



UPERC (Mini-Grid Renewable Energy Generation and Supply) Regulations, 2016

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Introduction

Definition

Business Models

Key features of Regulation



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Access to electricity at household level is a serious concern

In UP, 2 crore households lack access to minimum household requirement of electricity

NTP, 2016 intends to supply adequate & uninterrupted power to all categories of consumers by 2021-22

Also, mandates all Regulatory Commissions to notify necessary Regulations to safeguard investments related to Micro Grid Projects

UP being most prominent state, realizes importance of access to affordable & reliable energy

Thus, to safeguard investments involved, UPERC has notified **Mini-Grid Renewable Energy Generation and Supply Regulations, 2016**

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Compulsory Supply Hours (CHS)

- Electricity supply during 1700 hrs to 2300 hrs each day

Feed-in-Tariff (FIT)

- Tariff as per UPERC (Captive and Renewable Energy Generating Plants) Regulations, 2014 for technology specific Mini-Grid Projects

Grid Arrival

- Extension of Distribution Licensee's system within 100 meters of operation of Mini-Grid Projects

Mini-Grid Area

- Rural areas and areas having inadequate supply of electricity during peak hours and/or CHS

Mini-Grid Operator (MGO)

- A person, a group of persons, local authority, Panchayat Institution, users' association, co-operative societies, non-governmental organizations, a Company that builds, commissions, operates and maintains the Mini-Grid Project within Uttar Pradesh for generation and supply of electricity to consumers and/or sale to Distribution Licensee in Mini-Grid Areas under these Regulations

Mini-Grid Project

- RE based electricity generation system up to 500kWp, supplying electricity to consumers through PDN and/or to Distribution Licensee at interconnection point

Mini-Grid Renewable Energy System (MRES)

- Stand alone or grid interactive power plant generating electricity using RE source in Mini-Grid Areas for supply to consumers through PDN and/or injection at inter-connection point to Distribution Licensee

Power Distribution Network (PDN)

- Distribution infrastructure owned by MGO for supplying electricity to consumers

Standards of Performance (SoP)

- Supply to at least 10% willing domestic consumers in areas where such demand exists, within 40 meters of PDN,
- Continuous or intermittent supply for minimum 5 hours during CHS every day to all connected consumers,
- Adhere to SoP within 6 months from date of commencement of supply of electricity

Tariff to Consumer

- Mutually agreed or as per UP Mini-Grid Policy, 2016 if availing subsidy

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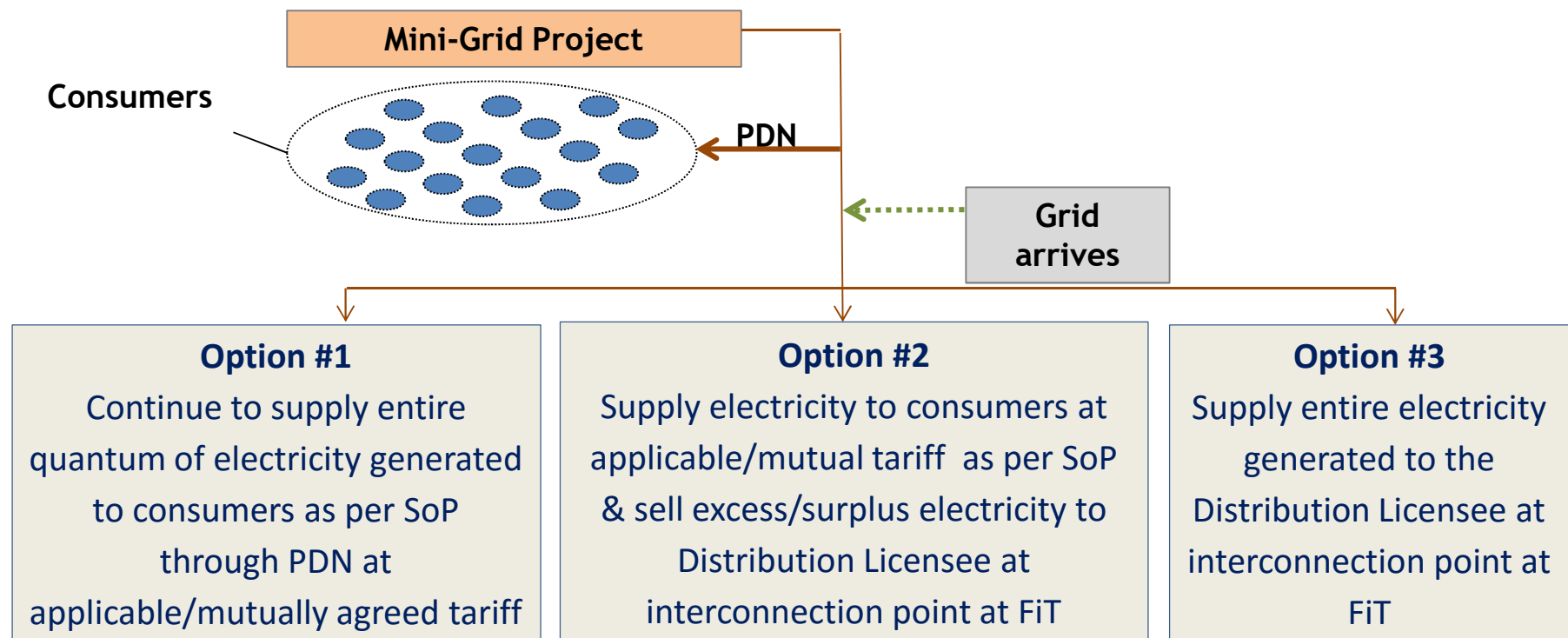


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Models for Business Operations- No Grid Scenario

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- MGO implements Mini-Grid Project for generation & supply of electricity through PDN in areas where Distribution Licensee's System doesn't exist
- MGO to intimate the project details to the Commission, SNA and Distribution Licensee

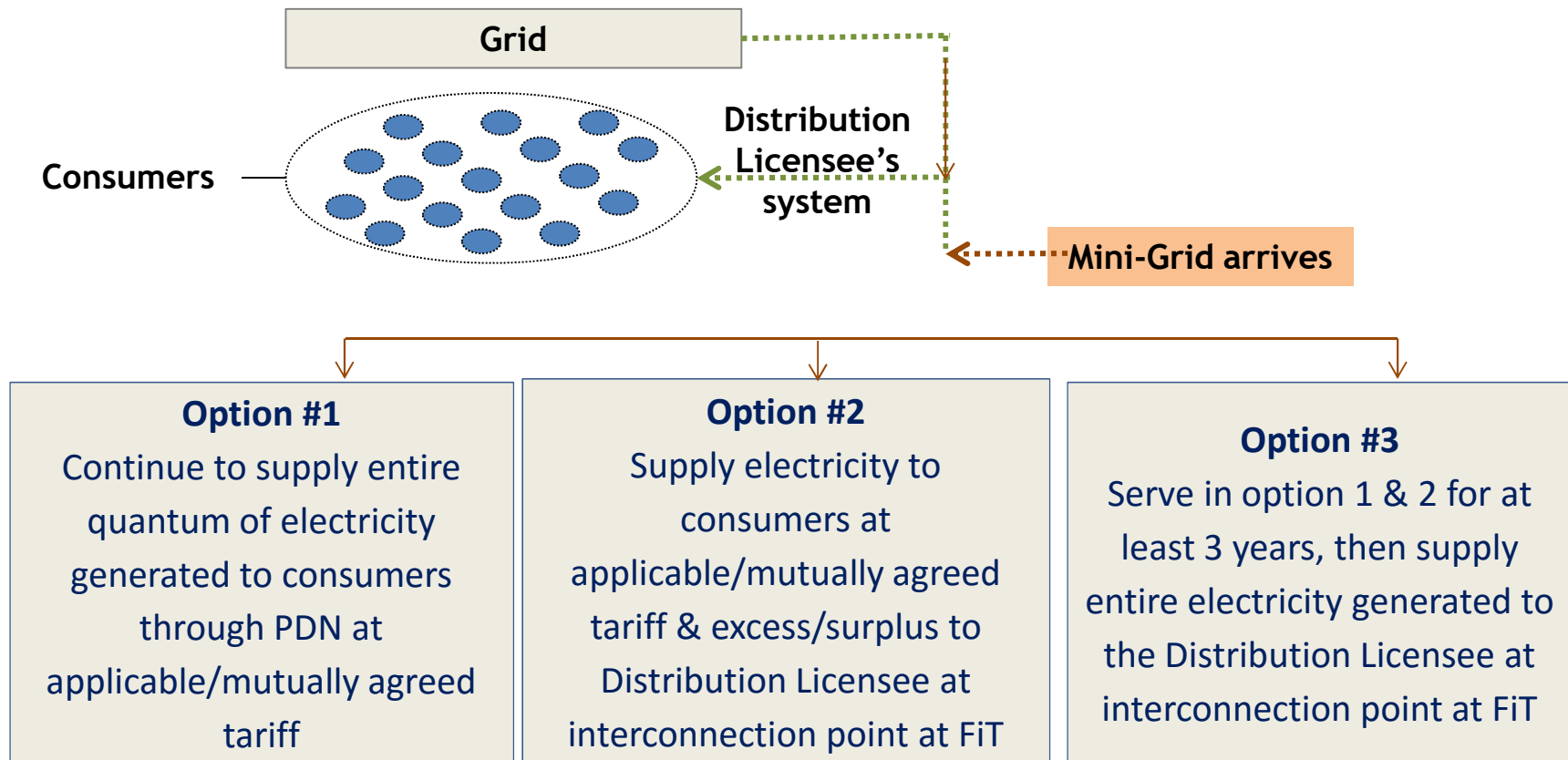


- MGO allowed to migrate to any of the options
- MGO allowed to act as Distribution Franchisee

Models for Business Operations- Grid pre-exists

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- MGO implements Mini-Grid project in areas where Grid exists, Capacity to be intimated
- Allowed to supply electricity, after supplying electricity to consumers for a minimum time of 6 months



- MGO allowed to migrate to any of the options

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Construction of PDN

- Projects with capacity ≤ 50 kWp, follow minimum technical standards
(PCC Poles, PVC covered aluminum cable supported with GI wire, Service connection through junction box mounted on Pole)
- Mini-Grid Projects with capacity > 50 kWp, PDN standards as per RESSPO, UPPCL or CEA (Measures relating to Safety and Electric Supply) Regulations, 2010

Inter-connection of MRES with Grid

- As per CEA (Technical Standards for connectivity of the Distributed Generation Resources) Regulations, 2013
- Cost of inter-connection to be borne by MGO

Safety Measures

- As per CEA (Measures of Safety and Electricity Supply) Regulations, 2010

Metering Arrangement

- As per CEA (Installation and Operation of Meters) Regulations, 2006
- Meter(s) at Generation end and at each of outgoing feeder(s)
- Distribution Licensee to install (with cost) meter at interconnection point.

Renewable Purchase Obligation

- Electricity generated from MRES interconnected with Distribution Licensee's System to qualify for RPO for Distribution Licensee
- MGO that intends to exit from Mini-Grid Area upon Grid Arrival, allowed to sell PDN (conforming to Distribution Licensee's standards) to Distribution Licensee based on depreciated value of assets
- Distribution Licensee refusing to purchase such PDN , RPO availed by them till date from Mini-Grid Project stands withdrawn, against Project capacity intimated by MGO
- If sale value is less than depreciated value of PDN, Distribution Licensee shall pay differential amount based on applicable floor price of REC, as per technology of MRES
- If Distribution Licensee refuses to enter into PPA, RPO availed till date from MRES will stand withdrawn

Exit Options

- MGO allowed to exit from Mini-Grid Area providing 90 days prior intimation to the Commission, SNA and Distribution Licensee

Grievance Redressal Mechanism

- Grievance of any consumer to be redressed as per UPERC (CGRF & Electricity Ombudsman) Regulations, 2007

Technical Committee

- Headed by Officer of UPERC, represented by members of SNA, Distribution Licensee, not below ranks of Chief Engineer, representatives of MGO to be invited during meetings
- Committee to facilitate & supervise implementation of Mini-Grid projects in UP
- Facilitate/ resolve dispute between MGO and Distribution Licensee
- Aggrieved party can approach the Commission if dispute not resolved within 3 months

Pictures of the Micro-grid systems of OMC

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Pictures of the Micro-grid systems of OMC

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Pictures of the Micro-grid systems of OMC

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Mini Grids in UP by OMC

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S.No.	Village	Thesil	District	Revenue Village (name)	Capacity of MRES (kW)	Domestic Customers	Commercial Customers	TOTAL Customers	Consumers with connected load more than 5kW
1	ADHACHAT	Tehsil-LAKHIMPUR KHIRI	DISTT- LAKHIMPUR	ADHACHAT	68	99	8	107	2
2	AHIRORI	TEHIL GOPAMAU	DISTT. HARDOI	AHIRORI	30	191	8	199	2
3	AIHAR	THESIL : DALMAU	DISTRICT : RAEBARELI	AIHAR	36	31	2	33	2
4	ATAIPUR	Tehsil - Kaimganj	Distt : Farrukhabad	ATAIPUR	32	141	18	159	2
5	ATTRAULI	TASHIL SANDILA	DIST HARDOI	ATTRAULI	30	172	90	262	1
6	AURANGABAD	Tehsil - Mishrikh	Sitapur	AURANGABAD	36	90	6	96	1
7	BADAGAON	Tehsil Sandila	District - Hardoi	BADAGAON	27	81	1	82	2
8	BAGHAULI	Hardoi	Hardoi	BAGHAULI	36	96	35	131	1
9	BAHAI	THESIL : LALGANJ	RAEBARELI	BAHAI	36	9	0	9	2
10	BANDA	TEHSIL PUWAYA	DISTT. SHAHJAHANPUR	BANDA	27	25	125	150	2
11	BANGARMAU (NAUNIHALGANJ)	TEHSIL - SAFFIPUR	DISTT - UNNAO	BANGARMAU (NAUNIHALGANJ)	36	13	6	19	2
12	BANSATPUR (DHOOLA MAU)	Tehsil - Bishwa, Mahmudabad	Distt : Sitapur	BANSATPUR (DHOOLA MAU)	27	26	1	27	2
13	BARITHANA	Saffipur	Unnao	BARITHANA	36	89	2	91	2
14	BASURA	Mehamudabad	Sitapur	BASURA	27	88	8	96	2
15	BAWAN	hardoi	Hardoi	BAWAN	36	64	4	68	2
16	BEHJUM	Mitauli	Khiri	BEHJUM	27	30	105	135	2
17	BELAGUSISI	Raebareli	Raebareli	BELAGUSISI	36	50	5	55	2
18	BERUWA	Sandila	Hardoi	BERUWA	36	150	5	155	2
19	BHARAWAN	Sandila	Hardoi	BHARAWAN	30	94	33	127	2
20	BHARIAL	Gopamau	hardoi	BHARIAL	30	64	16	80	2
21	BHARIYA (BAHERIA)	Sandila	Hardoi	BHARIYA (BAHERIA)	30	100	6	106	1
22	BHURWARA	Gola	Khiri	BHURWARA	36	43	9	52	2
23	BIHAT GAUR	Maholi	Sitapur	BIHAT GAUR	27	21	0	21	2

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S.No.	Village	Thesil	District	Revenue Village (name)	Capacity of MRES (kW)	Domestic Customers	Commercial Customers	TOTAL Customers	Consumers with connected load more than 5kW
24	BILGRAM	Hardoi	hardoi	BILGRAM	36	27	67	94	2
25	BISWAN	Bishwa	Sitaur	BISWAN	55	4	9	13	1
26	CHAPARTALA	Mitaouli	Khiri	CHAPARTALA	36	0	0	0	2
27	CHAUDHERA	Sadar	Shahjanpur	CHAUDHERA	36	1	33	34	1
28	DEWARA KALAN	Unnao	Unnao	DEWARA KALAN	36	34	0	34	1
29	DHINGWAS	Lalganj	Hardoi	DHINGWAS	36	16	0	16	1
30	GAAJU	Sandila	Hardoi	GAAJU	27	120	6	126	2
31	GANGSARA	Powaya	Shahjanpur	GANGSARA	27	12	90	102	2
32	GANJ MURADABAD	sitapur	Unnao	GANJ MURADABAD	32.5	58	8	66	2
33	GAUSGANJ	Sandila	Hardoi	GAUSGANJ	35.5	65	31	96	2
34	GONDA	Mahmudabad	Sitapur	GONDA DEVERIYA	27	34	3	37	2
35	GOVINDPUR	Dalmau	RAEBARELI	GOVINDPUR	36	31	2	33	1
36	HARGAON	Sitapur	Sitapur	HARGAON	42	51	145	196	2
37	HARPALPUR	Sewayajpur	Hardoi	HARPALPUR	36	97	68	165	2
38	JAGATPUR	Unchahar	Raebareli	JAGATPUR	36	14	87	101	1
39	JANGAON	Sandila	Hardoi	JANGAON	45	216	15	231	2
40	KAANTH	Sadar	shahjanpur	KAANTH	45	30	61	91	2
41	KAIMA	Sidhauli	Hardoi	KAIMA	27	79	0	79	2
42	KALAULI	Sandila	Hardoi	KALAULI	36	104	2	106	1
43	KALYANMAL	Sandila	Hardoi	KALYANMAL	30	85	7	92	1
44	KAMALPUR	Shahabad	Hardoi	KAMALPUR	27	114	3	117	2
45	KAMLAPUR	Sidhauli	Sitapur	KAMLAPUR	36	28	48	76	2
46	KAMPIL KHAS	Kayamganj	Farrukhabad	KAMPIL KHAS	27	152	0	152	2

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S.No.	Village	Thesil	District	Revenue Village (name)	Capacity of MRES (kW)	Domestic Customers	Commercial Customers	TOTAL Customers	Consumers with connected load more than 5kW
47	KHUDHAGANJ	Sadar	Farrukhabad	KHUDHAGANJ	27	201	29	230	2
48	KOTHRA	Mohammdi	Kheri	KOTHRA	27	30	0	30	1
49	KURSATH	Bilgram	hardoi	KURSATH	27	84	3	87	2
50	LONHARA	Sandila	Hardoi	LONHARA	30	107	4	111	1
51	MADHOGANJ	Bilgram	hardoi	MADHOGANJ	27	91	20	111	1
52	MAHMUDABAD	Mahmudabad	Sitapur	MAHMUDABAD	41	2	40	42	2
53	MAHOLI	maholi	Sitapur	MAHOLI	36	23	75	98	2
54	MAILANI	Gola	Kheri	MAILANI	27	26	59	85	2
55	MALLAWAN	Mallawan	hardoi	MALLAWAN	36	20	2	22	1
56	MANEHROO	Raebareli	Raebareli	MANEHROO	36	37	0	37	2
57	MEER NAGAR	sandila	Hardoi	MEER NAGAR	39	62	31	93	1
58	NAIMISHARAYAN	naimasharayan	Sitapur	NAIMISHARAYAN	36	0	0	0	1
59	NIGOHI	Tilhar	Sahajhanpur	NIGOHI	27	85	88	173	1
60	PIPARGAON NEWADA	Sandila	Hardoi	PIPARGAON NEWADA	27	48	66	114	1
61	PRATAP NAGAR	Sandila	Hardoi	PRATAP NAGAR	36	147	85	232	2
62	RAMPUR MATHURA	Mahmudabad	Sitaur	RAMPUR MATHURA	36	54	77	131	2
63	SAMODHA	Sandila	Hardoi	SAMODHA	27	134	15	149	2
64	SANDA	Bishwan	Sitaur	SANDA	34	52	44	96	2
65	SANDILA	Sandila	hardoi	SANDILA	45	15	0	15	2
66	SANSARPUR	Gola	Khiri	SANSARPUR	60	22	135	157	1
67	SEHWAJ NAGAR	Sadar	Shahjhanpur	SEHWAJ NAGAR	37	143	11	154	2
68	SINDHAULI	Powanyan	Shahjhanpur	SINDHAULI	27	85	5	90	1
69	SOM	Sandila	Hardoi	SOM	27	112	6	118	2

- Villages (namely Attrauli, Banda, Behjum, Gangsara, Hargaon, Sansarpur) have more than 2/3 rd Commercial consumers
- shows the acceptance because of reliability and assurance of power during the desired time slot.
- The opportunity cost of getting reliable electricity need to be taken into consideration.
- Cost of supply of electricity is lower as compared to Kerosene.
- Illumination by LED bulb is also higher than the Kerosene powered light source.
- The high cost is due to the construction of distribution network by the developer at its own cost.