reading/ Recording frequency:	Annually														
Calculation method (if applicable):	-														
QA/QC procedures:	-														
Purpose of data:	SD Monitoring														
Additional comment:															

Data / Parameter:	Disposal mechanism of the used batteries
Unit:	Number
Description:	Number of old batteries recycled

Measured/ Calculated / Default:	Measured																																													
Source of data:	Orb Maintenance records																																													
Value(s) of monitored parameter:	<p>Statistics for battery disposal are as below</p> <table border="1"> <thead> <tr> <th>Sl. No.</th> <th>Type of Battery</th> <th>Number units</th> <th>of</th> <th>Scraping Agency</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>180 Ah Lead Acid</td> <td>8</td> <td></td> <td>Sakthi Electronics</td> </tr> <tr> <td>2</td> <td>80 Ah Lead Acid</td> <td>7</td> <td></td> <td>Sakthi Electronics</td> </tr> <tr> <td>3</td> <td>60 Ah Lead Acid</td> <td>3</td> <td></td> <td>Southern Batteries</td> </tr> <tr> <td>4</td> <td>40 Ah Lead Acid</td> <td>1</td> <td></td> <td>Southern Batteries</td> </tr> <tr> <td>5</td> <td>80 Ah Lead Acid</td> <td>1</td> <td></td> <td>Southern Batteries</td> </tr> <tr> <td>6</td> <td>80 Ah Lead Acid</td> <td>7</td> <td></td> <td>Southern Batteries</td> </tr> <tr> <td>7</td> <td>30 Ah Lead Acid</td> <td>1</td> <td></td> <td>Southern Batteries</td> </tr> <tr> <td colspan="2">Total</td> <td colspan="3">28</td> </tr> </tbody> </table>	Sl. No.	Type of Battery	Number units	of	Scraping Agency	1	180 Ah Lead Acid	8		Sakthi Electronics	2	80 Ah Lead Acid	7		Sakthi Electronics	3	60 Ah Lead Acid	3		Southern Batteries	4	40 Ah Lead Acid	1		Southern Batteries	5	80 Ah Lead Acid	1		Southern Batteries	6	80 Ah Lead Acid	7		Southern Batteries	7	30 Ah Lead Acid	1		Southern Batteries	Total		28		
Sl. No.	Type of Battery	Number units	of	Scraping Agency																																										
1	180 Ah Lead Acid	8		Sakthi Electronics																																										
2	80 Ah Lead Acid	7		Sakthi Electronics																																										
3	60 Ah Lead Acid	3		Southern Batteries																																										
4	40 Ah Lead Acid	1		Southern Batteries																																										
5	80 Ah Lead Acid	1		Southern Batteries																																										
6	80 Ah Lead Acid	7		Southern Batteries																																										
7	30 Ah Lead Acid	1		Southern Batteries																																										
Total		28																																												
Monitoring equipment:	-																																													
Measuring/ Reading/ Recording frequency:	Annually																																													
Calculation method (if applicable):	-																																													
QA/QC procedures:	-																																													
Purpose of data:	SD Monitoring																																													
Additional comment:	<p>The system to ensure proper disposal of batteries is as follows: Customer logs the complaint in Orb Energy Customer Care Department for battery non performance. Defective batteries under warranty are pulled back from the field and sent to supplier for repair and/or replacement. Post the free repair the batteries are sent back to customer to close the complaint.</p> <p>In case of battery failure after warranty period, the batteries are pulled back from field and sent to supplier to see the possibility of repair on a chargeable basis. If the battery is repairable, then the cost of repair is communicated to customer his consent for repair is sought. In case the battery is beyond repairable condition, then customer is informed accordingly and advised to buy new battery. For buying new battery, a special discount is given for returning the old battery to Orb Energy. This communication goes with every system sold to the customer in local language. Refer annex 2</p>																																													

Data / Parameter:	Preventative maintenance service
Unit:	Number
Description:	No of services being done on each unit
Measured/ Calculated / Default:	Measured
Source of data:	Orb Maintenance records
Value(s) of monitored parameter:	Three preventative maintenance service visits in the first year are carried out for each unit installed.

Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annually
Calculation method (if applicable):	-
QA/QC procedures:	-
Purpose of data:	SD Monitoring
Additional comment:	The data archiving is done both manually and electronically as per the stipulated period after end of crediting period. The data is collected as a part of business operations of the PP. No separate monitoring process is required.

D.3. Implementation of sampling plan

>>

The following parameters have been determined using sampling approach

1. UOF – fraction of units that are in use

The samples have been picked through simple random sampling approach from SWH and SPV population separately. The details of the sampling results are as below:

Details

Description	SWH	SPV
Number of units (sampling population size)	21,407	14,645
Type of Sampling	Simple Random sampling without replacement	Random sampling without replacement
Monitoring Frequency	Biennial	Biennial
Confidence required	95%	95%
Precision required	5%	5%
Sample size considered	90	90
QA/QC	In cases where survey results indicate that desired precision is not achieved, the lower bound of a 95% confidence interval of the parameter value shall be used against repeating the survey efforts to achieve the desired precision.	

Results

Description	UOF	
	SWH	SPV
Article I.		
Number of units sampled initially	90	90
Samples rejected	3	3
Final number of samples	87	87
Minimum sample size required as per raosoft sample size calculator	73	73
Minimum sample size required as per UNFCCC sampling guidelines	82	82
Estimated proportion of operation	0.95	0.95
Units found not operating	0	5
UOF	1	0.943

Precision (margin of error) Achieved (%)	0	4.87%
Acceptability (error less than 5%)	Yes	Yes

$$\text{Precision achieved} = \frac{Z_{\text{value}} \times s.e.}{\sqrt{n}}$$

$$\text{Relative precision achieved (\%)} = \frac{Z_{\text{value}} \times s.e.}{\sqrt{n}} / \bar{x}, \text{ Z-value is used for proportional parameters of}$$

interest and t-value in case of mean parameters of interest.

Where n is the sample size

\bar{x} is the sample mean

$s.e.$ is the standard error of mean

For more information on sampled units is available in ER calculator.

SECTION E. Calculation of emission reductions or GHG removals by sinks

E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

>>

SWH				
Parameter		unit	Value	
Symbol	Description		2013	2014
UOF	Unit Operation Fraction	%	1.000	1.000
Units-thermal	Equivalent thermal units in operation	number	17230	17595
MWh-water heated	MWh generation from volume of water heated	MWh/ year	26536	27122
Baseline Emissions				
BE-elec	Baseline Emission from replacement of grid electricity	tCO ₂ e/year	10765.823	11003.541
BE-kerosene	Baseline Emission from replacement of kerosene	tCO ₂ e/year	21.3	21.8
BE-LPG	Baseline Emission from replacement of LPG	tCO ₂ e/year	824.88	842.33
Total BEy	Total	tCO ₂ e/year	11612.038	11867.654
PEy	Project emissions per year	tCO ₂ e/year	0	0
LEy	Leakage per year	tCO ₂ e/year	0	0
ER _y	Emission reduction achieved by the project activity	tCO ₂ e	11612	11867
SPV				
Parameter		unit	Value	
Symbol	Description		2013	2014
MWh/ year	MWh generated per year	MWh/ year	5574	5650
UOF	Unit Operation Fraction	%	0.943	0.943
BEy	Baseline emissions per year	tCO ₂ e/year	1509	1529
PEy	Project emissions per year	tCO ₂ e/year	0	0
LEy	Leakage per year	tCO ₂ e/year	0	0
ERy	Emission reduction achieved by the project activity	tCO ₂ e/year	1508	1529
Parameter		unit	Value	
Symbol	Description		2013	2014
BEy	Baseline emissions per year	tCO ₂ e/year	13120	13396

E.2. Calculation of project emissions or actual net GHG removals by sinks

>>

NA

E.3. Calculation of leakage

>>

NA

E.4. Summary of calculation of emission reductions or net anthropogenic GHG removals by sinks

Item	Baseline emissions or baseline net GHG removals by sinks (t CO ₂ e)	Project emissions or actual net GHG removals by sinks (t CO ₂ e)	Leakage (t CO ₂ e)	Emission reductions or net anthropogenic GHG removals by sinks (t CO ₂ e)
2013	13,120	0	0	13,120
2014	13,396	0	0	13,396
Total	26,516	0	0	26,516

E.5. Comparison of actual emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Item	Values estimated in ex-ante calculation of registered PDD		Actual values achieved during this monitoring period	
	Year	tCO ₂ e	Year	tCO ₂ e
Emission reductions or GHG removals by sinks (t CO ₂ e)	2013	14,526	2013	13,120
	2014	14,526	2014	13,396

E.6. Remarks on difference from estimated value in registered PDD

>>

The ERs realized compared to those predicted are consistently lower throughout all years of this monitoring period.

E.7. Actual emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Item	Actual values achieved up to 31 December 2012	Actual values achieved from 1 January 2013 onwards
Emission reductions or GHG removals by sinks (t CO ₂ e)	0	26,516

Appendix 1. Contact information of project participants and responsible persons/entities

Project participant and/or responsible person/ entity	<input checked="" type="checkbox"/> Project participant <input type="checkbox"/> Responsible person/ entity for completing the CDM-MR-FORM
Organization name	Orb Energy Pvt. Ltd.
Street/P.O. Box	Magadi Road
Building	#12, SrigandhadaKualu
City	Sunkadakatte, Bangalore
State/Region	Karnataka
Postcode	560091
Country	India
Telephone	+91 80 67711300
Fax	+91 80 67711333
E-mail	
Website	www.orbenergy.com
Contact person	Damian Miller
Title	Chief Executive Officer
Salutation	Mr.
Last name	Miller
Middle name	-
First name	Damian
Department	
Mobile	+91 9900242665
Direct fax	
Direct tel.	
Personal e-mail	damian.miller@orbenergy.com

Project participant and/or responsible person/ entity	<input type="checkbox"/> Project participant <input checked="" type="checkbox"/> Responsible person/ entity for completing the CDM-MR-FORM
Organization name	Climate-Secure Services
Street/P.O. Box	Club Road
Building	65, Pragati Apartments
City	PaschimVihar, Delhi
State/Region	Delhi
Postcode	110063
Country	India
Telephone	+91 11 2521 3080
Fax	
E-mail	info@climate-secure.com
Website	www.climate-secure.com
Contact person	

Title	
Salutation	Mr.
Last name	Lohia
Middle name	
First name	Rohit
Department	
Mobile	
Direct fax	
Direct tel.	+91 11 25213080
Personal e-mail	rohit.lohia@climate-secure.com

Annex1 - Monitoring data summary / ER calculation


Description	SPV	SWH
Sample size	87	87
Confidence level	95%	95%
Permissible Margin of error	5%	5%
Z value at confidence level	1.96	1.96
Operating Proportion	0.943	1.000
standard error of SoF	0.0249	0.0000
relative precision	0.04876	0.00000
Statistical acceptance	Acceptable	Acceptable

SPV				
Parameter		unit	Value	
Symbol	Description	number	2013	2014
MWh/ year	MWh generated per year	MWh/ year	5574	5650
UOF	Unit Operation Fraction	%	0.94	0.94
BE _y	Baseline emissions per year	tCO ₂ e/year	1509	1529
PE _y	Project emissions per year	tCO ₂ e/year	0	0
LE _y	Leakage per year	tCO ₂ e/year	0	0
ER _y	Emission reduction achieved by the project activity	tCO ₂ e/year	1508	1529
Total Emission reductions achieved by SPV units		tCO₂e	3037	

SWH				
Parameter		unit	Value	
Symbol	Description		2013	2014
UOF	Unit Operation Fraction	%	1.000	1.000
Units-thermal	Equivalent thermal units in operation	number	17230	17595
MWh-water heated	MWh generation from volume of water heated	MWh/ year	26536	27122
Baseline Emissions				
BE-elec	Baseline Emission from replacement of grid electricity	tCO ₂ e/year	10765.823	11003.541
BE-kerosene	Baseline Emission from replacement of kerosene	tCO ₂ e/year	21.3	21.8
BE-LPG	Baseline Emission from replacement of LPG	tCO ₂ e/year	824.88	842.33
Total BE _y	Total	tCO ₂ e/year	11612.038	11867.654
PE _y	Project emissions per year	tCO ₂ e/year	0	0
LE _y	Leakage per year	tCO ₂ e/year	0	0
ER _y	Emission reduction achieved by the project activity	tCO₂e	11612	11867
Total Emission reductions achieved by Thermal units		tCO₂e	23,479	


Annex 2

Battery Recycling Instruction Sheet




Recycle Your Battery

NO




Do not throw away your battery

YES



Return your old battery to an Orb Energy branch for a discount on a new battery. We will recycle it.



Recycle Your Battery

- **Do not throw away your battery. It will pollute the environment and potentially damage the health of your family and neighbours. Instead return it to us for a discount on a new battery, and we will ensure it is properly recycled. Thank you.**
- ನಿಮ್ಮ ಹಳೆಯ ಬ್ಯಾಟರಿಯನ್ನು ಹಾಗೆಯೇ ಬಿಡಬೇಡಿ. ಇದು ಪ್ರಕೃತಿಯನ್ನು ಹಾಳು ಮಾಡಬಹುದು ಹಾಗೂ ನಿಮ್ಮ, ನಿಮ್ಮ ಕುಟುಂಬದ, ಹಾಗೂ ಸೆರೆ ಹೊರೆಯವರ ಆರೋಗ್ಯವನ್ನು ಹಾಳು ಮಾಡಬಹುದು. ಆದರೆ ಬದಲಾಗಿ, ಈ ಬ್ಯಾಟರಿಯನ್ನು ನಮ್ಮ ಹತ್ತಿರ ರಿಯಾಯಿತಿ ದರದಲ್ಲಿ ಹೊಸ ಬ್ಯಾಟರಿಯೊಂದಿಗೆ ಬದಲಾಯಿಸಿ. ನಾವು ಈ ಬ್ಯಾಟರಿಗಳನ್ನು ಸರಿಯಾದ ರೀತಿಯಲ್ಲಿ ಪ್ರಸಾರಗಳಿಗೆ ಮಾಡುತ್ತೇವೆ.
- ಗಣಿಪ್ರದೇಶದ ಉದ್ದಕ್ಕೂ ವ್ಯಾಪಿಸಿರುವುದರಿಂದ, ಅಂತಹ ಪರಿಸರದೊಳಗೆ ಅಪಾಯಕಾರಿಯಾದ ಅಂಶಗಳನ್ನು ಹೊರಹಿಡಿಯುವುದು ಅಪಾಯಕಾರಿಯಾಗಿದೆ. ಇಂತಹ ಸ್ಥಳಗಳಲ್ಲಿ ಬ್ಯಾಟರಿಯನ್ನು ಹೊಸದಾಗಿ ಬಿಡುವುದು ಅಪಾಯಕಾರಿಯಾಗಿದೆ. ಇಂತಹ ಸ್ಥಳಗಳಲ್ಲಿ ಬ್ಯಾಟರಿಯನ್ನು ಹೊಸದಾಗಿ ಬಿಡುವುದು ಅಪಾಯಕಾರಿಯಾಗಿದೆ. ಇಂತಹ ಸ್ಥಳಗಳಲ್ಲಿ ಬ್ಯಾಟರಿಯನ್ನು ಹೊಸದಾಗಿ ಬಿಡುವುದು ಅಪಾಯಕಾರಿಯಾಗಿದೆ. ಇಂತಹ ಸ್ಥಳಗಳಲ್ಲಿ ಬ್ಯಾಟರಿಯನ್ನು ಹೊಸದಾಗಿ ಬಿಡುವುದು ಅಪಾಯಕಾರಿಯಾಗಿದೆ.
- **ಮಿ ಬ್ಯಾಟರಿಯನ್ನು ಪಾರವರ್ಯವಿಲ್ಲದಂತೆ ಇಡುವುದು ಮತ್ತು ಮಿ ಕುಟುಂಬದ ಸದಸ್ಯರನ್ನು ಮತ್ತು ಪಕ್ಕದವರನ್ನು ಅಪಾಯಕ್ಕೆ ಒಳಗುಮಾಡುವುದು ಅಪಾಯಕಾರಿಯಾಗಿದೆ. ಬದಲಾಗಿ ಕ್ರೋಸ್ ಬ್ಯಾಟರಿಯನ್ನು ಡಿಸ್ಕಾಂಟ್ ಪಂದಿಗಾಗಿ ದಾನಿ ಮಾಡುವುದು ಮತ್ತು ಅದನ್ನು ಸರಿಯಾದ ರೀತಿಯಲ್ಲಿ ಅಪಾಯಕಾರಿಯಾಗಿ ಮಾಡುವುದು ಅಪಾಯಕಾರಿಯಾಗಿದೆ. ಧನ್ಯವಾದಗಳು.**
- आपली बॅटरी फेंकून देऊ नका. त्यामुळे पर्यावरण दूषित होते आणि आपले कुटुंबिय आणि शेजारी यांच्या प्रकृतीस धोका होऊ शकतो. त्याऐवजी नवीन बॅटरीवर डिस्काउंटसाठी ती आम्हास परत करा, आणि आम्ही ती योग्य रित्या पुनर्निर्मित होते याची खात्री करू. आभारी आहोत.

Annex 3

Baseline information

The following baseline information, as mentioned in the registered PDD, has been used to calculate emission reductions:

Baseline distribution - Lighting		
Location type	Urban	Rural
Distribution	6%	94%
Electricity	70%	59.494%
Diesel	20%	5.696%
Kerosene	0%	32.278%
Gas	10%	2.532%
Baseline distribution - thermal		
Location type	Urban	Rural
Distribution	78.31%	21.69%
Electricity (Grid EF for India)	54.73%	21.951%
Kerosene	0%	4.878%
Gas	20.95%	12.195%

Fuel parameters/yr/household - Thermal	
Yearly Wood Consumption (TJ/yr)	0.019
Yearly Gas Consumption (TJ/yr)	0.004
Yearly Kerosene Consumption (TJ/yr)	0.00163
Wood EF per household (tCO ₂ /yr)	2.182
Gas EF per household (tCO ₂ /yr)	0.251
Kerosene EF per household (tCO ₂ /yr)	0.11700
Volume of water heated per day / capacity(%)	50
Temperature of Intake water (°C)	25
Temperature of outlet water (°C)	65
Number of Sunshine days per year	300

Fuel parameters/yr/household - Lighting	
Yearly Kerosene Consumption (TJ/yr)	0.002
Yearly Diesel Consumption (TJ/yr)	0.008
Yearly Gas Consumption (TJ/yr)	0.003
Yearly Electricity Consumption (MWh/yr)	0.386
Kerosene EF per household (tCO ₂ /yr)	0.142
Diesel EF per household (tCO ₂ /yr)	0.610
Gas EF per household (tCO ₂ /yr)	0.218
Electricity EF per household (tCO ₂ /yr)	0.329
Average wattage per bulb (W)	60
Average number of bulbs per household	5.0
Average lighting hours per day per household (h)	3.5

Annex 4

Monitoring Information

1. Onsite monitoring survey team

Name of Surveyor	Samples covered PV Lighting	Samples covered Thermal	Total
AnandShendagi	2	4	6
Girish Kumar	12	10	22
Hrish	4	10	14
Kumar.M	5	4	9
Prakash Method	15	4	19
Prashant Ashok Shetty	5	12	17
Praveen Benal	12	7	19
ShivayyaHirmath	7	3	10
Suresh Biradhar	11	11	22
Suresh.A	2	13	15
VeeraSamy	12	6	18
Ramesh	0	3	3
Non Response	3	3	6
Grand Total	90	90	180

2. Onsite monitoring survey team

Date of Survey	Samples covered PV Lighting	Samples covered Thermal	Total
04/11/2014	5	11	16
05/11/2014	12	17	29
06/11/2014	13	14	27
07/11/2014	12	11	23
08/11/2014	12	12	24
09/11/2014	10	6	16
10/11/2014	17	7	24
11/11/2014	4	8	12
12/11/2014	1	0	1
13/11/2014	1	0	1
Blank	0	1	1
Non response	3	3	6
Grand Total	90	90	180

CDM-MR-FORM

Sl.No.	Name of Surveyor	Date of survey	CustCode	System	Detail	InsdDate	Operational Status (Yes / No)
159	GIRISH KUMAR	10-Nov-14	ORB/MNG/PVS/0108/0039/O	Solite 180	Solite180	9-Feb-2008	Not Operational
170	SURESH BIRADHAR	08-Nov-14		Soelectric 120	Soelectric120	12-Feb-2008	Yes
223	GIRISH KUMAR	08-Nov-14		Soelectric 75	Soelectric75	6-Mar-2008	Yes
343	PRASHANT ASHOK SHETTY	09-Nov-14		Soelectric 120	Soelectric120	12-Apr-2008	Yes
360	PRASHANT ASHOK SHETTY	Non response		Soelectric 90	Soelectric90	24-Apr-2008	Non response
378	GIRISH KUMAR	08-Nov-14		Solite 75	Solite75	28-Apr-2008	Yes
550	PRAKASH MATHOD	06-Nov-14	SLD 0120 0074	Soelectric 120	Soelectric120	26-Jul-2008	Yes
723	SURESH BIRADHAR	10-Nov-14	SLD 0120 010176	Soelectric 120	Soelectric120	10-Sep-2008	Yes
739	GIRISH KUMAR	04-Nov-14	SLD 0120 0190	Soelectric 120	Soelectric120	25-Sep-2008	Yes
929	PRAKASH MATHOD	07-Nov-14	SLD 060 0039	Soelectric 60	Soelectric60	20-Nov-2008	Yes
1102	PRAKASH MATHOD	06-Nov-14	SLD0600093	Soelectric 60	Soelectric60	19-Dec-2008	Not Operational
1119	GIRISH KUMAR	05-Nov-14	SLD01200363	Soelectric 120	Soelectric120	23-Dec-2008	Yes
1137	GIRISH KUMAR	10-Nov-14	SLD01200361	Soelectric 120	Soelectric120	27-Dec-2008	Yes
1308	VEERA SAMY	08-Nov-14	SLD01500031	Soelectric 150	Soelectric150	30-Jan-2009	Yes
1318	GIRISH KUMAR	05-Nov-14	SLD01200492	Soelectric 120	Soelectric120	31-Jan-2009	Yes
1482	PRAKASH MATHOD	06-Nov-14	SLD00900072	Soelectric 90	Soelectric90	28-Feb-2009	Yes
1498	GIRISH KUMAR	04-Nov-14	SLD01200591	Soelectric 120	Soelectric120	2-Mar-2009	Yes
1688	SURESH BIRADHAR	10-Nov-14	STD01800098	Solite 180	Solite180	25-Mar-2009	Yes
1741	PRAKASH MATHOD	10-Nov-14	SLD01200690	Soelectric 120	Soelectric120	6-Apr-2009	Yes
1896	PRAKASH MATHOD	06-Nov-14	SLD1200745	Soelectric 120	Soelectric120	13-May-2009	Yes
2655	GIRISH KUMAR	12-Nov-14	SLD01201104	Soelectric 120	Soelectric120	21-Sep-2009	Yes
3017	GIRISH KUMAR	06-Nov-14	SLD0600425	Soelectric 60	Soelectric60	17-Nov-2009	Yes
3581	VEERA SAMY	09-Nov-14	SLD00900438	Soelectric 90	Soelectric90	16-Jan-2010	Yes
3960	SURESH.A	11-Nov-14	STD01800143	Solite 180	Solite180	22-Feb-2010	Not Operational
4340	VEERA SAMY	10-Nov-14	SLD00750277	Soelectric 75	Soelectric75	19-Mar-2010	Not Operational
4356	SURESH BIRADHAR	06-Nov-14	SLD0012001197	Soelectric 120	Soelectric120	19-Mar-2010	Yes
4546	SURESH BIRADHAR	08-Nov-14	SLD00900722	Soelectric 90	Soelectric90	1-Apr-2010	Yes
4719	PRAVEEN BENAL	08-Nov-14	SLD01201882	Soelectric 120	Soelectric120	15-Apr-2010	Yes
4736	PRAKASH MATHOD	06-Nov-14	SLD00750334	Soelectric 75	Soelectric75	16-Apr-2010	Yes
4925	ANAND SHENDAGI	13-Nov-14	SLD00600764	Soelectric 60	Soelectric60	5-May-2010	Yes
5099	VEERA SAMY	08-Nov-14	SLD01201974	Soelectric 120	Soelectric120	27-May-2010	Yes
5115	SURESH.A	Non response	SLD00600805	Soelectric 60	Soelectric60	28-May-2010	Non response
5305	KUMAR.M	06-Nov-14	SLD01202053	Soelectric 120	Soelectric120	17-Jun-2010	Yes
5478	VEERA SAMY	09-Nov-14	STD07500299	Solite 75	Solite75	6-Jul-2010	Yes
5494	KUMAR.M	06-Nov-14	SLD00900906	Soelectric 90	Soelectric90	9-Jul-2010	Yes
5513	PRAKASH MATHOD	10-Nov-14	SLD00900974	Soelectric 90	Soelectric90	11-Jul-2010	Yes
5684	PRAKASH MATHOD	07-Nov-14	SLD01202282	Soelectric 120	Soelectric120	27-Jul-2010	Yes
5857	PRAKASH MATHOD	06-Nov-14	SLD00901078	Soelectric 90	Soelectric90	10-Aug-2010	Yes
5874	VEERA SAMY	09-Nov-14	SLD00600939	Soelectric 60	Soelectric60	12-Aug-2010	Yes
6064	HRISH	07-Nov-14	SLD00600900	Soelectric 60	Soelectric60	28-Aug-2010	Yes
6117	SHIVAYYA HIRMATH	05-Nov-14	STD01200260	Solite 120	Solite120	1-Sep-2010	Not Operational
6237	GIRISH KUMAR	10-Nov-14	SLD01202430	Soelectric 120	Soelectric120	13-Sep-2010	Yes
6253	VEERA SAMY	09-Nov-14	SLD00601010	Soelectric 60	Soelectric60	15-Sep-2010	Yes
6272	SHIVAYYA HIRMATH	07-Nov-14	SLD01202469	Soelectric 120	Soelectric120	17-Sep-2010	Yes
6443	HRISH	05-Nov-14	SLD00901431	Soelectric 90	Soelectric90	29-Sep-2010	Yes
6616	PRASHANT ASHOK SHETTY	Non response	SLD01202600	Soelectric 120	Soelectric120	18-Oct-2010	Non response
6633	PRAKASH MATHOD	04-Nov-14	SLD00901491	Soelectric 90	Soelectric90	20-Oct-2010	Yes
6863	KUMAR.M	08-Nov-14	SLD00901537	Soelectric 90	Soelectric90	10-Nov-2010	Yes
7030	PRAVEEN BENAL	06-Nov-14	SLD01202804	Soelectric 120	Soelectric120	25-Nov-2010	Yes
7635	SHIVAYYA HIRMATH	08-Nov-14	STD00750393	Solite 75	Solite75	28-Jan-2011	Yes
7789	HRISH	05-Nov-14	SLD00901824	Soelectric 90	Soelectric90	10-Feb-2011	Yes
8090	KUMAR.M	05-Nov-14	STD01800212	Solite 180	Solite180	9-Mar-2011	Yes
8715	PRAKASH MATHOD	10-Nov-14	SLD00601660	Soelectric 60	Soelectric60	8-Apr-2011	Yes
8911	PRAVEEN BENAL	11-Nov-14	SLD01203431	Soelectric 120	Soelectric120	20-Apr-2011	Yes
9095	PRAVEEN BENAL	05-Nov-14	SLD01203500	Soelectric 120	Soelectric120	7-May-2011	Yes
9111	PRAVEEN BENAL	05-Nov-14	SLD01203504	Soelectric 120	Soelectric120	9-May-2011	Yes
9301	PRAVEEN BENAL	11-Nov-14	SLD00902092	Soelectric 90	Soelectric90	16-Jun-2011	Yes
9474	SURESH BIRADHAR	09-Nov-14	SLA033000243	Soelectric 330	Soelectric330	8-Jul-2011	Yes
9491	VEERA SAMY	06-Nov-14	SLA01203741	Soelectric 120	Soelectric120	9-Jul-2011	Yes
9681	SURESH BIRADHAR	07-Nov-14	SLD00601832	Soelectric 60	Soelectric60	5-Aug-2011	Yes
9721	SURESH BIRADHAR	05-Nov-14	SOL903L8811	Soelectric 90	Soelectric90	8-Aug-2011	Yes
9854	SHIVAYYA HIRMATH	09-Nov-14	STD00750454	Solite 75	Solite75	26-Aug-2011	Yes
9870	SHIVAYYA HIRMATH	09-Nov-14	STD00750457	Solite 75	Solite75	27-Aug-2011	Yes
9888	VEERA SAMY	04-Nov-14	SLD01203850	Soelectric 120	Soelectric120	28-Aug-2011	Yes
10060	PRAVEEN BENAL	05-Nov-14	SLD00602139	Soelectric 60	Soelectric60- 2 Lights (30ah,	19-Sep-2011	Yes
10233	PRASHANT ASHOK SHETTY	10-Nov-14	SLD0120 3966	Soelectric 120	Soelectric120 with 4 lights	7-Oct-2011	Yes
10250	PRASHANT ASHOK SHETTY	11-Nov-14	SLD01800259	Soelectric 180	Soelectric180 with 4 lights, 1	11-Oct-2011	Yes
10439	SURESH BIRADHAR	10-Nov-14	SLD 0120 4063	Soelectric 120	Soelectric120 with 4 lights w	24-Oct-2011	Yes
10493	SHIVAYYA HIRMATH	07-Nov-14	SLD 0120 4053	Soelectric 120	Soelectric120 with 2Light, 18	29-Oct-2011	Yes
10613	PRAKASH MATHOD	07-Nov-14	SLD00602342	Soelectric 60	Soelectric60 with 2 lights	5-Nov-2011	Yes
10629	HRISH	09-Nov-14	SLD 0120 4078	Soelectric 120	Soelectric120 with 4 lights	7-Nov-2011	Yes
10647	SURESH BIRADHAR	08-Nov-14	SLD01203996	Soelectric 120	Soelectric120 with 4 lights	8-Nov-2011	Yes
10819	GIRISH KUMAR	07-Nov-14	STD00750508	Solite 75	Solite75L	23-Nov-2011	Yes
10992	PRAVEEN BENAL	05-Nov-14	SLD00602306	Soelectric 60	Soelectric60-(9W, 11W, 30a	6-Dec-2011	Yes
11008	SURESH.A	10-Nov-14	SLD 0090 2786	Soelectric 90	Soelectric90 with 3 lights	8-Dec-2011	Yes
11198	PRAVEEN BENAL	10-Nov-14	SLD0150268	Soelectric 150	Soelectric150 with 5 lights (3	28-Dec-2011	Yes
11371	PRAVEEN BENAL	07-Nov-14	SLD00602499	Soelectric 60	Soelectric60 with 2 lights (9W	16-Jan-2012	Yes
11388	PRAKASH MATHOD	07-Nov-14	SLD00602450	Soelectric 60	Soelectric60 with 2 lights (9W	18-Jan-2012	Yes
11406	VEERA SAMY	08-Nov-14	slid 0090 2765	Soelectric 90	Soelectric90 with 5 lights	21-Jan-2012	Yes
11578	PRAVEEN BENAL	10-Nov-14	SLD 0075 0553	Soelectric 75	Soelectric75 - 3L no casing ar	25-Feb-2012	Yes
12010	VEERA SAMY	08-Nov-14	SLD 0090 3061	Soelectric 90	Soelectric90 with 5 lights	28-Apr-2012	Yes
12165	VEERA SAMY	09-Nov-14	SLD 0090 3126	Soelectric 90	Soelectric90 with 5 lights	25-May-2012	Yes
13471	ANAND SHENDAGI	04-Nov-14	SLD0090 3420	Soelectric 90	Soelectric90-3 Lights (40ah, r	19-Dec-2012	Yes
13850	PRASHANT ASHOK SHETTY	10-Nov-14	STD0120 1041	Solite 120	Solite 120L - LC	11-Feb-2013	Yes
14056	SURESH BIRADHAR	07-Nov-14	SLD01205453	Soelectric DC	Soelectric 120 - 4 Lights (40a	7-Mar-2013	Yes
14229	PRAVEEN BENAL	10-Nov-14	SLD 0120 5618	Soelectric DC	Soelectric 120 - 2L,16W Fan (23-Mar-2013	Yes
14246	KUMAR.M	06-Nov-14	SLD 0120 5635	Soelectric DC	Soelectric 120 - 2L,16W Fan (24-Mar-2013	Yes
14436	PRAKASH MATHOD	05-Nov-14	SLD 0120 5742	Soelectric DC	Soelectric 120 - 4 Lights (40a	8-Apr-2013	Yes
14609	PRASHANT ASHOK SHETTY	10-Nov-14	SLD 0120 0015	Soelectric DC	Soelectric 120 (60Ah, Econor	6-May-2013	Yes
14625	SHIVAYYA HIRMATH	07-Nov-14	SLD0120 0118	Soelectric DC	Soelectric 120 (40Ah, Econor	9-May-2013	Yes

CDM-MR-FORM

Sl.No.	Name of Surveyor	Date of Survey	CustCode	System	Detail	InsdDate	Operational Status (Yes / No)
232	HRISH	04-Nov-14	ORB/BR2/SWH/0108/0001	Sunstream 200G	Sunstream200G	02-Feb-2008	Yes
248	PRASHANT ASHOK SHETTY	09-Nov-14	ORB/KDP/SWH/0108/0107	Sunstream 200G	Sunstream200G	05-Feb-2008	Yes
326	HRISH	08-Nov-14		Sunstream 200G	Sunstream200G	21-Feb-2008	Yes
502	KUMAR.M	05-Nov-14	SUG 0200-PO279	Sunstream 200G	Sunstream200G	05-Apr-2008	Yes
526	PRASHANT ASHOK SHETTY	07-Nov-14	ORB/KRK/04/08	Sunstream 200G	Sunstream200G	12-Apr-2008	Yes
552	GIRISH KUMAR	04-Nov-14		Sunstream 200G	Sunstream200G	18-Apr-2008	Yes
803	GIRISH KUMAR	08-Nov-14		Sunstream 200G	Sunstream200G	10-Jun-2008	Yes
1056	PRASHANT ASHOK SHETTY	05-Nov-14	SUG A0200 0099	Sunstream 200G	Sunstream200G	09-Aug-2008	Yes
1080	VEERA SAMY	07-Nov-14	SUG A0200 0074	Sunstream 200G	Sunstream200G	15-Aug-2008	Yes
1358	SURESH.A	10-Nov-14	SUG C0150 0068	Sunstream 200G	Sunstream200GV	04-Oct-2008	Yes
1611	PRASHANT ASHOK SHETTY	11-Nov-14	SUG B0150 0164	Sunstream 150G	Sunstream150GV	15-Nov-2008	Yes
1635	KUMAR.M		SUG B0150 0127	Sunstream 150G	Sunstream150GV	20-Nov-2008	Yes
1662	SURESH.A	11-Nov-14	SUG 2000221	Sunstream 200G	Sunstream200G	24-Nov-2008	Yes
1912	SHIVAYYA HIRMATH	Non response	130.10.08.721MLT	Sunstream 100G	Sunstream100G	31-Dec-2008	Non response
1926	GIRISH KUMAR	05-Nov-14	SUGB01000129	Sunstream 100G	Sunstream100GV	01-Jan-2009	Yes
2165	HRISH	11-Nov-14	SUGB2000007	Sunstream 200G	Sunstream200GV	06-Feb-2009	Yes
2190	GIRISH KUMAR	05-Nov-14	SUGB01500408	Sunstream 150G	Sunstream150GV	08-Feb-2009	Yes
2467	VEERA SAMY	08-Nov-14	SUGA02000530	Sunstream 200G	Sunstream200G	18-Mar-2009	Yes
2545	SURESH.A	Non response	SUGA01500029	Sunstream 150G	Sunstream150G	31-Mar-2009	Non response
2771	SURESH.A	08-Nov-14	SUGA01500015	Sunstream 150G	Sunstream150GP	30-Apr-2009	Yes
3880	SURESH.A	08-Nov-14	SUGB2000090	Sunstream 200G	Sunstream200G	29-Sep-2009	Yes
4410	SURESH.A	10-Nov-14	SUGA2000182	Sunstream 200G	Sunstream200G	20-Nov-2009	Yes
5234	RAMESH	04-Nov-14	SUGC1500238	Sunstream 150G	Sunstream150GP	06-Feb-2010	Yes
5789	GIRISH KUMAR	05-Nov-14	SUGB1500056	Sunstream 150G	Sunstream150GV	30-Mar-2010	Yes
6343	RAMESH	06-Nov-14	SUGA(L)2000239	Sunstream 200G	Sunstream200G	04-Jun-2010	Yes
6367	SURESH.A	08-Nov-14	SUGB(S)1500025	Sunstream 150G	Sunstream150GH	07-Jun-2010	Yes
6645	PRASHANT ASHOK SHETTY	05-Nov-14	SUGA(L)1000129	Sunstream 100G	Sunstream100G	14-Jul-2010	Yes
6898	SURESH BIRADHAR	06-Nov-14	SUGB1500232	Sunstream 150G	Sunstream150GV	18-Aug-2010	Yes
6922	GIRISH KUMAR	06-Nov-14	SUGB1500235	Sunstream 150G	Sunstream150GV	21-Aug-2010	Yes
7199	PRASHANT ASHOK SHETTY	11-Nov-14	SUGB1500307	Sunstream 150G	Sunstream150GV	27-Sep-2010	Yes
7452	HRISH	04-Nov-14	SUGA(L)2000291	Sunstream 200G	Sunstream200G	25-Oct-2010	Yes
7477	SURESH BIRADHAR	06-Nov-14	SUGB(S)1000114	Sunstream 100G	Sunstream100GH	28-Oct-2010	Yes
7754	RAMESH	06-Nov-14	SUGB(F)1000022	Sunstream 100G	Sunstream100GH	21-Nov-2010	Yes
8007	GIRISH KUMAR	05-Nov-14	SUGA(L)1000064	Sunstream 100G	Sunstream100G	10-Dec-2010	Yes
8031	ANAND SHENDAGI	05-Nov-14	SUGB(F)1500046	Sunstream 150G	Sunstream150GH	13-Dec-2010	Yes
8058	SURESH BIRADHAR	04-Nov-14	SUCD1000093	Sunstream 100C	Sunstream100C	15-Dec-2010	Yes
8308	PRASHANT ASHOK SHETTY	10-Nov-14	SUGB1500507	Sunstream 150G	Sunstream150GV	05-Jan-2011	Yes
8562	SURESH BIRADHAR	07-Nov-14	SUGB(F)1000169	Sunstream 100G	Sunstream100GH	25-Jan-2011	Yes
8586	SURESH BIRADHAR	04-Nov-14	SUCD1000114	Sunstream 100C	Sunstream100C	27-Jan-2011	Yes
8863	PRASHANT ASHOK SHETTY	07-Nov-14	SUGB1000117	Sunstream 100G	Sunstream100GV	15-Feb-2011	Yes
8941	ANAND SHENDAGI	05-Nov-14	SUGB(F)1500228	Sunstream 150G	Sunstream150GH	19-Feb-2011	Yes
9116	SURESH BIRADHAR	08-Nov-14	SUGB(F)2000259	Sunstream 200G	Sunstream200GH	03-Mar-2011	Yes
9140	KUMAR.M	05-Nov-14	SUCD1000127	Sunstream 100C	Sunstream100C	04-Mar-2011	Yes
9167	PRAVEEN BENAL	07-Nov-14	SUGB1000164	Sunstream 100G	Sunstream100GV	05-Mar-2011	Yes
9418	PRASHANT ASHOK SHETTY	11-Nov-14	SUGB1500768	Sunstream 150G	Sunstream150GV	24-Mar-2011	Yes
9671	SURESH.A	09-Nov-14	SUGB(L)1000289	Sunstream 100G	Sunstream100GV	14-Apr-2011	Yes
9695	PRASHANT ASHOK SHETTY	05-Nov-14	SUGB(F)1000420	Sunstream 100G	Sunstream100GH	16-Apr-2011	Yes
10032	KUMAR.M	05-Nov-14	SUGB(F)200385	Sunstream 200G	Sunstream200GH	06-May-2011	Yes
10276	HRISH	06-Nov-14	SUGB(F)02000653	Sunstream 200G	Sunstream200GH	20-May-2011	Yes
11159	HRISH	04-Nov-14	SUGB(F)02000867	Sunstream 200G	Sunstream200GH	01-Aug-2011	Yes
11385	PRASHANT ASHOK SHETTY	11-Nov-14	SUGB(F)1500343	Sunstream 150G	Sunstream150GV	24-Aug-2011	Yes
11825	PRAVEEN BENAL	07-Nov-14	SUG(F)01500982	Sunstream 150G	Sunstream150GH	09-Oct-2011	Yes
12739	SURESH BIRADHAR	09-Nov-14	SUG B (F)020000040	Sunstream 200G	Sunstream200GH	13-Dec-2011	Yes
13025	PRAKASH MATHOD	04-Nov-14	SUGB(F)0200132	Sunstream 200G	Sunstream200GH	02-Jan-2012	Yes
13294	PRAVEEN BENAL	07-Nov-14	SUCD 0100 0206	Sunstream 100C	Sunstream100C	24-Jan-2012	Yes
13318	HRISH	06-Nov-14	SUGB(F) 0200 00205	Sunstream 200G	Sunstream200GH	25-Jan-2012	Yes
13595	SURESH BIRADHAR	05-Nov-14	SUGD(F)02000554	Sunstream 200G	Sunstream200GV	08-Feb-2012	Yes
13849	ANAND SHENDAGI	07-Nov-14	SUGB(F)02000317	Sunstream 200G	Sunstream200GH	21-Feb-2012	Yes
13873	SURESH.A	07-Nov-14	SUGB(F)2000021	Sunstream 200G	Sunstream200GH	23-Feb-2012	Yes
14150	PRAKASH MATHOD	04-Nov-14	SUGB(F)02000353	Sunstream 200G	Sunstream200GH	12-Mar-2012	Yes
14209	HRISH	09-Nov-14	SUGB(F)02000418	Sunstream 200G	Sunstream200GH	16-Mar-2012	Yes
14403	PRAVEEN BENAL	08-Nov-14	SUGB(F)01000179	Sunstream 100G	Sunstream100GH	28-Mar-2012	Yes
14427	SURESH BIRADHAR	08-Nov-14	SUGB (F) 0150 0374	Sunstream 150G	Sunstream150GV	29-Mar-2012	Yes
14454	GIRISH KUMAR	06-Nov-14	SUG B (F) 0200 0407	Sunstream 200G	Sunstream200GH	30-Mar-2012	Yes
14705	VEERA SAMY	04-Nov-14	SUG B (F) 0200 0499	Sunstream 200G	Sunstream200GH	13-Apr-2012	Yes
14958	PRAKASH MATHOD	10-Nov-14	SUG B (F) 0200 0619	Sunstream 200G	Sunstream200GH	30-Apr-2012	Yes
14982	PRAVEEN BENAL	06-Nov-14	SUGB(F) 01500505	Sunstream 150G	Sunstream150GV	02-May-2012	Yes
15259	PRAVEEN BENAL	11-Nov-14	SUGB(F)150 0540	Sunstream 150G	Sunstream150GV	09-May-2012	Yes
15337	SURESH.A	05-Nov-14	SUGB02000411	Sunstream 200G	Sunstream200GV	24-May-2012	Yes
15512	HRISH	10-Nov-14	SUG E (F) 0200 0423	Sunstream 200G	Sunstream200GM	29-May-2012	Yes
15537	ANAND SHENDAGI	06-Nov-14	SUG B (F) 0150 0293	Sunstream 150G	Sunstream150GH	01-Jun-2012	Yes
15563	SURESH.A	05-Nov-14	SUGB(F)01500256	Sunstream 150G	Sunstream150GM	06-Jun-2012	Yes
15814	GIRISH KUMAR	05-Nov-14	SUGB(F)01000097	Sunstream 100G	Sunstream100GV	20-Jun-2012	Yes
16067	SHIVAYYA HIRMATH	10-Nov-14	SUG E (F) 1500329	Sunstream 150G	Sunstream150GM	09-Jul-2012	Yes
16091	SURESH.A	09-Nov-14	SUG B(F)0200 0517	Sunstream 200G	Sunstream200GH	11-Jul-2012	Yes
16368	VEERA SAMY	07-Nov-14	SUG(F)2000672	Sunstream 200G	Sunstream200GM	28-Jul-2012	Yes
16622	SURESH.A	09-Nov-14	SUG E (F) 0150 0439	Sunstream 150G	Sunstream150GM	13-Aug-2012	Yes
16646	VEERA SAMY	07-Nov-14	SUG E(F)01500421	Sunstream 150G	Sunstream150GM	16-Aug-2012	Yes
16672	GIRISH KUMAR	08-Nov-14	SUGB(F) 2000836	Sunstream 200G	Sunstream200GH	18-Aug-2012	Yes
16923	SURESH.A	10-Nov-14	SUG E (F)1500531	Sunstream 150G	Sunstream150GM	08-Sep-2012	Yes
17556	VEERA SAMY	08-Nov-14	SUG E (F) 0200 1127	Sunstream 200G	Sunstream200GM	20-Oct-2012	Yes
17782	SURESH BIRADHAR	06-Nov-14	SUG E(F) 0200 1254	Sunstream 200G	Sunstream200GM	05-Nov-2012	Yes
19690	PRASHANT ASHOK SHETTY	11-Nov-14	SUG B (F) 200 0918	Sunstream 200G	Sunstream 200GV - R3	08-Feb-2013	Yes
20245	HRISH	06-Nov-14	SUG E(F)02002517	Sunstream 200G	Sunstream 200GM	08-Mar-2013	Yes
20546	SHIVAYYA HIRMATH	08-Nov-14	SUG E(F) 0200 2352	Sunstream 200G	Sunstream 200GM	26-Mar-2013	Yes
20799	PRASHANT ASHOK SHETTY	Non response	SUG B(F)0200 1029	Sunstream 200G	Sunstream 200GV - R3	09-Apr-2013	Non response
20824	PRAKASH MATHOD	04-Nov-14	SUG E(F) 0150 1667	Sunstream 150G	Sunstream150 GM	12-Apr-2013	Yes
21101	PRAVEEN BENAL	05-Nov-14	SUG E (F) 0200 2886	Sunstream 200G	Sunstream 200GM	29-Apr-2013	Yes
21354	SURESH BIRADHAR	06-Nov-14	SUG E(F) 0150 1737	Sunstream 150G	Sunstream150 GM	11-May-2013	Yes
21378	SHIVAYYA HIRMATH	06-Nov-14	SUC F(F)02000059	Sunstream 200C	Sunstream 200 CPR	12-May-2013	Yes

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
(a) 04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>; • Editorial improvement.
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net anthropogenic GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01	28 May 2010	EB 54, Annex 34. Initial adoption.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: monitoring report		