



# Hydel Bullet

A Monthly Publication Of the Kerala State Electricity Board Engineers' Association

Issue - 5

Vol - 4

May 2016

## HERALDING A NEW ERA...

A new Government have taken charge of the affairs of the State and a new Minister has taken charge of the Ministry of Power. We congratulate the new Government as well as the new Minister and extend them all support for their developmental initiatives. Incidentally, the new Chief Minister happens to be the Minister for Power in his earlier tenure and during that period, he had put his stamp and authority for his administrative capabilities.

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**Congratulations to the new electricity minister  
Sri. Kadakampally Surendran**



Sendoff given to Er. C.Babu at Thiruvananthapuram



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*Er. രാജൻ വി.*

### ➤ ഉൾജ്ജ സംരക്ഷണത്തിനൊരു

ചെറിയ വലിയകാര്യം *Er. ഇ.എം. നസീർ*

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*കുമാരി പ്രഭാ പാൽരാജ്*

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Lot of challenges are there in the power sector that needs to be tackled urgently by the new Government. Major challenge is the revival of stalled generation projects which are at various stages of implementation and in which huge amount of money is already invested. All out efforts are to be taken for reviving the construction of the stalled ongoing projects like 60 MW Pallivasal Extension scheme(PES) and 40 MW Thottiyar HEP which are driven into a mess. The issues need to be sorted out for restarting the activities by initiating discussions with the concerned and keeping in mind the interests of the organisation. The latest Government order issued in this regard for the foreclosure of these projects needs to be reviewed. It is needless to point out that foreclosure will not give us the desired goal of additional power inspite of investing hugely over the years but can only be of much relief to the Contractor. Environmental clearance obtained for projects like Athirappilly HEP is to be put to use at the earliest. Clearance for the Pathrakadavu HEP is to be secured. Financial and technical issues are to be cleared for the Brahmapuram and Cheemeni projects.

Similarly, highest priority should be given to the stalled projects in the transmission sector. The construction of 400 kV, Edamon- Kochi line by PGCIL should be given the foremost attention. It has been in the execution phase for more than 10 years and is still nowhere near the completion stage. The opposition raised by the local public in some areas is the major hindrance towards completion of the dream project. This project will help the State in evacuating power more economically from the Kudankulam atomic power project.

The transmission infrastructure is deeply inadequate for meeting the present and the future needs. In the era of open access and power trading, Extra High Tension transmission lines have become the major power corridors for purchase and sale of electricity, which can be a major revenue source for our utility in the future, since we have high capacity hydel reservoirs which can provide power during off-peak hours. The TransGrid project launched by the previous Government is an ideal launch pad for meeting the goals of the transmission sector. But the ambiguity in funding of the project needs to be resolved in a transparent manner considering its long term impacts. To meet the entire capital funding for this project, availing of some low cost external assistance like that availed for Kochi metro/KSTP PWD projects could even be considered for completing the project in time. The TransGrid projects need to be prioritized based on the value addition, scope of revenue generation, investment requirement, time for completion etc. to mitigate the risk to the organisation. All financial and technical analysis, including risk analysis, shall be conducted in detail to ensure the feasibility of the project as huge investment is involved.

In the distribution sector, though adequate funding in the form of Central aid and other assistances from other funding agencies like REC/PFC are available, the goal should be for timely completion of the projects. Hence the ongoing RAPDRP projects should be speeded and complete it in time. Similarly the newly launched projects like DDUGJY and IPDS shall be commenced immediately. For the smooth progress of any project, timely decision is a must. →



## SOLAR ENERGY

*Vincent Varghese*  
Executive Engineer  
Transmission Division,  
Thodupuzha.



### Introduction

Solar energy is the most readily available source of energy. It does not belong to anybody and is therefore free. It is the most important non-conventional source of energy, because it is non-polluting and helps in lessening the green house effect.

Solar energy has been used since prehistoric times, but in a most primitive manner. Before 1970 some research and development was carried out in a few countries to exploit solar energy more efficiently, but most of this work remained mainly academic. After the dramatic rise of oil prices in 1970s several countries began to formulate extensive research and development programme to exploit solar energy.

When we hang out cloths to dry in the sun, we use energy of the sun. In the same way solar panel absorbs the energy of the sun to provide heat for working and heating water. Such systems are available in market under being used in homes and factories.



The other domain which requires attention is the IT sector, where the projects extend for long years. Lot of procedures are yet to be computerised and the goal of a paperless office is still resting in papers. We urge to launch an ERP software in KSEBL for Business process re-engineering, so that the entire work process in our organisation can be computerised in a more user friendly manner.

The next priority should be on for revamping the HR sector, where unwarranted external influences have damaged the credibility of the organisation. Even though online mode has been declared for transfer and postings, things are still happening in the primitive fashion for obvious reasons. Several top posts are rearranged frequently leading to confusion among the

top brass. It is disappointing that even after becoming a public limited company; we have not yet settled down with a clear organisational hierarchy.

In general, lot of issues are remaining to be addressed by the Government. Apart from this, in the context of the proposed Amendments to the Electricity Act 2003, wherein the content and carriage is proposed to be segregated, the Government will have to shell out extra efforts to retain the unique structure of our organisation. Let us all come together and work for the bright future of our organisation.

Once again KSEBEA extend warm greetings to the new Government and offers all support in the efforts of the Government for the betterment of the organisation and the State at large.



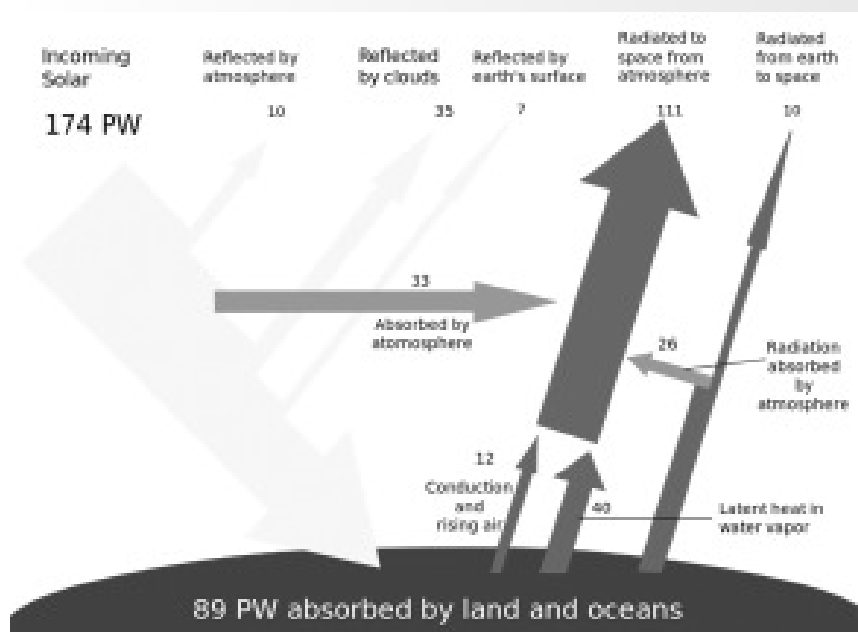


In the next few years it is expected that millions of households in the world will be using solar energy as the trends in USA and Japan shows. In India too, the Indian renewable energy development agency and ministry of non conventional energy sources are formulating a programme to have solar energy in more than a million households in the next few years. However the people's initiative is essential if the programme is to be successful.

India is the one of the countries with long days and plenty of sun shines especially in the Thar desert region. The zone having abundant solar energy available is suitable for harnessing solar energy for a number of applications.

A 140MW integrated power plant is to be set up in Jodhpur. The main disadvantage of this system now facing is that initial expense incurred is very high. Also the space required for installing a solar panel is very high. For generation of 100W power, 1m<sup>2</sup> solar panel is required. In Kerala CIAL (Cochin International Airport Ltd) set up solar power plant of capacity 12MW which is self sufficient for the full operation of airport. Solar power plant can also set up as floating type as in Banasura Sagar Dam.

### Solar Potential an Overview



In one second, our sun produces enough energy to meet the current needs of the entire earth for 500000 years (5 Lakh years)!

The Earth receives 174,000 terawatts (TW) of incoming solar radiation (insolation) at the upper atmosphere. Approximately 30% is reflected back to space while the rest is absorbed by clouds, oceans and land masses. The spectrum of solar light at the Earth's surface is mostly spread across the visible and near-infrared ranges with a small part in the near-ultraviolet. Most people around the world live in areas with insolation levels of 150 to 300 watts per square meter or 3.5 to 7.0 kWh/m<sup>2</sup> per day.



Solar technologies are broadly characterized as either **passive** or **active** depending on the way they capture, convert and distribute sunlight and enable solar energy to be harnessed at different levels around the world, mostly depending on distance from the equator.

**Active solar techniques** use photovoltaics, concentrated solar power, solar thermal collectors, pumps, and fans to convert sunlight into useful outputs. **Passive solar techniques** include selecting materials with favorable thermal properties, designing spaces that naturally circulate air, and referencing the position of a building to the Sun. **Active solar technologies increase the supply of energy and are considered supply side technologies, while passive solar technologies reduce the need for alternate resources and are generally considered demand side technologies.**

### Solar Power

Solar power is the conversion of sunlight into electricity either using photovoltaics (PV) or indirectly using concentrated solar power (CSP). Concentrated solar power systems use lenses or mirrors and tracking systems to focus a large area of sun light in to a small beam. Photovoltaics convert light into an electric current using the photovoltaic effect.

### Applications

SPV (Solar Photo Voltaic cell) can be used a number of applications.

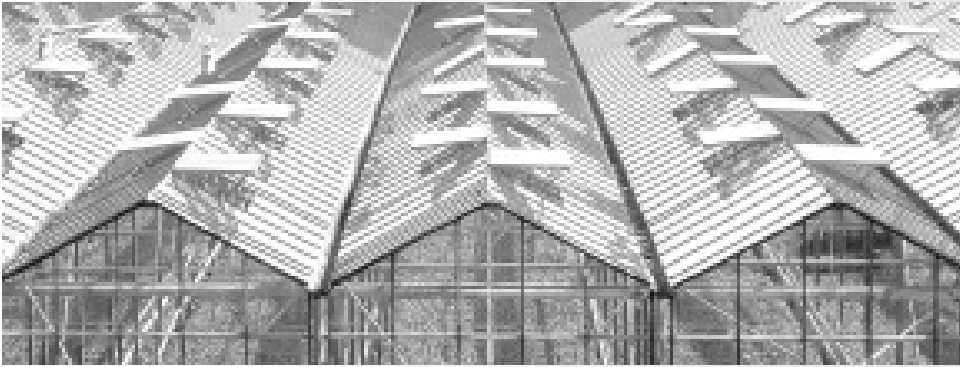
1. Domestic lighting.
2. Street lighting.
3. Village electrification.
4. Water pumping.
5. Desalination of salt water.
6. Powering remote telecommunication repeater stations.
7. Railway signalling.
8. Navigation



*Solar electric aircraft*



## 9. Agriculture and Horticulture



*Greenhouses like these in the Westland municipality of the Netherlands grow vegetables, fruits and flowers*

### Some of the gadgets using solar SPV



*Parabolic dish produces steam for cooking, in Auroville, India*

1. Solar cooker.
2. Solar pumps.
3. Solar ponds.
4. Solar hot water systems.



*Solar water heaters facing the Sun to maximize gain*







## THE BIG LIE-2

ഡോ. സി. രാമചന്ദ്രൻ

മുൻ ഡെ.ചീഫ് എൻജിനീയർ

**Big Lie**യെക്കുറിച്ച് ഹിറ്റ്ലറുടെ കാഴ്ചപാടിനെ സംബന്ധിച്ച് അമേരിക്കയിലെ ഒരു War Report ഇങ്ങനെ എഴുതി.

His primary rules were (1) Never allow the public to cool off, (2) Never admit a fault or wrong. (3) Never concede that there may be some good in your enemy. (4) Never leave room for alternatives (5) Never accept blame (5) Concentrate on one enemy at a time and blame him for every thing that goes wrong (6) People will believe a big lie sooner than a little one and if you repeat it frequently enough people will sooner or later believe it'

ഇത് നമ്മുടെ നേതൃത്വം കൃത്യമായി നടപ്പാക്കുന്ന രീതി ശ്രദ്ധിക്കൂ..

1. ഒരിയ്ക്കലും ജനങ്ങൾ ശാന്തരായിരിക്കാൻ അനുവദിക്കരുത്. (പള്ളി മുതൽ ലാവ്ലിൻ തുടങ്ങി സരിതാമ്മ വരെ ഒന്നും തന്നെ കെടാതെ അവർ സൂക്ഷി യ്ക്കുന്നുണ്ടല്ലോ.
2. ഒരിയ്ക്കലും തന്റെ തെറ്റ് സമ്മതിക്കരുത്. (ഏതെങ്കിലും ഒരു നേതാവ് തെറ്റ് സമ്മ തിയ്ക്കുമോ, സ്വയം പീഡനം നടത്തി നേടിയ കേസിനും തെളിവ്

ആവശ്യപ്പെടുന്നവരല്ലേ. ചെയ്തവൻ സമ്മ തിച്ചാലും ചെയ്തിച്ചവൻ തെറ്റ് സമ്മതി യ്ക്കാൻ അനുവദിയ്ക്കില്ലല്ലോ)

2. എതിരാളിയിൽ ഉള്ള യാതൊരു നല്ല ഗുണവും ഒരിയ്ക്കലും അംഗീകരിയ്ക്ക രുത്. എപ്പോഴും അവനെ കുറ്റം പറഞ്ഞു കൊണ്ടേയിരിയ്ക്കണം. (മഴ പെയ്താലും പെയ്തില്ലെങ്കിലും ഇടി വെട്ടിയാലും വണ്ടി മറിഞ്ഞാലുമെല്ലാം).
4. ഒരിയ്ക്കലും ഒരു പ്രശ്നവും പരിഹരി യ്ക്കാൻ അനുവദിക്കരുത്. (നമ്മൾ കൊണ്ടുവന്ന ബില്ലാണെങ്കിലും മറ്റവൻ പാസാക്കാൻ അനുവദിക്കരുത്. പിണ്ണാക്കു തന്നില്ലെങ്കിൽ അപ്പോൾത്തന്നെ ചക്കിൽ കാഷ്ഠിക്കണം. നമ്മുടെ അഭിപ്രായം തന്നെ മറ്റവൻ പറഞ്ഞാൽ പല്ലും നഖവും ഉപയോഗിച്ച് എതിർത്തുകൊള്ളണം.
5. ആർ എന്തു പറഞ്ഞാലും കുലുങ്ങരുത്. തികഞ്ഞ സത്യമായാലും ഒരുതരത്തിലും അംഗീകരിയ്ക്കരുത്. നോട്ടു കെട്ടു സ്വന്തം മടിക്കുത്തിൽ കണ്ടെത്തിയാലും ഗൂഢാ ലോചനയെന്നോ തനിയേ വന്നെന്നോ ഐ എസ് ഐ കൊണ്ടു വച്ചതാണെന്നോ ഏതു ചാനലിനു മുനിലും നാണിയ്ക്കാ തെയും മാനിയ്ക്കാതെയും തട്ടി വിട്ടു

### CONCLUSION

Solar power is anticipated to become the world's largest source of electricity by 2050, with solar photovoltaics (SPV) and concentrated solar power (CSP) contributing 16 & 11 percent to the global overall consumption respectively. We have proved the commercial profit of sun power in the tropics and have more

particularly proved that after our stores of oil and coal are exhausted the human race can receive unlimited power from the rays of the sun. But at present technology maximum 30% to 40% of conversion of solar energy to electrical energy is possible. This is the main bottle neck for the solar power production.



## Kochi Metro

Kochi has become the busiest place of the state due to the proximity of Airport, Sea port and Container Terminal of International connectivity. Floating population is the highest in Kochi compared to any other districts. The roads are congested and busy and hours of traffic jam make the road journey hellish. The number of four wheelers has doubled than that of 5 years before and two wheelers has trippled. Metro is expected to bring a relief to the situation. Test runs are being successfully conducted for short distance and first stage is expected to be operational by the end of December 2016.

As a matter of interest for Electrical Engineers I would like to share some informations I know about electrical systems related to Kochi Metro.

### Power to Muttom Yard for Kochi



U.S. Ravindran (Rtd. EE)

Metro is fed from Substation Kalamasserry through 2 numbers of 110 KV dedicated feeders.

Approximately 3.2 Kilometers of 6.30 mm Aluminium underground cables connects KSEB yard at Kalamasserry and Metro GIS at Muttom. About 300 meters of this double circuits passes through R.C.C. trench in KSEB compound. Cables in trefoil formation are clamped to angle iron brackets fixed at 75 cm intervals throughout on two sides of the trench. Control and communication are acheived by two numbers of optic fibre cables laid

കൊള്ളണം. അർദ്ധരാത്രിയ്ക്കു ബന്ധമില്ലാത്ത സുന്ദരിയുമായി പിടികൂടപ്പെട്ടാലും പെണ്ണ് കിടക്കാനിടമില്ലാതെ യാചിച്ചതാണെന്നു പ്രഖ്യാപിയ്ക്കണം. വേണമെങ്കിൽ ചില സദാചാര ചർച്ചകൾക്കു വേണ്ടിയാണെന്നും പറയണം.

6. എല്ലായ്പ്പോഴും ശ്രദ്ധമുഴുവനും ഓരോ ശത്രുവിലായിരിയ്ക്കണം. (ഓരോ സമയത്ത് മുഖ്യശത്രു രാഷ്ട്രീയത്തിൽ മാറിക്കൊണ്ടിരിയ്ക്കുമല്ലോ). എന്തിനും ഏതിനും അവനെ നിരന്തരം കുറ്റപ്പെടുത്തിക്കൊണ്ടിരിയ്ക്കണം. അതും വളരെ ഗൗരവമായിത്തന്നെ.

7. വലിയ വലിയ കള്ളങ്ങൾ ആരെക്കുറിച്ചും എന്തിനെക്കുറിച്ചും ഇടമുറിയാതെ തട്ടിവിട്ടാൽ ജനങ്ങൾ ഇന്നോ നാളെയോ വിശ്വസിച്ചുകൊള്ളുമെന്ന സത്യം എപ്പോഴും ഓർക്കുക.

ഈ തിരകൾ ഇനി ഔദ്യോഗികമായി പാഠ്യപദ്ധതിയിൽപ്പെടുത്തിയാൽപ്പോരേ? ബാക്കിയെല്ലാം ആയില്ലേ?





in parallel to the UG cables through HDPE pipes. At places where cable passes through marshy areas where excavation is not possible due to collapsibility of soil and railway crossings, cable is drawn through HDPE pipes pre-laid by horizontal direct drilling methods. At all other places cable are directly laid in soil at a depth of 1.8 m in a 1.2 m wide trench with 10 cm sand cushioning with protective slabs and warning tapes before back filling with soil and compacting. Along the 3.2 km route, the cables are joined at six locations inside 6 joint bays of 8 m X 2 m in size and 1.8 m in depth.

The corrugated aluminium tubular armouring is cross bonded through link boxes and earthed at all joint boxes. The very special joint kits are supplied by M/s. Raychem and jointing works is executed by skilled technicians of M/s. Raychem. Joints are also covered by 70 cm of sand and protected by slabs. The balance portion of joint bays are back filled after laying warning tapes with soil and covered with top cover slab to match with road level for normal traffic.

The receiving substation RSS at Muttom end is a gas insulated substation with duplicate 110 KV bus bar arrangements. 2 Nos. of 25 MVA transformers step down 110 KV to 33 KV. 33 KV via duct cables along the route of elevated Metro track feeds power to all auxiliary

substation ASS 1 and ASS 2 at 22 Stations from Aluva to Petta. Auxiliary substations ASS 1 has 200 KVA 33 KV/ 440 V auxiliary power supply and 33 KV/530 V - 530 V traction power supply. Auxiliary power supply feeds loads of lighting, operational control centre and SCADA panels of control centre. 530 V - 530 V is fed to a rectifier which gives out 750 V DC for traction purposes intended to feed the third rail installed by the sides along the route of elevated metro tracks. At Muttom traction substation feeds complete yard, inspection bay live, test track and gives connectivity to ramp. ASS 2 - auxiliary substation 2- is controlled from ASS, and equipped with 200 KVA 33 KV/440 V auxiliary transformer which feeds other lighting A/c and pump loads. One more R.S.S. is planned at Thykoodam and to be fed from Vyttila Ss.

There are eight numbers of traction (induction) motors of 275 KW each for every metro train. 750 DC supply from third rail is tapped by moving contacts and converted to 3 phase 440 V A/c by the controller in the moving engine (rolling stock) and speed control is achieved by variable voltage frequency method (3 VF).

Hope our metro will bring a great relief to the public like Delhi Metro and will considerably reduce the air pollution of the Area.





# ഊതി വീർപ്പിച്ച് ചാനൽ വാർത്താ പ്രളയം



Er. രാജൻ. വി

കഴിഞ്ഞ രണ്ട് മാസമായി ഏതാണ്ട് ഇരുപതോളം മലയാളം ചാനലുകൾ, നാല്പതിനായിരം ചതുരശ്ര കിലോമീറ്ററിൽ ചുരുങ്ങിക്കിടക്കുന്ന നൂറ്റിനാല്പത് അസംബ്ലി മണ്ഡലങ്ങളിലെ തിരഞ്ഞെടുപ്പു വിശേഷങ്ങളാണ് 24 X 7 സൈലിയിൽ സംപ്രേഷണം ചെയ്തു കൊണ്ടിരിക്കുന്നത്. പ്രധാനവാർത്താ സമയങ്ങൾപോലും കളഞ്ഞിട്ടാണ് ഈ കലാപരിപാടി നടത്തുന്നത്. വാർത്താ ചാനലുകളെന്ന് പേരെയുള്ളൂ, കൊച്ചുവർത്തമാനമാണ് പ്രധാനമായും നടത്തുന്നത്. അപ്രധാനമായ മണ്ഡലത്തിലെ സ്ഥിരമായി കെട്ടിവച്ച തുക നഷ്ടപ്പെടുന്ന സ്വതന്ത്ര സ്ഥാനാർത്ഥിയുടെ വീണ്ടുമുള്ള നാമനിർദ്ദേശ സമർപ്പിക്കൽപോലും തസ്തമയമായിട്ടാണ് ഈ ചാനലുകൾ കാണിക്കുന്നത്; അത്രയ്ക്ക് വിഷയദാരിദ്ര്യമാണ് അവർ അനുഭവിക്കുന്നത്. വ്യർത്ഥമായ ഈ ഇരുപത്തിനാലുമണിക്കൂറുമുള്ള ജല്പനങ്ങൾ ശ്രദ്ധിച്ചിരിക്കുന്ന സാധാരണ മനുഷ്യന്റെ സാമാന്യ ബുദ്ധി നശിച്ചില്ലെങ്കിലെ അതിശയമുള്ളൂ. മാധ്യമങ്ങൾ സത്യം മാത്രമെ ജനത്തെ അറിയിക്കുകയാണ് പൊതുജനം ധരിച്ചിരിക്കുന്നത്. പക്ഷെ അവർ മത്സരത്തിന്റെ ബഹളത്തിൽ അർദ്ധസത്യങ്ങളും ഊഹാഭോഹങ്ങളും പറഞ്ഞുകേൾവിക്കളയാക്കുകയാണ് സത്യമെന്ന വ്യാജേന ജനത്തിന് നൽകുന്നത്. പത്രധർമ്മമൊക്കെ പഴംകഥ. ഈ ബഹളത്തിനിടയിൽ നടക്കുന്ന ജിഷ കൊലപാതകം; സുപ്രീംകോടതിയുടെ അപകീർത്തി കേസും അഭിപ്രായസ്വാതന്ത്ര്യത്തിനെതിരെയുള്ള ഉത്തരവ് എന്നിവ ഈ മാധ്യമങ്ങൾക്ക് കാര്യമായി ശ്രദ്ധിക്കാൻ സാധിച്ചില്ല. ഈ തിരഞ്ഞെടുപ്പ് ബഹളമില്ലെങ്കിൽ ഈ വിഷയങ്ങളിൽ ഏറ്റവുമധികം പ്രതികരിക്കേണ്ടത് നമ്മുടെ മാധ്യ

മങ്ങളാണ്, അതാണല്ലോ ഒരു പൊതുസ്വഭാവം.

നമ്മുടെ പ്രധാന രാഷ്ട്രീയ പാർട്ടികൾ ഇപ്പോൾ പൊതുവെ ചെയ്യുന്ന തിരഞ്ഞെടുപ്പ് പ്രചാരണം, വാഹന പ്രചാരണം (നടന്നാക്കൊ പ്രവർത്തിക്കാൻ ഇപ്പോൾ ആളില്ല), കുറെ ഫ്ളക്സ് വലിച്ചുകെട്ടുക, വർണ്ണഭമായ കുറെ നോട്ടീസുകൾ വിതരണം ചെയ്യുക എന്നിവയാണ്. ഇത് തന്നെ പലതും നടത്തിപ്പ് സംഘങ്ങളെ ഏല്പിക്കുകയാണ് ചെയ്യുന്നത്. പണ്ടൊക്കെ നോട്ടീസുമായി വീട്ടിൽ വരുന്ന പാർട്ടി പ്രവർത്തകർ വീട്ടുകാര്യമായി കുശലമൊക്കെ പറഞ്ഞ് വോട്ട് അഭ്യർത്ഥിച്ചുമാണ് തിരിച്ചുപോകുന്നത്. അതേസമയം, ഇപ്പോൾ വരുന്നവർ നോട്ടീസ് വരാത്തയിൽ ഇട്ടിട്ടുപോകുകയാണ് ചെയ്യുന്നത്. വീട്ടുകാരെ കാണാൻ പൊതുവെ ശ്രമിക്കാറില്ല. ചാനലുകളുടെ വ്യർത്ഥമായ ചവിട്ടുനാടകം ഇരുപത്തിനാല് മണിക്കൂറും നടക്കുന്നത് കാരണം മറ്റൊരു പ്രവർത്തനത്തിന് പ്രസക്തിയില്ലാതായി. പൊതുവെ സമൂഹത്തിൽ അനാവശ്യമായ ഇടപെടൽ നടത്തുന്ന മാധ്യമങ്ങൾ വിശേഷിച്ചും ചാനലുകളെ നിയന്ത്രിക്കാൻ ആരും രാഷ്ട്രീയ പാർട്ടികൾപോലും പേടിച്ചു ശ്രമിക്കാറില്ല. പൊതുവെ വ്യക്തിത്വമില്ലാത്ത, വോട്ടിനെ പേടിയുള്ള രാഷ്ട്രീയക്കാരാണല്ലോ നമുക്കുള്ളത്.

കഴിഞ്ഞ തദ്ദേശ സ്ഥാപനങ്ങളിലെ തിരഞ്ഞെടുപ്പു സമയത്ത് മൂന്ന് നാല് ബൂത്തുകളിൽ അനുഭവപ്പെട്ട വോട്ടിംഗ് യന്ത്രപ്രശ്നം ഒരു വലിയ ദുരന്തമാക്കിയത് ഈ ചാനലുകളാണ്. ചില യന്ത്രങ്ങളിൽ അല്പം ശക്തി



യായി ഞെക്കണമായിരുന്നു. അത് യന്ത്രത്തിൽ പശ ഒഴിച്ചിട്ടാണ്, പേപ്പർ ബട്ടനിൽ കയറ്റി വച്ചിട്ടാണ് എന്ന രീതിയിലായിരുന്നു പ്രചാരണം. വെളിയിൽ നില്ക്കുന്ന ഇവർ ഇതെങ്ങനെ മനസ്സിലാക്കിയെന്നാണ് അറിയാത്തത്. അതിനെ മുന്നൂറോളം ബുത്തുകളിൽ എത്തിക്കുന്നത് ഈ ചാനലുകളാണ്. കാര്യങ്ങൾ ശരിക്കറിയാവുന്ന കളക്ടർ യാഥാർത്ഥ്യം പറഞ്ഞിട്ടു ആർക്കും മനസ്സിലാകുന്നില്ല. എല്ലാപേരും ചാനലുകളുടെ വ്യർത്ഥമായ ജലപനങ്ങളിൽ മയങ്ങിക്കിടക്കുകയായിരുന്നു. അങ്ങനെ അവസാനം നൂറ്റിമുപ്പതോളം ബുത്തുകളിൽ വീണ്ടും പോളിംഗ് നടത്തി. കുഴപ്പമുണ്ടെന്ന് പറഞ്ഞ യന്ത്രങ്ങളിൽ വിദഗ്ദ്ധ സംഘം പരിശോധിപ്പിച്ചപ്പോൾ പ്രത്യേകിച്ച് കുഴപ്പമൊന്നുമില്ലായിരുന്നു.

ഇപ്പോൾ നടക്കുന്ന അസംബ്ലി തിരഞ്ഞെടുപ്പ് ചാനൽ ചവിട്ടു നാടകത്തിലും പ്രത്യേകിച്ചൊരു കഥയുമില്ല; സ്ഥലത്ത് നില്ക്കുന്ന ചാനൽ പ്രവർത്തകനോട് / പ്രവർത്തകയോട് സ്റ്റുഡിയോയിൽ നിന്നും കുറെ അർത്ഥമില്ലാത്ത ചോദ്യങ്ങൾ ചോദിക്കും; അപ്പോൾ കുറെ ഉത്തരങ്ങളും കിട്ടും. വൈകുന്നേരം ഇതൊക്കെ വച്ച് ചാനൽ ചർച്ചകളും നടക്കും, അതിനായി സ്ഥിരം വിദഗ്ദ്ധരും ചാനലുകളുടെ കൂടെയുണ്ട്. അവർ ചർച്ച ഏത് രീതിയിലും നയിക്കും.

കഴിഞ്ഞ പതിനാലാം തീയതി ആറ് മണിയോടെ തിരഞ്ഞെടുപ്പ് രാഷ്ട്രീയ പാർട്ടികളുടെ പ്രചാരണം കൊട്ടിക്കലാശത്തോടെ അവസാനിച്ചു. ഈ കൊട്ടിക്കലാശമെന്ന പേക്കുത്ത് തന്നെ ഈ ചാനലുകളുടെ നിർമ്മാണമാണ്. മണിക്കൂറുകളോളം ഗതാഗതം തടസ്സപ്പെടുത്താമെന്നല്ലാതെ അതുകൊണ്ട് ഒരു ഗുണവുമില്ല. പൊതുജനം ഇതൊന്നും ശ്രദ്ധിക്കാറില്ല. അവർ അല്ലാതെ

തന്നെ നല്ലരീതിയിൽ കാര്യങ്ങൾ മനസ്സിലാക്കുന്നവരാണ്. അതറിയാനുള്ള സാമാന്യ ബുദ്ധി ഇല്ലാത്തവരാണ് നമ്മുടെ രാഷ്ട്രീയ പാർട്ടികളും മാധ്യമങ്ങളും എന്നതാണ് ദുഃഖകരമായ കാര്യം.

പത്രധർമ്മത്തെക്കുറിച്ച് ഒരു ബോധ്യവുമില്ലാത്ത നമ്മുടെ മാധ്യമങ്ങളെ നിയന്ത്രിക്കാൻ ഇന്നാർക്കും സാധിക്കില്ല. പ്രസാർ ഭാരതിയൊക്കെ ശരിക്കും ഒരധികാരവുമില്ലാത്ത കേന്ദ്ര ഏജൻസികളാണ്. ഈ മാധ്യമങ്ങൾ, ചാനലുകൾ സ്വയം നിയന്ത്രണമെന്നാണ് പറയുന്നത്. അതിന്റെ ദോഷഫലങ്ങളാണ് ജനം അനുഭവിക്കുന്നതും. വളരെ ശക്തമായ ഒരു വാർത്ത ഉപകരണമാണ് ടി.വി. ചാനലുകൾ. അതിനെ സമൂഹത്തിന് ഗുണകരമായ രീതിയിൽ പ്രയോഗിക്കണമെന്നുള്ളത് സാമാന്യ നിയമം. അത് പാലിക്കുന്നതിന് പകരം ഈ അധികാരത്തെ സമൂഹത്തിന്റെ അവനിർമ്മിതിക്കായി ഉപയോഗിക്കുന്നത് ശുദ്ധ വിവരക്കേടാണ്.

ഈ ചാനലുകളുടെ അവനിർമ്മിതി കാരണം സർക്കാരുകൾക്ക് പല തലവേദനകളും ഉണ്ടാകുന്നുണ്ട്. സർക്കാരിന് ജനത്തോട് ഉത്തരവാദിത്വമുണ്ട്. അതെ സമയം ചാനലുകൾക്ക് ആരോടും ഒരു ഉത്തരവാദിത്വവുമില്ല. അവരുടെ റേറ്റിംഗിലൊഴിച്ച് അങ്ങനെയൊന്നും കുറെ നാള് മുമ്പേ രണ്ട് കുറ്റവാളികളെ മധുരയിൽ നിന്നും അറസ്റ്റ് ചെയ്തുകൊണ്ട് വരുമ്പോൾ കുറെ ചാനലുകൾ മുവിലും പുറകിലും അകമ്പടി സേവിച്ചത്. പുതിയ ഗവൺമെന്റ് അത് മനസ്സിലാക്കണം. ചാനൽ ചർച്ചകളിൽ കൂടിയല്ല സർക്കാരിന്റെ നയരൂപീകരണം നടത്തേണ്ടത്. അതേപ്പോഴും ഗവൺമെന്റിന്റെ രാഷ്ട്രീയ വിശ്വാസങ്ങൾക്കനുസരിച്ചായിരിക്കണം. ചാനലുകൾക്ക് നഷ്ടപ്പെടാനൊന്നുമില്ലെന്ന കാര്യം പ്രത്യേകം ശ്രദ്ധിക്കുക.





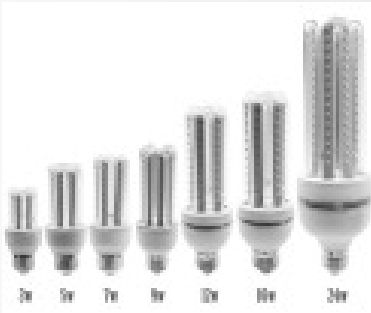
## ഊർജ്ജ

# സംരക്ഷണത്തിനൊരു ചെറിയ വലിയകാര്യം

ഊർജ്ജ സംരക്ഷണത്തിന് വളരെയേറെ സഹായമാണ് എൽ.ഇ.ഡി. ബൾബുകളുടെ ഉപയോഗം. ഇക്കാര്യം ലക്ഷ്യമിട്ട് എഞ്ചിനീയേഴ്സ് അസോസിയേഷൻ കഴി

ഞ്ഞവർഷം ഒരു മാതൃകാ നടപടിക്ക് തുടക്കം കുറിച്ചു. സംഘടനയുടെ തിരുവനന്തപുരം യൂണിറ്റിന്റെ കൂടുംബ സംഗമവേളയിൽ ഗിഫ്റ്റായി അംഗങ്ങൾക്ക് നൽകിയത് എൽ.ഇ.ഡി. ബൾബുകളായിരുന്നു. പല വീടുകളിലായി ഊർജ്ജ സംരക്ഷണോപാധികളായി അവ ഇന്നും പ്രവർത്തിച്ചുകൊണ്ടിരിക്കുന്നു.

ഈ പുരോഗമനാശയം മറ്റു സംഘടനകളും പ്രസ്ഥാനങ്ങളും പിന്തുടരുമെങ്കിൽ വൈദ്യുതി ചെലവേറിയ നിലവിലുള്ളതിനാവശ്യമായി വൈദ്യുതി വിളക്കുകളുടെ സ്ഥാനത്ത് എൽ.ഇ.ഡി. ബൾബുകളെ പ്രയോജനപ്പെടുത്താനാകും. ഗൃഹപ്രവേശം, വിവാഹം, കൂട്ടികളുടെ കലാകായിക മത്സരങ്ങൾ തുടങ്ങിയവയ്ക്കൊക്കെ നൽകുന്ന സമ്മാനങ്ങൾ എൽ.ഇ.ഡി. ബൾബുകളുടെ വിലയ്ക്ക് സമാനമാണെങ്കിൽ സമ്മാനങ്ങളായി എൽ.ഇ.ഡി. ബൾബുകൾ നൽകുന്നതു തന്നെയാണ് കാലോചിതം. ഇതുവഴി വളരെയേറെ വൈദ്യുതി പ്രത്യേക ചെലവൊന്നുമില്ലാതെ ലാഭിക്കാനാകും. സമ്മാനദാതാവിനും സ്വീകർത്താവിനും നാടിനും ഒരുപോലെ ഗുണകരവും. ഈ മാതൃകാ നടപടിക്ക് വ്യാപകമായ പ്രചരണം ലഭിച്ചാൽ നേട്ടത്തിന്റെ കാര്യത്തിൽ ഏറെ മുന്നോട്ട് പോകാനുമാകും.



Er. ഇ.എം. നസീർ

മലയാളത്തിലെ പ്രമുഖ പത്രങ്ങൾക്ക് ഈ നിർദ്ദേശമടങ്ങിയ കുറിപ്പ് അയച്ചുകൊടുത്തതാണെങ്കിലും അത് പ്രസിദ്ധീകരിച്ച് നല്ലൊരാശയം ജനങ്ങളിലെത്തിക്കാൻ ആരും താൽപര്യമെടുത്തില്ലെന്ന കാര്യം ഖേദപൂർവ്വം അറിയിക്കട്ടെ. കേരളത്തിൽ വൻവിലയ്ക്ക് വൈദ്യുതി വിൽക്കാൻ മത്സരിക്കുന്ന സ്വകാര്യസ്ഥാപനങ്ങളുടെ കൊള്ളലാഭ ലക്ഷ്യം പരാജയപ്പെടുമോയെന്ന് ആരൊക്കെയോ ഭയക്കുന്നു....!!! വൈദ്യുതി ഉപയോഗം കുറഞ്ഞുപോയാൽ കച്ചവടം പൊടി പൊടിക്കില്ലല്ലോ. ഊർജ്ജാല്പാദനം വർദ്ധിക്കുന്നതുപോലെ ഊർജ്ജസംരക്ഷണവും ഒരേ സമയം നടക്കുന്നതാണ് യുക്തിസഹം. കേരളം ഉപഭോക്തൃ സംസ്ഥാനമാണെന്ന ദുഷ്പേര് വളരെ മുമ്പേ സമ്പാദിച്ചിട്ടുണ്ടല്ലോ. ഈ ദുഷ്പേര്ത്തിന് ത്വരകമാകാൻ വൈദ്യുതിയെയും പ്രയോജനപ്പെടുത്താനാണ് പലർക്കും താൽപര്യമെന്ന കാര്യം നാം തിരിച്ചറിയുക. വൈദ്യുതി മേഖല സ്വകാര്യവൽക്കരിക്കും; ഇതുമൂലമുള്ള ദോഷഫലങ്ങൾക്കും അതിനുവേണ്ടി നിലകൊള്ളുന്നവരുടെ സ്ഥാപിത താല്പര്യങ്ങൾക്കും വിധേയരാകാൻ നമുക്കധികം കാത്തിരിക്കേണ്ടിവരില്ല.







## ☞ Regulators launch study to simplify power tariffs



# Indian Power Sector Roundup

Power regulators have launched an internal study to look into various options of designing 'progressivity' in tariffs. The trigger is the mismatch between the average tariff and cost of supply, barriers put up by states in providing open access, and high subsidy and cross subsidy.

A forum of regulators member told Business Standard that in several states, tariff structure is too complex. Each consumer category is further split into many sub-categories and such structure is preventing the consumers from responding to tariff signals. "Some electricity regulatory commissions (ERCs) have already introduced some degree of progressivity in the tariff setting. However, the actual degree of change in behaviour based on price signals given is yet to be looked into," he said.

He explained that progressivity in power tariff rates means an increase in tariff with a higher consumption level, which helps in tariff reduction for those who are at the bottom of society.

Some ERCs are looking into an option of reduction in the several slabs within the domestic category to three slabs comprising 1-50 units, 51-100 units and 101 units and above. Such tariff structure would obviate the need for passing on the deficit between the average cost of supply and average tariff of domestic consumer category to other categories of consumers.

V Raja, former chairman of Maharashtra Electricity Regulatory Commission, said: "Competition critically is good destination to reach but that can take place only through open access. As far as designing progressive tariff for domestic consumers is concerned, it can be done through creation of balancing fund, which can be maintained at the level of power regulators."



He suggested the government would have to continue to provide subsidy for low-end consumers (those in the 0-100 unit category) and this will differ from state to state. The fine-tuning can be done by the regulators.

According to Raja, in case of agriculture tariff, the regulators can consider higher tariff for cash crops and lower for non-cash crops.

According to Deloitte Touche Tohmatsu India's Partner (Consulting) Debasish Mishra, despite the intention set out in the Electricity Act 2003 on progressive reduction of cross-subsidy, industrial, commercial and high-end residential consumers pay much higher tariffs than the cost to service them. "The quantum of subsidy and cross-subsidy that is needed for rural, residential and agriculture segment would only increase in the near future with rising universal access. This can only come from efficiency gains on the cost side such as lower transmission and distribution losses and lower fuel cost, as the tariffs in the subsidising categories cannot go up any more."

*(Source : Business standard)*



### **Power connection on demand soon: GoI**

In a bid to make electricity available to all, the government of India plans to launch a scheme under which consumers can pay for the new connection in monthly installments over a period of 5 years and will be able to avail the service on demand.

"We are thinking of launching a campaign to make it compulsory to provide electricity connection to all. We want to provide this facility to everyone that if he or she asks for electricity connection then it must be provided," power minister Piyush Goyal said at a conference organised to mark the completion of two years of the NDA regime.

The minister further said, "Poor people get electricity connection free of cost. But for those who are above poverty line, the amount paid for new connection will be charged through equated monthly installments in five years. We are working on such scheme and soon launch it."

On Wednesday, the minister had said, "We want to keep it (application for power connection) simple. Then we would ask our people to get the power connection. We won't wait for them to apply."

He had also said, "I am actually telling my officers that they have to go to peoples' homes, make a simple half-page format, (ask them to) just give Aadhaar number, e-mail, address and mobile number, and sign it, saying I am desirous of a power connection and follow all rules and terms. That is it."

On the occasion, Goyal also advocated cross-subsidisation of power tariff and said, "Indian farmer deserves to get low cost power. We support cross subsidisation by larger commercial or industrial establishment for other consumers."



The minister also said the government is working on a policy for reverse auction for wind power projects on the lines of solar power projects, which witness lowering of tariff to below Rs 5 per unit.

At present, wind power projects are awarded on the basis of feed in tariff which is provided by the regulator on the basis of costs of land, equipment and other services.

About the village electrification, the minister expressed confidence that the target of electrifying 18,452 villages will be achieved a year ahead of the set deadline of May 1, 2018.

"We will electrify all 18,452 villages by May 1, 2017, a year ahead of targeted deadline of May 1, 2018," the minister said.

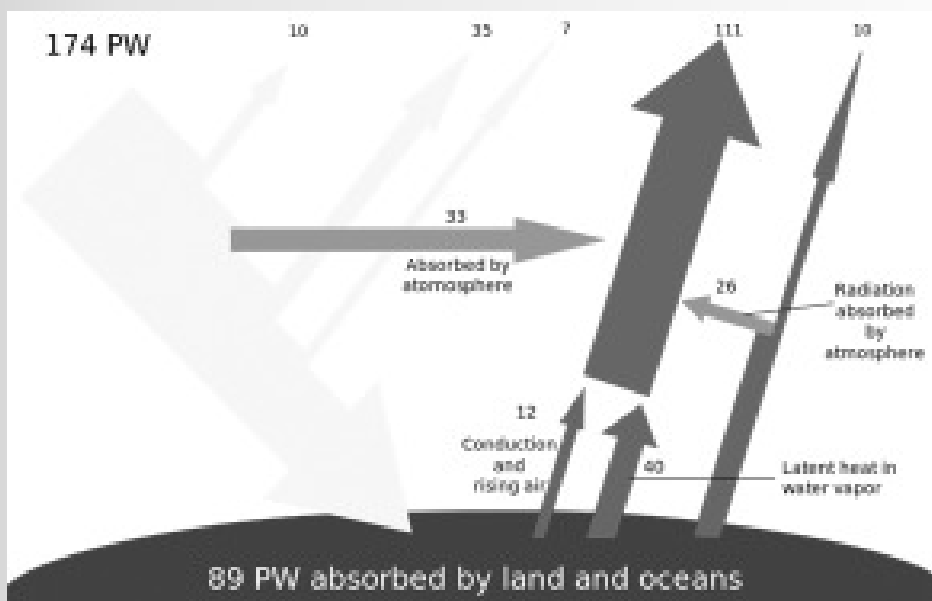
However, he said that "there may be a few aberrations (consumers) that may be from very dense forest, left wind extremism affected area or possibly a consumer who does not want power or one does not apply for power."

"I am very confident with the achievement of the two years gone by and with the roadmap being prepared for next three years... (the government will achieve) transformational results," he added.

While Goyal was talking here about the government's initiatives to boost electricity supply in the country, there was a power outage for a few minutes at the conference venue.

(Source : Kashmir Reader)

## ☞ Storing The Sun's Energy Just Got A Whole Lot Cheaper





With prices dropping rapidly for both renewables and battery storage, the economics of decarbonizing the grid are changing faster than most policymakers, journalists, and others realize. So, as part of my ongoing series, "Almost Everything You Know About Climate Change Solutions Is Outdated," I will highlight individual case studies of this real-time revolution.

My Monday post discussed the Federal Energy Regulatory Commission's (FERC) report that in the first quarter, the U.S. grid added 18 megawatts of new natural gas generating capacity, but 1,291 MW of new renewables. But one of FERC's "Electric Generation Highlights" for March deserves special attention as a leading indicator of the revolutionary new economics of solar plus storage:

Half Moon Ventures LLC's 4.2 MW Minster Solar Project in Auglaise County, OH is online. This project includes an energy storage capacity.

The Minster "solar + storage system is the largest U.S. facility of its kind connected through a municipal utility," according to S&C Electric Company, which built and integrated the storage system. It combines a 4.3-MW photovoltaic systems and a 7-MW/3-MWh storage management system that provides power conversion with lithium ion batteries.



The lithium-ion-based storage system used in Minster.



How does a storage system based on lithium-ion batteries make economic sense? The answer is: in a few different ways, with a system called "revenue stacking." It's worth taking a slightly wonky look at how such a system can stack or combine multiple revenue sources, since this is a defining feature of the game-changing new economics of solar energy plus storage.

To get the scoop on the system, I spoke to S&C's Director of Grid Solutions, Troy Miller, who described this as "one of the first, if not the first" energy storage system to allow so many different revenues sources. The company has also posted online the full case study.

### **Capturing the Multi-Faceted Value of Energy Storage**

First, this system lets Half Moon Venture sell into PJM's market for frequency regulation. PJM is the regional transmission organization that coordinates wholesale electricity movement and maintains grid reliability for over 60 million customers in 13 Eastern and Midwestern states and the District of Columbia. Frequency regulation is "the injection and withdrawal of power on a second-by-second basis to maintain grid frequency at 60 Hz."

To make this happen, "the battery system was sized for frequent charging and discharging cycles." The control platform for the system was designed "to interface with PJM market interfacing software to enable the system to follow a signal from PJM." The system analyzes both grid conditions and market pricing to determine how to optimize revenues by either dispatching to or absorbing electricity from the grid.

Second, the Village of Minster had a major power quality problem - "occasional low power factor," which wastes energy and requires expensive equipment to fix. Minster had been planning to install \$350,000 worth of capacitor banks dedicated to dealing with this issue. But S&C was able to design the storage system to "provide power-factor correction concurrent with frequency regulation services." That saved Minster \$350,000.

Third, the system will allow Minster to reduce peak mid-day demand charges. Utilities typically charge customers a fee whose size depends on the maximum power consumed during a day since, they argue, they have to maintain enough capacity to deal with the very biggest peak demand they might see - typically during a hot summer day.

For a large electricity user like Minster, "PJM looks at the five highest two-hour peak load periods across its entire territory" at the end of a given year. PJM then assesses the user a "Peak-Load Contribution" charge based on how big the peak is. In Minster's case, it is some 11 megawatts. To save Minster money, S&C designed their energy storage system software "to predict when these peaks would occur" and, when they do, to "switch from providing frequency-regulation services to demand response ser-



vices." The system should be able to shave Minster's peak demand some 2 MW.

The bottom line, according to Miller, is "Revenue stacking is one of the quickest ways to create a strong return on investment for energy storage systems." He expects to see a lot more projects like these in the future.

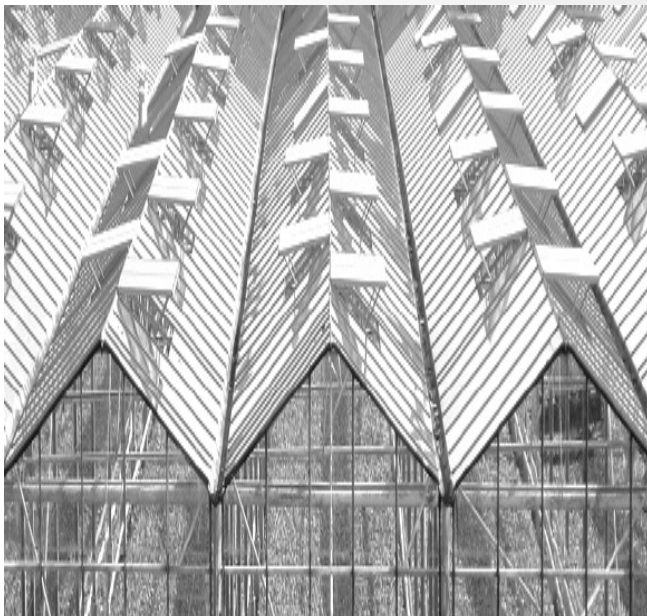
I asked him how much the sharp drop in battery prices had opened the door to such projects. Miller explained that battery prices had come down by a factor of three in the last few years, which greatly "expands available opportunities that are currently in the money." Lots of stuff that didn't make economic sense now does.

We already know there are a number of ways to greatly increase the penetration of renewable energy using existing hardware and software. What we are now witnessing is the dawn of a revolution that will enable lithium-ion batteries to play a larger and larger role in that increased penetration.

Renewables are more unstoppable than ever. The only questions that remain now are 1) will we embrace the kind of aggressive deployment programs needed to avoid catastrophic global warming, and 2) will we nurture a domestic market that will maintain U.S. leadership in key job-creating low carbon technologies, or will we outsource more jobs to China and Europe.

*(Thinkprogress)*

## ☞ Installed solar capacity touches 7,000 MW by April



The fate of almost 1,000 megawatt of solar power capacity in India's solar programme hangs in balance even after a month and a half since US-based SunEdison declared bankruptcy.

Despite this the Ministry of New & Renewable Energy is confident of meeting its targets of adding 12,000 MW of capacity in 2016-17 and 15,000 MW of capacity in 2017-18. India's total installed solar power capacity stands at around 6,998 MW as on April 30.

"There are no stranded projects as of now. The only doubt is





whether SunEdison's projects will take off or not. We are still waiting for clarity from the company on the same. Even if they are unable to commission their projects, we would always have the option of bidding them out again," said a senior official of the Ministry of New & Renewable Energy. SunEdison has 450 MW of solar projects already operational, but uncertainty is more over the yet to be commissioned 1000 MW. The company on its part has been maintaining that it is committed to India projects but is open to selling some stake in them.

The official added that since the tendering process has been completed for more than the targeted capacity addition for 2016-17, the developments at SunEdison will not impact the Ministry's targets. Overall in the country, tendering is already complete for 15,500 MW of solar power capacity and another 5,500 MW of tenders are expected to come in the next couple of months.

### **AP, Telangana on top**

The States leading the way in solar capacity addition are Andhra Pradesh and Telangana, which has helped raise the solar power capacity in the country. Both these States have seen a three-fold and five-fold increase respectively in solar power capacity in the last six months, according to the Ministry data.

In Telangana, installed solar power capacity stood at 527 MW on April 30, up from around 91 MW on November 30, 2015. In Andhra Pradesh the capacity stood at 792 MW on April 30, up from about 283 MW on November 30, 2015. Punjab has also doubled its solar power capacity over the last six months. On April 30, the State had 405 MW of installed solar power capacity as compared with 200.32 MW on November 30, 2015. Solar power consultancy firm Bridge To India expects the country to be the fourth largest market for solar power globally with installed capacity expected to cross 10,000 MW.

*(Source : Business line)*



### **Himachal to get India's first solar wind power plant**

State-run Himachal Pradesh Electricity Board Ltd (HPEBL) and Solar Energy Corp of India (SECI) on Wednesday signed a pact to set up India's first solar wind hybrid power plant in the hill state.

The agreement was signed by Managing Directors P.C. Negi of HPEBL and Ashwani Kumar of SECI in the presence of Chief Minister Virbhadra Singh here.

Under the agreement, joint venture Himachal Pradesh Solar Power Corp Ltd has been set up to commission a pilot solar wind hybrid power project of 2.5 MW at Rangrik in Kaza in Lahaul-Spiti district.

It will be commissioned by October 2017, a government statement said. On completion, it would benefit 12,000 habitants of Rangrik, Kaza, Tabo, Losar and Pin valley.

Its estimated cost would be Rs.30.72 crore.



The entire Lahaul-Spiti district, where the solar wind hybrid plant will come up, is populated mainly by tribals. The climate in the district is harsh as much of the land forms part of a cold desert where the mercury drops below minus 20 degrees Celsius during winter.

*Source : Business Standard*

## **☛ Power Tribunal's Compensatory Tariff Decision: Time to Take a Fresh Look at Competitive Bidding?**



The ministry of power's standard-form case-1 bid documents for power procurement by the state distribution utilities (Discoms) from coal-based power projects were issued



in 2005. Various Discoms held competitive bids to procure power using these bid documents and winning bidders included Adani, Coastal Gujarat Power and Tata Power. Long-term power purchase agreements were executed between these power producers and the Discoms. Most of these bidders premised their bids on a mix of domestic and Indonesian coal in their power plants. Subsequently, the Indonesian government changed their domestic coal policy and benchmarked coal prices to prevailing international coal prices, negating any price negotiated in private contracts. This resulted in a steep rise in fuel costs and these power producers approached the Central Electricity Regulatory Commission (CERC) requesting a pass-through of the increased costs to the Discoms by increasing the tariffs. The CERC concluded that there was no provision under these power purchase agreements that allowed such pass-through of costs. However, given the severe impact of increased fuel costs on power producers, the CERC allowed them compensatory tariffs as relief. The CERC's decision was appealed by the Discoms before the Appellate Tribunal for Electricity (APTEL).

The APTEL recently passed an order in this matter, which is a landmark judgement in a number of ways. As well explained by Ashwini Chitnis and Shantanu Dixit in an earlier article, the order is a good judgement as it upholds the sanctity of power purchase agreements and prevents the use of discretionary powers by the CERC to trump them. It also clears the air with respect to what actually should be or is the role of regulatory commissions in the context of competitive bidding regimes.

However, perhaps the more interesting feature of the order is the APTEL's comment that "the statutory objective of electricity legislation in India is to not only protect the consumers' interest but to also make electricity available at reasonable prices to ensure that the sector sustains itself on the returns it gets, because if the sector perishes, the consumer will suffer. Cheapest price is desirable but at the same time it must be reasonable and sustainable."

This statement provides excellent guidance to policy makers, encouraging them to design competitive bidding regimes which balance risks and rewards amongst power producers, consumers and the government. A corollary to this is that if the bidders assume risks that are beyond their control when it is economically irrational for them to do, alarm bells should go off for the government. The design of the bid documents allowed bidders to take such economically irrational risks, leading to the problems that, in turn, led to the case being brought before the CERC in the first place. Let us see how this played out.

### **Long-term commodity price based contracts**

Globally, economists and law makers recognise price volatility of commodities as a key risk which can significantly affect economic activities which depend heavily on commodity inputs. Consequently, the use of economic tools to protect against such price volatility, such as indexing commodity prices, passing-through variable costs and hedging the risk of increased costs in long-term commercial contracts, is common.



This is certainly the case where the economic activity in question involves the generation of electricity using fossil fuels. As we know, the supply and prices of fossil fuels are highly influenced by international political and economic events such as instability in West Asia, OPEC's decisions with respect to oil supply and price and in the present context, the pushes and pulls of Indonesian domestic politics which led Indonesian coal prices being indexed to prevailing international coal prices. Therefore, in most countries, competitive bidding regimes awarding long-term power purchase agreements require bidders to quote escalable or variable fuel costs as part of their bids. Such escalation is usually linked to standard commodity market indices, which help ensure stability of returns on investment and a sustainable supply of power at reasonable prices. Bid documents may also specify a floor price, below which bidders are not allowed to quote their tariffs. These mechanisms prevent against aggressive bidding and the selection of bidders quoting tariffs which are, *prima facie*, likely to be unsustainable through the term of a 20-25 year power purchase agreement. Bids that are designed with such precautionary measures are more likely to result in contracts that achieve the balance between protecting consumers' interest and ensuring reasonable returns on power producers' investments, as alluded to in the APTEL judgement.

### **Where the Ministry of Power's bid documents went wrong**

In the Indian context, the 2005 bid documents gave bidders the option to quote either escalable or non-escalable fuel costs. To quote the cheapest price with the objective of winning the bid, power producers quoted aggressively, largely by opting for non-escalable fuel costs. The government, on its part, with the single-minded objective of procuring power at the cheapest price, regardless of whether such prices were sustainable or not, selected the lowest tariff. Subsequently, as mentioned above, the Indonesian fuel prices increased dramatically, leading to litigation with power producers pleading before the CERC to allow increased fuel costs to be passed through to consumers. There is no question that power producers are culpable for having exercised their choice to quote non-escalable fuel costs. Perhaps they felt that they would win the bid and come back to the counter-party i.e. the Discoms or the regulator and seek tariff escalation using, as in this case, force majeure or change in law provisions in the power purchase agreements. In that, APTEL is justified in having turned down their plea for compensatory tariff. However, with little more insight, it becomes clear that the bidding system itself had inherent deficiencies which offered the opportunity for it to be gamed.

Given that corporations operate on the theory of maximisation of profits and the government's own experience in competitive bidding in the other sectors of the economy, by giving bidders the option to quote non-escalable fuel costs, the government either failed to apply its mind or was complicit in designing bid documents which they knew (or should have known) could be taken undue advantage of.





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	Er.Santhosh Menon (Central)	
	Dr.Binu Shankar(South)	
SIPEF/AIPEF	Er.George Mathew	
	Er.B.Sreekumar	
Assistance to Juniors	Er.Induchoodan	
	Er.Subha TG	
	Divya R.G	



Website Committee	Er.Vidya Raja Gopal	
	Er.Zaheera Mahln	
	Er.Mujeeb	
	Er.Ramu.V.S	
	Er.KrishnaKumar M- Convener	
	Er.Vivek VS	
	Er.Nahas Mohammed Shamim	
	Er. Shine Sebastian	
	Er.Anil.T.P	
	Er.Radhakrishnan	
Regulatory Affairs	Er. C P George	
Auditors	Er.Bipin Sankar Periyamana	(Ex-officio)
	Er.Radhakrishna kumar	
	Er.Harikrishna.A	

കവിത

## ജന്മാന്തരങ്ങളിൽ പ്രിയ സഖി നീ.....

(അന്നു മാതാപിതാക്കൾ സാക്ഷിയായ്  
 മുപ്പതുമുക്കോടി ദേവകൾ സാക്ഷിയായ്  
 കൊട്ടും കുരവയും വീണ മീട്ടവേ  
 കണ്ടുനാം സ്വപ്നങ്ങൾ ഒരു കുഞ്ഞിക്കാലുകാണാൻ;  
 കാലചക്രം കറങ്ങിത്തീരിയവേ  
 അനപത്യതാ ദുഃഖം കരളെ പിളർക്കവേ  
 എത്ര നേർച്ചകൾ നേർന്നു നമ്മൾ  
 എത്ര പരിഹാരങ്ങൾ ചെയ്തു നമ്മൾ  
 താമര മിഴിയാളേ നിൻ മിഴിനീർ  
 എൻ നയനങ്ങളെ ഈറനണിയിക്കുമ്പോള-  
 റിഞ്ഞില്ലാ നിൻദേഹമെന്നിക്കുമ്പോ  
 ദേഹിവിട്ടു പോകുമെന്ന്;  
 ഇണയില്ലാ ജീവിതം ജീവിത പാടമെന്ന്  
 നിന്നിലെ സനഭഗമെന്നെ വിളിക്കവേ  
 കീടങ്ങൾക്കെന്റെ ഭൗതികം ആത്മ സമർപ്പണം -  
 ചെയ്യവേയപ്പോഴും പാടി ഞാൻ  
 ജന്മാന്തരങ്ങളിൽ പ്രിയസഖി നീ.....  
 ജന്മാന്തരങ്ങളിൽ ഞാൻ കണ്ട ദൈവം നീ.....

**കുമാരി പ്രഭാപാൽരാജ്**  
 (D/o. Er. H. Palraj,  
 Dy. Chief Engineer)







## Letters by Association



### KSEB ENGINEERS' ASSOCIATION

TC 26/1300, Engineers House, Paravita, Thiruvananthapuram-680001  
 Tele.No. 0471-2330896, FAX No. 0471-2330853, Website : ksebea.in  
 E-mail: ksebea@gmail.com

**President**  
 Dr. E. Mohammed Shareef

**Vice-President (South)**  
 Er. Bipin Sankar Periyarama

**Vice-President (North)**  
 Er. N.T. Job

**General Secretary**  
 Er. G. Shaji Kumar

**Organising Secretaries**  
 Er. B. Mahanth (S)  
 Er. V.S. Vivek (N)

**Treasurer**  
 Er. V. Vishnu Prabhu

**Secretaries**  
 Er. M. Mohammed Rafi (HQ)  
 Er. M. Krishna Kumar (S)  
 Er. K. Naganaja Bhat (N)

KSEBEA/Letters/2016-17

09-05-2016

To

**The Chairman & Managing Director,  
 Kerala State Electricity Board Ltd.**

Sir,

Sub:- Sanctioned strength of employees in KSEBL- concerns- reg.

Ref:- FTD note dated 15-04-2016 originated by the Chief Engineer (HRM)

In view of the FTD note under reference, we may be permitted to present the following concerns and facts in connection with the sanctioned strength of employees which is a long pending issue in KSEB Ltd.

The sanctioned strength has been arrived based on some of the Board Orders at the time of re-organization of **Profit Centers** during the year 2002. But the fact is that the 2002 Board order is exclusively for the Distribution Profit Center. Subsequent Board Orders were issued in 2009, for the re-organization of Transmission wing. But unfortunately, similar re-organization orders do not exist in the case of Generation Profit Center. Apart from this, formation of SCM & IT wings, Chief Engineer offices, Transmission circles, formation of offices in connection with RGGVY, APDRP and a large number of deployments especially in the cadre of AEE, from the 92 shelved places are not seen included in the note. It may be noted that the FTD note is mainly focusing on Distribution Profit Centre only.

More over, the sanctioned strength of corporate wing cannot be identified, as most of the offices are reformed / renamed with new staff pattern, not in line with the old Board Orders, after re-organization. Hence, the sanctioned strength of corporate offices may not be assessed with the old & out dated Board Orders. There are so many deployment orders existing in the case of Generation & Transmission wings, those places were well identified before the issuance of the AE upgradation order in 2014.

Knowingly or unknowingly so many fact are hiding in the case of technical staff especially in the case of Asst.Engineers & Asst.Eee.Engineers. Copy of some of the sample cases are enclosed for your kind information.

Hence, it is requested that the final list of sanctioned places may be arrived only after detailed study, based on the prevailing Board Orders and need based requirements of the concerned wings, so that the concerns and ambiguities in connection with the staff strength can be avoided.

It is requested that the matter may please be considered favorably.

Yours faithfully,

  
 GENERAL SECRETARY

Acc;

Copy to:

The Director (Finance), KSEBL  
 The Director (GS/HRM), KSEBL  
 The Chief Engineer (HRM)



## BOARD ORDERS



### Abstract

Eligibility for Family Pension to parents and unmarried daughters above 25 years of age widowed disabled daughters and divorced disabled daughters -enhancement in income limit - Adoption of Government order - Sanctioned -Orders issued.

### CORPORATE OFFICE (ADMINISTRATION)

B.O.(FTD) No. 302/2016 (Estt.V/88/2016) Dated, Thiruvananthapuram, 27.01.2016.

### ORDER

Sanction is accorded to adopt G.O.(P) No.155/15/Fin dated 28.04.2015 for implementation in the Kerala State Electricity Board Limited (copy appended).

By Order of the Full Time Directors,  
Sd/-

R. RAJASEKHARAN NAIR,  
SECRETARY (ADMINISTRATION)

### GOVERNMENT OF KERALA

### Abstract

Eligibility for Family Pension to Parents and unmarried daughters above 25 years of age widowed disabled daughters and divorced disabled daughters - enhancement in Income limit -Revised - Orders - issued.

### FINANCE (PENSION-B) DEPARTMENT

### ORDER

As per Government Order read above, Government have enhanced income limit referred to in Rule 90(6A) (i) of part III Kerala Service Rules as ₹ 15,000/- per annum enabling parents and unmarried daughters above 25 years widowed disabled daughters and divorced disabled daughters and solely dependent on the deceased for maintenance and having no other source of income. Several request have been received to enhance the limit of the above annual income.

2. Government after having examined the matter, are pleased to order that the income limit referred to in Rule 90(6A) (i) part III Kerala Service Rules in the case of parents and unmarried daughters above 25 years widowed disabled daughters and divorced disabled daughters, will be revised to ₹ 30,000/- per annum.
3. These Orders will take effect from 01.04.2015.
4. The amendment to the Rule 90 (6A) (i) of Kerala Service Rules part III will be issued separately.

By Order of the Governor,  
**Dr. K.M. ABRAHAM**  
Additional Chief Secretary (Finance)



## KERALA STATE ELECTRICITY BOARD LIMITED

(Incorporated under the Indian Companies Act, 1956)

CIN : U40100KL 2011 SGC 27424

Reg. Office: Vydyuthi Bhavanam, Pattom, Thiruvananthapuram - 695 004, Kerala - 695004

Phone : 0471 - 2514472, 2514455 FAX No. 0471 - 2514472

website: www.kseb.in. e-mail : pokseb@gmail.com

### ABSTRACT

Arranging retirement function on the date of retirement of employees - Sanctioned - Orders issues.

### CORPORATE OFFICE (PERSONNEL)

B.O. (CMD) No. 1347 / 2016 (PS 1/3764 / PR / 2016) Thiruvananthapuram,  
Dated : 02-05-2016

### ORDER

In Vydyuthi Bhavanam, Pattom, Thiruvananthapuram, the retiring employees are honored with a memento at the official retirement function organised on the date of retirement of the employee and the refreshment expenses incurred in this regard is being met by Kerala State Electricity Board Limited. However it has come to the notice of Kerala State Electricity Board Limited. However it has come to the notice of Kerala State Electricity Board Limited that employees retiring from certain other offices are not being honored by an official retirement function.

The recognized Trade Unions, during the pay revision discussions have demanded that an official function may be arranged for the retiring employee at the office concerned on the date of his /her retirement as a matter of precedence and presented with a memento in honour of the meritorious service rendered.

Taking into consideration of the good intention involved, Kerala State Electricity Board Limited has decided that it is appropriate and advisable to organize an official retirement function inviting family members at the office from which the employee retires on the date of retirement in his / her honour subject to the following.

1. A memento not exceeding ₹ 1500 be presented to the retiring employee at the official function conducted in his /her honour on the date of retirement. The expenditure incurred on this behalf be borne by Kerala State Electricity Board Limited.
2. Refreshments be arranged at the retirement function@ ₹ 25 person for a maximum of 50 persons including the family members of the retiring employee with a total expenditure not exceeding ₹ 1,250 which will be borne by Kerala State Electricity Board Limited.
3. The Head of Department / Head of the ARU from where the retiring employee drawing salary is authorized to incur the above expenses on behalf of Kerala State Electricity Board Limited and is authorized to convene such function on the date of retirement of the employee.
4. The expenses incurred on account of the above be debited and accounted in the Administration & General Expenses account - other expenses ( 76.190) of the ARUs concerned.

By Order of the Chairman & Managing Director  
Sd/-

**R. Rajasekharan Nair**  
Secretary (Administration)



## KERALA STATE ELECTRICITY BOARD LIMITED

(Incorporated under the Indian Companies Act, 1956)

Reg. Office: Vidyuthi Bhavanam, Pattom, Thiruvananthapuram - 695 004, Kerala - 695004

Phone : 0471 - 2514610, 2514274, 251 4624, E-mail : ceit@kseb.in

website: www.kseb.in. CIN : U40100KL2011SG027424

### ABSTRACT

Changing Billing Cycle of Net Metered Consumers to facilitate Banking and Settlement of Renewable Energy - Orders issued.

### CORPORATE OFFICE (IT & CR)

B.O. D(D&S) No. 1349 / 2016 (IT/CU/Solar/2016-17) Thiruvananthapuram, dated 02/05/2016

Read : Note No. IT/CU/Solar/ 2015 - 16/ dated 31-03-2016 of the Chief Engineer (IT & CR)

### ORDER

The Chief Engineer (IT & CR) in the note read above reported that for the implementation of KSERC (Grid interactive Distributed Solar Energy Systems) Regulations - 2014, a software module is to be developed and integrated with OrumaNet, the LT billing software for facilitating banking and settlement of renewable energy. As per the regulations, the eligible consumer in time of the day (ToD) billing system or in non - time of the day (non - ToD) shall be entitled to use the quantum of electricity banked by the consumer and the eligible consumer shall have the right to avail open access for wheeling the excess electricity generated by the solar energy system installed in one of the premises of the consumer and to use such excess electricity in other premises owned by the consumer within the area of supply of the licensee.

The Chief Engineer (IT & CR) further reported that to develop the net metering software, the billing period of the net metered consumer and the consumer's other premises where adjustment has to be done, need to be altered to monthly billing cycle so that the electricity injected into the system and the electricity drawn by the consumer can be measured, accounted and settled as per the regulations.

Having considered the recommendation of the Chief Engineer (IT & CR) and considering the fact that only limited number of cases come under this category, sanction is accorded to change each of the eligible net metered consumer and the consumer's other premises where adjustment has to be done, to monthly billing cycle so that the electricity injected into the system and the electricity drawn by the consumer be measured, accounted and settled as per the KSERC regulations.

By Order of the Director

Sd/-

**R. Rajasekharan Nair**

Secretary (Administration)



## KERALA STATE ELECTRICITY BOARD LIMITED

(Incorporated under the Indian Companies Act, 1956)

Registered Office: Vydyuthi Bhavanam, Pattom, Thiruvananthapuram-695004

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Fax: +91 471 2448213 E-mail: trac@ksebn.net website www.kseb.in

CIN: U40100KL2011SGC027424

### Abstract

Implementation of Standards of Performance Regulations, 2015 approved by KSERC - Orders issued.

### Corporate Office (Commercial & Tariff)

B.O. (FTD) No. 1235 /2016 (KSEB/TRAC/SOP /R3 /2015) Tvpm. dated 21-04-2016

**Read :** 1. Government of Kerala Gazette No. 66 dated 11.1.2016

2. Note No. KSEB/TRAC/SOP/R3/2015/2698 dated 2.4.2016 of the CE(C&T)

Kerala State Electricity Regulatory Commission (Standards of Performance of Distribution Licensees) Regulation, 2015 was notified in the Kerala Gazette read as 1st paper above. The above regulation came into force with effect from 11.1.2016. Chief Engineer (Commercial & Tariff) as per the note read as 2nd paper above, recommended for implementation of Standards of Performance Regulations.

Having considered the note, Board decides:

1. to authorize the Chief Engineers (Distribution) to prominently exhibit the new standards of performance in all distribution offices under their jurisdiction.
2. to authorize the office of the Director (Distribution & Safety) to prepare the list of difficult areas for submitting before the Commission for approval
3. to authorize Chief Engineer (SCM) to ensure adequate stock of LT/HT meters and CT/PT units so that the time limit as prescribed by SOP in replacing the faulty meters is achieved
4. to entrust the planning wing under the Director (Corp. Planning & SCM) to prepare the additional investment plan, as required, to meet the enhanced requirements specified under Standards of performance regulations.
5. to entrust Chief Engineer (IT&CR) to ensure assigning unique number to every consumer within 3 months of notification of SOP regulations and prepare scheme for mapping the consumers as envisaged under regulation 9(2) within the specified time limits.
6. to authorize Chief Engineer (IT&CR) to develop a reporting interface to generate the specified reports (Regulation 19) in an automated environment based on Annexure I&II of the Regulation.
7. to entrust the distribution Advisory Committee with the work of preparation of manual of procedure for processing complaints within the time limits.
8. to entrust Chief Engineer (HRM) with the training of field staff regarding new SOP in a time bound manner.

Orders are issued accordingly.

By order of the FTD

Sd/-

R. Rajasekharan Nair  
Secretary (Administration)



## KERALA STATE ELECTRICITY BOARD LIMITED

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CIN: U40100KL2011SGC027424

### Abstract

Review of Methodolgy suggested in Method III of Annexure VI of the Board Order (FB) No. 2518/2013 dated 28-11-2013 sanction accorded - Revised orders issued.

### Corporate Office ( Commercial & Tariff)

B.O. (FTD)No. 1389/KSEBL/TRAC/S Code/UAL/R2/2016/2016 -17 dtd : Tvpm 05/05/2016

- Read :
1. Board Order (FB) No. 2518/2013 dated 28-11-2013
  2. Note LG No. 7926/2015 dated 12-02-2016 of LA & DEO to CE (C&T)
  3. Amendment in Regulation 153 (15) of supply Code 2014 vide notification dated 11-01-2016 of Hon'ble KSERC
  4. Note No. KSEB/TRAC /SCode /UAL/R2/2016 -17/2757 dated 23-04-2016 of the Chief Engineer (Commercial & Tariff)

### ORDER

As directed by the Hon'ble KSERC to formulate guidelines and detailed procedure to be followed in the case of inspection and detection of unauthorised use of elcectricity, orders were issued as per Board order read as 1st paper above incorporating measures for preventing unauthorized use of electricity and detailed procedure to be followed during inspection, provisional assessment on detection of UAL, hearing , final assessment, handling appeal and its final disposal.

The LA & DEO, in the note read as 2nd paper above has communicated to the Chief Engineer (Commercial & Tariff), the direction of Director (Distribution & Safety) in File No. 7926/15 of LA & DEO to review the methodology suggested in Method -3 of Annexure 6 to the B.O. (FB) No. 2518 / 2013 dated 28-11-2013 in the back drop of the order of the Appellate Authority in Appeal No. 48/ 2014 to limit the penal assessment to the unauthorized portion of load only, subject to the provisions of section 126 (6) of Electricity Act 2003.

Method -3 of Annexure 6 to the Board Order (FB)No. 2518/2013 dated 28-11-2013 stipulates that :

" When the load factor of authorised load and unauthorised loads are similar and no base period could be rationally arrived at for estimating the average consumption prior to the introduction of unauthorised load, then the method of apportioning the consumption due to unauthorised load on prorata basis as below may be followed.

The provisional bill may be prepared for a period of 12 months with the new connected load (which includes the UAL) and FC & CC are arrived accordingly. The total of FC & CC amount thus arrived to be multiplied by 2. From this resultant amount, the amount already paid by the consumer is to be deducted to obtain the final amount in respect of the provisional assessment".

Based on the direction of the Director (Distribution & Safety), the Chief Engineer (Commercial & Tariff) as per note read as 4th paper above had submitted before the Full Time Directors, the proposal to modify the methodology by limiting the penalization to the UAL only.





Having considered the note of the Chief Engineer (Commercial & Tariff) the Board hereby decides to adopt the methodology prescribed in Method - 3 of Annexure 6 of the B.O. dated 28-11-2013 as follows:

When the load factor of authorised load and unauthorised loads are similar and no base period could be rationally arrived at for estimating the average consumption prior to the introduction of unauthorised load, then the method of apportioning the consumption due to unauthorised load on pro-rata basis as below may be followed, in the case of consumers billed on the basis of connected load.

Unauthorised consumption for each month of the 12 months prior to the date of inspection / detection of UAL =  $(\text{Total recorded consumption for the month}) \times \frac{\text{UAL}}{\text{New connected load (including UAL)}}$

After assessing the energy consumption due to unauthorised additional load for each of the 12 months prior to the date of inspection / detection of UAL, the penal charges shall be assessed as prescribed below.

- (A) Penal Fixed charges for 12 months = Fixed charges of the tariff applicable  $\times$  UAL  $\times$  12 (no. of months assessed)  $\times$  2
- Penal Energy Charges for each months = Energy charges of the tariff applicable (highest applicable slab in case of telescopic tariff based on recorded total consumption)  $\times$  assessed unauthorised consumption for the month  $\times$  1 (since one time energy charges has already been billed through normal bill)
- (B) Penal energy charges for 12 months prior to the date of inspection / detection of UAL = Sum of the penal energy charges for each month as calculated above.
- (C) Total Penal charges = (A) + (B)

By order of the Full Time Directors

Sd/-

R. Rajasekharan Nair  
Secretary (Administration)



## Letters to the Editor

**കത്തുകൾ അയക്കേണ്ട വിലാസം**

Chief EditorHydel Bullet,  
KSEB Engineers' Association, Panavila  
Thiruvananthapuram - 01, Phone : 0471 - 2330696  
Email :hydelbulletin@gmail.com



## PIB Release

### ☞ EESL Distributes LED Bulbs Under “UJALA” in the Range of

#### Rs. 75-95 across 16 States

The LED bulbs under Government of India's *Unnat Jyoti by Affordable LEDs for All* (UJALA) scheme are being distributed across 16 States in the country in the price range of Rs 75- 95. The project, executed by Energy Efficiency Services Limited (EESL), under the administration of Ministry of Power, procures high quality LED bulbs from leading manufacturers through a transparent bidding process. In the latest round of procurement, which ended on March 31, 2016, the lowest procurement cost was Rs. 54.90 (exclusive of taxes and administrative costs).

The government, through aggregation and transparent procurement has achieved a rapid decline in LED prices. In the first round of procurement held in January 2014, EESL achieved the lowest bid at Rs. 310. The prices for the subsequent procurements for other states, during September 2014 to February 2015, ranged between Rs. 204 to Rs. 104.

EESL has pooled the prices of all the previous procurements since 2014 and the passed on the direct benefit to the consumers across states. Various state-specific taxes and other administrative costs like distribution, awareness, etc are added to the pooled procurement price. Therefore, the cost of the LED bulb has been brought down to a price range of Rs. 75 - Rs. 95, after addition of administrative costs, distribution and awareness cost. Therefore, the variation in the final cost of the bulbs is owing to the difference in taxes across states.

The Government has ensured transparency and encouraged competition by using e-procurement of goods and services. This has resulted in significant reduction in transaction cost and time and enhanced process efficiency. This in turn has led to a much larger participation of bidders thereby increasing competition and reducing the procurement cost of LED bulbs.

The UJALA scheme is being monitored in a transparent manner through a national dashboard ([www.ujala.gov.in](http://www.ujala.gov.in)). As on date, EESL has distributed over 10.77 crore LED bulbs across India and the programme have led to significant savings to the state and consumers who are using these bulbs. As of date, the savings achieved are -

Estimated daily energy savings	3.83 crores kWh
Estimated reduction of peak Demand	2,800 MW
Estimated daily cost reduction of bills of consumers	INR 15.32 crores
Estimated daily greenhouse gas emission reductions	31,000 tonnes of CO <sub>2</sub>

The target of the programme is to replace all the 77 crore incandescent bulbs sold in India by LEDs. This will result in reduction of 20,000 MW load, energy savings of 100



billion kWh and Green House Gas (GHG) emissions savings of 80 million tons every year. The annual saving in electricity bills of consumers will be Rs. 40,000 crore, considering average tariff of Rs. 4 per kWh.

**☞ First e-bidding process through “DEEP” Portal for short term power procurement results in substantive savings for Uttarakhand, Kerala , Bihar & Torrent Power**

First e-Bidding process through recently launched DEEP (Discovery of Efficient Electricity Price) e-Bidding Portal for Short term power procurement has been concluded for the State of Uttarakhand and Kerala on 29.04.2016, for Torrent Power Ltd. on 03.05.2016 and for State of Bihar on 09.05.2016.

Secretary (Power) Shri P K Pujari, while congratulating States of Uttarakhand, Kerala Bihar and Torrent Power for early adoption of the e-bidding portal, stated that the process has resulted in substantial savings as the prices discovered through e-bidding are significantly lower than the prices at which power was procured during the similar period in the last year.

For the State of Kerala, the lowest prices for the month of May in slot of the day have been discovered at 3.14 per unit while in the last year, Short term power in round the clock was procured at the rate of 4.70 per unit.

For the State of Uttarakhand, the lowest price for power for the month of July on round the clock basis was discovered at 2.59 per unit through reverse auction in e-Bidding process using the bidding portal. It may be noted that last year for the month of July, the lowest price at which short term power was procured by the Discoms in the State of Uttarakhand was 3.41 per unit.

In e-Bidding process of Torrent Power Ltd., the lowest price for the month of May-June in slot of the day has been discovered at the rate of 2.95 per unit. There was no short term procurement in 2014-15 and 2015-16 by Torrent Power Ltd.

For the State of Bihar, the lowest rate for the month of July, for slot of day, has been discovered at 3.08 per unit. No procurement was done in last two year through bidding by Discoms in the State of Bihar.

These lower prices discovered through reverse auction in e-Bidding Process are expected to result in overall reduction of cost of procurement of power in the States and greater transparency in the auction process benefiting the ultimate consumers.

Shri Piyush Goyal, Minister of State (IC) for Power, Coal , New and Renewable Energy had inaugurated the launch of “DEEP (Discovery of Efficient Electricity Price) e-Bidding& e-Reverse Auction portal” for procurement of short term power by DISCOMs on April 2016 with the objective to introduce uniformity and transparency in power procurement by the DISCOMs and at the same time promote competition in electricity sector.

The Guidelines for short term procurement of power was also notified on 30.03.2016 by Ministry of Power, Government of India, making it mandatory for all the Procurer(s) to procure short term power by using this e-Bidding portal. The scope of this portal



shall be further expanded soon to cover medium term and long term procurement of power.

### **☞ Achievements and Initiatives of Ministry of Power, Coal and New & Renewable Energy in two years**

- Road map ready for 24X7 affordable environment friendly 'Power for All'
- India turned power surplus from chronic power shortage; Record capacity addition in conventional and solar power, transmission lines; Lowest ever Energy deficit
- Coal shortage eliminated; highest ever growth in coal production of 7.4 crore tonnes
- 18 states and 1 union territory already signed agreements or have agreed to join UDAY ; bonds worth Rs. One lakh crore issued
- Accelerating connections to 18,452 un-electrified villages ;7,779 remote villages already electrified
- Over 9 crore LED bulbs distributed through UJALA in 2015-16
- Unparalleled transparency adopted in e-auction of Coal blocks; supplying gas to gas power plants; procurement of LED bulbs
- Mobile Apps : GARV, UJALA & VIDYUT PRAVAH to Empower Citizens
- Increase overall renewable capacity by more than 5 times from 32,000 MW in 2014 to 1,75,000 MW by 2022
- Farmers benefitted through highest-ever distribution of solar pumps in 2015-16

The last two years have seen rapid progress towards Prime Minister Shri Narendra Modi's vision of 24x7 affordable environment friendly 'Power for All' by 2022 - a mission we are working to achieve by 2019.

### **Scarcity to Surplus**

In a significant transformation, India has become power surplus from chronic power shortage. Record capacity addition of around one-fifth of current conventional power capacity and solar power capacity addition of 157% in the last two years led to a boost in power generation. The highest-ever increase in transmission lines and sub-stations improved the transmission scenario resulting in energy deficit falling to lowest ever of 2.1% in 2015-16.

### **Critical Coal Situation Resolved**

Today, not a single power plant faces shortage of coal as opposed to the impending power crisis in 2014 when two-thirds of major power plants had critical coal stocks of less than 7 days. Working on war footing our government completely eliminated coal shortage in the country. In line with achieving the target of doubling coal production to 100 crore tonnes by 2020, the last two years witnessed the highest ever growth in coal production of 7.4 crore tonnes.

### **Most comprehensive power sector reform ever**

Our government focused on addressing the root problems of the power sector. UDAY (Ujwal DISCOM Assurance Yojana) for improvement in financial and operational



efficiencies of State Power Distribution Companies (DISCOMs), the weakest link in the power value chain, was launched in 2015. Every DISCOM is expected to eliminate losses by 2019-20 with potential savings of over Rs. 180,000 crore every year from 2019. UDAY was designed through extensive stakeholder consultations and has been a game changer for States. Despite being a voluntary scheme 18 States and 1 Union Territory across political and regional lines have signed agreements or agreed to join. UDAY bonds worth about Rs. 1 lakh crore were issued within three weeks.

### **Progress of Programmes**

Prime Minister Narendra Modi's Independence Day, 2015 promise of connecting the unconnected 18,452 un-electrified villages in 1,000 days is ahead of schedule with over 40% (7,779 remote villages) already electrified. India is headed for the top slot in the global LED market through UJALA (Unnat Jyoti by Affordable LEDs for All) Yojana, which will replace 77 crore bulbs with energy efficient LED bulbs by 2019. Over 9 crore LED bulbs were distributed in 2015-16, about 150 times higher than 6 lakh in 2013-14.

### **Unprecedented Transparency**

Due to widespread irregularities, the Supreme Court had cancelled 204 coal blocks in 2014. Through transparent e-auctions and allotment of just 74 coal blocks around Rs. 3.44 lakh crore potential revenues will accrue to coal bearing States over the life time of the mines. Again, by supplying gas through transparent e-auctions in 2015, nearly half of gas power plants were revived. Transparent procurement process reduced LED bulb prices by 83% in two years and Solar Tariffs reduced to one-fourth from 2010. DEEP (Discovery of Efficient Electricity Price) portal for compulsory purchase of short-term power through auctions by States.

### **Mobile Apps to Empower the Citizens**

GARV (Grameen Vidyutikaran) app to help people track rural electrification and UJALA app to monitor LED distribution has brought accountability and transparency in these two programmes. Moreover, Vidyut Pravah app provides real time information of electricity price and availability. By filling the information gap, State governments have been made accountable.

### **World's Clean Energy Capital**

India is running the world's largest renewable energy expansion programme with a target to increase overall renewable capacity by more than 5 times from 32,000 MW in 2014 to 1,75,000 MW in 2022. By taking a leadership role in the International Solar Alliance of 121 countries and organising RE-Invest 2015, the world's largest renewable financing meet, our government has laid the foundations for massive growth in this sector.

### **☞ Total Installed Power Generation Capacity**

The Coal Based Generation Capacity is 62.13% of the total installed capacity of 2,98,059.97 MW as on 31.03.2016. This was stated by Shri Piyush Goyal, Minister of



State (IC) for Power, Coal & New and Renewable Energy in a written reply to a question in the Lok Sabha today. As on 31.03.2016, the total installed Power generation capacity in the country was 2,98,059.97 MW with the fuel wise break-up as under:-

### INSTALLED CAPACITY AS ON 31.03.2016

(FIGURES IN MW)

	Hydro	Thermal				Nuclear	Renewable Energy Sources (RES) @	Total
		Coal	Gas	Diesel	Total			
Installed Capacity (MW)	42783.4	185173	24508.6	993.53	210675	5780	38821.51	298060
% share	14.35	62.13	8.22	0.33	70.68	1.94	13.02	100

@ : Renewable Energy Sources capacity is as on 31.12.2015

The Minister further stated that under Intended Nationally Determined Contributions (INDC), the Government of India has committed to achieve renewable generation capacity of 1,75,000 MW in the next few years. After achieving the renewable generation capacity of 1,75,000 MW, the share of coal based energy in the energy mix of the country is expected to reduce.

#### **Flexibility in utilisation of domestic coal for reducing the cost of power generation**

The Union Cabinet chaired by the Prime Minister Shri Narendra Modi has given its approval for allowing flexibility in utilisation of domestic coal for reducing the cost of power generation.

The objective of the proposal is to allow flexibility in optimal use of domestic coal in efficient Generating Stations resulting in reduction in the cost of electricity generation and reduce the power purchase cost of State Distribution companies. Such flexibility will be able to leverage coal to electricity conversion, efficiency of equipments as well as transportation cost optimization.

This would create new thrust in promoting efficiency, optimum utilization of natural resources as well as overall economic benefit in the power sector in the country. This will result in coal transportation cost reduction as well as savings in energy used for transportation and may also result in removal of congestion of Railways network. This will also be a more environment friendly arrangement as less coal will be used to produce more power and also the distance for transportation of coal would be optimized. This proposal is also in line with the UDAY scheme of Government of India which also envisages liberally allowing of coal swaps from inefficient plants to efficient plants and from plants situated away from coal mines to pit head to minimize cost of coal transportation thus leading to reduction in cost of power.

The proposal envisages that all the long term coal linkages of individual State Generating Stations shall be clubbed and assigned to respective states / state nominated agency. Similarly coal linkages of individual Central Generating Stations (CGS) shall be clubbed



and assigned to the company owning the CGS, to enable the efficient coal utilization amongst end use generating stations. There shall be flexibility in use of such coal amongst the generating stations of state owned utilities, plants of other state power utilities, company owning the Central Generating stations and IPPs, amongst each other. In case of use of coal in State/ Central Generating Plants, the deciding criteria shall be plant efficiency, coal transportation cost, transmission charges and overall cost of power. In case of use of coal assigned to the State in Private Generating Stations, power through substituted coal shall be procured on bidding basis from amongst the competing private sector plants, where the source of coal, quantity of coal, quantum of power, and delivery point for the receipt of power shall be indicated upfront.

The Central Electricity Authority shall in consultation with all the Stakeholders, issue the methodology for implementation of use of coal assigned to the State(s) in their own Generating stations, other State Generating Stations, CGS and IPPs. Similarly methodologies for use of coal by company owning CGS for use of coal in their own plants or any other efficient plants shall also be issued by Central Electricity Authority.

**Background:** The Coal is the main source of power generation in the country. There are broadly two categories of coal based Thermal power plants: (i) Pit Head based plants, which are situated near coal Mines and (ii) Load centre based plants situated near load centres. Power Plants are having different efficiency levels for conversion of coal to electricity depending upon their technology, unit capacity etc. At present, there are situations where efficient power plants have shortage of coal while some other Power Stations have adequate coal available with them because of less capacity utilization.

#### Lowest Ever Energy Deficit of 2.1% in 2015-16

During 2015-16, the energy shortage was 2.1% which is the lowest ever in a single year. This was stated by Sh. Piyush Goyal, Minister of State (IC) for Power, Coal & New and Renewable Energy in a written reply to a question in the Lok Sabha today. As reported by the States / UTs, the details of energy shortage in terms of electricity in the country during the last two decades are given below:-

Year	Requirement (MU)	Availability (MU)	Shortage	
			(MU)	(%)
1991-92	2,88,974	2,66,432	22,542	7.8
1992-93	3,05,266	2,79,824	25,442	8.3
1993-94	3,23,252	2,99,494	23,758	7.3
1994-95	3,52,260	3,27,281	24,979	7.1
1995-96	3,89,721	3,54,045	35,676	9.2
1996-97	4,13,490	3,65,900	47,590	11.5
1997-98	4,24,505	3,90,330	34,175	8.1
1998-99	4,46,584	4,20,235	26,349	5.9
1999-00	4,80,430	4,50,594	29,836	6.2



2000-01	5,07,216	4,67,400	39,816	7.8
2001-02	5,22,537	4,83,350	39,187	7.5
2002-03	5,45,983	4,97,890	48,093	8.8
2003-04	5,59,264	5,19,398	39,866	7.1
2004-05	5,91,373	5,48,115	43,258	7.3
2005-06	6,31,554	5,78,819	52,735	8.4
2006-07	6,90,587	6,24,495	66,092	9.6
2007-08	7,39,343	6,66,007	73,336	9.9
2008-09	777,039	691,038	86,001	11.1
2009-10	830,594	746,644	83,950	10.1
2010-11	861,591	788,355	73,236	8.5
2011-12	937,199	857,886	79,313	8.5
2012-13	995,557	908,652	86,905	8.7
2013-14	10,02,045	9,59,614	42,431	4.2
2014-15	10,68,923	1,030,785	38,138	3.6
2015-16	11,14,235	10,90,713	23,522	2.1

The Minister further stated that at present, India is importing power only from Bhutan. The imported power is mainly Bhutan's surplus power from hydro stations commissioned in Bhutan with the assistance from the Government of India. During 2015-16, energy imported from Bhutan was about 5 Billion units (BU), the Minister added.

#### **After Energy Efficient Bulbs, Government Launches National Programmes for Smart Pumps for Farmers and Energy Efficient Fans**

EESL will distribute 2 lakh Smart SIM-enabled Agricultural Pumps sets free of cost to the farmers in AP. In order to make country more energy efficient, the Union Government today launched two schemes namely National Energy Efficient Agriculture Pumps Programme and National Energy Efficient Fan Programme in Vijayawada, Andhra Pradesh. The programme was launched by the Chief Minister of Andhra Pradesh, Shri N. Chandrababu Naidu during the inaugural session of the two-day International workshop on energy efficient lighting. These Schemes will be implemented by Energy Efficiency Services Limited (EESL), a JV of PSUs under Ministry of Power.

Under the National Energy Efficient Agriculture Pumps Programme, farmers can replace their inefficient pumps free of cost with the new BEE star rated energy efficient agricultural pump-sets. These pumps will come enabled with smart control panel and a SIM card, giving farmers the flexibility to remotely control these pumps from their mobile phones and from the comfort of their homes. EESL will distribute 200,000 BEE star rated pump-sets to the farmers under this programme, which will lead to 30% of energy savings by 2019. This translates into an annual savings of approximately Rs 20,000 crore on agricultural subsidies or a saving of 50 billion units of energy every year.





### FEATURES OF NATIONAL ENERGY EFFICIENT AGRICULTURE PUMPS PROGRAMME

Smart BEE star rated Energy Efficient Agricultural Pump sets be distributed to farmers.

Farmers can replace their inefficient agricultural pump sets free of cost.

Pumps to come with Smart Control Panes that has a SIM card and a Smart Meter.

Smart Control Panel will enable a farmer to switch on or switch off these pumps through his mobile and sitting at the comfort of his home.

Smart meters to ensure the farmers to monitor consumption on real time basis.

EESL to distribute 200,000 BEE star rated pump-sets to the farmers under this programme, which will lead to 30% of energy savings by 2019. This translates into an annual savings of approx Rs20,000 crore on agricultural subsidies or a saving of 50 billion units of energy per year.

With the usage of these 50 Watts BEE 5 Star rated ceiling fans, to be distributed under the **National Energy Efficient Fan Programme**, it is estimated that consumer's electricity bills will reduce by about Rs. 700-730 per year. Therefore, the cost recovery of purchasing these fans is less than 2 years. These fans are 30% more energy efficient as compared to conventional fans, which range from 75-80 Watts. At present, two energy efficient fans will be provided to each consumer at Rs 60 a month per fan on EMI basis. The EMI amount will be added to the consumers' electricity bills for two years. This scheme will be available to the consumer on providing a copy of latest electricity bill along with a copy of residence proof at the designated distribution centre. The consumer can also purchase the fan by paying Rs. 1250/- upfront.

### FEATURES OF NATIONAL ENERGY EFFICIENT FAN PROGRAMME

Energy-Efficient, 50 Watts and 5-Star Rated Ceiling Fans.

These fans are 30% more energy efficient as compared to conventional fans, which range from 75- 80 Watts.

Fans being procured from leading companies.

At present, two energy efficient fans will be provided to each consumer at Rs 60 a month per fan on EMI basis.

Scheme will be available to the consumer on providing a copy of latest electricity bill along with a copy of residence proof at the designated distribution centre.

Consumers can also purchase the fan by making UPFRONT payment of Rs. 1,250 for 50 watts fan

It is estimated that consumer's electricity bill will reduce by about Rs 700-730 per year- which means that the cost of this fan can be recovered in less than 2 years.



Speaking on the occasion, Chief Minister of Andhra Pradesh Shri N Chandrababu Naidu called upon the people to feel responsibility of saving energy which is a big challenge the nation is facing. He said that the State government is moving ahead with innovative ideas in saving energy. Shri Chandrababu Naidu also said that when Visakhapatnam was hit by Hudhud cyclone last year, the government replaced all the incandescent bulbs with LED which saved 21,000 mw of power and also saved money of the State exchequer.

Stating he was the harbinger in bringing reforms in Electricity Board functioning, Shri Naidu said "Andhra Pradesh is the first state in India to adopt more than 1.8 crore LED bulbs under the UJALA scheme which has helped the state government to save Rs 2.6 crore daily. Andhra Pradesh has always been a pioneer in adopting Energy efficiency programmes. To add to the success of UJALA in the state we will now implement energy efficient fan programme and the energy efficient agriculture pumps programme. This will help us to manage our peak demand and in-turn help the state become energy sufficient".

Earlier Shri N Chandrababu Naidu inaugurated the International workshop on Energy Efficient Lighting by unveiling the Energy Efficient Fan and by switching on Energy Efficient Agriculture Pump installed in Rajamundry, 150 km from Vijayawada, through remote control. Shri Chandrababu Naidu distributed first lot of LED bulbs and fans to the consumers at the function.

Andhra Pradesh Principal Secretary, Energy, Shri Ajay Jain, welcomed the gathering. Dr Ashok Sarkar, World Bank Group, Zhinguiang Xu, Dy Director General National Energy Conservation Centre, China, TERI D G Shri Ajay Mathur, Chairman EESL Shri Rajeev Sharma and Shri Saurabh Kumar, Managing Director, EESL others attended the meeting. In all representatives of 15 countries across the globe and from representatives of State governments in country are attending the conference.



**We demand  
distinctive pay  
structure for  
power engineers**



Unit meeting conducted by Thrissur unit.



Hydel technical journal released by Er.Balakrishnan, former member, KSERC.



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