

Tata Power Delhi Distribution Limited

Tata Power Delhi Distribution Limited [TPDDL], formerly known as “North Delhi Power Limited” is a joint venture between Tata Power and the Government of NCT of Delhi with the majority stake being held by Tata Power (51%). TPDDL distributes electricity in North & North West parts of Delhi and serves a populace of 7 million. The company started operations on July 1, 2002 post the unbundling of the erstwhile Delhi Vidyut Board (DVB). With a registered consumer base of 14.39 Lacs and a peak load of around 1704 MW, the company’s operations span across an area of 510 sq kms.

TPDDL has been the frontrunner in implementing power distribution reforms in the capital city and is acknowledged for its consumer friendly practices. Since privatization, the Aggregate Technical & Commercial (AT&C) losses in TPDDL areas have shown a record decline. AT&C loss is a measure of overall efficiency of the distribution business which is the difference between units input into the system and the units for which the payment is collected. Today, AT&C losses stand at 9.87% which is an unprecedented reduction of around 81% from an opening loss level of 53% in July 2002.

Recent Recognitions:

- TPDDL won “Rooftop Solar Enabler of the Year- utility” award at Indian Rooftop Solar Summit 2016 organised by FirstView Research and Publishing Pvt Ltd
- TPDDL Adjudged winner of SAP-ACE Awards-2015 under the category of “Big Data Analytics”. The award was conferred for successful implementation of SAP HANA Project (Memory Data Analytics Solution).
- TPDDL bags “Business-Excellence-promising practice Award 2015”. TPDDL has been recognized amongst the Top 5 Tata Group Companies for their contribution to the Tata Best Practices Programme (EDGE) through creation of repository of good practices etc.
- TPDDL won “**Safety Innovation Award 2015**” started by Institution of Engineers (India) under the category of Safety and Quality Forum winning for the 7th consecutive year.
- TPDDL bags ‘**Most innovative Discom Award**’ at INDIAN CHAMBER OF COMMERCE ‘best state power utility awards-2015’ for taking up innovative and positive steps to increase system efficiency and manage the supply demand situation more effectively.

- TPDDL is honoured at 'India Power Awards-2015. Mr. Praveer Sinha, CEO & MD, Adjudged CEO of the year 2015 and TPDDL awarded for overall performance in Power Distribution Sector.
- TPDDL has been adjudged as winner of "Jewels of Digital 2015" Awards.
- TPDDL bags 5th "Asia Best CSR Practices Award" under the category of Women Empowerment, hosted by CMO Asia at Singapore.

Grid Connected Rooftop Solar Power Plants Commissioned by Tata Power Delhi Distribution Limited

Spearheading the Solar Initiative, Tata Power Delhi Distribution Ltd. (TPDDL) embarked on its Grid Connected Roof Top Solar journey way back in 2008 and till date has set up 15 Grid Connected Solar Plants, with a **cumulative capacity of 1.78 MW**, in its own premises.

TPDDL pioneered in the 'Demonstration Programme on Tail End Grid Connected Solar Power Plants', an initiative of Ministry of New and Renewable Energy (MNRE), Govt. of India. TPDDL has commissioned eight (8) Solar Plants under this prestigious program. The most significant in TPDDL Solar Projects is the Mega Watt Class of Grid connected Solar Plant at its Central Stores at Keshavpuram, which is a unique project where dual utilization of land has been achieved by creating a roof top solar plant over a fully functioning open material store.

Details of cases are mentioned in Annexure.



One of the most significant of all solar projects implemented by TPDDL is the Mega Watt Class Grid connected Solar Plant at its Central Stores at Keshavpuram.

TPDDL has also solar powered traffic light system at Madhuban Chowk(Rohini) junction in addition to Grid interactive rooftop Solar PV plant at various office locations in its area.



Connectivity provided for Grid Connected Rooftop Solar Power Plants by Tata Power Delhi Distribution Limited

Total 82 cases with cumulative solar capacity of 5.6 MWp are connected with Grid/ under progress

Presently 54 cases with cumulative capacity of 2.82 MWp has been connected with TPDDL Distribution Grid. Another 28 cases with cumulative capacity of 2.78 MW is under progress for installation of Net Meters.

Details of these cases are mentioned in Annexure

Initiatives taken to encourage solar projects as a utility

In its endeavor to make Solar Project initiative a success in Delhi, in addition to the provisions available to the Consumers for implementation of rooftop Solar Projects on their own, TPDDL is offering its services for further facilitating Solar Project implementation. TPDDL is the First utility in India actively promoting solar power and net metering for its consumers.

- The Hon'ble Delhi Electricity Regulatory Commission has accepted TPDDL proposal and has approved its initiatives in Solar Projects which will ensure standardization, competitive pricing and uniform compliance with stipulated Regulations as well as quality and safety norms.
- TPDDL discovered best price through empaneling three OEMs for the CAPEX model – consumer owned net metering solar PV. TPDDL engaged in a bidding process to encourage vendors to participate and source solar power plants at competitive prices through open bidding process and utilize its own technical capabilities for

execution. The cost of plant is significantly less than the market cost due to competitive and bulk procurement.

- TPDDL suggestions along with draft Solar Policy has been submitted for consideration to Power Department of GoNCTD. Presently, this Solar Policy is in final stage of implementation by Govt. of Delhi.
- First of kind project by a DISCOM in India to launch solar rooftop program with limited or no tariff impact and all the while providing significant benefit both to consumers as well as environment with green, sustainable source of energy.

Capacity Building

In order to ensure capacity building extensive trainings are being carried out within the company along with vendors. Also considering long term perspective a Voluntary Training Center has been instituted where TPDDL is pursuing the matter of developing, offering and certifying underprivileged persons in the area of Solar Power Skills. Considering the current focus of the country TPDDL would like to build competent workforce to support this cause.

Awareness Initiatives

In a bid to promote awareness among society, the following reach outs programmes have also been done:

- Information on TPDDL Website and leaflets to Customers
- Awareness Sessions have been conducted with Bawana, Narela, Keshavpuram, Naraina, Wazirpur and Kanjhawala Industrial Associations
- More than 250 Industrialists attended
- Presentations have been made to Key Govt. Consumers like DJB, DMRC and NDMC.
- Presentations have been made to other key Private Consumers and RWAs
- Presentations have been made to Financial Institutions like World Bank, SIDBI etc.
- A special Customer Meet conducted for Educational Institutes
- Awareness Program being initiated in Schools through the office of the President of India
- Awareness Program for all other Departments in TPDDL with particular focus in Customer facing groups

Steps taken to promote sustainable development of solar projects

In order to promote sustainable development of solar rooftop projects, studies are being carried out within the company to gauge the impact of the solar systems and various

repercussions that solar projects might have with respect to safety and other operational issues.

The topics mentioned below will give us a brief overview about the sensitivity of the issue and TPDDL's commitment towards to the solar rooftop projects.

Solar projects bring in a new set of challenges for which TPDDL is gearing itself to fulfill its obligation towards its customers with respect to quality power and uninterrupted supply. The same are as follows:-

1. Central Monitoring of Network through the below mentioned technologies and changes to be made with respect to the following for accommodating solar
 1. AMR
 2. Grid Meter
 3. Energy Audit (along with NOP Conditions)
 4. Reading of Solar Meter unit
 5. BQC/RQC logic
 6. GIS, SCADA, ADMS etc.

2. The network conditions which needs to be envisaged are as follows:-
 1. Augmentation (of any kind)
 - i. Financials (Cost)
 - ii. Cost to be borne by consumer or not
 2. 11 KV (Changeover, N-1, Dedicated and Non Dedicated feeder segregation, percentage loading)
 3. Power Transformer scenario building.

3. Protection
 1. Harmonics, DC Injection, Flickering
 2. Tap Changer
 3. PTW Flow
 4. Reactive Power Scenario

4. Communication Network and related equipment
 1. Smart Meter- RF Mesh Network (Reviewing of RFP floated for Unified RF Canopy Network and its scope with respect to solar)
 2. Data Logger Challenges and cost
 3. Integration with ADMS (ADMS points with respect to Solar needs to be given along various phases of implementation)

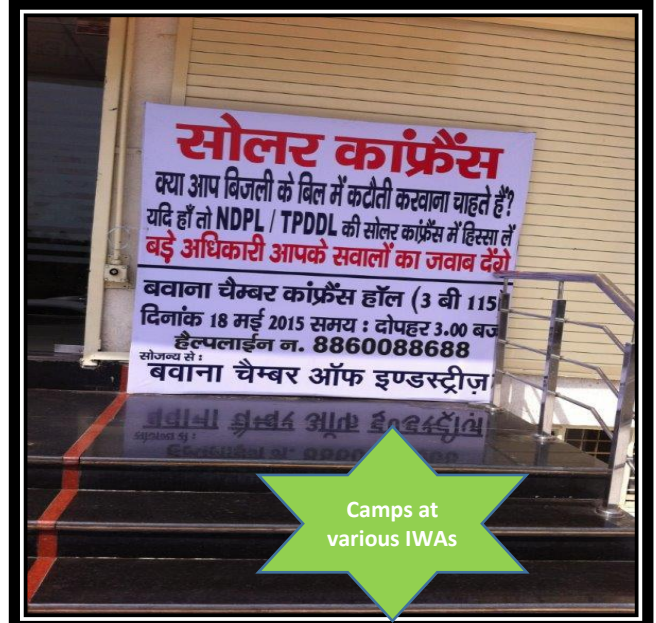
5. Consumer Portal
 1. Equipment Analysis

2. Solar Generation
 3. Integration with other systems and its features
-
6. Operation and Maintenance
 1. Shutdown Procedure
 2. Local Earthing
 3. Reverse Generation and related safety process

Solar Project Awareness Sessions with Consumers



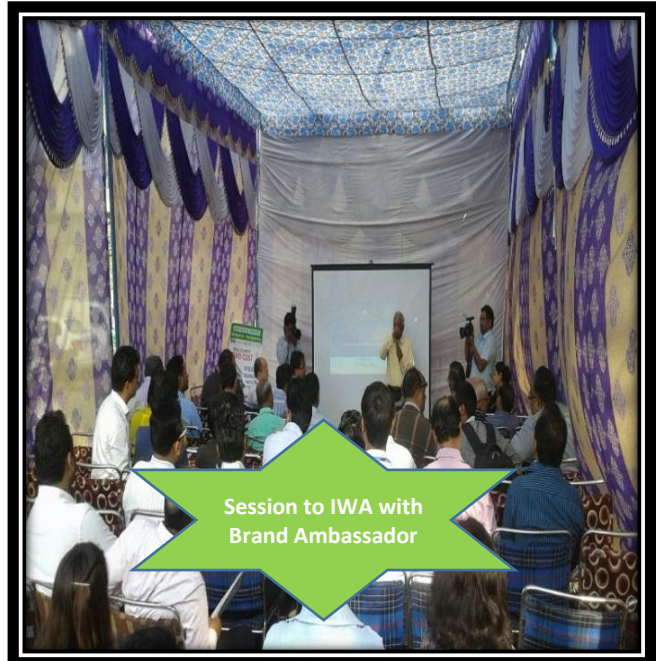
Camps at various RWAs



Camps at various IWAs



Solar session for Schools

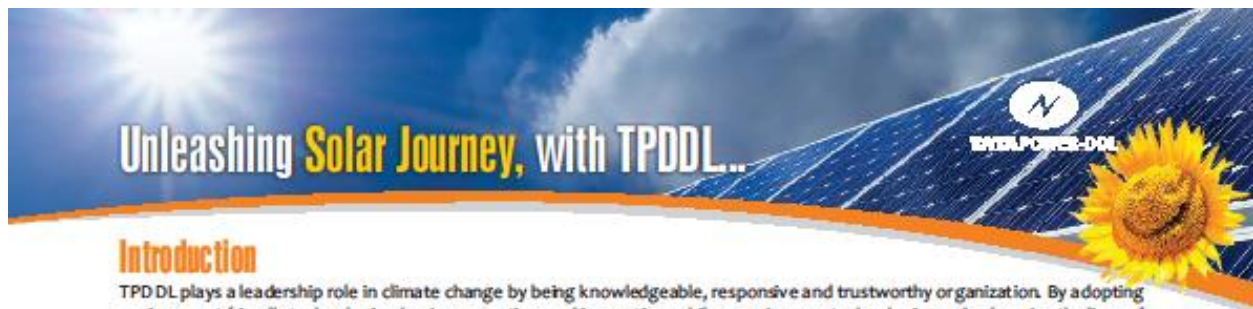


Session to IWA with Brand Ambassador

Interaction & Awareness – Other Stakeholders

Stakeholders		Focus Area
Delhi Committee	Dialogue	Finalization of Draft Solar Policy
MNRE		Facilitation of Implementation & Empanelment
World Bank		Facilitation for Funding
TERI		Facilitation in Impact Study
MSME		Participation in Exhibition and Awareness Drive to Medium & Small Scale Industries
ASSOCHAM		Awareness Drive to Industries
CII		Awareness Drive to Industries
School Workshop		Solar Energy work shop with Educational Institutes
RE Expo		Awareness Drive to Industry
Urban Thinkers Campus		Solar integration with Smart City

Solar Pamphlet



Introduction

TPDDL plays a leadership role in climate change by being knowledgeable, responsive and trustworthy organization. By adopting environment friendly technologies, business practices and innovation, while pursuing new technologies and enhancing the lives of our consumers.

With over 300 clear sunny days available in Delhi and declining cost of solar technology, the generation cost from a rooftop solar PV plant is competitive with conventional power generation technologies.

In keeping with the consumer centricity spirit, TPDDL brings energy solutions that are:

- ✔ Cost effective - Zero cost of fuel for over 25 years
- ✔ Significant savings on your energy bill
- ✔ Highest quality, standards and benchmark services
- ✔ Provides clean and green energy

TPDDL Initiative

To facilitate consumers for installation of rooftop solar projects, TPDDL has undertaken open competitive techno-commercial bidding procedure to empanel implementation agencies which will install solar projects on turnkey basis with optional comprehensive AMC for solar plants for a period of 5, 7 or 10 years.

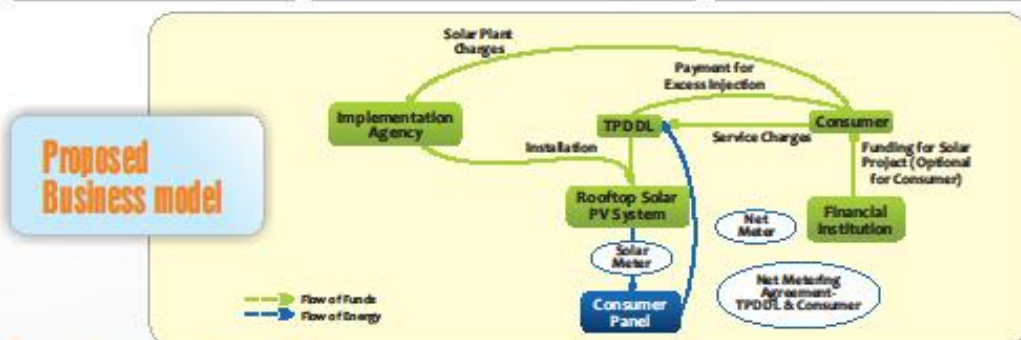
Delhi Electricity Regulatory Commission has approved TPDDL proposal for facilitation of installation of rooftop solar plant by providing single window service to consumers for supply, installation, testing and commissioning with maintenance agreement as opted by consumers.

Three Agencies, that are empanelled with Ministry of New & Renewable Energy, Govt. of India as channel partner with highest Grading of "SPA", have been short listed as empanelled associate for TPDDL Consumers –

M/s Tata Power Solar

M/s Su-Kam Power Systems Limited

M/s Jackson Engineers Limited



How the consumer benefits

TPDDL SERVICES	BENEFIT TO CUSTOMERS
Empanelment of Implementing Agency with open competitive bidding	Optimum price with superior technology and benefit of Economy of Scale
Standardization of Equipment Specification & Technology	Ensuring Quality of Solar Plant
Verification of engineering Design and Array layout for each consumer after joint site survey	Customized design of optimum solar capacity for customer
Facilitation to finalize terms & conditions for supply, installation and AMC	Ensuring smooth transaction and proper execution for solar project
Dedicated technical team to monitor & facilitate installation, testing and commissioning of the Solar Plants	Ensuring highest Quality and Safety for Solar Plant execution
TPDDL EMPANELLED IMPLEMENTATION AGENCY SERVICES	BENEFIT TO CUSTOMERS
Supply of material as per TPDDL Benchmark, modules with 25 years warranty and Solar Plants with 5, 7 or 10 years' warranty	Ensuring Quality of material/Best quality materials
Installation of project within timeline* with adherence to TPDDL Safety & Quality Guidelines	Ensuring standard of quality and safety
Committing Performance Ratio for Solar Plant for 25 years	Ensuring proper generation of Solar Plant
Optional AMC including cleaning and comprehensive warranty for Solar Plant - for 5, 7 or 10 years	Ensuring hassle free service and Performance Warranty

Illustrative example of a rooftop solar plant

Item Description	Commercial consumer
Solar plant capacity	30 Kwp
Retail tariff for Non domestic load	9.64 (8.50 INR+ 8% surcharge+ 5% tax)
Retail tariff escalation (assumed)	6%
Solar plant supply and installation cost	Rs. 20.88 Lakhs
5 Year AMCC Cost (optional)	Rs. 0.89 Lakhs
Units to be generated per annum (approx.)	42000 UNITS
Tax benefit with Accelerated Depreciation	Rs. 5.78 Lakhs
Savings in Electricity Bill for 25 years	Rs. 2.06Crores

DISCLAIMER:

The example given above is purely for illustrative purpose and TPDDL in no way confirms the accuracy of the same. Savings (if any) shall be determined as per variety of factors, including but not limited to COP of the plant, climatic conditions, consumer consumption, efficiency of the plant, rules regulations and tariff as notified from time to time.

Connection procedure

- Step 1** A consumer shall submit an application, seeking connectivity under the Net Metering Regulations, 2014 along with an application fee of Rs. 500/- (Rupees Five Hundred) to TPDDL for feasibility analysis.
- Step 2** TPDDL shall complete the feasibility analysis at the proposed site for connecting the Renewable Energy System to the distribution system within thirty (30) days from the date of receipt of the application.
- Step 3** On feasibility analysis, if it is found feasible for TPDDL to provide connectivity for the applied capacity or a reduced capacity, TPDDL shall inform all such applicants, to apply for registration and further processing.
- Step 4** The rooftop solar plant must get connected to the grid within one year from the registration process.

TPDDL Solar Journey



Endorsed as the 1st utility in the country, TPDDL became an empanelled channel partner with MNRE accredited with the highest grading of SPA denoting "Highest Performance Capability" and "Highest Financial Strength". TPDDL continues to facilitate and enable consumers with the assurance of highest quality standards of product and service. Major drivers for promotion of Rooftop Solar Projects by TPDDL are as follows -

- TATA Group Commitment to Combat Climate Change
- Exploring Solution to problems of Delhi: Rampant Pollution | Electricity Shortages
- Renewable Purchase Obligation (RPO)
- Demonstrating viable business model for rooftop generation for metro cities like Delhi



TATA POWER-DEL

TATA POWER DELHI DISTRIBUTION LIMITED
A Tata Power and Delhi Government Joint Venture

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Who to contact

As part of TPDDL commitment to our consumers, for questions related to rooftop solar, please feel free to contact:

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Annexure

Solar Projects Commissioned in TPDDL Premises

S.No.	Location of the Plant	Installed Capacity (KWp)	Technology Used
1	CENPEID	14.85	Crystalline
2	Corporate Office	3.95	Crystalline
3	Solar project at PP-1 Grid for Traffic Light	1.5	Crystalline
4	Pooth Khurd Grid	58	Crystalline
5	Keshavpuram	1000	Crystalline
6	CENNET	25	Crystalline
7	Narela A-7 Grid	51.5	Crystalline
8	Bawana Clear Water Grid	55	Crystalline
9	Narela DSIDC-2 Grid	60	Crystalline
10	GTK Grid	25	Crystalline
11	RG-2 Grid	24.5	Crystalline
12	RG-24 Grid	24	Thin Film
13	RG-5 Grid	225	Crystalline
14	RG-22 Grid	150	Crystalline
15	RG-23 Grid	55	Crystalline

Solar Projects awarded to TPDDL empanelled Solar Agencies

S.No.	Name of Consumer	Order of (in KW)
1	Tulip International School	21
2	Kasturi Ram College of Higher Education	12
3	Gajinder Yadav	11
4	Dr.Reena Jannana & Surgical Hospital	6
5	Unity Buildwell	300
6	Aakriti Furnishers	25
7	Sydney Garden & Resorts	40
8	Allied Engineering works	40
9	Galaxy Toyota	100
10	Lilavati Vidyamandir	101
11	Ravi Kishore Enterprise	100
12	Kirtimaan Developers	8
13	Suresh Kapoor	13
14	Chotu Ram Rural Institute of Technology	25
15	Shakti Ganesh	2
16	Jaswant Ice Cold Storage	101
17	Maharaja Agrasen Institute of Technology	101
18	Devendra Khatri	4

Net Metering Connections Installed / In Progress

Sno	Notification no.	Solar Capacity (in KWp)	Applicant	CA no.
1	2009687694	130	GENERAL MANAGER	60000003693
2	2010608844	30	DSIDC LTD	60008062840
3	2010383563	40	ALLIED ENGINEERING WORKS	60012973420
4	2009691088	20	MAX ELECTRONICS	60016090577
5	2009948521	2.4	A B LAL.	60001405871
6	2010056438	204	DELHI TRANSPORT CORPORATION	60000003412
7	2010056583	68	DELHI TRANSPORT CORPORATION	60000013718
8	2010254655	2	MEENUMENGHANEY	60014851202
9	2010322081	1.5	MANGLA DEVI	60000524821
10	2009798066	20	Lt. Shri Bihari Lal Educational Society	60007097920
11	2009798096	45	DEVENDER.	60019104318
12	2009685857	12	SECRETARY VIDHAN SABHA OLD SECT.	60019133598
13	2010451283	10	SANDEEP KUMAR	60009508684
14	2010607511	5	SUKHWANT SINGH DILLON	60001342066
15	2010569938	5	QUALITY COL. OFFSET	60006843571
16	2010664420	5	SUNITA GUPTA	60012119107
17	2010687266	40	ROOP NAGAR PUBLIC SCH.	60010885907
18	2010687866	5	JAGMOHAN SINGH	60012046888
19	2010758309	15	JOHNSON APPLIANCEIS	60001355613
20	2010819920	11	RENU YADAV	60020059279
21	2010753338	3	SATVIR SINGH KUHAL	
22	2010842709	21	SARA EDUCATIONAL WELFARE	60009569835
23	2010868234	30	SBSM Senior Secondary School	60006105302
24	2010884705	25	RAMANAND GUPTA & RAMESH CHAND GUPTA	60018985758
25	2010882725	10	Gurunanak Satsang Sabha	60007899325
26	2010909627	5	ARCHNA MISHRA	60019702533
27	2010903602	25	ANITA & SEEMA PAHUJA	60013364363
28	2010934538	12.5	KASTURI RAM RESEARCH CERTRE	60000608210

Sno	Notification no.	Solar Capacity (in KWp)	Applicant	CA no.
29	2010942858	5	MAYA SHARMA	60001995046
30	2010752144	10	VISHWA EDUCATION SOCIETY	60012565010
31	2011063020	8	M/S CALCOM ELECTRONICS LTD.	
32	2011071457	10	NAVAL KISHOR	60004422956
33	2011073387	133	SARDARE	60000015952
34	2011073368	90	PREM CHAND GARG	60000016513
35	2011092893	101	LEELA WATI VIDYA MANDIR	
36	2011106809	4	C R K Hari	60010432379
37	2011104325	15	NATIONAL RES. CENT.OF PLANT BIO	60017061999
38	2011122090	25	SECRETARY S.C.R.E.T KANJHAWALA	
39	2011157738	50	RDJP SCHOOL	60004105585
40	2011204659	10	VEDIC UPCHAAR (P) LTD	60020215319
41	2011193306	6	DR. NARESH MORE	60012512798
42	2011208056	9	KAILASH CHAND	60002888992
43	2011242396	1.5	KUMR UJJWAL	60016783536
44	2011242655	102	MAHARAJ AGARSEIN INSTITUTE OF TECH	60000005581
45	2011252499	5	NARENDER GOYAL	60019527096
46	2011359395	5	BRIJ MOHAN GOEL	60019950504
47	2011422246	8	SURESH KAPOOR	60001396641
48	2011406786	10	SANJAY AGGARWAL	60001511538
49	2011463999	30	EAGLE AGRO FOODS PVT. LTD.	60005261361
50	2011455192	10	DINESH	60019718471
51	2011471172	10	INDIAN OIL CORPORATION LTD	60002580979
52	2011446537	4	Devender Singh	60010427577
53	2011492403	6	Vinod Kapoor	60002257131
54	2011492370	4	Vakul Kapoor	60002033581
55	2011491788	5	Tara Chand	60001006935
56	2011482857	10	Ashwani Kapoor	60020205765
57	2011512408	3	PUSHPAGROVER	60013728898

Sno	Notification no.	Solar Capacity (in KWp)	Applicant	CA no.
58	2011510462	10	SANTOSHPODDER	60020151266
59	2011498231	1500	DELHI METRO RAIL CORPORATION LTD	60019525074