



Budget Speech

In respect of

Demand No. 43

By

**Shri Sobhandeb Chattopadhyay**

*Minister-in-Charge*

Department of Power & Non-Conventional Energy Sources  
Government of West Bengal

2018-2019

February, 2018

## Budget Speech of Power and NES Department for the year 2018-19

Hon'ble Mr. Speaker, Sir,

1. On the recommendation of the Governor, I beg to move that a sum of **Rs. 2638,64,72,000.00 (Rupees Two Thousand Six Hundred and Thirty-eight Crore Sixty-four Lakh Seventy-two Thousand only)** be granted for expenditure under **Demand No. "43"**, Major Expenditure Heads of Account : 2045-Other Taxes and Duties on Commodities and Services", "2575-Other Special Areas Programmes", "2801-Power", "2810-Non-Conventional Sources of Energy", "3451-Secretariat-Economic Services", "4801-Capital Outlay on Power Projects" and "6801-Loans for Power Projects"

1.1 The Demand comprises funding and equity contribution for the West Bengal State Electricity Distribution Company Limited (WBSEDCL), the West Bengal Power Development Corporation Limited (WBPDCCL) and the Durgapur Projects Limited (DPL); funds for the West Bengal Renewable Energy Development Agency (WBREDA); West Bengal State Electricity Transmission Company Limited (WBSETCL); West Bengal Green Energy Development Corporation Limited (WBGEDCL) and salaries of officers & staff and other expenses in the Department of Power and Non-conventional Energy Sources, in the office of the Chief Electrical Inspector and expenditure connected with the West Bengal Electricity Regulatory Commission.

1.2 The avowed goal of 'Power for All' is in the last leg of completion. Now Grid power touches every nook and corner of

the State. All mouzas of the state have been electrified. Now service connection work from the existing infrastructure is going on. In the current Financial Year i.e. 2017-18 (upto December) **5.66 Lakh new service connection** have been given by the WBSEDCL. In the same time frame **2816 CKM HT line and 11,039 CKM LT distribution line** has been drawn. A total **8228 DTRs with total 348.925 MVA capacity** have been added to the system.

WBSEDCL will be providing power even to the marginal people dwelling in the riverine deltas commonly known as '**Nadir Char**'. These are inaccessible to grid power due to their ever changing terrain. WBSEDCL has decided to electrify these areas through **off grid Solar PV power plants** and mini grid system.

1.3 With rapid expansion of the consumer base from **85 lakhs in 2011 to 179 lakhs in Jan, 2018** i.e. an unprecedented growth of 112% within a span of only 7 years, **Low Voltage problem was looming large even an year ago**. But after planned intervention the problem is on the wane. In 2017-18 WBSEDCL has made a capacity addition of 246.8 MVA through construction of **29 new 33/11 KV distribution Sub-station and capacity augmentation of 282.1 MVA** was also done in this period. At the same time WBSETCL commissioned **New Chanditala 400 KV, New PPSP 400 KV GIS, Sadaipur 220 KV and Keshiary 132 KV** substation to provide transmission backbone to the whole system. **Total 2519 MVA transformation capacity, including augmentation and 430 CKM transmission line** has been added so far in 2017-18.

During the rest of the period of this Financial year WBSEDCL will add another **4 nos. 33/11 KV substation**, WBSETCL is expecting to commission EHV substation at **Mohitnagar (Jalpaiguri), Islampur (Uttar Dinajpur), Domkal (Murshidabad), Indus (Bankura), Sonakhali (South 24 PGS)**. Up gradation of Alipurduar 132 KV and Barasat 132 KV to 220 KV will also be done in this period.

In order to ensure quality power and system reliability some system improvement works like conversion of overhead to underground cabling in major cities and introduction of **High Voltage Distribution System(HVDS) in industrial and commercial hubs** of the state are already undertaken. Extra High Voltage substation and reactive power management have been introduced by WBSEDCL and WBSETCL as part of the programme christened **Strengthening and Extending Electricity Distribution Network (SEEDN)**. This will be major programme of 2018-19. Sech Bandhu alias Deen Dayal Upadhyay Gram Jyoti Yojana (**DDUGJY**) and Integrated Power Distribution System (**IPDS**) are other two major ongoing programmes of 2018-19.

**1.4 'Sustainable Development'** is a very prominent word of the present era lexicon. The word 'sustainable' has at least two connotations in the field of energy- first ensuring Energy Security which is essential for growth and development and second one is **living continuity of the Mother Earth**. State Power Utilities have taken up this matter very seriously.

West Bengal, a power surplus state, is having **total installed capacity of 8990 MW** comprising State Sector Generating Stations and IPPs. In addition, **Central Sector allocation is 1500 MW** which is in excess to meet the **peak demand of around 8450 MW**. Considering the future load growth, **1000 MW Turga Pump storage Project and 660 MW Sagardighi Unit No 5** which is the first Supercritical project of the state are on the threshold of actual grounding. **Physical construction of both the projects are expected to commence in 2018-19**. Exploration of Hydro Power Potential and Implementation of Small Hydro projects will be focus area in 2018-19. WBSEDCL has taken up implementation of **Rammam Intermediate Hydroelectric Project(12MW)** and **Lodhama II Small Hydro Project (10MW)** in Darjeeling. Prefeasibility study and DPR preparation of some other projects will be done in 2018-19.

1.5 In spite of low insolation in the Eastern region, State Government's strategic intervention in building up Solar PV Power Plants is now producing results. In 2017-18 two Utility scale **Solar PV Power Plants of 10 MW** capacity each have been commissioned at the **Teesta Canal Fall II, (Haptiagach), Uttar Dinajpur and Mejia, Bankura**. In 2018-19 WBREDA, WBSEDCL and WBPDCCL will implement another 10 ground mounted utility scale Solar PV Power Plants throughout the state. Approximately Rs.500Cr. is necessary for these works and State Government will provide necessary fund. Two floating Solar Power Plants of capacity 5MW each will be set up in Santaldih and Sagardighi.

Rooftop Solar Programme has already got necessary momentum. In May,2011 grid Connected Roof Top Solar Plant capacity was only .0229 MW. In January,2018 this figure stands at 21.216 MW. Among various components of this programme Rooftop Solar Programme in Schools has gained much prominence. So far Rooftop solar PV Power Plants have been commissioned at **642 schools out of 1000 schools proposed** in the last Budget. **Work in remaining schools will be completed soon.** In 2018-19 WBREDA proposes to install Rooftop solar PV Power Plants in 1000 more schools.

1.6 In spite of our efforts in harnessing Renewable Energy, the matter of fact is Thermal Energy is likely to remain main stay of our Power mix for at least another two decades. Therefore emphasis is given on using Clean Coal Technologies to mitigate emission of CO<sub>2</sub>, SO<sub>2</sub>, NO<sub>2</sub> and particulate matter content in the environment. Renovation and modernisation work of BTG packages of Kolaghat Thermal Power Station Unit Nos. 1,2 & 3 will be completed in 2018-19. **Further ESP and Ash handling works worth Rs 229.87 Crores in Kolaghat Units 1, 2 & 3 will also be done in the 2018-19.**

1.7 Extensive use of **Information Technology** based management tools is another hall mark. After WBSEDCL, WBPDCCL has also implemented ERP. That will result in real time basis financial and material management.

1.8 As part of the **Ease of doing business applications**, service connections are being received and disposed on line by WBSEDCL. Almost all 28 services of the Directorate of Electricity are made available On-line under **e-District Mission Mode Programme**. In 2017-18 a **Regional Office of the Chief electrical Inspector** has been opened in Siliguri for the district in North Bengal.

## Generation

2. Total installed capacity in the State is 8990 MW **excluding Central Sector allocation** of 1500 MW. This figure excludes Grid Connected Rooftop Solar PV Power Plants which is 21.216 MW at present. Gross generation achieved during 2017-18 (upto December, 2017) is 16,936.736 MU.

2.1 Annual coal requirement of WBPDCCL is 23.5 MMT. This is primarily sourced from CIL. Govt. of India has allocated six captive Coal Blocks to WBPDCCL with expected production capacity of 125 MMT up to 2025. Out of these six captive coal mines, Barjora Coal mine has recently come into operation. Barjore (North) and Panchwara (North) is expected to be operational soon.

2.2 Sustainable Generation is the focus area of WBPDCCL. Now WBPDCCL is poised to implement Clean Coal Technologies like Flue-gas Desulphurisation (FGD), Selective Catalyst Reduction (SCR) in its generation units.

Flue-gas desulfurization (FGD) is a set of technologies used to remove Sulphur dioxide (SO<sub>2</sub>) from exhaust flue gases of Coal power plants, and from the emissions of other Sulphur dioxide emitting processes.

Stringent environmental regulations regarding SO<sub>2</sub> emissions have been enacted in India by the Environment Protection (Amendment) Rules 2015, dated 7th December 2015. SO<sub>2</sub> is now to be removed from flue gases by a variety of methods like wet FGD or dry FGD.

WBPDCCL is going to install different type of FGD for its different Power plants. Initially WBPDCCL has planned for installation of FGD in SgTPS Unit N0 3& 4 and Unit No 2 of KTPS . Approximate cost is Rs 847 crore.

2.3 The Government of West Bengal has approved installation of Supercritical Unit No. 5 of Sagardighi Thermal Power Station of 660 MW capacity. State Government will contribute **30% equity and has already contributed** Rs. 770.57 Crore for the Unit. 70% of the project cost will be financed by PFC as loan.

2.4 After successful renovation and modernisation (R&M) of Bandel Unit No. 5 WBPDCCL has also undertaken (R&M) work of BTG and BOP packages of KTPS Unit Nos. 1, 2 & 3. Estimated project cost is Rs. 831.41 Crore.

R & M work of ESP and AHP of KTPS Unit No 1,2 & 3 has also been undertaken. Estimated cost is Rs 229.87 crore.

## 2.5 Upcoming Projects

### a) 1000MW Turga Pumped Storage Project at Purulia District:

Detailed Project Report (DPR) preparation was made & concurred by CEA in October 2016. Cabinet Approval accorded on 8<sup>th</sup> May 2017 by Govt. of West Bengal with **Project Cost of Rs. 4800.69 crore including IDC**. Pre-Construction activities are in progress. Compensatory afforestation of land of 234 ha was arranged by Government of West Bengal. The project has been included in the Rolling Plan of JICA, Japan for external funding. **The cost sharing for the project envisaged as 85% EAP Loan and 15% Equity (State share). Govt. of West Bengal has issued Debt Sustainability Certificate for EAP Loan.** Process of Loan Agreement is in progress. Diversion arrangement of existing Irrigation and Drinking Water system concurred by I&W Department and PHE Directorate respectively. For Stage-I Forest

Clearance, the case of diversion of 234 ha forest land is under active consideration of the Forest Advisory Committee, MoEF & CC, GoI. Target Date of Commissioning of All Four Units by September 2024.

**b) Small Hydro Projects:**

Implementation of **Rammam Intermediate Hydroelectric Project (12MW) and Lodhama II Small Hydro Project (10 MW)** in the district of **Darjeeling** have been taken up by WBSSEDCL. Another hydro project named **Ragnu SHP (6 MW) at Darjeeling hills** is under investigation stage for preparation of DPR. The State has also taken up implementation of **11 nos of Small Hydro Project of total capacity 78.5 MW in Darjeeling hills** through private developers.

Updation of Pre feasibility Report (PFR) of **7 nos of Small Hydel Projects having capacity below 5 MW each** and a cumulative capacity of **16 MW has begun**. The state has also taken up implementation of some other Hydro electric project of cumulative capacity **293 MW** like **Teesta Low Dam I & II (Combined)- 81 MW, Teesta Intermediate Hydroelectric Project (84MW), Teesta Low Dam( 80MW) and Rammam Stage I Hydroelectric Project (48MW) through Central PSU.**

Updating of Pre Feasibility Report (PFR) for **Bandu Pumped Storage Project** in the district of **Purulia** has been taken up by WBSSEDCL and implementation of the said project is being decided through tariff based bidding.

**C) Solar Generation:-**

**A 10 MW Solar PV Project each** at the bank of **Teesta Canal Fall (TCF) and Mejia in Bankura** were commissioned on **18.08.2016 & 15.12.2017** and the power generated till **31.12.2017** are **19 MU and 0.52 MU** respectively.

Another two nos. **10 MW Solar PV Plants at Charrah & Santaldih in Purulia** district are likely to be commissioned in January 2018 & June 2018 respectively.

Order has been placed for another **30MW** ground mounted Solar Power Project at Salboni, Patni (Kharagpur-I), Canal Top at TCF PS-I and work is under progress.

Further, another **60MW ground mounted Solar Power Plant (SPV) has been proposed for sanction at Raniganj, Jhargram, Asansol, Uttar Dinajpur and Purulia** under RIDF Trance XXIII.

Moreover, Rooftop Solar PV Plants of 10 KWP each in **140 educational institutes have been installed till December 2017. Total Cumulative Generation as on 31.12.2017 is about 1.90 MU.**

WBPDCCL has taken up installation of 10 MW Ground Mounted Solar PV Power plant at Sagardighi Thermal Power Project. Work is under progress for 10 MW Roof Top Solar PV Power Plant **at all the Power Plants of WBPDCCL.** Tendering process of 5 MW Floating Solar Power at Sagardighi and Santaldih Thermal Power Plants are also under process.

WBREDA has taken up a project to install ground mounted 10 MWp solar power project at Bhajanghat, Krishnaganj, Nadia. Agriculture Department has already accepted the proposal for relinquishment of 53 acre of land for the project.

WBREDA has conceived a project proposal of 7 MWp capacity at the premises of DPL, Durgapur.

WBREDA also conceived a project to set up utility scale solar power project of capacity 10 MW on the water body of the catchment area – Nilnirjan Dam of Bakreswar Thermal Power Project, Birbhum. The project is now under consideration.

## Distribution System

3. The West Bengal State Electricity Distribution Company Limited (WBSEDCL) is in charge of distribution of power throughout the State except Kolkata and parts of Howrah, Hooghly, North 24 Parganas, South 24 Parganas and Paschim Burdwan districts. WBSEDCL has **5 (five) Zonal Offices, 19 (Nineteen) Regional office, 71 (seventy one) Division Offices and 509 (five hundred nine) Customer Care Centres** to cater to **1.79 crore consumers** out of which **1.43 crore** are rural consumers and **0.36 crore** are urban consumers. In 2011 total consumer strength was **85 lakh** only, i.e. **number of total consumers has increased by 112%**. There were only **5.51 lakh BPL** consumers in the system of WBSEDCL in 2011. A further **25.43 lakh** new BPL consumers have been brought into the system in seven years which is an achievement.

3.1 WBSEDCL has a robust distribution system of **1,77,042 CKm. of HT** distribution lines and **3,27,702 CKm. of LT** distribution lines. It has **576** (five hundred seventy six) numbers of **33/11 KVA Sub-Stations** with a total capacity of **9274.15 MVA**. It also owns **2,47,966** nos. of distribution transformers (DTRs) comprising **11,602.35 MVA** of total capacity.

## System Improvement Works

3.2 It is already said that the Government is on the verge of achieving **100% universal electrification** throughout the State. This requires simultaneous improvement and strengthening of the distribution system. **WBSEDCL has achieved the following milestones in this Sector in the Financial Year 2017 - 18:**

- i) **5.66 Lakhs** new service connections.
- ii) Construction of **2816 CKm.** of HT and **11,039 CKm.** of LT distribution lines.

- iii) Capacity addition of **246.8 MVA** through construction of **29 Nos.** new 33/11 KV Sub-Stations and capacity augmentation of **282.1 MVA** have been completed to combat load growth and low voltage problems at some places.
- iv) A total of **8228** numbers of distribution transformers with a total **348.925 MVA** capacity have been added to the system.
- v) **HT AB cable-11,153 ckt KM** and **LT AB cable- 140.04 ckt KM** have been drawn to reduce the quantum and possibility of theft of energy, interruptions and accidents.
- vi) New **5 nos. CCC , 1 no. Division and 1 no. Region** have been opened for providing better service to the consumers.

### **Rural Electrification**

3.3 Starting with modest **55%** (approx) coverage in 2011, now the Government can boast of achieving **99.8%** coverage. **Rural Electrification work has been completed in 19 districts, namely Jalpaiguri, Alipurduar, Uttar Dinajpur, Dakshin Dinajpur, Malda, Purba Medinipur, Paschim Medinipur, Jhargram, Bankura, Purulia, Birbhum, Murshidabad, Howrah, Hooghly, Purba Burdwan, Paschim Burdwan, Nadia, North 24 Parganas, Darjeeling (Siliguri Mahakuma Parishad).** Residual works in the districts of Coochbehar & South 24 Parganas and Hilly area of Darjeeling & Kalimpong is expected to be completed by 2018. In case of Sunderban, most critical work was the river crossing. Barring some service connection work, electrification work in Sundarban has been completed. Providing service connection to all consumers will be completed by 2018.

Besides above, some reverine areas known as '**Nadir Char**' areas are there in the State, which are inaccessible to grid power

due to their very difficult geographical location. Electrification of these areas shall be done through off-grid Solar PV Panel with battery back-up. Such work is expected to be completed by 2018-19.

### **Restructured - Accelerated Power Development and Reforms Programme (R-APDRP), Part-B :**

**3.4 Under R-APDRP Part - B**, scheme with sanctioned fund of Rs. 808.78 Crore have already been completed in 55 towns. Work of remaining 4 towns are progressing steadily and expected to be completed by March 2018.

### **National Electricity Fund (NEF) :**

**3.5** Underground cabling work of **Bolpur and Nabadwip**, two renowned tourist destinations was taken up under this scheme. Rs. 57.83 Crore and Rs. 32.93 Crore were sanctioned for Bolpur and Nabadwip respectively. Both have been completed. Rs.3.51 Crore has been allotted to (NEF) phase-II work of Bolpur which also has been completed.

In Kolkata and Medinipur Zone augmentation of Sub-Station capacity and replacement of MOCB (Minimum Oil Circuit Breaker) by SCADA (Supervisory Control and Data Acquisition) compatible VCB (Vacuum Circuit Breaker) and control and protection panel has been completed in June,2016. Work in Burdwan Zone is in progress and expected to be completed in March,2018. Total project cost was Rs.114.55 Crore.

### **Sech Bandhu (DDUGJY) Scheme:**

**3.6** A program has been started under **Sech Bandhu (DDUGJY)** for creating village infrastructure for providing access to power to all rural households, system strengthening, feeder segregation and improvement in meeting infrastructure throughout the state of West Bengal with the **sanctioned project cost of Rs.4305.50 crore.**

Electrification work of **14 no. Un-Electrified (UE)** and **59 Partially Electrified (PE) Villages** under Sundarban area in South 24 Parganas district has been undertaken under the scheme. The electrification of **14 no Un-Electrified villages & 34 no Partially Electrified Villages** have already been completed and energized with electric connection to the **4881 no BPL** households. The target for completion of balance work is by February 2018.

Under this scheme **80 new 33/11 KV Substations will be constructed. Out of that 23 no Sub-Stations** have been targeted for completion in the FY 17-18 and the balance by FY 18-19.

The letter of Awards (LOAs) for turnkey execution of village infrastructure for access to power for all rural households, feeder segregation & metering in all the districts have been placed except Darjeeling district where work has been taken up in departmentally. The work has been started in all the districts. 3.58 lakh of defective energy meters have already been replaced under the scheme. Replacement of LT OH bare conductor line with Aerial Bunched Conductor (AB Cable) has been undertaken on priority. The target for completion of the work is within FY 20-21.

### **Strengthening and Extending Electricity Distribution Network (SEEDN)**

**3.7 Under SEEDN, Phase-I**, Rs 319 crore was sanctioned to WBSEDCL for all districts for implementation of this scheme. The scheme involves new connection, service connection with or without pole, Conversion of LT line from single phase to three phase using AB cable and commissioning of 33/11KV Unmanned Sub-Station.

A new program has been started under **SEEDN, Phase-II**. Considering the growth in number of consumers- and increasing load demand , necessary action is being taken. A primary budgetary sanction of Rs.300 Crore for this purpose has already been granted by GoWB. The work is in progress.

## Digital Facility:-

3.8 Energy bill payment using portal / mobile Apps/ mobile wallets like **Paytm, m-pesa, airtel money, phone-pe** has been launched. Consumers can also make payment through RTGS/ NEFT/NACH against energy bills as well as quotation for new connections. Integration with **E-Pradan of IFMS** (Integrated Financial Management System) of West Bengal Govt. for payment against energy bill/ quotation for new connection of Govt. establishment using RTGS.

SMS alert/ notifications to consumers / intending consumers having mobile number registered with WBSEDCL has also been implemented.

Now **100% bulk billing** has been achieved through **AMR using MDAS** in time.

Implementation of **SCADA/DMS** i.e, Supervisory Control and Data Acquisition / Distribution Management System at three nos. towns in the State of West Bengal namely Kolkata (U/A) and Siliguri for real time monitoring and control of the assets like substation breakers, Ring Main units etc. for better system management has also been successfully operationalised in **Siliguri town & Asansol (U/A) town for Kolkata (U/A)**, the operationalisation has been planned by end of March 2018.

## Awards:-

3.9 WBSEDCL has been awarded as the Winner in the category **"Utility achieving Highest Electrification of un-electrified households"** in IPPAI Power Awards 2017 and WBSEDCL's **'Innovation in Energy Storage through Hydro'** in the category of Innovation.

## Transmission of Power

4. The State has been able to take grid power to the remotest corners of the State. Catering to a wide range of consumers like

small households, agricultural pump sets, industrial growth centers etc., requires a robust transmission system. The West Bengal State Electricity Transmission Company Limited (WBSETCL) is providing this infrastructure in the way of catalyzing activity between generation units and distribution sub-station.

4.1 WBSETCL has been entrusted with the responsibility for transmission of power at EHV level (66 KV to 400 KV) to supply to the entities engaged in distributing electricity, exchange of power among the utilities and exchange of power through inter-connection with Central Transmission Utility (CTU).

WBSETCL's vision is to develop and maintain the most reliable and economic power transmission system in the country with the highest system availability and quality and the least technical losses.

#### **TRANSMISSION SYSTEM DEVELOPMENT UNDER STATE SECTOR:**

4.2 Since April 2011 till March 2017, WBSETCL has commissioned 22 no EHV Substations (including up-gradation), which effects addition of 17 no. new sub-stations, enhancement of 9545 MVA transformation capacity (including augmentation work) and inclusion of 2076 CKM Transmission lines. This has led to total transmission system comprising of 118 nos. EHV sub-stations with total 27752 MVA transformation capacity and 12962 CKM of Transmission lines within the State at the end of FY 2016-17.

4.3 In the current financial year (2017-18), till December 2017, **New Chanditala 400 kV Substation** at District Hooghly (with 945 MVA transformation capacity), **New PPSP 400 kV GIS** at District Purulia (with 80 MVAR Reactor), **Sadaipur 220/132/33 kV Substation** at district Birbhum (with 420 MVA transformation capacity) & **Keshiary 132/33 kV Substation** at District Paschim Medinipur (with 50 MVA transformation capacity) came into

operation. Consumers of entire state specially in Howrah, Hooghly, Birbhum & Paschim Medinipur districts will be benefited from these Substations. Total 2519 MVA Transformation Capacity including augmentation and 430CKM Transmission Line has been added during this period.

WBSETCL is maintaining its Transmission System availability consistently around 99.9% and transmission system loss to around only 3%.

4.4 During rest of the period of 2017-18, WBSETCL is expecting to commission the following green field Substation and Transmission Lines:

Sl. No.	Name of Sub-station	District	MVA
1	Alipurduar 220 kV (Up-gradation)	Alipurduar	320.0
2	Barasat 220 kV (Up-gradation)	North 24 Pargana	320.0
3	Keshiary 132 kV (2 <sup>nd</sup> Transformer)	West Midnapur	50.0
4	Domkal 132 kV GIS	Murshidabad	100.0
5	Sonakhali 132 kV GIS	South 24 Parganas	100.0
6	Indus 132 kV GIS	Bankura	100.0
7	Mohitnagar 132 kV GIS	Jalpaiguri	100.0
8	Islampur 132 kV Substation	North Dinajpur	100.0
	<b>Total</b>		<b>1190.0</b>

Sl. No.	Name of Transmission line	Voltage in kV	Line length in CKM
1	Sagardighi TPS – Gokarna 400 kV D/C	400	88.5
2	Alipurduar (PG) – Alipurduar 220 kV D/C	220	13
3	Nazirpur – Domkal 132 kV D/C	132	62
4	Subhasgram – Sonakhali 132 kV D/C	132	80
5	One Ckt of Kharagpur – Keshiary 132 kV D/C	132	24
6	LILO of NJP-Chalsa-Moinaguri 132 kV D/C at Mohitnagar	132	30
7	Conversion of Kasba – Saltlake 132 kV D/C to KLC – Saltlake 132 kV D/C	132	0.535
	<b>Total</b>		<b>298</b>

4.5 During the period of 2018-19, WBSETCL is expecting to commission following green field Substations and Transmission lines :

Sl. No.	Name of Sub-station	District	MVA
1	New Sagardighi 220 kV GIS	Murshidabad	320
2	Rejinagar 220 kV Substation	Murshidabad	420

Sl. No.	Name of Sub-station	District	MVA
3	Gazol 220 kV GIS	Malda	420
4	New Town II C 220 kV GIS	North 24 Parganas	480
5	Panagarh 132 kV GIS	Paschim Burdwan	100
6	Dinhata 132 kV GIS	Coochbehar	100
7	Bhadrapur 132 kV GIS	Birbhum	100
8	Saltlake Stadium 132 kV GIS	North 24 Pargana	160
9	Burdwan 132 kV GIS	Purba Burdwan	150
10	Debra 132 kV GIS	Paschim Medinipur	100
11	Jhalda 132 kV GIS	Purulia	100
12	Salar 132 kV GIS	Murshidabad	100
13	Kamakhyaguri 132 kV Substation	Alipurduar	63
	<b>Total</b>		<b>2613</b>

Sl. No.	Name of the Line	Voltage in kV	Length in CKM
1	New Chanditala - Gokarna 400 kV D/C	400 kV	360.00
2	LILO of Arambag-Durgapur 400 kV S/C at New Chanditala	400 kV	94.00

Sl. No.	Name of the Line	Voltage in kV	Length in CKM
3	TLDP III - TLDP IV 220 kV S/C	220 kV	21.10
4	D/C LILO of Arambag - Rishra 220 kV S/C ine at New Chanditala	220 kV	31.00
5	N. Chanditala - Domjur 220 kV D/C	220 kV	17.00
6	D/C LILO of Sagardighi TPS - Gokarna 220 kV D/C Line at New Sagardighi	220 kV	21.00
7	Rajarhat (PG) - New Town II C 220 kV D/C	220 kV	31.60
8	D/C LILO of Gokarna-Krishnanagar 220kV D/C at Rejinagar	220 kV	9.00
9	D/C LILO of Amtala-Berhampur 132kV D/C at Rejinagar	132 kV	44.60
10	D/C LILO of Amtala - Debogram 132 kV D/C at Rejinagar	132 kV	16.40
11	D/C LILO of Gokarna - Katwa 132 kV D/C at Salar	132 kV	4.20
12	Kasba - Salt Lake Stadium 132 kV D/C (UG Cable)	132 kV	12.00

Sl. No.	Name of the Line	Voltage in kV	Length in CKM
13	Saltlake - Saltlake Stadium 132 kV S/C (UG Cable)	132 kV	4.00
14	Saltlake GIS - Saltlake Stadium 132 kV S/C (UG Cable)	132 kV	4.00
15	Basirhat to New Town AA-III - Barasat 132 kV D/C	132 kV	70.00
16	Coochbehar – Mathabanga 132 kV D/C	132 kV	93.00
17	Rampurhat - Bhadrapur 132kV D/C	132 kV	48.00
18	Bagmundi - Jhalda 132kV D/C	132 kV	98.00
19	132kV D/C Line from TL No T-21 of Midnapur- Kharagpur WBIDC 132kV Line to Debra	132 kV	52.00
20	132 kV D/C Line from New Sagardighi to Gokarna – Raghunathgunj 132 kV Line	132 kV	7.60
21	132 kV D/C line from Bhadrapur to Gokarna - Raghunathgunj 132 kV Line	132 kV	31.00

Sl. No.	Name of the Line	Voltage in kV	Length in CKM
22	LILO of one circuit of Coochbehar – Mathabanga 132 kV D/C at Dinhata	132 kV	94.00
23	Balance Portion of Moinaguri - Mathabhanga 132 kV D/C	132 kV	16.40
24	D/C LILO of Domjur – Uluberia 132 kV D/C at Foundry Park	132 kV	4.60
25	Kharagpur - Jhargram 132 kV D/C	132 kV	84.00
26	Durgapur - Panagarh 132 kV D/C	132 kV	61.00
27	D/C LILO of Malda(PG) - Dalkhola(PG) 220 kV D/C at Gazol	220 kV	6.40
28	132kV D/C from Gazol to LILO point of existing 132kV line to Samsi 132kV SS	132 kV	19.00
29	D/C LILO of Malda - Raiganj 132kV D/C line at Gazol SS	132 kV	2.60
30	132kV D/C from Gazol SS to the nearest point of 132kV line towards Balurghat SS & Conversion of S/C to D/C	132 kV	103.80

Sl. No.	Name of the Line	Voltage in kV	Length in CKM
31	Indus - Raina 132 kV D/C	132 kV	60.00
32	D/C LILO of Satgachia - Mahachhanda 132 kV D/C at Burdwan 132 kV	132 kV	5.00
33	LILO of BTPS - Satgachia 132 kV S/C at Khanyan	132 kV	2.00
34	LILO of Gokarna - Rampurhat 132 kV S/C at Kuli 132 kV SS	132 kV	9.00
35	LILO of BTPS - Dharampur 132 kV Ckt-III at Kalyani	132 kV	2.00
36	Conversion of Purulia - Bagmundi 132 kV S/C to D/C	132 kV	69.00
37	LILO of Bajkul - Egra 132 kV S/C at Contai	132 kV	3.00
	<b>Total</b>		<b>1611.30</b>

**Future Transmission plan of WBSETCL from 2019-20 to 2024 - 25 :**

4.6 With the focus of improving performance in terms of availability, reliability and quality the following network expansion has been envisaged by **WBSETCL up to 2024-25** :

- a) Establishment of 44 nos. new EHV Substation of different voltage level

(400 kV – 2 no, 220 kV – 7 no, 132 kV – 35 no)

- b) Up gradation of 8 existing EHV Substations to next higher voltage level

(132 kV to 220 kV – 5 nos & 66 kV to 132 kV – 3 nos)

- c) Addition of 9456 MVA Transformation Capacity in these green field projects

(400 kV – 1726 MVA, 220 kV – 3500 MVA, 132 kV – 4230 MVA).

- d) Addition of about 3772 CKM new Transmission line

(400 kV – 60 CKM, 220 kV – 748 CKM & 132 kV – 2964 CKM).

After development of the on-going and planned transmission system, quality & reliability of power supply in the State will improve considerably and the following objectives will be fulfilled:

- a) Improvement in reliability of power supply to the command areas leading to reduction in the customer interruption frequency index and customer interruption duration index.
- b) Voltage profile will considerably improve and improve system stability & reduce losses.
- c) Promote development in Industrial and Agricultural sector.

### **Funding:**

4.7 Total Capital Expenditure of around Rs.1450 Crore for on-going & up-coming projects to be implemented shortly has been approved by WBSETCL. Further fund of around Rs. 4800 Crore would also be required for on-going & up-coming projects in next three financial years.

WBSETCL is not dependent on the State Government for its maintenance, up-gradation and implementation of new projects. Projects are developed maintaining Debt Equity Ratio of 70:30, as permitted by the Regulator. Debt portion is arranged from financial institutions and Equity portion is met from internal accruals.

## TECHNOLOGICAL INITIATIVES:

**4.8 Transmission Capacity Enhancement:** To enhance power transfer capacity of existing transmission lines WBSETCL has already completed change of 181 CKM ACSR Panther conductor of following 132 kV lines by HTLS (High Temperature Low Sag) –

1. Malda (PG) – Malda 132 kV D/C line
2. Jeerat – Dharampur 132 kV D/C line
3. Gokarna – Berhampur 132 kV D/C line
4. Dharampur – Titagarh 132 kV D/C line
5. Durgapur – Ukhra 132 kV D/C line

Further, replacement of another 227 CKM conductor by high capacity conductor in respect of following existing lines has also been approved for execution.

1. New Chanditala - Rishra 220 kV S/C
2. New Haldia - Haldia - Haldia NIZ 132kV D/C,
3. Gokarna - Kuli 132kV D/C,
4. KTPS - Tamluk 132kV D/C
5. Kasba - KLC - Salt Lake 132kV D/C

6. Kasba - Sonarpur 132kV D/C
7. LILO part of New Town AA III - Saltlake GIS 132kV S/C line at New Town AA I

75% of said project cost will be availed from "Power System Development Fund" (PSDF) as grant.

### **Reactive Power Management:**

4.9 For Reactive Power Management in the State Transmission System, installation of total 590 MVAR of 33 kV Capacitor Bank at 36 nos. EHV Substations of WBSETCL has been planned to improve the power factor as well as system voltage profile and to reduce transmission loss in WBSETCL system.

In order to control and overcome high voltage problems in Eastern Regional grid, installation of 1 no. 125 MVAR switchable bus reactor at Arambag 400 KV substation has been considered.

90% of the project cost for the above two schemes will be funded from PSDF as Grant.

### **CENTRAL SECTOR TRANSMISSION SYSTEM WITHIN THE STATE:**

4.10 POWERGRID maintains 1 (one) no  $\pm$  800 kV HVDC & 400 kV Substation at Alipurduar, 4 (four) nos. 400 kV, 3 (three) nos. 220 kV sub-stations for evacuation of power from Central Sector Generators including power from Bhutan and for supply of power to West Bengal. Apart from this, one 400 kV switching station at Berhampur has been developed by POWERGRID for supply of power to Bangladesh (500 MW).

POWERGRID is also constructing another 400 kV sub-station at Rajarhat for supply of power to West Bengal.

In order to provide reliable and secure power supply within the State from various future generation sources and also to facilitate power exchange with the neighboring States/Regions under various operating conditions, Central Electricity Authority (CEA) has already approved construction of 2 (two) nos. 765 kV sub-stations under Tariff Based Competitive Bidding (TBCB) at Midnapur and Jeerat under Regional Scheme. POWERGRID Midnapur – Jeerat Transmission Limited has obtained the LOI for development of this project through TBCB route which was planned to be completed by 2021-22.

Presently around 4000 MW power can be received from Central Transmission Utility (CTU) system. After establishment of planned 765 kV systems, this capacity would be increased substantially and West Bengal Grid security would be further strengthened. Adequate quantum of power can be imported or exported as per the situation.

### **Renewable Energy**

5. In the perspective of present power scenario in West Bengal, focus area for application of Renewable Energy Technologies (RETs) have been shifted to make the grid greener by increasing the share of renewable energy in the total energy mix of the state. State Government is continuously putting efforts to develop Renewable Energy based project in a long term perspective to address the growing power needs of the economy while enhancing energy security and providing opportunities for mitigating green house gas emission.

The activities associated with promotion and development of Renewable Energy in the State is being looked after by West Bengal Renewable Energy Development Agency (WBREDA) being the State Nodal Agency (SNA).

RE Sector is not matured like conventional fossil fuel based power system and being nurtured by various policies, regulatory

frame work. With introduction of RPO, West Bengal Power Distribution Company Limited (WBSEDCL) has also come forward to explore MW level RE projects with innovative ideas in the State. WBPDCCL has also taken up voluntarily initiative to deploy MW level Solar Power project within their jurisdiction in line with the primary objectives of the State Government.

## Solar Power

5.1 West Bengal is now nearing 100% village electrification, the need of electricity at the farthest and remotest villages are at present primarily met from grid source. As a result need for off-grid solar systems in the State is diminishing. However, in few isolated un-electrified hamlets, which are geographically isolated particularly in Island and Char areas, the unmet demand of electricity is partially fulfilled by small solar PV systems.

WBSEDCL has already identified few hamlets and char areas, where electricity will be met from Renewable Energy Sources.

During 2017-18, WBREDA has electrified two public libraries in Hooghly District with Solar PV systems each of capacity 1.5 kWp and also deployed LED lighting system for efficient uses of solar electricity. WBREDA also has electrified eight health facilities in Sundarbans with stand alone type solar PV power plants with battery backup of cumulative capacity 100 kWp. The BPHC's/Health Centers are:

Name of sites	Capacity	Date of commissioning
Gosaba BPHC	20 kWp	10/8/2017
Chottomoilakhali PHC	20 kWp	20/8/2017
Indrapur PHC	20 kWp	10/8/2017

Name of sites	Capacity	Date of commissioning
Bally-II GP HQ	5 kWp	10/8/2017
Shambhunagar GP HQ	5 kWp	19/8/2017
Mousuni PHC	20 kWp	19/8/2017
Rakhalpur GP HQ	5 kWp	13/8/2017
Lahiripur GP HQ	5 kWp	20/8/2017

During 2016-17 and 2017-18, WBREDA has arranged 3000 solar lanterns for distribution among the families who have no access to electricity so far. District wise distributions of solar lanterns are as follows:

Sl. No.	District Name	No. of Solar Lanterns(Sets)	Date
1	Purba & Paschim Burdwan	527	28.10.2016 & 28.06.2017
2	Bankura	180	19.10.2016
3	Purba Medinipur	373	21.10.2016
4	Murshidabad	500	26.10.2016
5	Nadia	400	21.10.2016
6	Coochbehar	800	28.10.2016 & 22.03.2017
7	North 24 Parganas	42	18.11.2016
8	Purulia	5	28.10.2016
9	Dakshin Dinajpur (Individual)	01	15.12.2016
10	Pollution Control Board	100	31.05.2017

5.2 On the other hand, government has given importance to use solar energy in grid connected mode in urban areas. The benefit of using grid connected rooftop solar system is mainly to supplement grid electricity consumption and availing net metering benefit. Grid connected MW level solar power plants, Roof-top solar power with net metering arrangements are likely to play a significant role in the future.

As of now, small rooftop solar PV Power Systems of about 21.216 MW have been installed in West Bengal through various initiatives. A few examples are: Installation at Garden Reach Shipbuilders & Engineers Limited (500 kWp), Auckland International Limited (750 kWp), Metro Rail (450 kWp), Ludlow Jute & Specialties Limited (1.2 MWp), Rotary Children Welfare Trust (40 kWp), Ordnance Factory Board, Auckland Road (100 kWp) etc. All these power plants are connected to the grid in Net-Metering mode which has reduced the use of grid electricity. Govt. of West Bengal has also taken up some major program for setting up of such grid connected PV power plants.

**Some of the major projects completed by WBREDA are:**

- Grid Connected Rooftop Solar PV System at 18 colleges of cumulative capacity 340 kWp
- Grid Connected Rooftop Solar PV System at four Universities of cumulative capacity 350 kWp
- Grid Connected Ground Mounted Solar PV Project of capacity 200 kWp at DPL, Durgapur
- Grid Connected Rooftop Solar PV System of capacity 50 kWp at West Bengal Judicial Academy
- Grid Connected Rooftop Solar PV System of capacity 20 kWp at Bikalpa Shakti Bhavan

- Grid Connected Rooftop Solar PV System of capacity 30 kWp at Indian Institute of Foreign Trade, Kolkata
- Grid Connected Rooftop Solar PV System of cumulative capacity 90 kWp at two District Courts

Apart from the above initiatives, Govt. of W.B. has taken a major initiative to install Roof Top Grid Connected Solar PV power plant at different schools in the State to supplement their energy consumption and to reduce electricity bill. So far 642 schools have been energised with Solar Power.

### **Aloshree Program:**

5.3 The Government of West Bengal has conceived a program Christened as "**Aloshree**" with an objective to install Grid Connected Solar Photovoltaic (GRTSPV) System in all government buildings and buildings of local bodies with technically fit for such installations.

Under "Aloshree" programme, WBREDA is in the process of installing Grid connected Rooftop solar PV system of cumulative 2MWp on the roof of different Government buildings. The work is in progress. In addition WBPDCCL has also been assigned to set up GRTSPV systems of cumulative capacity 10.8 MW on the roof of their establishment and Thermal Power stations and the installation work is in progress. WBSEDCL has also taken up similar initiative for setting up such grid connected power plant of cumulative capacity of 10.5 MW at different buildings of the establishment of WBSEDCL and WBSETCL.

### **Innovative Project:**

5.4 WBREDA has taken up an innovative project of solar tree (artifacts). Under this project, two solar trees each of having 3 kWp solar PV modules shall be set up at the "Bidyut Unnayan Bhawan". The solar tree concept expected to take a big role to

utilize compact space for accommodation of solar PV modules on canopy like structure, easy cleaning arrangement with aesthetic look.

## **Wind Power**

5.5 Wind power potential in West Bengal has been estimated to be about 22 MW at 100 m height. In order to validate the estimation of wind power potential, WBREDA has given clearance to National Institute of Wind Energy, Chennai for installation wind monitoring stations at Freserganj and Ganga Sagar.

WBREDA also intends to revamp the existing 2 MW Wind power Project at Freserganj and consulted the experts of National Institute of Wind Energy. National Institute of Wind Energy has submitted a feasibility report and the report is now under consideration.

WBREDA has submitted a project proposal for installation of a 1.25 MW Solar wind Hybrid Power Plant at Ganga Sagar in 24 Parganas (S) district in the premises of the existing Wind Power Project.

WBREDA has identified few potential locations along coastal line of Bay of Bengal for setting up of wind power Projects. NIWE has concluded pre feasibility study at Ganga Sagar and submitted report to WBREDA. The report is being examined.

## **Solar Water Heating System**

5.6 Solar Water Heating Technology is matured and time tested. It is now cost effective for both household and industrial applications. WBREDA is trying to encourage usage of solar heating systems to supplement cooking gas and electricity for the purpose of heating water for bathing, cooking and also for industrial applications. As of now, more than 22500 LPD of Solar Water Heating Systems have been installed in the State. WBREDA

is in the process of installing Solar Water Heating Systems of cumulative capacity 31,100 LPD at 82 Homes and Hostels under Social Welfare and Backward Class Department.

### **Skill Development:**

5.7 Renewable Energy Technology is an emerging technology. The use of renewable energy is increasing rapidly in the state. The installation base of such projects are increased many folds. There will be a huge requirement of trained man power for installation and maintenance of such projects in near future. Considering this aspect, WBREDA has taken skill development programme with MNRE, Government of India to increase the trained man power in the field of renewable energy. In the year 2017-18, WBREDA has facilitated to conduct four nos. skill development training program through an NGO and an Engineering Colleges with a target to develop 120 heads. Of skilled man power in Renewable Energy field.

With these submissions, I would now request the Hon'ble Memeber to kindly consider the budget proposals included in the Demand no. "43" for **Rs. 2638,64,72,000.00 (Rupees Two Thousand Six Hundred and Thirty-eight Crore Sixty-four Lakh Seventy-two Thousand only)** and to kindly approve the same.