



Voluntary Carbon Standard
Project Description

07-07- 2009

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1 Description of the Project:

1.1 Project title

Bundled Wind power project in Tamil Nadu, India, co-ordinated by Tamil Nadu Spinning Mills Association (TASMA-II)

Version: 01

Date : 07/07/2009

1.2 Type/Category of the project

As per the Voluntary Carbon Standard (VCS-2007.1), the Project falls under UNFCCC Clean Development Mechanism.

I.

II. AS PER APPLIED APPROVED CONSOLIDATED METHODOLOGY, ACM 0002, VERSION 10 THE PROJECT TYPE AND CATEGORY IS AS BELOW:

III.

Project Type : Renewable Energy Project

Category : “Grid connected electricity generation from Renewable sources”

The project activity is a grouped project, consisting of 812 wind turbine generators (WTGs) installed in different passes (Aralvaimozhi, Senkottah and Palghat passes) located in the State of Tamil Nadu, India.

1.3 Estimated amount of emission reductions over the crediting period including project size:

This project activity falls under ‘projects’ group and involves 460.18 MW wind energy generation which reduces approximately 758093 tCO₂e per year. The generated power from this project activity is supplied to the southern regional grid of India, dominated by the fossil fuel based power plants.

Table-1: Estimated amount of emission reductions over crediting period (From 1st April 2006 to 31st March 2016)

Years	Annual estimation reductions in tonnes of CO ₂ e
2006-07	758093
2007-08	758093
2008-09	758093
2009-10	758093
2010-11	758093
2011-12	758093
2012-13	758093
2013-14	758093
2014-15	758093

2015-16	758093
Total estimated reductions in tonnes of CO₂ e	7580930
Total No of crediting years	10
Annual average over the crediting period of estimated reductions (tonnes of CO₂e)	758093

1.4 A brief description of the project:

Purpose of the project activity: The project activity is a grouped Wind power project in Tamil Nadu, India, co-ordinated by Tamil Nadu Spinning Mills Association (referred as TASMA II). The intent of the Project Activity is to reduce GHG emission and promote sustainable development by use of renewable energy (Wind) for generation of power by bringing together a number of investors with small power requirements to invest into wind turbines. In the absence of the project activity, the equivalent amount of electricity would have been generated by the power plants connected with the southern grid which is predominantly based on fossil fuel.

Project Scenario: The project activity involves the installation of WTGs which generates approximately 817.63 GWh of Power. The Project activity thus reduces the anthropogenic emissions of greenhouse gases (GHGs) in to the atmosphere associated with the equivalent amount of electricity generation from renewable and cleaner energy source i.e. Wind. The electricity thus generated is already being supplied to the Southern regional grid. All the 812 WTGs involved in this project have commissioned and connected with the southern regional grid. The electricity thus generated is being used in one of the following manners:

1. Export the entire energy to the southern grid
(Or)
2. Wheel the required energy for captive consumption and banking the surplus energy or exporting the surplus energy to the grid.

The baseline scenario of the project activity would be the same as that of the pre-project scenario i.e. drawing power from the grid connected fossil fuel intensive power plants as per the ACM0002 methodology.

Contribution of the project activity to sustainable development:

Ministry of Environment and Forests, Government of India has suggested that social well being, economic well being, environmental well being and technological well being are the four indicators for sustainable development in its host country approval eligibility criteria for Clean Development Mechanism (CDM) projects¹. This criteria can also be adopted for VCS.

The project activity contributes to sustainable development in the following manner.

I) Social well being

The project activity generates 804 GWh of power per year from clean and renewable source (wind). The districts of Kanyakumari, Tirunelveli and Coimbatore of Tamilnadu where the WTGs are located now, had no proper road connectivity prior to the project commencement. It is only after the installation of the windmills, there is improvement in road connectivity in these areas. These roads are being used by the local villagers. The feedback from the local people, points to the positive impact of the project. The project will also aid the State electricity grid in meeting out their electricity demand. The local residents near the project sites are getting employment and new business opportunities are growing due to this project activity.

II) Economic well being

The lands purchased for the wind farms are mostly barren lands and are located in the remote areas. After commencement of this project activity, there is an increase in the value of these lands which would have otherwise fetched lower revenue. The local residents are also getting jobs as a result of the project activity. There is an increase in the business opportunities for the local people in establishing small shops and allied activities. In addition to the above, there are some rural and infrastructural developments around the wind farms.

III) Environmental well being

The project activity generates clean energy without any GHG emissions which is commonly associated in the field of electricity generation. Hence, the project related

¹ http://cdmindia.nic.in/host_approval_criteria.htm

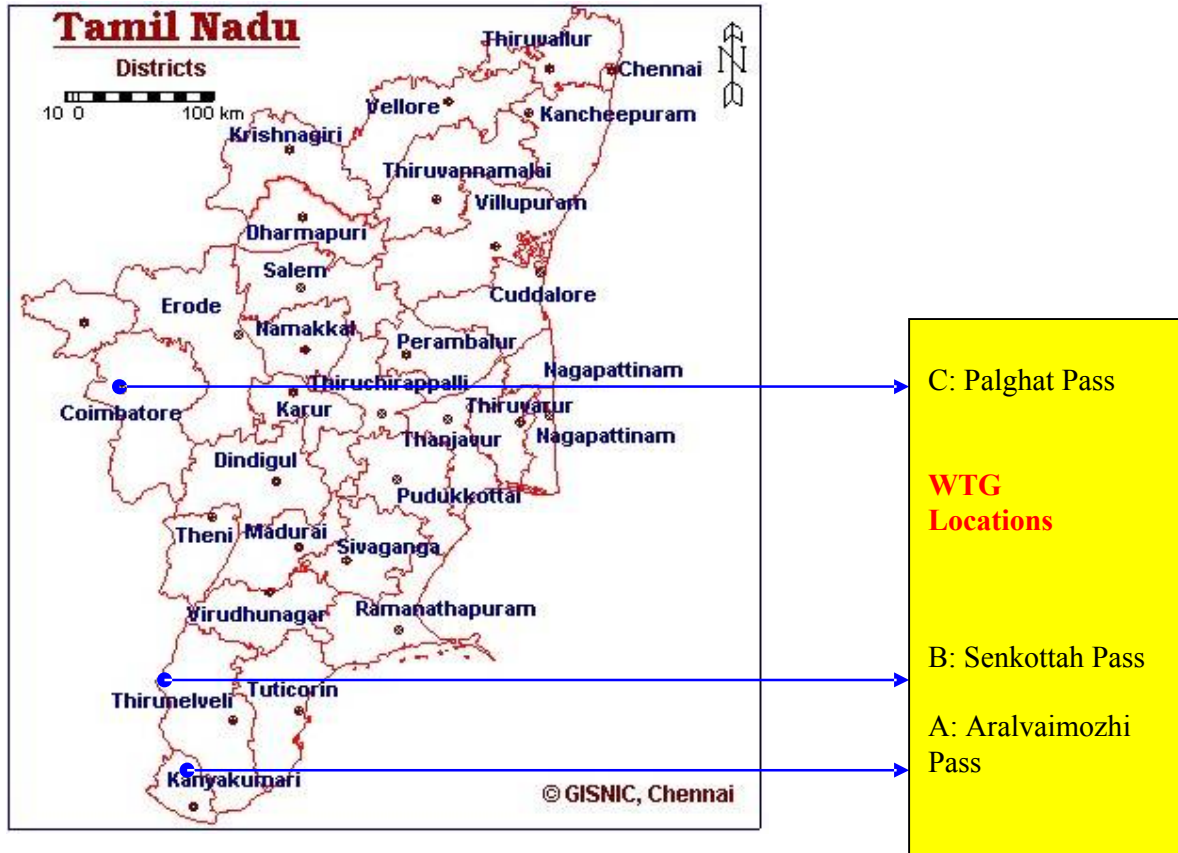
GHG emissions are nil for the project activity, as it uses natural energy (wind) as the only source for the purpose of electricity generation.

IV) Technological well being

All the WTGs in the project activity are from well known International Manufacturers with latest technology. This will further demonstrate the development of new technologies in harnessing the renewable energy and will promote further percolation of developed technology throughout the world. The clean renewable electricity thus generated is being supplied to the respective grid to meet out the demands.

1.5 Project location including geographic and physical information allowing the unique identification and delineation of the specific extent of the project:

The map below shows the geographical location of the project sites. All these sites are identified as potential locations for the wind electricity generation by the Ministry of New and Renewable Energy (MNRE), Govt. of India. The details of the individual WTGs under the project activity, like location, Capacity, unique High Tension Service Connection (HTSC) number and Global Positioning System, are presented in Appendix 1 at the end of VCS PD.



1.6 Duration of the project activity/crediting period:

The starting date of the project activity is 31st January 2004. (Based on the earliest commissioning date of one of the Wind Mills in the group)

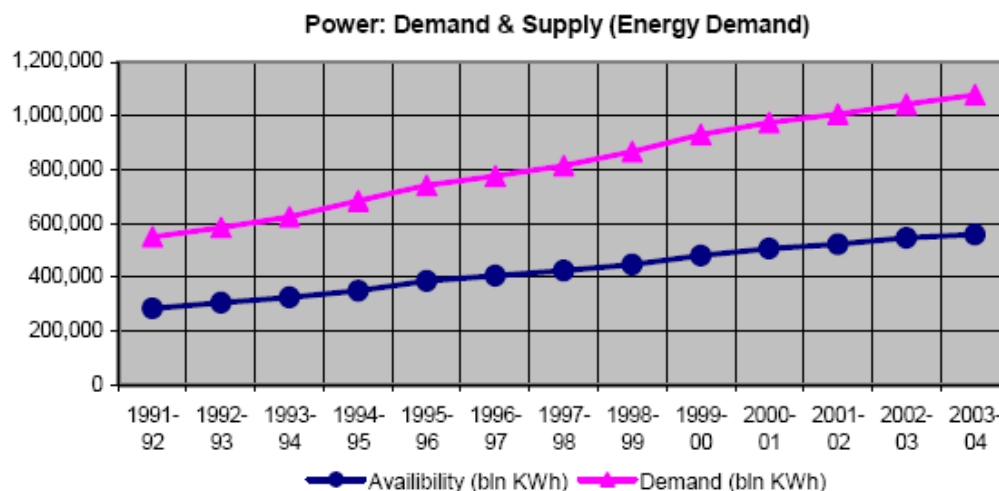
The Renewable crediting period starts from 01/04/2006, which can be renewed once.

The starting date of credit period is considered from 1st April 2006. The chosen crediting period is 10 years (from 1st April 2006 to 31st March 2016).

1.7 Conditions prior to project initiation:

Power generation, supply and demand scenario in India2:

A total of 123,014 MW capacity of Power Generation was installed in India till 2004-05. In 2003-04, the demand for energy was increased by 2 percent which accounts to a shortfall of 559 billion kWh, while peak demand rose to 84,574 MW. In the period 1992-93 to 2003-04, the energy demand for electricity increased at a CAGR (compounded annual growth rate) of around 6 per cent, from 305 billion kWh to 559 billion kWh. During the same period, supply increased at a CAGR of around 6 per cent. As a result, the energy shortage grew from 25 billion kWh (8.33 per cent) in 1992-93 to 40 billion kWh in 2003-04 (7.15 per cent).



As the figure shows, India has constantly been plagued with a demand supply gap in the Power sector. Such a gap is a major hindrance to the growth of a developing economy like India. The Government of India set up the Kohli Committee under Mr. Udes Kohli to estimate the investment required in the sector over the tenth and eleventh plans to bridge this demand-supply gap.

2 <http://cii.in/documents/September2005-IEPU.pdf>

In spite of significant growth in electricity generation over the years, the shortage of power continues to exist in India primarily on account of growth in demand for power, outstripping the growth in generation and generating capacity addition.

Therefore in the absence of the project activity, equal amount of electricity would have been generated from the operation of existing fuel mix in the grid comprising mainly fossil fuel based power plants and future capacity expansion connected to the grid.

1.8 A description of how the project will achieve GHG emission reductions and/or removal enhancements:

The project activity generates electricity, using renewable source of energy (wind) which emits no GHG. In the absence of the project, the energy would have been drawn from the grid which is predominantly fossil fuel based generation. Hence the project displaces the fossil fuel based generation. Thus the project activity achieves GHG emission reduction by employing a cleaner technology to generate electricity.

1.9 Project technologies, products, services and the expected level of activity:

Technology:

Wind energy generation is a clean technology for production of electricity, with no emission of Green House Gases.

The project activity has employed Horizontal Axis WTGs of different capacities. All the WTGs deployed in the project activity are from well-known international manufacturers. All these machines are type tested and approved by the Ministry of New and Renewable Energy (MNRE), Government of India.

The Technical Components of WTG are as follows:

Main Tower	- Metallic tower of height ranging from 45 m to 80 m
Nacelle	- Houses, Main shaft, Gearbox and Generator
Main shaft	- Rotated by the Blade connected to gearbox/generator
Gearbox	- To step up Generator RPM (not used in some models)
Generator	- Induction Type generators
Blade	- Fibre blades to take off at wind speeds from 4 m /sec to 2.5 m /sec
Hub	- Connects, the blade and main shaft and houses the brakes

A unit system of WTG, consisting of the above subsystems works in conduction with, LT line and HT line. The turbine generates power at 400 to 690 volts, which is stepped up to 11/22/33 KV by the local transformers kept at EB yard near the windmill. The HT transmissions are connected to service 110 KV/230 KV substations provided by TNEB. Metering equipment is electronic multipurpose meter of accuracy class 0.5% required for the project. The main meter shall be installed and owned by TNEB and the LCS (Local Control System) meter shall be installed and maintained by the owner of the project i.e. the main meter at EB yard which is under control of TNEB and another meter is located at the control panel of WTGs. The TNEB personnel every month, records the reading of the main meter in the presence of Site In-charge.

The choice of capacity of the WTG was based on,

- The present and future power requirements of the mill owners.
- The Availability, lead time and cost of WTGs with the suppliers
- Wind Characteristics and the locations

The project activity involves the installation of 812 WTGs with the following capacity distributions.

Table: 1

Capacity Wise Details			
SL. NO	CAPACITY (KW)	NO.OF MACHINES	TOTAL CAPACITY (MW)
1	225	196	44.10
2	230	5	1.15
3	250	145	36.25
4	330	11	3.63
5	350	46	16.1
6	500	97	48.5
7	600	54	32.4
8	750	78	58.5
9	800	20	16
10	850	15	12.75
11	1250	120	150.0
12	1500	3	4.5
13	1650	22	36.3
	TOTAL	812	460.18

The sub projects covered by this project activity involves the following makes of WTGs

Table: 2

MAKE WISE DETAILS				
SL. NO	MAKE	CAPACITY (KW)	NO.OF MACHINES	TOTAL CAPACITY (MW)
1	NEPC	225	135	30.375
2	Southern Wind Farms Ltd.,	225	48	10.80
3	VESTAS RRB	225	13	2.925
4	ENERCON	230	5	1.15
5	Chiranjeevi Wind Energy Ltd.,	250	16	4.00
6	PIONEER WINCON	250	108	27.00
7	SRIRAM EPC LTD	250	21	5.25
8	ENERCON	330	11	3.63
9	SUZLON	350	46	16.10
10	VESTAS RRB	500	97	48.50
11	ENERCON	600	18	10.80

12	SUZLON	600	4	2.40
13	VESTAS RRB	600	32	19.20
14	NEG MICON/VESTAS	750	68	51.00
15	NEPC	750	2	1.50
16	VESTAS	750	8	6.00
17	ENERCON	800	20	16.00
18	PIONEER ASIA WIND TURBINES	850	15	12.75
19	SUZLON	1250	120	150.00
20	SUZLON	1500	3	4.50
21	NEG MICON/VESTAS	1650	20	33.00
22	VESTAS	1650	2	3.30
	TOTAL		812	460.18

The wind turbines have an average lifetime of 20 years as per the industry standards.

1.10 Compliance with relevant local laws and regulations related to the project:

The wind power project does not require compliance of any local laws and regulations. However, the NOC has to be obtained from TNEB for setting up the wind mill. PPA/WA has to be executed with TNEB for selling / captive usage and all these requirements have been complied with.

Table 6: Relevant applicable laws & regulations and Compliance status of the project activity

Regulations	Compliance status
NOC from TNEB	Complied
Power Purchase Agreement with TNEB	Complied
Wheeling agreement	Complied

The project proponent has conducted discussions with members of the local population. The local population welcomes the project due to various benefits, such as employment, development of infrastructure in the area and improvement in their standards of living.

1.11 Identification of risks that may substantially affect the project's GHG emission reductions or removal enhancements:

The risks that may substantially affect the project's GHG emission reductions are

- Wind availability
- Grid availability
- Machine availability (repair & maintenance)

1.12 Demonstration to confirm that the project was not implemented to create GHG emissions primarily for the purpose of its subsequent removal or destruction.

The project activity primarily aims at displacement of grid electricity in which majority of power is generated from fossil fuels like coal. Therefore the aim of the project activity is to reduce GHG emissions instead of to create GHG emissions primarily for the purpose of its subsequent removal or destruction.

1.13 Demonstration that the project has not created another form of environmental credit (for example renewable energy certificates).

The project so far has not created any other form of environmental credit the same is confirmed in our declaration letter submitted to DOE. Also, the project is seeking for registration under CDM. However, the emission reductions out of the VCS programme i.e. the VCUs will be considered only for the period during which no CDM/CER benefits are claimed.

Reference: <http://cdm.unfccc.int/Projects/Validation/DB/4R4NBZ8HU31NRZMNQAMH37GJN07926/view.html>

1.14 Project rejected under other GHG programs (if applicable):

The project activity has never been rejected under any other GHG program. However, it is applied under another GHG program (UNFCCC CDM) and is under Host Country Approval & Validation by DOE. VCU revenue will be considered only for the period during which no CDM/CER benefits are claimed.

1.15 Project proponents roles and responsibilities, including contact information of the project proponent, other project participants:

Table 7: Roles and Responsibilities of the Project Proponent

Project Proponent	Roles & Responsibilities
Tamil Nadu Spinning Mills Association (TASMA)	- To ensure that the project activity is in compliance with all the local laws and regulations applicable to the project activity. - It is under the purview of their duty to ensure that parameters are monitored efficiently and the records are maintained in a proper manner, so that it eases the validation/verification procedures.

Table 8: Contact Information of the project proponents

Organization:	Tamilnadu Spinning Mills Association (TASMA)
Street/P.O.Box:	Door No 24, 11th Cross Street, Thiruvalluvar Nagar
Building:	Spencer Compound
City:	Dindigul
State/Region:	Tamil Nadu
Postfix/ZIP:	624 003
Country:	India

Telephone:	+91 451 2433637 / +91 451 2428756 / +91 451 2431513
FAX:	+91 451 2421467
E-Mail:	dispa@rediffmail.com , tasma_dispa@yahoo.co.in
URL:	www.tasma.in
Represented by:	K.Venkatachalam
Title:	Chief Advisor
Salutation:	Mr.
Last Name:	Karuppaih
Middle Name:	
First Name:	Venkatachalam
Department:	All
Mobile:	+91 9842133318 / +91 94433 69858
Direct FAX:	+91 451 2421467
Direct tel:	+91 451 2431513
Personal-Mail:	kvmasterminds@gmail.com

1.16 Any information relevant for the eligibility of the project and quantification of emission reductions or removal enhancements, including legislative, technical, economic, sectoral, social, environmental, geographic, site-specific and temporal information.

The project qualifies all the requirements of GHG programme including CDM and VCS programme. The project does not perceive any risk related to quantification of emission reductions or removal enhancements, including legislative, technical, economic, sectoral, social, environmental or geographic.

The project participants have obtained all clearances from the necessary relevant Authorities. The project activities' contribution towards sustainable development in terms of society, environment and economy (both direct and indirect impacts) are stated below:

Economic Impacts:

- Creates employment opportunities in the project vicinity during erection, commissioning, operation & maintenance.
- Employment creation both temporary and permanent
- Improving the local infrastructure like roads
- Improved power supply

Social Impacts:

- Promotes self employment among the unemployed youth (eg. civil contractors, spare parts shops, hotels, restaurants, security personnel etc.,)
- Connectivity improvements in the local area through improved local transportation.

Environmental Impacts:

The environmental footprint of Wind Turbine Generators is minimal, since:

- Wind is one of the cleanest forms of renewable energy and power generation does not involve any fossil fuels.
- Produces electricity without GHG emissions.
- The materials used in the WTGs are non hazardous in nature.
- Impact on land, air and water is nil, since there are no discharges or Emissions during the project lifetime.

Technological Impacts:

There are continuous research and development on the geometry of the wind blades, height of towers, diameters of towers etc., which improves well for the technological well being in the development of wind energy to produce clean electricity.

Also, the generated electricity from the project activity is connected to the grid. The project activity improves the supply of electricity with clean, renewable wind power while contributing to the regional/local economic development. Wind energy plants provide local distributed generation, and provide site-specific reliability and transmission and distribution benefits including:

- improved power quality;
- reactive power control;
- mitigation of transmission and distribution congestion,

All the above are the contributions of the project activity for the sustainable development.

1.17 List of commercially sensitive information (if applicable):

There is no commercially sensitive information which has been excluded from the public version of the VCS PD for this project activity.

2 VCS Methodology:

2.1 Title and reference of the VCS methodology applied to the project activity and explanation of methodology choices:

The project activity uses approved consolidated baseline and monitoring methodology: **ACM0002**.

Title: – “Consolidated Baseline Methodology for grid connected electricity generation from renewable sources”, Version 10 (EB 47), Sectoral scope: 1

The methodology ACM0002 refers to the latest approved versions of the following tools:

Table 11 Tools applicable to the project activity

Title	Tool for the demonstration and assessment of additionality
Version	5.2
Dated	26 th August 2008
Reference	http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html

Title	Tool to calculate the emission factor for an electricity system
Version	1.1
Dated	29 th July 2008
Reference	http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html

2.2 Justification of the choice of the methodology and why it is applicable to the project activity:

Approved methodology ACM 0002 “Grid connected electricity generation from Renewable sources”, version 10, has been considered as the appropriate methodology for this project activity because,

IV.TABLE 12: JUSTIFICATION FOR APPLICABLE METHODOLOGY I.E. ACM0002.

V.

S.No.	Applicability conditions of ACM0002	Project activity conditions	Remark
1	The project activity is the installation or modification / retrofit of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit.	The project activity has installed wind turbine generators for generation of electricity that use renewable energy source (wind.)	The applicability condition is met out.
2	In case of hydro power plants: - The project activity is implemented in an existing reservoir, with no change in the volume of the reservoir.	The project activity is not a hydro power plant.	Not relevant for the present project activity.

	- The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m². - The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m².		
3	The geographic and system boundaries for the relevant electricity grid can be clearly identified and information on the characteristics of the grid is available	The project activity is connected to the southern grid of India. Hence, its boundary is clearly identifiable and characteristics are available from the records of Central Electricity Authority, Government of India (www.cea.nic.in).	The applicability condition is met out.
4	Applies to grid connected electricity generation from landfill gas to the extent that it is combined with the approved "Consolidated baseline methodology for landfill gas project activities" (ACM0001)	The project activity does not involve electricity generation from landfill gas	Not relevant for the present project activity
5	5 years of historical data (or 3 years in the case of non hydro project activities) have to be available for those project activities where modification/retrofit measures are implemented in an existing power plant	The project activity is installation of new wind turbine generators and does not involve modification/retrofit	Not relevant for the present project activity

2.3 Identifying GHG sources, sinks and reservoirs for the baseline scenario and for the project:

As per the methodology, the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the

VCS project power plant is connected to i.e. it includes all the power plants connected to the southern grid. The schematic diagram of the project boundary is shown below.

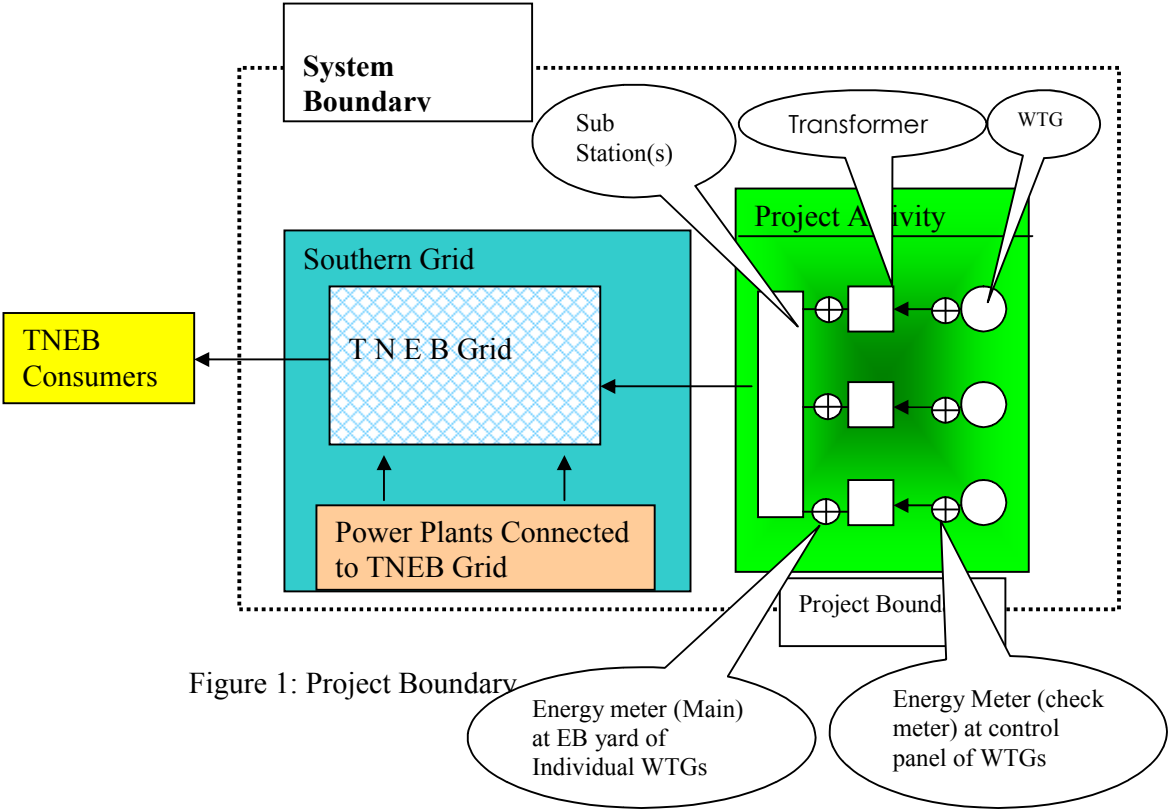


Figure 1: Project Boundary

Table 13: Sources and Gases Included in the Project Boundary

Source		Gas	Included?	Justification/ explanation
Baseline	GHGs emissions from electricity generation by existing fuel mix in the southern grid that is displaced due to the project activity	CO ₂	Yes	Main emission source
		CH ₄	No	Minor emission source, excluded for simplification. This is conservative.
		N ₂ O	No	Minor emission source, excluded for simplification. This is conservative.
Project activity	Electricity generation by wind turbine generators	CO ₂	No	As per methodology ACM 0002, wind energy project does not create any GHG emissions.
		CH ₄	No	The project activity is renewable energy project which does not create any emissions.
		N ₂ O	No	The project activity is renewable energy project which does not create any emissions.

2.4 Description of how the baseline scenario is identified and description of the identified baseline scenario:

Baseline scenario description

The Indian electricity system is broadly divided into two grids, the new Integrated Northern, Eastern, Western and North Eastern Grids (NEWNE) and the Southern Grid, as per the following Table No.14. Each grid covers several States. As the grids are interconnected, there is inter-state and inter- regional exchange. A small power exchange also takes place with the neighboring countries, Bhutan and Nepal.

Table 14: Geographical scope of the regional electricity grids³

<i>Northern Eastern Western North Eastern</i>				<i>Southern</i>
<i>Haryana</i>	<i>Bihar</i>	<i>Gujarat</i>	<i>Assam</i>	<i>AP</i>
<i>HP</i>	<i>Jharkand</i>	<i>MP</i>	<i>Manipur</i>	<i>Karnataka</i>
<i>JK</i>	<i>Orissa</i>	<i>Chhattisgarh</i>	<i>Meghalaya</i>	<i>Kerala</i>
<i>Rajasthan</i>	<i>WB</i>	<i>Maharashtra</i>	<i>Nagaland</i>	<i>Tamil Nadu</i>

³ [CO₂ Baseline Database for the Indian Power Sector, User Guide, Version 3.0, December 2007](#)

<i>UP</i>	<i>D.V.C</i>	<i>Goa</i>	<i>Tripura</i>	<i>Lakshadweep</i>
<i>Uttaranchal</i>	<i>A&N</i>	<i>D.N.H</i>	<i>Arunachal Pradesh</i>	<i>Pondicherry</i>
<i>Chandigarh</i>	<i>Sikkim</i>	<i>Daman&Diu</i>	<i>Mizoram</i>	
<i>Delhi</i>				

For the purpose of identifying the appropriate baseline scenario to any project, it is required that the “project electricity system is defined by the spatial extent of the power plants that can be dispatched without significant transmission constraints”. This implies that the grid emission factors are most appropriately calculated at the level of the regional grids. As the project activity is in Tamil Nadu which is under the Southern region, the Southern regional grid is identified as the appropriate project electricity system and all the baseline calculations are made accordingly.

In the absence of the present project activity, the quantum of Electricity now delivered to the grid, would have otherwise been generated by the operation of the grid connected power plants of the southern grid, which would have reflected in the Operating Margin (OM). Further, the project activity would have prevented addition of new generation sources, which would have reflected in the Build Margin (BM) also. Thus the reflection in OM & BM will automatically reflect in the Combined Margin (CM) of the project activity as discussed in Section - 4.2 of the PD. Hence, it is clear that the present project activity considerably reduces GHG emissions to the applicable extent.

2.5 Description of how the emissions of GHG by source in baseline scenario are reduced below those that would have occurred in the absence of the project activity (assessment and demonstration of additionality):

The additionality is demonstrated based on the following test:

Test 1- The project test:

Step 1: Regulatory Surplus

The project activity has installed wind based electricity generators of capacity 460.18 MW. There is no mandatory law or regulation which enforced the Project Participants to adopt the wind electricity generation. Project Participants has been issued with all required regulatory clearances before commissioning. Thus, the project activity is consistent with the current laws as there is no mandatory regulation on the choice of the technology for generating power.

Step 2: Implementation barriers

The barrier faced by the project activity is Investment barrier and the same is demonstrated through Investment analysis as below.

Investment barrier

Investment analysis

The project faces capital or investment return constraints that could be overcome by the additional revenues associated with the generation of VCU.

The project promoter used benchmark analysis to compare the investment analysis. For benchmark analysis, the Project Internal Rate of Return (Project IRR) of the project activity has been used to assess the financial attractiveness of the project activity. The IRR of any investment activity is one of the most commonly used tools to establish the viability and the financial feasibility of the project.

Choice of Benchmark value:

Since it is a predominant investment decision in non core business, the PP was particularly interested in the return of the investment. Hence project IRR was selected as the financial indicator to assess the attractiveness of the project.

As per guidance on Assessment of Investment analysis, version 02, annex 45 of EB 41, it states that *“In cases where a benchmark approach is used the applied benchmark shall be appropriate to the type of IRR calculated. Local commercial lending rates or weighted average costs of capital (WACC) are appropriate benchmarks for a project IRR. Benchmarks supplied by relevant national authorities are also appropriate if the DOE can validate that they are applicable to the project activity and the type of IRR calculation presented.”*

As per Sub-step 2b of Additionality tool, version 5.2, *“When applying benchmark analysis, the financial/economic analysis shall be based on parameters that are standard in the market, considering the specific characteristics of the project type, but not linked to the subjective profitability expectation or risk profile of a particular project developer. Only in the particular case where the project activity can be implemented by the project participant, the specific financial/economic situation of the company undertaking the project activity can be considered.”*

Project IRR, being nothing but the return earned by the project, has to be compared with a benchmark or cut-off rate to determine the adequacy of the return. PP has chosen WACC as the benchmark. *WACC alone* represents the weighted average of the costs of various sources of financing in the financial structure of the project. In other words, WACC represents the minimum rate of return which the project should earn to merit consideration, as failure to earn the minimum rate of return is indicative of the erosion in the value of investment. Therefore, no other benchmark is more suitable than WACC in cases where project IRR is used to demonstrate the Additionality.

TASMA has decided to bundle the WTGs installed between 2005 and 2007 and subsequently decided to bundle/group the machines which were left in TASMA I project due to unfortunate delays. So the Benchmark i.e. WACC has been calculated for each financial years.

The WACC for the subsequent years has been calculated as demonstrated below:

$$\text{WACC} = \text{CoE} * \{E / (E+D)\} + \text{CoD}_{\text{post tax}} * \{D / (E+D)\}$$

Where:

CoE – Cost of equity

CoD – Cost of Debt

CoE – Cost of Equity:

The Capital Asset Pricing Model (CAPM) approach is a generally accepted methodology for determining the Cost of Equity. CAPM is based on the portfolio theory of finance in which risks are classified into:

- Systematic risk - risk applicable to the market as a whole, such as inflation, tax rises, interest rates, etc.
- Specific risk - residual risk unique to an individual firm or a small group of companies that form a subset of the market.

The theory stipulates that specific risks can be eliminated through diversification and hence, only systematic risks determine the return expectation of investors. The basis of CAPM is the relationship between risk and return. Whilst there has been considerable debate on the strength of the risk/return relationship, evidence indicates that there is a strong linear and positive relationship over the long term, which can be expressed by the following formula⁴

$$E(r_e) = r_f + \text{Equity Beta } (\beta) * [E(r_m) - r_f]$$

Where:

E (r_e) - the expected rate of return on equity (cost of equity)

r_f is the risk-free rate of return (e.g. return on government bonds)

E (r_m) - the expected rate of return on a market portfolio

Equity Beta (β) - coefficient reflecting the volatility (risk) of the stock relative to the market, which measures the systematic risk of the stock

The **Risk free rate (r_f)** has been taken from the long term government bond rates at the time of the investment decision of the project activity (sub Bundle) in 2003 to 2006. The average interest rate on Central Government date Securities i.e. bond rate during year for considered financial years (i.e. 2002-03 to 2006-07) is given in below table:

⁴ ***Cost of Capital for Central Sector Utilities by Crisil Advisory Services***

Years	Risk Free rate ⁵
2002-03	7.57%
2003-04	7.60%
2004-05	6.37%
2005-06	7.57%
2006-07	8.22%

The **Market Risk Premium** ($E(r_m) - r_f$), as measured and applied in practice, is the premium above the risk-free rate of return that investors expect to earn on a well-diversified portfolio of equities.

The **expected rate of return on a market portfolio** ($E(r_m)$) has been calculated as the compounded annual growth rate of the market portfolio. In calculating market risk premium, it is usual to use an established stock market index as a proxy for the market portfolio. In India, a choice of possible indices are available – BSE 30, BSE 100, S&P CNX 500, Nifty, etc. Choice of stock market index will also be considerably influenced by the availability of historical data. In this regard, BSE 30 has the advantage of having the longest history and data is available for 20 years. The data on other indices, viz. S&P CNX 500 and Nifty, are available only since 1991. Hence BSE Sensex has been considered for calculating the Expected market return at the time of taking decision of project activity. The Expected market return has been estimated for year 2002-03 to 2006-07 on the basis of average of each months return and is given in the below table:

Years	Expected Market Return [$E(r_m)$] ⁶
2002-03	16.09%
2003-04	16.74%
2004-05	17.19%
2005-06	18.14%
2006-07	19.10%

Equity Beta is the measure of the expected volatility of a particular stock relative to a well-diversified market portfolio. It measures the systematic risk of a stock, i.e. the risk that cannot be eliminated in a well-balanced, diversified portfolio. The beta of equity is calculated as the covariance between its return and the return on a well-diversified market portfolio, divided by the variance of the return on a well-diversified market portfolio.

As the project activity involves the wind power generation, so the beta has to be taken from the listed companies involved in the wind power generation. But as there is no listed companies whose core business is wind power generation, so the beta value has been considered for the listed companies who are involved in the similar business i.e. power generation. The following are listed companies whose beta value available at the time of investment decision during 2003-04 to 2006-07 is given in the below table:

⁵ <http://rbidocs.rbi.org.in/rdocs/Publications/PDFs/80303.pdf>

⁶ The worksheet of benchmark evaluation submitted to DOE for validation

S. No.	Year	Power generating Company	Beta Value
1	2002-03	Tata Power	1.46
2		CESC Ltd	1.00
3		Reliance Energy/Reliance Infra	-
4		BF Utilities	-
		Average Beta value	1.23
1	2003-04	Tata Power	1.04
2		CESC Ltd	2.89
3		Reliance Energy/Reliance Infra	0.63
4		BF Utilities	2.83
		Average Beta value	1.85
1	2004-05	Tata Power	2.03
2		CESC Ltd	1.21
3		Reliance Energy/Reliance Infra	0.90
4		BF Utilities	2.59
		Average Beta value	1.69
1	2005-06	Tata Power	1.11
2		CESC Ltd	1.34
3		Reliance Energy/Reliance Infra	1.10
4		BF Utilities	1.39
		Average Beta value	1.24
1	2006-07	Tata Power	0.76
2		CESC Ltd	0.57
3		Reliance Energy/Reliance Infra	0.93
4		BF Utilities	3.7
		Average Beta value	1.49

The **Cost of Debt** has been considered as *Prime Lending Rate (PLR)* at the time of investment decision of the project activity. For the post tax cost of debt, the income tax will deductible at prevailing at the time of conceptualization of the project activity. Since for the first 10 years due to wind promoting policy of 10 year tax holidays, so it has to pay MAT under section 80 I A of Income tax act prevailing at the time of decision making. The PLR during 2002-03 to 2006-07 (at the time of conceptualization of the project activity of all sub-bundles) is given by Reserve Bank of India (RBI) in below table:

Year	Cost of Debt ⁷
2002-03	10.75%
2003-04	10.25%
2004-05	10.25%
2005-06	10.25%
2006-07	12.25%

⁷ <http://www.rbi.org.in/scripts/PublicationsView.aspx?id=9581>

The **Debt Equity ratio** as per the Wind Power policy norms has been considered as 70:30.

The WACC as a Benchmark calculated during 2002-03 to 2006-07 is given in the below table:

Year	Benchmark	Comments
2002-03	12.75%	This benchmark is for the WTGs whose decision has been taken in 2003-04
2003-04	14.53%	This benchmark is for the WTGs whose decision has been taken in 2004-05
2004-05	14.55%	This benchmark is for the WTGs whose decision has been taken in 2005-06
2005-06	13.36%	This benchmark is for the WTGs whose decision has been taken in 2006-07
2006-07	15.91%	This benchmark is for the WTGs whose decision has been taken in 2007-08

Calculation and comparison of financial indicators

TASMA has experience due to its interaction with many of its members invested in WTGs earlier and with manufacturers. The investment analysis has been done considering the past experience of TASMA. In August 2003, TASMA had decided to appoint an investment consultant to make the investment analysis on wind mill and prepare a suitable investment guideline to the intended investors on WTGs, who are the members of TASMA. For the time being, till the investment guideline comes in to effect, TASMA had suggested⁸ the members that they might take investment decisions based on the guidelines provided by TASMA which was again based on the reports of Indian Wind Directory, TNEB's Book of Statistics at a Glance and the TNERC's Tariff order dated 16.03.2003. The financial indicator namely Internal Rate of Return has been calculated by considering all the relevant costs (including, the investment cost and the operation and maintenance cost) and revenues (excluding CER revenues, but including subsidies/fiscal incentives where applicable).

The following table illustrates the parameters used for the investment analysis for each size of WTG installed in 2004.

Parameter		Unit	References
Installed Capacity	All Sizes	MW	
Capital cost per MW	45	Million INR/MW	Investment guidelines for TASMA members - TASMA minutes of meeting ⁹
Debt: Equity	70:30	-	Same as above

⁸ Minutes of meeting dated 23/08/2003 submitted to DOE

⁹ Minutes of meeting dated 23/08/2003 submitted to DOE

VCS Project Description

O&M Costs	1.25	Percentage	Investment guidelines for TASMA members - MoM dated 23/08/2003
Plant Load Factor	15	Percentage	Same as Above
Banking charges	5%	of energy banked	Same as Above
Wheeling Charges	5	Percentage	Same as above
Book Depreciation Rate (Straight Line Method basis)			
Civil Works	4.5	Percentage	Draft Discussion Paper on “Tariff Related Issues for Non Conventional Energy Sources” by TNERC
Plant and Machinery	4.5	Percentage	
Book Depreciation up to (% of asset value)	90	Percentage	

Later on in 2004, the Financial Consultant has been appointed and in December 2004, the appointed Financial Consultant has submitted the report on Investment guideline for the members of TASMA investing on WTGs. The report proposed the capacity wise cost of WTGs considering the past variation in the price trends of WTGs. The report also proposed the Pass wise PLF for each WTGs Size.

The following table illustrates the parameters used for the investment analysis for each size of WTGs from 2005 onwards.

Parameter		Unit	References
Installed Capacity	All sizes	MW	
Capital cost per MW		Crore INR/MW	Investment guidelines from Financial consultant. The Capacity wise Project cost is attached in Appendix 2
Debt: Equity	70:30	-	Investment guidelines from Financial consultant
O&M Costs	1.25	Percentage	Investment guidelines from Financial consultant
Plant Load Factor	19.94	Percentage	It has been arrived on the basis of weighted average considering Investment guidelines from Financial consultant. The pass wise PLF are provided in Appendix 2
Banking charges	5%	of energy banked	Investment guidelines from Financial consultant

Wheeling Charges	5	Percentage	Investment guidelines from Financial consultant
Book Depreciation Rate (Straight Line Method basis)			
Civil Works	4.5	Percentage	Draft Discussion Paper on “Tariff Related Issues for Non Conventional Energy Sources” by
Plant and Machinery	4.5	Percentage	
Book Depreciation up	90	Percentage	

to (% of asset value)			TNERC
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The Project IRR calculated on the basis of above mentioned assumptions:

Project IRR			
Year	Range of IRR without VCU Revenue	Range of IRR with VCU Revenue	Benchmark
2003-04	1.69% - 9.75%	2.10% - 10.28%	12.75%
2004-05	1.03% - 12.79%	1.44% - 13.47%	14.53%
2005-06	0.53% - 12.39%	0.93% - 12.92%	14.55%
2006-07	0.97% - 11.45%	1.37% - 12.09%	13.36%
2007-08	2.46% - 9.76%	2.94% - 10.30%	15.91%

The Project IRR of the project activity is shown in the above table and it is found that it is coming below the Benchmark as mentioned in the above table.

It is evident that without VCU revenue the Project activity is not financially viable. Hence the project is additional.

Sensitivity Analysis

To substantiate the robustness of the results obtained above the sensitivity analysis has been conducted. As per guideline provided by EB in meeting no. 41 annex 45 the criteria for choosing the sensitivity analysis parameter is:

Guidance: Only variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation (all parameters varied need not necessarily be subjected to both negative and positive variations of the same magnitude), and the results of this variation should be presented in the PDD and be reproducible in the associated spreadsheets

The following parameters which can affect 20% of the total cost or revenue are:

1. **Plant Load Factor (PLF)**
2. **Project Cost**
3. **O&M Cost**

The sensitivity analysis was carried on project IRR varying the O&M Cost and PLF by $\pm 10\%$ following the guideline provided by EB in meeting no. 41 annex 45.

Since, the tariff for the WTGs is a fixed one throughout its lifetime; sensitivity analysis has not been done on tariff basis.

The result of the project is presented in table below:

A sensitivity analysis has been carried out to identify the attractiveness of the project activity to reasonable variations in the critical assumptions (shown separately). The scenarios considered for the purpose of sensitivity analysis are +/- 10 % increase in generation. The effect of these variations on the IRR is summarized below:

Description	Project IRR without VCU revenue	
Year	Base IRR	IRR with 10 % increase in Generation
2003-04	1.69% - 9.75%	2.91% - 10.88%
2004-05	1.03% - 12.79%	1.98% – 14.34%
2005-06	0.53% – 12.39%	1.40% – 13.76%
2006-07	0.97% - 11.45%	1.91% – 12.95%
2007-08	2.46% - 9.76%	3.51% - 11.14%

Description	Project IRR without VCU revenue	
Year	Base IRR	IRR with 10 % decrease in Project Cost
2003-04	1.69% - 9.75%	3.04% - 11.00%
2004-05	1.03% - 12.79%	2.08% – 14.50%
2005-06	0.53% – 12.39%	0.91% – 13.92%
2006-07	0.97% - 11.45%	2.02% – 13.11%
2007-08	2.46% - 9.76%	3.63% - 11.29%

Description	Project IRR without VCS revenue	
Year	Base IRR	IRR with 10 % decrease in O&M cost
2003-04	1.69% - 9.75%	2.08% – 10.00%
2004-05	1.03% - 12.79%	1.28% – 12.95%
2005-06	0.53% – 12.39%	0.77% – 12.54%
2006-07	0.97% - 11.45%	1.20% – 11.62%
2007-08	2.46% - 9.76%	2.68% – 9.93%

The Internal Rate of Return (IRR) for all these wind mills without considering the revenues from the VCUs, which is below the Bench mark rate mentioned in above table (Benchmark used for comparison of the IRR). However, the IRR improves while considering the VCU revenues. Thus, it is evident that VCU revenue will definitely help the project to overcome certain barriers primarily associated with the additional investment with regards to the supply of power to the distribution grid.

Step 3: Common Practice

The source of power generation in the southern region was analysed. The total installed capacity of southern regional grid as on March 31, 2005 was 31730.95 MW.

Total installed capacity of Southern Regional Electricity Grid as on March 31,2005

Southern Grid	Total Installed Capacity in MW as on 31-03-2005	Percentage
Hydro	10672.24	33.63 %
Coal	13892.50	43.78 %
Gas	2720.40	8.57 %
Diesel	939.32	2.96 %
Wind	2056.70	6.48 %
Renewable Energy Sources	619.79	1.95 %
Nuclear	830.00	2.62 %
Total	31730.95	100.00 %

The above table clearly depicts that power generation through wind energy constitutes a very less quantum of the total power being generated by the southern regional grid. Hydro and thermal powers are still the most preferred sources for power generation in this region. Wind energy has only 6.48% stake of the total installed capacity, when compared to that of 33.63 % hydro and 55.31% of thermal. Thus, investing in wind energy was not a common practice in this region.

(Source: http://cea.nic.in/powersecreports/ExecutiveSummary/2005_03/22-28.pdf
<http://cea.nic.in/>)

3 Monitoring:

3.1 Title and reference of the VCS methodology (which includes the monitoring requirements) applied to the project activity and explanation of methodology choices:

The project activity falls under the purview of the approved VCS methodology ACM0002 “*Consolidated methodology for grid-connected electricity generation from renewable sources*”.

Table 20
Methodological details

Sectoral scope	01
Methodology Applicable	ACM0002
Version	10
Dated	Valid from 11 th June 2009
Reference	http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html

The methodology ACM0002 refers to the latest approved versions of the following tools:

- ✓ Tool to calculate the emission factor for an electricity system, Version 1.1
- ✓ Tool for the demonstration and assessment of Additionality, Version 5.2

3.2 Monitoring, including estimation, modelling, measurement or calculation approaches:

Purpose of monitoring:

The purpose of monitoring procedure is to record the real and measurable emission reduction in an efficient way which results in availing the revenues that accrues from the project activity. Hence, TASMA is responsible for the monitoring/calculation of actual credible emission reduction in the most transparent and relevant manner.

Types of data and information to be reported, including units of measurement (Origin of the data):

The Key records that will be maintained are:

- Project Activity Matrix giving all ID details
- Monthly Working Details of WTGs
- Monthly Generation Details
- VCUs Computed on a yearly basis
- Calibration Certificates for the main energy Meters

Monitoring, including estimation, modelling, measurement or calculation approaches:

TASMA will be responsible to calculate the emission figures. Calculation of emission figures will be based on the recorded generation for a period and the emission factor recorded in the VCS PD.

The generation registered by the main meter alone will hold well for the purpose of billing as long as the error in the main meter is within the permissible limits. The calibration of the main meter will be the responsibility of the TNEB. The calibration of the main meter will be done as per the procedure set out as per PPA which refers to CEA/TNERC norms. the Calibration is done by TNEB once in five years as per CEA norms.

If, on any occasion, it is found that the main meter is beyond permissible limit of error, TNEB will be informed about it and TNEB will make necessary efforts to correct the meter and recalibrate the same. During the time when the main meter is not functioning, the same will be replaced with a spare meter and the faulty meter will be sent to the Meter Relay Testing (MRT).The MRT in turn will remove the chip and send it to the meter manufacturer for retrieving the generation recorded. The retrieved reading will be used for billing.

Monitoring times and periods, considering the needs of intended users:

The monthly meter reading of main meter is being taken jointly by the Parties (TNEB and site-incharge of the WTG owner) on the fixed day of the month. At the conclusion of meter reading on each occasion, an appointed official of the TNEB shall sign the meter card provided for this purpose and the said entries will be verified by the site-incharge. The main meter reading recorded will be the units of electricity generated. Emission reduction calculation is based on the main meter reading.

Monitoring roles and responsibilities:

- Tasma will be responsible to calculate the emission figures. Calculation of emission figures will be based on the recorded generation for a period and the emission factor recorded in the VCS PD.
- Changes in Project boundary in any event will be monitored through the Regional Representatives of Tasma and recorded by Tasma.
- All documents will be numbered and identified along with retention periods.
- Each WTG which is part of the project activity will be uniquely identified. The ID number will have the following structure:
Company ID+ WTG ID - as provided by Tasma
- The site-incharge will be responsible for operation and maintenance of wind mill.
- Data capturing will be done using controlled format.
- In each site, minimum communication facilities such as telephone or wireless or mobile phone is provided.

VI.

Managing data quality:

- The monitoring activity will be centrally executed by Tasma with the help of Site-In charges & Regional Representatives and copies of all documents pertaining to the respective wind mills were maintained..
- The systems and procedures maintained to implement the monitoring plan/data collection will be done using the above said procedures set up by Tasma..

Table 21: Details of parameter to be monitored

Data Variable	Data unit	Measured/ Calculated/ Estimated	Recording frequency	Party responsible
EG _y	MWh	Measured	Quarterly	Tasma

3.3 Data and parameters monitored / Selecting relevant GHG sources, sinks and reservoirs for monitoring or estimating GHG emissions and removals:

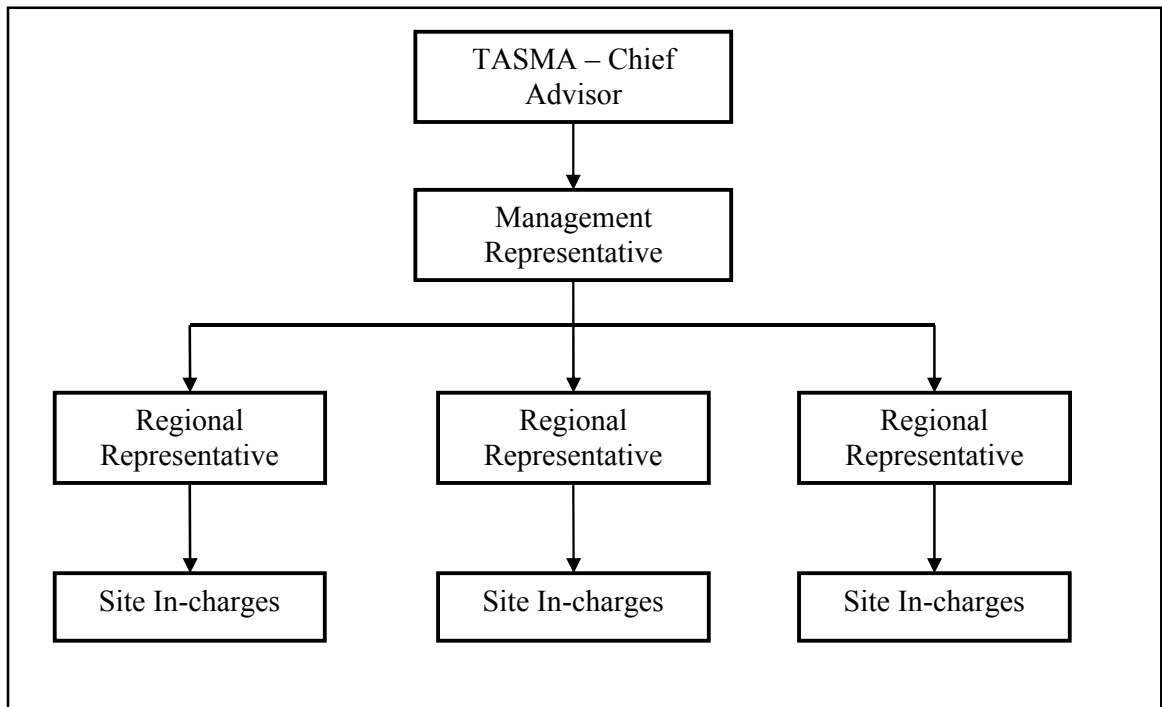
Table 22

Data / Parameter:	EG _y
--------------------------	-----------------

Data unit:	MWh
Description:	Net electricity supplied to the grid
Source of data to be used:	TNEB statement
Value of data applied for the purpose of calculating expected emission reductions	The total generation considered for 10 years: 8176299.2 MWh The total generation considered as average per year: 817629.9 MWh
Description of measurement methods and procedures to be applied:	Measured by 0.5 Class Meter – (accuracy $\pm 0.5\%$) Net generation = (Export- Import) To be certified by TNEB Statement Monthly Measurement by TNEB.
QA/QC procedures to be applied:	QA/QC of Monitoring Equipment Calibration procedure: Main meter is calibrated by the TNEB as per guidelines provided by CEA/TNERC, which refers at least once in five years. However the Calibration would be carried out at least once in three years to meet the requirements under VCS. The values would be cross-checked with the Sales records.
Any comment:	Data will be archived during the whole crediting period + 2 years

3.4 Description of the monitoring plan

The monitoring activity will be centrally executed by TASMA. The organization for monitoring will be as follows:



The Management Structure for monitoring emission reductions would provide for:

- Operation and Maintenance
 - Maintenance of Meters and Calibration
 - Calculation of Emission Figures
 - Local Environmental Care
 - Changes in project boundary
 - Documents and Records
 - Periodic Review meetings
- Tasma through the project members will appoint a site in-charge for each site with the responsibility of operation, maintenance and safety of WTGs.
 - The Project Sponsor / Project members will abide by all regulatory and statutory requirements as prescribed under the State and Central laws and regulations
 - The generation from the WTGs will be monitored by LCS meters attached with the wind mill and also by the main meter which is owned by TNEB.
 - TNEB meter shall meet the Indian and regional electricity authority's standards (CEA) (with set calibration schedules).
 - The generation for the purpose of emission reduction calculation will be based on the TNEB meter, which is a statutory body.
 - All the monitoring data will be recorded and kept under safe custody of the site in-charge
 - Also any change within the project boundary, will be recorded and informed to Tasma.

Measurement Frequency:

Frequency of measurement by TNEB – Once in a month

Frequency of measurement by Site In charge – Once a month along with TNEB official

Calibration of the Energy Meter - This is carried out by TNEB (As per CEA / TNERC norms)

4 GHG Emission Reductions:

4.1 Explanation of methodological choice:

As per the applied approved methodology ACM0002 (Version 10) Emission Reductions are calculated as:

$$ER_y = BE_y - PE_y - L_y$$

Where:

ER_y - Emission reductions in year y (t CO₂e/yr)

BE_y - Baseline emissions in year y (t CO₂e/yr)

PE_y - Project emissions in year y (t CO₂e/yr)

LE_y - Leakage Emissions in year y (t CO₂e/yr)

Baseline Emissions:

The baseline emissions include only CO₂ emissions from electricity generation in Fossil fuel fired power plants that are displaced due to project activity, calculated as follows:

$$BE_y = (EG_y - EG_{\text{baseline}}) \times EF_{\text{grid,CM,y}}$$

Where:

BE_y = Baseline emissions in year y (tCO₂/yr)

EG_y = Electricity supplied by the project activity to the grid (MWh)

EG_{baseline} = Baseline electricity supplied to the grid in the case of modified or retrofit facilities (MWh). As it is a new power plants this value is taken as zero

$EF_{\text{grid,CM,y}}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system”

According to the Tool to calculate the emission factor for an electricity system, version 1.1, $EF_{\text{grid,CM,y}}$ i.e baseline emission factor (EF_y) is calculated as a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) factors according to the following below steps. Calculations for this combined margin are based on data from an official source and are made publicly available.

As per “Tool to calculate the emission factor for an electricity system”, version-1.1, the steps followed to calculate Combined margin of Southern regional grid are as follows:

Step 1: Identify the relevant electric power system:

Historically, the Indian power system was divided into five independent regional grids, namely Northern, Eastern, Western, Southern, and North-Eastern. Each grid covered

several states. Since August 2006, however, all regional grids except the Southern Grid have been integrated and are operating in synchronous mode, i.e. at same frequency. Consequently, the Northern, Eastern, Western and North-Eastern grids will be treated as a single grid and is being named as NEWNE grid from FY 2007-08 onwards for the purpose of CO₂ Baseline Database.

Table 1 Geographical scope of the two electricity grids

NEWNE Grid				Southern Grid
Northern	Eastern	Western	North-Eastern	Southern
Chandigarh	Bihar	Chhattisgarh	Arunachal Pradesh	Andhra Pradesh
Delhi	Jharkhand	Gujarat	Assam	Karnataka
Haryana	Orissa	Daman & Diu	Manipur	Kerala
Himachal Pradesh	West Bengal	Dadar & Nagar Haveli	Meghalaya	Tamil Nadu
Jammu & Kashmir	Sikkim	Madhya Pradesh	Mizoram	Pondicherry
Punjab	Andaman-Nicobar	Maharashtra	Nagaland	Lakshadweep
Rajasthan		Goa	Tripura	
Uttar Pradesh				
Uttarakhand				

The proposed project is located in the state of Tamilnadu and will be feeding the electricity in the Southern regional grid. Therefore the proposed project would have impact on all the generation facilities in this grid. Thus all the power generation facilities connected to this grid form the boundary for the purpose of baseline estimation. The Southern grid is also connected with other regional grids, however, the net exchange of energy within the regional grids is very small and negligible and hence other regional grids are not included in the boundary for estimation of baseline emissions.

Step 2. Select an operating margin (OM) method

The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on one of the following methods:

- Simple OM, or
- Simple adjusted OM, or
- Dispatch data analysis OM, or
- Average OM.

Due to non-availability of archived dispatch data in the public domain for the NEWNE grid, 'Dispatch Data Analysis' (1c) has not been chosen, though it should be the first methodological choice.

As per Tool to calculate emission factor of an electricity system, version-1.1, the simple operating margin (Simple OM) can be used only if low-cost/must-run resources constitute less than 50% of total grid generation in (a) average of the five most recent years, or 2) based on long-term averages for hydroelectricity production.

From the available information published by CEA “CO₂ database for Indian Power sector”, it can be seen from the table below that low cost/must run sources for Southern regional Grid accounts for less than 50% of the total generation in the last five years. Hence the Simple OM method has been used to calculate the Operating Margin Emission factor applicable.

Table 2 All India Region wise generating installed capacity (MW) of power utilities including allocated shares in joint and central sector utilities (As on 31 July 2009)

SL. NO.	REGION	THERMAL				Nuclear	HYDRO (Renewable)	R.E.S.@ (MNRE)	TOTAL
		COAL	GAS	DSL	TOTAL				
1	Northern	19087.95	3531.19	12.99	22632.13	1180.00	13425.15	1766.37	39003.65
2	Western	26335.18	7748.22	17.48	34100.88	1840.00	7448.50	4023.62	47413.00
3	Southern	16982.50	4150.20	939.32	22072.02	1100.00	10993.18	7047.90	41213.10
4	Eastern	16709.92	190.00	17.20	16917.12	0.00	3933.93	227.41	21078.46
5	N. Eastern	93.33	766.00	142.74	1002.07	0.00	1116.00	171.00	2289.07
6	Islands	0.00	0.00	70.02	70.02	0.00	0.00	6.11	76.13
7	All India	79208.88	16385.61	1199.75	96794.24	4120.00	36916.76	13242.41	151073.41

Captive Genrating capacity connected to the Grid (MW) = 19509.49

RES -Renewable Energy Sources includes Small Hydro Project(SHP), Biomass Gas(BG), Biomass Power(BP), Urban & Industrial waste Power(U&I), and Wind Energy.

Step 3. Calculate the operating margin emission factor according to the selected method

The simple OM emission factor is calculated as the generation-weighted average CO₂ emissions per unit net electricity generation (tCO₂/MWh) of all generating power plants serving the system, not including low cost/must-run power plants / units, using the following equation:

$$EF_{OM,y} = [\sum_{ij} F_{ij,y} * COEF_{ij}] / [\sum_j GEN_{j,y}] \dots \dots \dots (3)$$

Where $F_{ij,y}$ and $COEF_{ij}$ are the fuel consumption and associated carbon coefficient of the fossil fuel i consumed by power plant j in the grid in year(s) y . $GEN_{j,y}$ is the electricity generation by power plant j connected to the grid excluding zero- or low-operating cost sources in year(s) y .

As per ACM0002 version 10, the OM emission factor can be calculated using *ex ante* generation-weighted average of the most recent 3 years for which data is available or using *ex post* generation data in the year in which the project generation occurs. The OM emission factor is calculated using *ex ante* generation weighted average of the most recent 3 years (2005-06, 2006-07 and 2007-08) and hence does not require yearly monitoring of the OM emission factor. The Central Electricity Authority, Ministry of Power, Government of India has published a database of Carbon Dioxide Emission from the power sector in India based on detailed authenticated information obtained from all operating power stations in the country. This database i.e. The CO₂ Baseline Database provides information about the Combined Margin Emission Factors of all the regional electricity grids in India.

Step 4. Identify the cohort of power units to be included in the build margin (BM)

The database of Carbon Dioxide Emission from the power sector in India published by CEA has calculated the build margin in accordance with the Grid Tool, as the average emissions intensity of the 20% most recent capacity additions in the grid based on net generation. Depending on the region, the build margin covers units commissioned in the last five to ten years.

Step 5. Calculate the build margin emission factor

The Build Margin emission factor $EF_{BM,y}$ is calculated ex-ante based on the most recent information available on plants already built. The Build Margin emission factor $EF_{BM,y}$ is given as the generation weighted average emission factor of the selected representative set of recent power plants represented by the 5 most recent plants or the most recent 20% of the generating units built (summation is over such plants specified by k). The most 20% of the generating units built recently is used for build margin emission factor calculation.

Step 6. Calculate the combined margin (CM) emissions factor

The combined margin emissions factor is calculated as follows:

$$EF_y = w_{OM} * EF_{grid,OM,y} + w_{BM} * EF_{grid,BM,y}$$

Where:

$EF_{grid,BM,y}$	Build margin CO2 emission factor in year y (tCO2/MWh)
$EF_{grid,OM,y}$	Operating margin CO2 emission factor in year y (tCO2/MWh)
w_{OM}	Weighting of operating margin emissions factor (%)
w_{BM}	Weighting of build margin emissions factor (%)

For wind and solar projects, ACM0002 allows the usage of the default weights are as follows:

$$w_{OM} = 0.75 \text{ and } w_{BM} = 0.25.$$

The details of calculation of OM, BM and CM are shown in Appendix-3.

Project Emissions:

The project involves the generation from the install on wind turbines and so there is no project emission from the project activity.

$$PE_y = 0$$

Leakage Emissions:

There is no leakage involved in the project activity.

$$L_y = 0$$

4.2 Quantifying GHG emissions and/or removals for the baseline scenario:

Base Line Emissions: (BE_y)

According to ACM0002, Baseline Emission is calculated by the following formula.

$$BE_y = EG_y * EF_y$$

Baseline emission factor (combined margin)

$$\begin{aligned} EF_y \text{ (tCO}_2\text{e/MWh)} &= w_{OM} \text{ EF}_{OM, y} \text{ (tCO}_2\text{e/MWh)} + w_{BM} \text{ EF}_{BM, y} \text{ (tCO}_2\text{e/MWh)} \\ &= 0.75 * 0.9985 + 0.25 * 0.7133 \\ &= 0.927 \text{ t CO}_2\text{e/MWh} \end{aligned}$$

Annual electricity supplied to the grid by the Project

EG_y = Electricity supplied by the project activity to the Grid (MWh)

$$EG_y = 460.18 \times 8760 \times 20.28\% = 817629.9 \text{ MWh} = 817.63 \text{ GWh}$$

$$BE_y = 817.63 \times 927 = 758093.35 \text{ tCO}_2\text{e}$$

4.3 Quantifying GHG emissions and/or removals for the project:

Project Emissions: (PE_y)

According to ACM0002, there is no project emission for grid connected wind based power generation. Hence in this case it is considered as

$$PE_y = 0 \text{ tCO}_2\text{/year}$$

Where,

PE_y is the Project Emission for the year.

4.4 Quantifying GHG emission reductions and removal enhancements for the GHG project:

Emissions Reduction: (ER_y)

For a given year, the emission reductions contributed by the project activity (ER_y) is calculated as follows:

$$ER_y = BE_y - PE_y - L_y$$

Where,

BE_y	-	Base Line Emission for the year 'y'
ER_y	-	Emission reductions for the year 'y'
PE_y	-	Project Emissions for the year 'y'
L_y	-	Leakage for the year 'y'

The emission reductions will be calculated based of actual net electricity supplied to the grid, using the baseline emission factor presented above.

$$ER_y = BE_y = 758093.35 \text{ tCO}_2\text{e}$$

5 Environmental Impact:

As per the prevailing local /host country laws no environmental impact assessment is required, (the Schedule 1 of Ministry of Environment and Forests (Government of India) notification dated September 14, 2006), 38 activities are required to undertake environmental impact assessment studies. The details of these activities are available at <http://envfor.nic.in/legis/eia/so1533.pdf>

However the project participant has carried out Aspect and Impact analysis of all the activities of the project and concluded that there is no negative environmental impact due to the project activity and wind energy is one of the cleanest sources of energy.

6 Stake holder's comments:

The local stakeholders have already been contacted for the first bundled CDM project of TASMA. For the second project, a questionnaire survey was conducted covering the people living in the villages nearby the site.

The basic points covered in the questionnaire are given below:

Sl No	Questions
1.	What do you think about the environment in your locality?
2.	Is your environment affected by the wind mill?
3.	Is your TV Reception affected by the Windmill?
4.	Does the project affect the livelihood?
5.	Does the project improve the livelihood?
6.	Has employment increased due to the project?
7.	Is there Noise problem due to the wind mill?
8.	Is there water problem due to the windmill?
9.	Is there Vibration problem due to the windmill?
10.	Is there any problem with respect to construction?
11.	Does the wind mill affect the migration of birds?
12.	Does the wind mill affect the grazing of cattle?
13.	What are the benefits from the wind Mill?
14.	Comments and suggestions :(if any)

Summary of the comments received

The overall opinion expressed through the questionnaire was based on the experience of the local stake holders with the already existing windmills. The overall response was that the impact of windmills in the locality will be of positive nature.

The summary analysis of questionnaire survey is presented below:-

Sl No	Question	Response By Majority of respondents
1.	What do you think about the environment in your locality?	Very Good
2.	Is your environment affected by wind mill?	Not at all affected
3.	Is your TV Reception affected by Windmill?	Not at all affected
4.	Does the project affect the livelihood?	Not at all affected
5.	Does the project improve livelihood?	Good Improvement
6.	Has employment increased due to the project?	Good Improvement
7.	Is there Noise problem due to wind mill?	Not at all
8.	Is there water problem due to windmill?	Not at all
9.	Is there Vibration problem due to windmill?	Not at all
10.	Is there any problem with respect to construction?	Not at all
11.	Does the wind mill affect the migration of birds?	Not at all
12.	Does the wind mill affect the grazing of cattle?	Not at all
13.	What are the benefits from the wind Mill?	Good Benefits
14.	Comments and suggestions :	• Plantation to be considered • Approach roads should not affect water catchments • Provide employment for locals

Report on how due account was taken of any comments received

The responses are categorised as positive and negative based on the comments. The positive responses indicate that respondent feels that the project activity will lead to overall good for the society.

All of the individual respondents are of the view that the project activity is of good to them and the society. It has added to the electricity generation of the state grid without causing any pollution.

No negative comments were not received that required follow up action. The original sheet shown to DOE and a copy given

7 Schedule:

Table: 28 Chronological plans

<i>Parameter</i>	<i>Date/period</i>
<i>Start date of the project activity</i>	<i>31st January 2004</i>
<i>Project termination</i>	<i>28th March 2026</i>
<i>Project lifetime</i>	<i>20 years</i>

<i>Agreement with the DOE</i>	<i>11th November 2008</i>
<i>VCS PD completion</i>	<i>3rd June 2009</i>
<i>Begin VCS Validation</i>	<i>July 2009</i>
<i>Monitoring frequency by TNEB & Site In-charge</i>	<i>Monthly</i>
<i>Reporting frequency to TASMA by Regional Representative</i>	<i>Once in three months</i>

8 Ownership:

8.1 Proof of Title:

The Commissioning certificate issued by the TNEB for all the WTGs is the vital evidence for the proof of title of the sub-project owners. Also, an authorization letter is given by each individual sub project owner to TASMA to deal with the processes. The above said documents are provided to the DOE for verification.

8.2 Projects that reduce GHG emissions from activities that participate in an emissions trading program (if applicable):

>> Not applicable

Appendix-1– WTG Identification, Location and HTSC Number

Comp Code No	Name of the company	Location Pass	WTG No	Capacity in Kw	HTSC NO	Deg XX ^o	Min XX'	Sec XX''	Deg XX ^o	Min XX'	Sec XX''
C001	Adisankara Spinning Mills (P) Ltd	C	2.01	750	1285	10	67	68	77	18	28
C001	Adisankara Spinning Mills (P) Ltd	C	2.02	750	1288	10	69	12	77	17	43
C002	Alpine knits India Pvt. Ltd	C	2.01	250	359	10	92	59	77	14	43
C002	Alpine knits India Pvt. Ltd	C	2.02	250	482	10	94	16	77	25	95
C002	Alpine knits India Pvt. Ltd	C	2.03	250	589	10	95	21	77	27	16
C003	Ambika Cotton Mills Ltd	C	2.01	800	1258	11	85	72	76	74	82
C004	Ammarun Foundries	C	2.01	850	497	10	89	35	77	24	33
C004	Ammarun Foundries	C	2.02	850	498	10	89	73	77	24	37
C005	Anand Hosieries	C	2.01	500	417	10	54	16	77	8	45
C006	Anand Textiles	C	2.01	1250	322	10	52	60	77	7	39
C006	Anand Textiles	C	2.02	1250	325	10	52	19	77	8	11
C006	Anand Textiles	C	2.03	500	416	10	54	21	77	8	42
C007	Angalakshmi Spinning Mills	B	2.01	500	1826	8	55	28	77	3	45
C008	Angalaparameswari Textiles	C	2.01	250	529	10	94	70	77	26	40
C009	Annai Power (P) Ltd	A	2.01	225	1303	8	19	55	77	34	12
C010	Anugraha Valve Castings Ltd	B	2.01	1250	1182	8	13	23	77	39	44

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C010	Anugraha Valve Castings Ltd	B	2.02	1250	2193	8	57	40	77	35	14
C010	Anugraha Valve Castings Ltd	B	2.03	1250	2221	8	55	55	77	35	21
C011	Anugraha Valve Castings Ltd	C	2.01	350	1313	8	56	24	77	35	25
C012	Armstrong Process	A	2.01	500	1261	8	12	35	77	36	29
C013	Armstrong Spinning Mills (P) Ltd	A	2.01	500	1559	8	15	18	77	43	58
C013	Armstrong Spinning Mills (P) Ltd	A	2.02	500	1636	8	12	45	77	37	28
C013	Armstrong Spinning Mills (P) Ltd	B	2.03	500	2012	8	15	12	77	43	49
C014	Arul & Co	A	2.01	225	1280	8	13	24	77	35	53
C015	Arul Sakthi Wind Farm (P) Ltd	C	2.01	250	1222	10	75	65	77	36	81
C015	Arul Sakthi Wind Farm (P) Ltd	C	2.02	250	1222	10	75	72	77	37	1.4
C016	Arun Dye Chem	C	2.01	225	894	10	43	30	77	21	23
C017	Arun Excello Urban Infrastructure Pvt. Ltd	A	2.01	225	2018	8	11	57	77	34	20
C017	Arun Excello Urban Infrastructure Pvt. Ltd	A	2.02	225	2018	8	11	52	77	34	30
C017	Arun Excello Urban Infrastructure Pvt. Ltd	A	2.03	225	2018	8	11	65	77	34	21
C018	Arun Fabricators	A	2.01	225	2436	8	11	45	77	34	7.4
C019	Arvinth Hospital	A	2.01	250	241	8	15	10	77	33	10
C019	Arvinth Hospital	A	2.02	250	89	8	14	53	77	32	22
C020	AVE Maria Spinning Mills (P) Ltd	A	2.01	350	2167	8	18	5.2	77	36	33
C021	AVR SS Builders	A	2.01	350	2385	8	16	45	77	36	18
C022	AVR Swarna Mahal	A	2.01	600	92	8	59	1.7	77	32	52
C022	AVR Swarna Mahal	B	2.02	1250	1980	10	36	52	77	25	58
C023	B.K.S.Textiles Pvt Ltd.,	C	2.01	225	438	10	40	54	77	20	19
C023	B.K.S.Textiles Pvt Ltd.,	C	2.02	225	594	10	40	49	77	20	54
C024	Balavimothan Power Process (P) Ltd	C	2.01	250	1163	10	76	51	77	37	23
C025	Balu Exports	C	2.01	750	406	10	41	1.1	77	22	87
C025	Balu Exports	C	2.02	750	453	10	41	43	77	22	89
C025	Balu Exports	C	2.03	750	590	10	41	24	77	25	52
C025	Balu Exports	C	2.04	750	888	10	41	19	77	25	32
C025	Balu Exports	C	2.05	750	889	10	41	31	77	25	27
C025	Balu Exports	C	2.06	750	920	10	41	44	77	25	19
C026	Best & Co	C	2.01	1250	865	10	41	41	77	25	46
C026	Best & Co	C	2.02	1250	866	10	41	55	77	25	25
C026	Best & Co	C	2.03	1250	867	10	42	6.8	77	25	17
C026	Best & Co	C	2.04	1250	868	10	42	3.2	77	24	60
C026	Best & Co	C	2.05	1250	869	10	42	10	77	24	36
C026	Best & Co	C	2.06	1250	921	10	40	4.2	77	24	33
C026	Best & Co	C	2.07	1250	922	10	39	50	77	24	37
C026	Best & Co	C	2.08	1250	932	10	37	39	77	7	54
C026	Best & Co	C	2.09	1250	930	10	37	11	77	8	0.2
C026	Best & Co	C	2.1	1250	929	10	36	56	77	8	2.3
C026	Best & Co	C	2.11	1250	928	10	36	56	77	8	22
C026	Best & Co	C	2.12	1250	931	10	36	42	77	7	59
C026	Best & Co	C	2.13	1250	933	10	38	9.2	77	7	42

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C026	Best & Co	C	2.14	1250	934	10	37	50	77	8	15
C026	Best & Co	C	2.15	1250	927	10	37	35	77	8	15
C026	Best & Co	C	2.16	1250	935	10	38	1.3	77	8	43
C026	Best & Co	C	2.17	1250	925	10	37	45	77	8	45
C026	Best & Co	C	2.18	1250	926	10	37	33	77	8	53
C026	Best & Co	C	2.19	1250	924	10	37	38	77	9	20
C026	Best & Co	C	2.2	1250	923	10	37	51	77	9	30
C027	Best Cotton Mills (P) Ltd	A	2.01	1250	1450	8	14	19	77	41	15
C028	Best Heat Treatment Services	C	2.01	350	1383	10	35	47	77	17	34
C029	Best International	A	2.01	1250	1350	8	13	15	77	41	23
C029	Best International	A	2.02	1250	1353	8	13	16	77	41	35
C030	Bhuvaneshwari Textiles (P) Ltd	C	2.01	500	527	10	56	47	77	13	16
C031	Bhuvaneshwari Cotspin India (P) Ltd	C	2.01	500	520	7	43	85	12	11	43
C031	Bhuvaneshwari Cotspin India (P) Ltd	C	2.02	500	521	7	44	7.9	121	10	38
C031	Bhuvaneshwari Cotspin India (P) Ltd	C	2.03	500	522	7	44	29	121	13	4
C031	Bhuvaneshwari Cotspin India (P) Ltd	C	2.04	600	537	7	44	99	121	17	16
C031	Bhuvaneshwari Cotspin India (P) Ltd	C	2.05	600	538	7	44	59	121	15	65
C031	Bhuvaneshwari Cotspin India (P) Ltd	C	2.06	600	539	7	44	58	121	17	76
C032	BMM Paper Board (P) Ltd	B	2.01	750	770	8	59	4.1	77	21	1
C033	Bright Castings	C	2.01	350	1371	10	35	46	77	17	44
C034	Brindavan Cotton Mills (P) Ltd.,	A	2.01	1250	1372	10	40	39	77	9	43
C034	Brindavan Cotton Mills (P) Ltd.,	C	2.02	750	398	10	40	40	77	9	56
C034	Brindavan Cotton Mills (P) Ltd.,	C	2.03	750	400	8	10	18	77	37	56
C035	C. Revathi	C	2.01	250	487	10	82	56	77	18	59
C036	C.V.Spinner (P) Ltd	C	2.01	750	1095	10	41	53	77	28	52
C037	Cheran Spinners Limited	B	2.01	1650	1490	8	56	41	77	28	22
C037	Cheran Spinners Limited	B	2.02	750	2013	9	2	63	77	25	22
C037	Cheran Spinners Limited	B	2.03	750	2469	9	2	38	77	25	13
C038	Cheran Spinning Mills (P) Ltd	A	2.01	1250	1970	8	10	23	77	39	22
C039	Chiranjilal Spinners (P) Ltd	B	2.01	750	1686	8	58	13	77	30	15
C040	Chola Spinning Mills Pvt. Ltd	B	2.01	750	2016	9	1	43	77	24	77
C040	Chola Spinning Mills Pvt. Ltd	B	2.02	750	2017	9	1	15	77	24	57
C041	Chola Textiles (P) Ltd	A	2.01	1250	1979	8	9	50	77	38	37
C042	Classic Wind Farms	C	2.01	600	645	10	56	32	77	20	27
C042	Classic Wind Farms	C	2.02	600	639	10	56	34	77	20	16
C042	Classic Wind Farms	C	2.03	600	554	10	56	17	77	14	35
C042	Classic Wind Farms	C	2.04	600	600	10	56	42	77	20	13
C042	Classic Wind Farms	C	2.05	600	601	10	56	49	77	20	9.8

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C043	Color Chemicals	A	2.01	250	2060	8	11	5.7	77	35	28
C043	Color Chemicals	A	2.02	250	2079	8	12	77	77	36	31
C044	CR Mills (Coimbatore) Pvt Ltd.,	A	2.01	350	1204	8	14	30	77	38	8.5
C045	D. Ganthimathi	C	2.01	250	452	10	93	19	77	13	75
C046	D. Parthiban	C	2.01	250	488	10	82	55	77	18	61
C047	D.M. Kathir Anand	C	2.01	225	598	10	46	8.1	77	22	21
C047	D.M. Kathir Anand	C	2.02	600	1491	10	50	20	77	24	57
C048	D.M.R. Textiles	C	2.01	250	354	10	92	69	77	14	10
C048	D.M.R. Textiles	C	2.02	250	355	10	92	57	77	14	16
C049	Dev International	B	2.01	500	1595	9	1	48	77	21	57
C050	Dev International	C	2.01	225	431	10	41	57	77	21	58
C050	Dev International	C	2.02	225	431	10	42	1.6	77	21	58
C050	Dev International	C	2.03	225	585	10	55	31	77	15	58
C050	Dev International	C	2.04	250	674	10	92	38	77	26	47
C051	Deventhira Spinners Pvt Ltd	A	2.01	500	669	8	18	58	77	34	92
C051	Deventhira Spinners Pvt Ltd	B	2.02	500	996	8	56	0.7	77	32	8.3
C051	Deventhira Spinners Pvt Ltd	B	2.03	500	997	8	55	75	77	31	97
C052	Divyalakshmi Mills Pvt Ltd	C	2.01	225	778	10	39	13	77	19	28
C052	Divyalakshmi Mills Pvt Ltd	C	2.02	500	337	10	40	13	77	19	2.3
C052	Divyalakshmi Mills Pvt Ltd	C	2.03	225	1297	10	39	18	77	19	28
C053	Dixey Textiles (P) Ltd	B	2.01	750	1413	8	57	23	77	29	38
C054	Durgesh Nandhini Oil Mills Spinning Division	B	2.01	500	1792	9	3	3.2	77	23	76
C054	Durgesh Nandhini Oil Mills Spinning Division	B	2.02	500	1794	9	3	8.4	77	23	98
C054	Durgesh Nandhini Oil Mills Spinning Division	B	2.03	500	1795	9	3	20	77	23	93
C054	Durgesh Nandhini Oil Mills Spinning Division	B	2.04	500	1786	9	3	2	77	24	68
C055	Easwari Knitting Works	C	2.01	800	1250	7	66	96	11	82	89
C056	Elgi Automotive Services Ltd.,	B	2.01	500	1474	9	2	27	77	21	56
C057	Elgitread (India) Ltd	C	2.01	1500	1434	10	49	4.1	77	5	45
C058	Enkay Enterprise	C	2.01	250	1435	10	38	18	77	19	3.5
C059	Ess Kay Yarn Dyeings	C	2.01	250	1436	10	38	23	77	19	2.7
C060	Eswari Creations	A	2.01	225	1281	8	14	30	77	35	38
C061	Eveready Spinning Mills (P) Ltd	A	2.01	1250	1779	8	14	28	77	41	26
C062	Excel Cotspin (India) (P) Ltd	A	2.01	1250	1713	8	10	5.9	77	38	18
C063	Expofab	A	2.01	850	1508	8	12	22	77	37	20
C064	Fab Colours	C	2.01	225	707	10	43	49	77	21	15
C065	Fab-N-Fabrics	B	2.01	750	1085	8	59	49	77	21	15
C065	Fab-N-Fabrics	B	2.02	750	1535	8	57	36	77	30	2.7

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C065	Fab-N-Fabrics	C	2.03	350	333	10	56	9.4	77	50	30
C066	Ferro Links	B	2.01	1250	2178	9	0	2	77	32	25
C067	Fisher Spinning Mills India (P) Ltd	A	2.01	1250	1848	8	14	18	77	41	31
C067	Fisher Spinning Mills India (P) Ltd	A	2.02	1250	1705	8	14	47	77	41	35
C067	Fisher Spinning Mills India (P) Ltd	A	2.03	1250	1780	8	14	57	77	41	32
C067	Fisher Spinning Mills India (P) Ltd	A	2.04	1250	1782	8	15	10	77	41	11
C067	Fisher Spinning Mills India (P) Ltd	A	2.05	1250	1781	8	14	60	77	41	13
C067	Fisher Spinning Mills India (P) Ltd	A	2.06	1250	1876	8	15	28	77	41	28
C068	Forknits	C	2.01	750	404	10	41	29	77	24	93
C068	Forknits	C	2.02	750	591	10	41	38	77	25	47
C069	Frontline Chemicals	C	2.01	225	1299	10	44	34	77	23	41
C069	Frontline Chemicals	C	2.02	225	1299	10	44	39	77	23	41
C070	G.K.Wind Farms India (P) Ltd	C	2.01	250	632	10	66	11	77	32	87
C071	G.R. Natarajan & Co.,	A	2.01	350	2165	8	17	54	77	36	33
C071	G.R. Natarajan & Co.,	A	2.02	350	2411	8	17	44	77	37	41
C072	G.R. Thanga Maligai (Firm)	A	2.01	600	836	9	21	85	78	51	17
C072	G.R. Thanga Maligai (Firm)	A	2.02	600	1011	9	21	61	78	51	3
C073	G.R. Thangamaligai Jewellers (P) Ltd.,	A	2.01	600	1010	9	21	30	78	34	81
C074	G.R. Thangamaligai Pearl & Kundan Jewellery	A	2.01	500	383	10	39	20	77	19	53
C075	G.R.Thanga Malligai	C	2.01	600	725	9	21	62	78	51	14
C076	Gangai Garments	C	2.01	500	552	10	56	59	77	14	17
C076	Gangai Garments	C	2.02	500	553	10	56	52	77	14	23
C077	Gangotri Textiles Ltd	C	2.01	1650	1260	10	36	78	77	19	81
C077	Gangotri Textiles Ltd	C	2.02	1650	1261	10	36	64	77	20	32
C077	Gangotri Textiles Ltd	C	2.03	1650	1262	10	36	27	77	19	78
C078	Gates Wears	C	2.01	250	1232	10	41	36	77	23	33
C079	Global Polybags Industries (P) Ltd	A	2.01	1250	1369	8	10	44	77	38	33
C079	Global Polybags Industries (P) Ltd	A	2.02	1250	1454	8	10	56	77	38	25
C080	Gomathi Spinning Mills India (P) Ltd	A	2.01	1250	2073	8	11	48	77	39	4.3
C081	Gomuki Spinning Mills Pvt Ltd	C	2.01	225	978	10	42	43	77	23	29
C081	Gomuki Spinning Mills Pvt Ltd	C	2.02	225	954	10	42	24	77	23	37
C081	Gomuki Spinning Mills Pvt Ltd	C	2.03	225	1117	10	42	21	77	23	36
C081	Gomuki Spinning Mills Pvt Ltd	C	2.04	225	1134	10	43	10	77	23	42
C081	Gomuki Spinning Mills Pvt Ltd	C	2.05	225	1134	10	43	15	77	23	43
C081	Gomuki Spinning Mills Pvt Ltd	C	2.06	225	1183	10	42	54	77	22	39
C081	Gomuki Spinning Mills Pvt Ltd	C	2.07	225	1184	10	42	56	77	22	49
C081	Gomuki Spinning	C	2.08	225	1184	10	42	0.9	77	22	49

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	Mills Pvt Ltd										
C081	Gomuki Spinning Mills Pvt Ltd	C	2.09	225	1183	10	42	58	77	22	38
C081	Gomuki Spinning Mills Pvt Ltd	C	2.1	225	1183	10	42	2.5	77	22	38
C081	Gomuki Spinning Mills Pvt Ltd	C	2.11	225	1294	10	42	49	77	22	45
C082	Goodluck Windfarms India (P)Ltd	A	2.01	225	1307	8	13	37	77	36	15
C083	Goodwill Apparels	C	2.01	225	715	10	42	30	77	23	631
C083	Goodwill Apparels	C	2.02	225	715	10	41	950	77	23	622
C084	Goyal Ispat Ltd	A	2.01	600	814	9	21	82	78	60	15
C084	Goyal Ispat Ltd	A	2.02	600	1095	9	15	7.8	79	10	55
C084	Goyal Ispat Ltd	A	2.03	600	1096	9	15	37	79	10	62
C085	GRT Hotels and Resorts Pvt Ltd.,	A	2.01	600	949	9	21	76	78	44	24
C086	Guhan Textile Mills Pvt Ltd	A	2.01	1250	1336	8	10	45	77	38	59
C087	Guru Paper Mills (P) Ltd	B	2.01	750	1924	8	59	119	77	27	75
C088	Hazel Mercantile Ltd	C	2.01	1250	1196	10	42	41	77	24	20
C088	Hazel Mercantile Ltd	C	2.02	1250	1197	10	42	31	77	24	24
C089	Hotel A.R.A.P Pvt Ltd	C	2.01	350	1316	10	35	8.7	77	19	1.8
C090	Impact Fashions	C	2.01	225	1000	10	67	19	77	39	72
C090	Impact Fashions	C	2.02	225	1087	10	67	1	77	39	4
C090	Impact Fashions	C	2.03	225	1088	10	67	14	77	39	41
C091	Jai Hind Spinning Mills Ltd	B	2.01	1250	938	8	56	20	77	40	15
C092	Jain Hashmukh Pukhraj	C	2.01	330	1002	7	60	3.3	11	88	79
C093	Jain Jindas Pukhraj	C	2.01	330	1001	7	60	4.1	11	88	96
C094	Jain Mahendra Pukhraj	C	2.01	330	1189	7	69	73	11	85	47
C095	Jansons Industries Ltd	B	2.01	1250	2211	9	0	17	77	33	4.1
C096	Jayachandra Bearings (India) Pvt. Ltd	C	2.01	250	1164	10	76	22	77	36	100
C097	Jeyavishnu Spintex (P) Ltd	C	2.01	500	1170	10	41	31	77	23	29
C098	JVS Export	B	2.01	230	520	10	43	12	77	22	49
C098	JVS Export	B	2.02	230	520	10	43	7	77	22	49
C098	JVS Export	C	2.03	800	1735	8	56	45	77	28	58
C098	JVS Export	C	2.04	800	1665	8	57	9	77	28	49
C099	K. Paramasivam	A	2.01	225	2162	8	9	47	77	33	49
C100	K. Seyad Abdul Kareem	A	2.01	225	1004	8	19	56	77	33	19
C101	K. Yoosuf Meeran	A	2.01	225	1003	8	19	1.6	77	33	20
C102	K.M.Knitwear	C	2.01	250	1231	10	41	35	77	23	56
C102	K.M.Knitwear	C	2.02	250	1463	10	41	176	77	23	218
C103	K.S. Kamalakannan	A	2.01	225	1158	8	19	56	77	34	4.3
C104	K.S.R. Textile Mills (P) Ltd	C	2.01	800	1040	7	67	14	11	83	70
C104	K.S.R. Textile Mills (P) Ltd	C	2.02	800	1040	7	67	29	11	83	50
C105	K.T.V. Oil Mills	A	2.01	1650	1418	8	58	24	77	28	100
C105	K.T.V. Oil Mills	A	2.02	1650	1419	8	58	96	77	28	55
C105	K.T.V. Oil Mills	B	2.03	1650	1444	8	57	94	77	29	0.3
C105	K.T.V. Oil Mills	B	2.04	1650	2429	8	18	98	77	40	89

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C105	K.T.V. Oil Mills	B	2.05	1650	2430	8	19	32	77	40	55
C106	Kamachi Steels Ltd	A	2.01	600	1132	9	15	33	79	1	70
C106	Kamachi Steels Ltd	A	2.02	600	1132	9	15	12	79	16	71
C107	Kandagiri Spinning Mills Ltd	A	2.01	1250	1404	8	13	49	77	41	47
C107	Kandagiri Spinning Mills Ltd	A	2.02	1250	1405	8	14	28	77	41	11
C107	Kandagiri Spinning Mills Ltd	B	2.03	1250	2004	9	0	39	77	32	29
C108	Kannammal	C	2.01	250	489	10	82	54	77	18	60
C109	Karthi Rice Mill	C	2.01	350	334	10	56	6	77	5	22
C110	Kaveri Bio Proteins (P) Ltd	A	2.01	225	1742	8	12	3.5	77	33	59
C111	Kavery Textiles	C	2.01	225	1110	10	43	59	77	21	27
C112	Kavin Hospital	A	2.01	225	1296	8	12	4	77	35	35
C113	Kavitha Dyeings	A	2.01	225	707	8	11	44	77	34	38
C113	Kavitha Dyeings	A	2.02	225	1278	8	11	0	77	29	0
C113	Kavitha Dyeings	A	2.03	250	1877	8	12	15	77	35	35
C114	Kayaar Exports (P) Ltd	C	2.01	1650	1292	10	38	85	77	10	92
C115	Kesharinandan Knit Fabrics (P) Ltd.,	B	2.01	750	1519	8	57	16	77	29	25
C115	Kesharinandan Knit Fabrics (P) Ltd.,	C	2.02	750	669	10	35	41	77	10	24
C116	Kevi Textiles Clothing Company	C	2.01	250	1277	10	75	95	77	37	1.6
C117	Kiwi Cottspin Mills (P) Ltd	B	2.01	750	1727	8	59	0.6	77	26	8.4
C118	Kongarar Cotton & Synthetics Ltd	B	2.01	750	2246	9	0	39	77	26	41
C119	Krishna Poly Packs (P) Ltd	B	2.01	750	1753	8	59	2.7	77	30	47
C119	Krishna Poly Packs (P) Ltd	B	2.02	750	2120	9	1	16	77	31	36
C120	Krishna Squeezer & Driyer Ltd	C	2.01	350	1391	10	35	32	77	18	47
C121	Kutti Spinners (P) Ltd.,	A	2.01	350	1644	8	11	9.8	77	37	27
C121	Kutti Spinners (P) Ltd.,	C	2.02	1250	2220	8	59	40	77	33	13
C122	L.G.Balakrishnan & Bros Ltd	B	2.01	850	615	10	91	4.9	77	30	37
C122	L.G.Balakrishnan & Bros Ltd	B	2.02	500	1475	9	2	22	77	21	46
C122	L.G.Balakrishnan & Bros Ltd	A	2.03	500	1476	9	2	37	77	21	37
C123	L.K.Textiles (P) Ltd	C	2.01	600	699	7	84	79	90	33	61
C123	L.K.Textiles (P) Ltd	B	2.02	330	827	7	59	56	11	88	97
C124	Lakshmi Saraswathi Cotton Mills Pvt. Ltd	C	2.01	500	1432	9	0	14	77	17	26
C125	Lakshmi Spinners	C	2.01	750	1096	10	42	36	78	28	28
C126	Lawn Textile Mills (P) Ltd	C	2.01	225	1031	10	44	33	77	21	11
C126	Lawn Textile Mills (P) Ltd	C	2.02	225	1031	10	44	23	77	21	5.8
C126	Lawn Textile Mills (P) Ltd	C	2.03	225	1031	10	44	36	77	21	17
C126	Lawn Textile Mills (P) Ltd	C	2.04	225	1031	10	44	15	77	21	5.5

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C126	Lawn Textile Mills (P) Ltd	C	2.05	225	1031	10	44	27	77	21	26
C127	Leeds Spinning Mills Pvt. Ltd	C	2.01	250	1321	10	75	88	77	35	79
C127	Leeds Spinning Mills Pvt. Ltd	C	2.02	250	1322	10	76	0.6	77	35	82
C127	Leeds Spinning Mills Pvt. Ltd	B	2.03	250	1323	10	76	12	77	35	86
C128	LGB Auto Products Ltd	A	2.01	500	1477	9	2	55	77	21	42
C129	M. Ponnusamy	B	2.01	225	2111	8	10	16	77	35	2
C130	M. Thiagarajan (Sree Meenakshisundaram Textiles)	C	2.01	750	1729	8	59	55	77	26	3.7
C131	M.P. Creation	C	2.01	250	1293	10	75	56	77	36	98
C132	M.R. Agency	C	2.01	250	358	10	92	72	77	14	42
C132	M.R. Agency	A	2.02	250	1387	10	75	4.6	77	35	20
C133	M.T.A. Mills (P) Ltd	C	2.01	350	2168	8	17	60	77	36	33
C134	Magna Electro Castings Ltd	C	2.01	750	476	10	35	25	77	8	27
C134	Magna Electro Castings Ltd	C	2.02	1650	859	10	36	11	77	12	46
C135	Mahalakshmi Textiles	C	2.01	225	725	10	39	30	77	20	94
C136	Maharaja Modern Rice Mill	C	2.01	350	465	10	55	42	77	5	52
C137	Mallow International	C	2.01	250	971	10	44	39	77	21	25
C137	Mallow International	C	2.02	350	1097	10	35	54	77	18	52
C137	Mallow International	B	2.03	350	1370	10	36	0.5	77	17	14
C138	Mallur Siddeswara Spinning Mills (P) Ltd	A	2.01	1650	1682	8	57	33	77	26	60
C139	Mani Spinning Mills (P) Ltd	A	2.01	1250	1703	8	14	37	77	41	39
C139	Mani Spinning Mills (P) Ltd	A	2.02	1250	1704	8	14	38	77	41	23
C140	Maple Overseas (P) Ltd	A	2.01	225	1878	8	11	41	77	38	14
C141	Meera Textiles (P) Ltd	A	2.01	1250	1669	8	10	56	77	39	8.4
C142	Metro Fabrics	C	2.01	225	1252	8	13	38	77	36	36
C143	Mithun Wind Farms	A	2.01	225	1452	10	38	31	77	18	35
C144	Moon Spinners Ltd	C	2.01	500	1599	8	17	20	77	42	14
C145	Motley Wrenchyarn (P) Ltd	A	2.01	350	1379	10	36	5.8	77	19	9.2
C146	Mountain Spinning Mills Ltd	B	2.01	500	1750	8	15	35	77	44	18
C147	MSS Spinners Pvt Ltd	C	2.01	750	1752	8	58	32	77	29	49
C148	Murugan Textiles	C	2.01	500	404	10	54	55	77	9	18
C148	Murugan Textiles	C	2.02	500	540	10	56	46	77	13	38
C148	Murugan Textiles	B	2.03	500	541	10	56	39	77	13	16
C149	Muthu Export House	A	2.01	500	1583	9	1	56	77	22	12
C150	Muthuraam Poly Spin	A	2.01	250	1175	10	76	13	77	36	81
C150	Muthuraam Poly Spin	C	2.02	225	2383	8	20	45	77	35	65
C150	Muthuraam Poly Spin	B	2.03	225	2383	8	20	36	77	35	71
C151	N.R.U Spinning Mills Ltd	B	2.01	750	2127	9	1	49	77	24	27
C152	N.S.P.Knitting Mills	B	2.01	500	1074	8	59	33	77	19	2.6
C152	N.S.P.Knitting Mills	C	2.02	500	1105	8	58	51	77	19	4.5
C152	N.S.P.Knitting Mills	C	2.03	500	331	8	42	330	77	21	500

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C152	N.S.P.Knitting Mills	C	2.04	500	330	8	42	392	77	21	684
C153	N.S.P.Tex	C	2.01	750	875	10	41	361	77	25	797
C154	Naga Limited	C	2.01	800	900	7	67	87	11	85	65
C154	Naga Limited	C	2.02	800	899	7	68	38	11	86	13
C155	Nanco Hosiery Mills	C	2.01	225	817	10	43	54	77	18	48
C155	Nanco Hosiery Mills	C	2.02	225	817	10	43	58	77	18	48
C156	Nandhi Spinning Mill (P) Ltd	C	2.01	250	1108	10	45	14	77	22	36
C157	Neeraj Enterprises (P) Ltd.,	B	2.01	250	492	10	92	26	77	25	57
C158	Nelsun Paper Mills Ltd	C	2.01	750	1539	8	59	0.5	77	22	27
C159	NIF Wind Energy India Pvt Ltd	C	2.01	250	849	10	41	33	77	20	45
C159	NIF Wind Energy India Pvt Ltd	C	2.02	250	848	10	41	31	77	20	40
C160	Nilgiri Textiles Pvt Limited	A	2.01	800	1049	7	68	90	11	82	41
C161	P. Mohan	A	2.01	225	2019	8	10	26	77	34	27
C162	P. Palanivel	C	2.01	225	2143	8	11	10	77	35	16
C163	P.K.P.Processors	A	2.01	250	530	10	94	96	77	26	55
C164	P.S.K. Textiles India Pvt Ltd	A	2.01	250	2349	8	8	40	77	34	50
C164	P.S.K. Textiles India Pvt Ltd	A	2.02	250	2349	8	8	53	77	34	50
C165	P.S.K.Engineering Construction & Co	B	2.01	350	1776	8	11	35	77	36	18
C166	Palaniappa Textiles (P) Ltd	A	2.01	750	1784	8	59	21	77	27	25
C167	Pallava Textiles Ltd	B	2.01	750	1402	8	9	74	77	33	25
C167	Pallava Textiles Ltd	A	2.02	750	2014	9	2	24	77	25	10
C168	Pallipalayam Spinners (P) Ltd	A	2.01	750	1968	8	10	74	77	33	12
C169	Pandian Textile Mills (P) Ltd	A	2.01	1250	1889	8	10	4	77	38	44
C170	Parani Spinning Mills Pvt Ltd.,	A	2.01	1250	1334	8	11	16	77	38	49
C171	Pariyur Amman Spinning Mills Ltd	C	2.01	750	1910	8	16	17	77	37	61
C172	Parvathy Dyeing	C	2.01	500	547	7	49	88	12	11	72
C173	Pavai Alloys & Steels Pvt Ltd.,	C	2.01	330	1033	7	59	80	11	88	71
C174	Pavathal Spinning Mills (P) Ltd	C	2.01	250	1474	10	77	35	77	39	1.9
C175	Pioneer Woven Sacks (P) Ltd	C	2.01	225	351	10	41	54	77	21	8.3
C175	Pioneer Woven Sacks (P) Ltd	C	2.02	225	525	10	55	29	77	15	11
C175	Pioneer Woven Sacks (P) Ltd	A	2.03	225	525	10	42	15	77	20	56
C176	Plant Lipids (P) Ltd	A	2.01	600	1577	8	18	34	77	40	23
C176	Plant Lipids (P) Ltd	A	2.02	600	1578	8	18	26	77	40	23
C176	Plant Lipids (P) Ltd	A	2.03	600	1579	8	18	30	77	40	33
C176	Plant Lipids (P) Ltd	A	2.04	600	1580	8	18	22	77	40	32
C176	Plant Lipids (P) Ltd	A	2.05	600	2064	8	24	14	77	33	57
C176	Plant Lipids (P) Ltd	A	2.06	600	2035	8	23	57	77	34	45
C176	Plant Lipids (P) Ltd	A	2.07	600	2036	8	24	12	77	34	39
C177	Pon Pure Chem (P)	A	2.01	250	2034	8	11	8.1	77	36	27

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C177	Pon Pure Chem (P) Ltd	A	2.02	250	2077	8	12	24	77	36	30
C177	Pon Pure Chem (P) Ltd	A	2.03	250	2078	8	12	24	77	36	30
C178	Poppys Knitwear (P) Ltd	A	2.01	850	1452	8	18	87	77	37	23
C178	Poppys Knitwear (P) Ltd	A	2.02	850	1751	8	18	74	77	37	16
C178	Poppys Knitwear (P) Ltd	A	2.03	850	1806	8	9	86	77	37	51
C178	Poppys Knitwear (P) Ltd	A	2.04	850	2350	8	17	82	77	37	21
C178	Poppys Knitwear (P) Ltd	A	2.05	850	2351	8	18	28	77	36	98
C178	Poppys Knitwear (P) Ltd	C	2.06	1250	2502	8	13	32	77	41	33
C178	Poppys Knitwear (P) Ltd	C	2.07	850	576	10	93	51	77	30	10
C178	Poppys Knitwear (P) Ltd	C	2.08	850	577	10	93	8.5	77	28	8.2
C178	Poppys Knitwear (P) Ltd	C	2.09	850	578	10	92	77	77	29	16
C179	Power Link System (P) Ltd	C	2.01	230	518	11	85	7	75	98	6
C179	Power Link System (P) Ltd	C	2.02	330	1157	11	85	81	76	26	12
C180	Power Spinning Mills	C	2.01	225	839	10	43	18	77	23	5
C180	Power Spinning Mills	C	2.02	225	839	10	43	23	77	23	5.6
C181	Prabath Mills	B	2.01	500	622	7	62	3.3	11	81	79
C182	Prabha Engineers	B	2.01	500	1793	9	3	2.7	77	23	24
C182	Prabha Engineers	B	2.02	600	2213	9	0	24	77	25	2.1
C182	Prabha Engineers	B	2.03	600	2214	9	0	25	77	24	50
C182	Prabha Engineers	C	2.04	600	2283	9	0	39	77	26	21
C183	Prabhu Spinning Mills (P) Ltd	C	2.01	1650	1284	10	58	86	77	21	98
C184	Prabhu Spinning Mills (P) Ltd	C	2.01	1650	1159	10	59	45	77	33	61
C185	Prachidhi Spinners Pvt Ltd	C	2.01	750	1074	10	38	13	77	9	1.8
C185	Prachidhi Spinners Pvt Ltd	C	2.02	750	773	10	38	17	77	8	50
C186	Prassanna Spinning Mills	C	2.01	250	478	10	94	5.3	77	25	84
C186	Prassanna Spinning Mills	C	2.02	250	479	10	94	14	77	25	66
C186	Prassanna Spinning Mills	C	2.03	250	480	10	94	10	77	25	48
C186	Prassanna Spinning Mills	C	2.04	250	481	10	94	21	77	25	32
C187	Praveen Seeds Pvt. Ltd.,	C	2.01	250	1109	10	45	7.6	77	22	37
C188	Precision Equipments (Chennai) (P) Ltd	C	2.01	250	513	10	95	23	77	26	38
C188	Precision Equipments (Chennai) (P) Ltd	C	2.02	250	514	10	95	13	77	26	35
C189	Precision Machine & Auto Components (P) Ltd	C	2.01	250	512						

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C190	Premdurai Spinning Mills (P) Ltd	C	2.01	600	556	10	56	14	77	14	36
C190	Premdurai Spinning Mills (P) Ltd	C	2.02	600	557	10	56	4.2	77	14	31
C190	Premdurai Spinning Mills (P) Ltd	C	2.03	600	558	10	56	16	77	14	28
C191	Pressmatic Engineers	C	2.01	330	810	7	59	31	11	88	52
C192	Prime Wind Energy Company	A	2.01	250	670	10	55	53	77	18	67
C193	Purani Textiles Pvt Ltd	C	2.01	600	812	7	85	79	92	4	30
C194	Pushpak Precision Industries Pvt Ltd	A	2.01	250	671	10	55	62	77	18	76
C195	PVRSM Broilers & Hatcheries (P) Ltd	A	2.01	250	1798	8	12	39	77	39	21
C195	PVRSM Broilers & Hatcheries (P) Ltd	C	2.02	250	1879	8	12	39	77	39	21
C196	R.G. Selvarathi Coolie Mills	C	2.01	350	346	10	55	43	77	5	32
C197	R.M.P. Farms	C	2.01	250	531	10	94	84	77	26	86
C198	R.N. Polysacks (P) Ltd	B	2.01	225	655	10	44	90	44	22	51
C199	Raghav Industries Ltd	A	2.01	1250	1645	8	56	1.1	77	40	11
C200	Raju & Co	B	2.01	500	1309	8	14	41	77	36	15
C201	Raju Spinning Mills (P) Ltd	B	2.01	1250	886	8	56	12	77	39	39
C201	Raju Spinning Mills (P) Ltd	B	2.02	1250	887	7	55	50	77	40	0.1
C201	Raju Spinning Mills (P) Ltd	B	2.03	1250	1941	8	59	28	77	33	3.5
C201	Raju Spinning Mills (P) Ltd	C	2.04	1250	1942	8	59	39	77	32	38
C202	Rakhava Impex	C	2.01	250	637	10	72	92	77	38	9.3
C202	Rakhava Impex	A	2.02	250	724	10	74	85	77	38	82
C203	Ran India Steels (P) Ltd	A	2.01	1250	1127	8	11	9.2	77	38	28
C203	Ran India Steels (P) Ltd	A	2.02	1250	1149	8	10	46	77	38	14
C203	Ran India Steels (P) Ltd	A	2.03	1250	1339	8	13	39	77	41	12
C203	Ran India Steels (P) Ltd	A	2.04	1250	1368	8	11	3.7	77	37	55
C203	Ran India Steels (P) Ltd	A	2.05	1250	1399	8	13	6.6	77	42	2.3
C203	Ran India Steels (P) Ltd	A	2.06	1250	1421	8	13	50	77	41	12
C204	Rasi Seeds Pvt Ltd.,	A	2.01	1250	1400	8	13	44	77	42	18
C204	Rasi Seeds Pvt Ltd.,	A	2.02	1250	1401	8	14	4	77	42	45
C204	Rasi Seeds Pvt Ltd.,	A	2.03	1250	1403	8	14	6.9	77	42	29
C204	Rasi Seeds Pvt Ltd.,	A	2.04	1250	1424	8	10	3.7	77	39	0.6
C204	Rasi Seeds Pvt Ltd.,	A	2.05	1250	1433	8	10	37	77	38	21
C204	Rasi Seeds Pvt Ltd.,	A	2.06	1250	1438	8	13	4.6	77	43	6.8
C204	Rasi Seeds Pvt Ltd.,	A	2.07	1250	1456	8	13	42	77	42	59
C204	Rasi Seeds Pvt Ltd.,	B	2.08	1250	1492	8	13	17	77	43	21
C205	Rathnagiri Impex Pvt Ltd	C	2.01	750	1732	8	59	55	77	26	27
C206	RBR Garments	C	2.01	225	541	10	44	23	77	23	65
C206	RBR Garments	C	2.02	225	541	10	44	15	77	23	68

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C207	Rogini Mills	C	2.01	225	1185	10	37	7.9	77	18	5.6
C207	Rogini Mills	C	2.02	225	1185	10	37	0.7	77	18	0.3
C207	Rogini Mills	C	2.03	225	1185	10	37	5.7	77	17	5.6
C207	Rogini Mills	C	2.04	225	1185	10	37	7.9	77	18	5.6
C207	Rogini Mills	C	2.05	225	1185	10	37	7.9	77	18	5.6
C207	Rogini Mills	C	2.06	225	1185	10	37	7.9	77	18	5.6
C207	Rogini Mills	C	2.07	225	1186	10	36	60	77	17	41
C207	Rogini Mills	C	2.08	225	1208	10	36	51	77	17	47
C207	Rogini Mills	C	2.09	225	1345	10	36	51	77	18	13
C207	Rogini Mills	C	2.1	225	1208	10	36	56	77	17	47
C207	Rogini Mills	C	2.11	225	1318	10	36	58	77	18	5.6
C207	Rogini Mills	A	2.12	225	1318	10	36	54	77	18	1.8
C208	RRD Tex (P) Ltd	A	2.01	1250	1455	8	14	20	77	40	57
C208	RRD Tex (P) Ltd	A	2.02	1250	1453	8	14	8.8	77	40	36
C208	RRD Tex (P) Ltd	C	2.03	1250	1451	8	14	58	77	41	41
C209	S. Balakrishnan	C	2.01	225	1238	10	38	30	77	18	41
C210	S. Ganthimathi	A	2.01	250	486	10	82	57	77	18	60
C211	S. Muthusamy	A	2.01	225	2145	8	13	2	77	32	52
C212	S. Natarajan	C	2.01	225	2150	8	11	56	77	33	50
C213	S.G. Associates	C	2.01	225	669	10	94	34	77	30	32
C213	S.G. Associates	A	2.02	250	562	10	92	41	77	13	87
C214	S.K. Nallusamy	A	2.01	250	1612	8	9	94	77	34	12
C215	S.K.T. Textile Mills	C	2.01	350	2202	8	18	19	77	36	41
C215	S.K.T. Textile Mills	C	2.02	350	1332	10	36	35	77	18	2.3
C216	S.P. Apparels Ltd	C	2.01	800	1078	11	85	26	76	90	80
C216	S.P. Apparels Ltd	C	2.02	800	1079	11	85	60	76	92	80
C216	S.P. Apparels Ltd	C	2.03	330	1107	11	88	44	75	95	49
C216	S.P. Apparels Ltd	A	2.04	330	1181	11	88	88	75	93	10
C217	S.P. Superfine Cotton Mills (P) Ltd	A	2.01	1250	1658	8	10	20	77	38	39
C217	S.P. Superfine Cotton Mills (P) Ltd	A	2.02	1250	1714	8	14	20	77	40	57
C218	Sabari Exim (P) Ltd	A	2.01	600	1050	7	89	95	90	99	96
C218	Sabari Exim (P) Ltd	C	2.02	600	1051	7	89	94	90	98	3.3
C219	Sabari Jewellery	C	2.01	225	576	10	41	18	77	19	17
C220	Sakthi Animal Feeds	C	2.01	250	1166	10	75	54	77	37	8.1
C221	Sakthi Murugan Agro Foods Ltd	C	2.01	250	1173	10	74	91	77	36	73
C221	Sakthi Murugan Agro Foods Ltd	C	2.02	250	1173	10	75	5	77	36	72
C223	Sakthi Murugan Wind Farm (P) Ltd	C	2.01	250	1254	10	75	59	10	75	59
C223	Sakthi Murugan Wind Farm (P) Ltd	A	2.02	250	1254	10	75	72	77	36	65
C224	Sakthi Poultry Farm	A	2.01	225	2112	8	15	43	77	35	19
C224	Sakthi Poultry Farm	A	2.02	225	2146	8	14	97	77	35	16
C225	Sakthidaran Spintex Mills (P) Ltd	C	2.01	1250	1185	8	10	30	77	38	51
C226	Sakthivelu Poly Pack	A	2.01	225	545	10	41	58	77	21	8.8
C227	Salem Polypacks Ltd	B	2.01	225	2110	8	15	49	77	34	14
C228	Samba Publishing Co.(P) Ltd	A	2.01	800	1734	7	73	41	98	95	29
C229	Sambandam Mills	A	2.01	600	698	7	84	81	90	35	87
C230	Sambandam Spinning Mills Ltd	A	2.01	1250	1371	8	13	39	77	41	49
C230	Sambandam Spinning Mills Ltd	B	2.02	1250	1382	8	13	46	77	41	26
C230	Sambandam Spinning	B	2.03	1250	1995	8	58	52	77	33	14

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	Mills Ltd										
C230	Sambandam Spinning Mills Ltd	B	2.04	1250	2022	9	0	35	77	33	7.4
C230	Sambandam Spinning Mills Ltd	C	2.05	1250	2023	8	59	21	77	31	22
C231	Sanjeevi Wind Mills	A	2.01	250	1174	10	73	40	77	37	45
C232	Santha Spinning and Weaving Mills Pvt Ltd	A	2.01	1250	1346	8	10	54	77	36	39
C233	Santhi Casting Works	A	2.01	500	894	8	14	8	77	36	20
C233	Santhi Casting Works	A	2.02	500	1803	8	24	51	77	33	55
C233	Santhi Casting Works	C	2.03	500	895	8	14	15	77	35	52
C234	Santhosh Textile Process	C	2.01	600	660	10	56	7	77	20	36
C234	Santhosh Textile Process	C	2.02	225	631	10	55	45	77	17	18
C234	Santhosh Textile Process	C	2.03	225	632	10	55	42	77	17	29
C235	Saradhambika Paper & Board Mills (P) Ltd	A	2.01	750	861	10	42	65	10	42	65
C236	Saran Garments	C	2.01	850	1175	8	10	34	77	36	23
C237	Saran Knit Wear	B	2.01	225	455	10	92	48	77	13	91
C238	Scientific MES-Technik (P) Ltd	C	2.01	600	1857	9	0	30	77	17	9
C239	Seethalakshmi Textiles	A	2.01	250	1168	10	76	0.4	77	36	85
C240	Selvaganapathy Cotton Mills (P) Ltd	A	2.01	500	721	8	9	53	77	33	98
C240	Selvaganapathy Cotton Mills (P) Ltd	C	2.02	500	1272	8	9	57	77	33	61
C241	Selvam Traders	C	2.01	225	432	10	43	6	77	31	0
C241	Selvam Traders	C	2.02	225	500	10	43	6	77	31	0
C241	Selvam Traders	B	2.03	225	890	10	43	6	77	31	0
C242	Selvi Spinning Mill	C	2.01	750	1594	8	58	50	77	27	16
C243	Senbagam Textiles and Spinners	B	2.01	250	1271	10	38	27	77	18	47
C244	Sengunthar Mills (P) Ltd	A	2.01	1250	1623	8	59	50	77	31	56
C245	Seyad Cotton Mills Limited	A	2.01	500	1328	8	19	45	77	33	18
C245	Seyad Cotton Mills Limited	A	2.02	500	1484	8	19	41	77	34	14
C245	Seyad Cotton Mills Limited	A	2.03	500	1614	8	18	8.3	77	42	20
C246	Seyad Home Industries Pvt Ltd	A	2.01	500	875	8	19	51	77	33	26
C246	Seyad Home Industries Pvt Ltd	A	2.02	225	1155	8	19	55	77	34	12
C247	Seyad Shariat Finance Limited	A	2.01	225	1447	8	12	24	77	34	5.6
C247	Seyad Shariat Finance Limited	A	2.02	225	1572	8	20	1.5	77	34	12
C247	Seyad Shariat Finance Limited	A	2.03	225	2114	8	19	59	77	34	58
C247	Seyad Shariat Finance Limited	A	2.04	225	753	8	13	12	77	34	18
C248	Seyadu Beedi Company	C	2.01	500	1598	8	17	50	77	42	2.3
C249	Shah Dilip Ghisalal	B	2.01	330	1223	7	69	50	11	85	40

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C250	Shakthi Murugan Textiles	C	2.01	750	1681	8	58	73	77	27	6.8
C251	Shambhu Vengu & Co.	B	2.01	225	1476	8	37	5.2	77	18	55
C252	Shambhu Vengu Spinning Mills (P) Ltd	A	2.01	500	1603	8	59	3	77	17	35
C253	Shanmugam Powerr Looms	A	2.01	225	1293	8	14	..3.8	77	35	45
C253	Shanmugam Powerr Looms	A	2.02	250	2063	8	14	28	77	35	38
C253	Shanmugam Powerr Looms	C	2.03	250	2340	8	14	0.8	77	35	53
C254	Sharp Engineers	C	2.01	500	550	10	57	15	77	13	19
C254	Sharp Engineers	C	2.02	500	551	10	57	20	77	13	13
C254	Sharp Engineers	C	2.03	600	587	10	56	24	77	12	46
C254	Sharp Engineers	A	2.04	600	588	10	56	24	77	12	42
C255	Shenthur Alloys Foundry	A	2.01	350	2196	8	18	12	77	36	26
C256	Shiner Sacks Pvt Ltd	C	2.01	225	2051	8	15	53	77	34	13
C257	Shiva Cargo Movers Ltd	C	2.01	225	392	7	39	55	120	85	72
C257	Shiva Cargo Movers Ltd	C	2.02	225	392	7	39	51	120	86	13
C258	Shiva Tex Yarn Ltd	C	2.01	225	443	7	39	36	120	84	66
C258	Shiva Tex Yarn Ltd	C	2.02	225	443	7	39	45	120	83	40
C258	Shiva Tex Yarn Ltd	C	2.03	225	440	7	35	61	120	26	42
C258	Shiva Tex Yarn Ltd	C	2.04	225	440	7	35	41	120	26	32
C258	Shiva Tex Yarn Ltd	C	2.05	225	440	7	35	43	120	24	77
C258	Shiva Tex Yarn Ltd	C	2.06	225	439	7	35	46	120	23	46
C258	Shiva Tex Yarn Ltd	C	2.07	225	441	7	35	20	120	25	73
C258	Shiva Tex Yarn Ltd	C	2.08	225	441	7	35	22	120	23	72
C258	Shiva Tex Yarn Ltd	C	2.09	225	441	7	35	3.4	120	20	63
C258	Shiva Tex Yarn Ltd	C	2.1	225	442	7	38	83	120	51	74
C258	Shiva Tex Yarn Ltd	C	2.11	225	442	7	38	90	120	50	24
C258	Shiva Tex Yarn Ltd	C	2.12	225	442	7	39	8.5	120	53	31
C258	Shiva Tex Yarn Ltd	C	2.13	225	442	7	39	13	120	51	90
C258	Shiva Tex Yarn Ltd	C	2.14	225	442	7	39	18	120	50	30
C258	Shiva Tex Yarn Ltd	C	2.15	225	442	7	39	36	120	51	94
C258	Shiva Tex Yarn Ltd	B	2.16	225	442	7	39	37	120	50	44
C259	Shree Bharani Spinnings (India) Ltd	B	2.01	500	1365	9	0	10	77	17	15
C260	Shree Malliga Mills Pvt Ltd	B	2.01	500	953	8	55	38	77	31	2.4
C260	Shree Malliga Mills Pvt Ltd	B	2.02	500	995	8	55	31	77	31	1
C260	Shree Malliga Mills Pvt Ltd	C	2.03	750	2011	9	2	8.3	77	25	26
C261	Shreya Power Farm (India) Pvt Ltd	A	2.01	250	1167	10	75	30	77	36	99
C262	Shri Amman Steel and Allied Industries	A	2.01	1250	1134	8	16	16	77	39	8.8
C263	Shri Govindaraja Mills Ltd	A	2.01	750	1341	8	15	52	77	38	55
C263	Shri Govindaraja Mills Ltd	A	2.02	750	1342	8	15	59	77	38	38
C263	Shri Govindaraja Mills Ltd	A	2.03	750	1343	8	15	45	77	38	8.2
C263	Shri Govindaraja	B	2.04	750	1344	8	15	37	77	38	11

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	Mills Ltd										
C263	Shri Govindaraja Mills Ltd	C	2.05	1650	1984	9	0	39	77	28	50
C264	Shri Hari Process	C	2.01	225	493	10	52	0	77	11	0
C265	Shri Hrishikesh Knitters	C	2.01	250	535	10	92	92	77	31	93
C265	Shri Hrishikesh Knitters	B	2.02	250	622	10	92	94	77	28	60
C266	Shri Renuga Soft-X Towels	B	2.01	500	1431	9	0	10	77	17	6
C267	Shri Renuga Textiles Ltd	B	2.01	500	1788	9	2	79	77	24	53
C267	Shri Renuga Textiles Ltd	A	2.02	500	1796	9	3	16	77	23	75
C268	Shri Rohith Spinners Pvt Ltd	A	2.01	500	243	8	9	36	77	32	34
C268	Shri Rohith Spinners Pvt Ltd	C	2.02	500	244	8	9	35	77	32	34
C269	Shri Santhosh Meenakshi Textiles	C	2.01	500	461	10	56	8.1	77	8	76
C269	Shri Santhosh Meenakshi Textiles	C	2.02	500	460	10	56	7.1	77	8	97
C269	Shri Santhosh Meenakshi Textiles	C	2.03	500	459	10	56	51	77	9	2.5
C270	Shri Santhosh Meenakshi Textiles Pvt. Ltd	B	2.01	600	548	10	57	1.8	77	14	48
C271	Shriram City Union Finance Ltd	B	2.01	250	1066	8	56	68	77	31	14
C271	Shriram City Union Finance Ltd	B	2.02	250	1066	8	56	93	77	31	10
C271	Shriram City Union Finance Ltd	B	2.03	250	1066	8	57	0.5	77	31	12
C271	Shriram City Union Finance Ltd	B	2.04	250	1067	8	57	6.3	77	31	22
C271	Shriram City Union Finance Ltd	B	2.05	250	1067	8	57	1.6	77	31	22
C271	Shriram City Union Finance Ltd	B	2.06	250	1067	8	57	9.7	77	31	33
C271	Shriram City Union Finance Ltd	B	2.07	250	1068	8	56	89	77	31	21
C271	Shriram City Union Finance Ltd	B	2.08	250	1068	8	56	89	77	31	31
C271	Shriram City Union Finance Ltd	B	2.09	250	1068	8	56	98	77	31	33
C271	Shriram City Union Finance Ltd	B	2.1	250	1156	8	57	33	77	31	15
C271	Shriram City Union Finance Ltd	B	2.11	250	1156	8	57	34	77	31	17
C271	Shriram City Union Finance Ltd	B	2.12	250	1157	8	57	29	77	31	3.9
C271	Shriram City Union Finance Ltd	B	2.13	250	1157	8	57	36	77	31	4.8
C271	Shriram City Union Finance Ltd	B	2.14	250	1157	8	57	25	77	31	14
C271	Shriram City Union Finance Ltd	B	2.15	250	1264	8	57	16	77	30	69
C271	Shriram City Union Finance Ltd	B	2.16	250	1264	8	57	23	77	30	70

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C271	Shriram City Union Finance Ltd	B	2.17	250	1264	8	57	11	77	30	78
C271	Shriram City Union Finance Ltd	B	2.18	250	1265	8	57	21	77	30	91
C271	Shriram City Union Finance Ltd	B	2.19	250	1265	8	57	19	77	30	80
C271	Shriram City Union Finance Ltd	A	2.2	250	1265	8	57	28	77	30	93
C272	Shusbindu Manufacturing (P) Ltd	A	2.01	225	898	8	11	58	77	37	4.9
C273	Siddhanatha Textiles Pvt Ltd	B	2.01	850	1517	8	16	37	77	36	21
C274	SJLT Textiles Pvt Ltd	B	2.01	1650	1755	8	56	75	77	32	84
C274	SJLT Textiles Pvt Ltd	C	2.02	1650	1754	8	58	62	77	31	61
C274	SJLT Textiles Pvt Ltd	C	2.03	750	1055	10	42	38	77	29	44
C274	SJLT Textiles Pvt Ltd	C	2.04	750	1056	10	42	24	77	29	46
C275	SJS Granites	C	2.01	225	1233	10	41	71	77	22	53
C275	SJS Granites	A	2.02	225	1333	10	41	68	77	22	76
C276	Sky International	A	2.01	225	229	8	14	60	77	33	28
C277	Sky Weaves	C	2.01	225	245	8	14	74	77	33	46
C277	Sky Weaves	A	2.02	800	872	11	82	7	76	64	85
C278	Somakannan Textiles	A	2.01	225	2106	8	16	8.5	77	34	5.6
C279	Sornalakshmi Spinning Mills Pvt Ltd	A	2.01	350	1643	8	13	40	77	37	59
C280	Soundararaja Mills Ltd	A	2.01	1250	1712	8	16	16	77	42	7.3
C280	Soundararaja Mills Ltd	A	2.02	1250	1678	8	16	2.6	77	42	17
C280	Soundararaja Mills Ltd	A	2.03	1250	1711	8	15	54	77	41	36
C280	Soundararaja Mills Ltd	A	2.04	1250	1679	8	16	3.1	77	41	56
C280	Soundararaja Mills Ltd	A	2.05	1250	1845	8	15	37	77	41	50
C280	Soundararaja Mills Ltd	A	2.06	1250	1677	8	15	44	77	42	22
C280	Soundararaja Mills Ltd	A	2.07	1250	1673	8	15	28	77	41	56
C280	Soundararaja Mills Ltd	A	2.08	1250	1672	8	15	20	77	41	41
C280	Soundararaja Mills Ltd	A	2.09	1250	1674	8	15	27	77	42	11
C280	Soundararaja Mills Ltd	A	2.1	1250	1710	8	15	27	77	42	48
C280	Soundararaja Mills Ltd	A	2.11	1250	1709	8	15	32	77	42	29
C280	Soundararaja Mills Ltd	A	2.12	1250	1676	8	15	24	77	42	35
C280	Soundararaja Mills Ltd	A	2.13	1250	1708	8	15	11	77	42	37
C280	Soundararaja Mills Ltd	A	2.14	1250	1675	8	15	2.6	77	42	4.6
C280	Soundararaja Mills Ltd	A	2.15	1250	1706	8	15	4.8	77	42	22
C280	Soundararaja Mills Ltd	C	2.16	1250	1707	8	15	16	77	42	19
C281	Sree Jagathguru Textiles Mills (P) Ltd	C	2.01	500	343	10	41	30	77	22	3.1

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C281	Sree Jagathguru Textiles Mills (P) Ltd	C	2.02	500	344	10	41	26	77	22	15
C281	Sree Jagathguru Textiles Mills (P) Ltd	C	2.03	500	345	10	41	34	77	33	13
C281	Sree Jagathguru Textiles Mills (P) Ltd	C	2.04	500	349	10	41	38	77	22	4.2
C281	Sree Jagathguru Textiles Mills (P) Ltd	C	2.05	500	451	10	42	0	77	22	42
C281	Sree Jagathguru Textiles Mills (P) Ltd	C	2.06	225	1111	10	44	14	77	21	8.6
C281	Sree Jagathguru Textiles Mills (P) Ltd	C	2.07	225	1112	10	44	9.5	77	21	10
C281	Sree Jagathguru Textiles Mills (P) Ltd	C	2.08	225	1124	10	44	21	77	21	13
C282	Sree Santhosh Garments	C	2.01	600	661	10	56	0.7	77	20	36
C282	Sree Santhosh Garments	C	2.02	600	523	10	56	63	77	13	100
C282	Sree Santhosh Garments	C	2.03	600	524	10	56	50	77	14	0.7
C282	Sree Santhosh Garments	C	2.04	600	555	10	56	1	77	14	32
C282	Sree Santhosh Garments	C	2.05	225	544	10	55	9	77	16	100
C282	Sree Santhosh Garments	C	2.06	225	545	10	55	15	77	17	1
C283	Sri Bagiyalakshmi Spinners	C	2.01	225	956	10	44	23	77	21	5.8
C283	Sri Bagiyalakshmi Spinners	C	2.02	225	957	10	44	32	77	21	5.5
C284	Sri Balaji Sago & Starch Products	C	2.01	250	1165	10	76	38	77	37	4.8
C285	Sri Balamurugan Modern Rice Mill	B	2.01	350	1303	10	36	30	77	19	3.6
C286	Sri Harikumar Textiles (P) Ltd	C	2.01	250	1503	8	56	65	77	31	71
C287	Sri Krishna Paper Industries	A	2.01	225	1420	10	37	13	77	18	40
C288	Sri Lakshmi Saraswathi Textiles (Arni) Ltd	C	2.01	1250	1136	8	13	24	77	42	25
C289	Sri Manohar Jewellery	C	2.01	225	874	10	41	23	77	19	17
C290	Sri Matha Spinning Mills (P) Ltd	C	2.01	750	1286	10	66	74	77	18	25
C290	Sri Matha Spinning Mills (P) Ltd	C	2.02	750	1287	10	66	62	77	18	70
C291	Sri Muhuntha Paper Boards	C	2.01	225	1422	10	37	7.9	77	18	44
C291	Sri Muhuntha Paper Boards	C	2.02	225	1422	10	37	3.1	77	18	44
C291	Sri Muhuntha Paper Boards	C	2.03	225	1421	10	36	58	77	18	44
C292	Sri Palani Murugan Spinning Mills	C	2.01	250	1296	10	76	5.9	77	37	93
C292	Sri Palani Murugan Spinning Mills	C	2.02	250	1133	10	75	25	77	37	96
C292	Sri Palani Murugan Spinning Mills	C	2.03	250	1133	10	75	34	77	37	34

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C292	Sri Palani Murugan Spinning Mills	C	2.04	250	1123	10	75	53	77	38	15
C292	Sri Palani Murugan Spinning Mills	C	2.05	250	1122	10	76	26	77	37	80
C292	Sri Palani Murugan Spinning Mills	A	2.06	250	1280	10	76	37	77	37	78
C293	Sri Palaniappa Wind Mill	A	2.01	225	2125	80	11	15	77	35	10
C293	Sri Palaniappa Wind Mill	B	2.02	225	2125	80	11	19	77	35	11
C294	Sri Raju Cotton Mills	B	2.01	1250	1179	8	56	58	77	35	15
C294	Sri Raju Cotton Mills	C	2.02	750	1629	8	58	44	77	30	32
C295	Sri Ram Santhosh	C	2.01	225	313	10	55	30	77	17	47
C295	Sri Ram Santhosh	B	2.02	225	313	10	55	22	77	17	46
C296	Sri Ramnarayan Mills Ltd	B	2.01	750	1536	8	58	35	77	29	84
C296	Sri Ramnarayan Mills Ltd	B	2.02	750	1537	8	57	54	77	29	85
C297	Sri Renuga Ginning & Oil Mills Spinning Division	C	2.01	500	1785	9	28	51	77	25	14
C298	Sri Saravana Spinning Mills (P) Ltd	C	2.01	1650	1160	10	36	23	77	20	30
C299	Sri Saravana Spinning Mills (P) Ltd	B	2.01	1650	1324	10	39	11	77	10	99
C300	Sri Sathu Spinning Mills (P) Ltd	C	2.01	750	1759	8	59	9.2	77	27	25
C301	Sri Seethalakshmi Steel Castings (P) Ltd	C	2.01	350	1366	10	35	42	77	18	28
C302	Sri Sivajothi Spinning Mills (P) Ltd.,	C	2.01	225	514	10	43	10	77	21	1.3
C302	Sri Sivajothi Spinning Mills (P) Ltd.,	C	2.02	225	834	10	43	13	77	21	54
C302	Sri Sivajothi Spinning Mills (P) Ltd.,	C	2.03	225	955	10	43	7.5	77	21	52
C302	Sri Sivajothi Spinning Mills (P) Ltd.,	C	2.04	225	708	10	43	31	77	21	21
C302	Sri Sivajothi Spinning Mills (P) Ltd.,	C	2.05	225	1211	10	43	36	77	21	19
C302	Sri Sivajothi Spinning Mills (P) Ltd.,	C	2.06	225	1344	10	43	25	77	21	23
C303	Sri Sugan International	C	2.01	225	456	10	52	0	77	11	0
C304	Sri Velayudhaswamy Spinning Mills (P) Ltd	C	2.01	1650	1158	10	60	86	77	33	4
C304	Sri Velayudhaswamy Spinning Mills (P) Ltd	C	2.02	1650	1161	10	60	73	77	34	1
C305	Sri Venkatachalapathi Modern Rice Mill	C	2.01	350	590	10	55	7.2	77	5	7
C306	Sri Venkatalakshmi Spinners (P) Ltd	A	2.01	750	825	10	36	37	77	10	20
C307	Sri Venkateshwara Wind Farms	A	2.01	225	2109	8	15	85	77	35	38
C307	Sri Venkateshwara Wind Farms	A	2.02	225	2109	8	15	82	77	35	23
C308	Sri Venkateshwara Wind Farms	B	2.01	225	2074	8	15	76	77	35	36
C309	Stallion Garments	B	2.01	750	2225	9	0	52	77	23	7.1
C309	Stallion Garments	C	2.02	750	2224	9	1	5.7	77	23	14

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C310	Startime Apparels	C	2.01	225	870	10	43	8	77	21	49
C311	Status Exports	A	2.01	350	742	10	40	6.1	77	21	5.1
C312	Styleman Textiles (P) Ltd	B	2.01	500	1089	8	9	29	77	34	12
C312	Styleman Textiles (P) Ltd	C	2.02	500	1770	9	3	0.1	77	21	29
C313	Sudhan Spinning Mills (P) Ltd	C	2.01	1650	1295	10	58	61	77	21	7
C314	Suguna Automobiles	C	2.01	225	743	10	41	30	77	20	9.5
C314	Suguna Automobiles	C	2.02	225	1102	10	41	34	77	20	23
C315	Sulochana Cotton Spinning Mills (P) Ltd	C	2.01	750	670	10	36	41	77	9	63
C315	Sulochana Cotton Spinning Mills (P) Ltd	C	2.02	750	671	10	36	46	77	9	80
C315	Sulochana Cotton Spinning Mills (P) Ltd	C	2.03	750	389	10	38	33	77	8	67
C315	Sulochana Cotton Spinning Mills (P) Ltd	C	2.04	500	517	10	56	31	77	13	40
C315	Sulochana Cotton Spinning Mills (P) Ltd	C	2.05	500	518	10	56	31	77	13	42
C315	Sulochana Cotton Spinning Mills (P) Ltd	A	2.06	500	528	10	56	37	77	13	31
C316	Sun India Hatcheries Pvt Ltd	A	2.01	250	1613	8	10	2.4	77	34	13
C317	Sun Industrial Automation & Solution	A	2.01	350	1775	8	11	22	77	38	24
C317	Sun Industrial Automation & Solution	A	2.02	350	1852	8	11	29	77	38	2.7
C317	Sun Industrial Automation & Solution	A	2.03	350	2453	8	17	42	77	37	34
C317	Sun Industrial Automation & Solution	C	2.04	350	2454	8	17	35	77	37	36
C318	Sun Poly Sacks (P) Ltd	B	2.01	250	1266	10	43	29	77	20	75
C319	Super Spinning Mills Ltd	C	2.01	1250	1370	8	56	41	77	35	41
C320	Suriya Spinning Mills	C	2.01	500	617	10	56	52	77	12	21
C321	Surya Oil and Extractions Pvt Ltd	C	2.01	350	1317	10	35	43	77	19	2.1
C322	Swami Palani Andavar Spinners (India) Pvt Ltd	C	2.01	500	379	10	41	43	77	21	36
C322	Swami Palani Andavar Spinners (India) Pvt Ltd	C	2.02	225	1030	10	43	39	77	21	26
C322	Swami Palani Andavar Spinners (India) Pvt Ltd	A	2.03	225	1126	10	43	45	77	21	23
C323	Swarnapuri AVR Jewellery	C	2.01	350	2386	8	18	9.9	77	38	4.5
C324	Swathi Hacharies	C	2.01	250	515	10	92	22	77	26	18
C325	T T Industries	A	2.01	1250	1385	10	49	2.5	77	27	4.3
C326	T.E.S. Fathu Rabbani	A	2.01	225	788	8	13	6.7	77	34	36
C326	T.E.S. Fathu Rabbani	A	2.02	225	1152	8	19	54	77	33	13
C326	T.E.S. Fathu Rabbani	A	2.03	225	1153	8	19	59	77	33	46

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C327	T.E.S. Naina Mohamed	C	2.01	225	1154	8	19	57	77	33	52
C328	T.T. Ltd	C	2.01	1250	1384	10	49	14	77	25	46
C328	T.T. Ltd	C	2.02	1250	1195	10	43	7.4	77	25	15
C328	T.T. Ltd	B	2.03	1250	1200	10	43	5.4	77	25	0.2
C329	Tamilnadu Air Products (P) Ltd	C	2.01	500	1469	9	1	57	77	22	31
C330	Technocast Foundry	B	2.01	350	1448	10	35	30	77	18	38
C331	Thakadoor Spinning Mills (P) Ltd	B	2.01	750	1684	8	57	71	77	30	3.8
C331	Thakadoor Spinning Mills (P) Ltd	C	2.02	750	1055	8	59	18	77	22	87
C332	Thanga Maligai & Co,Jewellery	A	2.01	500	382	10	39	29	77	19	54
C333	The Tuticorin Spinning Mills Ltd	C	2.01	500	1724	8	15	46	77	44	129
C334	Theepam Embroideries	C	2.01	250	1230	10	41	29	77	23	33
C335	Thiagarajar Mills Ltd	C	2.01	1500	1432	10	49	5	77	6	4.8
C335	Thiagarajar Mills Ltd	A	2.02	1500	1433	10	49	19	77	6	30
C336	Thiruppathi Mills	B	2.01	1250	1516	8	16	36	77	40	32
C337	Tip Sons Financial Services Pvt Ltd	C	2.01	750	1649	8	59	40	77	27	40
C338	Tirupur Pandit Hosiery Mills Pvt Ltd	C	2.01	750	826	10	68	3	77	30	19
C338	Tirupur Pandit Hosiery Mills Pvt Ltd	C	2.02	750	826	10	67	86	77	30	14
C339	Tirupur Sri Sentil Cotton Mills	C	2.01	225	759	10	43	15	77	20	55
C339	Tirupur Sri Sentil Cotton Mills	C	2.02	225	759	10	43	20	77	20	54
C339	Tirupur Sri Sentil Cotton Mills	C	2.03	225	893	10	13	18	77	21	3.9
C339	Tirupur Sri Sentil Cotton Mills	C	2.04	225	893	10	43	13	77	21	4.3
C339	Tirupur Sri Sentil Cotton Mills	A	2.05	225	1075	10	43	6.6	77	21	4.6
C340	Tn Oxygen	B	2.01	250	2456	9	3	49	77	23	82
C340	Tn Oxygen	C	2.02	350	2388	8	17	32	77	36	10
C341	Top Light Lables	C	2.01	225	675	10	43	10	77	22	1.3
C341	Top Light Lables	C	2.02	225	676	10	43	11	77	21	43
C341	Top Light Lables	C	2.03	750	912	10	42	86	77	29	13
C342	Twowin Export	C	2.01	225	575	10	39	26	77	20	50
C342	Twowin Export	C	2.02	225	575	10	39	31	77	20	50
C342	Twowin Export	C	2.03	225	863	10	39	24	77	20	58
C342	Twowin Export	C	2.04	225	864	10	39	26	77	21	8.7
C342	Twowin Export	C	2.05	225	1213	10	42	5.5	77	23	46
C342	Twowin Export	C	2.06	225	1214	10	42	19	77	23	59
C342	Twowin Export	C	2.07	250	1319	10	75	34	77	35	85
C342	Twowin Export	C	2.08	250	1320	10	75	48	77	35	84
C342	Twowin Export	C	2.09	250	1367	10	75	22	77	35	82
C343	Udaya Kumar Modern Rice Mill	C	2.01	250	803	10	69	33	77	33	15
C344	Unique Shell Mould (India) Pvt Ltd	C	2.01	600	618	10	56	59	77	12	24
C345	Unity Overseas Tirupur	C	2.01	350	1155	10	35	51	77	18	15
C345	Unity Overseas	C	2.02	350	1137	10	36	43	77	19	18

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	Tirupur										
C346	V. Balasubramanian	B	2.01	250	1215	10	38	22	77	18	48
C347	V.M.D. Mills (P) Ltd	A	2.01	750	1960	8	56	31	77	38	57
C348	V.N.C.Electrodes	A	2.01	500	1565	8	14	53	77	44	48
C349	V.N.C.Steel Distributors	C	2.01	500	1566	8	15	0.3	77	44	49
C350	V.N.V. Textile India (P) Ltd	B	2.01	250	1265	10	75	39	77	37	50
C351	V.S.N.C. Narasimha Chettiar Sons	C	2.01	600	2173	9	1	10	77	22	56
C352	V.T. Uthararaju	C	2.01	225	967	10	43	6	77	31	0
C353	V.Thangavel & Sons Pvt Ltd	C	2.01	350	272	10	55	42	77	5	52
C353	V.Thangavel & Sons Pvt Ltd	A	2.02	350	335	10	55	57	77	5	8.8
C354	V.W.Mohamed Iqbal	C	2.01	250	1657	8	10	7.7	77	32	38
C355	Vairam Wind Power	C	2.01	225	546	10	54	39	77	14	31
C356	Vanitha Textiles	C	2.01	350	1205	10	36	35	77	18	55
C357	Vasu Yarn Mills India (P) Ltd	C	2.01	250	1263	10	74	84	77	37	51
C357	Vasu Yarn Mills India (P) Ltd	C	2.02	250	1263	10	74	95	77	37	51
C357	Vasu Yarn Mills India (P) Ltd	C	2.03	250	1263	10	75	9.1	77	37	49
C357	Vasu Yarn Mills India (P) Ltd	C	2.04	250	1264	10	75	41	77	37	28
C358	Vedanayagam Hospital Private Ltd	C	2.01	225	390	7	39	25	120	87	90
C358	Vedanayagam Hospital Private Ltd	C	2.02	225	391	7	39	49	120	87	8
C359	Veejay Sales and Services Ltd	C	2.01	800	35	11	67	59	76	5	73
C359	Veejay Sales and Services Ltd	C	2.02	800	36	11	38	18	76	52	29
C360	Veejay Syntex Private Ltd.,	A	2.01	800	1065	11	86	7.7	76	89	25
C360	Veejay Syntex Private Ltd.,	A	2.02	600	874	9	21	58	78	8	20
C360	Veejay Syntex Private Ltd.,	C	2.03	600	1092	9	15	58	79	4	31
C361	Veejay Terry Products Ltd	C	2.01	800	1066	11	84	73	76	80	90
C361	Veejay Terry Products Ltd	C	2.02	800	1066	11	84	74	76	77	52
C361	Veejay Terry Products Ltd	C	2.03	800	1128	11	84	33	76	77	39
C362	Veejay Tools & Die Pvt Ltd	C	2.01	230	341	11	83	30	76	29	96
C362	Veejay Tools & Die Pvt Ltd	C	2.02	230	341	11	83	42	76	30	75
C363	Vel Murugan Energy Farm (P) Ltd	C	2.01	250	1253	10	75	35	77	36	73
C364	Velavan Stores	C	2.01	350	350	10	55	32	77	5	41
C365	Venbro Polymers	C	2.01	250	448	10	95	26	77	25	74
C365	Venbro Polymers	C	2.02	250	449	10	94	89	77	25	77
C365	Venbro Polymers	C	2.03	250	450	10	95	7.6	77	25	76
C366	Vetal Textiles & Electronics Pvt Ltd	C	2.01	350	304	10	55	28	77	6	47
C366	Vetal Textiles &	C	2.02	500	393	10	55	26	77	6	34

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	Electronics Pvt Ltd										
C366	Vetal Textiles & Electronics Pvt Ltd	C	2.03	500	413	10	55	5.8	77	6	59
C366	Vetal Textiles & Electronics Pvt Ltd	C	2.04	500	469	10	55	42	77	6	29
C366	Vetal Textiles & Electronics Pvt Ltd	C	2.05	250	652	10	94	39	77	31	23
C366	Vetal Textiles & Electronics Pvt Ltd	C	2.06	250	653	10	94	25	77	31	34
C366	Vetal Textiles & Electronics Pvt Ltd	C	2.07	250	672	10	93	67	77	31	26
C366	Vetal Textiles & Electronics Pvt Ltd	C	2.08	250	673	10	93	60	77	31	25
C366	Vetal Textiles & Electronics Pvt Ltd	C	2.09	250	676	10	93	72	77	31	7.3
C367	Victus Dyeings	A	2.01	800	1051	11	83	54	76	88	5
C368	Vijay Export	C	2.01	350	1080	10	36	42	77	18	29
C368	Vijay Export	C	2.02	350	2405	8	17	53	77	37	25
C369	Vijayalakshmi Spinning Mills	C	2.01	225	1236	10	44	25	77	21	9.6
C369	Vijayalakshmi Spinning Mills	B	2.02	225	1236	10	44	37	77	21	14
C370	Viking Knitters	C	2.01	1250	2027	8	55	43	77	35	11
C370	Viking Knitters	C	2.02	1250	363	10	52	52	77	7	26
C370	Viking Knitters	C	2.03	1250	321	10	53	28	77	8	14
C371	Viking Textiles Pvt Ltd	C	2.01	500	414	10	54	1.9	77	8	52
C371	Viking Textiles Pvt Ltd	C	2.02	500	415	10	54	9.2	77	8	49
C371	Viking Textiles Pvt Ltd	C	2.03	600	65	10	36	22	77	24	41
C371	Viking Textiles Pvt Ltd	C	2.04	600	57	10	36	32	77	25	0.4
C372	Vikram Machine Spindles	C	2.01	250	1446	10	38	48	77	18	43
C373	Vishnu Textiles	C	2.01	350	1372	10	35	36	77	18	38
C374	Viswanath Chemicals	B	2.01	225	1472	10	37	47	77	17	24
C375	Viswanathan & Company	B	2.01	750	1730	9	0	15	77	26	10
C376	VSM Weaves India Ltd	B	2.01	750	2010	9	1	20	77	24	37
C376	VSM Weaves India Ltd	A	2.02	750	2421	9	1	33	77	24	61
C377	VTM Ltd	C	2.01	1250	1436	8	16	43	77	40	15
C378	Warsaw International	C	2.01	250	360	77	24	77	77	24	77
C378	Warsaw International	C	2.02	250	361	10	93	81	77	24	73
C378	Warsaw International	C	2.03	250	610	10	93	73	77	25	17
C378	Warsaw International	C	2.04	250	611	10	93	85	77	25	14
C378	Warsaw International	C	2.05	250	612	10	93	99	77	25	13
C379	Westerlies Wind Power (P) Ltd	C	2.01	250	1281	10	76	43	77	36	75
C379	Westerlies Wind Power (P) Ltd	A	2.02	250	1282	10	75	85	77	36	52
C380	Yash Metal & Alloys	A	2.01	500	1804	8	23	12	77	34	54
C381	Amaravathi Textiles	C	2.01	850	1576	8	16	28	77	36	47
C382	Anand Spinners	C	2.01	500	449	10	41	43	77	21	58
C383	Dr. R. Kannan	C	2.01	225	764	10	44	31	77	23	43
C384	Dr.Punithavathi	C	2.01	225	845	10	44	43	77	23	32

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	Kannan										
C385	Everest Fabrics	C	2.01	225	915	10	40	43	77	19	10
C385	Everest Fabrics	A	2.02	225	821	10	40	39	77	19	11
C386	Geetha Krishna Spinning Mills Pvt. Ltd.,	A	2.01	750	1310	8	13	53	77	37	53
C387	Jayakrishna Flour Mills Pvt. Ltd.,	A	2.01	225	2052	8	13	52	77	33	75
C387	Jayakrishna Flour Mills Pvt. Ltd.,	A	2.02	225	2335	8	13	24	77	33	3.9
C387	Jayakrishna Flour Mills Pvt. Ltd.,	A	2.03	225	2448	8	12	92	77	32	93
C387	Jayakrishna Flour Mills Pvt. Ltd.,	A	2.04	225	2449	8	12	99	77	32	97
C387	Jayakrishna Flour Mills Pvt. Ltd.,	A	2.05	225	2450	8	13	4.5	77	32	95
C387	Jayakrishna Flour Mills Pvt. Ltd.,	A	2.06	225	2451	8	12	84	77	32	93
C387	Jayakrishna Flour Mills Pvt. Ltd.,	A	2.07	225	2452	8	13	11	77	32	99
C387	Jayakrishna Flour Mills Pvt. Ltd.,	C	2.08	600	950	8	19	73	77	34	97
C388	K.A.S. Industries India Ltd.,	C	2.01	250	581	10	94	56	77	31	44
C388	K.A.S. Industries India Ltd.,	C	2.02	250	582	10	94	44	77	31	48
C389	Kikani Exports	B	2.01	500	436	10	56	4.5	77	9	24
C390	Micro Colour Makers	A	2.01	250	1488	8	23	20	77	71	89
C390	Micro Colour Makers	A	2.02	250	2059	8	17	74	77	38	58
C391	New Trend Exports	C	2.01	250	356	10	92	41	77	13	86
C392	Ramaswamy Naidu Textiles Ltd.,	C	2.01	500	485	10	35	8.9	77	9	57
C392	Ramaswamy Naidu Textiles Ltd.,	C	2.02	500	642	10	34	43	77	10	19
C393	S.B.T. Apparels Pvt. Ltd.,	B	2.01	750	2191	9	2	5.9	77	24	55
C394	Sree Vijayalakshmi Textiles	C	2.01	500	448	10	41	50	77	21	58
C395	Sri Murugan Mills	C	2.01	225	947	10	40	42	77	19	0.4
C396	The Prem Dyeing Works	C	2.01	500	297	10	56	15	77	19	22
C397	Unnamalai Spinning Mills	C	2.01	330	729	11	86	85	76	27	48

Appendix- 2 – WTG capacity wise Project Cost and Pass wise PLF as per Investment guidelines for 2005 onwards

	Proposed Cost in lakhs /MW for different size WTGs			
Capacity in KW	Make	2005	2006	2007
225	NEPC, SWFL, VESTAS RRB	525	551	579
230	ENERCON	525	551	579
250	CWEL, PIONEER WINCON, SRIRAM EPC LTD	475	499	524
330	ENERCON	525	551	579
350	SUZLON	475	499	524
500	VESTAS RRB	600	630	662
600	ENERCON, SUZLON, VESTAS RRB	575	604	634
750	NEG MICON/ VESTAS, NEPC, VESTAS	525	551	579
800	ENERCON	600	630	662
850	PIONEER ASIA WIND TURBINES	575	604	634
1250	SUZLON	600	630	662
1500	SUZLON			650
1650	VESTAS, NEG MICON/VESTAS	650	683	717

	PLF in percentage		
Capacity in MW	Aralvaimozhi Pass (A)	Shencottah Pass (B)	Palghat Pass (C)
0.225	23.61%	20.04%	17.48%
0.230	22.81%	20.26%	16.74%
0.250	20.98%	18.64%	15.40%
0.330	19.84%	16.98%	14.18%
0.350	18.71%	16.01%	13.37%
0.500	27.45%	21.68%	20.49%
0.600	24.32%	20.03%	19.48%
0.750	22.39%	18.59%	17.91%
0.800	27.73%	21.88%	20.52%
0.850	26.84%	20.58%	21.14%
1.250	26.04%	21.00%	20.88%
1.500	25.50%	20.59%	20.77%
1.650	29.79%	22.93%	23.43%

Appendix- 3**Baseline Information**

Variable	Data Source
EG _y – Electricity generated	Records maintained by project proponent
Parameter	Data Source
EF _{OM, y} - Build Margin Emission Factor (tCO ₂ /MWh)	CEA Data, version 04 www.cea.nic.in
EF _{BM, y} = Operating Margin Emission Factor (tCO ₂ /MWh)	CEA Data, version 04 www.cea.nic.in
EF _y – Grid Emission Factor	Calculated as the weighted average of the operating margin and build margin

Share of Must-Run (Hydro/Nuclear) (% of Net Generation)

	2002-03	2003-04	2004-05	2005-06	2006-07
North	26.1%	28.1%	26.8%	28.1%	27.1%
East	7.5%	10.3%	10.5%	7.2%	9.0%
South	18.3%	16.2%	21.6%	27.0%	28.3%
West	8.2%	9.1%	8.8%	12.0%	13.9%
North-East	45.8%	41.9%	55.5%	52.7%	44.1%
India	16.3%	17.1%	18.0%	20.1%	20.9%

CEA- ver04		
	Simple OM	BM
2005-06	1.01	
2006-07	1.00	
2007-08	0.99	0.71
average	0.998	

		Weightage
OM	0.998	0.75
BM	0.71	0.25
EF	0.927	