

**ASSESSMENT OF EXISTING RENEWABLE ENERGY REGULATIONS OF UTTARAKHAND  
AND FINDING OUT THE LOOPHOLES IN THE REGULATIONS**

ABHISHEK PANDEY

University of Petroleum and Energy Studies, Dehradun, India,  
abhilal26@gmail.com

MADHU SHARMA

University of Petroleum and Energy Studies, Dehradun, India  
madhusharma@ddn.upes.ac.in

KN DINESH BABU

University of Petroleum and Energy Studies, Dehradun, India  
dineshbabukn@gmail.com

MAYANK KUMAR

University of Petroleum and Energy Studies, Dehradun, India  
Connecting.mayank@gmail.com

**ABSTRACT**

For energy sector government form some agencies after the provision of electricity act 2003. Main objective of electricity act 2003 was government want to make law for transmission, generation and distribution of electricity and also want to increase interest of consumer in electricity and provide them proper supply. One of the main functions of UERC was to promote generation of electricity from renewable sources. UERC almost did all the relative activities to promote renewable. But still they are lacking behind at some points so this research has been done to highlight the loopholes in the regulations.

**INTRODUCTION**

Uttarakhand came into existence in the year 2000 and the power sector in the state has been unbundled as per the provisions of the Electricity Act 2003. The following entities have been formed to manage various activities in the energy sector.

Uttarakhand Electricity Regulatory Commission (UERC)	Its primary function is to regulate the electricity as per the Electricity Act-2003
Uttarakhand Renewable Energy Development Agency (UREDA)	It is State Nodal Agency of Ministry of New and Renewable Energy (MNRE) for promotion and development of renewable energy and State Designated Agency (SDA) of Bureau of Energy Efficiency (BEE) for implementation of energy efficiency and conservation activities in the State of Uttarakhand
Uttarakhand Jal Vidyut Nigam Limited (UJVNL)	It develops, operates and maintains power generating stations harnessing both conventional and non-conventional sources of energy
Uttarakhand Power Corporation Limited (UPCL)	It is the distribution licensee of the state. It caters to the sub-transmission & distribution, secondary substations & distribution lines 66 KV & below in the State.
State Load Dispatch Centre (SLDC)	It is the apex body to ensure integrated operations of power systems in the state.
Power Transmission Corporation of Uttarakhand Limited (PTCUL)	It is responsible for transmission of electricity at High/Extra high voltages (132 KV & above) and for coordination of facilities for inter-state, regional and inter-regional generation and transmission of electricity.

UERC vide its notification dated 15.04.2013 has notified UERC (Tariff and Other Terms for Supply of Electricity from Renewable Energy Sources and non-fossil fuel based Co-generating Stations) Regulations, 2013 with total 5 amendments till date. The UERC RE regulations, 2013 has elaborated almost all the factors associated with supply of electricity from renewable energy sources and non-fossil fuel based co-generating stations viz-a-viz obligations & duties of the generating station, sale of power, open access, RPO, tariff structure, control period, generic tariff, technology specific parameters, evacuation of power, connectivity and metering arrangement, energy accounting & billing, deemed generation etc.

### **UERC (TARIFF AND OTHER TERMS FOR SUPPLY OF ELECTRICITY FROM RENEWABLE ENERGY SOURCES AND NON-FOSSIL FUEL BASED CO-GENERATING STATIONS) REGULATIONS, 2013**

The chapter wise details of the contents of the UERC RE Regulations, 2013 are given below:

<b>Chapters</b>	<b>Contents</b>
Chapter 1- Preliminary	<ol style="list-style-type: none"> <li>1. Short title and commencement</li> <li>2. Scope and extent of application</li> <li>3. Definitions</li> </ol>
Chapter 2- General Conditions	<ol style="list-style-type: none"> <li>4. Eligibility Criteria for qualifying as Generating Station based on Non-Conventional/Renewable Energy Source</li> <li>5. Environmental and other Clearances</li> <li>6. Obligations and Duties of the Generating Station</li> <li>7. Sale of Power</li> <li>8. Open Access</li> </ol>
Chapter 3- Renewable Purchase Obligation (RPO)	<ol style="list-style-type: none"> <li>9. Minimum Quantum of electricity to be purchased by distribution licensees from 'nonfossil fuel based co-generation and generation of electricity from renewable energy sources</li> </ol>
Chapter 4- Tariff-General Principles	<ol style="list-style-type: none"> <li>10. Tariffs</li> <li>11. Control Period or Review Period</li> <li>12. Tariff and PPA Period</li> <li>13. Petition and proceedings for determination of Project Specific Tariff</li> <li>14. Tariff Structure</li> <li>15. Financial Principles</li> <li>16. Interest on loan capital</li> <li>17. Depreciation</li> <li>18. Return on Equity</li> <li>19. Interest on Working Capital</li> <li>20. Operation and Maintenance expenses</li> <li>21. CDM benefits</li> <li>22. Rebate</li> <li>23. Late Payment Surcharge</li> <li>24. Subsidy or incentive by the Central / State Government</li> <li>25. Taxes and Duties</li> <li>26. Applicability of Tariff</li> <li>27. Applicability of Merit Order to RE Sources</li> </ol>
Chapter 5 -Technology Specific Parameters	<ol style="list-style-type: none"> <li>28. Small Hydro Generating Plant</li> <li>29. Biomass Power Projects based on Rankine Cycle Technology</li> <li>30. Non-fossil fuel based Cogeneration Projects</li> <li>31. Biomass Gasifier Power Projects</li> <li>32. Biogas based Power Projects</li> <li>33. Solar PV Power Project</li> <li>34. Solar Thermal Power Project</li> </ol>

	<ul style="list-style-type: none"> <li>35. Grid interactive roof top and small solar PV plants</li> <li>36. Wind Energy</li> <li>37. Generic Tariffs</li> </ul>
Chapter 6 - Miscellaneous	<ul style="list-style-type: none"> <li>38. Transmission Charges, Wheeling Charges and Losses</li> <li>39. Evacuation of Power</li> <li>40. Maintenance of Transmission lines and Equipment</li> <li>41. SLDC Charges</li> <li>42. Connectivity and Metering arrangement for grid interactive roof top and small solar PV plants</li> <li>43. Metering Arrangement</li> <li>44. Energy Accounting and Billing</li> <li>45. Purchase of Electricity by the Generating station/Start up Power</li> <li>46. Banking of Power (Applicable only in case of Captive Generating Plants &amp; Non-fossil fuel based Co-generating Stations)</li> <li>47. Deemed Generation</li> <li>48. Savings</li> <li>49. Power to Remove Difficulties</li> <li>50. Power to Relax</li> </ul>

### LOOPHOLES IN THE RE REGULATIONS, 2013

There are certain clauses that resist in the development of renewable energy project and developer(s) are facing difficulties at several steps while implementing the RE projects. The rectification of such uncertain clauses should be required. The details assessments on each clause have been carried out and subsequently following loopholes are identified which should be rectified by the UERC at the earliest:

#### **CLAUSE NO. 11. CONTROL PERIOD OR REVIEW PERIOD**

The clause is relevant to the annual revision of the benchmark capital cost of the solar power plant. Any variance in the benchmark capital cost would change the generic tariff of the project. The revision of benchmark capital cost of the solar power plant in each year would make the uncertainty among the developers during the competitive bidding process. UERC after the end of each assessment year and in the month of July or August of each financial year comes with the draft order for the determination of benchmark capital cost of solar power projects, which is then finalized in the month September or October after calling hearings etc.

UPCL, the distribution licensee of the state, through UREDA invites tariff based competitive bid for the procurement of the solar power to fulfill their RPO from time to time. UREDA accordingly initiate the bidding process after incorporating generic tariff as approved by UERC and taking all necessary approvals from the state Government. Generally, it takes minimum 2 months for the allotment of projects to the successful bidders (1 month for submission of bids and another 1 month for scrutinizing of technical bid, an opening of a financial bid, approval from the state government etc). As such letter of allotments is given to successful bidders nearly in the month of December.

Now the developers have only 3 months remained for the commission of the allotted projects in the same financial year otherwise their project allotted tariff may change if the project is commissioned after March of that financial year as UERC may change the tariff during the process of annual revision of the benchmark capital cost of the solar power plant. The gestation period for the commission of the solar power projects is 1 years. Here the developers have the uncertainty on the applicability of the tariff allotted to their projects. The PERT charge for the same is given below:

S.N	Particulars of work	Duration in Months											
		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1	Draft order from UERC for the determination of benchmark capital cost of solar power projects												
2	Finalization of order from UERC for the determination of benchmark capital cost of solar power projects												
3	Invitation of tariff based competitive bids from UREDA												
4	Letter of allotment to successful developers												
5	Time remained for achieving the commission of the project in FY												

### RECOMMENDATION

The revision of benchmark capital cost should not be reviewed annually but it could be reviewed after 2 years so as to avoid uncertainty on applicable tariff among developers or UERC should complete its reviewing process by month of April of each financial year.

#### **Clause no. 9. Minimum Quantum of electricity to be purchased by distribution licensees from ‘non fossil fuel based co-generation and generation of electricity from renewable energy sources’**

The obligated entities that are required to fulfill their Renewable Purchase Obligation as per the clause no. 9 of UERC RE Regulation, 2013 are Distribution Licensee, Open Access Consumers (OACs) and Captive Users. The Distribution Licensee of the Uttarakhand is UPCL and there are almost 44 open access consumers registered in FY 2016-17 in the State. The numbers of OACs registered with SLDC varies in each year as per their registration in SLDC. Captive users are also obligated entities as identified under UERC RE Regulations, 2013 for the fulfillment of RPO compliance. As per the Electricity Rules 2005 the Captive Generating Plant is power plant in which not less than twenty-six percent of the ownership is held by the captive user(s), and also not less than fifty-one percent of the aggregate electricity generated in such plant, determined on an annual basis, is consumed for the captive use. So it is clear that all size of diesel generators that are installed in offices premises, commercial buildings, shopping center, movie theater etc are captive users and are required to fulfill RPO compliance. For example, 5 KVA capacity of diesel generator installed in party hall and is electrifying loads of party hall, is obligated entities and is required to fulfill RPO compliance even if it is operating only 1 day in a month. It is not possible to identify all captive users in Uttarakhand and monitor their generation through the financial year as it will require electricity meter, manpower etc.

### RECOMMENDATION

UERC may fix minimum capacity ceiling in the captive generating plant that will come under the purview of obligated entities and fulfill RPO compliance as stipulated by UERC from time to time. For example, all captive users (captive generating plant) having installed capacity of 500 KVA and above (could be any capacity as decided by UERC) will be an obligated entity. All captive generating plants having installed capacity less 500 KVA would not come under the purview of the definition of obligated entities and hence

will not be required to fulfill RPO compliance. This will facilitate the concerned department in proper monitoring and enforcement of RPO compliance.

### **CLAUSE NO. 35 GRID INTERACTIVE ROOF TOP AND SMALL SOLAR PV PLANTS**

UERC has incorporated this clause in the UERC RE Regulations to promote the grid interactive roof top and small solar PV plants based on net-metering wherein the beneficiary pays to the utility on net meter reading basis only.

However, UERC has not fixed any ceiling on the eligible solar rooftop power plant capacity with the sanctioned load/contracted load of the beneficiary. It means the beneficiary is free to install any capacity of the plant (upto 500 KW as per pertaining solar rooftop scheme) even if it has connectivity at single phase low voltage i.e. 230 Volt. Further as per the pertaining provision, 500 KW solar power plants should be connected to the 11KV line. It is contradictory that how 500 KW solar power plants could be used under the net-metering system as the import connectivity of beneficiary is at 230 V.

Alternately, if the two separate meters would be used i.e. import meter at 230 V and export meter at 11 KV, then UPCL (distribution licensee) have to build 11 KV evacuation system upto the premises of beneficiary that would be an additional financial burden on UPCL.

Ministry of New and Renewable Energy (MNRE), GoI has notified the grid-interacted rooftop solar power plant scheme based on net-metering in order to replace battery bank of the plant with the grid system. This scheme is not based on feed-in-tariff scheme. However, in Uttarakhand, solar rooftop projects that would be installed under net-metering basis are seems to be like a feed-in-tariff based project. UERC is providing nearly same net-metering tariff (energy exported to the grid) for grid-interacted rooftop solar when compared to feed-in-tariff.

### **RECOMMENDATION**

The capacity of grid-connected rooftop solar power plant should be decided accordingly to the sanctioned/contracted load capacity of the beneficiary i.e. the allotted capacity of the project should not exceed 80% sanctioned/contracted load capacity of the beneficiary. In this case, the import and export voltage would be same and all the above said problems would not come in a role.

### **CLAUSE NO. 47 DEEMED GENERATION**

In the UERC RE Regulations, 2013 the solar power projects are categorized into 3 types viz-a-viz Solar PV Power Project, Solar Thermal Power Project & Grid interactive roof top and small solar PV plants. The deemed generation is applicable only for Solar PV Power Project & Solar Thermal Power Project. UERC has not allowed deemed generation for Grid interactive roof top and small solar PV plants. Further deemed generation for ground mounted solar power project is allowed but at the floor of non availability of evacuation system for more than 60 hours in a month. Indirectly it means the outage for non availability of evacuation system for upto 2 hours during the sunny hours in each day is allowed in the State. The average sunny hours available in the state is around 7 hours. If evacuation system will not available even for an hour during the day time than most of the generation would be lost. The interruptions/outages in the evacuation system are very common in the State of Uttarakhand.

### **RECOMMENDATION**

The deemed generation for Grid interactive roof top and small solar PV plants should also be considered by UERC along with Solar PV Power Project, Solar Thermal Power Project. Further for all solar projects, the minimum threshold duration for non availability of evacuation system for consideration of deemed generation should be kept 30 hours in a month instead of 60 years.

### **REFERENCES**

- I. Uttarakhand Electricity Regulatory Commission (Tariff and Other Terms for Supply of Electricity from Renewable Energy Sources and non-fossil fuel based Co-generating Stations) Regulations, 2013.
- II. Personal meeting with officers of UERC & UREDA, GoUK