

# **ASSAM POWER SECTOR**

## **Report to the Power Finance Corporation**

January 2003

**ICRA Limited**

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## 1. EXECUTIVE SUMMARY

**A score of 18.2 has been assigned to the power sector in Assam. This assessment is predominantly based on information available/made available till August 2002.**

The distribution of marks against the parameters is as follows:

No.	Parameter	Maximum Score	Score Assigned
1	State Government Related Parameters	20.0	3.8
2	SERC Related Parameters	20.0	1.5
3	Business Risk Analysis	25.0	6.3
	- Generation	6.0	0.8
	- T&D	19.0	5.5
4	Financial Risk Analysis	30.0	4.7
5	Others	5.0	2.0
	<b>Total</b>	<b>100.0</b>	<b>18.2</b>

### The State Government

The Assam Government took its first step towards reforms in the power sector by signing an MoU with the GoI on March 26, 2001. The MoU spelt out the steps that the Assam Government needed to take in a time bound manner so as to improve the quality of power supply in the State and make the sector commercially viable. Although there have been delays in implementing the necessary measures within the deadlines committed in the MoU, the State Government has nonetheless initiated the reform process by setting up the Assam State Electricity Regulatory Commission (AERC) in August 2001 and operationalising the same by providing budgetary support. The State Government has also given its consent for the securitisation of outstanding dues of the Assam State Electricity Board (ASEB) to the Central Sector power companies. The ASEB, on its part, has also signed a Memorandum of Agreement (MoA) on distribution reforms with the MoP (on July 26, 2002 and steps have been taken to achieve 100% metering and energy audit in the distribution circles). Although we expect the reform process to gather pace in the current financial year, the weak financial health of the State remains a concern in so far as the ability of the State Government to provide subsidy support to the ASEB is concerned. The absence of any anti-theft legislation in Assam has also constrained the score of the State Power Sector in the current exercise.

### ERC

Although the AERC was set up in August 2001, as on August 2002, it was still in the process of streamlining its operations. The Commission's infrastructure was inadequate, both in terms of physical infrastructure and manpower availability. However, since the beginning of August 2002, the level of activity at the AERC has increased perceptibly.

The Commission, which was operating from a temporary office in the ASEB colony at Narangi in August 2002, was scheduled to shift to a larger office space within a couple of months. The AERC has already drafted the Conduct of Business Regulations and the Guidelines for Tariff Filing. In addition, it has appointed three advisors (Technical/Legal/Financial). Also, bids have been invited from consultants to help the Commission evaluate the tariff petition that is likely to be filed by the ASEB within the first week of September 2002. The AERC is expected to pass its first tariff order within three months of the filing of the petition. Although the budgetary support provided to the Commission by the State Government is inadequate in the current year, the GoA has promised additional funds to meet the expenses required for evaluation and passing of the tariff order. The score of the Assam State Power Sector on the SERC parameters has however been low in the absence of any tariff order as on date.

### **Operational Parameters (Generation, Transmission and Distribution)**

As far as the operations of the ASEB are concerned, there is much to be desired in the area of generation. While the total installed capacity of the State is 574 MW, nearly 318 MW of capacity currently lies idle, either because of poor health and obsolescence of machinery such as the 240 MW coal-based Bongaigaon thermal power station and the 18 MW mobile gas turbines or the prohibitively high cost of fuel required for generation such as the 60 MW Chandrapur thermal power station. Only the gas-based plants at Lakwa and Namrup are generating power to a reasonable extent. But even in the case of these two plants, power generation has been constrained by the inadequate supply of gas (at the Lakwa thermal power station) and the poor condition of equipment (at the Namrup thermal power station). Overstaffing as compared with the normative levels and high heat rates further raise the cost of generation for ASEB. In the absence of adequate generation, Assam has to rely heavily on purchased power to meet electricity demand in the State.

The high technical and commercial losses in ASEB T&D system (nearly 40%), despite the low agricultural consumption, add further to the cost of supply. The ASEB has procured the required number of electronic meters to achieve 100% metering at the 11KV feeder level and is expected to complete the installation of the same by December 2002. A subsequent energy audit would be helpful in reducing the ATC losses. Meanwhile, the ASEB is taking initiatives to curb theft of power by conducting meter testing and raids. Computerisation of billings is however yet to make any headway because of funding constraints, and this limits the potential of improving billing efficiency, which at present is reportedly at 80-85%. The GoA is supplementing the ASEB's efforts to bring down the level of arrears by ensuring timely payment of dues from its own departments. The level of receivables from the Government departments reduced to nil by the end of 2001-02.

### **Finances**

Given the high cost of supply and inadequate tariff levels, the financial health of the ASEB is weak at present. Moreover, the tariffs have not been revised since September 1998. In addition, no subsidy has been forthcoming from the GoA, leading to high cash losses, negative net worth and mounting overdues to both the Central sector power utilities and lenders. While the ASEB continues to be in default on all its loan obligations (except for dues to PFC and NEDFI and a portion of the ASEB bonds), it has been paying its current dues to the Central sector power utilities since July 2002 and has opened a letter of credit (L/C) facility for the purpose. However, a tariff revision at the earliest is critical for the sustenance of the ASEB's ability to repay its dues on time, at least in the short term. In the medium to long term, the Board's technical and commercial losses will have to be reduced and its operating costs brought down so that it can achieve financial viability.

## 2. STRUCTURE OF THE POWER SECTOR

The power sector in Assam comprises a single entity, viz., the Assam State Electricity Board which is a vertically-integrated entity responsible for generation, transmission and distribution of power in the State of Assam. Currently, the ASEB has a total generating capacity of 574 MW, the break-up of which is as follows:

**Table 2.1: Break-up of Installed and Operational Capacity**

(in MW)

Own Generation	Installed Capacity	Operational Capacity
<b>Thermal</b>		
- Namrup (Gas)	133.50	110
- Lakwa (Gas)	120.00	105
- Chandrapur (Oil)	60.00	45
- Bongaigaon (Coal/HSD/HFO)	240.00	40
- Mobile Gas Turbine	18.94	0
Subtotal	572.44	300
<b>Hydel</b>	2	Nil
<b>Total</b>	<b>574.44</b>	<b>300</b>

However, a significant portion of the installed capacity has remained non-operational in the past three years. As per the annual accounts of the ASEB, the installed capacity that was operable at the beginning of the 2000-01 was 300 MW only (as illustrated in the Table above). Even in those units that were operable, the generation has been low aggregating around 850-900 million units (MU), leading to a high dependence on purchased power.

ASEB purchases power from the various central sector units and from DLF Power, the sole Independent Power Producer (IPP) in the State with an installed capacity of 24.5 MW. Table 2.2 presents the share of ASEB in the various CPSUs:

**Table 2.2: Share of ASEB in the CPSUs**

CPSU	Capacity in MW	Share (%)	Share (in MW)
KHEP, NEEPCO	250	50.4	126
Agartala TPP, NEEPCO	84	41.8	35.11
Kathalguri, NEEPCO	291	52.85	153.8
Doyang, NEEPCO	75	40.22	30.17
Ranganadi	405	39.75	161
Loktak, NHPC	105	25.97	27.27
Total			533.35

Besides, the ASEB also has a bilateral arrangement with National Thermal Power Corporation (NTPC) whereby the latter has allotted ASEB the following share, which is subject to a six-monthly review, in three of its generating units in the Eastern region.

**Table 2.3: ASEB's Share in NTPC's Generating Units in Eastern India**

<b>NTPC Share as on date</b>	<b>Capacity (in MW)</b>	<b>Share (%)</b>	<b>Share (in MW)</b>
Farakka	1600	2.46	39.36
Kahelgaon	840	5.36	45.02
Talcher	1000	5.18	51.8
<b>Total</b>			<b>136.18</b>

At 585 MW in 2001-02, the peak demand of Assam has exhibited a compounded annual growth rate (CAGR) of 3.8% in the past five years. While the peak deficit was as high as 120 MW in 2001-02, the overall energy deficit had remained at 230 MU in the same year. With its own generating units being in poor health resulting in low heat rates and high auxiliary consumption, purchased power is expected to continue to meet a significantly larger share of the demand of power within the State, compared to own generation. ASEB is in the process of augmenting its generation capacity through construction of a hydel power plant at Karbi Langpi, with an installed capacity of 100 MW. The estimated cost of the project is Rs. 4.54 billion. The Tenth Five-Year Plan also envisages addition of a 38 MW waste-heat recovery unit to be installed in the Lakwa thermal power station. However, the finances for this project are yet to be tied up and the actual implementation of the project is contingent on adequate availability of funds.

Assam has a transmission network of 4,136.8 Circuit (Ckt) km and sub-transmission and distribution network comprising 4,766 Ckt of 33 kV lines, 32,159 Ckt km of 11kV lines and 42,554 Ckt km of LT lines. The major power-consuming centres of the State are located in Guwahati and Dibrugarh. The State is interconnected with other States in the North-Eastern region and also with the Eastern region.

As on March 31, 2002, ASEB served over 0.9 million consumers, out of which nearly 70% are domestic consumers. The domestic consumption accounted for 28% of energy sold and 18% of revenue billed in FY01. The industrial consumption, on the other hand, (including sale to tea/coffee gardens) accounted for 33% and 45%, respectively, in the same period.

### 3. DISCUSSION ON THE RANKING PARAMETERS

#### A. STATE GOVERNMENT-RELATED PARAMETERS

Item No	Item Description	Max Score	Score Assigned
A1	Existence of formal action plans for time-bound reforms	5	2.5

The GoA has signed an Memorandum of Understanding (MoU) with the Ministry of Power (MoP) in March 2001. ASEB has signed a Memorandum of Agreement (MoA) with MoP in July 2002. By virtue of these, the GoA and the ASEB have committed to initiate the reform process in the State in a time-bound manner. The status of implementation against the various reform parameters, as laid out in the MoU, is given below.

Intended Reforms	Status of Implementation
GoA would appoint the Chairman/Member SERC by April 30, 2001.	The same has been done but with a delay of two months.
GoA will operationalise the SERC by June 30, 2001. State Government would assign the SERC with the responsibility of tariff fixation and recommend to the GoI the omission of Sec 43(2) of the Electricity (Supply) Act, 1948.	The SERC has been formed under the Electricity Regulatory Commission Act, 1998. No separate legislation has been passed in this regard. The SERC is now operational and the process of tariff evaluation has been initiated.
The State Government would give its full support to the State Electricity Regulatory Commission to discharge statutory responsibilities.	GoA has provided budgetary allocation of Rs 2 million in 2002-03 for the SERC. Although the amount in itself is insufficient, GoA has promised additional ad hoc need-based funding in this year. From next year onwards, the Commission is expected to get adequate funds from the Consolidated Funds.
Energy audit at all levels. Installation of metering at all 11kV levels by July 31, 2001. 100% metering of all consumers by December 31, 2001. Online computerised billing at all major towns through by March 31, 2002.	Procured the necessary meters and CT/PT sets. Installation is underway and is expected to be complete in all Non-APDRP circles by the end of December 2002. All consumers are expected to be metered in the next two years.  Feeder-wise energy audit to be taken up once metering is complete. Normative Energy Audit is in place.  A pilot project on computerised billing is being taken up in a subdivision of Guwahati circle which is expected to be complete by December 2002. The experience gained through the same will be utilised to carry out online computerised billing system in three to four other circles.
Intended Reforms	Status of Implementation

The GoA will take measures including rationalisation of existing manpower, making only need-based recruitment, to reduce the cost of supply in the State.	A VRS scheme is being planned, provided the SEB is able to tie-up the required funds. The SEB has also engaged a consultant to carry out a study on manpower rationalisation. Further, in the last Board meeting of the SEB, it was decided to abolish 50 posts. ASEB has also released over 700 contract labourers who had been working for it for nearly two decades.
Level of ASEB's receivables to be brought down to 60 days billing by March 2002.	No significant progress has been made in this regard. However, the State Government, on its part, has cleared all the outstanding dues to the SEB on account of electricity consumed by its own departments. It is currently paying Rs. 30 million every month towards the electricity consumed by its departments. ASEB is also tightening its recovery efforts from municipal bodies through disconnection.
Assam will maintain Grid Discipline, comply with grid code and carry out the directions of Regional Load Centre.	The State has a full-fledged SLDC to monitor its load management and carry out the instructions of the NERLDC and ERLDC. There has been no known occurrence of grid indiscipline in the recent past.
GoA will securitise outstanding dues of CPSUs as per the scheme approved by GoI.	GoA has agreed to securitise accumulated dues of Rs. 11.1 billion till September 30, 2001 to the CPSUs (after taking into account 60% surcharge waiver) through issue of bonds to CPSUs.

ICRA has also been given to understand that an Electricity Reform Bill is in the process of being drafted. There is, however, no fixed ascertainable timeframe at this stage.

Based on the above, ICRA has assigned a score of 2.5 to ASEB.

Item No	Item Description	Max Score	Score Assigned
A2	Three-year track record of subsidy payment:	5	0

The rate of return (RoR) generated by ASEB over the past three years was as follows:

	2001-02	2000-01	1999-00
RoR	-74.63%	-81.4%	-76.44%

The subsidy to be paid is based on 3% RoR. No subsidy has been paid by ASEB in the three-year period under consideration (i.e., FY00, FY01 and FY02). Hence ICRA has assigned a score of zero.

Item No	Item Description	Max Score	Score Assigned
A3	Sustainability of subsidy	5	0

The Assam Government has not been paying any subsidy to ASEB for the past few years. An analysis of the State Government Finances reveal that the Revenue Deficit as a ratio of Revenue Receipts has increased from 20% in 1998-99 to an estimated 25% as per the Revised Estimates of 2001-02. The Gross Fiscal Deficit as a percentage of GSDP was 6% for 1999-00. In view of the strained financial position of the State Government and the fact that it has not been paying any subsidy, ICRA has assigned it a zero score.

Item No	Item Description	Max Score	Score Assigned
A4	Legislation for Power Sector Reforms	5	1.25
	a) Treatment of subsidies in the legislation including transitional support to utilities		
	b) Stringent Anti-Theft Legislation		
	c) Implementation of the Anti-Theft legislation		
	d) Powers of the ERC		

No new legislation has been enacted as yet regarding power sector reforms. However, the State ERC has been formed under Section 57 of the Electricity Regulatory Commission Act, 1998. The draft legislation is now with the Law Department and the Government is reportedly studying the anti-theft legislation that have been introduced in other states like Andhra Pradesh and West Bengal. However, ASEB has been taking initiative to stop pilferage and meter tampering under the existing laws. The total number of cases filed was 1230 in 1999-00, 885 in 2000-01 and 670 in 2001-02. In the first six months of 2002-03, 932 cases have been filed and nearly Rs. 4.4 million has been realised.

Taking the above into consideration, ICRA has assigned an overall score of 1.25.

**B. SERC-RELATED PARAMETERS**

Item No.	Description	Max Score	Assigned Score
<b>B1</b>	Infrastructure	5	1.5
<b>B2</b>	Timeliness of order	5	0
<b>B3</b>	Tariff philosophy	10	0

**B1: Infrastructure**

The Gazette Notification for the formation of the SERC was published in March 2001. At present, it is a one-member Commission headed by Mr. Nilmani Barua who has a technical background and is the ex-Managing Director of NEEPCO (North-Eastern Electric Power Corporation Limited). A Secretary and three advisers, one each in the areas of Technical, Legal and Finance assist him. Apart from this team, there was no other qualified staff (as of August 2002). As of August 2002, the Commission was operating from a temporary office located within the ASEB colony premises at Narangi. ICRA had been given to understand that the Commission would be shifting to new, larger and adequate office premises in the near future. The infrastructure provided to the Commission was inadequate, both in terms of manpower and in terms of facilities like communication equipment, etc. In order to make the Commission operational, a small amount of Rs. 2 million had been provided in the Annual Budget of the GoA in 2002-03, apart from which, the Commission had no other sources of funds. It has, however, been proposed to provide for adequate funding from the Consolidated Funds from 2003-04 onwards. For the smooth functioning of the Commission in the current year, GoA has promised adhoc need-based funding support. In view of the above, ICRA, therefore, assigns ASEB a score of 1.5.

**B2/B3: Timeliness of Orders/Tariff Philosophy**

Despite the fact that the Commission had been formed in August 2001, it was able to notify its Conduct of Business Regulations and frame the guidelines for tariff filing only in July 2002. On its own, ASEB had submitted the tariff proposal to the Commission before such guidelines were formed. However, the Commission found the petition to contain insufficient information and asked for re-submission of the petition in accordance with the guidelines framed by it. ASEB has filed the revised guidelines in October 2002. As of August 2002, AERC has already floated a tender inviting bids from consultants for assisting it in the evaluation of the tariff proposal. The first tariff order is expected to come by December 2002. However, till such time that the tariff

order comes, ICRA is constrained to assign a score of zero to both the above-mentioned parameters of timeliness of orders/tariff philosophy.

**C. BUSINESS RISK ANALYSIS****CI. Generation**

Item No	Item Description	Max Score	Score Assigned
a)	Auxiliary power consumption	1	0.25

The following Table indicates the auxiliary power consumption in generating stations of the State of Assam:

	2001-02	2000-01	1999-00
Auxiliary consumption (gas)	5.3%	5.3%	5.4%
Auxiliary consumption (coal/oil)	23.51%	22.68%	16.35%
Wtd. avg. auxiliary consumption	6.30%	7.10%	7.53%
Normative auxiliary consumption (gas)	3.0%	3.0%	3.0%
Normative auxiliary consmpn—Wtd. Avg. (coal/oil)	9.50%	9.50%	9.50%
Normative auxiliary consmpn—overall wtd. Avg.	3.36%	3.67%	4.26%
Variation	2.9%	3.4%	3.3%
Avg variation		3.2%	

Since the variation ranges between 3-5%, the score assigned is 25% of the maximum score.

Item No	Item Description	Max Score	Score Assigned
b)	Plant Load Factor	2	0.5

The following Table indicates PLF details:

	2001-02	2000-01	1999-00
Thermal Stations:			
Namrup (Gas)	35.3%	40.7%	29.2%
Lakwa (Gas)	36.3%	34.5%	34.1%
Chandrapur (Oil)	0.0%	0.0%	6.2%
Bongaigaon (Coal/HSD/HFO)	2.2%	4.6%	6.4%
MGT	0.0%	0.0%	0.0%
Subtotal	16.8%	18.6%	17.3%
Hydel	0%	0%	0%
Overall average for three years		17.56%	

The above PLF is estimated on the basis of the declared installed capacities. However, as mentioned earlier, in the discussion on the power generation aspect, the operating capacity has

been 300 MW only. The average PLF estimated on the basis of operative capacity is 33.53%. Since this figure is greater than 25%, the score assigned is 25% of the maximum score.

The main factors contributing to the low PLF are obsolescence of machinery, lack of proper repairs & maintenance and shortage of gas. A study done by ASCI in 1998 on the Bongaigaon thermal power plant reveals that out of the four 60 MW units, one unit is not operating after a boiler explosion in 1991. In fact, the study revealed that several of its parts have been taken away for use in other units due to non-availability of spares on time. Another unit, commissioned in 1985, has problems in the bank tubes connecting the upper and lower parts of the boiler drum which, as per the ASCI Report, has occurred due to water starvation of the boiler while on fire. The remaining two units, commissioned in 1982 and 1986, respectively, have coal feeding and air leakage problem in the regenerative air pre-heater and need heavy oil support to run at loads which are considerably lower than the rated capacity. But apart from the lack of proper maintenance, ostensibly due to fund constraints, the machines installed have also reportedly been suffering from design defects, which have resulted in the PLF scores not exceeding 25% for the Bongaigaon Thermal Power Stations (BTPS) right from inception. BTPS, therefore, has been under suspended operation since March 2002. The Lakwa TPS and the Namrup TPS also suffers from energy-inefficient machines. Although the heat rates for these two stations appear to be high at 3,918 Kcal/unit and 4,270 Kcal/unit, respectively, these are still lower than the design parameters. Many of the units installed at these locations have already clocked more than 1 lakh running hours, indicating the urgent need for assessment of residual life. In fact, ASEB is in the process of appointing consultants for conducting the Residual Life Analysis (RLA) study for BTPS, Lakwa TPS and Namrup TPS.

Another problem in the area of power generation is the lack of adequate gas supply. For example, in order to run the Lakwa gas-based plant even at a PLF of 68.5%, the total requirement of gas is 0.8 mmscm per day while the availability is only to the extent 0.45-0.5 mmscm per day. ASEB is now planning to divert the gas contracted for a new upcoming plant at Amguri to its existing gas-based plant at Lakwa. This would provide LTPS plants with an additional supply of 0.5 mmscm per day. The gas pipeline is being laid by the Assam Gas Company Limited and the additional gas is expected to be available by the middle of 2003. As far as the Chandrapur TPS is concerned, the prohibitive cost of oil has prevented the ASEB from running the plant.

Item No	Item Description	Max Score	Score Assigned
c)	Availability factor	2	0

As per the information given by the ASEB, the average availability of its thermal plants in the three-year period FY00-FY02 was 30.32%, compared to the normative availability of 80% for the coal-fired plants and 85% for the gas-based plants. Since the variation with relation to the normative availability is more than 5%, ICRA has assigned a score of 'zero' to the availability factor.

Item No	Item Description	Max Score	Score Assigned
d)	Manpower level per MW generated*	1	0

\* marks for manpower in hydel plants has been re-allocated on account of absence of any significant hydel capacity

The total manpower employed in generation is 1,934 as on June 30, 2002. Based on an installed capacity of 572.4 MW (thermal), the number of people per MW is 3.38. The variation with the benchmark figure of 1.23 employees per MW is, therefore, nearly 174%, which has resulted in ICRA's assigning a score of zero to the above parameter. Evidently, ASEB suffers from the problem of overstaffing. The Board has already released over 700 contract labourers who have been working for them for nearly two decades and is also considering a VRS proposal. Nothing, however, has been finalised on the VRS as yet.

## ***C2. Transmission and Distribution***

Item No	Item Description	Max Score	Score Assigned
a)	Level of interface metering	2.5	0

The following Table gives the level of metering in the State of Assam in March 2002:

	No. of Feeders	Metered Feeders	Unmetered Feeders	% of Metered Feeders	No. of Defective Meters	% of Operating Meters
220kV	18.00	15.00	3.00	83%	8.00	39%
132kV	82.00	62.00	20.00	76%	23.00	48%
66kV	27.00	22.00	5.00	81%	5.00	63%
33kV	484.00	265.00	219.00	55%	77.00	39%
11kV	1,186.00	344.00	842.00	29%	193.00	13%
6.6kV	1.00	0.00	1.00	0%	0.00	0%
3.3kV	10.00	9.00	1.00	90%	1.00	80%

For the 66 kV, 33 kV and 11 kV feeders put together, as against a total number of 1,697 feeders, around 631 feeders are metered. The number of meters in good condition is 356 which translates to 20.98 % of the total. Since the number of metered feeders (in working condition) is less than 25%, ICRA has assigned a score of zero to the level of interface metering.

Item No	Item Description	Max Score	Score Assigned
b)	Quality of T&D network	3.5	1.75

The major instances of system (grid) disturbance during the period April 2001 to March 2002 was as follows:

Period	April'01-Sept'01	Oct'01-March'02
No. of occurrences	29	3
Total duration of interruption	2 hrs 11 min	9 min
Estimated unserved energy due to such interruptions	765 MU	55MU
No. of occasions when the State grid was isolated from the regional grid due to system disturbance affecting power supply in the State.	29	3

The major interruptions that occurred in the transmission system in FY02 were a result of a system disturbance in the North Eastern grid because of which the State transmission system had to be isolated from the grid. Although this happened on 32 occasions in the last financial year, it was only three times that such occurrences happened in the last six months of the previous year.

The overall outage on account of the major interruptions was 2 hours 20 minutes in FY02. As per the data provided to ICRA, the availability of the transmission lines was 99% in FY02. However, the data on the availability of distribution lines was not provided to ICRA. Therefore, ICRA has assigned an overall score of 1.75 to the quality of T&D network.

Item No	Item Description	Max Score	Score Assigned
c)	Units billed on metered basis/units input in the system	3	0

As per the information provided by the Board, out of the 1,655.39 MU of energy billed in 2001-02, 1,589.07 MU was on the basis of metered data. Since this comprises merely 49% of the units input in the system in the same period, ICRA has assigned a score of zero. However, it needs to be mentioned that the total number of unmetered consumers has shown a decreasing trend. All new connections are being issued only on a metered basis. The total number of unmetered connections has decreased from 1,49,429 in 1999-2000 to 1,42,042 in 2001-02.

Item No	Item Description	Max Score	Score Assigned
d)	Energy audit	2.5	0

No energy audit has been done as yet. Hence, ICRA has assigned a score of zero to energy audit. However, ASEB has stated that energy audit for all the 11 kV feeders is going to be taken up after 100% meters have been installed on the same (the target for non-APDRP circles is December 2002). The overall target for implementing distribution reforms is December 2004.

Item No	Item Description	Max Score	Score Assigned
e)	Aggregate Technical and Commercial Losses	2.5	1.25

The ATC computation for 2001-02 is as follows:

	2001-02	2000-01	1999-00
Total units input (MU)	3247.6	3174.83	2873.81
Average realisation (Rs/unit)	3.50	3.26	3.10
Total collectibles (Rs billion)	11.36	10.35	8.91
Actual cash collections (Rs billion)	6.86	5.79	5.11
ATC losses (Rs billion)	4.51	4.57	3.8
ATC loss (%)	40%	44%	43%
Average		42%	

Since the ATC loss ranges between 40--50%, 50% of the maximum score has been assigned.

Item No	Item Description	Max Score	Score Assigned
f)	Collection efficiency	2.5	2.5

The collection efficiency for past three years has been as follows:

	2001-02	2000-01	1999-00
Amount billed (Rs billion)	6.40	6.33	5.01
Opening debtors (Rs billion)	3.61	4.22	3.87
Cash collections (Rs billion)	6.86	5.79	5.11
Collection efficiency	69%	55%	58%
Average		60%	

However, the collection efficiency on current billings has shown significant improvement, as depicted below.

	2001-02	2000-01	1999-00
Amount billed (Rs billion)	6.40	6.33	5.01
Cash collections (Rs billion)	6.86	5.79	5.11
Collection efficiency	107%	91%	102%
Average		100%	

ICRA, therefore, has assigned the maximum score on the basis of current collection efficiencies.

Item No	Item Description	Max Score	Score Assigned
g)	Manpower in T&D	2.5	0

The total manpower in T&D is 13,480 as on March 31, 2002 while the total number of consumers is approximately 911,514 (as on June 30, 2001). On an average, therefore, 14.8 employees serve 1,000 consumers. The median for the Number of Employees per 1,000 consumers in India (overall) is 7.59, as per the Annual Report on the Working of SEBs by the Planning Commission. Since the variation is over 50%, ICRA has not assigned any score.

**D. FINANCIAL RISK ANALYSIS**

Item No	Item Description	Max Score	Score Assigned
D1	Total debt/Net worth	2.5	0

Since the tangible net worth of the ASEB is negative on account of the accumulated losses, ICRA has assigned a score of zero to the above parameter.

Item No	Item Description	Max Score	Score Assigned
D2	Revenues from sale of power/Coverage of power Purchase and own gen costs	3.5	0

ASEB's revenue from sale of power has not been sufficient to cover the cost of its purchased power and operating expenses, as depicted in the following Table. Hence, ICRA has assigned a zero score.

Figures in Rs Billion	2001-02	2000-01	1999-00
Revenues from sale of power	6.36	6.23	5.18
<b>Costs</b>			
Power purchase cost	6.16	5.71	4.98
Fuel costs	0.76	0.88	0.83
O&M costs	0.15	0.17	0.15
<b>Power Purchase + Generation Costs</b>	<b>7.07</b>	<b>6.76</b>	<b>5.95</b>
Coverage	90%	92%	87%
Average		90%	

Item No	Item Description	Max Score	Score Assigned
D3	Revenues from sale of power / Coverage of all costs + Interest	5	2.5

A score of 50% is assigned to the parameter as per the calculation shown below:

Figures in Rs billion	2001-02	2000-01	1999-00
Revenues from sale of power	6.36	6.23	5.18
Operating costs	9.94	9.68	8.48
Interest	2.56	2.40	2.31
Operating costs + Interest	12.5	12.08	10.79
Coverage	51%	52%	48%
Average		50%	

Item No	Item Description	Max Score	Score Assigned
D4	Actual track record of debt servicing	5	0

ASEB has been defaulting on most of its loan obligations like State Government loans, bonds and loans taken from institutions like REC, LIC, etc. Hence, ICRA has assigned a score of zero.

Item No	Item Description	Max Score	Score Assigned
D5	Level of receivables	2.5	0

The level of receivables, related to the sale of power and ignoring the receivables on account of delayed payment charges, is 207 days as on March 31, 2002. Although this has shown a decline from the figure of 247 days as on March 31, 2001, it is still greater than 120 days and hence, ICRA has assigned a score of zero.

Item No	Item Description	Max Score	Score Assigned
D6	Power purchase and fuel creditors	2.5	0

The movement in power purchase and fuel creditors is as follows:

	2001-02	2000-01	1999-00
Power purchase and fuel costs (Rs Billion)	6.91	6.59	5.80
Power purchase and fuel creditors (Rs Billion)	15.96	13.35	10.16
Creditor Days	8.43	7.40	6.39

Since days outstanding is over 90 days, ICRA has assigned a zero score.

Item No	Item Description	Max Score	Score Assigned
D7	Funding of pension and gratuity liabilities	3	1

Although there is a Trust for meeting pension liabilities, the gratuity liabilities of the Board are currently unfunded. The gratuity liabilities are met as and when they mature. Hence, ICRA has assigned score of 1.

Item No	Item Description	Max Score	Score Assigned
D8	Projections	6	1.2

ICRA's projections have been based on assumptions of a 5% growth in units sold in each of the next three years, 20% increase in tariff w.e.f 2003-04, decrease of 2% in the T&D losses in each of the years 2003-04 and 2004-05 and the commissioning of the Karbi Langpi HEP in 2004-05. The higher gas availability in the LTPS has also been assumed w.e.f 2004-05. The establishment and O&M expense and the interest charges have been sourced from ASEB. It is observed that with increase in tariffs and the higher availability of cheap hydel generation, in addition to reduction in T&D losses, the coverage indicator improves significantly in 2004-05. However, since the tariffs will be determined by the AERC and the performance of the SEB in reducing T&D losses is yet to be demonstrated, ICRA cannot project the future numbers with conviction.

Period	2001-02 (estimated)	2002-03 (projected)	2003-04 (projected)	2004-05 (projected)
Revenue receipts including cash subsidy /Revenue expense including interest	50.6%	48.1%	53.7%	58%

ICRA is, therefore, assigning a score of 1.2 to this parameter.

**E. OTHERS**

Item No	Item Description	Max Score	Score Assigned
	Information Risk	5	2
	Quality and availability of MIS		
	Tariff filing with the SERC		

Overall, the status of receipt of information and MIS statements has been satisfactory, although there is scope for improvement. ASEB has taken the initiative to file the tariff petition in end of June 2002 even when the detailed guidelines were yet to be notified by AERC. ICRA, therefore, assigns it a score of 2.

## 4. KEY CONCERNS

Assam set the process of power reforms rolling when the GoA signed the MoU with the GoI in March 2001 signifying its commitment towards making this sector commercially viable. Since then, the SERC has been formed and operationalised, the process of securitisation of CPSU dues has been initiated and the action plan for distribution reforms have been agreed upon by the SEB and the Ministry of Power (MoP) through the Memorandum of Agreement (MoA) signed in July 2002.

However, the initial steps that have been taken with regard to the reform process needs to be followed up with further action in a time-bound manner. Presently, the Assam State Electricity Board is under significant financial strain which is a result of poor generation performance, high ATC losses and inadequate levels of tariffs. While the issue of tariff is expected to be addressed by the SERC by December 2002, any significant reduction of T&D losses will only be possible after 100% metering and energy audit is implemented. The installation of meters is taking place and is expected to be completed in most of the circles by end of 2002. The high ATC losses of ASEB remain a matter of concern and, it is in this context that the implementation a strong anti-theft legislation assumes importance. In the absence of such legislation, the ASEB will have to put in more efforts (and, hence, resources) on vigilance and power theft. The implementation of online computerised billing systems is essential to improve the billing efficiency. However, the generation performance of the SEB remains the weakest link in the power chain, with obsolescence of machinery, poor maintenance and lack of adequate fuel (gas) taking its toll on the PLFs and heat rates, thus raising the cost of generation.

ICRA expects the financial health of the ASEB to remain weak in the short term, although the first six months of operations in the current year shows an improvement in cash deficit, compared with the same period of last year. The weak financial health of the GoA also does not raise any hope of adequate fund support from the State Government. In these circumstances, the implementation of the distribution reforms with the help of APDRP funds and the timely addition of the hydel capacity without any further cost overruns assumes significance in so far as the improvement in the future cash position of the SEB is concerned. The efforts of ASEB to improve its collection efficiency (especially the dues from the Government departments and municipalities), reduce the costs (both through manpower rationalisation and sourcing of cheaper

hydel power from NEEPCO) and implement administrative changes (involving delegation of powers to the distribution circles along with consequent accountability) however raises the hope of improvement in the SEB's performance in the medium term.

## 5. ANNEXE 1.... PAST FINANCIALS

ASSAM Figures in Rs Billion Particulars	Apr-1, 01 To Mar-31, 02	Apr-1, 00 To Mar-31, 01	Apr-1, 99 To Mar-31, 00
	Provisional and under audit		
Revenue from Sale of Power	6.36	6.23	5.18
Subsidies and Grants from Government	0.52	0.53	0.52
Less: Electricity Duty	0.05	0.04	0.04
Net Revenue	6.84	6.72	5.67
Other Related Income	0.10	0.08	0.19
<b>OPERATING INCOME</b>	<b>6.93</b>	<b>6.80</b>	<b>5.86</b>
Purchase of Power	6.16	5.71	4.98
Fuel Charges	0.76	0.88	0.82
O & M	0.15	0.17	0.15
Employee Costs	2.69	2.72	2.34
Admin & Other Expenses	0.18	0.20	0.19
<b>COST OF SALES</b>	<b>9.94</b>	<b>9.68</b>	<b>8.48</b>
<b>OPBDIT</b>	<b>-3.01</b>	<b>-2.88</b>	<b>-2.62</b>
Interest on State Government Loans	1.27	1.18	1.09
Interest and Finance Charges on Others	1.28	1.22	1.22
Less: Interest & Financial Charges Capitalised	0.00	0.00	0.00
Total of Interest and Finance Charges	2.56	2.40	2.31
<b>OPBDT</b>	<b>-5.56</b>	<b>-5.28</b>	<b>-4.94</b>
Depreciation	0.86	0.84	0.89
<b>OPBT</b>	<b>-6.42</b>	<b>-6.11</b>	<b>-5.82</b>
Non-operating Income	0.08	0.04	0.04
Extraordinary Income	0.00	0.00	0.00
Other Debits & Extraordinary Items	-0.01	0.01	0.00
Capitalised Expenses	0.02	0.01	0.01
<b>PBT</b>	<b>-6.32</b>	<b>-6.07</b>	<b>-5.78</b>
Tax	0.00	0.00	0.00
<b>Reported PAT</b>	<b>-6.32</b>	<b>-6.07</b>	<b>-5.78</b>
<b>Adjusted PAT (Incl. prior period charges)</b>	<b>-6.20</b>	<b>-6.71</b>	<b>-6.95</b>
Accretion to Reserves	-6.20	-6.71	-6.95
Cash Accruals	-5.46	-5.24	-4.89

## 6. ANNEXE 2 ...PROJECTED FINANCIALS

Profit & Loss Account for the year Figs in Rs Billion	FY2001	FY2002 (Provisional)	FY2003	FY2004	FY2005
Revenue from Sale of Power	6.23	6.36	6.65	8.29	8.68
Subsidies and Grants from Government	0.53	0.53	0.53	0.53	0.53
less: Electricity Duty	0.04	0.04	0.05	0.06	0.06
Net Revenue	6.72	6.84	7.14	8.76	9.15
Other Related Income	0.08	0.10	0.10	0.10	0.10
<b>OPERATING INCOME</b>	<b>6.80</b>	<b>6.94</b>	<b>7.23</b>	<b>8.85</b>	<b>9.24</b>
Purchase of Power	5.71	6.16	6.07	6.52	4.88
Fuel Charges	0.88	0.76	0.68	0.72	1.25
O & M	0.17	0.15	0.34	0.36	0.39
Employee Costs + Admin and Other Expenses	2.91	2.87	3.12	3.23	3.23
<b>COST OF SALES</b>	<b>9.68</b>	<b>9.94</b>	<b>10.21</b>	<b>10.83</b>	<b>9.75</b>
<b>OPBDIT</b>	<b>-2.88</b>	<b>-3.00</b>	<b>-2.98</b>	<b>-1.98</b>	<b>-0.51</b>
Interest on State Government Loans	1.18	1.27	2.10	3.08	3.83
Interest and Finance Charges on Others	1.22	1.28	1.44	1.42	1.29
Less: Interest & Financial Charges Capitalised	0.00	0.00	0.00	0.00	0.00
Total of Interest and Finance Charges	2.40	2.56	3.54	4.50	5.13
<b>OPBDT</b>	<b>-5.28</b>	<b>-5.56</b>	<b>-6.52</b>	<b>-6.48</b>	<b>-5.64</b>