



**ARUNACHAL PRADESH STATE ELECTRICITY REGULATORY  
COMMISSION (APSERC)**

**Approval of Capital Cost**

**&**

**Levelized Tariff**

**For**

**Angong Nallah MHS(3x1500kW)**

**Deptt. of Hydro Power Development**

**Government of Arunachal Pradesh**

**Issued on 31/12/2024**

**Arunachal Pradesh State Electricity Regulatory Commission**

**अरुणाचल प्रदेश राज्य विद्युत नियामक आयोग**

**O. T. BUILDING, T. T. MARG, NITI VIHAR MARKET**

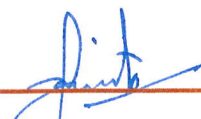
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## **Abbreviations**

<b>Abbreviation</b>	<b>Description</b>
A&G	Administration & General
ACT	Electricity Act, 2003
APSERC	Arunachal Pradesh State Electricity Regulatory Commission
ARR	Aggregate Revenue Requirement
APTEL	Appellate Tribunal For Electricity
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
Cr./ Crs	Crore/ Crores
D/E	Debt Equity
DHPD	Deptt. of Hydro Power Development
DOP, AP	Department of Power, Govt. of Arunachal Pradesh
FY	Financial Year
GFA	Gross Fixed Assets
GoAP	Government of Arunachal Pradesh
kWh	Kilo Watt Hour
MU	Million Units
MW	Mega Watt
O&M	Operation & Maintenance
ROE	Return on Equity
Rs.	Rupees
SBI	State Bank of India
SBI-MCLR	State Bank of India- Marginal Cost Lending Rate
SERC	State Electricity Regulatory Commission
YoY	Year on Year

  
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**Order on Petition for Approval of Levelized Tariff of Angong Nallah(3x1500kW)**

**Before**

**The Arunachal Pradesh State Electricity Regulatory Commission (APSERC)**

**Itanagar, Arunachal Pradesh**

**Petition No. TP – 12 of 2024**

**In the matter of:**

**Petition for Approval of Capital Cost and Determination of Levelized Tariff for Angong Nallah HEP (3x1500kW) under Department of Hydro Power Development, GoAP as per Arunachal Pradesh State Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable energy source) Regulation, 2018 for a period of 35 years.**

**In the matter:**

**Department of Hydro Power Development,**

**Govt. of Arunachal Pradesh, Itanagar**

**Petitioner**



**PRESENT:**

**Hon'ble R.K Joshi**

**Hon'ble Nich Rika**


**Chairperson, APSERC**

**Member (Law), APSERC**

**ORDER**

**(Passed on 31.12.2024)**

The Commission in exercise of the powers vested in it under section 62 (1) (a) read with Section 62 (3) and Section 64 (3) (a) of the Electricity Act, 2003 and APSERC(Terms and Conditions for Determination of Renewable Energy Tariff) Regulations, 2018 and other enabling provisions in this behalf, hereby issues this order, approving the capital cost & determining the Levelized Generation Tariff of the Angong Nallah(3x1500kW) HEP under DHPD,GoAP for supply of electricity to the Department of Power for distribution in the State of Arunachal Pradesh. The relevant Regulation of the commission requires that the generating company shall file tariff petition before the Commission for fixation of tariff complete in all respects, along

  
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**Order on Petition for Approval of Levelized Tariff of Angong Nallah(3x1500kW)**

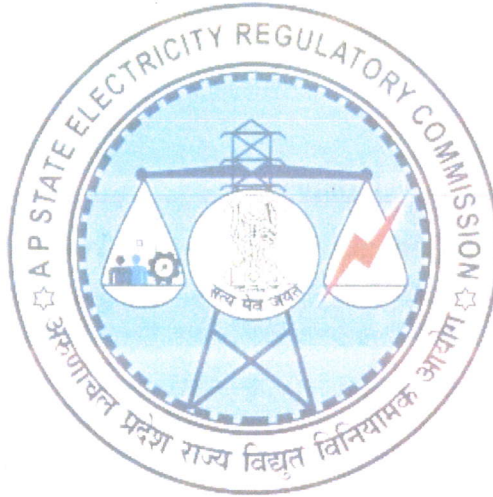
with requisite fee as prescribed in the Commission's Fee, Regulations, (1st amendments) 2017 3 month in advance of date of Commissioning of the project or Commissioning of the 1<sup>st</sup> unit in case of multiple unit or one month after the date of issuance of these Regulations, whichever is later. Accordingly, the tariff petition has been filed by the DHPD (the deemed generating company) complete in all aspects vide No. HPD-WZ-11029/1/2021/24-25/1554-55 dated 20.09.2024.

This order consists of five chapters, which include detailed analysis of the capital cost, approved Generation Tariff for 35 years. The Commission hereby directs DHPD to take all necessary steps for implementation of this order from the date specified below.

This order shall be effective from COD i.e. **14<sup>th</sup> August 2019** and shall remain in force for 35 years from the date of COD.

**Date: 31.12.2024**

**Place: Itanagar**



**Sd/-**

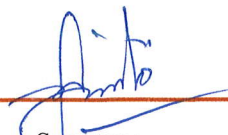
**Shri Nich Rika**

**Member (Law)**

**Sd/-**

**Shri R.K. Joshi**

**(Chairperson)**

  
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## **Chapter 1: INTRODUCTION**

### **Arunachal Pradesh State Electricity Regulatory Commission**

1.1 In exercise of the powers conferred by the Electricity Act, 2003, (hereinafter referred to as Act) the Government of Arunachal Pradesh constituted the Electricity Regulatory Commission for the State of Arunachal Pradesh to be known as “Arunachal Pradesh State Electricity Regulatory Commission” (APSERC) as notified on 07.05.2010 (hereinafter referred to as Commission). The Arunachal Pradesh State Electricity Regulatory Commission has been functioning with effect from 02.03.2011 with the objective and purpose for which the Commission has been established i.e., to discharge its functions as per Section 86 of the Act. The Commission had been functioning as a single member Commission as per provisions of prevalent laws/rules till the retirement of Shri R P Singh, the then Chairperson of the Commission from the post of Chairperson on 31.12.2019. The Post of Chairperson remained vacant till 17.07.2023 and hence no regulatory activities were taken up during this intervening period. After a gap of about three and half years a two-member Commission was constituted on 18.07.2023 notified vide No. PWRS/W-1075/2004/Pt/5715/37 dated 19.07.2023. Thereafter, the Commission continues to discharge the functions as envisaged in the Act.

1.2 In accordance with Section 86 (1) of the Act, the APSERC discharges the following functions:

- a) determine the tariff for generation, supply, transmission and wheeling of electricity, wholesale, bulk or retail, as the case may be, within the State:

Provided that where open access has been permitted to a category of consumers under section 42, the State Commission shall determine only the wheeling charges and surcharge thereon, if any, for the said category of consumers;

- b) regulate electricity purchase and procurement process of distribution licensees including the price at which electricity shall be procured from the generating companies or licensees or from other sources through agreements for purchase of power for distribution and supply within the State;
- c) facilitate intra-State transmission and wheeling of electricity;
- d) issue licenses to persons seeking to act as transmission licensees, distribution licensees and electricity traders with respect to their operations within the State;
- e) promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of



**Order on Petition for Approval of Levelized Tariff of Angong Nallah(3x1500kW)**

electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee;

- f) adjudicate upon the disputes between the licensees and generating companies; and to refer any dispute for arbitration;
- g) levy fee for the purposes of this Act;
- h) specify State Grid Code consistent with the Grid Code specified under Clause (h) of sub-section (1) of Section 79;
- i) specify or enforce standards with respect to quality, continuity and reliability of service by licensees;
- j) fix the trading margin in the intra-state trading of electricity, if considered, necessary;
- k) discharge such other functions as may be assigned to it under this Act.

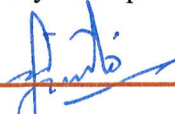
1.3 The Commission has to also advise the State Government as per sub section 2 of Section 86 of the Act, on all or any of the following matters, namely:

- a) promotion of competition, efficiency and economy in activities of the electricity industry;
- b) promotion of investment in electricity industry;
- c) reorganization and restructuring of electricity industry in the State;
- d) matters concerning generation, transmission, distribution and trading of electricity or any other matter referred to the State Commission by that Government.

1.4 The State Commission ensures transparency while exercising its powers and discharging its functions.

1.5 In discharge of its functions, the State Commission is also guided by the Tariff Policy notified by the Government of India under Section 3 of the Act. The objectives of the Tariff Policy are to:

- a) ensure availability of electricity to consumers at reasonable and competitive rates;
- b) ensure financial viability of the sector and attract investments;
- c) promote transparency, consistency and predictability in regulatory approaches

  
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across jurisdictions and minimize perceptions of regulatory risks;

- d) promote competition, efficiency in operations and improvement in quality of supply.

### **Arunachal Pradesh - Geographical Reality**

1.6 The total area of the State of Arunachal Pradesh is 83573 sq.kms. The State is having a population of around 13.82 lakhs (2011 Census). The State of Arunachal Pradesh is bounded by Assam in South, Bhutan in West, China in North, and Nagaland and Myanmar in East. It's Capital, Itanagar is about 380 kms. from Guwahati.

### **Arunachal Pradesh Department of Hydro Power Development**

1.7 In order to oversee, co-ordinate and monitor the development of hydro power in the State of Arunachal Pradesh, the State Govt. created a separate department namely "Department of Hydro Power Development" on 12/11/2003. It is a full-fledged department headed by a Chief Engineer. The Department is entrusted with the development of micro / mini / small hydro project, improvement of existing hydro projects including renovation & modernization works, operation and maintenance of existing hydel stations, survey & investigation of new potential sites, and construction of residential and non-residential building for the Department. The Department is foremost concentrating on the urgent need of bridging the existing demand supply gap in order to make the State self-reliant, so far as power needs of the State are concerned and to help achieve the target of all villages electrification and all household electrification.

1.8 The Petitioner upon the direction of the Commission vide ROP dated 28.08.2024 has submitted the present petition for approval of Capital Cost and Levelized Tariff for the projects useful life of Angong Nallah (3x1500kW) SHP.

### **Petitioners Prayer**

1.9 The Petitioner in the Filing of Petition has prayed for the following:

- a) Approve the Capital Cost & Tariff as submitted.
- b) Pass such other and further order(s) as are deemed fit and proper in the facts and circumstances of the case.

  
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## **Chapter 2: PROCEDURAL HISTORY**

2.1 The Petitioner had submitted petition for approval of capital cost and determination of levelized tariff for 3x1500kW Angong Nallah SHP vide letter No.HPD-WZ-11029/1/2021/24-25/1108-09 dated 06.08.2024. The Commission upon scrutiny of the petition found certain shortcoming related to affidavit, requisite fee and non-submission of DPR for which the Commission directed the Petitioner to submit the petition complete in all aspects removing the deficiencies cited vide ROP dated 28.08.2024. The petitioner complying to the direction of the Commission submitted the relevant details vide letter no.HPD-WZ-11029/1/2021/24-25/1554-55 dated 20.09.2024.

2.2 In the instant petition the Petitioner has sought approval for Capital Cost and determination of Levelized Tariff for the useful life of Angong Nallah (3x1500kW) HEP.

### **Information Gaps in the Petition**

2.3 In exercise of Tariff determination process, several deficiencies/information gaps were found in the Petition submitted by the Petitioner and the same was communicated to the Petitioner during admission hearing dated 23rd October 2024.

2.4 In response, the Petitioner furnished additional data/information to the Commission.

2.5 The Commission has scrutinized the Petition and the additional data/information furnished by the Petitioner with respect to its discrepancies identified and has considered the same while passing this Order.

2.6 In order to provide adequate opportunities to all stakeholders and general public, as mandated under Section 64 (3) of the Electricity Act 2003 and in relevant provisions of Regulations framed by the Commission and in order to ensure transparency in the process of tariff determination, the Commission decided to hold Public Hearing on 9<sup>th</sup> December 2024.

### **Inviting Public Comments/Suggestions**

2.7 The Commission after admission of the Petition had directed the petitioner to publish a public notice inviting comments/suggestions from public and to make available copies of the Petition to the members of general public on request.

2.8 Accordingly, Public Notice was published by the Petitioner in the newspapers and a period

  
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## **Order on Petition for Approval of Levelized Tariff of Angong Nallah(3x1500kW)**

of twenty-one (21) days was given for submitting the comments/suggestions by the general public:

**Table 1 List of Newspapers and dates of publication of public notice by Petitioner**

Newspaper	Language	Date of Publication
The Arunachal Age	English	26.10.2024
The Arunachal Pioneer	English	26.10.2024
The Arunachal Times	English	26.10.2024
The Dawnlit Post	English	26.10.2024

2.9 The Commission has also uploaded the petition on its website [www.apserc.nic.in](http://www.apserc.nic.in). Further in order to provide adequate opportunities to all stakeholders and general public, as mandated under Section 64 (3) of the Electricity Act 2003 and in relevant provisions of Regulations framed by the Commission, the Commission also held a public hearing on 9<sup>th</sup> December 2024. The details of the newspaper wherein the notice of public hearing was published is given in the table below:

**Table 2 List of Newspaper and date of publication of public notice by the Commission**

Newspaper	Language	Date of Publication
Arunachal Front	English	23.11.2024
Arunachal Observer	English	23.11.2024
Echo of Arunachal	English	23.11.2024

### **Submission of Comments/Suggestions and Conduct of Public Hearing**

2.10 No comments or suggestions on the Petition were received following the publication of the public notice. Furthermore, no comments or objections were raised during the public hearing. The details pertaining to the public hearing is being discussed in Chapter 4 of this Order.

  
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### **Chapter 3: BRIEF FACTS ABOUT THE PETITION**

3.1 The following chapter summarizes the Petition for approval of Capital Cost and Determination of Levelized Tariff for 3x1500kW Angong Nallah HEP as submitted by the Petitioner.

#### **Installed Capacity**

3.2 The Petitioner has submitted details of the plant along with Commercial Operation Date as referred in the table below:

**Table 3 Particulars of the Angong Nallah HEP as submitted in the Petition**

S. No	Name of the Station	Zone & District	Unit	Installed Capacity(kW)	Firm Capacity(kW)	Year of COD
1	Angong Nallah	Eastern Zone, Upper Siang District	3x1500	4500	4500	2019-20

#### **Design Energy**

3.3 The Petitioner has stated that the design energy of the HEP has been calculated in accordance with the APSERC Regulations which is provided in the table below:

**Table 4 Design Energy as submitted by the Petitioner**

S.No	Name of the Plant	Installed Capacity(kW)	Annual Design Energy (MU)
1	Angong Nallah MHS	4500	37.45

#### **Energy Sales during FY 2022-23**


3.4 The Petitioner has submitted the actual generation data of the plant for the year FY 2022-23 which is entirely sold within the state to Department of Power, GoAP. The generation data is given in the table below:

**Table 5 Actual generation of the Plant during FY 2022-23 as submitted by the Petitioner**

S.No	Name of the Plant	Units	Installed Capacity(kW)	Actual Net generation(kWh)
1	Angong Nallah MHS	3x1500	4500	2888494

#### **Capital Cost**

3.5 The Petitioner has referred to Regulation 7 of the Renewable Regulations, 2018 which

  
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## **Order on Petition for Approval of Levelized Tariff of Angong Nallah(3x1500kW)**

states that specific tariff is to be determined for SHPs of installed capacity of 1 MW to 25 MW. Angong Nallah MHS has an installed capacity of 4.5MW and accordingly the petitioner has submitted actual project cost for consideration and approval of the Hon'ble Commission. The Component wise details along with the technical & financial parameters and justifications have been submitted in the DPR submitted by the Petitioner. The capital cost of the project as submitted by the Petitioner given in the table below:

**Table 6: Capital cost of project commissioned upto COD as submitted by the Petitioner**

S.No	Name of Station	Installed Capacity (MW)	Capital Cost (Rs Lakhs)
1	Angong Nallah MHS	4.50	6143.00

### **Interest on Loan Capital**

3.6 The Petitioner has submitted that as per clause 14 of APERC RE Regulations 2018, interest on loan taken to fund the cost of project shall be recovered through tariff. DHPD has not taken any loan for financing the projects. In view of the above, no interest on loan has been claimed. DHPD submits that it will claim interest on loan in accordance with the above regulation in case loan is availed for financing of projects in future.

### **Depreciation**

3.7 The Petitioner accordingly has considered the depreciation rate over the life of the SHP as given in the table below:

**Table 7 Depreciation rate considered by the Petitioner for Angong Nallah SHP**

S.No	Particulars	Details
1	Useful Life in Years	35
2	Rate of Depreciation-for first 13 years	5.28%
3	Rate of Depreciation from 14 <sup>th</sup> year onwards	0.97%

3.8 The Depreciation for the plant as submitted by the Petitioner is given in the table below:

**Table 8 Depreciation of the plant as submitted by the Petitioner**

S.No	Name of Station	Date of COD	Capital Cost (Lakhs)	Useful Life(yrs.)	Depreciation up to 13 <sup>th</sup> Year(Lakhs)	Depreciation from 14 <sup>th</sup> Year(Lakhs)
1	Angong Nallah MHS	14.08.2019	6143.00	35	324.35	59.64

### **Return on Equity (ROE)**

3.9 The Petitioner for the purpose of calculation of ROE has considered equity as per Regulation 16 of the APERC RE Regulations, 2018 and accordingly has considered the



## Order on Petition for Approval of Levelized Tariff of Angong Nallah(3x1500kW)

debt-equity ratio of 70:30 and has calculated the RoE for the plant as given in the table below:

**Table 9 Return on Equity for the Plant as submitted by the Petitioner**

S. No	Particulars	Capital Cost (Rs Lakhs)	Equity (@30% of Capital Cost)	RoE@14% (Rs Lakhs)
1	Angong Nallah MHS	6143.00	1842.90	258.01

### Operation & Maintenance Expenses

- 3.10 The Petitioner has referred to clause 29 of the RE Regulations 2018 wherein the normative O&M expenses for the first year of the control period (i.e. FY 2018-19) shall be as follows:

**Table 10 Normative O&M Expense as per APERC RE Regulations 2018**

Region	Project Size	O&M Expenses (Rs. Lakh/MW)
Arunachal Pradesh	Below 5MW	38.06
	5MW to 25 MW	28.54

- 3.11 The Operation and Maintenance Expenses as submitted by the Petitioner for the plant is given in the table below:

**Table 11 O&M Expenses of the plant as submitted by the Petitioner (Lakhs)**

S. No	Particulars	Installed Capacity (MW)	Normative O&M Exp/MW	Normative O&M Exp/MW at base 2019-20	Escalation Rate/Annum
1	Angong Nallah MHS	4.50	40.24	181.07	5.72%

**Table 12 O&M Expenses as submitted by the Petitioner for Angong Nallah MHS**

Year	1 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr	4 <sup>th</sup> Yr	5 <sup>th</sup> Yr	6 <sup>th</sup> Yr	7 <sup>th</sup> Yr	8 <sup>th</sup> Yr	9 <sup>th</sup> Yr
Value (lakhs)	181.07	191.42	202.37	213.95	226.19	239.12	252.80	267.26	282.55
Year	10 <sup>th</sup> Yr	11 <sup>th</sup> Yr	12 <sup>th</sup> Yr	13 <sup>th</sup> Yr	14 <sup>th</sup> Yr	15 <sup>th</sup> Yr	16 <sup>th</sup> Yr	17 <sup>th</sup> Yr	18 <sup>th</sup> Yr
Value (lakhs)	298.71	315.80	333.86	352.96	373.15	394.49	417.06	440.91	466.13
Year	19 <sup>th</sup> Yr	20 <sup>th</sup> Yr	21 <sup>st</sup> Yr	22 <sup>nd</sup> Yr	23 <sup>rd</sup> Yr	24 <sup>th</sup> Yr	25 <sup>th</sup> Yr	26 <sup>th</sup> Yr	27 <sup>th</sup> Yr
Value (lakhs)	492.80	520.98	550.78	582.29	615.60	650.81	688.03	727.39	769.00
Year	28 <sup>th</sup> Yr	29 <sup>th</sup> Yr	30 <sup>th</sup> Yr	31 <sup>st</sup> Yr	32 <sup>nd</sup> Yr	33 <sup>rd</sup> Yr	34 <sup>th</sup> Yr	35 <sup>th</sup> Yr	
Value (lakhs)	812.98	859.49	908.65	960.62	1015.57	1073.66	1135.07	1200.00	

### Interest on Working Capital

- 3.12 The Petitioner has submitted that the working capital requirement has been calculated in accordance with the clause 17(1) of the APERC RE Regulations, 2018.

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**Order on Petition for Approval of Levelized Tariff of Angong Nallah(3x1500kW)**

3.13 The Interest on Working Capital as submitted by the Petitioner for 35 years of the life of the Angong Nallah SHP is given in the table below:

**Table 13 Interest on Working Capital (Rs Lakh) as submitted by the Petitioner for the useful life of Angong Nallah SHP**

S. No	Particulars	1 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr	4 <sup>th</sup> Yr	5 <sup>th</sup> Yr	6 <sup>th</sup> Yr	7 <sup>th</sup> Yr	8 <sup>th</sup> Yr
1	O&M exp for one Month	15.09	15.95	16.86	17.83	18.85	19.93	21.07	22.27
2	Receivables for 2 months	130.41	132.22	134.13	136.14	138.27	140.53	142.91	145.43
3	Maintenance & Spares at 15% O&M Expenses	27.16	28.71	30.36	32.09	33.93	35.87	37.92	40.09
4	Total	172.66	176.88	181.35	186.06	191.05	196.32	201.90	207.79
5	<b>IoWC (@11.04%)</b>	<b>19.06</b>	<b>19.53</b>	<b>20.02</b>	<b>20.54</b>	<b>21.10</b>	<b>21.68</b>	<b>22.29</b>	<b>22.94</b>
S. No	Particulars	9 <sup>th</sup> Yr	10 <sup>th</sup> Yr	11 <sup>th</sup> Yr	12 <sup>th</sup> Yr	13 <sup>th</sup> Yr	14 <sup>th</sup> Yr	15 <sup>th</sup> Yr	16 <sup>th</sup> Yr
1	O&M exp for one Month	23.55	24.89	26.32	27.82	29.41	31.10	32.87	34.75
2	Receivables for 2 months	148.09	150.90	153.88	157.03	160.35	118.92	122.64	126.57
3	Maintenance & Spares at 15% O&M Expenses	42.38	44.81	47.37	50.08	52.94	55.97	59.17	62.56
4	Total	214.02	220.60	227.57	234.93	242.71	205.99	214.69	223.88
5	<b>IoWC (@11.04%)</b>	<b>23.63</b>	<b>24.36</b>	<b>25.13</b>	<b>25.94</b>	<b>26.80</b>	<b>22.74</b>	<b>23.71</b>	<b>24.72</b>
S.No	Particulars	17 <sup>th</sup> Yr	18 <sup>th</sup> Yr	19 <sup>th</sup> Yr	20 <sup>th</sup> Yr	21 <sup>st</sup> Yr	22 <sup>nd</sup> Yr	23 <sup>rd</sup> Yr	24 <sup>th</sup> Yr
1	O&M exp for one Month	36.74	38.84	41.07	43.42	45.90	48.52	51.30	54.23
2	Receivables for 2 months	130.73	135.12	139.76	144.67	149.86	155.35	161.15	167.28
3	Maintenance & Spares at 15% O&M Expenses	66.14	69.92	73.92	78.15	82.62	87.34	92.34	97.62
4	Total	233.61	243.88	254.75	266.23	278.38	291.22	304.79	319.14
5	<b>IoWC (@11.04%)</b>	<b>25.79</b>	<b>26.93</b>	<b>28.13</b>	<b>29.40</b>	<b>30.74</b>	<b>32.16</b>	<b>33.65</b>	<b>35.24</b>
S.No	Particulars	25 <sup>th</sup> Yr	26 <sup>th</sup> Yr	27 <sup>th</sup> Yr	28 <sup>th</sup> Yr	29 <sup>th</sup> Yr	30 <sup>th</sup> Yr	31 <sup>st</sup> Yr	32 <sup>nd</sup> Yr
1	O&M exp for one Month	57.34	60.62	64.08	67.75	71.62	75.72	80.05	84.63



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2	Receivables for 2 months	173.77	180.62	187.87	195.53	203.63	212.19	221.24	230.81
3	Maintenance & Spares at 15% O&M Expenses	103.21	109.11	115.35	121.95	128.92	136.30	144.09	152.34
4	Total	334.31	350.34	367.30	385.22	404.17	424.21	445.39	467.78
5	<b>IoWC (@11.04%)</b>	<b>36.91</b>	<b>38.68</b>	<b>40.56</b>	<b>44.63</b>	<b>46.84</b>	<b>49.18</b>	<b>51.65</b>	<b>54.26</b>
S. No	Particulars	33 <sup>rd</sup> Yr			34 <sup>th</sup> Yr			35 <sup>th</sup> Yr	
1	O&M exp for one Month	89.47			94.59			100.00	
2	Receivables for 2 months	240.93			251.63			262.93	
3	Maintenance & Spares at 15% O&M Expenses	161.05			170.26			180.00	
4	Total	491.45			516.48			542.93	
5	<b>IoWC (@11.04%)</b>	<b>54.26</b>			<b>57.03</b>			<b>59.95</b>	

**Levelized Tariff of Angong Nallah (3x1500 kW)**

3.14 The Petitioner has computed the levelized tariff of the Angong Nallah SHP(3x1500kW) as referred in the table below:

**Table 14 Levellized Tariff (Rs/kWh) as submitted by the Petitioner for 3x1500 kW Angong Nallah SHP**

S. No	Particulars	1 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr	4 <sup>th</sup> Yr	5 <sup>th</sup> Yr	6 <sup>th</sup> Yr	7 <sup>th</sup> Yr	8 <sup>th</sup> Yr	9 <sup>th</sup> Yr
1	ARR (in Lakhs)	782.49	793.31	804.75	816.85	829.64	843.16	857.45	872.56	888.54
2	Net Generation (MUs)	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57
3	Tariff (Rs/Unit)	4.45	4.51	4.58	4.65	4.72	4.80	4.88	4.97	5.06
4	Discounting Factor (11.23%)	1.00	0.89	0.79	0.70	0.62	0.55	0.49	0.43	0.39
5	Discounted Tariff (Rs/Unit)	4.45	4.01	3.61	3.25	2.93	2.64	2.39	2.16	1.95
S. No	Particulars	10 <sup>th</sup> Yr	11 <sup>th</sup> Yr	12 <sup>th</sup> Yr	13 <sup>th</sup> Yr	14 <sup>th</sup> Yr	15 <sup>th</sup> Yr	16 <sup>th</sup> Yr	17 <sup>th</sup> Yr	18 <sup>th</sup> Yr
1	ARR (in Lakhs)	905.43	923.28	942.16	962.11	713.54	735.85	759.43	784.36	810.71
2	Net Generation (MUs)	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57
3	Tariff (Rs/Unit)	5.15	5.25	5.36	5.47	4.06	4.19	4.32	4.46	4.61
4	Discounting Factor (11.23%)	0.34	0.30	0.27	0.24	0.21	0.19	0.17	0.15	0.13

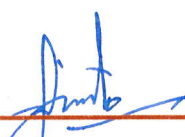


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5	Discounted Tariff (Rs/Unit)	1.76	1.60	1.45	1.31	0.86	0.79	0.72	0.66	0.61
S. No	Particulars	19 <sup>th</sup> Yr	20 <sup>th</sup> Yr	21 <sup>st</sup> Yr	22 <sup>nd</sup> Yr	23 <sup>rd</sup> Yr	24 <sup>th</sup> Yr	25 <sup>th</sup> Yr	26 <sup>th</sup> Yr	27 <sup>th</sup> Yr
1	ARR (in Lakhs)	838.57	868.03	899.17	932.09	966.90	1003.70	1042.60	1083.72	1127.20
2	Net Generation (MUs)	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57
3	Tariff (Rs/Unit)	4.77	4.94	5.12	5.30	5.50	5.71	5.93	6.17	6.41
4	Discounting Factor (11.23%)	0.12	0.10	0.09	0.08	0.07	0.06	0.06	0.05	0.05
5	Discounted Tariff (Rs/Unit)	0.56	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29

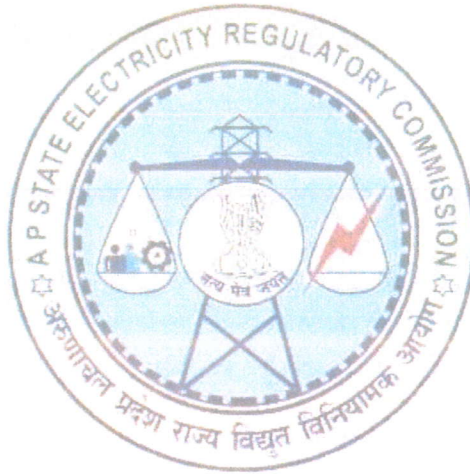
S. No	Particulars	28 <sup>th</sup> Yr	29 <sup>th</sup> Yr	30 <sup>th</sup> Yr	31 <sup>st</sup> Yr	32 <sup>nd</sup> Yr	33 <sup>rd</sup> Yr	34 <sup>th</sup> Yr	35 <sup>th</sup> Yr
1	ARR (in Lakhs)	1173.17	1221.76	1273.14	1327.45	1384.87	1445.57	1509.75	1577.60
2	Net Generation (MUs)	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57
3	Tariff (Rs/Unit)	6.68	6.95	7.24	7.55	7.88	8.23	8.59	8.98
4	Discounting Factor (11.23%)	0.04	0.04	0.03	0.03	0.02	0.02	0.02	0.02
5	Discounted Tariff (Rs/Unit)	0.27	0.25	0.23	0.21	0.20	0.18	0.17	0.16

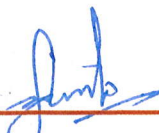
S.No	Particulars	Tariff
1	Total of Tariff	42.51
2	Total of Discounting Factor	8.77
3	<b>Levelized Tariff 35 years (Rs/Unit)</b>	<b>4.85</b>

  
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## **CHAPTER 4: PUBLIC CONSULTATION PROCESS**

4.1 A Public Hearing was held by the Commission on December 09<sup>th</sup>, 2024 for giving additional opportunity to all the stakeholders to submit their comments/suggestions on the said petition. However, no specific comments/objections have been received on the petition by the Commission. The list of the attendees in the public hearing is mentioned in Annexure-I of this Order.



  
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## **CHAPTER 5: Determination of Levelized Tariff**

5.1 The Commission has analysed the submission of the Petitioner with respect to the approval of capital cost and determination of levelized tariff for the useful life of the Angong Nallah SHP(3x1500kW). The component wise description of the Commission's analysis thereof is provided hereunder.

5.2 The Commission while approving the capital cost and determining the levelized tariff of the plant has taken into consideration the following:

- a) APERC (Terms and Conditions for Determination of Renewable Energy Tariff) Regulations, 2018.
- b) Documents/Information/Data placed before the Commission;
- c) Methodology adopted by the Commission in its previous Orders.

5.3 The assumptions considered by the Commission in accordance with APERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2018 for determination of levelized tariff for the 3x1500kW Angong Nallah SHP is given in the table below:

**Table 15 Assumptions considered by the Commission for determination of Levelized tariff for 3x1500kW Angong Nallah HEP**

S.No	Particulars	Details	Reference
1	Name of the Plant	Angong Nallah HEP	-
2	Installed Capacity (MW)	4.5MW(3x1500kW)	-
3	Capacity Utilization Factor	45%	Clause 27 of APERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2018
4	No of Hours	8766 hours	Clause 18 APERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2018
5	Auxiliary Consumption	1%	Clause 28 of APERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2018
6	Design Energy	37.45 MU	-
7	Net Generation	17.57 MU	-
8	Useful Life	35 years	Clause 2(w)(1)APERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2018
9	Commercial Operation Date	14.08.2019	Petitioners Submission
10	Debt component	70%	-
11	Equity Component	30%	-



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12	Interest on Loan Rate (MCLR + 200 basis points)	9.91%	Clause 14 (2)(b) APERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2018
13	Rate of Interest for Working Capital (MCLR +300 basis points)	10.91%	Clause 17(3) APERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2018
14	Income tax rate	0.00%	-
15	Discounting Factor	11.14%	-
16	O&M Expenses @ Rs.38.06 Lakh/MW (for FY 2019-20)	Rs.40.24 Lakhs	Clause 29(1) APERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2018
17	O&M escalation	5.72%	Clause 29(2) APERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2018

5.4 The component-wise details filled by the Petitioner's and the Commission's analysis and approval is made in the upcoming paragraph.

### **Capital Cost**

#### **Petitioner Submission**

5.5 The Petitioner has referred to Regulation 7 of the Renewable Regulations, 2018 which states that specific tariff is to be determined for SHPs of installed capacity of 1 MW to 25 MW. Angong Nallah MHS has an installed capacity of 4.5MW and accordingly the petitioner has submitted actual project cost for consideration and approval of the Hon'ble Commission. The Component wise details along with the technical & financial parameters and justifications have been submitted in the DPR submitted by the Petitioner. The capital cost of the project as submitted by the Petitioner given in the table below:


**Table 16: Capital cost of project commissioned upto COD as submitted by the Petitioner**

S.No	Name of Station	Installed Capacity (MW)	Capital Cost (Rs Lakhs)
1	Angong Nallah MHS	4.50	6143.00

#### **Commissions Analysis**

5.6 The Petitioner, in its petition, has submitted a capital cost of Rs. 6143.00 lakhs. The Commission noted that the initial Detailed Project Report (DPR) prepared by AHEC, IIT Roorkee, with an installed capacity of 3x1500 kW, estimated an initial capital cost of Rs. 3470.00 Lakhs, which was subsequently approved by the Government for the development of the Angong Nallah Small Hydro Power (SHP) project.

5.7 Upon scrutiny of the Detailed Project Report (DPR), the Commission observed that the

  
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project was sanctioned in the year 2004-05. However, due to a shortage of funds, the project could not be completed within the stipulated timeframe. Consequently, due to time overruns, the costs of labour and materials increased substantially. Additionally, the scope and quantum of work for certain civil structures, as well as electromechanical equipment, were expanded in accordance with the final design and drawings. As a result, a revision of the cost was deemed necessary, and a revised DPR was prepared, proposing a revised cost of Rs. 5883.50 Lakhs for approval by the relevant authorities. The entire cost was funded as grant from MNRE, Govt of India and Hon'ble PM's package during the year 2008-09.

5.8 A brief comparison of expenses incurred against various heads is given in the table below:

**Table 17 Cost (in Lakhs) comparison between initial DPR and revised DPR for Angong Nallah SHP**

S.No	Particulars	Initial DPR	Revised DPR
1	Civil Works	1482.64	3430.40
2	E&M Works	1143.78	1595.23
3	Other Expenses	837.08	857.87
4	Transmission System	6.50	-
5	<b>Total</b>	<b>3470.00</b>	<b>5883.50</b>

5.9 Furthermore, the Petitioner vide letter No. CE/EZ/HPD/W-G/41/2020-21/498 dated 26.08.2024 submitted revised cost estimate of Angong Nallah SHP amounting to Rs.260.34 Lakhs. This amount pertained to cover the flood damage restoration work which occurred due to sudden cloud burst in the month of October 2018.

5.10 The Commission after verification of the revised DPR and additional documents submitted by the Petitioner approves the revised capital cost of **Rs.6143.00** Lakhs for 3x1500kW Angong Nallah SHP.

### **Interest on Loan Capital**

#### **Petitioner Submission**

5.11 The Petitioner has submitted that as per clause 14 of APERC RE Regulations 2018, interest on loan taken to fund the cost of project shall be recovered through tariff. DHPD has not taken any loan for financing the projects. In view of the above, no interest on loan has been claimed. DHPD submits that it will claim interest on loan in accordance with the above regulation in case loan is availed for financing of projects in future.

#### **Commissions Analysis**

5.12 The Commission has acknowledged the submission made by the Petitioner and in light of



## Order on Petition for Approval of Levelized Tariff of Angong Nallah(3x1500kW)

this has not considered the interest on loan component in the tariff calculations for the determination of levelized tariff for the plant.

### Depreciation

#### Petitioner Submission

5.13 The Petitioner has proposed depreciation as per clause 15 of the RE Regulations 2018. The relevant extract is given in the table below:

#### *"15. Depreciation*

*The value base for the purpose of depreciation shall be the Capital Cost of the asset admitted by the Commission- The Salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the Capital Cost of the asset.*

*2. Depreciation rate of 5.28% per annum for first 13 years and remaining depreciation to be spread during remaining useful life of the RE projects considering the salvage value of the project as 10% of project cost shall be considered.....*

5.14 The Petitioner accordingly has considered the depreciation rate over the life of the SHP as given in the table below:

**Table 18 Depreciation rate considered by the Petitioner for Angong Nallah SHP**

S.No	Particulars	Details
1	Useful Life in Years	35
2	Rate of Depreciation-for first 13 years	5.28%
3	Rate of Depreciation from 14 <sup>th</sup> year onwards	0.97%

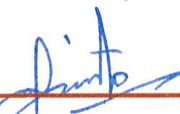
5.15 The Depreciation for the plant as submitted by the Petitioner is given in the table below:

**Table 19 Depreciation of the plant as submitted by the Petitioner**

S.No	Name of Station	Date of COD	Capital Cost (Lakhs)	Useful Life(yrs)	Depreciation upto 13 <sup>th</sup> Year(Lakhs)	Depreciation from 14 <sup>th</sup> Year(Lakhs)
1	Angong Nallah MHS	14.08.2019	6143.00	35	324.35	59.64

### Commissions Analysis

5.16 The Commission has acknowledged the submission made by the Petitioner with respect to depreciation claimed for the useful life of the plant. The Commission is aware of the fact that the entire capital cost of the Petitioner is being funded by Government of Arunachal Pradesh as a grant hence for such instance's depreciation charge shall not be applicable for tariff calculation.

  
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5.17 Consequently, if the capital cost is provided as a grant, the depreciation is not charged on the portion of the capital cost that is funded by the grant. The rationale is that depreciation is typically calculated on the actual capital invested by the project owner, and if the government has provided the funding as a grant, there is no obligation for the project owner to recover this cost through depreciation.

5.18 The Commission has also referred to the accounting standard Regarding treatment of Grant, wherein as per the Accounting Standards 12 of Institute of Chartered Accountants of India (ICAI), the principle for treatment of grants is laid as under:

*“Government grants related to specific fixed assets should be presented in the balance sheet by showing the grant as a deduction from the gross value of the assets concerned in arriving at their book value. Where the grant related to a specific fixed asset equals the whole, or virtually the whole, of the cost of the assets, the asset should be shown in the balance sheet at a nominal value. Alternatively, government grant related to depreciable fixed assets may be treated as deferred income which should be recognized in the profit and loss statement on a systematic and rational basis over the useful life of the asset, i.e., such grant should be allocated to income over the periods and in the proportion in which depreciation on those assets is charges.”*

5.19 The Commission had further observed that the Accounting Standards issued by the Chartered Accountants of India provides for two methods for treatment of the grant identifiable to the asset. Under first alternative, the gross block is reduced by the amount of grant and the depreciation is provided on reduced gross block. Under second alternative, depreciation is provided on the total gross block but the amount equal to the depreciation on the specific assets related to grant is shown as income in the respective year in the Profit and Loss Account and would be deductible from the tariff. Since no asset has been created by the petitioner through its own equity or capital, and the entire funding is done through government grant / aid, no depreciation is allowed for the project.

5.20 Considering the above facts and information, the Commission hereby disallows the consideration of any depreciation in the tariff component for the determination of levelized tariff of the Angong Nallah SHP which is referred in the table below:

**Table 20: Depreciation (in Rs. Lakhs) as approved by the Commission**

S. No	Particulars	Approved
1	Depreciation	Nil



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### Return on Equity (ROE)

#### Petitioner Submission

- 5.21 The Petitioner has referred to sub-regulation (1) of Regulation 16 of the RE Tariff Regulations 2018 which states that the value base for the equity shall be 30% of the capital cost for tariff determination. The Petitioner has further referred to sub-regulation (2) of the said Regulation which stipulated the normative return on equity (RoE) as 14% to be grossed up by prevailing Minimum Alternate Tax (MAT) as on 1st April of previous year for the entire useful life of the project.
- 5.22 The Petitioner has submitted that it has not considered the MAT rate as DHPD being Government Department and hence there is no MAT/Corporate Tax Liability.
- 5.23 The Petitioner for the purpose of calculation of ROE has considered equity as per Regulation 16 of the APSERC RE Regulations, 2018 and accordingly has considered the debt-equity ratio of 70:30 and has calculated the RoE for the plant as given in the table below:

**Table 21 Return on Equity for the Plant as submitted by the Petitioner**

S.No	Particulars	Capital Cost (Rs Lakhs)	Equity (@30% of Capital Cost)	RoE@14% (Rs Lakhs)
1	Angong Nallah MHS	6143.00	1842.90	258.01

#### Commissions Analysis

- 5.24 The Commission is aware of the fact that the entire funding of capital cost is being availed by the Petitioner as a grant from the GoAP with no obligation to pay back. Hence no equity is being infused either from shareholder or the Petitioner for development of projects. As a result, return on equity on capital does not arise in the tariff calculation of the plant. Accordingly, the Commission does not find any rationale in approving the RoE for the plant as submitted by the Petitioner. Hence the Commission has considered the Return on Equity of the plants as nil for determination of levelized tariff of the Angong Nallah SHP. The details of RoE approved by the Commission is given in the table below:

**Table 22 RoE approved by the Commission for Angong Nallah SHP (Rs Lakhs)**

S.No	Particulars	Approved
1	Return on Equity	Nil

## Order on Petition for Approval of Levelized Tariff of Angong Nallah(3x1500kW)

### Operation & Maintenance Expenses

#### Petitioner Submission

- 5.25 The Petitioner has referred to clause 29 of the RE Regulations 2018 wherein the normative O&M expenses for the first year of the control period (i.e. FY 2018-19) shall be as follows:

**Table 23 Normative O&M Expense as per APSERC RE Regulations 2018**

Region	Project Size	O&M Expenses (Rs. Lakh/MW)
Arunachal Pradesh	Below 5MW	38.06
	5MW to 25 MW	28.54

- 5.26 The Petitioner has further referred that the normative O&M expenses allowed under the Regulations shall be escalated at the rate of 5.72% per annum for the Tariff Period for the purpose of determination of levelized tariff. Since the installed capacity of the project is 4.5MW hence normative O&M expenses considered is Rs.38.06 Lakhs/MW for the FY 2018-19 which is further escalated at the rate of 5.72%.

- 5.27 The Operation and Maintenance Expenses as submitted by the Petitioner for the plant is given in the table below:

**Table 24 O&M Expenses of the plant as submitted by the Petitioner (Lakhs)**


S. No	Particulars	Installed Capacity (MW)	Normative O&M Exp/MW	Normative O&M Exp/MW at base 2019-20	Escalation Rate/Annum
1	Angong Nallah MHS	4.50	40.24	181.07	5.72%

**Table 25 O&M Expenses as submitted by the Petitioner for Angong Nallah MHS**

Yr	1 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr	4 <sup>th</sup> Yr	5 <sup>th</sup> Yr	6 <sup>th</sup> Yr	7 <sup>th</sup> Yr	8 <sup>th</sup> Yr	9 <sup>th</sup> Yr
Value (lakhs)	181.07	191.42	202.37	213.95	226.19	239.12	252.80	267.26	282.55
Yr	10 <sup>th</sup> Yr	11 <sup>th</sup> Yr	12 <sup>th</sup> Yr	13 <sup>th</sup> Yr	14 <sup>th</sup> Yr	15 <sup>th</sup> Yr	16 <sup>th</sup> Yr	17 <sup>th</sup> Yr	18 <sup>th</sup> Yr
Value (lakhs)	298.71	315.80	333.86	352.96	373.15	394.49	417.06	440.91	466.13
Yr	19 <sup>th</sup> Yr	20 <sup>th</sup> Yr	21 <sup>st</sup> Yr	22 <sup>nd</sup> Yr	23 <sup>rd</sup> Yr	24 <sup>th</sup> Yr	25 <sup>th</sup> Yr	26 <sup>th</sup> Yr	27 <sup>th</sup> Yr
Value (lakhs)	492.80	520.98	550.78	582.29	615.60	650.81	688.03	727.39	769.00
Yr	28 <sup>th</sup> Yr	29 <sup>th</sup> Yr	30 <sup>th</sup> Yr	31 <sup>st</sup> Yr	32 <sup>nd</sup> Yr	33 <sup>rd</sup> Yr	34 <sup>th</sup> Yr	35 <sup>th</sup> Yr	
Value (lakhs)	812.98	859.49	908.65	960.62	1015.57	1073.66	1135.07	1200.00	

#### Commissions Analysis

- 5.28 The Commission has referred to clause 29 of the APSERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulation, 2018 which is cited below:

  
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### “29. Operation and Maintenance Expenses:

1. Normative O&M expenses for the first year of the Control period (i.e. FY 2018-19 shall be as follows.

Region	Project Size	O&M Expense (Lakh/MW)
Arunachal Pradesh	Below 5 MW	38.06
	5MW-25MW	28.54

2. Normative O&M expenses allowed under these Regulations shall be escalated at the rate of 5.72% per annum for the Tariff Period for the purpose of determination of levelized tariff.”

5.29 The Commission in accordance with the above provision of the Regulation and the assumptions considered in table 15 of this order has computed the O&M expense of the Angong Nallah SHP(4.5MW) for the useful life of the plant as referred in the table below:

**Table 26 O&M expense approved by the Commission for Angong Nallah SHP**

Year	FY 20 (1 <sup>st</sup> Yr)	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr	4 <sup>th</sup> Yr	5 <sup>th</sup> Yr	6 <sup>th</sup> Yr	7 <sup>th</sup> Yr	8 <sup>th</sup> Yr	9 <sup>th</sup> Yr
Value (lakhs)	181.07	191.42	202.373	213.95	226.19	239.12	252.8	267.3	282.55
Year	10 <sup>th</sup> Yr	11 <sup>th</sup> Yr	12 <sup>th</sup> Yr	13 <sup>th</sup> Yr	14 <sup>th</sup> Yr	15 <sup>th</sup> Yr	16 <sup>th</sup> Yr	17 <sup>th</sup> Yr	18 <sup>th</sup> Yr
Value (lakhs)	298.7	315.8	333.86	352.96	373.15	394.49	417.06	440.91	466.13
Year	19 <sup>th</sup> Yr	20 <sup>th</sup> Yr	21 <sup>st</sup> Yr	22 <sup>nd</sup> Yr	23 <sup>rd</sup> Yr	24 <sup>th</sup> Yr	25 <sup>th</sup> Yr	26 <sup>th</sup> Yr	27 <sup>th</sup> Yr
Value (lakhs)	492.8	521	550.8	582.29	615.6	650.808	688.03	727.39	768.997
Year	28 <sup>th</sup> Yr	29 <sup>th</sup> Yr	30 <sup>th</sup> Yr	31 <sup>st</sup> Yr	32 <sup>nd</sup> Yr	33 <sup>rd</sup> Yr	34 <sup>th</sup> Yr	35 <sup>th</sup> Yr	
Value (lakhs)	812.98	859.49	908.65	960.62	1015.6	1073.66	1135.07	1200.00	

## Interest on Working Capital

### Petitioner Submission

- 5.30 The Petitioner has submitted that the working capital requirement has been calculated in accordance with the clause 17(1) of the APSERC RE Regulations, 2018 as referred below:

#### “17. Interest on Working Capital

1. The Working Capital requirement in respect of Wind energy projects, Small Hydro Power, Solar PV projects shall be computed in accordance with the following:

- (a) Operation & Maintenance expenses for one month;
- (b) Receivables equivalent to 2 {Two} months of energy charges for sale of electricity calculated on the normative Capacity Utilisation Factor (CUF);

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(c) Maintenance spare @ 15% of operation and maintenance expenses.”

5.31 The Petitioner has further referred to clause 17(3) of the APERC RE Regulations, 2018 which is cited as below:

“3. Interest on Working Capital shall be at interest rate equivalent to the normative interest rate of three hundred (300) basis points above the average State Bank of India MCLR (One Year Tenor) prevalent during the last available six months for the determination of tariff.”

5.32 Accordingly, the Petitioner has considered the interest @11.04% pa on working capital which has been considered based on 300 basis points above SBI MCLR (One Year Tenor) for last six months. The average SBI MCLR (One Yr Tenor) for the last six months considered by the Petitioner is 8.04%.

5.33 The Interest on Working Capital as submitted by the Petitioner for 35 years of the life of the Angong Nallah SHP is given in the table below:

**Table 27 Interest on Working Capital (Rs Lakh) as submitted by the Petitioner for the useful life of Angong Nallah SHP**

S. No	Particulars	1 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr	4 <sup>th</sup> Yr	5 <sup>th</sup> Yr	6 <sup>th</sup> Yr	7 <sup>th</sup> Yr	8 <sup>th</sup> Yr
1	O&M exp for one Month	15.09	15.95	16.86	17.83	18.85	19.93	21.07	22.27
2	Receivables for 2 months	130.41	132.22	134.13	136.14	138.27	140.53	142.91	145.43
3	Maintenance & Spares at 15% O&M Expenses	27.16	28.71	30.36	32.09	33.93	35.87	37.92	40.09
4	Total	172.66	176.88	181.35	186.06	191.05	196.32	201.90	207.79
5	IoWC (@11.04%)	19.06	19.53	20.02	20.54	21.10	21.68	22.29	22.94
S. No	Particulars	9 <sup>th</sup> Yr	10 <sup>th</sup> Yr	11 <sup>th</sup> Yr	12 <sup>th</sup> Yr	13 <sup>th</sup> Yr	14 <sup>th</sup> Yr	15 <sup>th</sup> Yr	16 <sup>th</sup> Yr
1	O&M exp for one Month	23.55	24.89	26.32	27.82	29.41	31.10	32.87	34.75
2	Receivables for 2 months	148.09	150.90	153.88	157.03	160.35	118.92	122.64	126.57
3	Maintenance & Spares at 15% O&M Expenses	42.38	44.81	47.37	50.08	52.94	55.97	59.17	62.56
4	Total	214.02	220.60	227.57	234.93	242.71	205.99	214.69	223.88
5	IoWC (@11.04%)	23.63	24.36	25.13	25.94	26.80	22.74	23.71	24.72
S.No	Particulars	17 <sup>th</sup> Yr	18 <sup>th</sup> Yr	19 <sup>th</sup> Yr	20 <sup>th</sup> Yr	21 <sup>st</sup> Yr	22 <sup>nd</sup> Yr	23 <sup>rd</sup> Yr	24 <sup>th</sup> Yr
1	O&M exp for one Month	36.74	38.84	41.07	43.42	45.90	48.52	51.30	54.23
2	Receivables for 2 months	130.73	135.12	139.76	144.67	149.86	155.35	161.15	167.28
3	Maintenance & Spares at 15% O&M Expenses	66.14	69.92	73.92	78.15	82.62	87.34	92.34	97.62
4	Total	233.61	243.88	254.75	266.23	278.38	291.22	304.79	319.14
5	IoWC (@11.04%)	25.79	26.93	28.13	29.40	30.74	32.16	33.65	35.24

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S.No	Particulars	25 <sup>th</sup> Yr	26 <sup>th</sup> Yr	27 <sup>th</sup> Yr	28 <sup>th</sup> Yr	29 <sup>th</sup> Yr	30 <sup>th</sup> Yr	31 <sup>st</sup> Yr	32 <sup>nd</sup> Yr
1	O&M exp for one Month	57.34	60.62	64.08	67.75	71.62	75.72	80.05	84.63
2	Receivables for 2 months	173.77	180.62	187.87	195.53	203.63	212.19	221.24	230.81
3	Maintenance & Spares at 15% O&M Expenses	103.21	109.11	115.35	121.95	128.92	136.30	144.09	152.34
4	Total	334.31	350.34	367.30	385.22	404.17	424.21	445.39	467.78
5	IoWC (@11.04%)	36.91	38.68	40.56	44.63	46.84	49.18	51.65	54.26

S. No	Particulars	33 <sup>rd</sup> Yr	34 <sup>th</sup> Yr	35 <sup>th</sup> Yr
1	O&M exp for one Month	89.47	94.59	100.00
2	Receivables for 2 months	240.93	251.63	262.93
3	Maintenance & Spares at 15% O&M Expenses	161.05	170.26	180.00
4	Total	491.45	516.48	542.93
5	IoWC (@11.04%)	54.26	57.03	59.95

### Commissions Analysis

5.34 The Commission has referred to clause 17(1) & clause 17(3) of the of the APSERC (Terms & Conditions for Determination of Renewable Energy Tariff) Regulations, 2018 for computing Interest on Working Capital. The relevant extract from the regulations is referred below:

***“17. Interest on Working Capital:***

*1. The Working Capital requirement in respect of Wind energy projects, Small Hydro Power, Solar PV projects shall be computed in accordance with the following:*

*(a) Operation & Maintenance expenses for one month;*

*(b) Receivables equivalent to 2 {Two} months of energy charges for sale of electricity calculated on the normative Capacity Utilisation Factor (CUF);*

*(c) Maintenance spare @ 15% of operation and maintenance expenses*

.....

*3. Interest on Working Capital shall be at interest rate equivalent to the normative interest rate of three hundred (300) basis points above the average State Bank of India MCLR (One Year Tenor) prevalent during the last available six months for the determination of tariff.”*

5.35 The Commission in accordance with the provision mentioned in the Regulation referred above has computed and approved the Interest on Working Capital of the Angong Nallah SHP for its useful life as referred in the table below The Commission has considered the last six-month MCLR of FY 2019-20 and has computed the interest rate @10.91% (Average last six-month MCLR: 7.91 + 300 basis points=10.91%).

  
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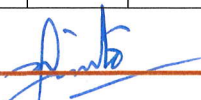
**Table 28 Marginal Cost Lending Rates for the last six months of FY 2019-20 released by SBI**

Effective Date	1 year Tenor-wise MCLR Rates (Source: SBI Monthly Press Releases)
10.03.2020	7.75
10.02.2020	7.85
10.01.2020	7.9
10.12.2019	7.9
10.11.2019	8
10.10.2019	8.05
<b>Avg. for last 6 months of FY 2019-20</b>	<b>7.91%</b>

5.36 The Interest on Working Capital as approved by the Commission for the useful life of Angong Nallah SHP in determination of levelized tariff is given in the following table:

**Table 29 Interest on Working Capital (in Lakhs) approved by the Commission for Angong Nallah SHP**

S. No	Particulars	1 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr	4 <sup>th</sup> Yr	5 <sup>th</sup> Yr	6 <sup>th</sup> Yr	7 <sup>th</sup> Yr	8 <sup>th</sup> Yr
1	O&M exp for one Month	15.09	15.95	16.86	17.83	18.85	19.93	21.07	22.27
2	Receivables for 2 months	31.52	33.32	35.23	37.24	39.37	41.63	44.01	46.52
3	Maintenance & Spares at 15% O&M Expenses	27.16	28.71	30.36	32.09	33.93	35.87	37.92	40.09
4	Total	73.77	77.99	82.45	87.16	92.15	97.42	102.99	108.89
5	<b>IoWC (@10.91%)</b>	<b>8.05</b>	<b>8.51</b>	<b>9.00</b>	<b>9.51</b>	<b>10.05</b>	<b>10.63</b>	<b>11.24</b>	<b>11.88</b>
S. No	Particulars	9 <sup>th</sup> Yr	10 <sup>th</sup> Yr	11 <sup>th</sup> Yr	12 <sup>th</sup> Yr	13 <sup>th</sup> Yr	14 <sup>th</sup> Yr	15 <sup>th</sup> Yr	16 <sup>th</sup> Yr
1	O&M exp for one Month	23.55	24.89	26.32	27.82	29.41	31.10	32.87	34.75
2	Receivables for 2 months	49.18	52.00	54.97	58.12	61.44	64.96	68.67	72.60
3	Maintenance & Spares at 15% O&M Expenses	42.38	44.81	47.37	50.08	52.94	55.97	59.17	62.56
4	Total	115.11	121.70	128.66	136.02	143.80	152.02	160.72	169.91
5	<b>IoWC (@10.91%)</b>	<b>12.56</b>	<b>13.28</b>	<b>14.04</b>	<b>14.84</b>	<b>15.69</b>	<b>16.59</b>	<b>17.53</b>	<b>18.54</b>
S.No	Particulars	17 <sup>th</sup> Yr	18 <sup>th</sup> Yr	19 <sup>th</sup> Yr	20 <sup>th</sup> Yr	21 <sup>st</sup> Yr	22 <sup>nd</sup> Yr	23 <sup>rd</sup> Yr	24 <sup>th</sup> Yr
1	O&M exp for one Month	36.74	38.84	41.07	43.42	45.90	48.52	51.30	54.23
2	Receivables for 2 months	76.75	81.14	85.78	90.69	95.88	101.36	107.16	113.29
3	Maintenance & Spares at 15% O&M Expenses	66.14	69.92	73.92	78.15	82.62	87.34	92.34	97.62
4	Total	179.63	189.91	200.77	212.25	224.39	237.23	250.80	265.14
5	<b>IoWC (@10.91%)</b>	<b>19.60</b>	<b>20.72</b>	<b>21.90</b>	<b>23.16</b>	<b>24.48</b>	<b>25.88</b>	<b>27.36</b>	<b>28.93</b>
S.No	Particulars	25 <sup>th</sup> Yr	26 <sup>th</sup> Yr	27 <sup>th</sup> Yr	28 <sup>th</sup> Yr	29 <sup>th</sup> Yr	30 <sup>th</sup> Yr	31 <sup>st</sup> Yr	32 <sup>nd</sup> Yr
1	O&M exp for one Month	57.34	60.62	64.08	67.75	71.62	75.72	80.05	84.63
2	Receivables for 2 months	119.77	126.62	133.86	141.52	149.61	158.17	167.22	176.79

  
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3	Maintenance & Spares at 15% O&M Expenses	103.21	109.11	115.35	121.95	128.92	136.30	144.09	152.34
4	Total	280.31	296.34	313.30	331.22	350.16	370.19	391.37	413.75
5	IoWC (@10.91%)	30.58	32.33	34.18	36.14	38.20	40.39	42.70	45.14

S. No	Particulars	33 <sup>rd</sup> Yr	34 <sup>th</sup> Yr	35 <sup>th</sup> Yr
1	O&M exp for one Month	89.47	94.59	100.00
2	Receivables for 2 months	186.90	197.59	208.89
3	Maintenance & Spares at 15% O&M Expenses	161.05	170.26	180.00
4	Total	437.42	462.44	488.89
5	IoWC (@10.91%)	47.72	50.45	53.34

### Levelized Tariff of Angong Nallah (3x1500 kW)

#### Petitioner Submission

5.37 The Petitioner in accordance with the submission referred in above section of this order has computed the levelized tariff of the Angong Nallah SHP(3x1500kW) as referred in the table below:

**Table 30 Computation of Levelized Tariff (Rs/kWh) as submitted by the Petitioner for 3x1500 kW Angong Nallah SHP**

S. No	Particulars	1 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr	4 <sup>th</sup> Yr	5 <sup>th</sup> Yr	6 <sup>th</sup> Yr	7 <sup>th</sup> Yr	8 <sup>th</sup> Yr	9 <sup>th</sup> Yr
1	ARR (in Lakhs)	782.49	793.31	804.75	816.85	829.64	843.16	857.45	872.56	888.54
2	Net Generation (MUs)	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57
3	Tariff (Rs/Unit)	4.45	4.51	4.58	4.65	4.72	4.80	4.88	4.97	5.06
4	Discounting Factor (11.23%)	1.00	0.89	0.79	0.70	0.62	0.55	0.49	0.43	0.39
5	Discounted Tariff (Rs/Unit)	4.45	4.01	3.61	3.25	2.93	2.64	2.39	2.16	1.95
S. No	Particulars	10 <sup>th</sup> Yr	11 <sup>th</sup> Yr	12 <sup>th</sup> Yr	13 <sup>th</sup> Yr	14 <sup>th</sup> Yr	15 <sup>th</sup> Yr	16 <sup>th</sup> Yr	17 <sup>th</sup> Yr	18 <sup>th</sup> Yr
1	ARR (in Lakhs)	905.43	923.28	942.16	962.11	713.54	735.85	759.43	784.36	810.71
2	Net Generation (MUs)	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57
3	Tariff (Rs/Unit)	5.15	5.25	5.36	5.47	4.06	4.19	4.32	4.46	4.61
4	Discounting Factor (11.23%)	0.34	0.30	0.27	0.24	0.21	0.19	0.17	0.15	0.13
5	Discounted Tariff (Rs/Unit)	1.76	1.60	1.45	1.31	0.86	0.79	0.72	0.66	0.61

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S. No	Particulars	19 <sup>th</sup> Yr	20 <sup>th</sup> Yr	21 <sup>st</sup> Yr	22 <sup>nd</sup> Yr	23 <sup>rd</sup> Yr	24 <sup>th</sup> Yr	25 <sup>th</sup> Yr	26 <sup>th</sup> Yr	27 <sup>th</sup> Yr
1	ARR (in Lakhs)	838.57	868.03	899.17	932.09	966.90	1003.70	1042.60	1083.72	1127.20
2	Net Generation (MUs)	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57
3	Tariff (Rs/Unit)	4.77	4.94	5.12	5.30	5.50	5.71	5.93	6.17	6.41
4	Discounting Factor (11.23%)	0.12	0.10	0.09	0.08	0.07	0.06	0.06	0.05	0.05
5	Discounted Tariff (Rs/Unit)	0.56	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29

S. No	Particulars	28 <sup>th</sup> Yr	29 <sup>th</sup> Yr	30 <sup>th</sup> Yr	31 <sup>st</sup> Yr	32 <sup>nd</sup> Yr	33 <sup>rd</sup> Yr	34 <sup>th</sup> Yr	35 <sup>th</sup> Yr
1	ARR (in Lakhs)	1173.17	1221.76	1273.14	1327.45	1384.87	1445.57	1509.75	1577.60
2	Net Generation (MUs)	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57
3	Tariff (Rs/Unit)	6.68	6.95	7.24	7.55	7.88	8.23	8.59	8.98
4	Discounting Factor (11.23%)	0.04	0.04	0.03	0.03	0.02	0.02	0.02	0.02
5	Discounted Tariff (Rs/Unit)	0.27	0.25	0.23	0.21	0.20	0.18	0.17	0.16

**Table 31 Levelized Tariff (Rs/unit) as submitted by the Petitioner for Angong Nallah SHP**

S.No	Particulars	Tariff
1	Total of Tariff	42.51
2	Total of Discounting Factor	8.77
3	<b>Levelized Tariff 35 years (Rs/Unit)</b>	<b>4.85</b>

**Commissions Analysis**

- 5.38 The Commission, in accordance with the approvals outlined in the preceding section of this order, has computed the levelized tariff for the 3x1500 kW Angong Nallah SHP, considering a CUF of 45%. After accounting for the CUF and an auxiliary consumption of 1%, the net saleable energy is determined to be 17.57 MU.
- 5.39 The petitioner is directed to adhere to the Capacity Utilization Factor (CUF) approved by the Commission and shall operate the plant on must run basis. However, in the event that the petitioner is unable to achieve the 45% CUF due to external constraints beyond their control, other than force majeure events, the petitioner shall be entitled to claim the benefits



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under the "Must-Run Status" as per the Electricity (Promotion of Generation of Electricity from Must-Run Power Plants) Rules, 2021, and its amendment.

5.40 The levelized tariff for 3x1500kW Angong Nallah SHP approved by the Commission is given in the table below:

**Table 32 Computation of Levelized Tariff approved by the Commission for 3x1500kW Angong Nallah SHP**

S. No	Particulars	1 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr	4 <sup>th</sup> Yr	5 <sup>th</sup> Yr	6 <sup>th</sup> Yr	7 <sup>th</sup> Yr	8 <sup>th</sup> Yr	9 <sup>th</sup> Yr
1	ARR (in Lakhs)	189.11	199.93	211.37	223.46	236.24	249.75	264.04	279.14	295.11
2	Net Generation (MUs)	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57
3	Tariff (Rs/Unit)	1.076	1.138	1.203	1.272	1.344	1.421	1.502	1.588	1.679
4	Discounting Factor (11.14%)	1	0.900	0.810	0.729	0.656	0.590	0.531	0.478	0.430
5	Discounted Tariff (Rs/Unit)	1.07612	1.0237	0.9738	0.9263	0.8812	0.8383	0.7974	0.759	0.72159
S. No	Particulars	10 <sup>th</sup> Yr	11 <sup>th</sup> Yr	12 <sup>th</sup> Yr	13 <sup>th</sup> Yr	14 <sup>th</sup> Yr	15 <sup>th</sup> Yr	16 <sup>th</sup> Yr	17 <sup>th</sup> Yr	18 <sup>th</sup> Yr
1	ARR (in Lakhs)	311.99	329.84	348.70	368.65	389.73	412.03	435.59	460.51	486.85
2	Net Generation (MUs)	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57
3	Tariff (Rs/Unit)	1.775	1.877	1.984	2.098	2.218	2.345	2.479	2.620	2.770
4	Discounting Factor (11.14%)	0.387	0.348	0.313	0.282	0.253	0.228	0.205	0.185	0.166
5	Discounted Tariff (Rs/Unit)	0.686	0.653	0.6212	0.5909	0.5621	0.5347	0.5086	0.4839	0.4603
S. No	Particulars	19 <sup>th</sup> Yr	20 <sup>th</sup> Yr	21 <sup>st</sup> Yr	22 <sup>nd</sup> Yr	23 <sup>rd</sup> Yr	24 <sup>th</sup> Yr	25 <sup>th</sup> Yr	26 <sup>th</sup> Yr	27 <sup>th</sup> Yr
1	ARR (in Lakhs)	514.70	544.14	575.27	608.17	642.96	679.74	718.62	759.72	803.18
2	Net Generation (MUs)	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57
3	Tariff (Rs/Unit)	2.929	3.096	3.273	3.461	3.659	3.868	4.089	4.323	4.570
4	Discounting Factor (11.14%)	0.149	0.135	0.121	0.109	0.098	0.088	0.079	0.071	0.064
5	Discounted Tariff (Rs/Unit)	0.4378	0.417	0.396	0.3769	0.3585	0.34106	0.3244	0.3086	0.29359

S.No	Particulars	28 <sup>th</sup> Yr	29 <sup>th</sup> Yr	30 <sup>th</sup> Yr	31 <sup>st</sup> Yr	32 <sup>nd</sup> Yr	33 <sup>rd</sup> Yr	34 <sup>th</sup> Yr	35 <sup>th</sup> Yr
1	ARR (in Lakhs)	849.12	897.69	949.04	1003.32	1060.71	1121.38	1185.53	1253.34
2	Net Generation (MUs)	17.57	17.57	17.57	17.57	17.57	17.57	17.57	17.57
3	Tariff (Rs/Unit)	4.832	5.108	5.400	5.709	6.036	6.381	6.746	7.132

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4	Discounting Factor (11.14%)	0.058	0.052	0.047	0.042	0.038	0.034	0.031	0.028
5	Discounted Tariff (Rs/Unit)	0.2793	0.2657	0.2527	0.2404	0.228696	0.21755	0.20695	0.1969

**Table 33 Levelized Tariff approved by the Commission for 3x1500kW Angong Nallah SHP**

S.No	Particulars	Tariff
1	Total of Tariff	18.240
2	Total of Discounting Factor	9.732
3	<b>Levelized Tariff 35 years (Rs/Unit)</b>	<b>1.874</b>

5.41 The levelized tariff of **Rs.1.874/unit** as approved in this order shall be applicable from the date of commercial operations of 3x1500kW Angong Nallah SHP. The Petitioner is directed to raise bill to APDOP against the energy sale from this plant with effect from FY 2024-25 till the useful life of the plant in accordance with the tariff approved by the Commission. The provisional tariff considered if any shall be subjected to adjustment considering the above levelized tariff approved by the Commission.

5.42 Accordingly, the Petition TP-12 of 2024 is disposed of.



**Date: 31.12.2024**

**Place: Itanagar**

**Sd/-**

**Shri Nich Rika**

**Member (Law)**

**Sd/-**

**Shri R.K. Joshi**

**(Chairperson)**

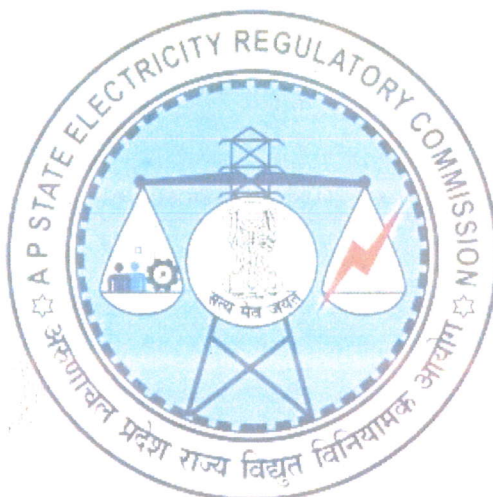
Secretary  
APERC



## **Annexure-1**

**Table 34 List of Participants during public hearing**

<b>S.No</b>	<b>Name</b>	<b>Designation</b>
1	Mr.Duyu Tacho	CE(Commercial) cum CEI
2	Mr.Anirban Hazra	Consultant DHPD
3	Mr.Sayank Mondal	Consultant DHPD
4	Mr.Habung Opo	JE(DHPD)



  
Secretary  
AP SERC