



Idam Infrastructure Advisory Pvt. Ltd.

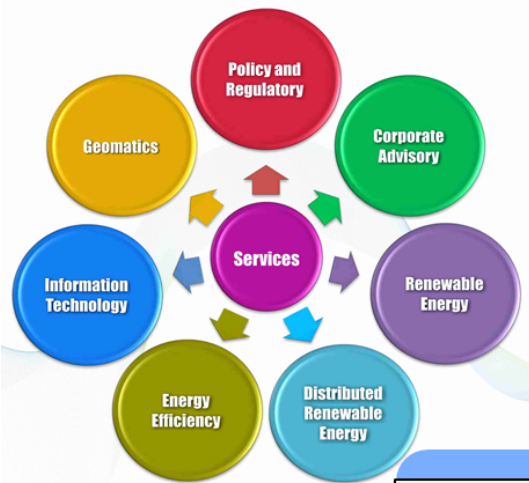
Regulatory Challenges and Proposed Solutions for Rooftop Sector

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PV Invest West – Top Players in Utility Scale, Rooftop, RESCO

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Idam Infra - Service Offerings



Policy and Regulatory (P&R):

- P&R Analysis
- P&R Formulation
- Tariff Orders and Petitions
- Adjudication and Appeals
- Case Specific Arbitration & Litigation Support
- Regulatory Process Support
- Market Development
- Institutional Strengthening and Capacity Building

Corporate Advisory Services:

- Market Assessment and Business Entry Strategy
- Risk Assessment and Due Diligence
- Transaction Support Services
- Project Appraisal
- Project Design and Implementation Support
- Resource Efficiency
- Policy and Regulatory Support
- IT Solutions

Renewable Energy (RE) Services:

- RE Policy Analysis and Design
- Grid Integration of Renewable Sources
- RE Procurement Strategy
- RE Bid Process Management
- RE Technology Assessment
- Project Feasibility Development and Structuring
- RE Transaction and Due Diligence Support
- Capacity Building

Distributed RE Services:

- Policy Design and Analysis
- Regulatory Analysis and Process Support
- Market Assessment Services
- Project Structuring
- Techno – Commercial Feasibility Study
- Project Development and Project Management Support
- Battery Based Energy Storage
- Institutional Strengthening and Capacity Building

Energy Efficiency (EE) Services:

- EE Policy Advisory
- DSM Planning, Implementation and Regulatory Support
- Energy & Water Audit
- EE Technology Assessment
- Engineering & Project Management
- Monitoring and verification
- Carbon Foot Printing
- Institutional Strengthening and Capacity Building


Information Technology Services:

- IT Consulting and Strategy
- Application Development and Support
- Database Development and Administration
- Offshore Software Development and Support
- Mobile Application
- Portal Development
- Website Design and Content Management Solutions
- Technical & Customer Support


Geomatics Services:

- Underground Utility and Cadastral Survey
- Aerial and Satellite Mapping
- 2D and 3D Geodatabase
- LiDAR Data Processing
- Orthophoto Generation
- Spatial Modelling
- Digital Elevation Model/Digital Terrain Model Generation
- Cadastral Maps Geo-Referencing and Digitization


Issues that shackled up growth of rooftop Solar PV in India




Reluctance of DISCOMs due to revenue loss; availability of net-meter; CEIG inspection etc



"Involvement of multiple stakeholder viz. State Nodal Agencies, DISCOMs, Public Sector Undertakings, Developers etc.



Lack of mandatory notification/
Lack of State policies



Lack of uniformity in regulations

Source: Demand for grants standing committee on energy 2019-20 (Dec 2019)

Need to bring out benefits of GRPV to key stakeholders

- Government of India
 - Decarbonisation of the Indian economy
 - Paris commitment
 - Energy security & sustainability
- For distribution Utilities
 - » Avoided power purchase cost at the distribution level
 - » Lowering of distribution and transmission losses
 - » Ease in meeting RPO targets
 - » Saving on investment in distribution Infrastructure (low penetration)
- For Consumer
 - » Lowering electricity bills
 - » Optimal utilisation of available roof space/vacant areas
 - » Additional benefits in terms of tax exemption (if applicable)
 - » Opportunity for consumer participation and investment through smaller systems

Why Solar PV rooftop ?

Rooftop vs. Utility scale solar power projects

Solar Deployment areas/ benefits	Supply gap reduction	Energy security	T&D loss reduction	Stimulate investments	Optimal utilization of infrastructure	Employment generation	Reduction in carbon foot print
Large ground mounted solar projects	✓	✓	✗	✓	✗	✓	✓
Rooftop Solar projects	✓	✓	✓	✓	✓	✓✓	✓✓

Regulatory Challenges in Rooftop Sector

- Discoms have no incentive to promote rooftop solar
- Confusion about BTM installations
- Net-metering and OA Together?
- Need for innovative business models
- Grid connectivity charges pose problem

GRPV Targets for each Discom under Section 86(1)(e)

State electricity regulatory commission (SERC's) should set GRPV installations targets for each discom

Section 86 1 (e) of the electricity act 2003:

- *Promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person,*
 - *Specify, for purchase of electricity from such sources,*
 - *A percentage of the total consumption of electricity in the area of a distribution licensee*
-
- MNRE may advise State Electricity Regulatory Commission (the Commission) to set target for GRPV deployment for each DISCOM in the State till FY 2022.
 - MNRE may also advise the Commission to not impose any grid support charges till the deployment of GRPV equivalent to target capacity not achieved.
 - While formulating the targets, the Commission may take into consideration the State specific targets set by Central Government / Policy issued by State Government, if any.
 - The Commission should direct DISCOM to design and develop consumer categories wise program that would help accelerate GRPV deployment.
 - MNRE may support the Commission in amending Regulations / issuance of guidelines in this regard.

GRPV Targets and Grid Support Charges



- Set Target for capacity in such as manner that 3% of total electricity is generated from GRPV
- Target should be set in MW terms for each Discom by SERC
- Sub-limits can be specified for consumer segment (HT/LT) or (Commercial/Industrial)
- Utility shall be **allowed to levy 'banking charges'** equivalent to applicable wheeling loss for providing banking facility under net metering arrangement (say, 6% at HT or 9% at LT)
- **ToD based adjustment of banked units** energy crediting adjustments shall be allowed.
- Upon accomplishing target capacity limits, Utility be **allowed to levy Grid support charges for new GRPV capacity**
- **Long term Regulatory certainty** of above arrangement should be enabled through Regulations.

- Net-metering should be permitted for all consumer categories with maximum demand of 1MW
- 'Behind the Meter' (BTM), a new sub-category of GRPV wherein the projects are grid tied but not supplying power back to the grid i.e. without net-metering
- Discoms should freely allow BTM installations for C&I consumer beyond 1 MW capacity
 - **Reverse power flow protection relays** and **zero volt sensor** at invertors are used for grid protection.
 - **Electrical inspector** - A competent authority, allowed interconnectivity as per grid connectivity rules.
 - It should be mandatory to register such installations with Discoms
- OA should be permitted for consumers with net-metering facility
 - In such cases, energy on open access should be settled before settlement of net metered energy
 - This will ensure that OA processes are not compromised

Net-metering & IPP on Large Rooftops...

- It is proposed that large warehouse may be permitted to engage in Net-metering and Open Access to supply other consumers
- Further, it is suggested that threshold of 1MW be lowered to 500kW
- These ideas are not practical as these would require major changes to OA framework in the state
- In the case of larger rooftops (that can support > 1MW capacity) there should be provision to create 2 projects. 1st project to be allowed Net metering until 1 MW, while other may be allowed for open access.

Allowing Group/Virtual Net metering for GRPV projects

- Group Metering scheme for group of residential consumers in RWAs/Townships/Housing complexes or MSME industrial clusters would have far reaching implications and are also scalable to harness huge untapped potential.
- Virtual Net Metering means Open Access without any OA Charges and los compensation
 - The Concept not in line with the prudent principles of power system operation
 - However, it is needed to handle small set of specific problems
 - Hence, to be allowed only for the LT categories of consumer (i.e. LT Residential and LT Commercial)
 - Further, VNM to be allowed in the same 11kV feeder to avoid technical and billing related issues.
- **RESCOs need to be nudged to look beyond C&I segments and policy/regulatory intervention thru this model would open up huge opportunity** instead of looking at “open access” which is path filled with lot of resistance and litigations and regulatory inertia

Streamlining process of Regulatory Approval of GRPV business models

- SERCs shall engage with DISCOMs in devising tailor made business models for GRPV deployment
E.g.: KERC order on possible business model for SRPV, 2019
- Defined timeline for entire process of regulatory approval and adoption of business model.

Conclusion

- Solar rooftop has certainly significantly more advantages than large projects
- Unfortunately, these are not quantified
- Lots of misconceptions about these projects
- Technical solutions exist for almost all challenges
- Strong policy & regulatory advocacy is required

Thank You

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