

NOTE SUBMITTED TO GROUP OF MINISTERS ON ELECTRICITY
On Meeting Power Requirements of the State of Andhra Pradesh

By

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Executive Summary

Andhra Pradesh is facing shortage in electricity supply. Large parts of the state are reeling under power cuts for more than twelve hours in a day. Though adding commensurate power generation capacity appears to be the solution to overcome this power shortage increasing concerns about climate change and the need to bring down carbon emissions leads us to explore alternatives to meet this power requirement. Integrated resource planning would help to come up with a least cost option that will meet energy needs of the state without harming the environment.

There is no proper plan for electricity sector in the state. Despite statutory and regulatory requirements proper plans are not prepared for power sector the state. For efficient functioning of the sector transparent formulation of plans is essential.

Issues related to electricity facing the state can be examined from two directions: Demand Side Management and Supply Side Management.

DEMAND SIDE MANAGEMENT

Demand side management (DSM) measures look at opportunities to bring down quantum of electricity consumption. They not only bring down power costs to different stakeholders it also helps in reducing carbon emissions. There is scope to bring down energy consumption by 20 to 30 percent among all consumer categories through energy conservation and efficiency measures.

Reduce T&D Losses: By bringing down T&D losses in CPDCL (15.67%), NPDCL (14.21%) and SPDCL (12.21%) to the level of EPDCL (6.96%) more than 5,000 MUs of power could be saved.

Agriculture DSM: Agriculture sector consumes more than 20 percent of the electricity supplied in the state. Efficiency of agriculture pump-sets is very low. Though DSM measures like installation of capacitors, frictionless foot valves, HDPE pipes, and use of ISI standard motors were made mandatory under free power to agriculture they are not being implemented properly due to lack of technical guidance at the local level with nearly 8000 linemen posts lying vacant. These posts need to be filled immediately.

Energy conservation in domestic sector: Domestic consumers in the state account for 19 percent of the electricity supplied. Electricity consumption in the domestic sector can be reduced through energy conservation measures and using energy efficient appliances. Promotion of solar water heaters helps to minimize morning peak demand.

Energy efficiency in commercial and industrial sectors: Industrial and commercial sectors in the state together consume 35 percent of the power supplied. DSM measures have not caught the imagination of the stakeholders in these sectors. Government as an important consumer in the commercial category can take initiative by procuring only energy efficient appliances including electric bulbs. While evaluating bids life time costs of appliances instead of just purchase cost shall be taken in to account.

Efforts shall be made to shift loads peak hours to non-peak hours.

Restrictive and Control measures/load shedding shall be linked to aggregate technical and commercial (AT&C) losses.

SUPPLY SIDE MANAGEMENT/POWER GENERATION

Renewable energy

Renewable Energy Policy in the state shall be formulated in transparent and participatory Manner.

It is important to scientifically estimate potential of different RE sources in the state. At present there is no cogent picture of RE potential in the state.

The developers of these RE based power plants shall be selected through transparent bidding process. This also helps to bring down tariffs.

The tariff for these RE based power plants shall be as decided by APERC or the price discovered through transparent, competitive bidding process.

The power so generated shall be available for supply in the state at the rate decided as above. This is particularly important in the background of APERC's approval to REC mechanism in the state.

If the developers fail to start power generation within a specified time damages shall be recovered from them.

In the case of remote areas with no electricity network distributed renewable energy units can be promoted.

Roof top solar PV shall be made compulsory for shopping malls.

To encourage roof top solar PV to be connected to grid proper incentives may be provided. Along with this procedures shall be simplified. Experiences from West Bengal may be examined in this context.

Conventional Power:

Whenever conventional power capacity addition is planned, keeping in to account environmental implications only super critical plants in the capacity of 660 MW shall be allowed.

Simhadri – NTPC: Out of 1000 MW capacity of the NTPC Simhadri – II units AP is getting only 38.71% of this capacity as its share. Under new policy AP shall get 50% of the capacity as its share.

Extension plants of Gas IPPs: All the IPPs in the state with a combined capacity of 2500 MW are setting up new extension plants and the National Tariff Policy provides that quantum of power equivalent to 50% of the existing capacity of these plants can be procured through PPA approved by the Electricity Regulatory Commission. 1,250 MW of power from the extension plants shall be available to the state at the rate decided by the Commission.

Natural gas shall not be allocated to merchant power plants in the state.

BPL and Hinduja Plants: Though PPA with BPL (500 MW) at Ramagundam and with Hinduja National Power Corporation (1000 MW) at Visakhapatnam were signed nearly two decades back there is no sign of these plants generating power. These two plants can be allocated to other developers through competitive bidding.

APGENCO plants: APGENCO plants are not being subjected to regulatory scrutiny. This has led to inflated capital costs. The Comptroller and Auditor General's Report which examined some of these plants being set up by GENCO showed that there was excess spending in the range of 19 to 27 percent. If proper care is not taken in execution of these plants they turn out to be huge financial burden on the state government as well as people in the state.

UMPP: Reliance Energy which won the bid to set up 4,000 MW Ultra Mega Power Plant (UMPP) at Krishnapatnam has stopped works at this plant. GoAP has to see that this plant goes on stream as planned.

Case 1 bidding: 4,000 MW Capacity (2,000 MW for 25 year duration and 2,000 MW for a period of four years from June 2012) is being procured through Case 1 bidding. But there is no progress on this front.

Merchant plants: In the coming two decades more than 53,000 MW of power generation capacity is proposed to be added through 104 merchant power plants. They pose both environmental and economic challenges. They need to be closely scrutinized and only those which meet genuine requirements shall be allowed.

Gas: There is need to install pipelines to take gas to different parts of the state.

NOTE TO BE SUBMITTED TO GROUP OF MINISTERS ON ELECTRICITY

The Government of Andhra Pradesh through G.O. Rt. No. 1663 dated 16-04-2012 constituted a Group of Ministers to suggest: (i) Steps to be taken to encourage setting up of Non Conventional Energy Projects like Wind, Solar, Hydel etc., (ii) Measures to be taken to meet the power requirement of the State. This Group of Ministers is constituted in the background of widespread power cuts in the state and resentment from different sections against these power cuts.

Recently DISCOMs in the state have come out with specific Restriction and Control (R&C) Measures to regulate power supply to different categories of electricity consumers in the state. These measures include power cuts ranging from 2 hours to 12 hours in the case of domestic and commercial consumers depending on their location (2 hours power cut in cities and 12 hours in villages), power holidays and restrictions on maximum use of electricity in the case of industrial consumers. This has come about in the face of burgeoning growth in electricity consumption and failure on the power generation front to cope up with increasing demand for power. Demand for power has reached 300 MU per day while power generation could meet only 250 MU.

One obvious solution to this power problem would be to ramp up power generation. Addition of power generation capacity has also become problematic. At present there are proposals to build nearly 120 power plants with a combined capacity of more than 75,000 MW in the next decade. Existing power generation capacity in the state is less than 17,000 MW. More than 70% of the proposed capacity addition would be from coal based thermal power plants.

In the context of contemporary concerns on climate change and global warming it is imperative to avoid coal based thermal power plants. The thermal power plants' carbon emissions are one of the highest. These carbon emissions contribute to global warming.

While meeting the power needs of the state population it is also important to pay attention to environmental implications, particularly global warming and carbon emission related issues.

In the background of electricity crisis in the state integrated resource planning would help to come up with a least cost option that will meet energy needs of the state without harming the environment.

Future interventions shall aim at:

1. Taking electricity to the households which do not have electricity connection. (In AP, according to 2011 census, 8 percent [10 percent in rural areas and 3 percent in urban areas] households do not have access to electricity.)

2. Improve quality of electricity.
3. Bring down environmental (global warming/carbon emissions) impact of the electricity sector through interventions at all levels – from generation to consumption.

No proper plan:

There is no proper plan for electricity sector in the state. The Multi Year Tariff (MYT) system was brought in to keep in place proper systems to estimate power consumption in the state in the for a five year period. Because of the uninspiring functioning of both the APERC and DISCOMs in the state the MYT system is in limbo. Otherwise also according to the existing Acts the licensees in the state were expected to plan five years ahead. These were expected to be wetted by the APERC. The Commission also issued a regulation to estimate power consumption in the coming five years and plan procurement accordingly. But no attention is paid to this regulation. Even if some plan is there same is not placed before the public. For efficient functioning of the sector transparent formulation of plans as a first step is essential.

Issues related to electricity facing the state can be examined form two directions: Demand Side Management and Supply Side Management.

Demand Side Management

It is important to pay attention to demand side management (DSM) measures. DSM measures look at opportunities to bring down quantum of electricity consumption. They not only bring down power costs to different stakeholders it also helps in reducing carbon emissions. One unit of electricity saved amounts to avoiding generation of 1.4 units of electricity. This in turn avoids burning one kg of coal. There is scope to bring down energy consumption by 20 to 30 percent among all consumer categories through energy conservation and efficiency measures.

Reducing T&D Losses:

One important area that needs immediate attention is T&D losses. There is scope to bring down T&D losses to a significant level thereby obviating the need to add additional power generation capacities.

T&D Losses

DISCOM	T&D Losses in 2010-11 (%)
EPDCL	6.96
SPDCL	12.21
NPDCL	14.21
CPDCL	15.67

During the year 2010-11 in EPDCL area T&D losses stood at 6.96% of the power supplied. If other three DISCOMs also reach that T&D losses rate more than 5,000 MUs of power could be saved. This will result in savings of Rs. 1,500 crore to Rs. 2,400 crore. Burden on consumers will come down to that extent. When EPDCL could bring T&D losses below 7% why cannot other DISCOMs achieve the same? CPDCL, NPDCL and SPDCL justified higher T&D losses on the basis of their higher LT load and higher agriculture sales compared to EPDCL. While this may explain the situation to some extent the inefficiencies in functioning of the DISCOMs need to be acknowledged and proper corrective steps need to be taken to improve the situation. While AT&C losses are 3.54% in Visakhapatnam circle, it is 49.86% in Hyderabad South circle, 32.93% in Nizamabad circle, 28.87% in Warangal circle and 27.08% in Nalgonda circle during first half of 2011-12. And these differences cannot be attributed to only higher LT loads. By bringing the T&D losses in CPDCL, NPDCL and SPDCL to the level of EPDCL the state could save generation capacity of about 660 MW.

Given the fact that agriculture consumption is over estimated and T&D losses are under estimated the scope to reduce losses is even higher.

Agriculture DSM:

Agriculture sector in AP consumes more than 20 percent of the electricity supplied in the state. Efficiency of agriculture pump-sets is very low and there is scope to improve efficiency of these pump-sets and thereby bring down overall electricity consumption in agriculture sector. As a part of free power supply to agriculture DSM measures were made compulsory to be eligible for free power. These DSM measures include installation of capacitors, frictionless foot valves, HDPE pipes, and use of ISI standard motors. Field experiences showed that use of capacitors alone will help to bring down T&D ??? Losses by ... percent. Though quantum of power supplied to agriculture is increasing there is no sign of implementation of these measures. DISCOMs are claiming that 90% of the pump-sets are provided with capacitors. But field level verification would show that not even 10% of the pump-sets are fitted with capacitors, though they are not costly. No attention is being paid to other components of DSM measures in agriculture. In the absence of proper education of the farmers on these measures a host of apprehensions have gripped them. Absence of properly trained technical support in the form of

line men also has come in the way of implementation of these measures. In order to implement DSM measures effectively in agriculture sector it is important to fill all linemen vacancies and also induct additional linemen in keeping with the increase in number of agriculture services and quantum of electricity consumption. The returns from this investment will be more than commensurate.

Energy conservation in domestic sector:

Domestic consumers in the state account for 19 percent of the electricity supplied. Within the domestic category the conspicuous consumption is on the rise. The data for the last three years show wide disparities in electricity consumption. Households in 0-50 units slab constituting 50 percent of the households in the state accounted for 11.65 percent of total households' consumption in the state. At the same time the households in slabs above 300 units constituting 2.79 percent of the households in the state consumed 18.17 percent of total domestic electricity consumption. Average monthly household consumption in 0-50 units slab is 16 units. It is 900 units in the case of above 500 units slab. While total electricity consumption of households in 0-50 units slab declined by 7.58 percent that of households in slabs of more than 300 units doubled. Apart from these disparities there is scope to bring down electricity consumption in the domestic sector through energy conservation measures and using energy efficient appliances. By switching off lights and appliances when not required considerable quantity of electricity can be saved. Similarly, use of energy efficient bulbs, tube lights, fans, TV sets, refrigerators will help to bring down electricity consumption. This not only brings down electricity bills for the consumers but also carbon emissions. Such interventions have social as well as environmental benefits.

Solar water heaters also need to be promoted in the domestic sector as they help to minimize morning peak demand. Tariff rebate can be provided to households with solar water heaters on the lines of Karnataka. In Karnataka households with solar water heaters are provided a rebate of Rs. 0.50 per unit subject to maximum of Rs. 50 per month.

Energy efficiency in commercial and industrial sectors:

There is also huge scope to conserve electricity in industrial and commercial sectors. These two sectors together consume 35 percent of the power supplied in the state. In spite of some initiatives of BEE/NREDCAP it has not caught the imagination of the stakeholders in these sectors.

Government offices are also important consumers in the commercial category. Government departments shall procure only energy efficient appliances including electric bulbs. While procuring these biddings shall be evaluated based on life time costs (purchase cost + energy cost + maintenance cost) and not just on the basis of purchase cost. In the past GoAP issued some

GOs on these issues. But no attention was paid to their implementation. Given the serious electricity crisis in the state GoAP shall be a trend setter in this regard. To implement these effectively the GoAP may explore best practices from other parts of the country. For e.g., it may examine the experiences of Indian Railways in this regard.

Peak Demand Deficit: The gap between peak and non-peak demand deficit needs to be examined. Peak deficit is higher than non-peak deficit. If some of the loads can be shifted from peak hours to non-peak hours the need to set up additional power plants to meet peak demand can be overcome. This needs a detailed examination of power consumption pattern in the state.

There is no rational basis for **Restrictive and Control measures/load shedding** imposed by DISOMs in the state. While 2 hour power cut is imposed on city dwellers it is 12 hours for people living in villages though both of them pay the same tariff. Public hearings shall be conducted on load shedding. Load shedding shall be linked to aggregate technical and commercial (AT&C) losses.

SUPPLY SIDE/GENERATION

Renewable energy

The Group of Ministers is also expected to suggest “steps to be taken to encourage setting up of Non Conventional Energy Projects like Wind, Solar, Hydel etc.”

Constraints in access to conventional fuels like coal and gas and increasing concern over global warming, carbon and other GHG emissions led to renewable energy as an alternative to meet our energy needs. Electricity Act, 2003 also incorporated measures meant to promote renewable energy. Section 61 (h) of this Act provides that the promotion of co-generation and generation of electricity from renewable shall taken in to account by the Electricity Regulatory Commissions while determining electricity tariffs. Similarly Section 86 (1) (e) of this Act provides that the Electricity Regulatory Commission shall promote co-generation and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee.

National Electricity Policy as well as National Tariff Policy also proposes measures for promotion of renewable energy sources. These include fixing a minimum percentage for purchase of energy from such sources taking into account availability of such resources in the region and its impact on retail tariff, and procurement by distribution companies at preferential tariffs determined by the appropriate Commission.

National Action Plan on Climate Change also proposed that 15% of the power consumed has to come from renewable energy sources by the year 2020.

Following these provisions APERC stipulated that at least 5% of the power consumed in the state need to be procured from renewable energy sources. At present less than 3% of the power consumed comes from renewable energy sources. It is important to explore the ways and means to promote renewable energy. RE source approved by APERC include wind, biomass, bagasse, municipal and industrial solid waste, mini-hydel and solar.

Need to Formulate Renewable Energy Policy in a Transparent and Participatory Manner. The state government had come out with wind energy policy in 2008. This policy is based largely on the inputs of the developers only. The state government did not formulate policies for other renewable energy sources.

At the same time we are also concerned that some private concerns are being allowed to set up renewable energy units even before a comprehensive RE policy is formulated. We request the state government through the Cabinet Committee to put such proposals in abeyance till the final policy is announced. Projects are being taken up without there being a proper policy framework.

It is important to scientifically estimate potential of different RE sources in the state. Recently states like Orissa, Gujarat, and Karnataka completed exercise related to assessment of RE potential in their states. Such exercise also needs to be done before the policy to tap them is put in place. At present there is no cogent picture on RE potential in place. Such assessment shall be shared with the public and the same shall be given final shape only after obtaining inputs from the public.

The developers of these RE based power plants shall be selected through transparent process. The present first come first served method is giving rise to many controversies. The present system is to be replaced by selection of developers through competitive bidding. Recent experiences from Gujarat and MP in the case of solar energy showed that the tariffs have come down substantially with the introduction of competitive bidding process. Per unit cost of solar energy has declined to below Rs. 8.

The tariff for these RE based power plants shall be as decided by APERC or the price discovered through transparent, competitive bidding process.

The power so generated shall be available for supply in the state at the rate decided as above. This is particularly important in the background of APERC's approval to REC mechanism in the state.

If the developers fail to start power generation within a specified time damages shall be recovered from them.

In the case of remote areas with no electricity network distributed renewable energy units can be promoted.

Roof top solar PV shall be made compulsory for shopping malls.

To encourage roof top solar PV to be connected to grid proper incentives may be provided. Along with this procedures shall be simplified. Experiences from West Bengal may be examined in this context.

Conventional Power

Whenever conventional power capacity addition is planned, keeping in to account environmental implications **only super critical plants in the capacity of 660 MW shall only be allowed.** Carbon emissions from these plants are said to be lower than normal plants. Recent biddings under UMPPs programme also showed that capital costs of these plants is not higher than normal plants.

AP's right:

Simhadri – NTPC

Out of 1000 MW capacity of the NTPC Simhadri – II units AP is getting only 38.71% of this capacity as its share. According to the new norms the state where a unit of Central Generating Station (CGS) is located will get 50% of the capacity as its share. It is in the background of this changed policy that the Union Cabinet Minister for Power declared that AP would get 50% capacity of the new plant when he declared full load commercial operation of unit -3 of Simhadri Stage – II on 11 September, 2011 in the presence of Shri. P. Balaraju, member of AP Cabinet and Shri. T. Subbarami Reddy Member of Parliament who chairs Parliamentary Committee on power. Based on this available capacity to AP from Simhadri – II shall be reckoned as 500 MW but not 387.31 MW. In this way AP will get 110 MW additional power generation capacity.

Extension plants of Gas IPPs

All the IPPs in the state are setting up extension plants and the National Tariff Policy (Section 5.1) provides that quantum of power equivalent to 50% of the existing capacity of these plants can be procured through PPA approved by the Electricity Regulatory Commission. The present installed capacity of these IPPs in the state is 2,500 MW. Following this Tariff Policy 1,250 MW of power from the extension plants shall be available to the state at the rate decided by the Commission. In fact the Commission directed the DISCOMs to explore feasibility of acquiring a share of power in such expansion projects (Para. 148 of Tariff Order 2011-12 and Para 45 of Tariff Order 2012-13). By following this AP will have access to additional capacity of 1,250 MW.

Gas allocations to merchant power plants - implications

According to a decision taken by Empowered Group of Ministers (EGOM) at its meeting held on 24 February, 2012 on gas allocation two merchant power plants in Andhra Pradesh that currently sell electricity at open market price would not face disconnection as they have signed short term agreements with DISCOMs in AP to sell power at regulated tariff. Gas is allocated to these plants even when plants with PPAs in the state are functioning at 50% PLF only. In the past one of these plants was reported to have sold power to consumers in neighboring states of Tamil Nadu and Karnataka even when there was acute power shortage in our state itself at huge profit. When the decision of the Ministry of Petroleum states that “priority should be given to the power plants in Andhra Pradesh” and it means that power plants generate power for use in AP but not generate power in AP and sell outside at huge profits. Recent decision of EGOM appears to have corrected it to some extent by insisting that power should be sold at regulated tariff within the state.

At this instance it is also to be noted that the existing gas based power plants which have concluded PPAs with APDISCOMs with combined capacity of 2,500 MW were working below their threshold level PLF. Fixed costs of these plants is already being borne by the consumers in the state. If the same 1.46 MCMD gas was allocated to these plants additional power should have been available at Rs. 1.85 per unit (variable cost) as opposed to the full cost to be paid to the merchant plants' power. Because of this diversion of gas to the merchant plants consumers in the state had to bear additional burden of fixed costs of these plants also. When DISCOMs in the state and consequently consumers as well as the state government are under severe financial burden because of high cost power purchase it is unthinkable to allot gas to a merchant power plant. By diverting the gas to the plants which already have PPAs access to additional power generation of about 375 MW will be available to the state under current circumstances at least cost. Because of this the state government shall recommend to the EGOM to allocate above gas to plants that already have PPAs with DISCOMs in the state.

Plants not grounded: BPL, Hinduja.

PPA with BPL for 500 MW thermal plant at Ramagundam and with Hinduja National Power Corporation for 1000 MW thermal plant at Visakhapatnam were signed nearly two decades back. These were also allocated land and provided coal and water linkages. Even at present there is no sign of these plants coming up in the near future. More than this these plants are reported to be trying to come up as merchant plants. If that is the case even if they were set up the power generated will not be readily available to the state. The right step to be taken at this juncture is to allocate these two plants to other developers through competitive bidding and to enter in to PPA with the successful bidder for long term power purchase. Through this 1,500 MW of generation capacity will be available at least cost and in a short time.

APGENCO plants

In spite of the favourable treatment given to private developers to add power generation capacity in the state APGENCO continues to be the most important source of electricity. The proposed capacity addition in the coming days will help to cement its place in the state's power sector. At the same time there are some issues of concern that needs to be addressed urgently in order to save APGENCO from future collapse ...

Five new thermal power plants of APGENCO with the combined capacity of 2,130 MW have come in to operation in the state. These are VTPS – IV, RTPP – II, RTPP – III, KTPS – VI, and Kakatiya – I. Though the Commission has allowed the DISCOMs to procure power from these plants PPAs with them are not yet cleared by the Commission. According the norms/regulations in operation after the enactment of power sector reform Acts both at state and central level at the first stage PPA between the generating company and distribution licensee shall be approved by the Commission followed by financial closure. After this erection of plant and machinery starts and COD needs to be declared before the distribution licensee starts receiving power from the generating station. All these steps are skipped in the case of these new GENCO plants. Though the draft PPAs are with the Commission for quite some time the Commission has not to bothered to examine them. This shows that these plants are operating under non-transparent atmosphere.

The Comptroller and Auditor General's Report for the year 2010 brought out excess expenditure incurred in execution of these plants. In this Report 2010 CAG examined RTPP – II, VTPS – IV and Kakatiya – I plants. According to this report excess spending in VTPS – IV was Rs. 350 crore, in RTPP – II it was Rs. 308 Crore (18.78%) and in the case of Kakatiya – I it was Rs. 555.48 Crore (26.74%). On these three plants excess expenditure to the tune of Rs. 1,213.48 crore were incurred resulting in inflating the capital cost of these projects by nearly 25%. Besides this, there was delay of 8 to 15 months in operationalising of these plants. But DISCOMs did not bother to recover liquidated damages from the contractor. According to the terms of the agreement benefits from tax concessions amounting to more than Rs. 2 crore were not returned to the Licensees. For all these plants BGR Energy Systems Ltd was the BOP contractor. Its execution of BOP works at all these plants was mired in controversy. Even CAG commented that undue favour was shown to BGR Company (Para 2.220.2).

Even when PPAs for these plants are not yet cleared we learn that already execution of other plants like RTPP IV and V is under way. 3,000 MW of new capacity is said to be in advanced stage of implementation. This includes 2x800 MW at Krishnapatnam, 800 MW at Bhoopalapally and 600 MW of RTTP. All these plants are likely to start power generation during the next financial year. In all six projects with an outlay of Rs 17,488 crore are under construction. In addition to this six more projects with total capacity of 7,242 MW capacity and an outlay of Rs 35,263 crore are under development and five projects of 6,800 MW capacity are under

investigation. This shows that the government bodies themselves have least respect to regulatory process. Approval for PPA by ERC sends a signal to the financiers that this is a viable project that could be financed. Without such signals financial institutions may take recourse to higher interest rates to hedge their risks. Added to these there is very less or non-existing equity component in these investments. Most of the investments are mobilized through debt. Due to this the debt burden will be higher. This will lead to high cost of power. Added to this already APGENCO's financial condition is in precarious condition because of mounting arrears from DISCOMs.

If proper care is not taken in execution of these plants these plants may turn out to be huge financial burden on the state government. This is because from now on APGENCO also needs to follow the bidding route to supply power. With inflated capital costs it will not be able to compete with other developers. These may end up as stranded assets burdening both the state government and people of the state. This acquires greater significance in the background of the Government of India's direction that ERC shall not decide the tariff for consumers whose consumption is more than one MW.

UMPP

Reliance Energy had won the bid to set up 4,000 MW Ultra Mega Power Plant (UMPP) at Krishnapatnam in Nellore district. AP gets 50% of the power generated at this plant. News reports indicate that work at this plant has come to a standstill for various reasons. GoAP needs to take steps to see that this plant goes on stream as planned.

Case 1 bidding

4,000 MW Capacity (2,000 MW for 25 year duration and 2,000 MW for a period of four years from June 2012) is being procured through Case 1 bidding. But there is no progress on this front.

Merchant plants:

Source wise Proposed Capacity Addition

Source	No. of Units	Capacity (MW)
Coal	63	55,925.2 (71.84)
Gas	33	16,734.0 (21.50)
Nuclear	2	4000.0 (05.14)

Hydel	3	410.0 (00.53)
Renewable Energy	16	761.2 (00.98)
HSD	1	12.0
Total	118	77,842.4

In the coming two decades 77,842 MW of power generation capacity is proposed to be added through 118 power plants. Except 14 plants with a combined capacity of about 24,300 MW which are coming up either under central or state sectors or as UMPP through competitive bidding all other plants are coming up in the private sector as merchant power plants. While these plants use resources available in the state they will not be available to the state or amenable to state government control. While they reap profits people in the state have to face environmental pollution and resource drain. It is important to see that these power plants also address power requirements in the state. ...

Gas: No infrastructure.

With constraints in expanding coal supplies within the country attention is being paid to natural gas as an alternative fuel. The discovery of natural gas in KG basin increased the prospects of shift to gas based power generation. But AP is constrained by lack of infrastructure to transport gas. Robust gas transport infrastructure is very important to take gas to different parts of the state. At present there is only one pipeline – East-West Pipeline - that takes KG Basin gas to Gujarat. This implies that the gas flows in only one direction starving other parts of the state of gas. Though the Central Government authorized a pipeline ‘Vijayawada-Nellore-Chennai’ it did not cross the stage of Detailed Feasibility Report.

Besides to this two new pipelines are proposed to be laid from Kakinada, one by GSPC and another by GAIL to western India almost parallel to the existing East-West pipeline. It is to be noted that the western India is already well served by a well developed network of gas pipelines. If these are also allowed this will further accentuate the existing imbalances in gas consumption in the country, and AP will be the prime sufferer in this.

Extension of pipelines only in one direction, i.e., western India was supported with the contention that well developed gas market exist only in this part of the country and that is why gas will flow in this direction only. But here it is to be mentioned that pipeline network in western India was laid in the wake of gas finds in the Bombay High and this initial network expansion led to market development. In other words in western India markets developed in response to growth of gas pipeline infrastructure, i.e., infrastructure preceded market expansion. Similar treatment shall be given to AP, which is starved of energy resources. Infrastructure

development precedes economic development. Gas transport infrastructure needs to be created to enable access to KG Basin gas. GoAP has to see that required gas transport infrastructure is created.

CONCLUSION

No single measure will help to overcome the present crisis in power sector in the state. A combination of demand side and supply side measures need to be adopted to meet energy needs of the state. New capacity addition shall be planned keeping in mind the scope for power saving through DSM measures. In this scheme of things renewable energy sources shall find proper place. In sum, serious attempt shall be made to bring down energy intensity of the economy.