THE ERNAKULAM

POWER SCENE

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MONTHLY NEWSLETTER OF THE KSEB ENGINEERS' ASSOCIATION, ERNAKULAM UNIT

Chairman Speaks

Congratulations! The AGB meeting was conducted in a highly satisfactory manner and I take this opportunity to convey to each and every member of our Unit, the appreciation that was received from all the corners. Yes, that was the outstanding end result of the best efforts made by a wonderful team who had dedicated themselves wholeheartedly to make the AGB at Fine Arts Hall on 19th May 2013 a grand success and an unforgettable event in the history of our Ernakulam Unit.. Let this teamwork be there in all the future endeavors of the Association.

We are happy that the much awaited monsoon showers have started bringing joy not only to the employees of KSE Board, but also to all Keralites. Due to the onset of showers, the power demand has come down to 48-50 MU per day there by reducing the burden of purchase of power. The levels in dams also have started picking up.

Now, we may ponder over certain crucial issues our organization is facing now….The financial position of the Board has started slightly improving thanks to the revision of electricity tariff, but this can be considered as a reduction in financial crisis only, because the entire revenue gap has not been bridged due to the recent revision of power tariff. Still a revenue gap has been kept as the regulatory asset, which is yet to be received by Board at a later revision of the tariff. Can the Board postpone such payment to the purchase of power, when the Board is paying the same in advance by taking loan from financial institutions? The burdens of the interest to these loans will have to be again transferred to the consumer! In such a situation, is the consumer getting any benefit? This indicates the sad truth that due to the business of electricity of KSE Board in this manner, only financial institutions are getting benefits and the financial position of electricity board is adversely affected day by day.

In this context we have to look into the bold decision taken in the case of petroleum industry. The subsidy is being reduced and the prices are being increased in every fortnight directly with the cost of purchase. Now the consumers have realized the cost of petroleum and the futility in going for a massive protest.

If similar broad vision and bold decision are there, while making policies in power sector, the Board can get the profit as stipulated in the electricity act. Board can utilize this profit for its future developments of producing & distributing of electricity, assuring the welfare of its consumers and society as a whole.

Let the new leadership of our Association think, formulate and put forward to the policy makers of power sector such ideas that help the betterment of the financial status of our organization. Let each of us do contribute and give support to our leaders in this regard.

With regards,

TENSON M.A.

Inauguration of 60th AGB 2013 by Sri. Aryadan Muhammed, Hon'ble Minister for Power & Transport at Fine Arts Hall Ernakulam on 19.5.2013

Inauguration of Exhibition Pavilion associated with AGB 2013

Edited, Printed and Published by Er: T.M. Muhammed Nadeer for and on behalf of KSEB Engineers' Association, Ernakulam

Grid Connectivity of Renewable Energy – Issues and Solutions

Muhammad Ali Rawther

(Member, Transmission & Generation Operation)

Now Kerala is passing through a very acute shortage of power. This is due to i) demand is increasing @ 9~10% per year, ii) lack of addition of sufficient new internal generation, iii) Lack of sufficient inter-state transmission system, iv) transmission congestions in the S1-S2 of the Region, v) heavy shortage of rain fall during last year (45% less than previous years average rain fall).

The consumption on 18-05-2013 was 60.13MU out of which 26% was from Hydro, 35% .was from CGS, 28% was from Traders, 2.5% from IEX and balance 8.5% from other minor sources like BDPP, KDPP & UI.

The total Hydel storage as of date is 584MU, which is required until onset of monsoon. During last year, 45% shortage in storage has been experienced due to lack of monsoon & northeastern monsoon. Max. Storage during last year was around 33% of the total storage capacity of 4140MU. Kerala Grid cannot be operated safely without the generation from Idukki Power station. Hence, all efforts shall be taken to control utilization of the Hydel storage as much as possible.

The present strategy of Generation is based the following

- CGS = 26MU, but due to shortage of coal, the present availability is around 20~21MU
- Purchase from Traders under STOA is 16.84MU, this is varying from month to month and availability of corridor.
- Day Ahead Purchase from IEX/PXIL = 2~ 4MU, which is based on the quantum of power availability and available transmission capacity (ATC).
- Balance requirement shall be met from HYDRO of KSEB, Costly Power from RGCCPP, Kayamkulam and IPPs like BSES, KPCL, etc.

When there is shortage in HYDRO, we will be forced to purchase costly power from liquid fuel stations or Power Cuts & Load Shedding.

Now, the total import capacity of Kerala is around 2000MW. And even though we have sufficient purchase agreement, it is not possible to import more power, due to lack of sufficient inter- state transmission lines. At present, we are working for completion of Mysore-Areacode 400kV Line. And commencement of new Uduppy-Mylatty-Areacode 400kV Line along with 2x500MVA GIS (400kV) at Mylatty. In addition Kochi – Edamon 400kV line also to be completed. In continuation of completion of Mysore-Areacode 400kV Line, Trichur- Areacode line will be started.

It is high time to think over establishing more internal generation, since external power purchase and import are depending on various factors like, availability of Coal, transmission corridor constraints, etc. Present base load of KSEB is the CGS power, which is imported through our interstate transmission networks.

KSEB has approved (in principle) 400MW Gas station at BDPP in the first stage. In addition we have sanctioned many other small Hydel stations but which is not sufficient to meet our future requirement.

At this juncture the importance of Renewable energy like, wind, Solar, etc, is coming in to the picture. As we know the availability of primary fuels like coal is available for 114 years and liquid fuels like petroleum products for 40yers as per present level of production. Govt of India has taken

lots of measures to increase generation from Renewable Sources and thereby reduce consumption of fissile fuel and emission GHS.

The promotion of renewable sources of energy is a vast area for public policy from many aspects as energy security, employment generation, clean energy, etc. Electricity Act 2003(EA) introduced a statutory mandate to promote renewable sources of Energy. They are:

1. Promoting co-generation and renewable while making regulations for tariff determination.
2. Promote co-generation and renewable by providing suitable measures for connectivity with Grid and sale of electricity to any person. Also a percentage of total consumption electricity shall be from renewable sources by purchase in each area of distribution licensee.
3. National policy for permitting standalone systems including renewable sources of energy in rural area.

   The National Electricity Policy requires that the percentage for purchase of power from Non-conventional sources, known as Renewable Purchase Obligation (RPO) should be increased progressively and that electricity from renewable sources may be given a preferential tariff.

   The statutory provisions in the EA 2003 have given a major boost to the promotion of renewable in India. The currently assessed potential of renewable energy in India, except solar is 87000MW. Central Govt. has launched an ambitious National Solar Mission, which seeks to set up about 20,000MW of Grid connected solar-based connectivity by the year 2022 in three phases. At all India level, the share of electricity from renewable is presently about 4.13%.

The promotion of renewable presents challenges for policy makers and regulators since (i) the cost of Generation is much higher than that of long PPA for conventional resources, (ii)building up of transmission system for low PLF power plants in RE, (iii) ensuring Grid stability while injecting large quantum of non-firm power, particularly from wind, (iv) large coordination among the state & central agencies to implement the project. Though the wind has the problem of variability, the generation from solar power plants is also uncertain to some extent. These two sources are going to make a significant contribution in the future.

The challenges for transmission and dispatch of renewable – based electricity are on many accounts.(i)Issue of evolving appropriate technical standards for connectivity and Grid operations , (ii) Finances are scarce with state transmission utilities and the transmission infrastructure for renewable gets less priority due to lower capacity utilization, (iii) Scheduling and real time grid management and (iv) less time is available for the commissioning of transmission infrastructure to evacuate power from the sources because gestation period of generating station is hardly one to two years, whereas that of transmission system for power evacuation is close to three years.

Action Plan to solve the above issues:

"Must run" priority to solar and wind based stations as long as Grid security is not threatened. The grid code has introduced a new concept of Renewable Regulatory charge for socializing the financial impact of deviations within ±30% band.

The transmission charges for solar power plants only the marginal cost of transmission utility. Central commission has completely waived transmission charges & losses for solar power plants setup by the year 2013 for use of interstate transmission system.

Renewable Energy Certificate (REC):

It is a market-based instrument. It is intended to overcome the stagnation at the meagre level of RPO

in many states. It was formally launched on 18/11/2010. On every one MWh of electricity generated from Renewable sources, generator is entitled to get once RE Certificate from the central registry, National Load Dispatch centre (implementing agency). There are two categories of REC, viz, Solar & Non-Solar.

1. It will bring market-based efficiency in pricing of renewable based electricity with potential reduction of costs.
2. It will provide another dependable avenue for revenue realization to generators.
3. It could facilitate large-scale deployment of renewable based standalones without government subsidy.

Standalone Systems/Micro Grids:

There are two possible business models, (i) Subsidy driven & (ii) REC driven. Subsidy driven model entails both capital & tariff subsidy. Such subsidy given either as annuity or Generation Based Incentive (GBI) can reduce the electricity cost close to Rs.4~5/unit. The real difficulty in this first business model comes from the expectations of consumers for supply at subsidized rates comparable to typical rural supply by utilities in India (for example of BPL connections). Hence, the promotion is difficult.

In the second case, REC driven case, presently in India, REC mechanism covers only grid connected generators based on renewable. If this mechanism is extended to standalone/ off Grid systems through some institutional mechanism for verification and metering of generation, Renewable based Off-Grid/standalone has the potential to become financially viable without any subsidy. Grid connectivity of many small RE generators (eg: 1kW and above) will create lots of grid disturbance issues, which will be difficult to manage at this moment by the Utilities. Hence, based on generation, even for self-consumption, suitable REC shall be issued for 0.25Mwh/0.50Mwh/1Mwh. The same can be marketed even at floor price (nearly Rs 9/- per unit for solar). This will be attractive for the solar generators, even for roof top domestic solar consumers. Hence, return on investment (RoI) can be achieved at an early date and attract more consumers.

It is right time to formulate new strategy and regulations for more solar power (small & large scale) under standalone system/Off Grid under REC mechanism.

Many states like Tamilnadu, Karnataka, Gujarat, etc have advanced in Generation of RE, especially in Wind and Solar. There are lots of issues related to the interconnectivity of Renewable energy to the existing Grid network. The unexpected withdrawal of wind and cloudy sky will lead to unexpected collapse of Solar & Wind generation. This will make the Grid operation very critical as well big financial losses to the concerned distribution utilities/states. Hence, to support on financial matters, CERC formulated Renewable Regulatory Fund mechanism with effect from 1.7.2013 for the RE generators of capacity more than 5MW for Solar & 10MW for Wind.

But there are lot of Issues on technical matters like, harmonic issues, Reactive power injection and Var compensation, Safety matter, Metering, tariff, etc. These issues shall be discussed in detail to formulate a common methodology before integrating the RE Generation in bulk to existing networks.

Conclusion:

Base load shall be from Thermal Generating stations like gas stations, share from CGS with Hydro support. Renewable Energy shall be promoted to meet the localized requirement like captive Power plant. Small generation on solar/wind shall be of off - Grid type. Regulation shall be formulated for connectivity of RE with existing Grid of KSEB.

Congratulations to Central Office Bearers

Vice-President (South)
Er. B. Sreekumar
Executive Engineer
Ele. Division
Thripunithura

Organising Secretary (South)
Er. K.D. Jins
Assistant Executive Engineer
BDPP
Brahmapuram

Secretary (Benevolent Fund)
Er. E. A. Riyas
Assistant Engineer
220 kV Substation
Kalamassery

Er. Muhammad Ali Rawther and others visiting the Exhibition Hall

Er. S. Jayasree receiving Best AE Award (Transmission) from Benny Behanan MLA

Audience - AGB 2013

Er. M. A. Tenson & Er. P. S. Haseena (Ernakulam Unit) receiving Best Powerscene Award from Er. K. K. Gopalakrishnan Nair (Retd. Dy. CE)

NEXT MONTHLY MEETING

Date : **6th June 2013, Thursday**
Time : **05.30 p.m.**
Venue : **Transmission Club, Kalamassery**
Agenda : **Normal Business Session**

WELCOME

Sri. Jinny Sebastian, Assistant Engineer, 220 kV S/s, Kalamassery.

The Ernakulam Unit of KSEB Engineers' Association welcomes you.

Congratulations

Congratulations to Er. S. Jayasree for securing the Best AE (Transmission) Award in AGB 2013.

OFFICE BEARERS OF ERNAKULAM UNIT 2013-14

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Building Committee Convenor : **Er. P. A. Martin**
AE, 110 kV S/S Edappally, Ph. 9496008733

Members are requested to give the articles to the Power Scene, to the Editor or the Area Representatives Articles from family members are most welcomed. Articles may be e-mailed to nadeerkseb@gmail.com

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