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The Financing Capabilities of Indian Institutions to Provide Alternatives to Sovereign Guarantees

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THE FINANCING CAPABILITY OF INDIAN INSTITUTIONS TO PROVIDE ALTERNATIVES TO SOVEREIGN GUARANTEES

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EXECUTIVE SUMMARY

The introduction of private power is viewed by many as one of the most important steps India can take toward meeting the growing demand for electricity over the next decade and beyond. To date, the private power program has attracted a great number of independent power project (IPP) proposals. Although tangible progress has been made on most of these projects and investor interest remains high, progress has been slower than desired.

One of the main reasons that projects are not moving faster towards closure is the difficulty in obtaining project financing, especially debt financing. To address the financing issue (and to gain investor confidence in the private power program in general), the Government of India (GOI) offered central guarantees on the first eight so-called "fast-track" projects. As of late-1995, two projects had obtained guarantees and all eight had been designated. For other projects, different approaches to obtaining financing need to be found since the GOI is reluctant to continue pledging national credit for private power project financing. However, the basic credit problem that first necessitated the GOI guarantees remains. This problem is the generally poor credit of the State Electricity Boards (SEBs), which are the primary buyers of power from IPPs.

The Ministry of Power of GOI has suggested at least eight alternatives to the GOI counter guarantee. These include combinations of security arrangements based on letters of credit, escrow accounts, guarantees of performance and payment, access to central devolutions (annual funds transferred to the states from the center), and balance sheet financing. The institutions offering credit support through these mechanisms include the SEBs, state governments, centrally-owned enterprises, Indian financial institutions and Indian companies. The GOI has not offered details on how these security mechanisms would be structured or the ability of these institutions to be acceptable providers of credit support to lenders and developers. This study provides a description of how these alternative security packages could be implemented and of the ability of some of the institutions to provide credit support.

The alternatives suggested are of three basic types. The first relies on the IPP to establish multiple layers of security from the SEB and the state government to support its power purchase agreement (PPA). One possible scenario would be to have a letter of credit (LC) as the first layer of security; it would be used to cover any short-term shortfalls in the amounts required to make power purchase payments. This would be followed by the establishment of an escrow arrangement whereby selected SEB customers would make payments into an account under the control of an independent agent. In the event of non-payment, amounts in the escrow account would be directed to the IPP rather than the SEB. In the event that the escrow proved inadequate, the IPP could have further recourse to the state government through the state's guarantee of SEB performance. Numerous variations on the LC, escrow account, and state guarantees would be possible to structure and implement. The examples provided in this report are meant to be

illustrative and should not to be viewed as the only method of utilizing these security mechanisms.

The second type of mechanism involves further security to support the issuance of state guarantees. Here, access to state devolutions would provide the IPP with a security interest in funds due to be received by the states from the center. While this arrangement could be legally structured, it would likely require legislative approval before it could be successfully implemented. The third category of security involves the IPP selling power to non-SEB buyers, including the centrally owned National Thermal Power Corporation or Power Grid Corporation of India, Ltd. The alternatives suggested by the GOI are not discrete alternatives and could be used in combination. For example, entering into a PPA with Power Grid Corporation of India might be combined with access to central devolutions.

An analysis of the ability of Indian institutions to provide credit support has been conducted using various methodologies. The basic purpose of this analysis is to provide an indication of the amount of new capacity that could be financed by relying on credit support within India, and as a substitute to a sovereign guarantee. Most important has been the analysis of the SEBs and the state governments. Although guarantees from Indian financial institutions are also a significant source of potential credit support for IPPs, the ultimate risk is usually passed on to the SEBs and state governments.

The methodology for assessing the credit quality of the SEBs is based upon an analysis of business and financial risks primarily using publicly available information. The results, which place SEBs into four bands, are not to be construed as a credit rating. The bands denote a gradation of credit quality that reflects the relative ability of an SEB to meet its payment obligation for purchased power on a timely basis. SEBs in the higher bands could place a larger amount of their revenues into an escrow account than those in lower credit bands. The methodology relies upon an analysis of the current financial condition of the SEBs and makes assumptions about future growth, the pace of power sector reforms, and the impact that reforms will have on SEB creditworthiness.

The analysis of the state governments and Indian financial institutions relies on a similar approach, that is, to analyze the current financial condition and provide estimates of the future based upon a few basic assumptions. In addition, for each institution, the ability to provide credit support has been expressed in terms of the amount of new generating capacity that could be built (in MW) based upon minimum requirements of credit support per MW; these range from Rs. 17.52 per MW for state governments to Rs. 26.3 million per MW for SEBs.

A summary of the credit support expected to be available to finance IPPs from Indian institutions is shown in Exhibit ES-1. It is estimated that, depending upon the nature and pace of reforms, between 17,418 and 20,719 MW of new generating capacity could be supported by SEBs, state governments, and Indian corporations between 1995 and 2002. The GOI estimates that India's

electric capacity needs to increase from 80,000 MW in 1995 to 160,000 MW in 2010. This translates into roughly 5,300 MW per year or 44,000 MW over the study horizon. Our analysis shows that the Indian institutions can provide between 40% and 50% of this need.

Exhibit ES-1
Summary of IPP Credit Support Available from Indian Institutions
(in MW)

SOURCE	1995-1998	1999-2002	TOTAL
State Electricity Boards			
Slow Reform	7,440	3,298	10,738
Moderate Reform	7,440	5,269	12,709
Full Reform	7,440	6,599	14,039
State Government Guarantees	3,400	1,550	4,950
Indian Corporations	1,730	0	1,730
Totals			
Total - Slow Reforms	12,570	4,848	17,418
Total - Moderate Reforms	12,570	6,819	19,389
Total - Full Reforms	12,570	8,149	20,719
Central Transfers to State Governments	5,900	800	6,700
Financial Institutions	11,766	22,002	33,768
Export Credit Agencies	8,250	13,500	21,750

Despite their poor financial condition, SEBs are expected to provide the largest amount of credit support for IPPs. Over the next eight years, they should be able to provide credit support for between 10,738 MW and 14,039 MW, depending on the extent of reform undertaken at the state and central levels. In addition, an estimated 21,750 MW of power could be financed from export credit agencies and 33,768 MW by Indian financial institutions between 1995 and 2002. This is not additional or incremental capacity to the amount provided by Indian institutions; rather, these agencies will rely on the various types of credit described in this report.

The study results indicate that as an intermediate measure, alternatives to the sovereign guarantee are feasible, but are not likely to provide enough credit support to meet all of the needs of India's power sector. Unless reforms are put in place, only half of the country's power sector needs can be met. This emphasizes the need for power sector reforms in India. The analysis presented here

assumes that reforms will begin to be implemented in the second time period (1999-2002), and thus the benefits of reform will only begin to be realized by the end of the time frame for this study. It should be emphasized that the major benefits of reform will occur beyond 2002.

The alternative security mechanisms discussed in this report are only short-term solutions because they imply a finite amount of deals. Because many of these security mechanisms create what is really a preferred class of creditor, over the long term, this could become a problem for other creditors, such as fuel suppliers and equipment vendors. This situation is aggravated by the substantial presence of subsidized consumers.

The alternatives must be viewed as transitional solutions that can attract investment until such time as the basic problem of lack of SEB credit quality is addressed and tackled permanently. The remedy for this basic problem must come through economic reforms in general and power sector reforms in particular. Throughout the reform process, it can be expected that the credit quality of the SEBs will rise to acceptable levels eventually, making the guarantee and alternative guarantee mechanisms redundant. The future capacity additions would depend solely on the fundamental strength of the project, and special treatments and arrangements would no longer be required. However, given the wide scope of problem areas that the reforms must address, the process will involve a considerable period of time. Reforms initiated today will require around five years to have a significant impact.

Some of the long-term requirements to be addressed as part of the power sector reform process include realistic tariff fixation for the subsidized segments, operating efficiency improvements, capital restructuring, and management efficiency improvements. Continual assessments of SEB credit quality is important to the reform process because credit assessments serve as a continuing indication of the progress made in implementing reforms.

Some legal issues remain that need to be discussed in terms of implementing the security mechanisms described in this report, although none of them seem insurmountable. Preliminary legal opinions suggest that the agreements with existing lenders to the SEB could be modified to enable a special charge for the IPP under the escrow arrangement. For the state government guarantee, the Legislative Assembly would have to pass a resolution approving its issuance. While legal counsel believes that the central devolution mechanism is constitutionally valid, legislative approval would be necessary for the state government to enter into the arrangement.

Investors have other concerns as well. Risks such as fuel supply, regulatory risks, and foreign exchange are not discussed in this report, but they are of great concern to IPP developers and should not be overlooked.

CHAPTER 1
INTRODUCTION

This study examines the ability of Indian institutions involved in the development of private power projects to provide direct financing or credit support. It covers the five types of institutions that will most likely assume many of the risks and thus allow projects to obtain financing: SEBs, state governments, Indian financial institutions, private Indian corporations, and Export Credit Agencies. These institutions' ability to support private power projects will be a critical factor in determining the amount of new private power capacity that can be built in India.

1.1 INDIA'S POWER SECTOR FINANCING NEEDS

Since its independence, India has increased its power generating capacity 55-fold: from 1,362 MW in 1947 to 79,817 MW in 1995. Over this period, three-quarters of its 550,000 villages have been connected to the electric grid. This expansion has resulted in per-capita electricity consumption rising from 15.6 billion kWh in 1950 to almost 310 billion kWh in 1994. Nevertheless, India's per capita electricity consumption is still one of the lowest in the world, while its growth in demand for electricity is one of the highest. Major power shortages remain; in 1994 they ranged from 8%-10%, while peak capacity shortages averaged 21%.

India's Central Electricity Authority (CEA) estimates that for the Eighth Plan (1992-97), the nation will need capacity additions of 48,000 MW. By conservative estimates, the country's current generating capacity must be doubled to roughly 160,000 MW over the next 10 to 15 years. However, GOI resources have been insufficient to meet the targets set out in the Eighth (and preceding) Plans, and are not expected to be adequate to meet the demand for new generating facilities beyond the Eighth Plan. As a result, the CEA has since revised its targets downward to 30,538 MW to reflect the limited GOI resources available for capacity expansions. Investment in the power sector was further negatively affected when budgetary cuts reduced total Eighth Plan spending from almost $41 billion to $26 billion. Investments in power generation account for almost 62%, or $16 billion, of total Plan spending (around $3.2 billion per year).

To further complicate this situation, actual spending during the first three years of the Eighth Plan is below target levels. Central sector companies have faced significant investment shortfalls for many reasons, including volatility in capital markets. During FY 1993, these same companies raised only $30-40 million against a target of $500 million from capital market bond issues. As a result, the actual capacity additions in the Eighth Plan are expected to be much lower than the revised target of 30,538 MW.

Rapid growth in the demand for power and insufficient public capital to finance new generating capacity prompted the Government of India to alter its policies in 1992 and allow foreign investment in its power sector. The perceived poor credit risk of India's SEBs, however, is one of several major hurdles that must be overcome in attracting foreign capital to finance private power projects. In 1992 the SEBs suffered financial losses of $1.57 billion. A system of cross-subsidies among the consumer mix that does not fully recoup costs, and high transmission and distribution losses were contributing factors to these financial losses.

1.2 NEED FOR ALTERNATIVES TO COUNTER GUARANTEES

Recognizing that it will take some time before the SEBs are be judged creditworthy by the international financial community, the GOI decided to support the SEBs by offering to guarantee payments for purchased power for a select number of fast-track projects. The government's offer of a counter-guarantee was meant to be a transitional measure, providing time for power sector reform to transform the SEBs into creditworthy institutions. In the end, only eight projects were slated to receive a GOI counter-guarantee, and only two of these have moved forward.

The reluctance of the Ministry of Finance to provide further GOI guarantees is not unjustified, as it would eventually have a negative effect on the sovereign rating of the nation. Further, by granting power sector guarantees, the GOI is potentially leaving itself open to requests for guarantees for other types of privately owned and developed infrastructure projects, such as roads, ports, and telecommunications.

The decision to halt the provision of GOI guarantees has prompted the Ministry of Power to investigate alternative options. Because the reform process is not anticipated to yield immediate results, these alternatives must provide an acceptable arrangement for projects without GOI counter-guarantees to secure the requisite amount of debt financing. As part of the nation's overall program of economic reform, the GOI has high expectations for growth in the industrial sector, which cannot be met unless the power sector can achieve its own targets. Therefore, the question of whether or not private sector power projects without government guarantees will succeed in attracting sufficient debt funding is a critically important one, the answer to which requires an examination of the various alternatives to counter guarantees that are being proposed and an assessment of their viability for attracting debt financing or for directly providing funding.

CHAPTER 2
GUARANTEE ALTERNATIVES

2.1 CURRENT MODELS FOR APPLYING THE GUARANTEE ALTERNATIVES

India's private power program has received as many as 137 proposals from Indian and foreign private investors to build power generating units with an aggregate capacity addition of 58,700 MW (*Business Standard* Feb. 22, 1995). The slow progress of both the administration and financing of these projects has been cause for concern to all parties involved. As these projects move towards financial closure without GOI counter-guarantees, all parties are keenly watching lenders' responses to the guarantee alternatives being proposed.

A number of guarantee alternatives are under consideration. In essence, these alternatives have been proposed because they allow the GOI to shift the risk it assumes under the counter-guarantee arrangement to other parties. At least eight alternatives have been suggested by the GOI. Although the eight alternatives discussed in this chapter are some of the most likely to be adopted, they are by no means the only possibilities.

The ability to finance an IPP on a non-recourse or limited recourse basis depends largely on the credit quality of the power purchaser. Most of the pending proposals involve IPPs that will sell power to an SEB. Under this structure, where the SEB is the sole purchaser of the power, SEB credit quality is one of the most important factors in a project's ability to secure financing.

It is important to differentiate between parties that are able to assume risks and the financial mechanisms that need to be put in place in order to structure the risk allocation. For clarification and illustration, in addition to discussing the various alternatives, several financial structures (such as the escrow account, guarantee agreements, letters of credit, central devolutions, and partial risk guarantees) are described in the context of each alternative. Three examples of financial structures involving Indian institutions are also presented. These current examples are included to illustrate how an IPP security package with no reliance on sovereign guarantees would be structured. As might be expected, legal issues are raised by the use of many of these alternatives. Chapter 4 provides a discussion of some of the legal questions most likely to be raised. The alternatives suggested by the GOI, plus one other under consideration by developers, are discussed below.

2.1.1 Letter of Credit and Escrow Account Backed by SEB Customer Receivables

In this arrangement, it is envisioned that the security package would include both an irrevocable letter of credit and an escrow account. The IPP's first recourse in the case of non-payment would be the letter of credit and then the escrow account.

The irrevocable letter of credit is an instrument issued by a bank guaranteeing payments on behalf of its customer to a beneficiary for a stated period of time and when certain conditions are met. In the context of private power projects, the SEB would open the letter of credit (LC). Although IPP developers would like to have long-term LCs, banks have been reluctant to offer these and LCs would most likely be one-year and irrevocable (i.e., non-cancelable). The SEB would be required to open a LC for a value equal to three months average IPP billing. The payment made under these LCs would be immediate if the SEB failed to make a payment to the IPP for any reason. The bank would either issue the LC under the working capital limits already approved for the SEB or it would issue a new credit for this specific LC. Upon a draw under the LC, the SEB would be required to reimburse the bank within three days. In the event that the SEB does not reimburse the bank, the bank can refuse to revalidate the LC; thus, the bank is limiting its exposure to one month. The LC as described here is useful primarily for short-term liquidity purposes. By itself, It would not likely be considered as acceptable security for an IPP, and thus an escrow account would be required as well.

The escrow account would be an account opened by the SEB for the benefit of the IPP. The escrow account would be administered by an independent escrow agent (normally a bank). A three-party agreement would be entered into among the IPP, the SEB, and the escrow agent, who would act as an agent of the IPP. The cash flows (receivables) of the SEB from selected customers would be deposited directly into the escrow account instead of being paid to the SEB. If no event of default has occurred and there are no outstanding draws under the LC, the agent bank will transfer the funds from the escrow account to the SEB, and the SEB will meet its IPP and other payment obligations. In the event of default, the flow of funds from the escrow account to the SEB would be stopped and payments would be made by the escrow agent from the escrow account directly to the IPP. Transfers from the escrow account to the SEB would only resume when all outstanding payment obligations to the IPP had been met.

The funding for the types of escrow accounts now being discussed would be set at a multiple of one month of IPP billing. The amount of the multiple is discussed further in Chapter 3. Because the escrow account needs to be in place over the 10-15 year duration of the power purchase agreement, a structure that allows for the continual and reliable replenishment of the escrow account needs to be in place at all times. To meet this requirement, the SEB could instruct groups of creditworthy industrial customers to pay all amounts due the SEB (primarily the full amount of its electricity bill) directly into an escrow account.

There are variations of the type of escrow account that can be established. The variations relate primarily to the selection of cash flows for the account. Some have opted for the SEB's high-tension customers, whereas others have preferred the SEB's accounting regions or distribution circles. There are also variations on the letter of credit amount and the amount of cash required to fund the escrow account. To a large extent variations depend on limitations on the SEB's ability to earmark its receivables, the negotiating skills of the parties involved and the level of comfort desired by the lenders. In some cases the escrow arrangement described above will provide an adequate level of security. In others, to further protect against SEB payment risks, the escrow account would need to be combined with guarantees from one or more Indian financial institutions or supported by a state government guarantee, both of which are described below. Alternatively, the escrow account could be structured so that a fixed amount, or a reserve, ne kept in the account at all times for the duration of the PPA. The reserve amount would be negotiable, but would be likely to be based on six months to one year of debt service obligations.

2.1.2 LC and Escrow Account with Guarantees from Indian Financial Institutions

Under this alternative, one or more Indian Financial Institutions (IFIs) would guarantee payment by the SEB if the escrow account mechanism failed to meet the SEB's payment obligations. If the IPP was not paid through the escrow mechanism, it would call the guarantee and receive payment from the financial institution. Thus, the financial institution would be assuming the credit risk associated with the SEB's inability to make payments. IFIs are willing to assume the credit risk of select SEBs as demonstrated by a number of smaller power projects, after direct funding and guarantees. See Chapter 3, section 3.3 for a more detailed discussion of this subject.

2.1.3 LC and Escrow Account with State Government Guarantees (and Central Devolutions)

The security packages structured by many IPPs in India involve a state government guarantee of payment. In this arrangement, an escrow account would be set up by the escrow agent and funded by the SEB, as described above. The escrow mechanism would be further supported by a guarantee from the government of the state in which the project is located. For example, if the SEB failed to pay the IPP within 7 days of the payment date, the IPP would require the state government to pay within 21 days from the date of demand.

In some instances, IPP developers are requesting additional security from the state. In one project currently under negotiation, if the payments from the escrow account are insufficient to meet SEB obligations and the state government defaults on its payment guarantee, the IPP would have a claim on the annual allocation of funds to the state from the central government (central devolutions.)

Central devolution arrangements envision that the entity guaranteeing SEB payment obligations would be able to access funds due to the state government from the central government. The funds that the central government transfers to the state government are deposited with the Reserve Bank of India. Therefore, the Reserve Bank of India (RBI) would be the operating agency for the central devolution arrangement. Fund transfers from the center to the state include the Central Plan Assistance, the state share in central taxes, and other central loans and grants.

In terms of the level of comfort granted to the IPP owners and lenders, the central devolution is a closer security arrangement to the GOI counter-guarantee than any of the other alternatives. This alternative is currently being considered for the 750 MW Rosa Power Project in the state of Uttar Pradesh being promoted by Grasim Industries.

However, there are more projects pursuing state government payment guarantees without backup from central devolutions. One example is the project promoted by the Torrent Group and Siemens. This is a gas-based project in the State of Gujarat. The security package involves an LC, an escrow account, and a state government guarantee. Since this project has not yet reached financial closure, the success of the alternatives is yet to be determined. Some other projects are the Gujarat Torrent Energy Project, the Dyna Makowski Project in Tamil Nadu, the S. Kumar Project in Madhya Pradesh, and the BPL project in Andhra Pradesh.

2.1.4 Blended GOI Guarantee

Under this proposal the Government of India would provide a guarantee to the IPP, but the scope of the GOI guarantee would be limited to amounts payable on the occurrence of certain specified events (or risks), such as payment default. This would be in addition to guarantees issued by Indian financial institutions.

2.1.5 Power Purchase Agreement with the Power Grid Corporation of India Limited

This alternative replaces the SEBs as power purchasers with an institution such as the Power Grid Corporation of India (PGCIL), a central sector transmission company. PGCIL would in turn enter into a back-to-back PPA with an SEB. In this arrangement, PGCIL would assume the SEB payment risk. PGCIL may or may not enter into a central devolution arrangement.

The PGCIL was set up to establish and operate the regional and national power grids that make power transfer in India more reliable, secure, and economical. PGCIL has taken over the management of various completed and ongoing transmission projects from the National Thermal Power Corporation, National Hydro Electric Power Corporation, and the Nuclear Power Corporation.

PGCIL's ability to enter into power purchase agreements with IPPs is limited, however, and governed primarily by its current balance sheet strength (equity capital of approximately $585 million as of March 31, 1993). As a limited liability company, it is not expected to receive any GOI support, except through arrangements that are negotiated on a project-specific basis.

2.1.6 Direct Supply of Power to High-Tension Industrial Customers

Similar to utilizing industrials to enhance the escrow funding, creditworthy industrial customers could become the contract power purchasers (rather than the SEBs), with electricity transmitted to the customer over SEB facilities.

Several possible situations exist where an IPP could supply power directly to an industrial customer. This could occur by wheeling power across the grid, by "behind-the-fence" generation, or through industrial cogeneration. In these situations, the payment risk is shifted away from an SEB to the credit risk of the industrial customer(s). In some instances lenders may find this to be an acceptable or even preferable arrangement, particularly if the industrial customer is a creditworthy entity. Although this may be an acceptable arrangement for the lenders and the IPP, it could have an adverse impact on the consumer mix of the SEB, leading to further deterioration in the credit quality of the SEB in question. The Jindal Tracetebel Power Project in Karnataka is based upon sales of nearly 75% of the output to an industrial steel project, which is also under development by the same promoters. In this project, excess power (25%) would be sold to the SEB or other high-tension customers.

2.1.7 Distribution by IPPs

In this alternative, the IPP would be permitted to distribute the power it generates to consumers within an identified geographical area and also undertake the responsibility of collection. The IPP would assume the risk of customer payment under this arrangement.

2.1.8 World Bank Guarantee

The new World Bank guarantee evolved from the expanded cofinancing operations program that first provided a World Bank guarantee for the Hub River Power Project in Pakistan. Now the Bank is integrating its guarantee with country lending programs. The program allows the Bank to provide guarantees to commercial lenders for private-sector infrastructure projects. The World Bank offers two kinds of guarantees: a partial risk guarantee that covers risks arising from nonperformance of sovereign obligations or from force majeure, and a partial credit guarantee, which typically is used to lengthen loan maturities beyond those available from commercial lending sources.

In addition, World Bank guarantees can mitigate risks that capital markets are not accepting, such as SEB credit risk, changes in the policy/legal/regulatory framework, and foreign exchange convertibility. World Bank guarantees for private power projects have been used in Pakistan, China, Jamaica, and the Philippines. The World Bank guarantee would cover the commercial debt financing of an IPP; however, borrowing from multilateral agencies and export credit agencies is not eligible to be covered by a Bank guarantee.

When a World Bank guarantee covers a private sector project, an indemnity from the government is required. This is normally an indemnity agreement whereby the government indemnifies The World Bank for any payments the Bank makes under its guarantee.

The World Bank guarantee offers certain advantages to the GOI over providing counter-guarantees. For example, the amount of GOI exposure under a World Bank guarantee would be less than a full guarantee on all of the debt and equity typically provided with the counter-guarantee. The GOI's maximum contingent liability would be the debt servicing on the foreign commercial debt component of the financial plan as compared to the total payments for capacity and energy under the counter-guarantee. This concept has yet to be tested by developers.

2.1.9 Corporate Balance Sheets of Developers

Although this is not one of the eight alternatives proposed by the GOI, it is included here because it is under consideration for several projects. This option includes corporate guarantees to IPP lenders from some of the larger Indian corporations. The capacity of major corporations to provide guarantees is limited, given the amount of debt required. Although it is not unusual for corporations to assume construction risk on large-scale projects, Indian corporations may not be willing to accept the long-term risks inherent in 20-year PPA agreements.

2.2 EXAMPLES OF IPPS WITH ALTERNATIVE SECURITY ARRANGEMENTS

In the pages that follow, illustrations are provided for three projects which represent a cross-section of existing projects. Key information about the project is furnished for each. It should be noted that the information furnished under each of the illustrations is primarily from public sources.

CASE A	Power Project - 320 MW
FINANCIAL DETAILS	
Project Cost	US $390 million
Debt: Equity	70 : 30
Debt Structure	ECAs 37% Indian Financial Institutions 37% Multilaterals 26%
Equity Structure	US Company 60% Indian Company 40%
Financial Closure	4th Quarter of 1995 or 1st Quarter of 1996
SECURITY PACKAGE	
Broad Description	Security package involves: a) Revolving irrevocable letter of credit, b) escrow account, c) state government guarantee and d) power of attorney to the IPP enabling them to collect directly from the consumers in the identified distribution circles of the SEB. (The options are to be exercised in the order given above.)
Risks Covered	Payment Risk (SEB obligations under PPA Termination Risk) Fuel Risk: Entire risk mitigated through a long-term fuel linkage contract with a large and dependable supplier
Specific Variations on LC/Escrow	LC value - 3 month's expected billing by the IPP LC validity - one year, to be renewed every year Escrow - SEB cash flow equivalent to 1.5 times expected monthly IPP billing. Funding to come from 6 distribution circles of the SEB. The selected distribution circles have high growth potential. The distribution circles have 70% high-tension (HT) consumers and 30% low-tension (LT) consumers. HT consumers will be required to pay directly into the escrow account. LT consumers to pay section officers of the SEB and section officers in turn will deposit funds into the escrow account. Until an event of default occurs, the escrow account will have a zero balance (every day the funds will be transferred to the SEB account). Only in the event of default are the outflows from escrow account stopped and the escrow agent bank is directed to pay the IPP from the escrow account.

CASE B	Power Project - 500 MW
FINANCIAL DETAILS	
Project Cost	US $ 585 million
Debt: Equity	75 : 25
Debt Structure	Not Available
Equity Structure	Overseas Company 26% Indian Company 26% Equipment Suppliers 10% Indian Public/IFC/ADB 38%
Financial Closure	Dec. 1995
SECURITY PACKAGE	
Broad Description	Security package involves a) revolving irrevocable letter of credit, b) escrow account, and c) state government guarantee (the options are to be exercised in the order given above).
Risks Covered by the Security Package	Payment Risk (SEB obligations under PPA Termination Risk) Fuel Risk - Development of captive open cast pits being contemplated. International coal developer approached for a joint venture with Coal India and promoter company. Long-term contract with joint venture coal company under consideration to mitigate the fuel supply risk.
Specific Variations on LC/Escrow	LC value - 1 month's expected billing by the IPP (at 100% plant load factor) LC validity - five years or as per Indian banking practices Escrow - SEB cash flows have been identified to ensure that not less than a one month average bill of the IPP is credited to the escrow account. Cash flows to come from select HT consumers of the SEB. Until default occurs, the escrow agent (the bank) transfers amounts in the Escrow Account to the SEB account. Only during the specified period (five days prior to payment date and three days after payment date) must the escrow agent ensure that the amount in the escrow account is not less than the projected average monthly billing by the IPP. Only in the event of default, outflows from the escrow account are stopped and the escrow agent (bank) is directed to pay the IPP from the escrow account.

CASE C	Power Project - 655 MW
FINANCIAL DETAILS	
Project Cost	US $ 740 million
Debt Structure	ECAs 36% Indian Financial Institutions & Commercial Banks 28% Foreign Commercial Banks 36%
Equity Structure	Indian Company 30% O&M contractor 20% State Owned Company* 12% (*engaged in New Power Project Development) EPC Contractor 10% Indian Public 28%
Financial Closure	Expected in 1995
SECURITY PACKAGE	
Broad Description	Security package involves a) revolving irrevocable letter of credit, b) escrow account and c) state government guarantee (the options to be exercised in the order given above). In addition, an Indian financial institution will guarantee the ECA for the IPP's debt obligations.
Risks Covered	Payment Risk (SEB obligations under PPA Termination Risk) Fuel Risk: details not available
Specific Variations on LC/Escrow	LC value - 1 month's expected billing by the IPP LC validity - minimum 12 months Escrow - SEB cash flows have been identified to ensure that not less than one month's average billing of the IPP is credited to the escrow account. Cash flows to come from selected HT consumers of the SEB. Until a default occurs, the escrow agent transfers amounts in the escrow account to the SEB account. Only in the event of default are the outflows from the escrow account stopped and the escrow agent (bank) is directed to pay the IPP from the escrow account.

CHAPTER 3
FINANCING AND CREDIT CAPACITY OF KEY INSTITUTIONS

This chapter examines the ability of five types of institutions that will be key in supporting or providing financing for private power projects in India. It also gives initial estimates of the amount of new power capacity that might be financed either directly by such parties or through their provision of credit support or financing.

Credit Support by:
- State Electricity Boards
- State governments
- Private Indian corporations

Financing by:
- Indian Financial Institutions
- Export Credit Agencies.

Foreign multinational corporations are also key sources of financing, primarily equity. Over the last few years, foreign private power developers have exhibited a strong interest in the Indian power market. The availability of equity financing from these sources is not expected to be a constraint, provided adequate amounts of debt can be obtained. The main purpose of this report is to examine the ability of Indian institutions to provide direct financing or credit support to other institutions in order to facilitate debt financing. Debt financing is expected to provide between 70 and 80 percent of total project costs.

It must be noted that the analysis presented in this chapter is based on historical performance statistics of each of the major players. The country is, however, currently going through a process of economic reforms on an unprecedented scale. In a period of three years, major reforms have been implemented in the areas of industrial licensing, taxation, tariff rationalization, capital markets, banking, and currency convertibility. The results of these reforms have already become apparent in the record GDP growth of 5% and industrial growth of 8% in 1994-95. It is inevitable that these reforms will eventually affect the major players in the power sector, such as SEBs and state governments. As a result, in the future these institutions will be required to adopt fiscal discipline and will emerge financially stronger than at present. It is therefore emphasized that the estimates arrived at in this chapter are most likely to be on the conservative side.

3.1 STATE ELECTRICITY BOARDS

The purpose of this section is to evaluate the credit quality of the State Electricity Boards and to make a preliminary estimate of the amount of new independent power project capacity that can be supported through escrow accounts established by SEBs. As primary purchasers of IPP-generated power, the SEBs' ability to make timely payments for power purchases is an essential element in the credit analysis of the IPPs under development in India.

The analysis presented here relies on historical data obtained from public sources; it did not involve discussions with SEB officials nor was it initiated at the request of the SEBs. The major source of information on SEB operations and financial performance was the *Annual Report on Working of SEBs and Electricity Departments*, published by the Power and Energy Division of the GOI's Planning Commission in October 1995. SEBs submit their performance statistics to the regulatory authorities on an annual basis. Data for fiscal year 1993-94 (April 1 to March 31) are actual results; data for 1994-95 are revised estimates. SEB financial statements are subject to audit by the Comptroller and Auditor General's Office, but are not prepared under the accounting rules established by the Companies Act of India of 1956. Because the sources of data are limited, some cautions apply to the findings. This information should not be used to make a specific assessment of the credit of any particular SEB or its ability to perform in relation to any specific project; nor should it be construed as a rating of an SEB. Rather, the results are useful in understanding the overall credit situation of the SEBs and the effect this has on India's ability to meet its power capacity goals over the next decade. The analysis does not address the policy and regulatory environment and how it may affect the financing of private power projects.

For the most part, SEBs are not autonomous enterprises that can operate without state interference, and they do not always operate on a commercial basis. As a result, IPP developers and lenders are requiring additional credit support from SEBs to address the risk of non-payment for power purchases and to eliminate the risks associated with government interference. One way to address these risks is to require the SEB to set up an escrow account for the benefit of the IPP. The account receives payments directly from some of the SEB's customers. Under certain circumstances, funds in the account can be made available to the IPP to pay the SEB's obligations. The ability of SEBs to continually fund escrow accounts is discussed here, based on a preliminary assessment of 16 SEBs' relative creditworthiness. Also discussed is how SEB creditworthiness could be improved if economic reforms are implemented.

SEBs were formed under the Indian Electricity Act of 1948 and are wholly owned by their state governments. Therefore, state governments play a pervasive role in SEB operations, including the appointment of Board Members, approval of capital expenditures and financing, tariff setting, control over subsidies paid to the SEB, and overseeing private sector participation. The typical SEB is led by a Chairman who is appointed by the State. SEBs are involved in all aspects of electricity production (generation, distribution and transmission) except fuel supply, and provide for approximately 65% of the power generated in India.

Most SEBs have no paid-up equity capital and some have a negative net worth. Their equity base consists of retained profits or losses and non-refundable cash deposits from customers. Debt financing is provided from several sources, including perpetual loans and guaranteed bonds from state governments, loans from development finance institutions (e.g., Industrial Credit and Investment Corporation of India, Industrial Development Bank of India), and a small amount of short-term bank loans from regional banks. The typical SEB has the following capital structure:

Exhibit 3-1
Capital Structure of a Typical Indian SEB

Net Worth	10%
State Guaranteed Bonds	20%
Loans from Financial Institutions	35%
State Government Loans[1]	35%

[1] Some states such as Andhra Pradesh have converted these "perpetual" loans into equity.

Each year an SEB develops a capital spending program and obtains funding through the state government budget process and from financial institutions. Generally, financing is not arranged on a project basis. SEBs have also used vendor financing for the supply of certain types of equipment.

To date, no SEB has been rated by any of the Indian credit rating agencies, although ratings for certain debt obligations of the National Thermal Power Corporation and the privately-owned Tata Electric Companies and Gujarat Industries Power Company Ltd. have been conducted by CRISIL. CRISIL has also completed confidential assessments of credit quality of some SEBs at the request of developers setting up projects in this area. Based on this experience, CRISIL has developed methodologies for analyzing SEBs based upon publicly available information. This methodology, partially applied to 16 SEBs, is discussed below.

3.1.1 SEB Credit Assessment

Key parameters affecting the business and financial risk of an SEB have been selected by CRISIL and are shown in Exhibit 3-2. For each parameter, data have been obtained that provide an indication of how the SEB performed over the last two years. Indicators include total revenue, the amount of revenue derived from customers that pay full-cost recovery tariffs, the level of subsidy received from the state, operating profits, interest coverages and operating indicators including capacity and capacity mix, customer mix and tariff history. Some of the data are

presented in the exhibits below; a more complete presentation of the data is contained in Appendix A.

Exhibit 3-2
Key Parameters for SEB Credit Assessment

Business Risks			Financial Risks
Industry & Regulatory	**Operations**	**Market and Service Area**	**Financial Performance**
Not Evaluated since it is largely common across SEBs	Generation Plant Mix Overall Size Plant Performance Power Purchases/Sales Unit Cost of Generation	Consumer Mix Tariff Demand	Profitability Receivables Debt Service Role of State Government Treasury Borrowing Capacity

In order to develop a relative assessment, CRISIL assigned weights to each of the key parameters. Weighting was based on an assessment of the degree to which each factor affects the level of overall risk associated with the SEB's performance. The analysis thus produces a broad indication of each SEB's ability to meet its payment obligations in a timely fashion. Exhibit 3-3 shows the results of the relative credit assessment.

Exhibit 3-3
Classification of SEBs into Four Bands of Credit Quality

Band	SEB
A	Maharashtra
B	Andhra Pradesh, Tamil Nadu, Karnataka, Kerala, Orissa, Madhya Pradesh
C	Rajasthan, Gujarat, Punjab, West Bengal, Himachal Pradesh, Uttar Pradesh
D	Bihar, Assam, Haryana

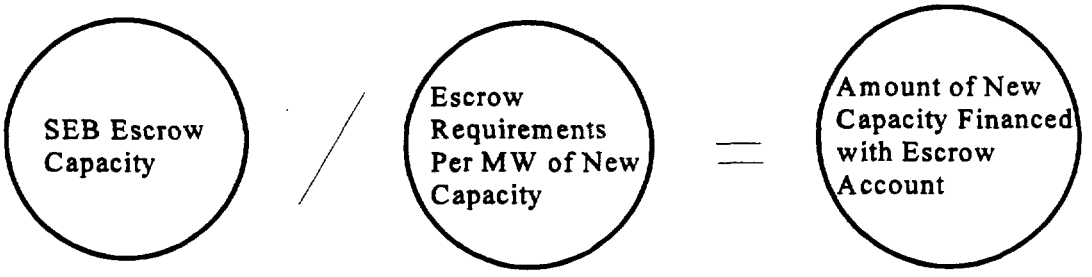
Source: Credit Rating & Information Services of India Limited, Bombay, CRISIL, July 1995.

The 16 SEBs have been placed into four bands. These bands denote a gradation of credit quality. Band A denotes the best credit quality and bands B, C, and D represent a step-wise reduction in credit quality with respect to band A. The ability to meet the payment obligation on a timely basis for the power purchased from independent power producers decreases from band A to bands B, C and D. In order to keep the ability to meet the payment obligations without a deterioration in credit quality, a distinction has been made in terms of the percentage of SEB

revenues that can be escrowed. An SEB in band A could escrow a higher percentage of its designated revenues than SEBs falling in band B, and similarly less for bands C and D.

3.1.2 Amount of New IPP Capacity Supported by SEBs

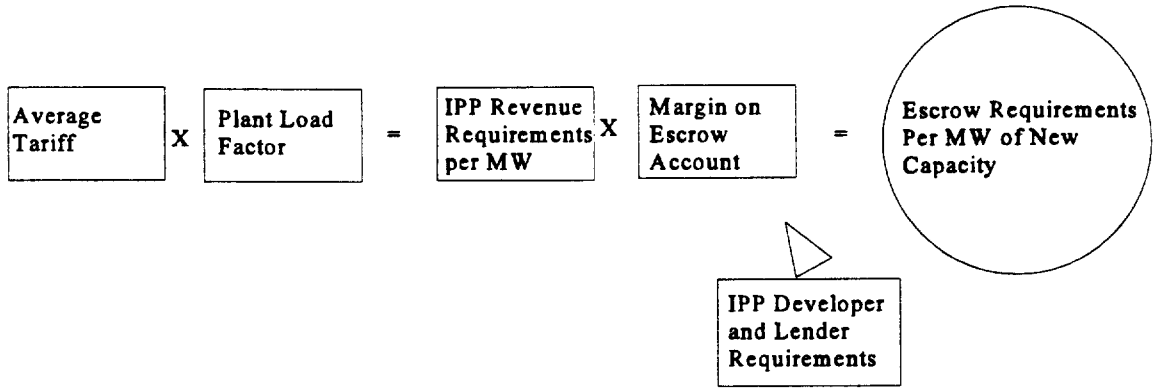
This section describes the methodology used to estimate the amount of new capacity that can be built by relying on credit support from SEB escrow accounts. The estimates are based upon the assumption that the total amount of capacity that independent power developer(s) will be willing to own will be limited to the maximum amount of funds that an SEB can place in an escrow account. Two factors were used to develop the estimates: the amount of funds required to be placed in the escrow account per unit of additional capacity and the maximum size of an SEB escrow account (Rs. Million). From these factors, the total new capacity can be determined. The diagram below depicts the methodology.



Amount Required in the Escrow Account per Unit of New Capacity. The amount of funds that must be placed in the escrow account per unit of new capacity was determined by estimating the expected IPP revenues per MW and increasing the revenues by a factor to reflect the variances and uncertainties regarding whether or not these monies will actually be placed in the accounts. The diagram below shows the assumptions used to determine the escrow requirement per MW of new capacity.

IPP revenues charges per MW are assumed to be an average of Rs. 2.50 per kWh (approximately $0.08 kWh) with a plant load factor of 80%. This is based upon an assumption that IPP revenues will fully recover the costs of production plus a return profit for the IPP. These assumptions are based upon discussions with IPP developers in India and on the pricing terms of IPPs elsewhere in Asia. An estimate of average IPP revenues per MW is:

(Rs 2.50/kWh x 8760 hours/year x 80%) / 1,000 = Rs. 17.52 million/MW

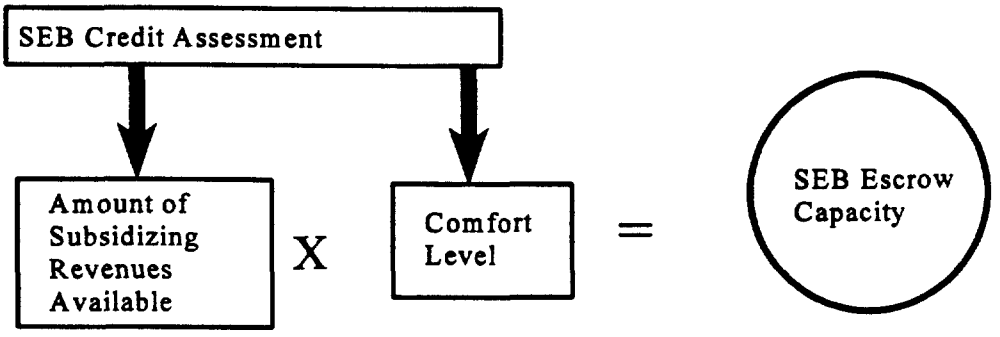


Many IPP developers and lenders have indicated that they will not be satisfied with a 1:1 revenue coverage in the escrow account. Discussions with these parties have indicated that an additional "safety margin" will be required. IPPs are seeking to place an additional 10%-50% of revenues into the escrow account. The reasons cited for needing this safety margin are the SEBs' lack of experience in funding escrow accounts and the variances in revenues that are anticipated to occur over the period of the power purchase agreement. These variances could occur because of fluctuations in electricity sales due to SEB performance, economic cycles/demand fluctuations at the user end (which are escrowed), or due to variations in the credit quality of the escrowed accounts which reduces the certainty of the availability of the money in the accounts. Additional coverage sought by the IPPs directly reduces the total amount of capacity that the SEB can support, as follows:

Escrow Amount/MW= IPP revenues/MW X safety margin
= Rs. 17.52 million/MW x 1.5 (50% safety margin)
= Rs 26.3 million/MW

The analyses presented here are all based upon escrow accounts funded at a level of Rs. 26.3 million/MW. To the extent that the safety margin could be reduced, the amount of new capacity would be proportionally increased.

Maximum Size of an SEB Escrow Account. The maximum size of an escrow account that can be supported by the SEB is determined based on the overall credit assessment and an analysis of the quality of SEB revenues. For each of the four bands of credit, a "comfort factor" has been assigned as a way to reflect an SEB's ability to preserve its credit quality while placing its accounts into escrow. The diagram below shows the methodology used to determine the SEB escrow capacity.



Each SEB has a mix of consumer classes that broadly falls into two categories:

Subsidizing segments: Consumers that are charged a tariff greater than the average tariff (e.g., industrial consumers, commercial users, railways).

Subsidized segments: Consumers that are supplied at a tariff lower than the SEB's average tariff (e.g., agricultural and domestic users).

Only subsidizing segment revenues are considered to be eligible to be used in funding the escrow accounts. Revenues from the subsidizing segment are drawn from a relatively small consumer base where consumers are charged above-average tariffs. Tariff levels by consumer segments for band A and B SEBs can be found in Appendix A. Total revenues and subsidizing revenues are shown in Exhibit 3-4.

Exhibit 3-4
Estimated Breakdown of SEB Revenues 1993/94

SEB	Total Revenues (USD millions)	Subsidizing Revenues (USD millions)	Percentage of Total Revenues
Maharashtra	$1,346	$862	64%
Uttar Pradesh	$756	$513	68%
Tamil Nadu	$640	$486	76%
Madhya Pradesh	$635	$508	80%
Gujarat	$609	$366	60%

SEB	Total Revenues (USD millions)	Subsidizing Revenues (USD millions)	Percentage of Total Revenues
Andhra Pradesh	$571	$406	71%
Karnataka	$378	$285	75%
Rajashtan	$370	$262	71%
Punjab	$325	$211	65%
West Bengal	$224	$91	40%
Bihar	$208	$179	86%
Haryana	$194	$116	60%
Orissa	$137	$97	71%
Kerala	$137	$90	66%
Assam	$58	$10	17%
Himachal Pradesh	$53	$11	21%
Total	**$6,640**	**$4,491**	**68%**

The total subsidizing revenues for the 16 SEBs is $4.5 billion, approximately 68% of their total revenues. In 1993/94 subsidizing revenues ranged from $862 million for the Maharashtra SEB to $11 million for Himachal Pradesh. The Bihar SEB had the highest percentage of subsidizing revenues as a percentage of total revenues (86%) and the Assam SEB had the lowest (17%).

CRISIL derived the amount of subsidizing and subsidized revenues from data on total revenues and customer mix. It is assumed that the SEB will buy power from the IPP and sell it at a tariff equal to or higher than the SEB's cost of service. Currently, average SEB tariffs are approximately Rs. 1.2 per kWh (1993-94). Tariffs for subsidized segments average approximately Rs. 0.60 per kWh and tariffs for subsidizing segments average approximately Rs. 1.70 per kWh. In order for an SEB to maintain its credit quality, it will be necessary for it to charge full cost recovery tariffs.

One other assumption should be noted. While it can be presumed that additional revenues will be generated from the new IPP capacity, these revenues are not available for the initial escrow account, and have not been included in the escrow account estimates for IPPs coming on line between now and 1999. These have been included, however, in the calculation of capacities beyond 1999. An annual revenue forecast for each state was beyond the scope of this analysis.

It is not possible for an SEB to place all of its subsidizing segment revenues into an escrow account. While actual percentages can be debated, the SEB must, at a minimum, preserve its existing credit quality after dedicating its subsidizing segment receivables. It is assumed that the better the SEB credit, the higher the percentage of subsidizing segment revenues that are available for dedication to an escrow account without an accompanying deterioration in credit quality. For this analysis, the SEB credit quality bands were used to arrive at a "comfort level," which is defined in terms of the percentage of subsidizing revenues available for placement in an escrow account. The following comfort levels were used in this analysis:

Credit Band	Comfort Level
A	80%
B	70%
C	40%
D	20%

The escrow account mechanism was considered for SEBs that have lower credit quality (bands C and D) because several of the SEBs have substantial subsidizing revenues, including Rajasthan, Gujarat and Uttar Pradesh. However, the ability of these SEBs to dedicate revenues to an escrow account is limited because doing so might cause a deterioration in their credit quality, particularly with regard to the SEB's ability to make payments on its other existing payment obligations.

Based on the table above, the maximum size of the escrow account was calculated as:

Escrow Account Size = Subsidizing Segment Revenues x Comfort Level

The amount of escrow is shown in column 4 of Exhibit 3-5. Maximum escrow account estimates range from a high of Rs. 48,592 million for Maharashtra to a low of Rs. 1,060 million for Assam.

Total Capacity (MW) Supported by IPPs. Exhibit 3-5 shows that a maximum of 7,740 MW of new electric generation capacity can be financed based upon SEB escrow accounts and come on line between now and 1998. The Maharashtra SEB leads the SEBs in its ability to finance over 1,000 MW using the escrow account. The average amount of new capacity per SEB is estimated to be approximately 465 MW, which is considerably lower than the amount of new capacity needed to meet demand growth projections. This demonstrates that without improvements in the SEBs' operating and financial performance, their ability to meet developers' and lenders' requirements for credit support will be limited. Additional sources of credit support will be required to sustain further capacity additions.

Exhibit 3-5
New IPP Capacity Based upon SEB Escrow Accounts: Present - 1998

State	Subsidizing Revenues (Rs. Million)	Comfort Level (%)	Escrow Size (Rs. Million)	New IPP Capacity (MW)
Maharashtra	60,740	80%	48,592	1,848
Tamil Nadu	35,639	70%	24,947	949
Andhra Pradesh	23,514	70%	16,460	626
Madhya Pradesh	33,358	70%	23,351	888
Karnataka	18,917	70%	13,242	503
Orissa	15,055	70%	10,539	401
Kerala	9,939	70%	6,957	265
Gujarat	30,255	40%	12,102	460
Rajasthan	13,521	40%	5,408	206
Punjab	16,983	40%	6,793	258
West Bengal	20,502	40%	8,201	312
Himachal Pradesh	3,052	40%	1,221	46
Uttar Pradesh	28,726	40%	11,490	437
Bihar	19,241	20%	3,848	146
Assam	5,299	20%	1,060	40
Haryana	7,110	20%	1,422	54
Total Capacity	**341,852**		**195,633**	**7,440**
Avg. Capacity				**465**

Source: CRISIL and Hagler Bailly Consulting, July 1995.

The Maharashtra SEB continues to have the best ability to finance power plants using the escrow account. It is assumed that all of the revenues from IPP-generated power will be subsidizing revenues. However, the need to keep escrow accounts in place for the duration of the Power Purchase Agreement still sets a serious limit on the amount of funds available for escrow.

The assumptions made about the level of capacity brought on line are as follows:

- SEBs will maintain the same credit quality bands as shown in Exhibit 3-7. The use of the escrow mechanism will not deteriorate their credit quality because the addition to the SEB receivables from IPP capacity additions will offset the loss of their existing subsidizing segment receivables.

- All new capacity during the period 1995 to 1998 will be met by IPPs. Subsidizing revenues available for placement in escrow accounts for new IPPs over the period 1999 to 2002 will come from the additions to subsidizing revenues generated by the SEBs during the period 1995 to 1998.

- Demand estimates for each state from 1999 to 2002 have been derived from the demand projections in the Ministry of Power's *14th Power Survey Estimates*.

- SEB purchases from IPPs will be at Rs 2.50 per kWh based on current estimates.

3.1.3 Future Scenarios

Beyond 1999, several additional scenarios were examined to project the ability of SEBs to support new IPP capacity. The first scenario assumes that from now until 2002 there will be a continuation of current regulatory policies and that there will be no significant changes in the operational and financial performance of SEBs. The second and third scenarios assume that benefits from economic reforms begin to be realized by, among other indicators, an improvement in the credit quality of the SEBs, and that these benefits begin to materialize from 1999 onward. The years 1999 to 2002 would mark the period of the initiation of reforms. The year 2002 has therefore been considered for evaluating the capacity of the reformed SEBs. These benefits will allow SEBs to increase the amount of revenues that they can dedicate to an escrow account for the benefit of IPP capacity. The difference between scenarios two and three is the magnitude of economic reforms adopted by SEBs. The second scenario assumes moderate reforms, while the third assumes full economic reforms. It should be emphasized that although the analysis in this study ends in the year 2002, the benefits from reform extend well beyond that time period.

Scenario 1: Slow Reforms. It is estimated that an additional 3,298 of new IPP capacity can be added between 1999 and 2002 (see Exhibit 3-6).

Exhibit 3-6
New IPP Capacity Based Upon Slow Reforms in 1999-2002

State	Subsidizing Revenues (Rs. Million)	Comfort Level	Escrow Size (Rs. Million)	New IPP Capacity (MW)
Maharashtra	19,775	80%	15,820	602
Tamil Nadu	11,390	70%	7,973	303
Andhra Pradesh	13,744	70%	9,621	366
Madhya Pradesh	13,811	70%	9,668	368
Karnataka	6,733	70%	4,713	179
Orissa	10,266	70%	7,186	273
Kerala	7,840	70%	5,488	209
Gujarat	12,075	40%	4,830	184
Uttar Pradesh	22,955	40%	9,182	349
Rajasthan	13,400	40%	5,360	204
Punjab	6,240	40%	2,496	95
West Bengal	935	40%	374	14
Himachal Pradesh	2,170	40%	868	33
Bihar	10,200	20%	2,040	78
Assam	1,110	20%	222	8
Haryana	4,450	20%	890	34
Total Capacity	**157,094**		**86,731**	**3,298**

Scenarios 2 and 3: Benefits from Economic Reforms are Realized. The second and third scenarios reflect changes in the financial performance of the SEBs as a result of operational, institutional, regulatory, and financial reforms. Several SEBs have already initiated reform programs to improve their operating and financial performance. Based on discussions with The World Bank (the primary sponsor of SEB restructuring in at least four states), it is assumed that reform program impacts will begin to take effect in 1999 and beyond.

The degree of reform is expected to vary among states. Orissa, for example, has already begun a radical program of unbundling generation, transmission, and distribution involving the creation of a transmission grid company and privately-owned distribution companies. Other states are

expected to implement similar reforms over the next five to ten years. But even when reforms are implemented in the near term, it will take several years before the improvements in performance will be realized.[1]

In order to reflect the differences among the states implementing reforms, two reform scenarios for SEBs are presented here. For SEBs that implement moderate economic reforms, an improvement in their credit quality will be realized, allowing them to move into a higher credit quality band, increasing their "comfort level" and pledging a larger amount of their subsidizing revenues for the escrow account. Improvements as a result of full economic reforms would be defined as even greater improvements in the credit quality of all SEBs. The change in "comfort levels" as a result of reforms is shown in Exhibit 3-7.

Exhibit 3-7
Comfort Level Assumptions With and Without SEB Reforms

Band	Slow Reforms	Moderate Reforms	Full Reforms
Band A	80%	90%	100%
Band B	70%	80%	90%
Band C	40%	70%	80%
Band D	20%	40%	70%

Average SEB performance levels have been used to determine the performance levels based upon a scenario in which the benefits of the reform process apply to all SEBs equally. The rationale behind the expected improvements is described in Appendix A. The improvements in performance parameters are shown in Exhibit 3-8.

[1] Meetings with The World Bank/New Delhi, State governments, SEBs and regulators resulted in one overarching observation: the time required to build the political consensus among the various stakeholders in the power sector reform process will be at least 1-2 years. Thereafter, the benefits from the revised institutional structure will impact performance criteria shown in Exhibit 3-9.

Exhibit 3-8
Expected Improvements from SEB Economic Reforms

Performance Indicator	Average Performance FY 1994	Expected Performance Moderate Reforms	Expected Performance Full Reforms
Plant Load Factor	58%	65%	75% and above
T&D Losses	20%	15%	10%
Subsidy/Total Revenue	19%	10%	0%
Subsidizing Tariff/ Subsidized Tariff	4.15	2.5	1.5
Rate of Return on Net Fixed Assets	-7.11%	3%	3% or more
Number of Days Receivables	110	75	45

- ***Results of Moderate Reforms***

Assuming that moderate reforms are implemented during the period 1999 to 2002, 5,269 MW can be added by relying upon the SEB escrow mechanism. This is more than the amount that could be built from 1995 to 1998 when no reform benefits are realized (Exhibit 3-9).

Exhibit 3-9
New IPP Capacity Based upon Moderate Reforms in 1999-2002

State	Subsidizing Revenues (Rs. Million)	Comfort Level	Escrow Size (Rs. Million)	New IPP Capacity (MW)
Maharashtra	22,161	90%	19,945	758
Tamil Nadu	12,908	80%	10,326	393
Andhra Pradesh	14,118	80%	11,294	429
Madhya Pradesh	14,865	80%	11,892	452
Karnataka	7,545	80%	6,036	230
Orissa	11,543	80%	9,234	351
Kerala	8,553	80%	6,842	260
Gujarat	16,136	70%	11,295	429
Uttar Pradesh	26,416	70%	18,491	703
Rajasthan	13,979	70%	9,785	372
Punjab	9,090	70%	6,363	242
West Bengal	7,460	70%	5,222	199
Himachal Pradesh	3,049	70%	2,134	81
Bihar	15,675	40%	6,270	238
Assam	3,210	40%	1,284	49
Haryana	5,400	40%	2,160	82
Total Capacity	**192,105**		**138,573**	**5,269**

- ***Results With Full Reforms***

Assuming that full reforms are implemented for the period 1999 to 2002, 6,599 MW can be added by relying upon the SEB escrow mechanism. This is nearly 25% higher than the result of moderate reforms and twice the amount with slow reforms (See exhibit 3-10).

Exhibit 3-10
New IPP Capacity Based upon Full Reforms in 1999-2002

State	Subsidizing Revenues (Rs. Million)	Comfort Level	Escrow Size (Rs. Million)	New IPP Capacity (MW)
Maharashtra	24,070	100%	24,070	915
Tamil Nadu	14,081	90%	12,673	482
Andhra Pradesh	14,408	90%	12,967	493
Madhya Pradesh	15,684	90%	14,116	537
Karnataka	8,170	90%	7,353	280
Orissa	12,536	90%	11,282	429
Kerala	9,107	90%	8,196	312
Gujarat	16,813	80%	13,450	511
Uttar Pradesh	26,993	80%	21,594	821
Rajasthan	14,075	80%	11,260	428
Punjab	9,565	80%	7,652	291
West Bengal	8,548	80%	6,838	260
Himachal Pradesh	3,195	80%	2,556	97
Bihar	18,021	70%	12,615	480
Assam	4,110	70%	2,877	109
Haryana	5,807	70%	4,065	155
Total Capacity	**205,182**		**173,564**	**6,600**

A summary of the results is presented below in exhibit 3-11.

Exhibit 3-11
Summary of Increase in Capacity (MW) based upon SEB Escrow 1995-2002

SEB	1994-1998	Slow Reforms	Moderate Reforms	Full Reforms	Total Slow Reforms	Total Moderate Reforms	Total Full Reforms
Maharashtra	1,848	602	758	915	2,450	2,606	2,763
Tamil Nadu	949	303	393	482	1,252	1,342	1,431
Andhra Pradesh	627	366	429	493	993	1,056	1,120
Madhya Pradesh	888	368	452	537	1,256	1,340	1,425
Karnataka	503	179	230	280	682	733	783
Orissa	401	273	351	429	674	752	830
Kerala	265	209	260	312	474	525	577
Gujarat	460	184	429	511	644	889	971
Uttar Pradesh	437	349	703	821	786	1,140	1,258
Rajasthan	206	204	372	428	410	578	634
Punjab	258	95	242	291	353	500	549
West Bengal	312	14	199	260	326	511	572
Himachal Pradesh	46	33	81	97	79	127	143
Bihar	146	78	238	480	224	384	626
Assam	40	9	49	109	49	89	149
Haryana	54	34	82	155	88	136	209
Total	**7,440**	**3,298**	**5,269**	**6,599**	**10,738**	**12,709**	**14,039**

3.2 STATE GOVERNMENTS

This section broadly assesses the credit quality of India's States and determines the size of the power projects that the States can support through the provision of state guarantees and the appropriation of central transfers. The analysis relies largely upon secondary sources of data obtained from the Reserve Bank of India and the Center for the Monitoring of the Indian Economy (CMIE).

It should be noted that this credit assessment is based on the current fiscal and economic situations of the States. Many states have embarked on radical reform programs, encompassing the adoption of fiscal discipline and implementation of industrial policies to aggressively seek new investments, the rationalization of tax structures, the privatization of infrastructure, and the adoption of actions to make the public sector self-supporting. The effects of these changes are expected to be increasingly visible over the next five to seven years. As a result, at least some of the states will emerge much healthier financially and will be able to support much larger or many more power projects. Moreover, as power sector reforms in the states progress, it is expected that credit support will shift more to the SEBs and away from reliance upon the comfort that state guarantees provide.

The potential of states to offer guarantees and obtain appropriations of central transfers is a requirement for many of the security arrangements being negotiated for private power projects in India today. An analysis of the capacity of a state to offer guarantees to power producers requires knowledge of its future plans and strategies as well as information on its current financial position. For example, since many states are implementing policies that are expected to lead to significantly higher growth in the industrial sector, the states should also expect to realize future growth in tax and non-tax revenues. This in turn will result in a greater capacity to offer guarantees to power producers.

However, the analysis here relies more heavily on historical and existing data on the fiscal and economic situation than on projections of future revenue growth. Because this study relies upon secondary sources of information and did not include discussions with members of the State Governments, predictions of future performance are not fully reflected here. Nevertheless, its broad findings are indicative of the existing capacities of the different states and the overall funding potential of state guarantees and appropriations of central transfers.

3.2.1 Provision of a State Guarantee

The ability of a state to support power projects by providing guarantees to power producers was evaluated in two steps. First, the ability of the each state to raise additional resources to support the issuance of guarantees was assessed; next, this ability was translated into the size of the power projects that each state could support.

The State's Ability to Secure Resources. A state's ability to secure resources is a function of its socioeconomic structure as well as the current and future trends in state finances. Exhibit 3-12 presents the areas analyzed for each factor.

Exhibit 3-12
State's Ability to Secure Resources

Socioeconomic Structure	State Government Finances
1. Basic economic indicators 2. Demographic trends 3. Infrastructure availability 4. Agricultural sector 5. Industrial sector 6. Banking sector 7. Energy sector 8. Future investments	1. Debt profile 2. Revenue and expenditure management 3. Deficit management 4. Dependence on central government

Using these parameters, a weighted score was computed for each state based on its performance for selected indicators. A consolidated score for each state was also developed; this overall score is indicative of a state's relative ability to secure resources. A higher score indicates a better credit quality and hence a greater ability to secure resources. The criteria for the scores and some of the data are described in Appendix B. Key terms and results are discussed below.

Definitions of Key Terms Used in the Analysis

State Revenue: The revenue receipts that the state collects on its own, as differentiated from receipts that the state receives from the central government.

Gross Borrowing: The total loans drawn down by a state during the year, both from the central government and through internal borrowing.

Net borrowing: Gross borrowing less repayment of loans from the central government and internal borrowing.

Gross Fiscal Deficit: (GFD) This indicates the actual gross borrowing of the state government from all sources in a particular year. This borrowing is required to fund three kinds of expenditures: the state revenue deficit, the capital outlays of the state, and the net lending by the state.

Net State Domestic Product (NSDP): The annual gross income generated minus depreciation on fixed assets.

Overview of State Finances in India. This overview of the public finance system in India provides background on how the state credit assessment was conducted. The accounting system for states is very different from conventional corporate accounting. The annual accounts of a state are divided into two types: revenue statements and capital statements. Both statements are further organized into two parts: receipts and expenditures (i.e., inflows and outflows during the year).

Revenue statements consist of fund flows that are recurring. Revenue expenditures can be broadly considered to be the running expenses that the government incurs to keep itself operational. Similarly, the revenue receipts should be considered as inflows the government receives from day-to-day activities such as taxes, dividends from public sector enterprises, and user charges for state-owned facilities.

Capital statements consist of long-term receipts and expenditures. Capital expenditures consist of the acquisition of long-term assets such as land, buildings and equipment. Capital receipts essentially consist of debt that the state government raises from various sources. Each of these statements is described in further detail.

- **Revenue Statements**

  Revenue receipts are classified into two categories, according to the source from which they arise. These are:

  - the state's own revenues (hereafter referred to as "state revenues"), which are receipts that the state obtains from its internal sources
  - receipts that the state obtains from the federal government (referred to hereafter as the "center").

  The salient features of both these categories are described below. First, however, the peculiarities of the Indian taxation system are discussed briefly.

  Taxes in India are collected at two levels: by the states themselves and by the center. The Constitution of India delineates the areas over which the state and the center have the authority to collect taxes. The taxes a state itself collects are for its own use and are shown in the state's accounts as a part of the "state revenues." Some of the taxes which the center collects are for its own use, and there are others which the center allocates to the

states. The manner in which the center divides revenues between itself and the states is determined and set every five years by a statutory body known as the Finance Commission.

Although tax jurisdiction is divided between the states and the center in India, the division is not equitable: the taxes that the states can collect are largely inelastic and stagnant. Important taxes like income tax, customs duty, and excise duty are under the control of the center. Some states have thus grown increasingly dependent on the center for resources.

- ***State Revenues*** consist of tax receipts and non-tax receipts. As described above, tax receipts consist of the taxes which the state itself collects. Non-tax receipts consist of income from various sources such as dividends from the state's public sector, royalties from mines and forests, and user charges for the services that the state provides.

- ***Receipts from the Center*** are from two sources: the taxes that the center collects that are to be shared with the states according to the Finance Commission guidelines and "grants." Grants are funds given by the center's Planning Commission to the states on an annual basis for implementing development schemes at the state level. To some extent, these grants are discretionary and their size for a particular state may depend on the current political situation. The over-reliance by any state on grants is generally unfavorable because it makes the state vulnerable to the current political environment.

Revenue expenditures are the costs of running the government, and a distinction is often made between developmental and non-developmental expenditures. Developmental expenditures are the costs incurred by the state for the social and economic services it provides which contribute to development. Non-developmental expenditures cover debt servicing and interest payments, administrative services (including police), pensions, the costs of collecting taxes and duties, and the maintenance of state organizations. The distinction broadly follows the various ministries. For example, expenditure of the Ministries of Agriculture, Health, and Rural Development are developmental, while Home Affairs is primarily non-developmental.

Ideally, since revenue expenditures are recurring and do not lead to the creation of assets, they should be funded by revenue receipts. However, all the states of India have incurred large revenue deficits, i.e., revenue expenditures exceed revenue receipts. This has led to a need to fund

revenue expenditures from loans raised by the state (capital receipts). This is an unsustainable situation over the long term.

- **Capital Statements**

Capital Receipts consist of loans that the state government receives from a variety of sources. The primary source is the center, which accounts for the largest proportion of the state's debt. Other sources include:

- Loans from financial institutions and other market borrowing. These loans are heavily regulated by the center, and the state has very limited flexibility in its ability to raise these on its own.
- Advances and overdrafts from the Central Bank.
- Increases in the public account (the name given to those transactions where the government functions as a banker). This account consists of the state providence funds, reserve funds, deposits and advances received by the state, and the cash balance.

Capital Expenditures mainly consist of three items:

- Capital outlays for the building of assets. Again, these can be categorized as developmental and non-developmental, as discussed above.
- Repayment of debt.
- Loans by the state government for various purposes.

The results of the analysis of the states' socioeconomic and financial situations are shown in Exhibit 3-13.

Exhibit 3-13
Results of State Financial Position
Scores on Socioeconomic Structure and State Finances
Out of a possible 5 points

	Socioeconomic Structure	State Finances	Total
Maharashtra	3.19	3.05	3.12
Karnataka	2.45	3.25	2.85
Gujarat	2.87	2.80	2.84
Haryana	2.29	3.15	2.72
Punjab	3.32	2.10	2.71
Tamil Nadu	2.63	2.65	2.64
Madhya Pradesh	1.88	3.35	2.62
Andhra Pradesh	2.19	2.80	2.50
Rajasthan	1.76	2.45	2.11
Kerala	2.31	1.80	2.06
West Bengal	1.66	2.20	1.93
Uttar Pradesh	2.02	1.80	1.91
Assam	1.23	2.15	1.69
Orissa	1.61	1.60	1.61
Bihar	1.11	1.70	1.41
Himachal Pradesh	1.57	1.15	1.36

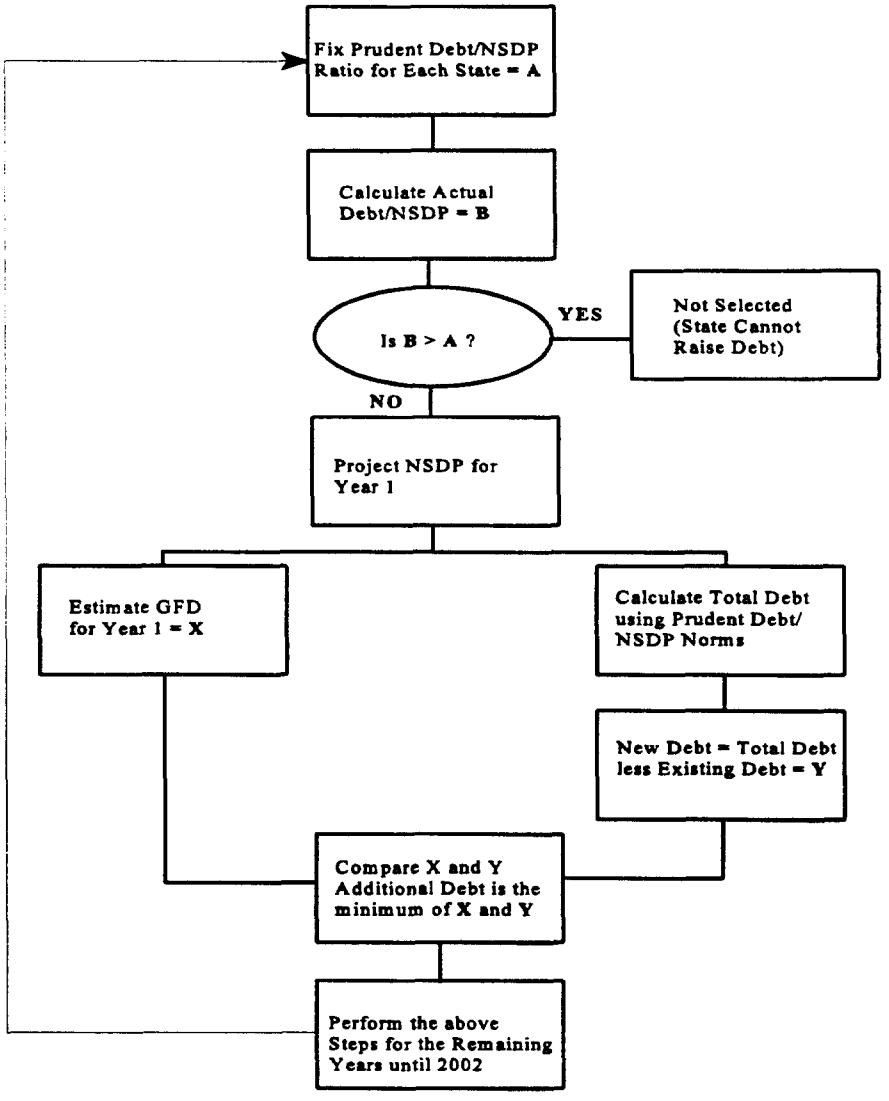
Source: CRISIL, based on CMIE and RBI *Bulletins*, 1994.

Determination of Power Project Size. The information on the states' socioeconomic structures and financial situations (given in Appendix B and summarized in the table above) provides the basis for estimating the size of the power projects the states can support. The analysis assumes that the states use the revenue expenditure account to meet any payments they might have to make under their guarantee obligations. Guarantee payments will require either a reduction in the revenue surplus (for a state having such a surplus) or an increase in the revenue deficit. In either case, it will lead to an increase in the gross fiscal deficit, which must be funded through additional debt. The ability to raise additional debt has been calculated here for the different states of India. Assuming, for the purposes of this analysis, that the states require the ability to

raise 100% of the guarantee amount, the ability to take on additional debt can provide a useful estimate of the size of power projects that different states can support.

The methodology used to determine the amount of additional debt that each state can incur is described below. The methodology results in two indicators: the amount of additional borrowing that a state can maintain each year, and the overall debt ceiling for a state. Exhibit 3-14 illustrates the three steps used to calculate the level of additional debt the state can incur.

Exhibit 3-14
Methodology of Calculating Additional Debt



Step 1: The analysis begins by determining the highest total debt/NSDP ratio that can be reasonably expected for a state, given its ability to secure resources (described in Appendix B). Thus, the size of total debt that the state can incur has been linked to its relative strength in securing resources, as well as the size of the economy (given by the NSDP).

Based on this analysis, the states of Karnataka, Gujarat, Haryana, Maharashtra and Punjab were determined to have the best ability to raise additional resources. A debt/NSDP ratio of 35% is given as the ceiling for these states for taking on additional debt. Tamil Nadu, Andhra Pradesh, and Madhya Pradesh have less ability to secure resources relative to the size of their economies. Thus, the ceiling for debt/NDSP is set at 32%. The calculated ceilings for other states are as follows: Rajasthan, Uttar Pradesh, Kerala and West Bengal - 30%; and Assam, Orissa, Bihar and Himachal Pradesh - 28%.

Setting a ceiling based on the ratio of debt/NDSP establishes a level of debt beyond which the state would be unlikely to be able to meet debt service or guarantee obligations comfortably, and could experience a deterioration in its ability to secure additional resources. To determine the ceiling for debt/NSDP ratio, the current debt levels have been taken as an indicator. The debt/NSDP ratio of states falling in the middle bands have been taken to be the most indicative. Since many of the states currently have high levels of debt, further increases of their Debt/NSDP ratio would be difficult under normal circumstances.

Step 2: Controls from the center will limit the additional debt that the state can incur in a given year. Thus, a second ceiling was calculated, measured by the GFD/NSDP ratio. This imposes a limit on the net borrowing per year relative to the size of the state's economy. Historical rates for this ratio formed the basis of the ceiling calculations.

The permissible GFD/NSDP ratios for the various states are: Karnataka, Gujarat, Haryana, Punjab, and Maharashtra - 7%; Tamil Nadu; and Andhra Pradesh and Madhya Pradesh - 6%. For all other states the ceiling is fixed at 5%. Exhibit 3-15 summarizes the ceilings for debt/NDSP and GFD/NSDP.

Exhibit 3-15
Calculation of Debt/NDSP and GFD/NSDP Ceiling

States	Range of Scores	Debt/NSDP	GFD/NSDP
Karnataka, Maharashtra, Punjab, Haryana, Gujarat	above 2.7	35%	7%
Tamil Nadu, Andhra Pradesh, Madhya Pradesh	2.5-2.7	32%	6%
Rajasthan, West Bengal, Uttar Pradesh, Kerala	1.9-2.5	30%	5%
Assam, Orissa, Bihar, Himachal Pradesh	below 1.9	28%	5%

Step 3: On the basis of the above rules governing debt/NSDP and GFD/NSDP, a model was built that determines the additional debt that a state can raise each year for the subsequent years up to 2002.

Step 4: The final step determines how much of the additional debt that can be raised can be used for servicing obligations to an independent power producer. The GFD has three components: the revenue deficit, capital outlays, and the net loans given by the state government. Out of these, the revenue deficits are the most politically difficult to reduce. A state government can cut capital outlays and lending more easily, although these cuts could be more harmful to the economy in the long run.

It was assumed that the revenue deficit component is not available for servicing IPP obligations. For the remaining GFD components (capital outlays and net lending) it was assumed that the government could cut up to 20% of the expenditure and use it for servicing IPP obligations. This figure represents money available for the IPP; it was used subsequently in calculating the project size (in MW) that it can support.

Calculation of the Project Size (in MW) That Can Be Supported. Project size (in MW) was calculated using the method explained below. The calculations used to determine the amount required by the independent power producer (IPP) per MW are also shown.

Annual billing per MW = 2.5 (Rs./kWhr) x 80% x 8760 (hours per year) x 1000
= Rs. 17.52 million per MW ($0.57 million per MW)

Assumptions

- Rupee/Dollar conversion rate: $1=Rs. 31
- Tariff charged by IPP to SEB: Rs. 2.5 per kWh
- Plant load factor for an IPP: 80%

Thus, the number of MW that can be supported are yearly amounts available through each alternative divided by 17.52.

The calculated project sizes that can be supported through state guarantees are presented in Exhibit 3-16.

Exhibit 3-16
Power Project Size Through State Guarantees, 1995-98 and 1999-2002
(MW)

State	Funds Available for Issuance of Guarantees (Rs. Lakhs)		Capacity through State Guarantee		Total Power Project Capacity in MW from State Guarantees
	1995-1998	*1999-2002*	*1995-1998*	*1999-2002*	*1995-2002*
Karnataka	69,986	29,438	400	150	550
Gujarat	48,590	9,426	300	50	350
Haryana	40,119	17,387	250	100	350
Maharashtra	154,224	44,975	900	250	1150
Punjab	29,914	34,974	150	200	350
Andhra Pradesh	78,000	41,803	450	250	700
Madhya Pradesh	48,452	13,168	300	100	400
Tamil Nadu	527	87			0
Rajasthan	19,721	21,457	100	100	200
West Bengal	30,867	9,026	200	50	250
Uttar Pradesh	61,934	54,227	350	300	650
Kerala	0	0			0
Total	582,333	275,968	3,400	1,550	4,950

Note: Tamil Nadu and Kerala are unable to raise monies for capital.

According to these criteria, the states of Assam, Orissa, Bihar and Himachal Pradesh would not be able to support any significant increase in plant size through issues of guarantees. This is because their current levels of debt are higher than the prudent Debt/NSDP ceiling of their respective bands.

Tamil Nadu has been excluded for a different reason. Even though it has a low debt, the Gross Fiscal Deficit is mainly being used for meeting the revenue deficit rather than the capital outlay and net lending. Since the criteria states that only debt that is otherwise being used for capital outlays and net lending is available for supporting guarantees, Tamil Nadu will therefore not be able to provide guarantees to support any significant capacity expansion.

3.2.2 Appropriations of Central Transfers

An alternative mechanism to the provision of a state guarantee as a means to provide comfort to power project investors is the government appropriation of central transfers. The viability of central appropriations as a mechanism is limited, however, by two key factors.

First, only statutory flows regulated by the Finance Commission (the state's share in central taxes) are desirable for appropriation. As explained in the overview on state finances, revenue funds flow from the center from two sources: the statutory flows that the Finance Commission presides over and the relatively discretionary Planning Commission flows. From the point of view of the IPP, the flows governed by the Finance Commission are more acceptable for appropriation because they are predictable and certain. The Planning Commission funds, on the other hand, are more volatile and may be subject to political considerations.

Second, not all states have solid credit quality. Only those states that meet a minimum credit quality criteria should be considered eligible to use central transfers. The reliance of states with lower credit quality on central appropriations would only further deteriorate their credit quality. In this analysis, all states were evaluated for the use of this mechanism.

Assuming that up to 25% of the state's share in central taxes can be appropriated, and forecasting the funding available through the Tenth Finance Commission, it was possible to determine the amount of funding that could be available for each state. From this figure, the number of MW that can be supported with appropriations of central transfers were determined.

The calculations for the period 1995 to 1998 are based on figures for the states' shares in central taxes as given by the Tenth Finance Commission. Although the Commission's report is not yet publicly available, figures from the report are quoted in the media. The calculations are based on numbers drawn from independent sources, including the Reserve Bank of India. Tenth Finance Commission figures were also used in the calculations for 1998-2000. For the period 2000-2002, it was assumed that the states' share of central taxes would grow at a real rate of 5% over the period 1995-2000.

The methodology for calculating the project size that can be supported with central appropriations is the same as described above for the state guarantee. The project-size calculations are summarized in Exhibit 3-17.

Exhibit 3-17
Possible Projects to be Supported by Appropriations of Central Transfers

State	Funds from 10th Finance Comm. (Rs. Million) 1995-2000	Period 1: 1995-1998			Period 2: 1999-2002			
		Average Central Flow (Rs. Million)	Appro-priation (Rs. Million) (25%)	Estimated Capacity (MW)	Average Flow (Rs. Million)	Appro-priations (Rs. Million) (25%)	Difference Period 1 - Period 2	Estimated Capacity (MW)
Karnataka	105,200	21,040	5,260	300	23,748	5,937	677	50
Gujarat	88,800	17,760	4,440	250	20,046	5,012	571	50
Haryana	28,000	5,600	1,400	100	6,321	1,580	180	0
Maharashtra	137,100	27,420	6,855	400	30,949	7,737	882	50
Punjab	36,000	7,200	1,800	100	8,127	2,032	232	0
Andhra Pradesh	181,000	36,200	9,050	500	40,860	10,215	1,165	50
Madhya Pradesh	160,900	32,180	8,045	450	36,322	9,081	1,036	50
Tamil Nadu	133,600	26,720	6,680	400	30,159	7,540	860	50
Rajasthan	114,000	22,800	5,700	350	25,735	6,434	734	50
West Bengal	149,800	29,960	7,490	450	33,816	8,454	964	50
Uttar Pradesh	362,000	72,400	18,100	1,000	81,719	20,430	2,330	150
Kerala	77,200	15,440	3,860	200	17,427	4,357	497	50
Assam	83,300	16,660	4,165	250	18,805	4,701	536	50
Orissa	97,100	19,420	4,855	300	21,920	5,480	625	50
Bihar	247,000	49,400	12,350	700	55,759	13,940	1,590	100
Himachal Pradesh	47,600	9,520	2,380	150	10,745	2,686	306	0
TOTAL				**5,900**				**800**

Source: CRISIL

Three points should be noted concerning both the central guarantee and the appropriation mechanisms:

1. It is unclear whether it is legal or constitutional for flows from the Finance Commission to be used for appropriation. The issue of legality is being examined independently of this report.

2. Public sector companies like NTPC and NHPC have appropriated funds from the Planning Commission, providing current examples of appropriating central transfers for power plant construction. It should be noted, however, that these funds have originated from Plan allocations to the different states and not from the Finance Commission's regulated shares in central taxes.

3. The assumption that 25% of the flows are available for appropriation is a liberal one. It remains to be seen whether states will actually agree to this amount. It should be noted the experience of NTPC and NPC suggests that in recent years they have been successful in arranging for only $200-$250 million from the states through this route.

Exhibit 3-18 shows the size of power projects that can be supported using both the state guarantees and the appropriations of central transfers.

Exhibit 3-18
Power Project Size, 1995-98 and 1999-2002
(MW)

States	State Guarantee		Appropriation of Central Transfers		Total Power Project Capacity in MW	
	1995-1998	*1999-2002*	*1995-1998*	*1999-2002*	*1995-1998*	*1999-2002*
Karnataka	400	150	300	50	700	200
Gujarat	300	50	250	50	550	100
Haryana	250	100	100		350	100
Maharashtra	900	250	400	50	1,300	300
Punjab	150	200	100		250	200
Andhra Pradesh	450	250	500	50	950	300
Madhya Pradesh	300	100	450	50	750	150
Tamil Nadu	0	0	400	50	400	50

States	State Guarantee		Appropriation of Central Transfers		Total Power Project Capacity in MW	
	1995-1998	*1999-2002*	*1995-1998*	*1999-2002*	*1995-1998*	*1999-2002*
Rajasthan	100	100	350	50	450	150
West Bengal	200	50	450	50	650	100
Uttar Pradesh	350	300	1,000	150	1,350	450
Kerala	0	0	200	50	200	50
Assam	0	0	250	50	250	50
Orissa	0	0	300	50	300	50
Bihar	0	0	700	100	700	100
Himachal Pradesh	0	0	150	0	150	0
Total	**3,400**	**1,550**	**5,900**	**800**	**9,500**	**2,350**

According to the criteria employed for this study, the states of Assam, Orissa, Bihar and Himachal Pradesh would not be able to support any significant increase in plant size through either of the two routes. This exhibit shows the capacity they would be able to support if they were considered to be in a position to use appropriations of central transfers.

Limitations of the Assessment. The assessments to determine the size of power projects that the two mechanisms can support were carried out using only published data on the states. To maintain the data's consistency and uniformity, the sources were chosen in a manner such that the compilation method was common to all the states. Some figures were drawn from quotes in the public media, including the following major sources:

- Reserve Bank of India bulletins for the assessment of state finances
- *Basic Statistics Relating to States of India* a CMIE publication, was used extensively in calculating indicators for the economic structure of the states.

Although most states have produced revised estimates for the year 1994-95, these are not yet compiled by the RBI. Therefore, only the 1993-94 revised estimates are included in the analysis. Although it can be argued that growth since then will result in an enhancement in the capacity of the states to support power projects, this has been counterbalanced to an extent by using more liberal norms for calculating the resources that the state will be able to secure and the money that can be appropriated from central flows.

NSDP figures are available only for 1991-92. For the calculation of the NSDP-related ratios, the NSDP ratios were extrapolated for future years using the historical growth rate for each state. It

should be noted that this may not be a wholly valid assumption, because in the past three years, many states have broken away from their past records and some of the more backward states have embarked on a higher growth path.

3.3 INDIAN FINANCIAL INSTITUTIONS

This section evaluates the credit quality of the Indian Financial Institutions (IFIs) and determines the power capacity they can support through direct financing and/or guarantees.

3.3.1 Background

The Indian financial system is dominated by a few major lending institutions that specialize in infrastructure and industrial development finance, and over twenty predominantly government-owned commercial banks focusing mainly on working capital finance. In addition to these six banks, there a number of smaller financial institutions at the state level that lend to smaller industrial projects and have access to refinancing options from some of the IFIs. Commercial banks, both Indian and foreign, are numerous and located throughout the country. They specialize in corporate credit, but chiefly for the purpose of meeting working capital requirements. Apart from these banking institutions, there are government-owned insurance companies, non-bank finance companies, and mutual funds that have access to additional pools of capital resources that may be directed to long-term lending.

In terms of long-term lending to infrastructure projects and especially the power sector, however, only the larger financial institutions are active. At present, state-level institutions and Indian commercial banks are less active. Exhibit 3-19 shows the six financial institutions considered in assessing and forecasting the funding potential available for power sector investments.

Exhibit 3-19
Ownership and Rating Profile of Six Financial Institutions

Institution	Ownership Pattern	CRISIL Ratings on Long-Term Obligations
The Industrial Development Bank of India (IDBI)	Govt. of India: 73% Public/Others: 27%	AAA
The Industrial Credit and Investment Corporation of India Ltd. (ICICI)	Govt. Institutions: 33% Public: 29% Others: 38%	AAA

Institution	Ownership Pattern	CRISIL Ratings on Long-Term Obligations
The Industrial Finance Corporation of India Ltd. (IFCI)	IDBI: 50% Banks & others: 50%	N.A.
The Shipping Credit and Investment Corporation of India Ltd. (SCICI)	Fin. Inst.: 26% Banks: 15% Mut. Funds: 22% Others: 37%	AAA
The Small Industries Development Bank of India Ltd. (SIDBI)	IDBI: 100%	AAA
The Unit Trust of India (UTI)	IDBI: 50% Banks/Govt. Inst.: 50%	N.A.

Source: CRISIL, 1995.

3.3.2 Estimation Methodology

Indian financial institutions usually sanction funds for individual power projects in states and for overall sector development through central agencies. These funds are then disbursed according to the needs of each project. While sanctions theoretically can be construed to represent the commitment of the institutions and hence their potential, the consistently wide gap noted between sanctions and disbursements makes disbursements a more accurate indicator. According to CRISIL, the annual disbursements to the power sector by the six institutions mentioned above provide an estimate of the financing potential and level of commitment of the IFIs in the future.

Exhibit 3-20 displays disbursements to the power sector by the six financial institutions over a 10-year period. All IFIs typically have sector exposure limits defined as a portion of their total industrial lending exposure. Discussions with the lending institutions reveal that, in general, the exposure ceiling for the power sector is in the range of 15%-20%. While this limit is imposed on the total outstanding exposure, the same exposure limits are by and large applicable to new lending in any given year.

Based on an expected growth rate in lending to Indian industrials and the rough guidelines set for the power sector, an estimate of the amount of funds likely to be committed to the power sector can be made. Exhibits 3-21 and 3-22 show estimates of the projected annual growth rates in percentage and actual amounts for each of the six lenders for the 1995-2002 time frame. It can be seen that disbursement growth rates are expected to grow significantly over the next eight years. This is in part due to the increasing role of the private sector in building India's infrastructure needs.

Exhibit 3-20
Historic Loan Disbursements to the Power Sector by Six Financial Institutions
(Rs. Crores)

Year Ended		IDBI	ICICI	IFCI	SCICI	SIDBI	UTI
Mar'94	Pow.Sec. Total **% to Total**	803.6 7,760.7 **10%**	371.7 4413.3 **8%**	186.1 2163.1 **9%**	20.4 1006.6 **2%**	263.2 2314.9 **11%**	916.2 5477.4 **17%**
Mar'93	Pow.Sec Total **% to Total**	568.3 633.8 **9%**	124.2 3,315.2 **4%**	66.8 1,732.5 **4%**	30 486.3 **6%**	194 2,061.8 **9%**	262.7 5,572.7 **5%**
Mar'92	Pow.Sec Total **% to Total**	549.6 5,113.1 **11%**	38.2 2,351.3 **2%**	56.8 1,604.8 **4%**	0 170.9 **0%**	169.6 1,986.4 **9%**	291.7 2,016.8 **14%**
Mar'91	Pow.Sec. Total **% to Total**	447.8 3,832.4 **12%**	38.9 1,406.4 **3%**	45.1 1,574.1 **3%**	0 167 **0%**	88.3 1,760.2 **5%**	23 830.2 3%
Mar'90	Pow. Sec. Total **% to Total**	550.1 4,506 **12%**	5.4 913.3 **1%**	26.2 1,121.8 **2%**	N.A.	N.A.	27.4 720.5 **4%**
Mar'89	Pow.Sec Total **% to Total**	620.73 4,385.46 **14%**	12.11 842.21 **1%**	12.41 989.2 **1%**	N.A.	N.A.	58.28 1,091.24 **5%**
Mar'88	Pow.Sec. Total **% to Total**	436.57 3,449.63 **13%**	8.18 634.48 **1%**	8.37 656.35 **1%**	N.A.	N.A.	108.13 749.1 **14%**
Mar'87	Pow.Sec. Total **% to Total**	376.96 2,926.89 **13%**	7.13 562.54 **1%**	20.7 451.55 **5%**	N.A.	N.A.	18.36 417.59 **4%**
Mar'86	Pow.Sec. Total **% to Total**	332.23 2,539.72 **13%**	7.07 397.66 **2%**	4.11 403.89 **1%**	N.A.	N.A.	16.53 528.85 **3%**
Mar'85	Pow.Sec. Total **% to Total**	183.98 1,961.03 **9%**	2.71 3.43.98 **1%**	2.6 272.88 **1%**	N.A.	N.A.	40.7 236.24 **17%**

Source: The Reserve Bank of India, *Report on Development Banking in India, Years 1986-87 to 1993-94*, 1995; CRISIL interviews, July 1995.

Exhibit 3-21
Projected Annual Growth Rates in Lending

	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2002
IDBI	15%	15%	15%	15%	15%	15%
ICICI	50%	20%	20%	20%	15%	15%
IFCI	20%	20%	20%	20%	15%	15%
SCICI	40%	40%	40%	35%	30%	30%
SIDBI	15%	15%	15%	15%	15%	15%
UTI	10%	10%	10%	10%	10%	10%

Source: CRISIL interviews with financial institutions, July 1995.

Exhibit 3-22
Projected Disbursements of IFIs to all Industries
(Rs. Crores)

	1993-94 (Actual)	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02
IDBI	7,760	8,924	10,263	11,802	13,572	15,608	17,950	20,641	23,737
ICICI	4,413	6,620	7,943	9,532	11,438	13,154	15,127	17,396	20,005
IFCI	2,163	2,596	3,115	3,738	4,485	5,158	5,932	6,821	7,845
SCICI	1,006	1,408	1,972	2,760	3,727	4,845	6,298	8,187	10,643
SIDBI	2,314	2,661	3,060	3,519	4,047	4,654	5,352	6,155	7,078
UTI	5,477	6,025	6,627	7,290	8,019	8,821	9,703	10,673	11,740

A summary of financing capacity for each of the IFIs in the power sector is shown in Exhibit 3-23. The projected financing capacity represents the combination of direct lending and guaranteeing capacity of the financial institutions. Direct lending and guarantees are treated equally for the sake of computing sectoral exposure norms.

Exhibit 3-23
Summary of Financing and Guarantee Capacity
(Rs. Crores)

	94-95	95-96	96-97	97-98	Total 93-98	Total 99-2002	Total 95-2002
Total Estimated Incremental Disbursal to Power Sector	4,061	4,761	5,594	6,762	21,178	39,604	60,782
Funding Capacity							
Total project cost supportable @ 40% of total cost	10,153	11,903	13,986	16,905	52,947	99,009	151,956
Total equivalent power capacity (MW) supportable @ Rs.4.5. cr per MW	2,256	2,645	3,108	3,757	11,766	22,002	33,768

3.3.3 Assumptions

For direct funding:

- Assistance from financial institutions cannot exceed 40% of the total project cost. It is assumed that the entire 40% is met by IFIs. Hence, the total project cost supportable by the institutions would be 2.5 times the amount that can be disbursed by the IFIs.

- The power sector exposure limits used for each institution were also determined on the basis of discussions and general industry norms. A lower limit of 10% of total annual disbursements has been assumed for UTI and SIDBI, since their main charter is not for lending to large projects. Also in the case of SCICI, a lower limit of 10% was assumed for the first three years, based on past trends. For other institutions, the power sector exposure every year has been estimated at 15-20% of total annual disbursements.

For guaranteeing capacity:

- The payment to be made to the IPP per MW of power generated was calculated on the basis of an assumed cost of generation of Rs. 2.5 per kWh. Hence, on an assumed plant load factor of 80%, the payment would be Rs. 1.752 crores per MW.

- In calculating the power generation capacity supportable by the IFIs, a coverage of only 1.0 has been assumed. This is because of the superior credit quality of four of the six

institutions (AAA rating for rupee debt) and the assumed superior credit quality of the other two institutions because of their government/quasi-government ownership, growing reputation, and a demonstrated performance record in the capital markets.

3.4 PRIVATE INDIAN CORPORATIONS

3.4.1 Background

Private Indian corporations have been growing steadily since the early 1980s and have realized good profitability since the 1991 reform program was instituted. During this time, most major Indian companies greatly increased their equity base and attracted capital from a number of sources. In FY 1994, India attracted more than $5 billion in equity investment alone. The other major source of financing has been the issuance of offshore commercial paper in the form of bonds or global depositary receipts. Direct access to foreign markets yielded approximately $3 billion in FY 1994.

Since the initial burst of activity by foreign developers, many Indian corporations have shown interest in developing private power projects. At present, none of the eight "fast track" projects is led by an Indian developer, although many of these have Indian partners as co-developers, engineers, and operation and maintenance providers. However, many of the next group of projects (notably the smaller, industrial facilities) are dominated by Indian developers and industrial companies.

Some Indian companies are willing and able to undertake private power projects on a balance sheet financing or non-recourse basis without GOI guarantees for SEB payment obligations. This section presents an estimate of the amount of electric generation capacity that can be financed and/or guaranteed by Indian companies based on their current balance sheets and future prospects.

3.4.2 Methodology for Computing Guaranteeing Capacity

Summary financial indicators of 30 Indian-owned companies selected by CRISIL formed the basis of the analysis. These companies represent some of the largest privately-owned Indian companies in a wide range of industries for which ratings were available. Exhibits 3-24 through 3-26 present financial data for each of these companies.

While not all of the companies have outstanding credit ratings, most of them are judged to be in the *high safety* category (CRISIL rating of AA- or higher). This provides adequate assurance of the basic requirements for providing support for guarantees on the basis of the company's track

record and balance sheet. For example, a CRISIL card for the Tata Iron & Steel Company (TISCO) shows a long-term credit rating of AAA, the highest rating provided.

The analysis also assumes that the maximum amount guaranteed by the company in any given year does not exceed the company's net cash accruals. This is because, as a non-financial institution, the company would have to raise additional funds through loans for any diversions of cash that exceed the net cash accruals. This may adversely affect the credit standing of the company. By restricting the guarantee size to the internal cash position, there is a greater probability that a company's existing capital projects will be continued without serious disruption.

Exhibit 3-24
Financial Statistics of Selected Corporations, FY 1994 (in million US$)

Company	Net Worth	Net Sales	Net Cash	Market Capn.	1994 Assets
1. Reliance Industries	1,353	947	216	3,350	1,603
2. Tata Steel	778	1,020	82	988	2,012
3. Larsen & Toubro	457	781	61	1,784	584
4. Essar Gujarat	390	215	52	603	931
5. Grasim Industries	331	583	83	1,370	628
6. Hindalco	279	234	44	996	374
7. Tata Chemicals	254	136	74	1,434	606
8. GE Shipping	254	154	55	488	3,131
9. TELCO	247	967	45	1,892	549
10. Arvind Mills	226	123	23	492	127
11. Videcon International	220	268	19	348	86
12. Indian Rayon	216	243	36	634	272
13. GSFC	212	337	22	540	488
14. Tata Power	205	292	33	623	334
15. Indogulf Fertilizers	204	128	40	570	226
16. ITC	200	735	41	2,576	221
17. Jaiprakash Industries	197	178	33	389	271
18. Ballarpur Industries	159	317	22	410	309
19. Nagarjuna Fertilizers	139	190	46	290	342
20. Ashok Leyland	136	340	15	555	217
21. Andhra Valley Power	118	172	19	269	189
22. Gujarat Ambuja Cements	109	83	21	561	216
23. Calcutta Electricity Supply	83	261	21	329	507
24. Tata Hydro Electric	81	115	13	196	129
25. Nippon Denro Ispat	80	129	8	127	325
26. Ahmedabad Electricity	78	136	10	128	105
27. Jindal Strips	77	163	19	256	157
28. Siemens	76	207	10	621	70
29. Gujarat Ind. Power Corp.	30	36	10	172	62
30. Jindal Iron & Steel	23	63	11	133	51

Company	Net Worth	Net Sales	Net Cash	Market Capn.	1994 Assets
Total	7,212	9,554	1,183	23,126	15,125

Notes: 1) Net worth figure excludes revaluation reserve.
2) Net Sales = Gross Sales + Traded Goods Sales - Excise Duty
3) Net Cash Flow = Profit After Tax + Depreciation = Dividend
4) Assets = Gross Fixed Assets + Capital Work-in-progress - Revaluation Reserve

Exhibit 3-25
Abbreviated CRISIL Profile of a Sample Indian Corporation

Company	:	Reliance Industries Limited
Corporate Group	:	Reliance (Ambanis)
Business	:	Synthetic and Worsted Fibers, PSF, PFY, POY, PTA, exploration of gas fields, etc.
Long-Term Rating	:	AAA (CRISIL-Rated)

Exhibit 3-26
Financial Highlights

Statistic	Indian Rupees 1993-1994	$ Millions 1992-93
Net Sales	947.3	687.1
Operating Income	949.5	689.3
Operating Profit	325.4	276.0
Profit After Tax	179.8	100.5
Equity Capital	99.5	76.7
Net Worth	1,352.6	814.4
Net Cash Accruals	216.1	161.2
Gross Fixed Assets with CWIP	1,603.5	1,449.8
OPBDIT/Op. Income	34.3%	40.0%
PAT/Op. Income	18.9%	14.6%
Return on Capital Emp.	11.2%	11.5%
PBDIY/Int. & Fin. Charges	3.03	2.54
Total Debt/Net Worth	0.62	1.01
Market Capitalization	3,349.4	1,371.2
	Growth in Last 3 Years	
Operating Income	28.2%	
Profit After Tax	67.3%	
Net Worth	55.7%	

Source: CRISIL; CRISIL Card, 1995.

3.4.3 Summary of Conclusions

The guarantee capacity of the group of 30 Indian corporations was calculated assuming a power generating cost of Rs 2.5 per kWh in 1997. Based on this cost, a load factor of 80%, and a comfort factor (coverage) of 1.25, the payment to the IPP would be Rs. 2.19 million per MW of generation capacity. (This methodology is similar to the methodology used in the previous section of this report.) Using these assumptions and methodology, the total guaranteeing capacity of the 30 companies in 1994 was estimated to be:

Aggregate of net cash accruals of selected companies:	Rs. 3,787 crores
Guaranteeing capacity (MW) @ Rs. 2.19 per MW:	1,730 MW for FY 1994

The above capacity can be extrapolated for subsequent years based on a trend in sales growth and cash accruals. However, incremental cashflows over and above those earmarked above may well be used for the expansion/modernization of the parent company's existing business. Therefore, it would be reasonable to exclude the effect of incremental cash flows for this analysis. It is

assumed that each Indian industrial corporation would pledge its balance sheet for only one project.

Further, thermal power plants take between two and five years to build and require significant management and technical oversight. We therefore consider that most of the 30 companies analyzed would not undertake more than a single project over a five-year period.

3.5 EXPORT CREDIT AGENCIES

3.5.1 Definition of Export Credit Agencies

A substantial amount of imported equipment is financed by credits that exporters extend to importers. Some of this credit (especially medium- and long-term) is provided for by government-sponsored export credit agencies (ECAs). A recent estimate of worldwide annual medium- and long-term credits from ECA activity was about $75-$80 billion per year.[2]

Nearly every major exporting country has an export credit agency that provides a variety of direct credits, guarantees, and trade insurance. Most medium- and long-term trade credits are provided to the importer (buyer) as "buyer credits." Some ECAs, such as the Japanese ECA, also provide "supplier credits" to the exporter. The purpose of the export credit agencies is to promote exports, create jobs in their home countries, and compete effectively in the global marketplace. The largest ECAs are listed in Exhibit 3-27.

ECAs do not provide access to untied financing. Their facilities are related primarily to exports and investment from their own countries (subject to certain limitations on "non-national" goods and services to enable projects to be completed).

ECAs are obligated to operate on a break-even basis. Given the high level of country risk in their portfolios and their history of significant debt rescheduling under the Paris Club, however, their ability to operate on a profitable basis varies and depends upon the extent of continued government support and future demand for their services.

2 International Union of Credit and Investment Insurers (The Berne Union), April 1995.

Exhibit 3-27
Selected Export Credit Agencies

Country	Export Credit Agency
Canada	EDC
Germany	HERMES
France	COFACE
Italy	SACE
Japan	EID/MITI,EXIM
United Kingdom	ECGD
USA	EXIMBANK

In order to avoid excessive competition, since 1976, ECAs that are members of the OECD have been operating on a collaborative basis known as the "Arrangement on Guidelines for Officially Supported Export Credits," commonly referred to as the Consensus. Consensus guidelines stipulate minimum interest rates, maximum credit terms, and minimum down-payments for officially supported medium- and long term-export credits. The Consensus also sets guidelines on such issues as tied-aid credits. As a result of the Consensus, there will be similarities in loan or loan guarantee terms among the various ECAs. Differences in terms will relate primarily to the expectations of currency differentials, because countries generally provide financing in their own currencies, and the up-front exposure and other fees charged by the ECAs to the exporter.

3.5.2 ECA Participation in Power Projects

ECAs have a long history of providing financing for all types of power generation equipment. In recent years, financial support to the power sector by the US Exim Bank alone has exceeded $2 billion annually. There are several reasons why power equipment exports have been an important segment of the ECA portfolio. First, many countries do not locally manufacture power generation equipment and need to import a high percentage of the total costs of a generation plant. Second, given the high capital cost and long-term life of the equipment, the longest possible loan maturity is required. The variety of short-term trade credit mechanisms that exist in the marketplace are not at all useful for the financing of power generation equipment. For many years, one of the only sources of medium- and long-term credits for many developing countries has been the export credit agencies. Third, utility buyers were able to comply with the ECA requirements to provide sovereign guarantees to back up their loans. As a result, nearly every ECA has made loans for power generation equipment and the competition amongst ECAs for the

business (especially the United States, Canada, Japan, Germany, France, and the United Kingdom) has been formidable.

One recent IPP project in India financed with ECA support (and without GOI counter-guarantees) is the 655 MW project being developed in Gujarat by the Torrent Group and Siemens, with the support of Germany's ECA, Hermes.

3.5.3 Conditions of ECA Participation

ECA credits can cover a significant portion of the costs of imported equipment (up to 85%) including boilers, turbines, generators, transmission equipment, and foreign engineering services. The terms of the loans generally range from 7 to 12 years and are set by the type of equipment financing and the GNP of the country. The type of financing can be either a direct loan from the ECA or an ECA guarantee that extends to a financial institution (usually a commercial bank) to provide the actual funding. Interest rates are based on Commercial Interest Reference Rates (CIRRs) established under the Consensus. For US dollar loans, interest rates are around 8.5% (as of September 1995) for direct loans (these rates change frequently) or approximately 100 and basis points above U.S. Treasury bonds of comparable maturities.

Exposure fees are also charged, and can be quite high, depending upon the risk of the project. For example, the U.S. Exim Bank recently changed its exposure fee determination to more closely align the fee structure with market rates for project risk. As a result, exposure fees can range from 169 to 1,215 basis points on the total loan commitment. Most ECAs are moving towards a market risk-adjusted basis where the costs of financing are related to the risk. In the United States, for example, all government agencies including U.S. Exim are required to rate each exposure on the basis of the estimated financing and risk subsidies involved in the transaction. Financing subsidies are calculated as the difference between the interest charged on the transaction and the government's cost of borrowing. Risk subsidies are calculated as the difference between the exposure fees charged and the expected losses due to non-payment. The sum of all subsidies during each fiscal year can be no more than the amount appropriated in the federal budget.

ECAs have traditionally required sovereign guarantees to support their medium- and long-term lending, although this is changing rapidly. More recently, they have established project finance departments that are prepared to engage in limited recourse project financing without explicit sovereign guarantees. This represents a significant departure from traditional practices and has broadened the potential scope of ECA support projects that use alternatives to counter-guarantees. The willingness of ECAs to consider lending without sovereign guarantees does not preclude their ability to continue to do sovereign-guaranteed business.

As lenders on a limited recourse project finance basis, ECAs will look to the underlying credit of a project as a whole and operate much like a commercial bank. They may be likely to seek guarantees from Indian financial institutions and state governments to support their financing or guarantees. To date, ECAs have not been willing to accept the risks of construction and project completion (hence the term "limited recourse" project financing); these risks are generally assumed by the IPP developers. Some other important issues related to ECAs' ability to participate on a project financing basis are as follows:

- ***Overall ECA exposure in India.*** ECAs do have country limits on total exposure. Country limits are determined based upon an analysis of country credit (akin to a Standard & Poor's country rating analysis) and the total amount of existing exposure. An exception to country limits is the U.S. Exim Bank. For project finance transactions, there are no country limits because each transaction is priced according to the specific risks of the project and not the country risk, per se.

- ***Ability of project to access foreign currency.*** Many of the project finance transactions completed by ECAs rely upon escrow accounts, which are funded by export receivables in foreign currency and held outside of the country (offshore escrow accounts). Because power generation does not create a stream of export revenues, this type of arrangement is not possible.

- ***Ability of ECA staff to accommodate the complexity of the transaction.*** Most of the ECA dedicated project finance units are new and recently staffed. Their ability to undertake complex project finance transactions is limited now, but is expected to increase in the future.

3.5.4 Estimated Capacity of ECAs

Each year ECAs support medium- and long-term credit to developing countries of about $75-$80 billion. The IMF estimates that the ECAs account for more than 20% of the total indebtedness of developing countries and 37% of the debt to official creditors, exceeding the debt of multilateral creditors by a significant extent. For India, the ability to borrow from ECAs is significant, especially if economic and trade reforms in the country continue.

In order to estimate the capacity of ECA lending for IPPs, several factors were taken into consideration. First, given India's overall ability to increase its borrowing from ECAs, it is not expected that country limits will be the most important constraint to the capacity of ECA lending. Constraints to ECA capacity for projects based upon alternatives to counter-guarantees are expected to arise from the following three issues:

- ***Ability of Indian institutions to provide acceptable credit support.*** Because ECAs will be looking to the same security package as the IPP developers, the maximum amount of support that can be provided by the SEBs, state governments, and Indian financial institutions provides a ceiling on the amount of support the ECAs will be able to provide. The security packages described in this study are for the benefit of financial institutions such as the ECAs.

- ***The level of imported equipment.*** As mentioned above, ECA financing covers imports of power generation equipment and services. To the extent that IPP developers successfully minimize the amount of imported costs in their projects as a way of managing foreign exchange risks, the amount of funds requested from ECAs will be reduced. Over the long-term, this may occur because India has significant capability to manufacture many types of power generation equipment locally.

- ***The ability of ECA staff to handle (in a timely fashion) requests for non-recourse project finance exposures.*** While the U.S. Exim Bank has made a strong commitment to project finance, it is leading the effort. It is possible that given the small number of dedicated staff resources, the most serious constraint will be the number of transactions that can be processed in a given year by all of the ECAs.

  To date there are seven or eight pending IPP projects in India under consideration by the ECAs including projects supported by Enron, CMS, Cogentrix, Westinghouse, AES, Siemens, Rolls Royce, and Mitsubishi. ECAs most active are U.S. Exim Bank, ECGD, Hermes, and Japan Exim.

Exhibit 3-28 shows the estimated capacity of ECAs to provide credit support for IPPs in India. It assumes that between 1995 and 2002, ECA financing will be obtained for an average of four projects per year. This assumption is based on the expectation that ECAs will be approached by nearly all of the IPP developers for financing. This may be the case because of the lack of long-term financing that may be available from other sources of foreign currency lending, such as international capital markets. Two caveats to this should be noted. First, over this time horizon (1995-2002), capital market funding could easily replace ECA funding, provided the capital markets are prepared to finance on a long-term basis. Second, some of the requests for financing from ECAs could be provided for by other government-sponsored credit programs, primarily programs that support investment, not exports, but that have a mandate to provide longer-term financing on a non-recourse project financing basis. Some of the agencies in this category include the US Overseas Private Investment Corporation, the Commonwealth Development Corporation of the UK, and Kreditanstalt für Weiderbau of Germany. In addition, the International Finance Corporation of The World Bank is a source of long-term financing that could be used in place of or in addition to ECA financing, depending upon the circumstances.

Exhibit 3-28
Capacity of ECAs to Provide Credit for IPPs in India
($ millions)

(in $ millions)	1995	1996	1997	1998	1999	2000	2001	2002	Total
Projects (#)	1	2	3	5	5	5	5	5	29
Avg. Credit Per Project	302	302	302	302	302	302	302	302	
Total Credits	302	603	905	1,508	1,508	1,508	905	1,508	8,744
Total Project Costs	600	1,200	1,800	3,000	3,000	3,000	1,800	3,000	17,400
New Capacity (MW)	750	1,500	2,250	3,750	3,750	3,750	3,750	2,250	21,750

Exhibit 3-28 indicates that over the eight-year period, ECAs are expected to be able to provide up to $8.7 billion of credits to support the construction and equipping of 21,750 MW of new generating capacity. Other assumptions regarding average loan, project size, and financing are as follows:

Average project size (MW)	750 million
Total cost per kW	800
Total project costs	600 million
Equity (25%)	150 million
Debt (75%)	450 million
ECA portion of the debt	67%
ECA portion of the debt	300 million

CHAPTER 4
IMPLICATIONS AND ISSUES FOR FURTHER ATTENTION

4.1 THE CRITICAL ROLE OF POWER SECTOR REFORMS

In order for IPPs to become an important part of new power projects, electric power sector reform will be necessary. The current institutional and financial situation in India's power sector does not support project-financed power projects, which must have an assured revenue stream to meet their large monthly debt-service obligations over the life of the financing package (typically 10 to 20 years). As a result, India's first private power projects (the "fast-track" projects) required state guarantees and GOI counter-guarantees to back up SEB power purchase obligations.

There is general consensus within India and among world-wide power sector experts that appropriate power sector reform is the only means of assuring that the SEBs will become sustainable commercial entities without having to rely on GOI intervention through guarantees to compensate for their shortcomings. Some states and SEBs already have better credit than others (see Chapter 3); the resulting improvements in utility credit quality could mean that they are favored over others because private capital will be attracted to those regions with financially stable or reforming utilities.

4.1.1 The GOI Program

Since the 1970s, the GOI's electricity sector reform programs have generally focused on adding new assets and, to some extent, increasing regional efforts to improve supply and transmission efficiency. These programs have included investments in generation and transmission projects through the establishment of central sector companies (the Power Finance Corporation, the National Thermal Power Corporation, and the Power Grid Corporation) and enlarging the role of regional power planning. These interventions resulted in significant new additions to capacity and altered the ownership pattern in the power sector. The reforms did not fundamentally address or affect the operational and financial condition of existing SEBs, however, nor did they have any major impact on regulation.

In keeping with the economic reforms that began in 1991, the GOI has often stated that its major objective is to allow the private sector to build new electric generation capacity to meet India's growing demand for electricity. At least three measures have been adopted to achieve this objective: 1) allow private participation in the sector, 2) encourage foreign equity and debt

capital by issuing guarantees for early projects, and 3) eventually reduce the state's role in the sector.

If the government's major objective is to be achieved, the GOI must undertake a reform program at all levels that emphasizes the administrative and financial independence of electricity sector entities and an autonomous and stable regulatory regime. Expanding the operational and financial viability of SEBs will be important to increasing private investment (especially by foreign project developers) and power capacity additions.

Since the early 1990s, The World Bank has concentrated its efforts at the state level by embarking on an electricity sector reform program in several Indian states. These reforms are intended to permit the SEBs to function ultimately as financially viable and commercially responsible entities. The foci of the reforms include:

- tariff reform (full cost recovery)
- privatization of distribution systems
- establishment of an independent regulator.

4.1.2 Developments in State-Level Reform

The rationale for restructuring the power sector within the overall reform program is clear. The problems and barriers in the power sector are also well known; what is needed is the immediate adoption of a new regulatory approach to support the commercialization of the power sector with privatization as the ultimate goal. The World Bank has already made significant progress by articulating its objectives in India and has enlisted a number of states that have demonstrated the necessary political willingness to acquire the managerial ability to undertake these reforms. A notable pioneer among these is Orissa.

Since 1993, Orissa has made progress towards developing and implementing a far-reaching reform program in the power sector. The first step in this program was to develop a plan addressing the underlying causes of poor financial and power supply efficiency. The plan then focused on building a consensus for reform within the state government, including seeking assistance from the multilateral banks and the United Kingdom to implement the reform strategy. This entailed restructuring the electricity board and creating an environment where privately managed utilities can ultimately operate in a competitive mode.

Orissa's reform program builds upon the recent privatization experience of several countries including the United Kingdom, United States, and developing countries. The heart of Orissa's program is to de-monopolize the power sector and create a policy environment conducive to private investment for all aspects of power supply and use. To this end, the state authorities reached a consensus that allowed for the full reform of the electricity sector, including:

- preparing legislation for power sector reform at the state level
- fully corporatizating of the State Electricity Board
- adopting commercial accounting and reporting norms for each of the utility functions
- imposing full cost recovery by tariff adjustments
- privatizing existing and unfinished generation and transmission assets
- encouraging competitive bidding for generation projects
- establishing an independent regulatory commission
- promoting the efficient supply and use of electricity.

The adoption of this approach to reform will go a long way towards satisfying the demands of the private developers, lenders, and multilateral banks that are likely to provide funding. Most important, it sends a signal to Indian and other industrialists that Orissa is serious about economic development and is willing to take drastic steps if necessary to rectify market distortions and attract industry, jobs, and investments.

4.1.3 Next Steps

Over the next five years, similar reform programs are likely to be implemented in a handful of other states. It is recommended that the GOI increase its support for the reform program and attempt to widen the number of reforming states. At the national level, the GOI has shown its resolve to encourage private participation in the power sector by issuing changes in the original tariff announcements. These tariffs should be continuously monitored to ensure that cost recovery is increasingly being achieved. Moreover, the GOI has accepted the definition of CEA's role as providing regulatory oversight. Nonetheless, considerable additional effort needs to be applied in implementing this concept. The GOI is encouraged to address several additional areas of pressing concern, as outlined below.

Formulate a Reform Plan for Each State. This move will identify the extent to which the power sector needs to be restructured in each state to achieve the levels of technical and economic efficiency that the present structure inhibits. This action should result in at least four tangible outputs:

- the types of market or trade mechanisms to be used by the restructured industry (power pools, "production" pools, bilateral agreements subject to regulation, etc.)

- a plan for privatizing all or part of the distribution system to increase competition and improve efficiency

- the type of regulatory system and tariff-setting methods that will be used to govern the industry

- a defined role for the independent regulator in the new regulatory regime. Even if competition is envisioned in part of the industry, and even if largely self-executing market mechanisms are created (e.g., the England and Wales power pool), the regulator must play a central and pervasive role in the industry.

Commercialize State Utility Companies. While largely controlled by the state governments, the SEBs were constituted under the Electricity Act of 1948 by central government enactment. Moreover, due to the budgetary process, both the SEBs and the state governments that run them have become dependent on GOI transfers and subsidies. While the central sector companies described earlier are established under the Companies Act of India and enjoy considerable managerial autonomy, the SEBs do not.

For power projects that are not likely to receive GOI guarantees, the SEBs assume a very important role. At this point, developers know little about the actual performance and workings of SEBs; international lenders know even less. Indian SEBs need to be brought under the Indian Companies Act to facilitate commercialization, including international accounting review and credit ratings.

Restructure Other Power Sector Entities. Restructuring of non-electric energy and power companies is also essential. "Restructuring" does not always imply privatization, but it does involve the imposition of commercial modes of practice. The coal and gas sector, while having made progress towards commercializing activities, also requires private operators to meet growing demand and improve efficiency in operations. The GOI's decision to allow foreign ownership in the coal sector is a promising start.

Finally, the GOI may wish to consider shifting its policy objectives from soliciting private power developers and equity interests to immediate reform of the power sector. Through focusing on the creation of a predictable, transparent, and independent organizational and regulatory structure at the state level, India will be able to access long-term sources of debt capital and the international technology needed for the growing power system.

4.2 REVIEW OF MAJOR LEGAL ISSUES AND IMPEDIMENTS TO GUARANTEE ALTERNATIVES

Many issues surrounding the ability to implement the various alternatives to counter-guarantees remain outstanding. Many of these issues are legal in nature. As part of this study, input from the legal community in India was requested. Several legal questions were identified and presented to the law firm of Singhania & Co., solicitors in New Delhi. There has been no attempt to ensure that this list of questions and answers covers all of the outstanding legal issues related to the

alternatives to counter-guarantees, but many of these answers do provide a good level of clarification on the basic legal issues.

Legal issues raised by international lenders and the investment banking and legal communities range from concerns about the fundamental issues of the constitutionality of guarantees and official transfers to concerns over the mechanisms of an escrow account in India. The issues can be categorized as follows:

- constitutionality and powers of the state as a guarantor
- GOI treasury devolution mechanisms to states
- the functioning of the escrow mechanism at the state level.

Security packages, as structured for many projects in India, involve a state government guarantee of the performance of an SEB under its power purchase agreement. Issues that remain unresolved because of lack of precedent include whether this guarantee can be legally enforced, and if so, under what conditions. Other concerns include the role of the state legislature with respect to the state's issuance of these guarantees.

If the state government does not meet its obligation under the state government guarantee of the IPP project, the GOI treasury devolutions to the state would be drawn upon. The Reserve Bank of India, as the conduit of such transfers, will be one of the important players in making this arrangement operational. Several questions remain to be answered, including whether such an arrangement is constitutionally valid and, if so, under what conditions. In the case of escrow mechanisms, where SEB cash flows through an account managed by a mutually agreed-upon trustee, several questions arise. Typical concerns include the prioritization of the SEB's commitments, effects on the SEB's working capital requirements, and the concerns of other GOI creditors (e.g., fuel and equipment or services providers).

Some of the most frequently asked legal questions, along with their answers, are set forth below; they are categorized by type of financial instrument.

Question	Answer
Letters of Credit	
Under the security packages being contemplated, many IPPs are requiring that letters of credit opened by SEBs be issued for five years or longer. Do the Uniform Customs and Practice for Documentary Credits, International Chamber of Commerce Publication No. 500 (the U.C.P.) and the laws of India allow for long-term (5 or 10 year or even perpetual over the life of the license e.g., 30 years) letters of credit?	Although there is no prohibition under relevant Indian laws for opening long-term letters of credit, in practical terms, Indian banks may require a significant amount of collateral from the SEB in order to agree to open an irrevocable LC.
Escrow Accounts	

Question	Answer
Can a charge of the third party (the IPP) be created over the future long-term receivables (typically over the PPA term of 30 years) on assets that do not exist at the time the charge is created?	Yes. A floating charge may be created.
Will there be a need for a separate "Security and Hypothecation agreement" between the SEB and the IPP (besides the tri-partite escrow agreement) to create a charge of the IPP on the escrow account?	Yes
Some of the "Security and Hypothecation agreements" seek to provide rights to the IPP to direct the designated customers (HT Consumers) of the SEB (i.e., identified customers for the escrow account) to pay directly into the IPP account. Since there is no contractual relationship between the IPP and the HT consumer of the SEB, can such a right be made available to the IPP?	Yes. Such a right can be available to the IPP as an option in the power supply agreement. Specific provisions in the PPA can be made regarding payment to an escrow agent.
If lenders to the SEB have already created a charge on SEB receivables, will they object to the creation of a charge by the IPP on certain segments of the receivables?	Maybe. The agreement with the existing lenders to the SEB would have to be modified to enable the deduction of a certain fraction of the SEB's total revenue to the escrow account and also a specific charge of the IPP.
In case of an escrow arrangement where all of the cash flows of the SEB flow through one single escrow account and the escrow agent is required to pay more than one IPP through the escrow, how would priorities be established for the purpose of the payment?	The ranking can be established from the historical debt pattern and by contractual obligation identifying specific debtors.
Can an IPP set up a completely watertight arrangement to ensure that collections are credited to the escrow account and not diverted elsewhere?	Yes. To date no precedent exists in the power industry. Precedents are seen in the construction and oil and gas industries.
Will the establishment of an escrow mechanism dilute the security available to commercial banks extending working capital loans to SEBs?	Yes, depending on the liquidity of the individual SEBs.
Will other suppliers to the SEB such as central sector utilities, fuel suppliers such as Coal India, etc. object to the preferential treatment being given to IPPs? (This applies to the master contract between SEBs and fuel suppliers.)	Maybe, depending on the contractual obligation vis a vis the fuel supplier. Although other suppliers to the SEB may object to the preferential treatment being given to IPPs, they may not be in a position to succeed in challenging the preferential treatment.
State Government Guarantees Many IPP security packages involve the State Government Guarantee, guaranteeing the performance of SEB obligations under the Power Purchase Agreement. For example, if the SEB fails to pay within 7 days of the due date of payment, the IPP can make a demand on the state government to pay within 21 days (or any agreed-upon number) from the date of demand.	

Question	Answer
Will such an arrangement stand the test of constitutional validity?	Yes. There are no precedents confirming the constitutional validity, however, the Indian legal community has confirmed an opinion on its constitutional validity.
Even if such an arrangement is constitutionally valid, can all the funds, i.e., non-discretionary (based on a formula worked out by the Finance Commission) and discretionary (as decided by the Planning Commission), be used for payments to the IPP, or are only discretionary transfers available?	Yes. In general, "discretionary" funds may be used and in certain cases, "non-discretionary" funds may be used.
Central Government Devolutions	
Can a state government enter into a central devolution arrangement without legislative approval? (The state in question may be left with insufficient finances to fund certain programs such as hospitals and education.)	Maybe. Legislative approval of the state will be required if the state needs to allow commitments to social and welfare programs.
As a variation of the central devolution arrangement, can the IPP have an escrow arrangement with RBI, where certain identified cash flows in the state government revenue flow into the escrow account and if the state government fails to honor its guarantee the escrow mechanism will be operationalized?	Yes. Legal and operational issues may impact the establishment of such an arrangement.
Financial Institution Guarantees It is envisaged that the Indian Financial Institutions would guarantee the SEB obligations under the PPA. If the IPP is not paid through the escrow mechanism, the IPP would invoke the financial institution guarantee for payment. Thus, the financial institution would be taking risk on the SEBs.	
Are there any charter restrictions on the Indian Financial Institutions for providing this type of guarantee?	No. However, these would be subject to lending guidelines. (It is essential for such guarantees to be unconditional.)
Power of Attorney by the SEB to the IPP The granting of a power of attorney to the IPP to collect accounts receivable directly from SEB consumers in the event of failure of all the possible security levels available to the IPP takes the form of an LC, escrow mechanism, and the state government guarantee.	
Can such a power of attorney can be given by the SEB? Will it violate any provisions of the Electricity (Supply) Act, 1948, Indian Electricity Act (1910), or the Indian Electricity Rules (1956)?	Yes. The power of attorney can be given by the SEB pursuant to a notification under the provisions of the Electricity (Supply) Act, 1948.

4.3 OTHER ISSUES AFFECTING FINANCING FOR IPPS

Other issues affecting the ability of IPPs to obtain financing beyond what is described in this study certainly exist, even though they are not discussed in this report. It is important to

acknowledge that many other risks exist and that the ability of a project to obtain financing is dependent upon an approach to risk mitigation that adequately, in the eyes of the developers and lenders, addresses all of the project's risks. This report has focused almost exclusively on the SEB payment risk, which is by all accounts one of the most serious risks for IPP projects in India. Other risks, especially those of foreign exchange availability, fuel supply, and construction, must be addressed in every IPP, but are not discussed in this report.

4.4 ISSUES FOR FURTHER ANALYSIS AND NEXT STEPS

4.4.1 Expedited Project Approval Process

The Government of India should consider taking steps to streamline and expedite the approval process for all pending power projects. Such steps will enhance investor confidence in the Indian power market.

4.4.2 Reliance on Alternatives to Counter-Guarantees in the Short Term

Although the prospects for financing power projects in India without recourse to government counter-guarantees will be improved by the attainment of significant electric power reform, it will take time before the necessary reforms are in place. Therefore, credit support mechanisms need to be developed and implemented to ensure that the process of building new private power plants continues. To maximize investment in new generation capacity, creative combinations of all the options need to be pursued by project developers, the international financial community, and the Government of India.

4.4.3 Capital Market Development

The next phase of private power development in India will require a major expansion and regulation of Indian capital markets. For example, there is a need to develop commercial bonds with long-term tenures to finance power development.

4.4.4 Electric Power Regulatory Reform

Electric power regulatory reform is essential to improving the viability of India's energy sector, and enhancing its long-term economic growth prospects. The GOI has demonstrated its unwavering commitment to power sector reform and should continue to develop and apply key regulatory principles. An action plan to implement regulatory reform could include the following elements:

- Continuing India's commitment to regulatory reform and emphasizing a strategy for achieving defined goals.
- Identifying key regulatory principles, including, perhaps, special provisions to provide regulatory incentives for power projects valued at less than $100 million (e.g., cogeneration, renewables, energy efficiency).
- Outlining possible new institutional structures to be abolished/created pursuant to reform.
- Utilizing milestones and targets to measure progress made in regulatory reform (e.g., restructuring of tariffs).
- Announcing the strategy and key players tasked with accomplishing reform at the national, regional, and state levels. For example, in the short term, specific actions should be taken to streamline the project approval process.

4.4.5 SEB Credit Rating and Enhancement

The assignment of credit ratings to SEBs will give international bankers an indication of the level of risk they face with SEB power purchase agreements. This will also give policy makers and SEB managers an independent indicator of their progress towards reform. There are a number of local credit rating agencies in India capable of performing SEB credit analyses (e.g., CRISIL), and international rating agencies are active in the market (e.g., Standard and Poor's, Moody's). In order to perform this credit analysis, the SEBs' accounting practices may need revision to meet the standards of international financial institutions.

Since many alternatives to government counter-guarantees involve guarantees and risk-taking by other government and corporate institutions, efforts should be made to place a price on these guarantees that reflects the level of risk being taken by the market. While this is the way capital markets normally function, the lack of adequate credit information on the SEBs has weakened this critical link. The GOI has already taken steps to implement this type of framework in its agreements with the Ministry of Finance, state governments, and SEBs. Many possible measures remain to make the process more rigorous. Placing a price on guarantees will provide a financial incentive for SEBs to implement the reform process as quickly as possible, thereby reducing the cost of capital.

APPENDIX A
METHODOLOGY AND DATA FOR CREDIT QUALITY EVALUATION

A.1 CREDIT QUALITY ASSESSMENT

This appendix describes the methodology and some of the data used to evaluate the credit quality of the SEBs. The methodology is based on an analysis of the power sector in India and of the utilities engaged in the generation and distribution of power. Critical to this analysis was the Planning Commission report on the working of the SEBs.[3]

The credit quality of an SEB is primarily a function of two criteria: business risk and financial risk. These two categories of risk can be broken down further to highlight the key factors driving the risk in each category.

- ***Business Risk***. An evaluation of business risk must take into account three factors: 1) industry and regulatory environment, 2) market and service area, and 3) operating performance. The first factor is important for assessing the credit quality of an SEB. It has, however, been omitted from the subsequent analysis because there is minimal variability in the industry and regulatory environment across SEBs.

- ***Financial Risk***. Financial risk is a function of six factors: 1) accounting quality, 2) profitability, 3) debt servicing, 4) receivables, 5) dependence on state government, and 6) borrowing/leveraging capacity. Assessing the accounting quality of an SEB is critical to any evaluation of credit quality. However, because data were compiled from an MOP report, accounting quality, for the purposes of this study, was not a determining factor of financial risk.

The analysis establishes the key parameters influencing SEB performance within the framework defined above. Weights were assigned to each of the factors influencing business or financial risk. These weights were based on an assessment of the degree to which each factor affects the level of overall risk associated with SEB performance. The analysis produces a broad indication of each SEB's ability to meet its payment obligations in a timely fashion. Exhibit A-1 sets out the three key categories and the criteria used in each category for the evaluation of SEB credit quality.

[3] Power and Energy Division of the Planning Commission of the Government of India. *Annual Report on Working of SEB's*. February 1994.

Exhibit A-1
SEB Credit Quality

Market and Service Area	Operations	Financial Performance
Consumer mix Tariff Demand	Generation plant mix Overall size Plant performance Power purchases/sales Unit cost of generation	Profitability Receivables Debt service Role of state government treasury Borrowing capacity

A.1.1 Business Risk

Market and Service Area. The SEBs are responsible for the generation and distribution of power in their respective states. There are a few exceptions, where either generation, distribution, or both, are conducted by private or other state-owned entities. The SEBs are required to achieve a minimum return of 3% on net fixed assets at the beginning of the year; if an SEB fails to do so, it must obtain a subsidy from the state government to cover the deficit in return.

The Electricity Act authorizes the SEBs to charge tariffs adequate to support their operations. In practice, however, it is always the state government that decides the level of tariffs to be charged. This is especially the case in the agricultural sector, where political considerations often play a large role. Both the agricultural sector and domestic consumers receive electricity at subsidized rates. The tariffs are subsidized in part by industrial and commercial users (cross-subsidization) and partly through direct state government subsidies. There is a limit, however, to how high industrial and commercial tariffs can be raised. Moreover, the state government direct subsidy is not always readily available. For these reasons, as well as a poor consumer mix, the SEBs often face an inflexible pricing structure. Exhibit A-2 lays out the factors considered in the analysis of the market and service area.

Exhibit A-2
Market and Service Area

Consumer Mix	Tariffs	Demand
% of subsidized users % of subsidizing users	absolute tariff levels tariff growth rates tariff flexibility	demand-supply gap projected demand growth

Consumer Mix. The consumer mix of an SEB can be broadly classified into seven categories. Three of these (the domestic, inter-state sales, and agricultural sectors) receive subsidized power, three (industrial, railways and commercial users) pay a higher tariff, and one (the "other category") includes a very small amount of power for public lighting at a subsidized rate. Most of the rest are temporary connections, which are charged a very high tariff. In most of the states, the subsidized segments consume a significant portion of the power and yet contribute little to the revenues of the SEB. The consumer mix has a direct bearing on the future financial health of the SEB.

Subsidizing Segments	**Subsidized Segments**
commercial	domestic
industrial	agricultural
railways	inter-state sales

Tariffs. The SEB's average tariff and the growth in tariff increases are critical indicators of SEB credit strength. Also important are an SEB's flexibility in setting tariffs and its ability to increase rates. To some extent, flexibility is a function of the current industrial and commercial tariff (the subsidizing segments) and the level of cross-subsidization to agriculture and domestic users. For example, an SEB that charges a high tariff to the subsidizing segments and also has a high degree of cross-subsidization (in effect charging a very low tariff to the subsidized segments) may have little flexibility to increase its industrial tariffs.

Tariffs charged to the agricultural sector are quite low, averaging Rs. 0.2 per kWh (1993-1994) across India. Overall, average tariffs have increased in recent years, but this has happened only through increases in tariffs to the industrial and commercial sectors.

Demand . Projected growth in demand was examined in conjunction with the existing demand-supply levels to assess the demand growth of an SEB.

Operating Performance. On an operational level, the SEBs score poorly in comparison to the center-owned or private-sector power utilities. Their problems include inadequate coal supplies, poor quality of coal, old plants, poor maintenance of the plants, and inadequate rainfall, to name a few. State government funds to the SEBs are insufficient to meet minimum maintenance costs. In addition, most of the SEBs experience high transmission and distribution losses, mainly due to the widespread consumer base and pilferage from the grid lines.

For thermal plants, the plant load factor (PLF) is critical. The SEBs generally have registered poor PLFs in comparison to the central sector utilities. Similarly, the SEBs have performed poorly in terms of coal and fuel consumption and employee productivity ratios.

The criteria adopted for evaluating operating performance are highlighted in Exhibit A-3.

Exhibit A-3
Operations

Plant Mix	Size	Plant Performance	Unit Cost	External Dependence
Hydro-Thermal Mix	Installed Capacity	Plant Load Factor	Cost per kWh	Power Purchased
	No. of consumers	Coal consumption		Cost of power purchase
		Fuel oil consumption		Source of purchase
		Auxiliary consumption		
		T&D losses		
		Employees per MW		

Plant Mix. The mix of hydroelectric and thermal plants in total capacity was examined. For example, a state like Bihar where there is an absence of hydroelectric capacity is placed at a disadvantage because it has few low-cost power supplies. On the other hand, SEBs like Kerala and Himachal Pradesh which have virtually no thermal capacities are also placed at a disadvantage because they rely too heavily on rainfall levels.

Size. The size of an SEB is measured in two ways: 1) installed capacity and number of consumers and 2) the ability of management to construct and manage large projects with a high number of customers.

Plant Performance. The critical factors in determining overall plant performance are plant load factor and T&D losses. The PLF directly affects the amount of generation by the SEBs' thermal plants. T&D loss is an indicator of the losses resulting from transmission and pilferage. Other factors, such as coal consumption per MW, fuel consumption per MW, auxiliary consumption, and employee productivity, reflect the efficiency of plant operation.

Unit Cost. The sale price per unit of power indicates the overall operating efficiency of an SEB. A comparison with the average tariffs realized provides an indication of its operating profitability. SEBs with poor operating parameters like PLF, and coal and fuel consumption generally have higher unit costs. Since many SEBs cannot raise tariffs to cover their costs, the absolute cost of power generation often has a bearing on overall profitability.

External Dependence. In some cases, SEBs are dependent on external sources of power capacity (primarily central government utilities and other states) to meet their power requirements. Dependence on external sources of capacity exposes an SEB to the risks specific to that source. The extent of power purchased from external sources was evaluated in conjunction with the cost of such purchases.

A.1.2 Financial Risk

In the past, a majority of the SEBs consistently operated at a loss. This was attributable to the practice of providing subsidized power to a large segment of the consumer base, with tariffs lower than the costs of supplying power. Poor operating efficiency also increased the costs of generation. In addition, the relative inflexibility of the SEBs' ability to raise tariffs to cover escalating production costs contributed to their weak financial position. An analysis of each SEB's past financial performance was conducted to provide a review of their financial situation (Exhibit A-4).

Exhibit A-4
Financial Performance

Profitability	Receivables	Debt Service	State Govt. Dependence	Borrowing Capacity
Aggregate Profits	Level of Receivables	Interest Cover	Aggregate Subsidy	Net Internal Resources
Margins	Number of days	Cover to suppliers of power	Growth in subsidy	
Return on capital		Interest cover to state lenders	Subsidy/revenue	

SEBs do not prepare financial statements according to the provisions of the Indian Companies Act; the accounting rules they follow, however, are not significantly different, although there are variations in the accounting practices followed by the SEBs. For this study, data on the financial performance of the SEBs were compiled from Ministry of Power reports on the workings of Indian SEBs. Because these reports do not provide detailed breakdowns of the capital structure of the SEBs, capitalization ratios (such as debt-to-equity ratios) could not be determined.

Profitability. The trends in aggregate profits at the OPBDIT, OPBDT, and OPBT levels; commercial profits with and without subsidy; and cash profits have been assessed. Some of the

key profitability ratios analyzed are OPBDIT, OPBDT, and OPBT to operating income. The rate of return on net fixed assets with and without subsidies has also been analyzed.

Receivables. In the Indian environment, the receivables factor has assumed a critical nature due to the poor financial health of the SEBs. The revenue in arrears and the trends in receivables have been examined.

Debt Service. The interest coverages have been assessed as an indication of the debt servicing capability. Coverage to lenders other than the state governments and to power suppliers has also been assessed as an indication of the capability of the SEB to meet its payment obligations to external agencies (excluding the state government).

Dependence on State Government. Most of the SEBs have a negative net worth and are partially financed by state governments. In situations where the state governments are faced with a scarcity of funds, the dependence of the SEB on the state government becomes an area of concern. The level of the subsidy received by the SEB is an indicator of its dependence on the state government to meet its expenses. Varying levels of subsidies often result in a significant variability in profits and the rate of return. For example, the Uttar Pradesh SEB had a loss of 41% of its total revenue without subsidy and a loss of 12% of total revenue with subsidy. The corresponding rates of return with and without subsidy are 20.5% and 4.21%, which is indicative of a high dependence on the state government subsidy. In another case an SEB might be realizing heavy losses without subsidy, but realizing a profit with subsidy. Notwithstanding their current profitability, these SEBs are at a disadvantage because government subsidies cannot be relied upon as a sustainable source of revenue in the future.

Borrowing Capacity. Most of the SEBs have a negative net worth, which reveals an absence of any further borrowing capacity. Most also have a high level of outstanding debt from the state governments. Limited debt from financial institutions is generally guaranteed by the state government. Net internal resources (retained earnings plus additions to reserves during the year less loan repayments during the year) are used as a key indicator in evaluating SEB borrowing capacity.

A.2 RATIONALE FOR IMPROVEMENTS IN SEB CREDIT QUALITY FROM ECONOMIC REFORMS

Plant Load Factor: The average PLF achieved by all the SEBs during 1993-94 was 58%, with the minimum being around 30% for some SEBs (e.g., Bihar, Orissa, West Bengal) and the maximum being 65% for Andhra Pradesh. In a scenario of moderate reforms, the average PLF is expected to improve to 65%. If full reform is accomplished, then the PLF can be expected to rise above 75%.

Transmission and Distribution Losses: The variation in T&D losses across India is substantial. During FY 1994, states such as Uttar Pradesh showed losses as high as 25% compared to Maharashtra, where losses were 15% and falling. The expected level of both technical and non-technical improvement is based upon loss-reduction programs and turning billing/collection functions to the private sector, either as management contracts or as entire distribution circles.

Subsidies: The dependence on the state government subsidy should be significantly reduced once SEBs are given the flexibility to charge full-cost recovery or market-based tariffs from all of their consumers. In states where the SEB implements a full reform program, the subsidy is expected to be reduced to zero. SEBs such as Maharashtra, which are already earning profits without subsidies, will further improve their profitability. The ratio of subsidy to total revenue serves as an indicator of the dependence upon subsidies. In the case of full economic reforms, a percentage of zero indicates that the subsidy has been eliminated.

Consumer Mix: The reduction in GOI subsidies implies a change in the proportion of subsidized segments to total revenues. If this improvement is brought about, it will imply a reduction in the level of cross-subsidization between the subsidizing and subsidized segments. The ratio of the average tariff for the subsidizing segment to the average tariff for the subsidized segments presents a broad indication of the level of cross-subsidy among the consumer segments. Under the full reform scenario, there could still be situations where cross-subsidies exist because it may not be possible, even with full reforms, to charge the agricultural segment a tariff that is the same as the industrial segment tariff. Thus, a ratio of 1.5:1 between the average tariffs for the subsidizing and subsidized segments will present a considerable improvement over the existing situation.

Rate of Return (ROR) on Net Fixed Assets: A majority of the SEBs report negative RORs on net fixed assets. This is expected to improve to 3% with subsidy (an all-India average) in a scenario of moderate reforms and 3% without subsidy in a scenario with full reforms. SEBs like Maharashtra and Andhra Pradesh, which make profits even without subsidies, will further improve their ROR, whereas SEBs like Assam and Bihar will achieve a minimum 3% ROR without subsidies.

Receivables: The poor receivables position and its impact on SEB cash flow is unacceptable to most lenders considering a project-financed IPP in that state, e.g., receivables of greater than 150 days of sales are generally considered unworkable. States implementing reform have indicated that their target of 45 days has been deemed acceptable by the developer community.

Exhibit A-5
Key Operating Parameters

	1993 Size (MW)	Thermal Plants (% of total)	Average PLF (1988-93)	Average T&D Losses (1990-93)	Average cost per kWh (1991-93)
Maharashtra	7,557.4	83.4%	58.2%	15.5%	123.6
Andhra Pradesh	4,173.3	38.6%	65.7%	19.2%	89.3
Tamil Nadu	4,309.0	54.9%	62.0%	17.9%	114.1
Karnataka	3,035.3	21.5%	65.6%	18.9%	91.6
Madhya Pradesh	3,617.5	83.8%	51.1%	22.2%	126.0
Orissa	1,707.5	27.5%	33.1%	23.4%	78.3
Kerala	1,476.5	0.0%	NA	21.1%	78.6
Uttar Pradesh	5,599.2	73.1%	50.0%	24.6%	128.6
Rajasthan	1,185.0	54.0%	58.7%	23.1%	120.3
Himachal Pradesh	273.6	0.0%	NA	18.4%	114.7
Gujarat	2,883.0	90.1%	58.5%	21.7%	130.3
Punjab	2,245.1	75.7%	56.2%	18.7%	109.2
West Bengal	2,277.6	98.0%	32.6%	23.1%	161.7

Source: Power and Energy Division of Planning Commission of Government of India. *Annual Report on Working of SEB's*. February 1994.

Exhibit A-6
Consumer Mix by Revenues, 1992-93

	Domestic	Commercial	Agric-ultural	Indus-trial	Railway	Outside	Others	Total
Maharashtra	7.9%	3.8%	2.9%	57.4%	2.8%	0.7%	24.4%	100.0%
Andhra Pradesh	13.3%	6.0%	3.5%	60.1%	4.9%	0.1%	12.1%	100.0%
Tamil Nadu	11.3%	10.7%	0.0%	65.3%	0.0%	0.4%	12.3%	100.0%
Orissa	14.8%	5.9%	3.1%	59.7%	5.5%	0.0%	11.1%	100.0%
Madhya Pradesh	6.6%	4.7%	4.3%	65.3%	10.1%	2.7%	6.3%	100.0%
Kerala	22.6%	16.9%	1.3%	49.0%	0.0%	1.9%	8.3%	100.0%
Karnataka	16.9%	6.6%	1.7%	68.6%	0.2%	0.0%	6.1%	100.0%

Exhibit A-7
Consumer Mix by Unit, 1992-93 (%)

	Domestic	Commercial	Agricul-tural	Indus-trial	Railway	Out-side	Other	Total	Total MU Sold
Mahara-shtra	11.3	2.7	26.5	37.2	2.0	1.0	19.2	100	31,454
Andhra Pradesh	14.6	3.1	40.7	29.3	2.4	0.7	9.1	100	19,386
Tamil Nadu	15.6	5.4	27.0	41.8	0.0	0.7	9.5	100	19,130
Orissa	20.6	3.9	6.0	55.7	3.3	0.0	10.5	100	5,435
Madhya Pradesh	16.3	3.4	21.5	43.0	4.3	3.4	8.2	100	16,784
Kerala	31.5	12.1	4.0	44.8	0.0	1.8	5.7	100	5,838
Karna-taka	15.8	2.4	41.2	34.6	0.1	0.0	6.0	100	12,963

Source: Ibid.

Exhibit A-8
Key Market Parameters

	Demand Growth %	Tariff (Paise)	Tariff Growth %	Subsidizing Segment %
Maharashtra	7.0%	136.9	14.8%	61.2%
Andhra Pradesh	6.9%	94.3	11.3%	44.0%
Tamil Nadu	6.2%	107.1	14.9%	56.7%
Karnataka	5.5%	93.4	7.9%	43.0%
Madhya Pradesh	7.2%	121.0	11.8%	58.9%
Orissa	9.3%	80.7	6.4%	73.4%
Kerala	7.9%	74.8	9.6%	62.6%
Uttar Pradesh	7.3%	108.4	13.1%	39.5%
Rajasthan	9.5%	107.2	10.6%	56.3%
Himachal Pradesh	11.7%	101.1	15.3%	47.2%
Gujarat	6.8%	105.0	8.3%	47.9%
Punjab	5.7%	70.3	13.1%	43.1%
West Bengal	6.9%	115.1	4.6%	70.9%

Demand Growth: Total growth in demand from 1994-95 to 1999-2000
Tariff: Average Tariff in 1992-93
Tariff Growth: Total growth in average tariff from 1988-89 to 1992-93
Subsidizing Segment: Proportion of kilowatt hours sold to industrial, railway and commercial users as a percentage of total kilowatt hours sold.

Source: Ibid.

Exhibit A-9
Electricity Tariffs, 1992-93
paise/kWh

	Domestic	Agriculture	Average	Industrial	Commercial	Railway
Maharashtra	96.2	15.2	136.9	211.3	193.7	191.1
Andhra Pradesh	85.8	8.1	94.3	193.2	180.8	193.2
Tamil Nadu	78.0	0.00	107.1	167.2	212.6	NA
Madhya Pradesh	48.9	24.5	121.0	183.8	167.3	286.2
Karnataka	99.5	1.3	93.4	185.4	261.0	220.0
Orissa	58.0	42.0	80.7	86.5	123.0	132.0
Kerala	53.6	25.0	74.8	81.7	104.4	na

Exhibit A-10
Financial Performance of State Electricity Boards, 1992-93
In $ million ($1=Rs. 32)

SEB Name	Total Revenue	Subsidizing Revenue	Subsidy $million	OPBDIT	Comm. Profit without sub.	Comm Profit with sub.	Cash Profit	Net Internal Resources	Receivables	OPBDIT/OI	Interest/OI	Interest Cover	Cover to lenders other than SG	Cover to Suppliers	ROR without subsidy	ROR with subsidy	Receiv. as days sales
Maharashtra	1,345.6	862.2	0.00	263.7	50.5	50.5	158.6	78.9	351.6	20.3%	17.0%	1.19	2.10	1.51	3.1%	3.1%	95
Andhra Pradesh	571.2	405.6	0.00	121.8	-0.1	-0.1	45.9	32.2	82.8	21.8%	22.2%	0.98	2.21	1.36	-0.2%	-0.2%	53
Tamil Nadu	640.3	486.4	109.4	16.8	-80.5	28.9	65.9	79.3	24.3	2.6%	13.1%	0.20	0.30	0.77	-8.8%	3.2%	14
Karnataka	378.2	284.5	16.2	6.4	-6.1	10.1	29.9	120.2	174.0	1.8%	10.7%	0.17	0.26	0.92	-2.0%	3.2%	168
Madhya Pradesh	634.7	508.3	65.4	55.7	-65.8	-0.5	64.5	-47.6	117.5	9.7%	26.3%	0.37	0.46	0.70	-6.0%	0.0%	68
Orissa	137.1	97.4	23.7	16.2	-15.6	8.1	21.4	12.8	68.1	13.1%	26.2%	0.50	0.70	0.83	-5.1%	2.6%	181
Kerala	136.5	90.9	0.00	11.6	-19.4	-19.4	-10.8	35.2	26.0	9.5%	31.0%	0.30	0.64	0.78	-10.79%	-10.79%	83
Uttar Pradesh	755.7	512.7	265.3	4.0	-302.8	-37.5	22.8	-9.2	366.1	0.5%	39.8%	0.01	0.04	0.76	-19.78%	-2.45%	177
Rajasthan	369.7	261.7	88.2	-3.6	-65.2	23.0	59.1	-9.3	66.1	-1.0%	18.8%	-0.05	-0.01	0.75	-9.2%	3.2%	65
Himachal Pradesh	52.6	10.8	0.00	9.9	-12.8	-12.8	-10.0	-2.1	7.3	19.7%	50.4%	0.39	0.88	0.88	-13.0%	-13.0%	51
Gujarat	609.4	365.6	0.00	-187.7	-240.6	-240.6	-181.3	-186.3	143.4	-36.8%	20.4%	-1.80	-2.57	-0.81	-22.6%	-22.6%	86
Punjab	324.9	210.8	0.00	-64.5	-195.8	-195.8	-143.9	-41.5	39.5	-21.2%	47.2%	-0.45	-1.98	-0.19	-19.9%	-19.9%	44
West Bengal	223.9	90.5	21.3	-34.6	-85.5	-64.2	-45.3	-38.5	27.3	-15.7%	21.0%	-0.75	-0.76	0.43	-37.18%	-28.16%	45

Source: Based on Power and Energy Cell, Planning Commission, February 1994.

APPENDIX B
SOCIOECONOMIC STRUCTURE AND FINANCES OF STATE GOVERNMENTS

B.1 SOCIOECONOMIC STRUCTURE

This appendix examines the performance of India's states in the sectors noted in Chapter 2 to provide an overall view of the states' economies. For this purpose, critical performance indicators were isolated for each sector, and weights were assigned to the indicators. Based on these weights, a score was assigned to each state in each sector. The sectors were then weighted to calculate an overall score for the economic structure of each state. The parameters considered in the assessment are described below. A table showing the scores of each state in each category follows the explanation of categories (Exhibit B-1).

B.1.1 Basic Economic Indicators

Several aggregate ratios and statistics for the state economy indicate the state's level of overall development. The ratios and statistics considered in this evaluation were:

- The net state domestic product (NSDP)
- Per capita NSDP
- Growth rate in NSDP during the period 1980-81 to 1991-92
- Percentage of the state population below the poverty line
- Per capita income.

B.1.2 Demographic Trends

Demographic trends indicate the human resources position of the state and complement the economic indicators by giving a picture of the state's social trends. The indicators considered were:

- Projected population growth rate for 1991-2001
- Population density
- Infant mortality rate

- Literacy rate
- Urbanization rate.

B.1.3 Infrastructure Availability

The presence or absence of infrastructure has a direct bearing on how fast the state can grow in the future. This is true in terms of both social infrastructure and transportation and communication linkages. Indicators showing the level of development of infrastructure include:

- Road length per thousand square km
- Rail length per thousand square km
- Telephones per thousand people
- Persons per doctor
- Per capita health expenditures.

B.1.4 Agricultural Sector

The agricultural sector was assessed in three areas: the level of modernization in the sector, the productivity of the sector, and the extent to which the state is well-positioned for the future. Indicators used to measure the state's current position in each of these areas include:

- Extent of fertilizer usage
- Crop yields
- Number of tractors and energized pumpsets per hectare
- Extent of irrigated land.

B.1.5 Industrial Sector

In assessing the industry in the state, two areas were the focus of analysis: the aggregate industrial production indicators and the labor climate in the state. These indicators include:

- Manufacturing sector output
- Growth rate in the manufacturing sector
- Net value added per capita
- Man-days lost in strikes, lockouts, and industrial disputes as a ratio of the net value added.

B.1.6 Banking Sector

The main measure of the level of savings in a state is its level of deposits. One other key indicator was considered: the credit/deposit ratio. This ratio shows the aggregate effectiveness of the banking sector in the state. A low credit/deposit ratio is an indication that the savings of the state are not being used for funding investment in the state, and the savings are instead being funneled to other states by the banks. The indicators used in assessing the banking sector were:

- Deposits per capita
- Growth in deposits
- Credit/deposit ratio for the state.

B.1.7 Energy Sector

The efficiency of the energy sector and the consumption of energy in the state are directly related to the state's industrial and economic development. The indicators used to analyze this factor were:

- Per capita consumption of energy
- State power deficits
- Plant load factors of the SEB
- T&D losses
- Average subsidy given (paise/kWh).

B.1.8 Future Investments

The climate for investment in India is changing very rapidly, with large investments in the industrial sector envisaged over the next five years. The states have had varied reactions to the changing scenario; some have courted investments more actively than others. As a result, future industrial activity may be concentrated in very different areas from the traditional ones. While the analysis of the industrial sector looks at the current situation, this analysis of future investments is indicative of the future development in the states. The indicators considered were:

- Amount and number of investments awaiting approvals
- Amount and number of projects currently under implementation in the state.

Exhibit B-1
Scores of States on Socio-Economic Structure
(Out of 10 points possible)

	Basic Economic Indicators	Demographic	Infrastructure	Agricultural Sector	Industrial Sector	Banking Sector	Energy Sector	Future	Average
Andhra Pradesh	4.24	4.79	4.86	3.83	1.92	5.78	7.35	2.33	4.39
Assam	3.63	3.04	4.71	1.00	3.89	2.04	0.75	0.63	2.46
Bihar	1.54	2.24	3.10	2.56	3.92	1.23	1.94	1.25	2.22
Gujarat	5.14	6.59	5.77	2.89	5.97	4.21	7.09	8.27	5.74
Haryana	7.30	5.23	4.92	5.95	3.40	3.97	5.51	0.37	4.58
Himachal Pradesh	2.22	5.09	4.46	1.26	4.64	2.45	3.84	1.25	3.15
Karnataka	4.50	5.81	5.59	2.77	5.64	5.44	6.17	3.34	4.91
Kerala	2.53	7.87	7.83	3.67	4.04	4.54	5.77	0.73	4.62
Madhya Pradesh	2.46	3.46	3.02	1.69	5.61	3.53	6.26	4.10	3.77
Maharashtra	7.65	7.01	5.30	2.42	7.36	6.53	8.36	6.37	6.38
Orissa	1.79	3.27	4.05	1.22	5.29	3.08	4.79	2.31	3.23
Punjab	8.04	6.44	7.59	8.40	7.42	4.74	8.39	2.11	6.64
Rajasthan	4.32	2.80	4.21	2.10	4.04	3.50	6.33	0.92	3.53
Tamil Nadu	3.65	6.41	6.54	4.97	4.80	6.65	7.64	1.43	5.26
Uttar Pradesh	3.76	2.46	4.13	3.88	6.41	2.11	4.70	4.85	4.04
West Bengal	4.20	4.90	3.76	3.73	0.69	3.67	5.00	0.62	3.32

Source: CRISIL-based state budgets, RBI *Bulletins*.

B.2 STATE FINANCES

The socio-economic structure analysis was the first step in determining the states' ability to support power projects by providing guarantees to power producers. Historical data and future trends of the states' finances also have important effects on the extent to which the states can provide project guarantees.

Because there tend to be some fluctuations in the figures from year to year, all of the socio-economic ratios calculated for this analysis are averages over three years: accounts (i.e., actual figures) for 1991-1992 and 1992-1993, and revised estimates for 1993-1994. Five types of ratios were considered in this analysis: debt profile, revenue and expenditure management, dependence on the center, and "other." (The ratios in the "other" category are not discussed here. Their definitions and effects can be inferred from the discussions of the other four types of ratios.) A table showing the ratios for each state is given at the end of the description of ratios (Exhibit B-2).

B.2.1 Debt Profile

The debt profile of a state indicates whether the state will be in a position to service its debt obligations. The following indicators were used to make this determination:

Net Borrowings/Gross Borrowings: One step in building a debt profile for the states is to assess the likelihood that a state is heading for a debt trap, i.e., the state is using a large percentage of the loans taken in a year to service its older debt. The ratio of net borrowings to gross borrowings reflects this, indicating whether new debt is being *used effectively*. If the ratio is high, it signals that loans are largely being used for purposes other than repayment (presumably for productive purposes); this is taken as a healthy sign. However, even though a state's debt may not be used for repayment, the size of the debt that it is taking may itself be too large, making service difficult in the future. This situation is gauged by the other two ratios given below.

Debt/Net State Domestic Production (NSDP): This is a direct indicator of the size of the state's debt relative to the size of its economy. Since the size of the economy reflects the inherent ability of the state to service its debt in the long term (all other things being equal, a larger NSDP would translate into stronger resource flows to the government), this ratio provides an indication of whether the state is over-stretching its debt position.

Interest/Revenue Ratios (RR): This ratio is somewhat akin to the coverage ratios calculated for corporations. A higher ratio would be unfavorable because it indicates that in adverse circumstances, the state would have limited flexibility to repay its debt-servicing obligations.

B.2.2 Revenue and Expenditure Management

State Revenues/NSDP: An indication of the efficiency of a state's revenue collection efforts was derived by relating revenue collection to the size of the state's economy. If a state's tax collection system is more efficient and administered user charges are less subsidized, then this ratio is larger.

Non-Developmental Revenue Expenditure (NDRE)/Revenue Receipts: This is an indicator of the usefulness of the expenditures made by the state government. If the level of non-developmental expenditures is high as a proportion of total revenue expenditures, the state is effectively making wasteful investments. The state's economy and its citizens benefit from developmental expenditures. A low ratio is indicative of a state that is spending for its citizens' welfare.

Growth in State's Tax Revenue: Apart from measuring the current status of finances for the state, it is important to incorporate the trends in these finances into the analysis. By measuring the buoyancy of the state's revenues (that are within its control), a probable future trend for tax revenue growth can be discerned. Because non-tax revenues are largely static for all the states, only the past growth rate in *tax revenues* was considered.

B.2.3 Deficit Management

Large deficits signal an unsustainable situation because they are a clear indication that a state is living beyond its means. Although there are several useful deficit definitions, three deficit ratios that are the most critical to a state's finances were analyzed.

Gross Fiscal Deficit (GFD)/NSDP: While the debt/NSDP ratio paints a picture of the current situation, the GFD/NSDP figure is indicative of the future trend for the state's debt management. For example, if the state has a low debt/NSDP ratio but a high GFD/NSDP, this indicates that the debt-servicing situation could deteriorate rapidly in the future.

Revenue Deficits/Gross Fiscal Deficits: The GFD consists of three components: the revenue deficits, the capital outlay and the net loans given by the state government. Of these, the

revenue deficit (the excess of revenue expenditure over receipts) does not generate future income streams for the state. On the other hand, to a certain extent, the capital outlay and net loans go toward the creation of capital assets. This results either in direct income streams in the future or indirect effects such as providing supporting assets that benefit the economy as a whole. Thus, it is important to understand the proportion of revenue deficits to GFD.

B.2.4 Dependence on the Center

India's centralized fiscal system results in the states' heavy dependence on the center for resources. The situation is further aggravated by the fact that most of the dynamic sources of revenue (e.g., corporate tax, customs duty, income tax) are collected by the center, leaving relatively stagnant sources of funds for the states. This considerably reduces a state's financial flexibility in terms of securing resources. This dependence on the center, however, is not uniform across all states. Some states have managed to bring the tax and non-tax revenues under their control to form a substantial part of their total revenue receipts. In general, the extent of a state's dependence on the center depends on two factors: 1) the state's developmental level, because less developed states are given considerably higher grants and their share in central taxes is also higher and 2) the extent to which the state has been able to harness its own taxation powers.

Greater dependence on the center may reduce the financial flexibility of the state in raising revenue and increase the uncertainty of its cash flows. To determine the level of this dependence, several ratios were calculated, including:

State Revenues/Revenue Receipts: This indicates the overall level of dependence on the center. If the proportion of state revenues to total revenue receipts is large, it indicates that the state has made an effort to diversify its sources of revenue. Moreover, it implies that the state has an efficient revenue collection system in place that can be useful in the future. Because a state has much greater control over its own revenues, this is an effective measure of the financial flexibility that the state will have in times of trouble.

Discretionary Grants/Revenue Receipts: Flows from the center come primarily from two sources: a share of the state taxes collected by the center (regulated by the Finance Commission) and grants that primarily come from the Planning Commission as a part of central and state schemes. Grants from the center are affected to a considerable extent by political considerations; thus, the greater the dependence on this financial flow, the greater the uncertainty that the state revenues will be sustained at a given level.

B.2.5 Evaluation of Indicators

Of the ratios given above, ten were selected as the most discriminatory, weighted by relative importance, and then used for the analysis presented in Exhibit B-2. These ratios are:

1. State revenues/RR
2. State revenues/NSDP
3. NDRE/RR
4. Discretionary grants/RR
5. Growth in tax revenues
6. Net borrowings/Gross borrowings
7. GFD/NSDP
8. Revenue deficits/GFD
9. Debt/NSDP
10. Interest/RR.

Ratios were averaged over the past three years to obtain the values for each state presented below.

Exhibit B-2
Indicators of State Finances
Average of Past Three Years
(in percent)

Ratios	AP	Assam	Bihar	Gujarat	Haryana	HP	Karnat.	Kerala	MP	M'rashtra	Orissa	Punjab	R'jsthan	TN	UP	WB
State's revenues/RR	62.8	33.0	39.1	80.5	82.1	25.2	72.6	66.1	58.2	78.3	37.9	79.0	56.1	68.9	47.0	55.4
State's revenues/NSDP	10.4	8.0	8.0	15.0	13.0	9.0	13.6	14.3	11.9	12.0	7.4	11.7	12.1	14.8	8.0	7.2
NDRE/RR	30.6	30.7	41.5	30.6	37.7	34.1	30.0	41.7	28.1	33.6	35.5	45.6	34.4	29.0	44.3	38.1
Discretionary grants/RR	13.6	37.8	17.6	7.9	8.2	41.7	11.0	13.7	18.0	8.8	25.2	7.0	20.2	11.0	23.4	15.8
Growth in tax revenues	8.8	0.8	15.6	16.0	11.3	7.5	17.3	16.9	15.5	11.5	14.7	17.3	13.0	7.3	9.8	10..1
Net borrow/Gross borrowing	80.7	38.9	72.8	63.8	74.2	45.7	76.4	66.5	65.0	72.6	69.2	84.6	75.4	78.9	79.8	76.3
GFD/NSDP	3.3	2.6	5.1	4.8	2.7	7.6	3.9	5.6	2.8	3.2	6.0	5.7	5.0	5.0	5.4	3.1
Revenue deficits/GFD	-13.7	67.6	-50.6	-26.0	-2.5	-15.0	-4.7	-45.0	7.5	-19.4	-24.4	-48.5	-8.2	-99.0	-30.6	-51.4
Debt/NSDP	20.9	38.6	43.1	25.2	20.2	55.4	21.0	40.7	26.3	16.6	41.0	39.5	34.0	23.9	30.8	23.7
Interest/RR	12.0	13.1	20.6	16.0	13.7	15.2	12.0	16.9	11.7	15.2	19.4	18.5	15.4	10.7	20.6	18.4
Grants/RR	15.4	43.3	22.4	8.1	8.3	50.7	11.1	13.9	18.2	9.2	28.9	10.5	22.4	11.3	24.1	17.7
Admin. Costs/RR	8.6	11.7	12.3	7.8	7.8	9.6	7.4	7.3	8.5	10.7	8.4	19.7	8.4	8.5	10.9	11.0
Tax revenues/RR	47.7	19.7	26.5	60.7	54.8	18.7	59.1	57.8	38.0	60.3	26.6	56.0	36.2	58.0	34.7	50.2
Non-tax revenues/ RR	15.1	13.2	12.5	19.8	27.3	6.6	13.6	8.3	20.1	18.0	11.3	22.9	19.9	10.9	12.2	5.1
Growth in RR	11.4	8.8	17.0	16.8	27.5	21.2	18.3	17.7	16.8	13.1	17.7	-2.5	15.9	3.2	12.2	14.4
Growth in RE	11.9	13.9	12.9	12.2	26.6	16.9	14.2	17.3	16.6	13.2	19.1	1.3	19.9	-1.6	15.2	15.3
Capital outlay/NSDP	1.5	2.6	1.6	2.9	1.3	6.5	3.0	2.1	2.6	1.9	4.2	1.3	4.1	1.0	1.6	0.8
Capital outlay/Total Expend.	7.4	8.9	5.9	11.2	6.8	12.0	12.6	7.0	10.5	9.9	15.4	5.9	14.2	3.3	6.7	4.7
Budget deficit/Total receipts	0.00	-2.0	-0.6	-1.8	-0.5	-2.6	-1.7	0.3	-0.2	0.00	-0.7	11.6	0.00	-0.7	0.4	0.3
Budgetary deficit/NSDP	0.00	-0.6	-0.2	-0.4	-0.1	-1.4	-0.4	0.1	0.00	0.00	-0.2	3.8	0.1	-0.2	0.1	0.00
Capital outlay/GFD	45.7	103.5	31.1	63.6	49.1	101.1	80.0	37.0	98.0	59.6	71.0	22.0	88.8	19.7	29.0	26.0
Revenue deficit/RR	-2.7	6.6	-12.9	-7.1	-0.4	-0.4	-1.2	-11.6	1.0	-4.2	-7.5	-19.9	-2.3	-22.1	-9.9	-12.4

Source: CRISIL analysis from *RBI Bulletin*, 1994/95.

U.S. Agency for International Development
Bureau for Global Programs, Field Support, and Research
Center for Environment
Office of Energy, Environment, and Technology

The Center for Environment of the Bureau for Global Programs, Field Support, and Research houses the environmental programs of the U.S. Agency for International Development (USAID). One of five *Centers of Excellence* within the Agency, the Center for Environment provides field support to U.S. bilateral assistance efforts, manages global environmental program activities, oversees USAID's environmental research efforts, and is USAID's principal liaison on technical environmental issues to the rest of the U.S. Government, non-governmental organizations and universities, and other bilateral and multilateral donors.

The Office of Energy, Environment, and Technology is a part of the Center for Environment and helps developing countries and emerging economies find market-oriented solutions to their energy and environment problems. The Office helps set the energy policy direction for the Agency and responds to the short-term needs of USAID's field offices in assisted countries.

A lack of energy is seriously curtailing economic growth in developing countries and countries in transition. Expansion of energy supplies imposes a huge financial burden while increasing environmental threats in these countries. In addition, many countries lack the institutional capability and appropriate technology to operate and manage energy systems efficiently. These factors contribute to the role energy development plays as a leading contributor to global climate change and regional and local environmental problems.

To address these problems, the Office of Energy, Environment, and Technology leverages the financial resources of multilateral development banks, such as The World Bank and the InterAmerican Development Bank, the private sector, and other bilateral donors to increase energy efficiency and expand energy supplies, enhance the role of private power, and implement novel approaches through research and adaptation. These approaches include improving power sector investment planning ("integrated resources planning") and encouraging the application of cleaner technologies that use both conventional fossil fuels and renewable energy sources. The Office's promotion of greater private sector participation in the power sector and a wide-ranging training program also help to build the institutional infrastructure necessary to sustain cost-effective growth.

Further information regarding Center for Environment and Office of Energy, Environment, and Technology activities can be requested by contact the Office of Energy, Environment, and Technology at the following address.

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