NATIONAL REGISTRY
OF SOLAR ROOFTOP PV (SRTPV) SYSTEMS

SESSION 5: GRID INTEGRATION OF DISTRIBUTED RE (DRE)
5th November 2025

National Registry of SRTPV (www.indiaderregistry.in)

Background

- India presently has about 16.5 GW of solar rooftop PV (SRTPV) systems connected to the DISCOM grids (33kV, 22kV, 11kV and LT lines) which the System Operators (SLDCs, RLDCs and NLDC) have no visibility. Hence, the daily generation (>50 GWh) from these distributed PV plants are not being considered in the generation forecasting, scheduling and dispatching activities by SRLDCs/RLDCs. The PM Surya Ghar Yojana with the target of 10 million SRTPV will add another 30 GW of SRTPV in next 3 years which will create serious issues for the DISCOMs to manage the MV/LV grids
- To monitor the generation and performance of the grid connected SRTPV systems, it is very important to have a DISCOM-wise, Feeder-wise and DT-wise registry of SRTPV installations. The DISCOM-wise registry can be scaled up to State-wise and a to a National registry of all the SRTPV units connected to the grid so that the potential generation from these resources can be taken into consideration while scheduling and dispatching by the state load dispatch centers (SLDCs)
- ISGF has prepared the National SRTPV Registry which will help in effective management and integration of SRTPV systems
- This Registry Architecture is highly scalable to include millions (or billions) of all types of DERs connected to the grid – it can be expanded from a SRTPV registry to a National DER Registry with all the DERs connected to the grid such as BESS, EVSE, Industrial Grade Heating and Cooling Appliances etc. which can provide flexibility services to the grid

Benefits to DISCOMs

- **Planning and Optimization**: DISCOMs can avoid DT overloading, manage grid constraints, and plan network upgrades effectively
- **Regulatory Compliance**: Supports monitoring of RPOs and reduces curtailment risks through better control of SRTPV assets
- **Future Readiness**: The platform will also support DER integration such as EV chargers, BESS, industrial grade heating and cooling appliances that can provide flexibility services to the grid –run/store electricity when there is surplus generation and discharge/island during peak hours giving load relief

Project Outcomes

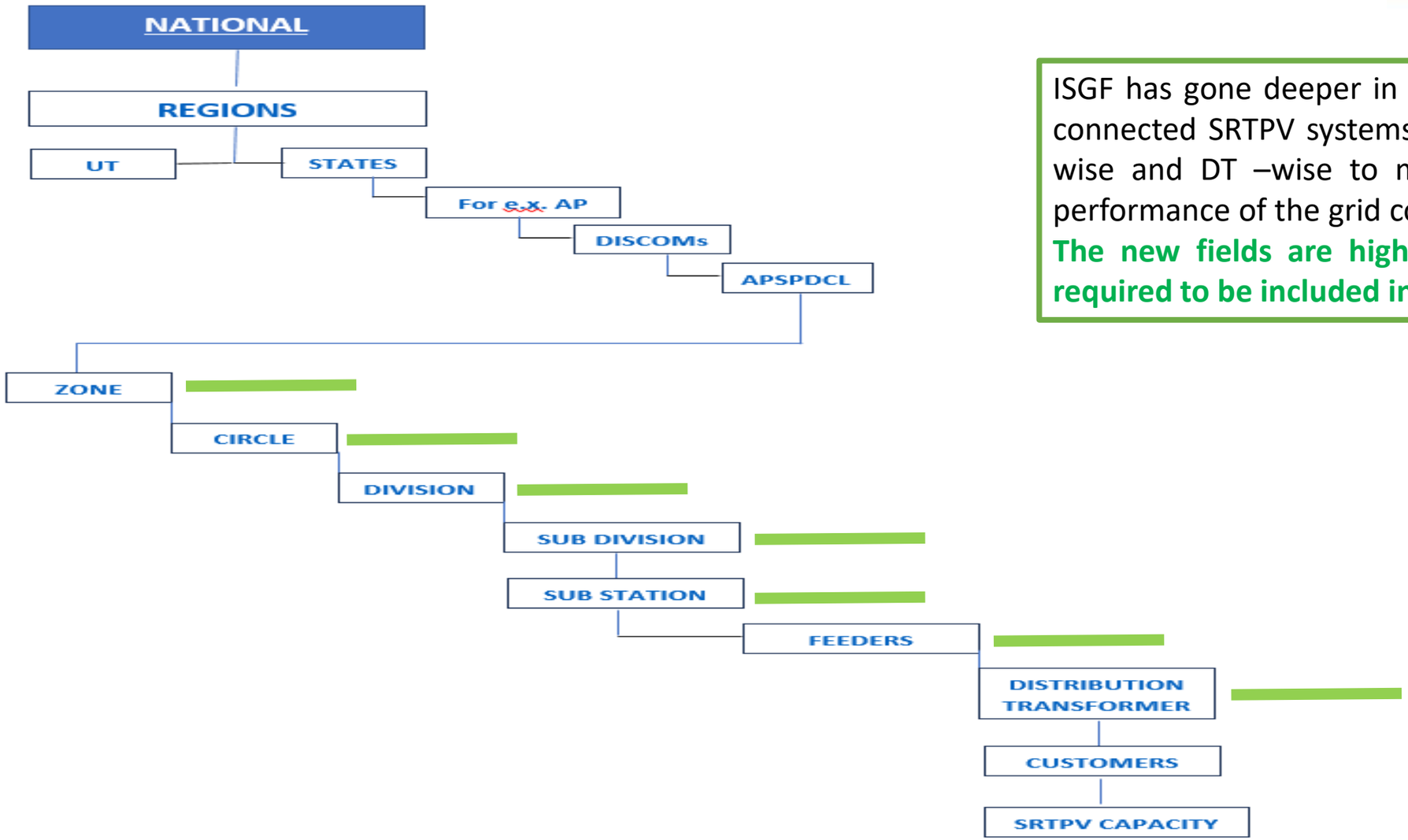
- **State-of-the-Art SRTPV Registry for the Country**: The development and implementation of a SRTPV Registry that serves as a comprehensive and up-to-date resource for tracking and managing solar rooftop installations throughout the country
- **Scaling up of Solar Rooftop PV (SRTPV) Systems**: Systematic planning and management of SRTPV installations, which facilitates the expansion and scaling up of rooftop PV systems across the nation
- **Performance Analysis**: Conduct performance analysis, including comparative assessments of daily, monthly, and yearly installations of SRTPV systems
- **Generation Forecasting for SRTPV**: The capability to forecast generation from SRTPV systems, facilitating integration into daily forecasting, scheduling, and dispatching operations managed by State Load Dispatch Centers (SLDCs) and Regional Load Dispatch Centers (RLDCs)
- **Efficient Grid Infrastructure Management:** Visibility of distributed SRTPV systems will help Discoms to manage the grid operations
- The Registry Architecture is scalable to be enhanced as a **National DER Registry** in the future

- BIS has adopted IEEE 1547-2018 standards as **IS:18689-2024 for Smart Inverters**
- ISGF and several other stakeholders are advocating for making smart inverters mandatory for all DER connections with the grid
- **Smart Inverters can be integrated with the SRTPV Registry which will enable to monitor SRTPV generation data in real-time**
- The SRTPV Registry will be a very valuable asset, as we upgrade to the regime of real time monitoring and control of DERs

Launch of National Registry at DUM 2024

The Hon'ble Minister of Power launched the National Registry of Solar Rooftop PV (SRTPV) System prepared by ISGF on 14th November 2024 at the Distribution Utility Meet (DUM2024) in Lucknow. (www.dumindia.in)

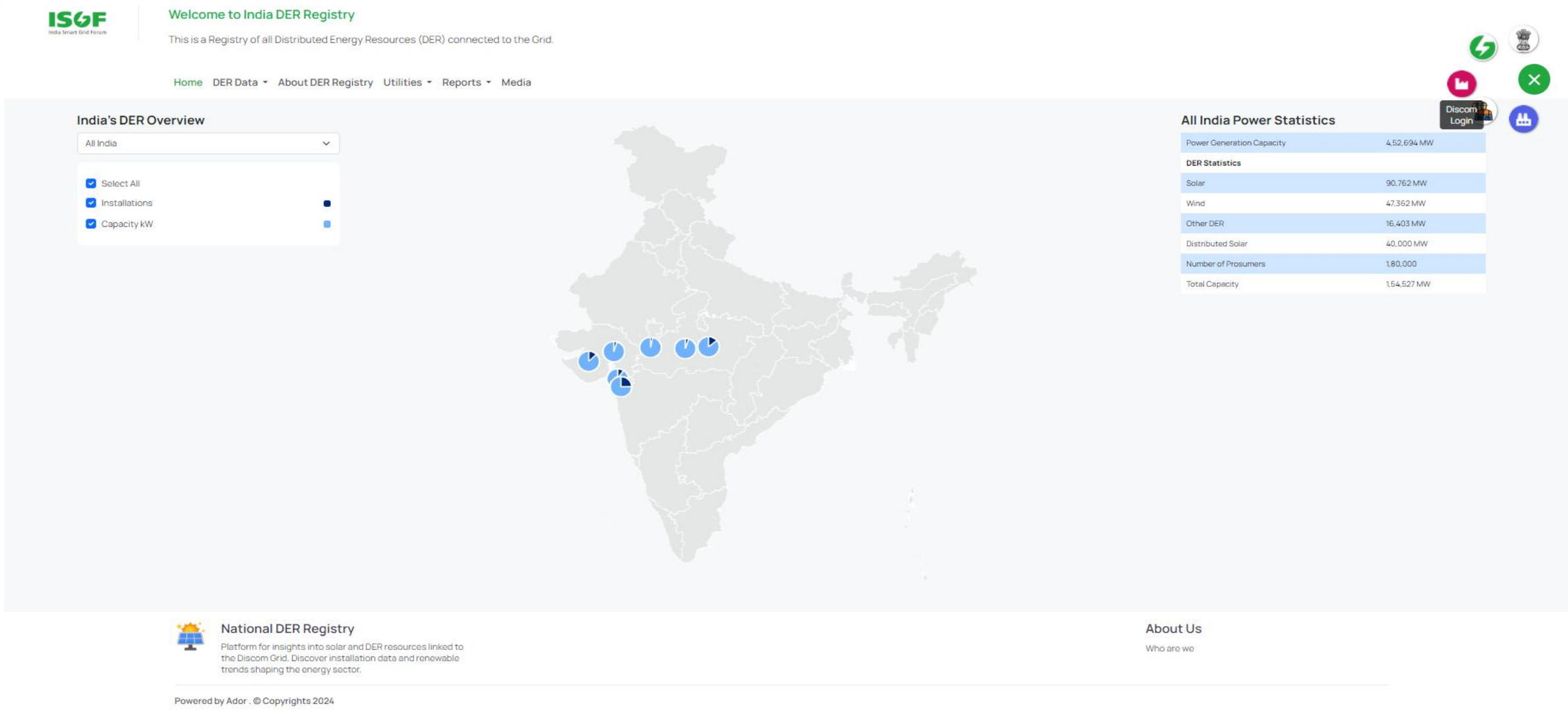
National SRTPV Registry - Architecture



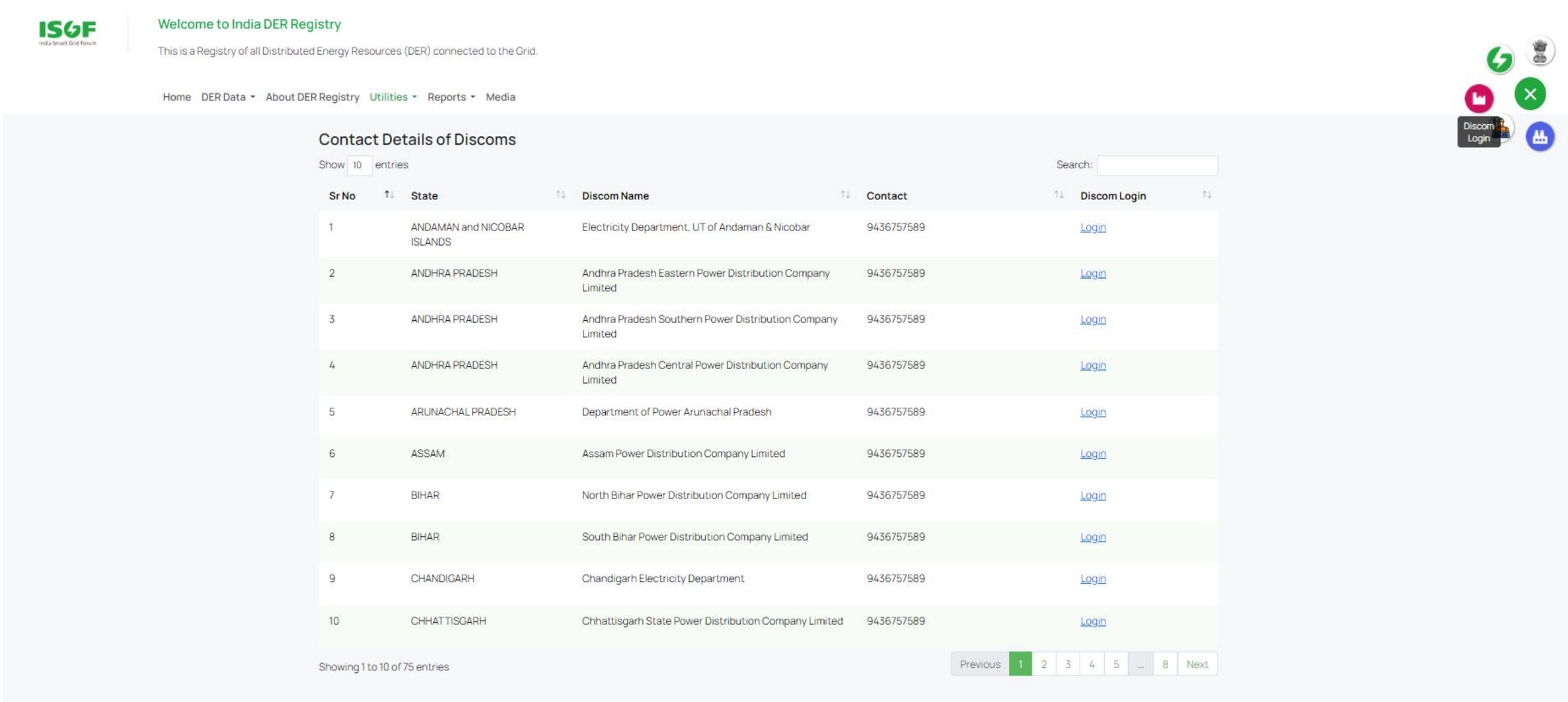
ISGF has gone deeper in capturing the details of grid connected SRTPV systems to monitor SRTPVs Feeder-wise and DT –wise to monitor the generation and performance of the grid connected SRTPV systems.

The new fields are highlighted in green which are required to be included in the Registry.

National Solar Registry Homepage



National Solar Registry – DISCOMs/Licensees List



ISGF India Smart Grid Forum

Welcome to India DER Registry

This is a Registry of all Distributed Energy Resources (DER) connected to the Grid.

Home DER Data About DER Registry Utilities Reports Media

Discom Login

Contact Details of Discoms

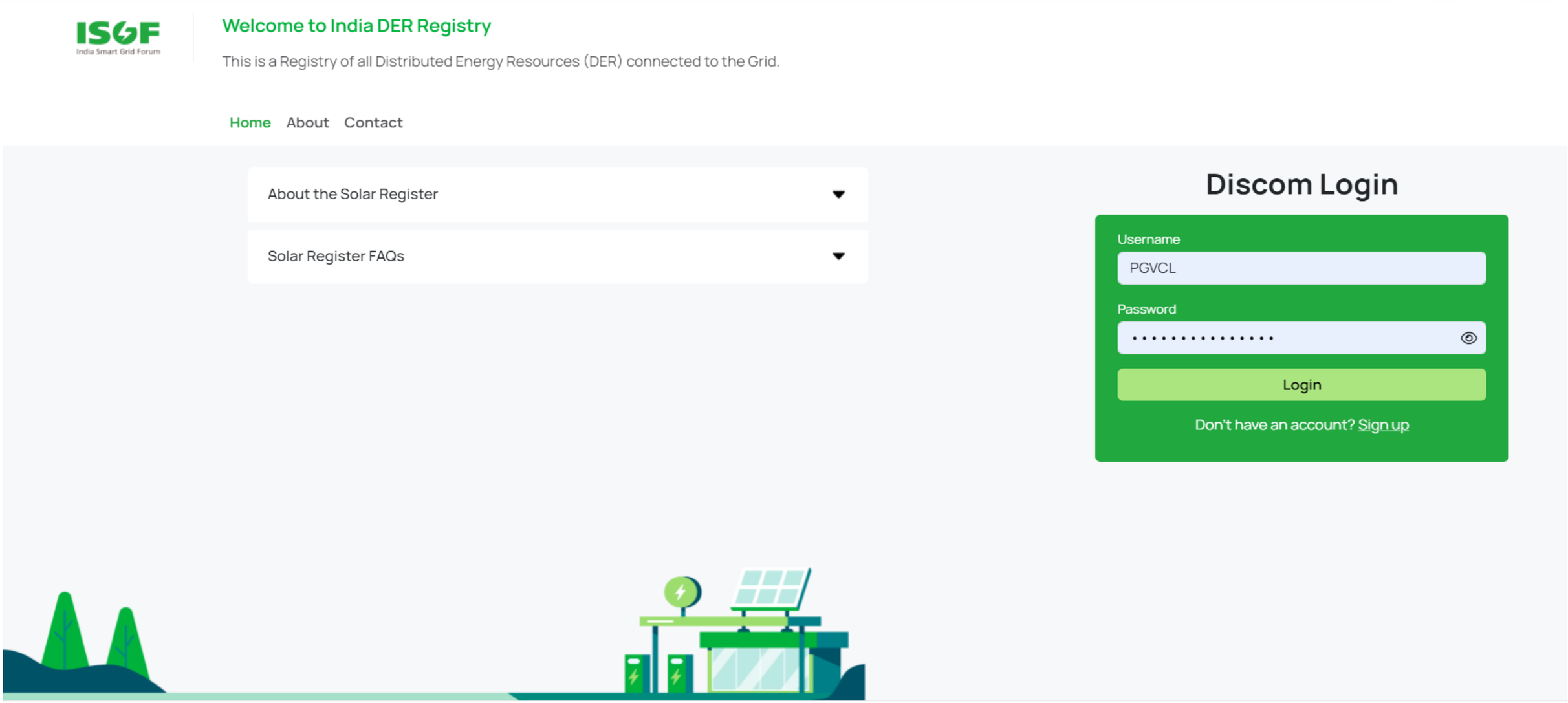
Show 10 entries Search:

Sr No	State	Discom Name	Contact	Discom Login
1	ANDAMAN and NICOBAR ISLANDS	Electricity Department, UT of Andaman & Nicobar	9436757589	Login
2	ANDHRA PRADESH	Andhra Pradesh Eastern Power Distribution Company Limited	9436757589	Login
3	ANDHRA PRADESH	Andhra Pradesh Southern Power Distribution Company Limited	9436757589	Login
4	ANDHRA PRADESH	Andhra Pradesh Central Power Distribution Company Limited	9436757589	Login
5	ARUNACHAL PRADESH	Department of Power Arunachal Pradesh	9436757589	Login
6	ASSAM	Assam Power Distribution Company Limited	9436757589	Login
7	BIHAR	North Bihar Power Distribution Company Limited	9436757589	Login
8	BIHAR	South Bihar Power Distribution Company Limited	9436757589	Login
9	CHANDIGARH	Chandigarh Electricity Department	9436757589	Login
10	CHHATTISGARH	Chhattisgarh State Power Distribution Company Limited	9436757589	Login

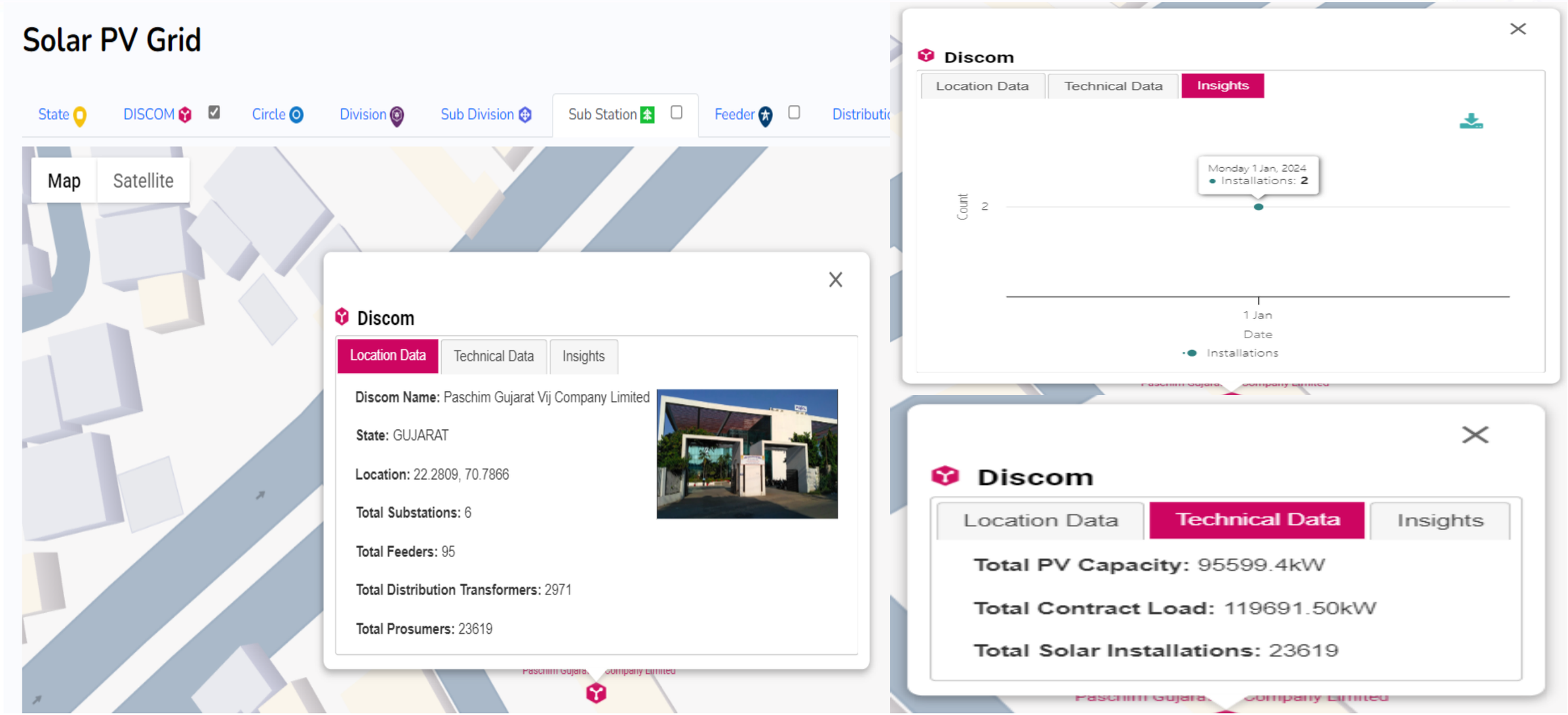
Showing 1 to 10 of 75 entries

Previous 1 2 3 4 5 ... 8 Next

National Solar Registry - DISCOM Login Page

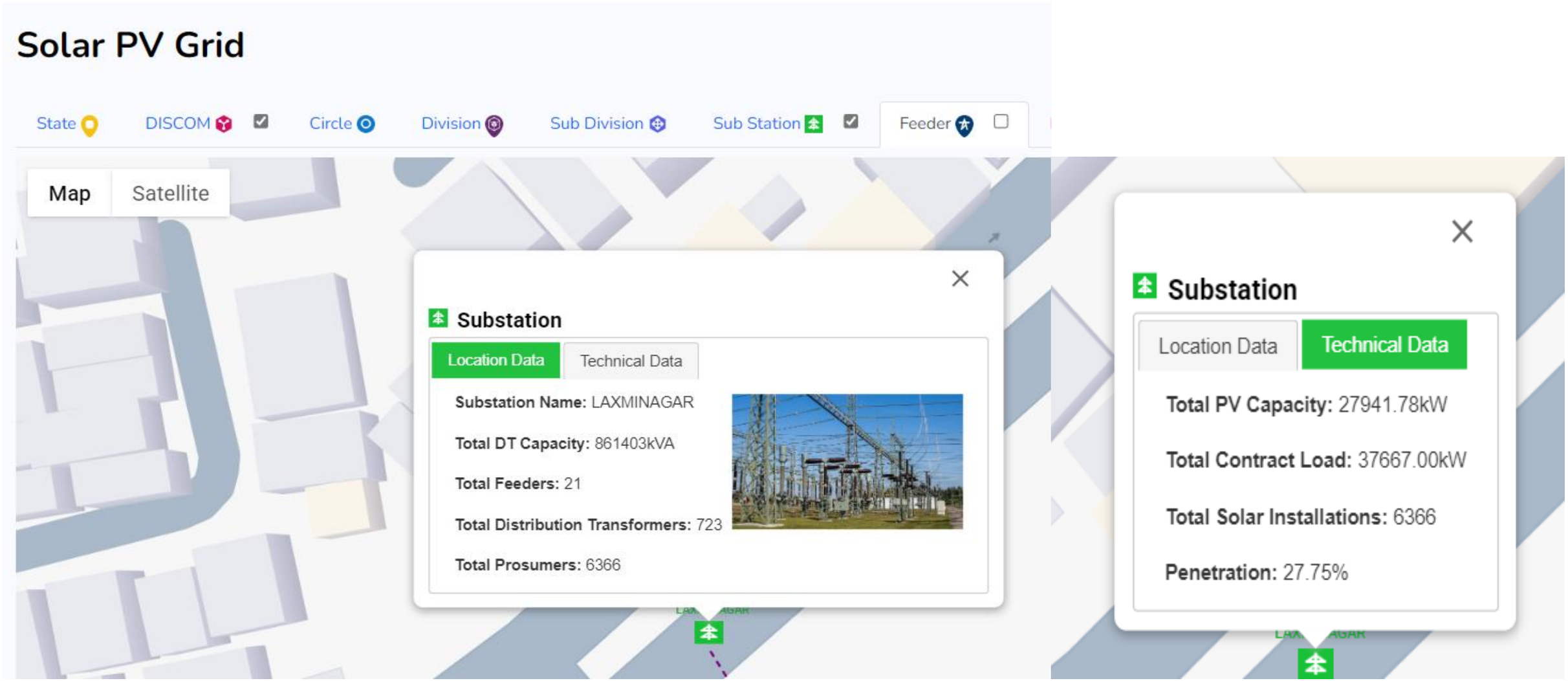


National Solar Registry – DISCOM-wise Data

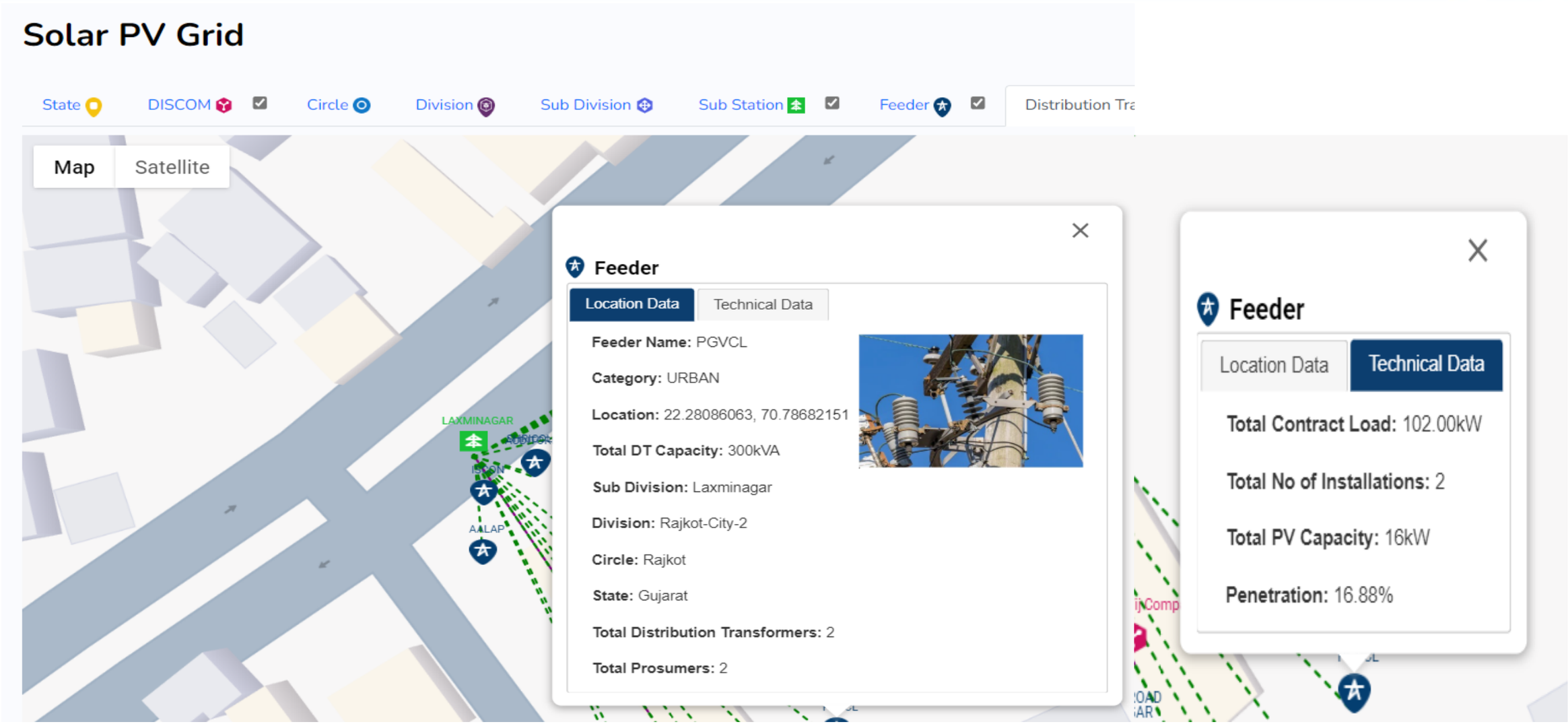


National Solar Registry - DISCOM-wise Map

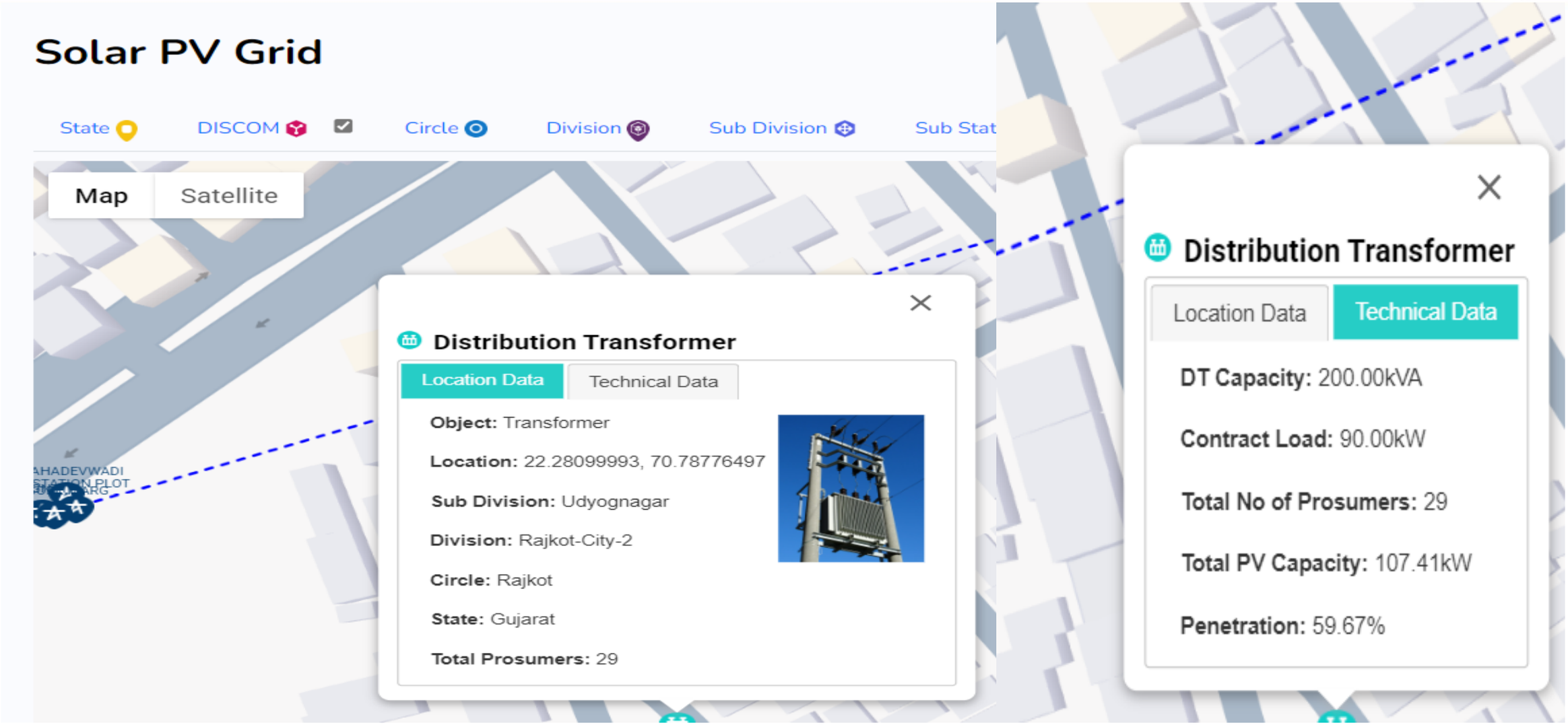
National Solar Registry - Substation-wise Details



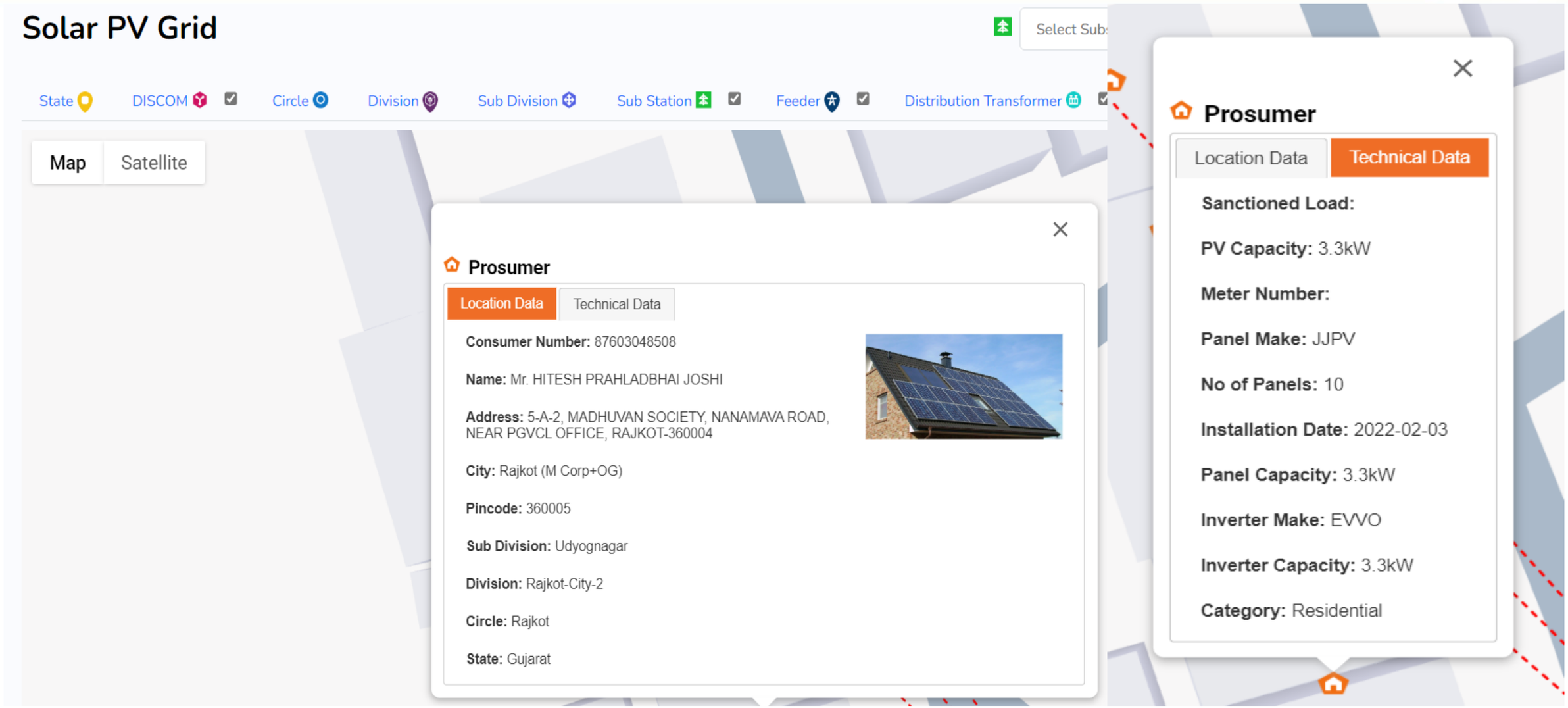
National Solar Registry - Feeder-wise Details



National Solar Registry - DT-wise Details

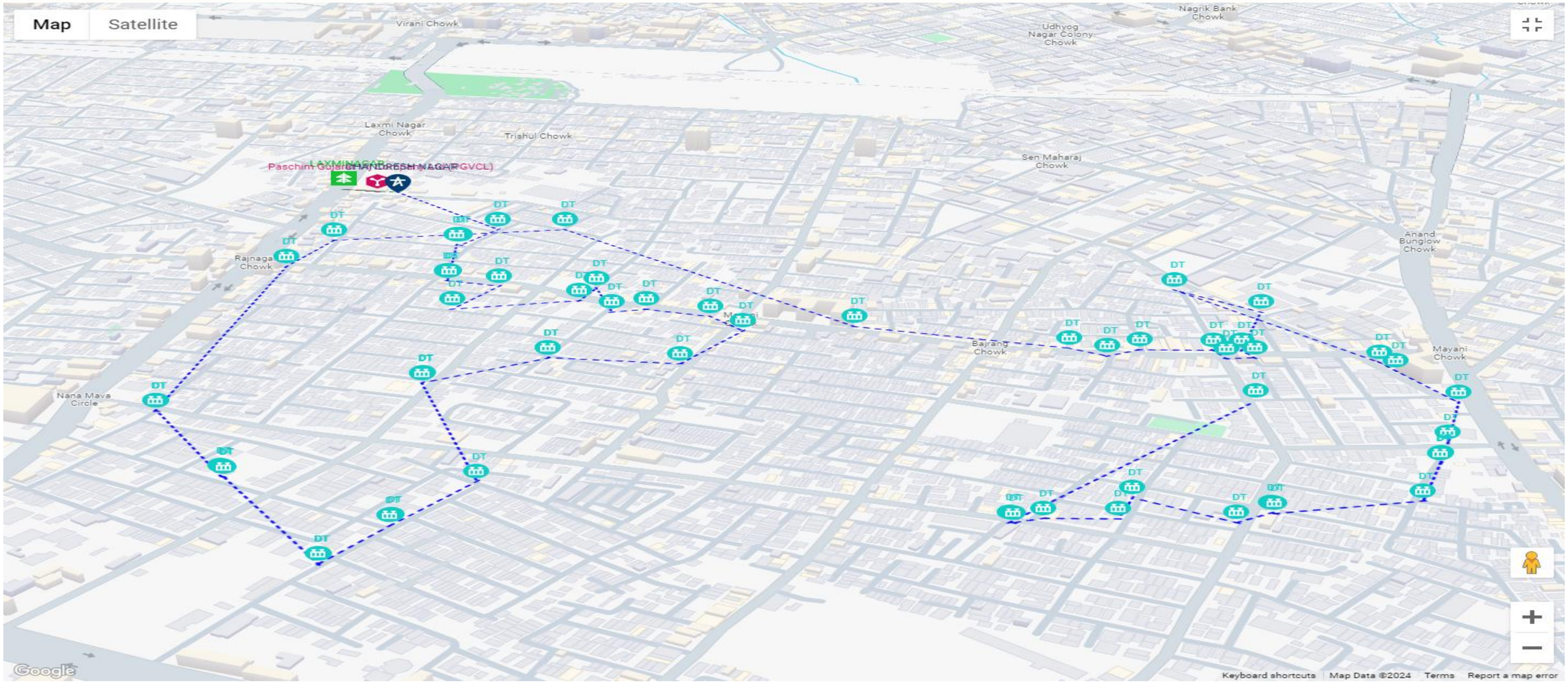


National Solar Registry - Prosumer-wise Details



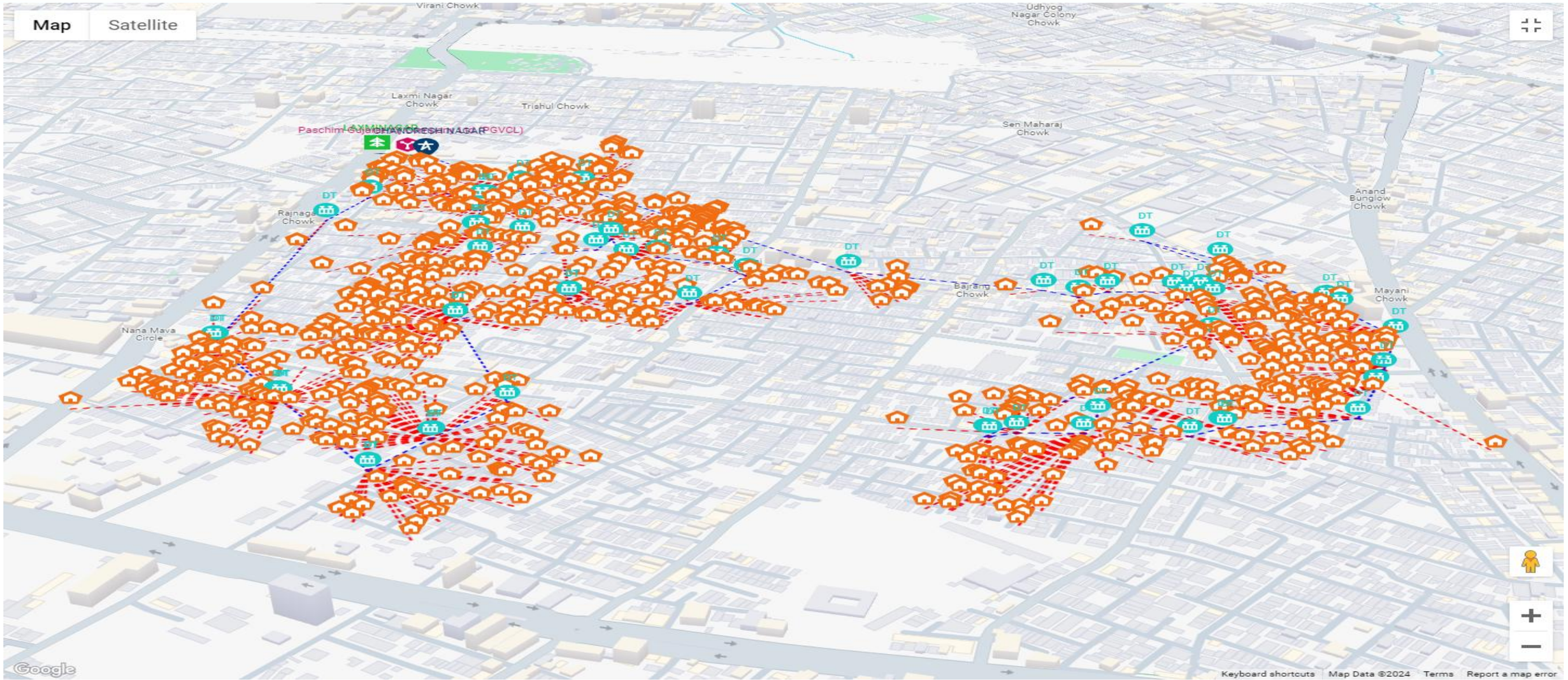
National Solar Registry Dashboard Overview

Mapping Substation to Feeder to Distribution Transformer



National Solar Registry Dashboard Overview

Mapping Substation to Feeder to Distribution Transformer to Prosumer



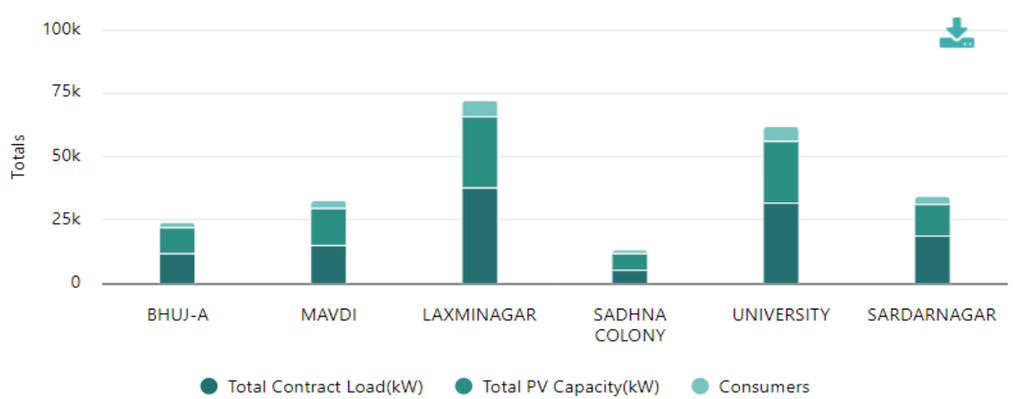
National Solar Registry - DISCOM Realtime Analytics Page

PGVCL

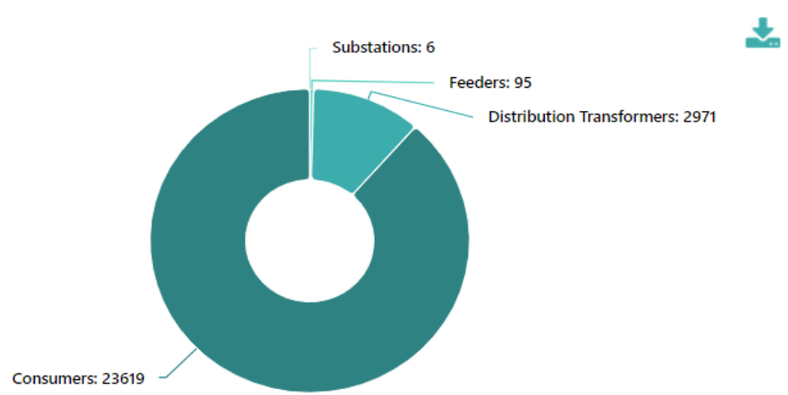
Realtime Analytics

Total RTS Installations	Total PV Capacity	Total Monthly RTS Installations	Total DT Capacity	Top Monthly PV Capacity
23,619	95,599 kW	69	339,007 kVA	30.97 kW
18.65% vs. Last month	19.50% vs. Last month	68.64% vs. Last month	16.09% vs. Last month	By: Greenera Enertech Pvt. Ltd.

PV Installations vs Total Capacity at Substation Level



Distribution of Key Components



National Solar Registry - DISCOM Realtime Analytics Page

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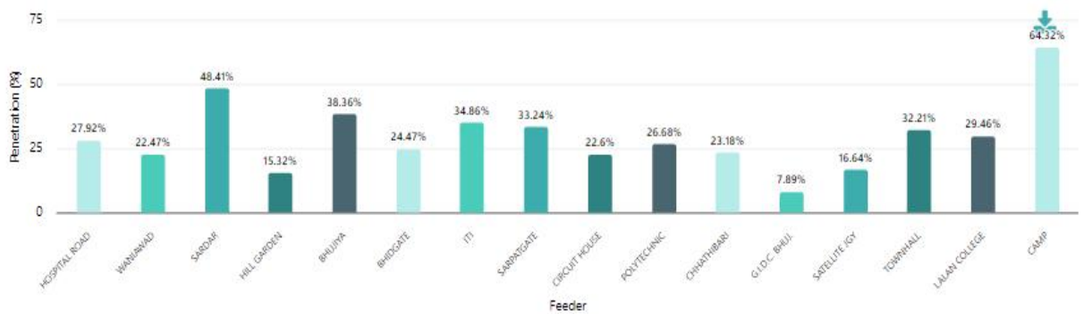
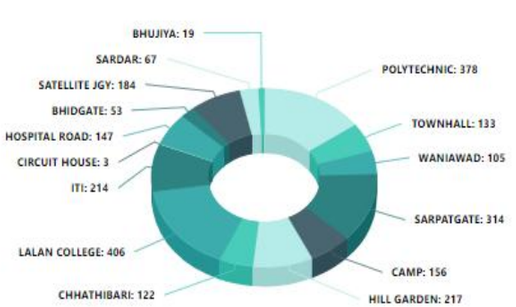
Feeder-wise Solar Penetration Level

Select Substation: BHUJ-A

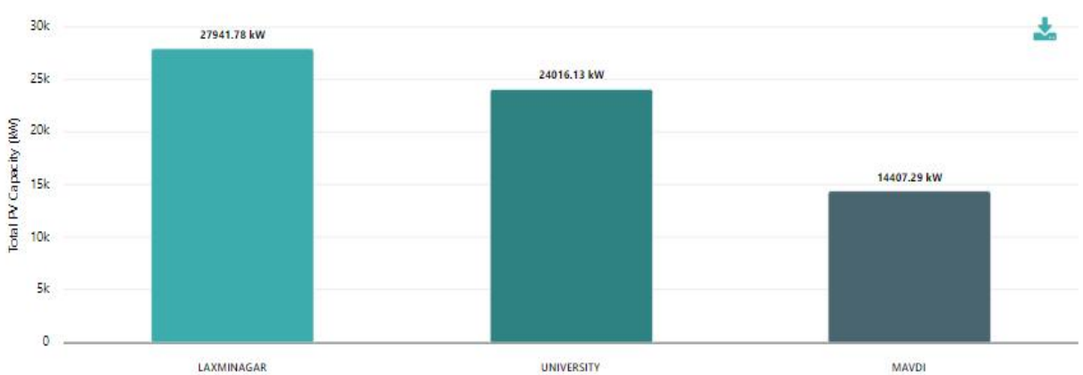


Feeder-wise Prosumer Count Segmentation

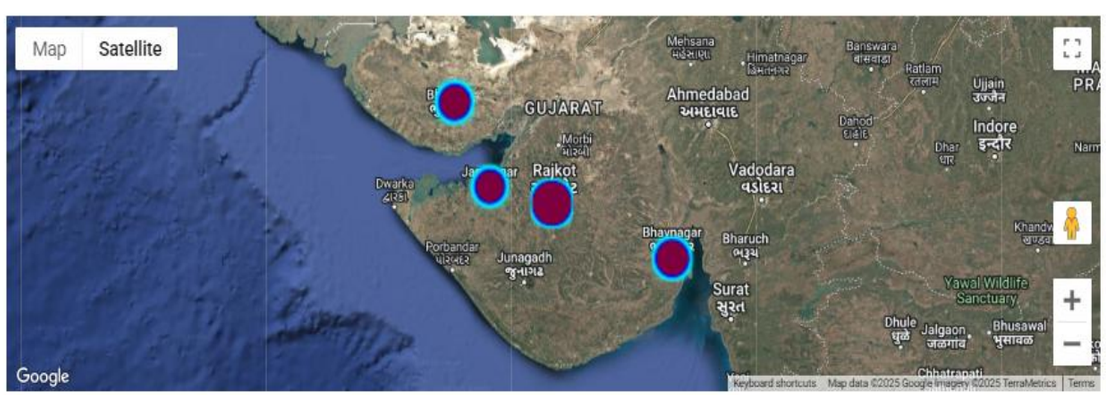
Select Substation: BHUJ-A



Top Producing Substations and Feeders



Distribution of RTS Installations



National Solar Registry - DISCOM Realtime Analytics Page

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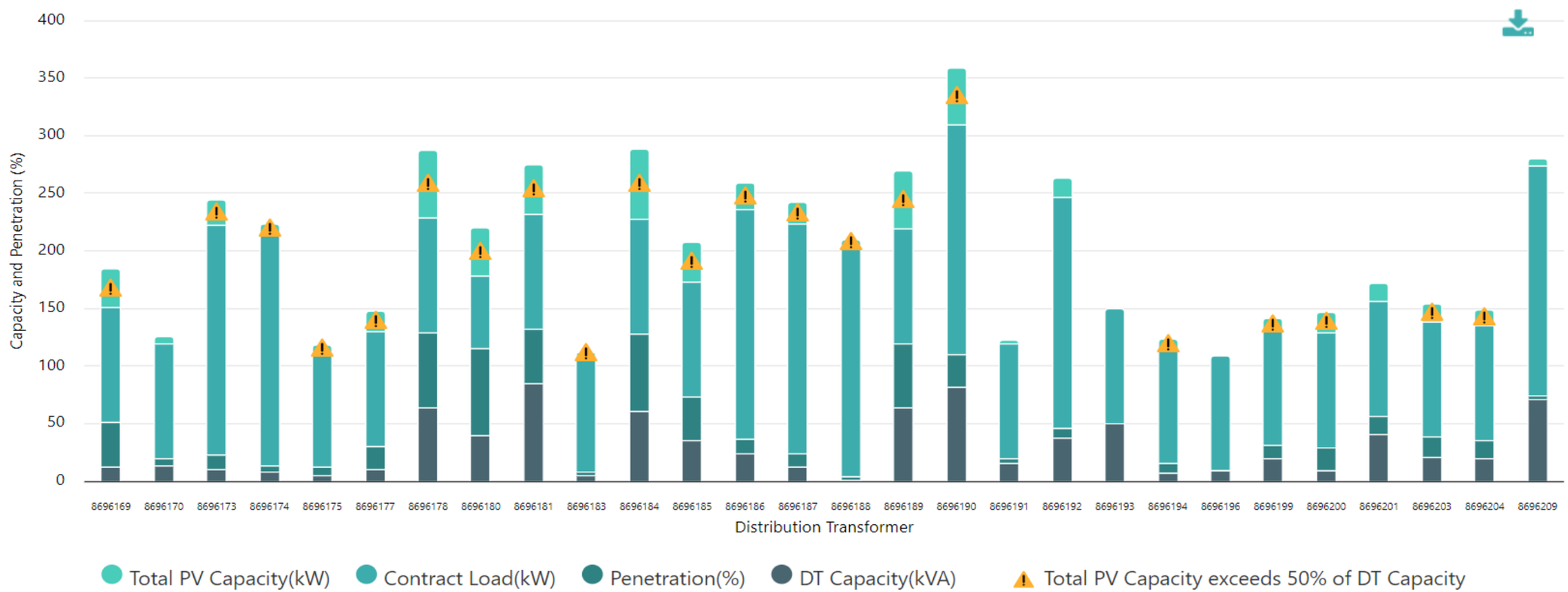
DT Performance with SRTPV Alerts

Select Substation: BHUJ-A

Select Feeder: HOSPITAL ROAD



Present Status and Next Steps

Present Status

- ISGF has developed the Framework and Designed the Solar Rooftop PV Registry - Architecture, Data Fields and APIs. This is designed DISCOM-wise, Sub-station wise, Feeder-wise and DT-wise. The data of all DTs and SRTPV units including the inverter details have been captured in the registry.
- Historic data of existing SRTPV units in 2 DISCOMS (PGVCL – Rajkot and MPPKVVNL-Indore) have been entered in the registry by ISGF in the first phase(under the present grant)
- Developed and hosted the Registry on a cloud platform-making this information publicly available while maintaining data anonymity
- Prepared a Standard Operating Procedure (SOP) for uploading of historical data of existing SRTPVs by DISCOMs ; held training sessions with few DISCOMs

Next Steps

- **The registry is being handed over to Central Electricity Authority (CEA) who will maintain the registry with support from respective SLDCs and DISCOMs**
- Mandating capturing of additional Data Fields (related to DT, Feeder and substation) while approving connections for new SRTPV systems by DISCOMs; and API integration of the SRTPV Registry with PM Surya Ghar Portal 2.0/ other DISCOMs portals so that new SRTPV connections are automatically updated in the National SRTPV Registry
- Request (and train if required) DISCOMs to upload the data of existing (historic) SRTPV systems in the registry

DATA FIELDS – Mandatory and Optional

Sr.	Data Field Category	Sub-Category	Description
1	Consumer Details	Consumer Number	DISCOM's Unique Identificxation Number for the consumer Connection
2		Name	First Name of the Consumer
3		Surname	Surname of the Consumer
4		Address - Line 1	Address of the Consumer
5		Address - Line 2	Address of the Consumer
6		Locality/Colony	Locality of the Consumer
7		City/Town/Village	Town of the Consumer
8		District	District of the Consumer
9		State	State of the Consumer
10		Pincode	Pincode of the Consumer
11		Whether the Premises is owned or rented	Consumer to comment whether the premise where the DER is installed is owned or rented property
12		Connection Category	Whether the connection is Residential/Industrial/Commercial/Agricultural/Other
13		Consumer Email	Email id of the Consumer
14		Consumer Mobile/Landline Number	Contact Number of the Consumer
15	Electricity Connection Details	HT Connection (11 kV / 22 kV / 33 kV) OR LT Connection (Single Phase/Three Phase)	To mention whether the connected load is HT then is it 11 kV / 22 kV / 33 kV OR whether the connected load is LT then is it Single Phase or Three Phase
17		Contracted Connection Load (kW)	To mention the Contracted Connection Load
18		Distribution Transformer (DT) Identification Number	To mention the Distribution Transformer (DT) Identification Number connected to the consumer
19		DT Capacity (kVA)	To mention the Distribution Transformer (DT) capacity connected to the consumer
20		DT Make and Date of Manufacture	To mention the DT Make and Date of Manufacture connected to the consumer
21		Approximate Distance from DT to the Consumer premise (In meters)	To mention the approximate distance from DT to the consumer premise
22		Unique Feeder Identification Number	To mention the Feeder Identification Number connected to the consumer
23		Feeder - UG Cable (or) Overhead Line (OHL)	To mention whether the Feeder connected to the consumer is Underground Cable or Overhead Line
24		Pole Number (incase of OHL)	What is the pole number in case of Overhead Line
25		UG cable size / Conductor Type and size	What is the size or type of Conductor
26		Substation Name	To mention the Substation name connected to the consumer
27		Power Transformer Capacity (kVA or MVA)	To mention the Power Transformer Capacity connected to the consumer
28		Sub-division	To mention the Sub-division of the consumer who is connected to the consumer
29		Division	To mention the Division of the consumer who is connected to the consumer
30		Circle	To mention the Circle of the consumer who is connected to the consumer
31		Zone	To mention the Zone of the consumer who is connected to the consumer
32		DISCOM	To mention the DISCOM of the consumer

DATA FIELDS – Mandatory and Optional

33	Solar Plant Details	Time Stamp of Application for Solar Installation	To mention the date when Application was applied for Solar Connection
34		Scheme under which Solar is Installed	To mention the scheme under which solar installation is done, to identify the subsidy plan.
35		Application No.	To mention the Application Number
36		DISCOM Registration No.	To mention the DISCOM Registration number
37		Approved PV Generation Capacity (kWp)	To mention the approved PV generation capacity by DISCOM
38		Export Limit, if any (kW)	The maximum amount of power that can be exported (sent out) from the PV Unit, through the Connection Point (kW), as approved by the DISCOM.
39		Latitude of Solar Installation	To share the laltitude of Solar Installation
40		Longitude of Solar Installation	To share the longitude of Solar Installation
41		New PV Capacity (kW)	To indicate the PV Capacity of new solar installations applied for.
42		Existing PV Capacity (kW) (if any)	To share the PV Capacity of existing solar installations if any
43		Grid Connected/Hybrid Connection	Is the Solar PV directly connected to grid or is a hybrid connection
44		Ground Mounted/Rooftop	Is the Solar PV ground mounted or rooftop
45		Module Capacity (kWp)	To mention the Module Capacity
46		Module Make	To mention the Module Make
47		Manufacturer	To mention the Manufacturer
48		No. of Modules	To mention the No. of Modules
49		Inverter Capacity (kVA)	To mention the Inverter Capacity
50		Inverter Make	To mention the Inverter Make
51		No. of Inverters	To mention No. of Inverters installed
52		Cell Types	To mention the cell type as mentioned below
a.		Mono-Crystalline	
b.		Poly-Crystalline	
c.		Mono-Perc	
d.		Single Sided / Bi-Facial	
53	Metering Details	Bi-directional Meter Make	To mention the Bi-directional Meter Make
54		Bi-directional Meter No.	To mention the Bi-directional Meter No.
55		Solar Meter Make	To mention the Solar Meter Make
56		Solar Meter No.	To mention the Solar Meter No.
57		Date of Installation of Solar Meter	To mention the Date of Installation of Solar Meter
58		Agreement Signing Date	To mention the Aggrement signing date of the same
59	Installer Details	Installer Name	To mention the Installer Name
60		Empanelment No.	To mention the Empanelment No. through it was choosen
61		Installer Email	To mention the Installer E-mail
62		Installer Mobile	To mention the Contact Details
63	DISCOM Officials	Lineman Name and contact details	DISCOM to share the Lineman details taking care of above feeder
64		Junior Engineer Name and contact details	DISCOM to share the Junior Engineer details taking care of above feeder
65		Assistant Engineer	DISCOM to share the Assistant Engineer details taking care of above Sub-division
66		Assistant Executive Engineer	DISCOM to share the Assistant Executive Engineer details taking care of above Sub-division
67		Executive Engineer	DISCOM to share the Executive Engineer details taking care of above Division
68		Superintending Engineer	DISCOM to share the Superintending Engineer details taking care of the Circle
69		Chief Engineer	DISCOM to share the Chief Engineer details taking care of the Zone
70	Other DER at Customer Premise	Battery Energy Storage System (kWh)	To share details of Battery Energy Storage System if installed at consumer premise
71		Wind Mills (kW)	To share details of Wind Mills if installed at consumer premise
72		EV Charger (kW)	To share details of EV Charger if installed at consumer premise
73		Water Heater	To share details of Industrial Grade Water Heater if installed at consumer premise
74		AC Plant	To share details of Central AC Plant if installed at consumer premise
75		Heat Pump	To share details of Heat Pump if installed at consumer premise
76		Any other DER	To share details of any other DER Equipment if installed at consumer premise

Out of 76 Data Fields only 47 are mandatory Data Fields

Thank you

For discussions/suggestions/queries email:

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