



# Completion Report

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Project Number: 29694  
Loan Numbers: 1803 and 1804  
October 2008

## IND: Gujarat Power Sector Development Program

Asian Development Bank

## CURRENCY EQUIVALENTS

Currency Unit – Indian rupee/s (Re/Rs)

		<b>At Appraisal</b> (14 November 2000)	<b>At Program Completion</b> (as of 20 March 2007)
Re1.00	=	\$0.0215	\$0.0220
\$1.00	=	Rs46.60	Rs44.08

## ABBREVIATIONS

ABT	–	availability based tariffs
ADB	–	Asian Development Bank
AT&C	–	aggregate technical and commercial
CERC	–	Central Electricity Regulatory Commission
CII	–	Confederation of Indian Industries
DGVCL	–	Dakshin Gujarat Vij Company Limited
ECCF	–	Electricity Consumers' Coordination Forum
EIRR	–	economic internal rate of return
FIRR	–	financial internal rate of return
FRP	–	financial restructuring plan
FY	–	fiscal year
GEB	–	Gujarat Electricity Board
GERC	–	Gujarat Electricity Regulatory Commission
GETCO	–	Gujarat Energy Transmission Company Limited
GGRCL	–	Gujarat Green Revolution Company Limited
GUVNL	–	Gujarat Urja Vikas Nigam Limited
HT	–	high tension
IPP	–	independent power producer
JBIC	–	Japan Bank for International Cooperation
LIBOR	–	London Interbank Offered Rate
LILO	–	line-in line-out
LT	–	low tension
MGVCL	–	Madhya Gujarat Vij Company Limited
MYT	–	multi-year tariff
OCR	–	ordinary capital resources
O&M	–	operation and maintenance
PCR	–	project completion report
PGVCL	–	Paschim Gujarat Vij Company Limited
PFC	–	Power Finance Corporation Limited
PPA	–	power purchase agreement
PPER	–	program performance evaluation report
RRP	–	Report and Recommendation of the President
SDP	–	sector development program
SEB	–	state electricity board
SIEE	–	summary of initial environmental examination
TA	–	technical assistance

## WEIGHTS AND MEASURES

cct-km (circuit kilometer)	–	unit of transmission line length
ha (hectare)	–	unit of area
km (kilometer)	–	unit of length
kV (kilovolt)	–	1,000 volts
kVA (kilovolt-ampere)	–	1,000 volt-amperes
kW (kilowatt)	–	1,000 watts
kWh (kilowatt-hour)	–	unit of energy
MVA (megavolt-ampere)	–	1,000,000 volt-amperes
MW (megawatt)	–	1,000 kilowatts
VA (volt-ampere)	–	unit of power/capacity
W (watt)	–	unit of active power

## NOTES

- (i) The fiscal year (FY) of the Government of India, and the Government of Gujarat and Gujarat Electricity Board ends on 31 March. FY before a calendar year denotes the year in which fiscal year ends, e.g., FY2002 begins on 1 April 2001 and ends on 31 March 2002.
- (ii) In this report, '\$' refers to US dollars.

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## BASIC DATA

### A. Loan Identification

1.	Country	India
2.	Loan Numbers	1803 and 1804
3.	Program Title	Gujarat Power Sector Development Program
4.	Borrower	India
5.	Executing Agency	
	a. Program Loan	Finance Department, Energy and Petrochemicals Department, Government of Gujarat
	b. Project Loan	Gujarat Urja Vikas Nigam Limited <sup>1</sup>
6.	Amount of Loan	
	a. Program Loan	\$150 million
	b. Project Loan	\$200 million
	Net after cancellation	\$109.063 million
	First cancellation	\$77.515 million (11 August 2004)
	Second cancellation	\$13.421 million (14 April 2005)
7.	Program Completion Report Number	IND 1058

### B. Loan Data

1.	Appraisal	Stage I	Stage II	Stage III	Stage IV
	– Date Started	14 Jul 00	8 Aug 00	4 Sep 00	12 Oct 00
	– Date Completed	26 Jul 00	28 Aug 00	12 Sep 00	19 Oct 00
2.	Loan Negotiations				
	– Date Started	13 November 2000			
	– Date Completed	14 November 2000			
3.	Date of Board Approval	13 December 2000			
4.	Date of Initial Loan Agreement	14 December 2000			
	Date of Amended and Restated Loan Agreement <sup>2</sup>	26 April 2002			
5.	Date of Loan Effectiveness				
	– In Loan Agreement	15 December 2000			
	– Actual	15 December 2000			
	– Number of Extensions	None			

<sup>1</sup> The Gujarat Electricity Board, the Executing Agency (EA) for the project loan, was reorganized into seven different companies effective 1 April 2005. Gujarat Urja Vikas Nigam Limited became the EA for the Project, effective 1 April 2005.

<sup>2</sup> In the program loan component, an amount of \$51,500,000 was disbursed under the initial loan (including capitalization of the front-end fee of \$1.5 million) and the balance was transformed to a London Interbank Offered Rate- (LIBOR) based loan. In the project loan component, an amount of \$3,111,867.15 was disbursed under the initial loan and the balance transformed to a LIBOR-based loan.

6.	Closing Date		
	a. Program Loan		
	– In Loan Agreement		31 December 2002
	– Actual		10 December 2003
	b. Project Loan		
	– In Loan Agreement		30 June 2005
	– Actual		20 March 2007
7.	Terms of Loan		
	a. Program Loan		
	– Interest Rate		Pool-based variable lending rate
	– Maturity		15 years
	– Grace Period		3 years
	Amended and Restated Loan Agreement		
	– Interest Rate		London Interbank Offered Rate (LIBOR)-based
	– Maturity		15 years
	– Grace Period		3 years
	b. Project Loan		
	– Interest Rate		Pool-based variable lending rate
	– Maturity		20 years
	– Grace Period		5 years
	Amended and Restated Loan Agreement		
	– Interest Rate		LIBOR-based
	– Maturity		20 years
	– Grace Period		5 years
8.	Disbursements		
	a. Dates		
	(i) Program		
	<b>Initial Disbursements</b>	<b>Final Disbursements</b>	<b>Time Interval</b>
	15 December 2000	10 December 2003	36 months
	<b>Effective Date</b>	<b>Original Closing Date</b>	<b>Time Interval</b>
	15 December 2000	31 December 2002	25 months
	(ii) Project		
	<b>Initial Disbursements</b>	<b>Final Disbursements</b>	<b>Time Interval</b>
	10 May 2002	20 March 2007	58 months
	<b>Effective Date</b>	<b>Original Closing Date</b>	<b>Time Interval</b>
	15 December 2000	30 June 2005	54 months

- b. Amount (\$ million)  
 (i) Program Loan

Tranche Number	Date Disbursed	Amount Disbursed
First Tranche	15 December 2000	51.5 <sup>a</sup>
Combined Second and Third Tranche	10 December 2003	98.5

<sup>a</sup> Inclusive of Front-end fee of \$1.5 million capitalized along with the tranche release.

- (ii) Project Loan

Category	Original Allocation	Last Revised Allocation <sup>a</sup>	Amount (Canceled)/ Increased	Amount Disbursed	Undisbursed Balance
01 : Equipment	157.53	102.98	(54.54)	102.98	0.00
02 : Front End Fee	2.00	2.00	0.00	2.00	0.00
03 : Interest During Construction	17.50	4.07	(13.43)	4.07	0.00
04 : Unallocated	22.97	0.00	(22.97)	0.00	0.00
<b>Total</b>	<b>200.00</b>	<b>109.06</b>	<b>(90.94)</b>	<b>109.06</b>	<b>0.00</b>

a. The latest date of category reallocation was effective 11 August 2005 (after affecting the cancellation of \$90.94 million at the Borrower's request).

Source: Asian Development Bank records.

### C. Program and Project Data

1. Program and Project Cost (\$ million)

Cost	Appraisal Estimate	Actual
(i) Program Loan		
Foreign Exchange Cost	150.00	150.00
<b>Total</b>	<b>150.00</b>	<b>150.00</b>
(ii) Project Loan		
Foreign Exchange Cost	200.00	109.06
Local Currency Cost	110.20	41.18
<b>Total</b>	<b>310.20</b>	<b>150.24</b>

2. Project Financing Plan (\$ million)

Source	Appraisal Estimate			Actual		
	Foreign	Local	Total	Foreign	Local	Total
ADB	200.00	0.00	200.00	109.06	0.00	109.06
GEB	0.00	110.20	110.20	0.00	41.18	41.18
<b>Total</b>	<b>200.00</b>	<b>110.20</b>	<b>310.20</b>	<b>109.06</b>	<b>41.18</b>	<b>150.24</b>

ADB = Asian Development Bank, GEB = Gujarat Electricity Board

Source: Gujarat Urja Vikas Nigam Limited.

## 3. Cost Breakdown by Project Component (\$ million)

Item	Appraisal Estimate			Actual		
	Foreign	Local	Total	Foreign	Local	Total
<b>I. Project Components</b>						
A: Transmission System Linked with the Private Sector Power Projects and for System Improvement	72.9	37.8	110.7	41.76	9.38	51.14
B & C: Transmission and Distribution Works Associated with Kheda (Anand), Rajkot, and Mahesana Distribution Circles	76.9	38.6	115.5	61.22	17.69	78.91
D: Drip Irrigation System	7.8	2.6	10.4	0.00	0.00	0.00
<b>Subtotal (I)</b>	<b>157.6</b>	<b>79.0</b>	<b>236.6</b>	<b>102.98</b>	<b>27.07</b>	<b>130.06</b>
<b>II. Contingencies</b>						
<b>Price and Physical</b>	<b>24.9</b>	<b>15.9</b>	<b>40.8</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Interest During Construction, Commitment Charges and Front End Fees	17.5	15.3	32.8	6.07	14.11	20.18
<b>Total</b>	<b>200.0</b>	<b>110.2</b>	<b>310.2</b>	<b>109.06</b>	<b>41.18</b>	<b>150.24</b>

## 4. Project Schedule

Item	Appraisal Estimate		Actual	
	Start	End	Start	End
Part A: Transmission System linked with the Private Sector Power Projects and for System Improvement:				
Tendering	Sep 2000	Apr 2001	Nov 2000	Oct 2003
Award of Contract	May 2001	Sep 2001	Mar 2002	Nov 2003
Supply, Erection and Commissioning	Oct 2001	Dec 2004	Nov 2002	Dec 2006
Parts B and C: Transmission and Distribution works associated with Kheda (Anand), Rajkot, and Mahesana distribution circles:				
Tendering	Sep 2000	Apr 2001	Apr 2001	Nov 2004
Award of Contract	May 2001	July 2001	Sep 2002	Jul 2005
Supply, Erection, and Commissioning	Aug 2001	Dec 2004	Mar 2003	Jul 2007
Technical Assistancess:				
Reorganization Plan for Gujarat Electricity Board	Feb 2001	July 2002	Dec 2000	Jun 2003
Consumer Awareness and Participation in Power Sector Reforms	Feb 2001	Jan 2002	Dec 2000	Dec 2004
Support to Gujarat Electricity Regulatory Commission	Feb 2001	July 2002	Dec 2000	Jul 2005

## 5. Project Performance Report Ratings

Implementation Period (Program Loan)	Ratings	
	Development Objectives	Implementation Progress
From 13 December 2000 to 31 May 2002	S	S
From 1 June 2002 to 30 November 2003	S	PS
From 1 December 2003 to 31 December 2003	S	S

Implementation Period (Project Loan)	Ratings	
	Development Objectives	Implementation Progress
From 13 December 2000 to 31 January 2002	S	S
From 1 February 2002 to 31 May 2002	S	PS
From 1 June 2002 to 20 March 2007	S	S

PS = partly satisfactory, S = satisfactory, U = unsatisfactory.

Source: Project Performance Reports of the Asian Development Bank.

## D. Data on Asian Development Bank Mission

Name of Mission	Date	Number of Persons	Number of Person-days	Specialization of members <sup>a</sup>
Reconnaissance	20–27 Jan 1997	5	25	a,g,m
Fact-finding	3–25 Apr 1997	9	189	a,b,d,g,n,o
Contact	1–13 Sep 1997	5	65	a,h,i
Pre-Appraisal	3–24 Sep 1997	11	209	a,b,c,d,g,h,i
Consultation	15–18 Sep 1997	4	16	a,d,g,p
JICA/ADB Coordination	16–31 Jan 1998	4	60	a
Contact	2–6 May and 13–16 May 1998	3	27	a
Consultation	11–16 Nov 1998	4	24	a,d,g,m
Consultation	17–25 Feb 2000	2	18	a,b
Contact	21–23 Feb 2000	2	6	a,b
Contact	29 May–2 June 2000	1	5	a
Appraisal (Stage I)	14–26 Jul 2000			
Appraisal (Stage II)	8–28 Aug 2000			
Appraisal (Stage III)	5–11 Sep 2000	8	56	a,b,c,d,g,i,n
Appraisal (State IV)	12–19 Oct 2000	8	57	a,b,c,g,h,m
Project Inception	22–29 Jan 2001	3	24	a
Project Review (1)	22–25 Oct 2002	3	9	a,k
Program Contact	23–24 Oct 2002	2	4	a
Program Contact	8–13 Jan 2003	4	24	a,q
Project Review (2)	29 Nov–4 Dec 2004	1	6	a
Project Completion Review	7–11 July 2008	3	15	a,k,l

ADB = Asian Development Bank, JICA = Japan International Cooperation Agency.

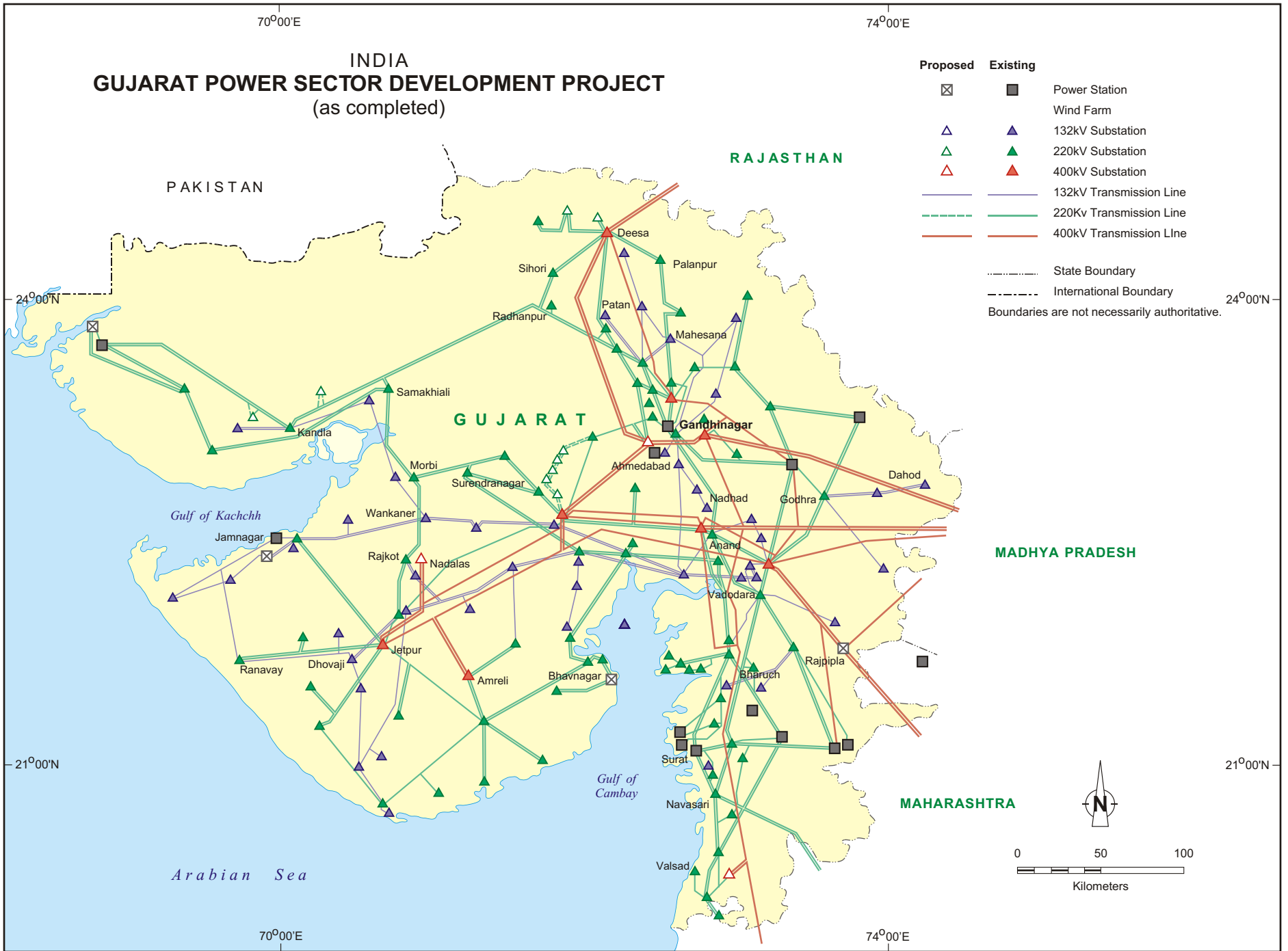
a a – engineer, b – financial analyst, c – counsel, d – economist, e – procurement specialist, f – control officer, g – programs officer, h – environmental specialist, i – social development specialist, j – poverty reduction specialist, k – assistant project analyst, l – resettlement specialist, k – disbursement assistant, l – consultant, m – Resident Representative, n – Manager, o – water resources specialist, p – Director. q – regulatory specialist

b The report was prepared by Vallabha Rao Karbar, Senior Project Implementation Officer (Energy), Michael Gomes, Assistant Project Analyst and a Staff Consultant.

Source: Back-to-office reports of the Asian Development Bank.

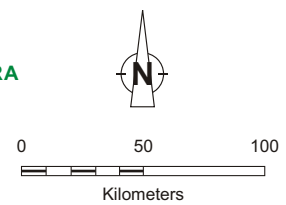
# INDIA

## GUJARAT POWER SECTOR DEVELOPMENT PROJECT (as completed)



Proposed	Existing	
☒	■	Power Station
△	▲	Wind Farm
△	▲	132kV Substation
△	▲	220kV Substation
△	▲	400kV Substation
— (purple)	— (purple)	132kV Transmission Line
— (green dashed)	— (green solid)	220kV Transmission Line
— (red dashed)	— (red solid)	400kV Transmission Line
⋯	⋯	State Boundary
⋯	⋯	International Boundary

Boundaries are not necessarily authoritative.



## I. PROGRAM DESCRIPTION

1. In December 2000, the Asian Development Bank (ADB) approved a sector development program (SDP)<sup>1</sup> loan comprising a policy loan of \$150 million and an investment loan of \$200 million, for a total of \$350 million. The SDP was designed to support the Government of Gujarat to restructure the power sector in the Indian state of Gujarat, reduce operating costs through improved operating efficiencies and governance, raise additional revenues, and eliminate the need for transfers from the state government budget over the long term. The program was also expected to facilitate expansion of the power supply using private generating capacity; promote conservation of water and electricity; support economic growth in the state, particularly in the industrial sector; and allow a shift in state government expenditures from the power sector to other sector priorities, such as education and health. Overall, the combination of higher economic growth and a shift in public expenditure was expected to contribute to reducing poverty.

2. The program component of the loan was designed to help the state government to (i) establish an appropriate legal and regulatory framework for the electricity sector, including establishment of an independent state regulatory commission; (ii) improve tariff rationalization and revenue realization; (iii) unbundle the Gujarat Electricity Board (GEB) into companies with adequate functional autonomy capable of providing better sector governance; and (iv) carry out fiscal reforms.<sup>2</sup>

3. The Project comprised four components: (i) Part A: transmission lines and substations associated with two private sector power projects and system improvements; (ii) Part B: transmission lines and substations associated with Kheda (Anand), Rajkot, and Mahesana distribution circles; (iii) Part C: upgrading and strengthening of distribution systems in Kheda (Anand), Rajkot, and Mahesana distribution circles; and (iv) Part D: a pilot scheme for energy and water conservation through conversion of existing irrigation systems to drip irrigation systems.

4. In 1996, ADB revised its operational strategy for India and decided to direct a portion of its assistance to the state governments. This change reflected the following: (i) a geographical focus, together with an ongoing selective sector focus, would enable ADB to maximize its development impact on the states concerned, and through the demonstrational impact of its operations on other states; (ii) state-level economic reforms, which had been lagging behind initiatives taken by the Government of India, needed support and incentives; and (iii) the states have considerable autonomy and have major legislative, administrative, and fiscal responsibilities in many economic and social sectors. Key elements of the new strategy included (i) reducing the states' fiscal deficits, (ii) reforming and restructuring public sector enterprises to improve their operating efficiencies, and (iii) supporting reforms in key infrastructure sectors with a view to increasing private investment. Gujarat was the first state chosen for this type of holistic support and the first loan was made by ADB in December 1996.<sup>3</sup> The SDP is an integral part of this assistance and was included in the India Country Assistance Plan for 2000.<sup>4</sup> In preparation

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<sup>1</sup> Loans 1803 and 1804-IND: *Gujarat Power Sector Development Program*, for \$350 million, approved on 13 December 2000.

<sup>2</sup> The fiscal reform objectives included (i) payment of all municipality dues to GEB; (ii) rationalization of electricity duty; (iii) retirement of the expensive commercial debt of GEB; (iv) reduction of accounts payable of GEB to power producers and suppliers of fuel and transport; and (v) reduction of IPP tariffs through buyout of debt.

<sup>3</sup> Loan 1506-IND: *Gujarat Public Sector Resource Management Program*, for \$250 million, approved on 18 December 1996.

<sup>4</sup> ADB. 2000. *Country Assistance Plan for India (2001-2003)*. Manila.

for the SDP, ADB approved five supporting technical assistance (TA) grants, amounting to \$1.98 million, to carry out various studies.<sup>5</sup>

5. The SDP was designed to reduce GEB's operating costs, raise additional revenues and progressively eliminate the need for transfers from the state government's budget, allow the expansion of the power supply using private generating capacity, and improve the environmental consequences of power use. It aimed to support economic growth in the state, particularly in industry, and sustain production in agriculture. It also sought to shift the focus of the state government's expenditures from power sector to other responsibilities such as the education and health sectors. Thus, the SDP included support and incentives for restructuring the power sector as program assistance and support for investments in the evacuation and distribution of power from proposed private sector generation projects, as well as in the relatively-neglected areas of metering, energy end-use management, and system loss reduction.

6. In addition, three technical assistance (TA), grants totaling \$1.1 million were also included in the SDP to support the reform initiatives: *Reorganization Plan for GEB*,<sup>6</sup> *Consumer Awareness and Participation in Power Sector Reforms*,<sup>7</sup> and *Support to the Gujarat Electricity Regulatory Commission (GERC) for policy advice, training, and operational support*<sup>8</sup>. Separate TA completion reports evaluated the TAs.<sup>9</sup>

## II EVALUATION OF DESIGN AND IMPLEMENTATION

7. The key events of program implementation are presented chronologically in Appendix 1.

### A. Relevance of Design and Formulation

8. The SDP's design was rated as highly relevant. At the time of appraisal, the central government and various state governments, including the Government of Gujarat, were in the process of formulating and implementing comprehensive reforms in the power sector. These reforms were aimed at improving the sector's (i) operational efficiencies, (ii) financial viability, (iii) service to consumers, and (iv) conservation of electricity. In Gujarat, comprehensive reform-oriented studies had already been initiated with technical support from ADB (paragraph 4). The design of the SDP was tailored to meet these objectives. The immediate objectives were to provide support and incentives to the state government and GEB for (i) sector reform activities such as establishing and operationalizing an independent regulatory commission and restructuring GEB; (ii) establishing transmission systems associated with independent power producer (IPP) generation projects; (iii) modernizing and upgrading distribution systems, especially those in Anand, Rajkot, and Mahesana distribution circles; and (iv) water and electricity conservation measures. Recognizing the close nexus between issues of water conservation and electricity conservation, the design also focused on electricity rates to agricultural consumers. The central government and the Government of Gujarat were

<sup>5</sup> The studies included (i) preparation of a power system master plan, (ii) preparation of a framework for electricity tariffs, (iii) review of electricity legislation and regulations, (iv) financial support to GEB for formation of two independent distribution profit centers, and (v) solicitation for private sector implementation of the Chhara Project.

<sup>6</sup> ADB. 2000. *Technical Assistance to India for Preparation of Reorganization Plan for Gujarat Electricity Board*. Manila. (TA 3573-IND).

<sup>7</sup> ADB. 2000. *Technical Assistance to India for Enhancing the Consumer Awareness and their Participation in Power Sector Reforms*. Manila. (TA 3574-IND).

<sup>8</sup> ADB. 2000. *Technical Assistance to India for Support Gujarat Electricity Regulatory Commission*. Manila. (TA 3575-IND).

<sup>9</sup> ADB. 2004. *Technical Assistance Report for Preparation of Reorganization Plan for Gujarat Electricity Board*. Manila and ADB. 2006. *Technical Assistance Report to Support Gujarat Electricity Regulatory Commission*. Manila.

committed to the SDP (see Appendix 2 of the Report and Recommendation of the President [RRP] for more detail). Thus, the design of the program was consistent with the central and state governments' policies for the power sector.

9. The SDP was also consistent with ADB's strategy for the Indian energy sector at the time of appraisal, which was to provide policy and investment support to state governments that were committed to reforming the power sector at the state level (see paragraph 33 of the RRP for more detail). In fact, the SDP was a subset of the overall support that ADB had been providing to Gujarat for infrastructure reforms.

10. At the time of appraisal, Gujarat had been experiencing an increase in electricity demand of about 9% per annum. This rate of growth was expected to continue in the foreseeable future since the state had been attracting a large amount of overseas and domestic investments. Adequate power supply and an independent regulatory system were crucial for ensuring continued investments. The prevailing situation posed serious constraints in this regard. During fiscal year (FY) 1999, load shedding was experienced every day of the year, ranging between 50 megawatt (MW) and 1,450 MW. The anticipated shortfall in generating capacity over the next decade was about 7,000 MW. The high levels of subsidy for agricultural consumers and the cross-subsidy burden of industrial consumers were also serious impediments to the viability of the sector. The flat tariff based on the horsepower of each pump set installed for agricultural consumers was becoming a major issue for the water sector.<sup>10</sup> Political interference in tariff setting and sector operations also had adverse impacts on the operational and financial performance of the state power sector, which was in the midst of a severe financial crisis. The demand on the state budget by the power sector was resulting in the sub-optimal allocation of funds. Comprehensive reform of the sector was an urgent need. In view of this, the Government of Gujarat pursued sector reforms in order to restore the sector's financial viability and sustainability, and sought ADB's intervention in the form of the SDP with the twin objectives of bringing reforms to the sector and improving the transmission and distribution systems to improve the quality and quantity of the power supply. Thus, SDP intervention and design in support of the state government—with the long-term goal of establishing an efficient, self-sustaining, and competitive power sector able to provide a sufficient quantity and quality of power—was highly relevant.

11. The SDP was formulated in close coordination with, and supported by, GEB, the state government, and the central Ministry of Power.

12. The SDP provided incentives for institutional and organizational actions to improve sector governance and achieve the functional unbundling of GEB. In parallel, the SDP supported physical investments to strengthen the capacity of the power system and reduce technical and non-technical losses to improve operational and financial sector performance. The SDP intended to improve public and private resource allocation in Gujarat by increasing GEB's operational efficiencies and delivery capacity, and progressively reducing the need for transfers from the state government budget. This required simultaneous intervention at the policy level to provide the necessary legal and institutional framework, and at the project level to support critical investment components to ensure success of the reform. Therefore, a mixed-modality SDP was considered the best instrument for supporting an initiative to restructure the power sector.

13. Given the lack of a conducive business environment to attract private capital and the

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<sup>10</sup> This was causing indiscriminate use of ground water by farmers resulting in the lowering of the ground water table, which in turn was leading to increased power usage and water quality problems.

parallel need to meet the growing demand for energy, the sector reform and restructuring strategy was focused on enhancing the cash flow at the distribution end. In addition to rationalizing the tariff structure, the SDP also focused on (i) reducing transmission and distribution losses, (ii) realizing 100% metering, (iii) improving billing and collection efficiency, and (iv) installing efficient operational management in the power sector companies. The autonomous functioning of the power sector along commercial lines, especially of the distribution functions, and the independent sector regulation and corporatization of the generation, transmission, and distribution functions of GEB were all required. The SDP was designed to assist the state government and GEB in achieving these objectives.

14. The SDP was realistically designed and formulated, and addressed the key developmental needs of the Gujarat power sector in a holistic manner. The design also provided for close monitoring of progress by releasing the policy loan in three tranches, subject to meeting the tranche conditions. The SDP continues to be highly relevant, even today, given the priority accorded by the central and state governments to a reform agenda as enshrined in the Electricity Act, 2003.

## **B. Program Outputs**

15. The status of policy compliance under the program loan is in Appendix 2. The program loan supported the state government initiatives in policy reforms in the power sector, which covered (i) enactment of state-level legislation (The Gujarat Electricity Industry Act, 2003), (ii) establishment and operationalization of GERC under The Gujarat Electricity Industry Act, 2003, (iii) restructuring of GEB, (iii) tariff rationalization, and (iv) fiscal reforms aimed at improving financial viability and competitiveness of GEB. As a part of the reform program, the state government prepared a financial restructuring plan and began implementing this plan effective 1 April 2005. The program also assisted GERC to strengthen its institutional capacity to establish the regulatory regime in the state.

16. Prior to loan effectiveness on 15 December 2000, seven policy actions of the Program's policy matrix had been completed, thereby fulfilling the conditions for the release of the first tranche on 15 December 2000. An additional 12 conditions were fulfilled simultaneously for the release of the second and third tranches of the program loan, which enabled ADB to release both tranche amounts on 10 December 2003.

17. Appendix 3 compares the performance of the SDP framework with that included in the RRP. To a large extent the SDP succeeded in enacting The Gujarat Electricity Industry Act, 2003 establishing a fully functional regulatory regime in the state, unbundling GEB and facilitating the smooth transition to a new setup, and improving sector governance through the establishment of independent boards in each of the unbundled entities. The framing of rules and regulations under the tariff principles laid down by GERC has also ensured the timely preparation and filing of annual revenue requirements to GERC by all the power utilities. Based on the annual revenue requirements and commensurate request for tariff revisions, GERC, till date revised retail tariffs four times. To improve operating efficiencies and reform the sector, GERC has issued performance standards for transmission and distribution licensees as per the provisions of the Electricity Act, 2003. The unbundling of GEB on a functional basis—into a generation company, transmission company, and four distribution companies—has helped the operation of three segments of the sector with enhanced focus, better supervision through decentralized decision-making, and improved accountability; and has instilled competition among these entities to improve their operational efficiencies. The project completion report (PCR) Mission is of the opinion that the outcome of the program component has already

contributed significantly to improving the operational and financial performance of the state power sector (during FY2007, the sector generated a revenue surplus of Rs2.2 billion) and will play a major role in the long-term sustainability of the power sector in the state.

18. The Program also contributed to the reform goal of improving the metering system in the state. GEB had achieved a target of metering 93% of consumers before the last tranche of the loan was released. As of 31 March 2008, 100% metering had been achieved in the state, with the exception of agricultural consumers. GEB also installed 5,293 energy audit meters on 11 kV, 33 kV, and 66 kV feeders. This has helped to improve the operational efficiency of the distribution system and reduce non-technical losses.

19. A brief review of the status of the completion of project components follows.

**1. Part A: Transmission System Linked with the Private Sector Power Projects and for System Improvement**

20. This component comprised (i) construction of 198 kilometers (km) of 220 kV transmission line and four 220 kV bays to evacuate power from the proposed Reliance Power Project (2x250 MW)—this subproject was eventually dropped from the Project since there was substantial delays in execution of the generation project; (ii) construction of 238.8 km of 220 kV transmission line and four 220 kV bays to evacuate power from the proposed Akrimota Power Project (2x125 MW) to the Kutch region in Gujarat; (iii) construction of the 220/66 kV Chitrod substation; (iv) augmentation of three existing 220/132 kV and seventeen 220/66 kV substations with 100 mega volt ampere (MVA) transformers; (v) construction of 273.7 km of 220 kV transmission lines (this also includes line-in-line-out (LILO) of the 220 kV Sankari–Anjar line at the Chitrod substation and LILO of the 220 kV Chhatral–Viramgam line at the Ranchhodpura substation) to strengthen the existing transmission network in the state; (vi) construction of 50 new 66/11 kV substations and associated 66 kV transmission lines of 602.13 km length; and (vii) augmentation of 185 existing 66/11 kV substations—this package was dropped from ADB financing at the request of GEB and subsequently was procured with GEB's own resources. This component was completed in December 2006 and has been operating satisfactorily since then.

**2. Parts B and C: Transmission and Distribution Works Associated with Kheda (Anand), Rajkot, and Mahesana Distribution Circles**

21. This component comprised (i) construction of the 2x315 MVA 400/220 kV Rajkot substation; (ii) establishment of LILO of the 400 kV Chorania–Jetpur transmission line at Raikot (60 km); (iii) construction of 15 new 66/11 kV substations; (iv) laying of 145.64 km of 66 kV transmission lines; (v) laying of 4,476 km of 11 kV and 3,402 km of 0.4 kV distribution lines; (vi) replacement of existing 23,857 (12,223 of 100 kilo volt-ampere [kVA] and 11,634 of 63 KVA) cold-rolled grain oriented transformers with more efficient amorphous core distribution transformers; (vii) procurement of 3,206 single and three phase meters (includes remote metering system); and (viii) hardware component of the required financial management and engineering support systems. ADB financing was utilized for establishing the wide area network only and the remainder of this subproject was financed from GEB's own resources. This component was completed in July 2007. At appraisal, it was also envisaged to augment the existing 41 66/11 kV substations using ADB loan proceeds. However, the augmentation subproject was dropped from ADB's financing and was executed from GEB's own resources in May 2006.

22. Completion of the subprojects described above helped the state to (i) meet 9,197 MW peak demand during FY2008 against the peak demand of 6,700 MW met in FY2002, with improved stability and reliability of the system; (ii) transmit and distribute 57,614 million kWh during FY2008 against the 30,232 million kWh in FY2002; (iii) significantly enhance the system availability to as high as 98.72% at the 220 kV level and 99.56% at the 66 kV level in FY2008; (iv) reduce the system losses from 34.02% in FY2002 to 22.23% in FY2008; (v) substantially increase the overall revenue due to improved collection efficiency (from less than 80% in FY2002 to 100% in three distribution companies<sup>11</sup> and 95% in one distribution company<sup>12</sup> during FY2008) and improved metering, computerized billing, and collection system in the state; (vi) reduce the transformer burnout rate from 19.7% in FY2002 to 17% in FY2008; (vii) achieve substantial improvement in voltage profile in the distribution system (voltage profile at low tension level was maintained within +/-6%), thereby, reducing the failure of farming motor sets and saving maintenance costs; and (viii) reduce scheduled and unscheduled power cuts.

### 3. Part D: Implementation of Drip Irrigation System

23. This component comprised conversion of existing flood irrigation systems to drip and sprinkler irrigation systems in Gujarat covering 4,000 hectares (ha)—in the districts of Sabarkantha, Banaskantha, Mehsana, Patan, and Gandhinagar—to conserve water and electricity. As per the Loan Agreement, this pilot project was to be implemented through GEB. GEB appointed Gujarat Agro Industries Corporation Limited (GAICL) as a nodal agency for implementing this component. GAICL recruited a private firm as a consultant to assist with project design, prepare technical specifications including bid documents, and supervise the implementation of the project. The consultant helped GAICL to design and finalize technical specifications and bid documents. Based on these outputs, GEB floated tenders in 2004. However, in March 2005 the state government notified GEB that all drip irrigation projects in Gujarat, including this component, would be carried out by a specially-created state government enterprise, Gujarat Green Revolution Corporation Limited (GGRCL). The state government directed GEB to withdraw this component from ADB financing. Accordingly, this component was dropped from ADB financing. GGRCL informed the PCR Mission that it had already implemented the drip irrigation component in the districts of Sabarkantha, Banaskantha, Mehsana, Patan, and Gandhinagar as a part of their program to implement the micro-irrigation systems in the state in 100,000 ha of land by 31 March 2008. GGRCL also informed GEB that it would cover an additional 100,000 ha of land across the state under the micro-irrigation systems during FY2009.

#### C. Program Costs

24. At appraisal, the Program (policy loan) cost of the SDP was \$150 million. The entire Program amount of \$150 million was released in three tranches without any changes.

25. At appraisal, the total cost of the Project was \$310.20 million equivalent, comprising \$200 million in foreign currency (64.5%) and \$110.20 million equivalent in local currency (35.5%). The ADB loan was \$200 million, of which only \$109.06 million (54.8%) was utilized. The cost savings of \$159.96 million equivalent consisted of \$90.94 million in foreign currency and \$69.02 million equivalent in local currency. Appendix 4 compares estimated project costs

<sup>11</sup> Uttar Gujarat Vij Company Limited, Dakshin Gujarat Vij Company Limited, and Paschim Gujarat Vij Company Limited.

<sup>12</sup> Madhya Gujarat Vij Company Limited.

with actual project costs. The net loan amount in foreign currency was \$109.063 million. The summary of contracts is given in Appendix 5. Appendix 6 provides the average exchange rates used to convert local currency to the dollar equivalent. Due to the Government of Gujarat mandating that GGRCL implement all the drip irrigation projects in the state, including similar works that would have been executed by GEB under Part D, GEB requested a reduction in the loan amount and cancellation of certain packages, which were funded from its own resources. Accordingly, \$77.515 million and \$13.421 million were cancelled (para. 27) from the agreed loan amount. Appendix 4 compares estimated project costs with actual project costs.

26. Appendix 7 compares the project financing plan. At the time of completion, total project expenditure was \$150.24 million, comprising \$109.06 million in foreign currency from the ADB loan, and \$41.18 million equivalent in local currency from GEB. ADB's share of financing increased from 64.5% to 72.6%, despite a decrease in the loan amount from \$200.000 million to \$109.063 million.

27. The foreign exchange cost savings of \$90.94 million can be attributed to the (i) cancellation of the interest during construction (IDC) amount of \$13.43 million from ADB financing, (ii) non-utilization of contingencies of \$22.90 million, (iii) dropping of the drip irrigation package from the scope of the Project (\$7.8 million), and (iv) utilization of a less-than-provisioned loan amount for procurement under components A, B, and C amounting to \$46.82 million.<sup>13</sup> The local currency cost savings of \$69.02 million equivalent can be attributed to the (i) non-utilization of contingencies of \$15.9 million, (ii) payment of less than estimated IDC with resultant savings of \$1.2 million, (iii) dropping of the drip irrigation package (\$2.57 million), (iv) utilization of a less-than-estimated counterpart amount under components A, B, and C, amounting to \$49.29 million.<sup>14</sup>

#### **D. Disbursements**

28. As a contribution to the state government's policy reforms, the program loan provided assistance in three tranches of \$50 million each, linked to sequenced policy reform targets. The first tranche was released at loan effectiveness on 15 December 2000. The second tranche was expected to be released by June 2001 and the third by June 2002. However, due to conditions beyond the control of the state government (e.g., elections in the state, change of government) the tranche conditions could not be fully accomplished as envisaged. As a result, the loan was extended until to 30 November 2003 at the request of the Central Government (first extension, 30 June 2003; second extension, 30 September 2003; and third extension, 30 November 2003). The second and third tranches of the loan were released simultaneously in December 2003. The proceeds of the Program loan were channeled through the central Ministry of Finance.

29. Under the project loan, disbursements totaled \$109.06 million out of the total loan amount of \$200 million. The sum of \$90.94 million was canceled in two stages: (i) \$77.515 million was canceled on 11 August 2004 at the request of the Central Government; and (ii) \$13.421 million under the IDC category was canceled on 14 April 2005, also at the request of the Central Government, which informed ADB that it would make cash payments of IDC and

<sup>13</sup> Savings of \$46.82 million were due to (i) deletion of 66 kV power transformers, some portion of energy meter, and financial management packages from ADB financing—these packages were financed by GEB from its own resources, and (ii) receiving quotes for tendered packages at lower prices than had been estimated.

<sup>14</sup> Savings were primarily due to (i) over-estimation at the time of appraisal, and awarding of contracts for civil and erection works at much lower prices than the estimated costs, and (ii) carrying out some erection and civil works with existing staff of GEB without contracting out to external contractors.

that the allocated IDC amount should not be capitalized. Initial disbursement under the loan started on 10 May 2002 and the final disbursement was made on 20 March 2007 (58 months later). Since the disbursements under the Project were mainly for supply of goods, ADB's commitment and direct payment procedures were used for disbursement purposes. The projected and actual disbursements are given in Appendix 8. Though the appraisal disbursement schedule was realistic for the typical subprojects financed under the Project, due to substantial delays in awarding the contracts, the disbursements in the Project's initial years were handled poorly. However, the disbursements picked up in the later stages.

## **E. Program Schedule**

30. The loans were approved on 13 December 2000 and became effective on 15 December 2000. The program loan was to be implemented over 24 months and the loan funds were to be released in three tranches. The first tranche was released on 15 December 2000, upon loan effectiveness. The second and third tranches were released together in December 2003 upon state government compliance with the policy actions for the second and third tranches.

31. At appraisal, all components of the Project were estimated to have been completed before the closing date of 30 June 2005. As all the subprojects could not be completed before the loan closing date of 30 June 2005, the closing date was extended to 30 June 2007 at the Borrower's request. The planned project implementation steps of various components are compared with the actual sequences of events in Appendix 9.

32. An advance procurement action facility was approved by ADB, and GEB initiated the preparation of the first set of bid documents in October 2000 for procurement of equipment under Part A. However, GEB was not able to award the first contract until March 2002, which was 10 months after the scheduled date of May 2001. The delay was due primarily to: (i) non-familiarity of GEB staff with the ADB *Guidelines on Procurement* (2007, as amended from time to time) as they were implementing multilateral bank-supported projects for the first time, (ii) adoption of a two-envelope procedure for simple supply-only contracts instead of a single-envelope procedure (a single-envelope procedure would have reduced the time required for completing the bid evaluation), (iii) numerous queries from prospective bidders seeking clarifications related to the qualification criteria, and (iv) internal procedural requirements and a number of approvals required before sending the evaluation reports to the ADB for consent. At appraisal, it was envisaged that contracts for all packages under Part A would be awarded from April to September 2001. In total, 22 packages were awarded over a period of 21 months as per the requirements of the subprojects. This significantly delayed the implementation of the Part A. In addition, there were delays in starting erection works at some project sites, coupled with unusually heavy rains during 2005 and 2006 in Gujarat, Part A of the Project was completed in December 2006 as against the December 2004 scheduled date of completion.

33. For the reasons cited above, the first contract under Parts B and C was awarded after a delay of 17 months in September 2002 as against the scheduled date of May 2001. In view of substantial delays in awarding contracts, further delays in starting erection works at sites, and unusually heavy rains during 2005 and 2006 in Gujarat, Parts B and C were completed in July 2007 as against the scheduled date of June 2004.

## **F. Implementation Arrangements**

34. The implementation arrangements envisaged at appraisal were adequate. GEB and the Gujarat Department of Finance and Energy were the implementation agencies for the Project

and Program, respectively. The implementation arrangements were the same as envisaged at appraisal, and ADB found them adequate. The project cell headed by a chief engineer was established at corporate office of GEB. The project cell acted as the project management unit (PMU) and was responsible for project implementation. The PMU was also responsible for procurement, providing technical support to the field offices for timely implementation of the subprojects and regularly reviewing the progress of implementation of the various components of the Project. Similar special cells, headed by superintendent engineers, were also established at the Kheda, Mehsana, and Rajkot circles. The superintendent engineers were responsible for obtaining the necessary administrative clearances for carrying out the works at sites, civil works, and the erection and commissioning of subprojects under their respective jurisdiction. The project cell head at corporate office of GEB and superintendent engineers at circle levels were assisted by a dedicated team of experts consisting of electrical and civil engineers, and administrative staff. Forest clearances for transmission lines and land acquisitions for substations were planned and executed as required. The organizational chart of the state power sector is in Appendix 10.

## **G. Conditions and Covenants**

35. A total of 17 policy measures were included in the policy matrix attached to the development of the policy loan. Seven of the policy measures were accomplished prior to loan effectiveness and the remaining 10 were to be implemented during the program implementation period. Compliance with the policy measures related to the second tranche was delayed by 30 months, and compliance with the third tranche measures was delayed by 20 months. The main reasons for the delays were state assembly elections and a change in the government (paragraph 54).

36. The conditions for the effectiveness of the Loan Agreement were met as required. After the state government met the conditions for loan effectiveness, ADB declared the loan effective on 15 December 2000. No covenants were modified, suspended, or waived during implementation. The status of compliance with covenants is given in Appendix 11. The borrower and EAs for the Program and Project loan are generally in compliance with the loan covenants.

## **H. Related Technical Assistance**

37. Three TAs were sanctioned in conjunction with the SDP. These related to preparation of a reorganization plan for GEB; promoting consumer awareness and participation in power sector reforms; and support to GERC.<sup>15</sup> TA completion reports (TCRs) for two TAs (preparation of a reorganization plan for GEB, and support to GERC) were prepared in 2004 and 2006, respectively. Third TA (promoting consumer awareness and participation in power sector reforms) being a small-scale TA, TCR for the same was not prepared.

38. The reorganization plan TA, signed on 18 May 2001, met its objectives of assisting the state government and GEB to establish the optimal model for the sector's structure and prepare a reorganization plan for GEB. The outcome of the TA was the successful

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<sup>15</sup> ADB. 2000. *Technical Assistance to India for Preparation of Reorganization Plan for Gujarat Electricity Board*. Manila. (TA 3573-IND).

ADB. 2000. *Technical Assistance to India for Enhancing the Consumer Awareness and their Participation in Power Sector Reforms*. Manila. (TA 3574-IND). and

ADB. 2000. *Technical Assistance to India for Support Gujarat Electricity Regulatory Commission*. Manila. (TA 3575-IND).

implementation of the reorganization plan prepared under TA assistance, with the full support of all stakeholders and a smooth transition to a new setup. However, there was a delay of about 24 months in completion of the TA, which was primarily due to the late fielding of consultants and poor law and order conditions that prevailed in the state in 2002. The overall rating of the TA is successful as per the TCR.<sup>16</sup>

39. The consumer awareness and participation in power sector reforms small-scale TA was approved on 13 December 2000. The objective of the small-scale TA was to enhance consumer awareness about the reform program being undertaken by state government and its implications for consumers, and to disseminate related information and seek consumer feedback on the reform program. To fulfill this objective, the Confederation of Indian Industry–Gujarat Chapter (CII) was selected as the EA and funded the activities of a newly-established Electricity Consumers Coordination Forum that included consumers' representatives from across the state. The Electricity Consumers Coordination Forum was empowered to conduct meetings, seminars, and a media campaign to reach out to the various consumers. Therefore, the TA helped in facilitating the implementation of reforms in the state power sector by generating wider acceptability among the public. The TA is rated successful.

40. The TA to provide support to GERC was signed on 18 May 2001. The TA supported GERC in the initial phase of its establishment and operation in accomplishing a number of regulatory tasks, including preparation of several key regulations, codes, and concept papers, and the issuing of a second tariff order. The TA also enabled participation of GERC officials in a training program on utility regulation and strategy in the United States as part of external training and capacity building support. There was delay of nearly 35 months in completion of the TA, which was primarily attributable to political unrest in the state in 2002 and the enhancement of functions of GERC resulting from the 2003 Electricity Act. The TA is rated successful as per the TCR.<sup>17</sup>

41. Overall, these TAs have supported and influenced key aspects of the reform program. The state government informed the ADB that TA support was timely and appreciated for its role in successful implementation of power sector reforms.

## **I. Consultant Recruitment and Procurement**

### **1. Consultants**

42. As decided at appraisal, GEB appointed an Indian firm for the drip irrigation component from its own resources. The scope of work entrusted to the consultant included: (i) design drip irrigation systems for the areas identified, (ii) prepare specifications for the materials to be procured under the drip irrigation component, (iii) coordinate with GEB for procurement, (iv) oversee installation, and (v) provide post-installation monitoring and assistance to GEB and the farmers for two years. Since these services were to be financed by GEB, ADB's *Guidelines for Selection of Consultants* were not followed. The consultant helped GEB to finalize the drip irrigation design and technical specifications. However, due to deletion of this component from ADB financing and changes in state government policy regarding the implementation of drip irrigation projects in the state, further assistance was not sought from the consultant and the assignment was terminated.

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<sup>16</sup> ADB. 2004. *Technical Assistance Completion Report for Preparation of Reorganization Plan for Gujarat Electricity Board*. Manila.

<sup>17</sup> ADB. 2006. *Technical Assistance Completion Report to Support Gujarat Electricity Regulatory Commission*. Manila.

## **2. Procurement**

43. The procurement packages funded by ADB consisted of the supply of goods. Since ADB had agreed to an advance procurement action facility, GEB could submit the first set of draft bid documents in November 2000 and award the first contract after 5 March 2002. GEB carried out the procurement of materials and equipment financed by ADB in accordance with ADB's *Procurement Guidelines* (2007, as amended from time to time). While no problems were encountered after the contract was awarded, GEB stated that it normally took a substantially long time for procurement because of ADB's requirements for the preparation of tender documents, evaluation of bids, and award of contract. In procuring packages such as power transformers, GEB received an unfavorable response from bidders due to the larger size of the package. Subsequently, the single package was divided into lots and was re-tendered.

### **J. Performance of Consultants, Contractors, and Suppliers**

44. GEB reported that the performance of all the contractors and consultants was generally satisfactory. All goods and services for the Project complied with the specifications and other operational performance standards.

### **K. Performance of the Borrower and the Executing Agency**

45. The Government of India was the Borrower. The Gujarat Department of Finance and the Department of Energy and Petrochemicals were the EAs for Program, and GEB was the EA for the Project. The overall performance of the Borrower and the EAs was satisfactory. The Gujarat Department of Energy and Petrochemicals and the Borrower regularly reviewed the progress of implementation of reforms in the state power sector. The central Ministry of Power also regularly reviewed the progress of implementation of reforms and the restructuring program in the context of meeting the ADB tranche conditions, and supported the state government to expedite the reform process. This ensured that the state government would be able to take the necessary policy measures to fulfill the tranche conditions. Overall, the state government demonstrated its full commitment to implementing the reform measures. Although the performance of the EA for Project was generally satisfactory, there were avoidable delays in the earlier stages of project implementation, including in the completion of tendering process, due to elaborate procedures and different levels of approvals required for obtaining the final approval for bid evaluation reports. Overall, GEB has demonstrated its capacity to formulate, appraise, and carry out engineering, procurement, and construction of transmission and distribution projects to approved specifications, standards, and to the satisfaction of ADB.

### **L. Performance of the Asian Development Bank**

46. ADB closely and regularly monitored the Program and Project through review missions and progress reports, and provided useful advice in several areas, including procurement and project management. The Resident Mission played a key role in providing timely advice to the state government in fulfilling the tranche conditions and to the GEB in its institutional capacity building, particularly with respect to procurement. The state government expressed its appreciation for the Resident Mission's role in the implementation of the program and project loans. Administration of the Project was delegated to the Resident Mission in February 2003. ADB, the EAs, and officials from the Department of Economic Affairs held tripartite meetings, which helped in the successful implementation of the SDP. The Resident Mission also closely monitored project administration, and timely corrective measures were proposed on several

occasions. Although there were delays in the initial stages of implementation of the Project, the overall performance was rated as satisfactory.

### III. EVALUATION OF PERFORMANCE

#### A. Relevance

47. The design of the SDP is regarded as highly relevant to both the short-term and long-term objectives of the central and state governments for the power sector. It was also in line with ADB's sector strategy and country strategy for India. In addition, since 1996 ADB has been providing support to Gujarat and the SDP was an integral part of this assistance (RRP para. 2). The SDP also relied on the outcome of the five preparatory TA grants provided by the ADB (para.4).

48. Since the power sector reforms were initiated by the Government in the 1990s, policy reforms in the power sector had been on the state government's agenda. The state government wanted the power sector to be able to meet a sustained high level of growth in demand for power, which was crucial for the economic development of the state. It had also recognized the need to attract private investment to supplement its efforts. However, the sector conditions that prevailed at the time of loan processing presented many serious constraints with respect to the policy regulatory framework, political interference, and physical infrastructure for power transmission and distribution. To address these constraints and improve the sector performance and its long-term sustainability, the state government embarked on a two-pronged strategy of policy reforms and physical investments in the sector, particularly to strengthen the transmission and distribution segments. Therefore, at appraisal, a mixed-modality SDP seeking to establish appropriate policies and support project investments was considered the best instrument for supporting power sector restructuring initiatives that were undertaken by the state government and GEB. At project completion, ADB's strategy for the power sector in India was in line with India's 10<sup>th</sup> and 11<sup>th</sup> five-year plan objectives of both the central and state governments, which seek to develop infrastructure for economic growth and poverty reduction. ADB's present strategy for assistance to the power sector includes (i) reinforcing the power sector, (ii) promoting higher efficiency and low-carbon power sources, (iii) expanding and optimizing transmission and distribution systems, (iv) providing institutional strengthening to implement reforms required by the Electricity Act, 2003, (v) promoting private sector participation, and (vi) encouraging energy conservation and ensuring environmental sustainability. The program and project outputs contributed to achieving these objectives.

49. The central and state governments are still pursuing capacity expansion, reforms, provision of a transmission and distribution infrastructure that optimally utilizes existing installed capacities and improves operation efficiencies, tariff (bulk and retail) setting on commercial terms by an independent regulator, and private sector participation. To achieve these objectives, the central government enacted the comprehensive 2003 Electricity Act. The Project was designed to augment the transmission and distribution capacities in the state to meet the increased demand for power and improve operational efficiencies, particularly the reduction of transmission and distribution losses. Therefore, it was relevant at appraisal and completion. The Project will continue to be relevant in the future because of the forecasted increase in demand<sup>18</sup> since room still exists to improve operational efficiencies at the transmission and distribution levels. This will also mean full utilization of the investments made under the loan. In addition, GERC is continuously directing the state power utilities to improve

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<sup>18</sup> As per the 17<sup>th</sup> Electric Power Survey of Central Electricity Authority, peak demand of Gujarat is projected to be 14,374 MW in FY 2012 compared to 9,197 MW in FY2008.

their infrastructure and operational efficiencies to meet growing demand and to enhance the sector's viability. The policy reforms implemented since ADB's intervention and the investments being made have also contributed significantly to improving the financial viability of the sector, which achieved a net profit of Rs2.2 billion in FY 2007.

## **B. Effectiveness in Achieving Outcome**

50. The Program achieved its immediate objectives of:

- (i) establishing an appropriate legal and regulatory framework for the electricity sector, including establishment of an independent state regulatory commission;
- (ii) rationalizing tariffs and improving revenue realization;
- (iii) introducing a commercial and competitive business environment to promote efficiency gains and change management practices;
- (iv) unbundling the GEB into companies with adequate functional autonomy that are capable of providing better sector governance and carrying out fiscal reforms;
- (v) improving the availability and quality of supply through augmentation and modernization of transmission and distribution system; and
- (vi) pursuing a 100% metering program.

51. GERC is fully functional with adequate staff. It has already issued a large number of regulations, which are aimed at facilitating, strengthening, and improving the sector's management and governance; and safeguarding consumer interests. Among the spectrum of responsibilities being discharged by GERC, it is determining tariffs in a manner that not only helps utilities in recovering the cost of service, but also provides clear signals to the consumers on the economic and efficient use of electricity. As a result of sustained efforts in the rationalization of retail tariffs, the revenue contribution from agriculture consumers has increased from only 4.00% in FY2001 to 10.86% in FY2008, while the share of sales to agriculture consumers has dropped from 49% in FY2001 to 31.6% in FY2008. The progressive rationalization of tariffs over the years has helped to reduce the state government's subsidy primarily on account of a reduction in concessional tariffs to agriculture consumers from Rs18.05 billion in FY2003 to Rs11.00 billion in FY2007.

52. With the implementation of various reform measures, including operational efficiency improvement measures and investments made in the state power sector, there have been noticeable improvements in the sector's financial health and internal efficiencies. As a result, the state power sector has been able to book a profit after tax of Rs2.2 billion in FY2007 compared to a net deficit of Rs6.22 billion in FY2002. The distribution companies have taken a number of measures to reduce the transmission and distribution losses. Important steps in this effort include (i) increased vigilance for the prevention of theft; (ii) improved metering, billing, and collection systems; and (iii) strengthened and modernized transmission and distribution networks. As a result, transmission and distribution losses have been reduced from 34.02% in FY2002 to 22.23% in FY2008.

53. The physical completion of project components also helped the state government to (i) transmit and distribute 54,083 million kWh of energy during FY2007 compared to 30,232 million kWh of energy during FY2002, and meet peak demand of about 9,197 MW in FY2008 compared to peak demand of 6,700 MW in FY2002; and (ii) improve operational efficiencies. The project components are being operated and maintained at high levels of efficiency. Also, due to ADB's support through the SDP and other measures taken by GEB in improving operations, the revenue deficit between the average cost of power supply and the average rate

of realization has been decreasing since FY2002. The average gap of Rs0.74 between cost and realization per unit in FY2002 became a surplus of Rs0.06 per unit in FY2007. As a result, the SDP was rated as effective.

### **C. Efficiency in Achieving Outcome and Outputs**

54. The program objectives were achieved satisfactorily. However, there were delays in fully complying with the target dates originally envisaged due to various unforeseen socio-political developments that took place during the implementation period. These included dissolution of the state assembly (after the bill was formally introduced in the assembly) followed by general elections and the formation of a new government, which lead to delays in the enactment of new reform legislation. Notwithstanding the delay in enacting the new legislation, GERC (established under the 2003 Electricity Act) had taken a number of steps towards rationalizing the tariff, improving revenue realization, and creating an enabling environment to attract the private sector investment in the state. Therefore, the SDP is rated as efficient.

55. The financial internal rate of return (FIRR) of components A, B, and C together is 9.90%, which is well above GEB's weighted average cost of capital of 7.43%. The economic internal rate of return (EIRR) of the Project has been reevaluated at more than 12%. Major assumptions used in the financial evaluation, economic evaluation, and detailed calculations of FIRR and EIRR are in Appendix 12.

### **D. Preliminary Assessment of Sustainability**

56. Preliminary assessment of the program shows many positive indications towards its long-term sustainability. These include the commitment shown by the state government in implementing the Program with respect to the continued (i) financial support it is providing to the sector through timely payments of subsidies and subventions, (ii) support to the power utilities as per the financial restructuring plan, (iii) functioning of the utilities with improved efficiency in a corporate environment, and (iv) effective functioning of GERC.

57. The design of all components and the technologies adopted are robust and appropriate given the technical parameters, requirements of the Indian power sector, and the Project's long-term sustainability. It is expected that the regulatory regime and constant pressure from consumers will ensure the timely provision of funds in the future for the required operation and maintenance. Transmission tariffs are determined based on cost plus methodology, which ensures the recovery of costs incurred at normative availability of the transmission system at 97% and a return on equity of 14% per annum. The distribution retail tariffs are determined primarily based on the cost-plus methodology. With the progressive increase in retail tariffs, the gap between the cost to serve and generated revenues produced a surplus in FY2007. This would help in ensuring a sustained cash flow to the distribution companies. In addition, bifurcation of agricultural feeders has led to (i) more efficient usage of power, (ii) improved reliability, and (iii) higher consumer satisfaction. There has also been a reduction in the use of captive power capacity.

58. As per the 17<sup>th</sup> Electric Power Survey of the Central Electricity Authority, the power demand in Gujarat is projected to grow at the rate of 10-11% per annum, which will ensure the full utilization of project investments in the transmission and distribution systems. As the FIRR of all the components exceed the weighted average cost of capital, the Project is financially

viable (para. 55), and project returns will contribute to the state power sector's overall financial health. The technical standards and quality systems adopted, and the material and equipment procured and installed, are considered superior and are unlikely to become obsolete. The state power utilities also have in-house capacity to operate and maintain the Project effectively and efficiently. Hence, all the components of the Project are expected to be optimally used throughout the life of the Project. The PCR Mission did not foresee any problems with the long-term sustainability of the Project. The reforms and restructuring undertaken, and investments made under the SDP, are sustainable in both the short- and long-term.

## **E. Impact**

### **1. Environmental Impacts**

59. Most of the Project's potential impacts are considered beneficial from an environmental point of view. Transmission line projects are exempted from environmental examination by the Government of India and require only a No Objection Certificate from the Department of Forests (DOF), which GEB obtained for all subprojects. The Project was classified as environmental category B since it had a limited environmental impact during the construction and operational stages. None of the subprojects posed any threat to endangered species. GEB has also taken adequate safety measures to minimize the project impacts, if any, on the environment. These measures included (i) taking special care in route selection of the transmission lines, and (ii) avoiding damage to mangrove swamps and forests. As per the Summary Initial Environmental Examination (SIEE), GEB has prepared initial environmental examination reports for the subprojects and submitted them for ADB's approval (para. 1 of SIEE).

60. As per the Forest (Conservation) Act<sup>19</sup>, any power lines infringing upon ecologically-sensitive areas require approval from the Ministry of Environment and Forest (MOEF). Since project components were expected to pass through desert and semiarid areas in the north and northwest sections of Gujarat, and not through ecologically-sensitive areas, approval from MOEF was not needed. The EA informed the PCR Mission that the line routes avoided wetlands and unstable areas. The routing of the transmission lines was selected to avoid the relocation of people and threats to common property resources. The Project also did not affect the aesthetics of any important landmarks.

61. The Project's impact on agricultural lands along the routes of the power lines was restricted to the construction phase, and adequate compensation was paid to the affected persons as determined by the district authorities. In total, compensation amounting to Rs17,931,252 was paid to affected persons during construction for loss of crops and losses due to damaged trees. In addition, the Project did not dislocate any agricultural activities. The land acquired for the new substations were mostly wasteland. All waste, excess construction material, and debris were removed from the construction site.

62. The transformers and other equipment used in the Project were free from polychlorinated biphenyl. Used transformer oil and scrap were collected and disposed of in compliance with the Environment (Protection) Act<sup>20</sup> and the applicable regulations and rules of MOEF. Batteries and transformer oil were disposed of in accordance with the provisions of MOEF.

<sup>19</sup> The Forest (Conservation) Act, 1980 came into force on 25 October 1980.

<sup>20</sup> The Environment (Protection) Act, 1986 came into force on 19 November 1986.

63. During appraisal, it was agreed that GEB would submit to ADB an annual report consisting of (i) monitoring results; and (ii) copies of permits, licenses, and clearances that may be issued by the Gujarat State Pollution Control Board and other state and national agencies responsible for enforcing environmental safety regulation and standards. In compliance with this agreement, GEB submitted the status of relevant approvals as a part of its quarterly progress reports. The chief engineer, who was heading the PMU, oversaw the environmental and safety issues since GEB did not appoint a senior official specifically to oversee environmental issues. As decided, GEB informed ADB that it had not recruited a consultant to determine the extent of use of poly-chlorinated biphenyl in the old transformers and other equipment.

## **2. Social Impacts**

64. The Project is gender-neutral with regard to beneficiaries as all categories of electricity consumers—domestic, agricultural, industrial, and commercial—derived benefits from the Project. These benefits included increased power availability and reliability of the power supply in Gujarat. For example, per capita consumption increased from 817 kilo watt-hours (kWh) per annum in FY2002 to 1,313 kWh per annum in FY2006. Other benefits included (i) increased industrial productivity; (ii) job creation in both rural and urban areas due to the additional power supply; (iii) reduction in the failure of farmers' motor sets due to the improved quality of power supply to agriculture sector, thereby generating savings on recurring maintenance costs; (iv) enhanced exposure of the rural population to different parts of the world through electronic media, and (v) improved standards of living in rural areas on account of increased access to a wide variety of goods and appliances.

65. State government officials informed the PCR Mission that the enhanced power supply in rural areas had not only improved socio-economic conditions in the state's rural communities, but also reduced migration from rural to urban areas.

66. GEB has (i) taken special care in the route selection of power lines to avoid human relocation, and threats to the survival of vulnerable communities and common property resources; and (ii) provided adequate compensation for damages, if any, to crops, trees, buildings, and other structures during construction (not a single building and/or structure was damaged during the execution of the Project). During the construction of power lines, a total of Rs17,931,252 was paid as compensation for crop losses and damage to trees.

67. Under Part A of the Project, one new 220 kV substation at Chitrod and 50 new 66 kV substations were constructed, all of which required land acquisition. Out of these 51 sites, 47 sites were state government-owned and transferred to GEB following payments made to the respective state authorities, 2 sites were partially privately owned (220 kV Chitrod substation and 66 kV Bhesali substation), and 2 sites were privately owned (66 kV Muller substation and 66 kV Jakhawada substation). These sites were mostly located in non-fertile wasteland, free from any inhabitants and encroachments.

68. Part of the site (9.82 ha) on which the Chitrod 220 kV substation was established belonged to a wealthy businessman, who donated the land based on the expected benefits that would accrue to the local population in the region due to the Project. The land for the Bhesali 66 kV (0.84 ha), Muller 66 kV (1.18 ha), and Jakhawada 66 kV (1.14 ha) substations was acquired from local landowners after paying compensation in accordance with market rates for comparable land. The EA informed the PCR Mission that (i) the land acquired was primarily non-agricultural land, and (ii) the owners of these sites were willing to sell the land for

construction of substations since it would improve the power supply situation.

69. Under parts B and C of the Project, government land was acquired to build one new 400 kV substation and 15 new 66 kV substations at Rajkot. These sites were also free from encroachments.

70. In 2005, GERC issued standards of performance relating to the quality and quantity of power supply, and for transmission and distribution licensees. These regulations were prepared in consultation with consumer groups, and prescribed penalties for failure to meet service standards with the ultimate aim of improving the efficiency of utilities in providing reliable, uninterrupted, and quality power and services. The regulations were widely publicized across Gujarat and are being closely monitored. Standard of performance reports are being submitted by distribution licensees on a quarterly basis, beginning with the first quarter of FY2008. Periodic reports are placed on the website. Forums to address grievances have been formed in each distribution company to attend to consumer complaints. GERC has also called for the establishment of an ombudsman to address consumer grievances. GERC follows a transparent, consultative, and interactive tariff-determining process with a view to protect consumer interests. In order to represent the consumers at public hearings, GERC has appointed consumer advocates during the determination of tariffs. GERC has also funded a Consumer Education and Research Society to create awareness among consumers. Six State Advisory Committee meetings have been held, at which various stakeholders and groups are given representation. The other consumer welfare measures implemented include establishment of customer care centers at district headquarters and major towns, better facilities for billing, and minimization of fault detection and rectification time. Distribution companies and GERC have also conducted a consumer satisfaction survey through an independent agency.

#### **IV. OVERALL ASSESSMENT AND RECOMMENDATIONS**

##### **A. Overall Assessment**

71. The lending and TA package offered by ADB was considered well prepared and included comprehensive incentives to implement a reform program. It provided state power utilities and the state government with the funding needed to enable reform implementation and the TA needed to ensure that the SDP was well designed. It is encouraging that there are very high levels of ownership of reforms within the state power utilities and acceptance by the consumers. Overall, the outcomes of the program and project loans have been successful. With continued support from the Government of Gujarat, directions from GERC, and actions by the successor entities of GEB, the intended long-term development impacts are likely to be achieved and sustainable. SDP formulation and design were consistent with ADB's country strategy and sector strategy, and with GEB's objectives of developing and modernizing transmission and distribution systems in the state to evacuate the power to consumers efficiently and reliably. Therefore, SDP intervention and design to support the Government of Gujarat with a long-term goal to establish an efficient, self-sustaining, and competitive power sector to provide sufficient quantity and quality of power was highly relevant.

72. The performance of GEB, the state and central governments, and contractors was generally satisfactory, although there were avoidable delays. Implementation of the program component as envisaged in the SDP was achieved with the full involvement and support of the state government and GEB. Implementation of the project components was delayed due to initial delays in preparing bid documents and the award of contracts. All the subprojects

achieved a high level of performance within a few months of being commissioned. GEB and its successor companies have the capabilities to operate and maintain the subprojects to derive maximum benefits from them. Though there were substantial delays in completion of the Project components and in compliance with tranche conditions, the SDP, in general, has met its objectives. The impact of the SDP is evident in the remarkable financial performance of the power sector where comprehensive improvements in operations have resulted in net profits of about Rs2.0 billion and Rs2.2 billion in FY2006 and FY2007, respectively. Overall the SDP is rated as successful.

73. GERC has developed the necessary regulatory framework aimed at facilitating, strengthening, and improving power sector management and governance. GEB and its successor companies have made significant efforts in bringing down transmission and distribution losses; improving revenue collection through better metering, billing and collection systems; and improving the quality and reliability of the power supply. The rationalization of tariffs has helped bridge the gap between the cost-to-serve and realization. As a result, the financial performance of the distribution companies has been very encouraging. All of the distribution companies are pursuing the policy of achieving 100% metering and collection efficiency. In 2007, one of the distributing companies was awarded by the Prime Minister of India for its excellent performance in power distribution. The state government is also making regular payments of a subsidy, as per the assessments of GERC, on a year-to-year basis. The project components have no negative environmental impacts. On the contrary, positive social impacts have been observed.

## **B. Lessons Learned**

74. For successful implementation of reforms in any sector, it is essential to conduct thorough consultations with, and seek and obtain support from, all stakeholders. The PCR Mission determined that the regular consultations on reforms by the state government and GEB management with GEB staff, consumer representatives, and industry chambers have significantly helped in successful implementation of the Program. Unlike other states, where the state governments enacted various legislation to reform the power sector, it was the implementation of the provisions of such legislation with the full support of the political and administrative system of Gujarat that made a difference in the success of the reforms program in that state.

75. Though the Project was very well-conceived, adequate attention was not given to enhance the project preparedness with respect to procurement activities during loan processing. This delayed the implementation of the Project in the initial stages, in spite of obtaining the approval for an advanced procurement action facility. Therefore, the PCR Mission strongly recommends that in the future the project processing teams give adequate attention to enhancing the EA's preparedness in starting the procurement activities to avoid delays in project implementation. Additional recommendations include: (i) carrying out a procurement capacity assessment of the EA before designing major infrastructure projects; (ii) establishing proper implementation arrangements from the very beginning of the project (for example, delegate the Resident Mission to monitor and support the EA); and (iii) planning appropriate measures to support the EA during project implementation, such as providing consultant assistance to fill gaps in capacity and use ADB procurement specialists input, when necessary, through planned missions and customized trainings.

## **C. Recommendations**

### **1. Program Related**

#### **a. Future Monitoring**

76. As various steps taken by the state government, GERC, GEB and its successor companies to implement reforms and restructure the power sector in the state were well-received by all the stakeholders and have contributed to the achievement of a revenue surplus position from revenue deficit situation prior to the SDP, there is no specific monitoring of the program required. There is also general consensus in India about the need for reforms in the sector among the political establishment and consumers. Therefore, the PCR Mission strongly believes that the reform process is irreversible. All project components have been successfully implemented and are operating without any operational problems. As GEB and its successor companies' staff have a long and successful track record of operating and maintaining the system, no future project monitoring by ADB is required. In addition, GERC also closely monitors the physical, technical, and operational performance of the sector entities, and sets various efficiency and operational improvement targets every year.

#### **b. Covenants**

77. All of the covenants were complied with.

#### **c. Further action or Follow-up**

78. As all the components of the Project were successfully implemented and disbursements have been completed, no further follow-up is required.

#### **d. Additional assistance**

79. No new loan has subsequently been provided for power sector development in Gujarat.

#### **e. Timing of Program Performance Evaluation Report**

80. A program performance evaluation report (PPER) mission may be fielded in the second quarter of 2009 to prepare a PPER.

### **2. General**

81. The authorities in Gujarat, in general, are appreciative for the support they received from ADB and they recognize the contributions made to the success of the reform and restructuring program in the state. Gujarat has large sources of unexploited renewable energy, especially wind and solar energy. The state government is keen to harness these sources of energy in view of environmental and climate change considerations. This is also in line with central government policy. The PCR team understands that GERC is also seeking to increase the renewable energy obligation of the distribution licensees in a pragmatic manner from the present level of 2%. It is recommended that ADB support this effort, starting with a TA to identify a realistic road map for renewable energy utilization in Gujarat in the next 10 years, and a possible loan.

## CHRONOLOGY OF MAIN EVENTS IN PROGRAM PROCESSING AND IMPLEMENTATION

Date	Event
<b>1997</b>	
3–25 April	Fact-Finding Mission
18 June	Management Review Meeting
3–24 Sep	Pre-Appraisal Mission
<b>2000</b>	
14–26 July	First appraisal activities carried out
8–28 Aug	Second appraisal activities carried out
4–12 Sep	Third appraisal activities carried out
12–19 Oct	Fourth appraisal activities carried out
3 Nov	Staff review committee meeting
13–14 Nov	Loan negotiations held
13 Dec	Approval of the Sector Development Program by the Asian Development Bank (ADB) Board of Directors comprising a policy loan of \$150 million and an investment loan of \$200 million (\$350 million total)
14 Dec	Loan and Guarantee agreements signed
15 Dec	Loan declared effective
15 Dec	First tranche of \$50.0 million released along with capitalization of front end fee of \$1.5 million
<b>2001</b>	
22–29 Jan	Project Inception Mission activities carried out
<b>2002</b>	
5 Mar	First package under category 01A awarded
10 May	First disbursement under category 01A
29 May	ADB agreed to GEB's request for inclusion of an additional subproject for financing under the project loan, utilizing available savings, amounting to \$32.3 million
26 July	Transformation of the program loans to London Interbank Offered Rate (LIBOR)-based
21 Sep	First package under category 01B awarded
22–25 Oct	First project review mission conducted
23–24 Oct	First program contact mission conducted
17 Dec	First disbursement under category 01B
31 Dec	Original program loan closing date
<b>2003</b>	
8–13 Jan	Second Program Contact Mission conducted.
21 Jan	ADB approved the first extension of the Program loan by six months from 31 December 2002 to 30 June 2003
3 Feb	The loan project transferred to INRM for administration
17 Jun	Second extension of program loan closing date by three months, from 30 June to 30 September 2003

Date	Event
22 Sep	Third and final extension of program loan closing date by two months, from 30 September 2003 to 30 November 2003, resulting in a cumulative extension by eleven months
10 Dec	Combined second and third tranche of \$98.5 million released
10 Dec	Actual program loan closing date; the program loan amount of \$150 million fully disbursed.
<b>2004</b>	
6 July	ADB approved the request of the Gujarat Electricity Board for an extension of loan closing date by two years from 30 June 2005 to 30 June 2007
11 Aug	First partial cancellation of \$77.515 million and reallocation of project loan categories
29 Nov–4 Dec	Second Project Review Mission conducted
<b>2005</b>	
14 Apr	At the request of the Government, a second partial cancellation of \$13.421 million under the category of “interest and commitment charges” was effected. The Government informed ADB that it would make cash payments of interest during construction (IDC) and the allocated IDC amount should not be capitalized.
30 June	Original Project loan closing date.
11 Aug	ADB processed the Borrower’s request to drop the Integrated Drip and Sprinkler Irrigation component of the loan. Accordingly, \$7.8 million was reallocated from category “Equipment—Irrigation System” to the remaining packages, and to meet the expenditure against the price variation provisions of the already awarded contracts.
<b>2007</b>	
20 Mar	Actual project loan closing date. Overall disbursement of \$109.06 million achieved with an overall cancellation of \$90.94 million.
<b>2008</b>	
7-11 July	Project Completion Review Mission. The mission conducted site visits and held discussions with project officials.

ADB = Asian Development Bank, IDC = interest during construction, LIBOR = London Interbank Offered Rate,  
Source: Asian Development Bank records.

## UPDATE OF POLICY MATRIX

Policy Areas/Objectives	Conditions Fulfilled			Current Status and Observations
	First Tranche Release (December 2000)	Second Tranche Release (December 2003)	Third and Final Tranche Release (December 2003)	
1. Legislative Reform Measures	<ul style="list-style-type: none"> <li>An independent Gujarat Electricity Regulatory Commission (GERC) established under the Central Electricity Regulatory Commission (CERC) Act, 1998.</li> <li>The Gujarat Electricity Industry (Reorganization and Regulation) was approved by the state cabinet, and submitted by the state government to the Government of India for its approval.</li> </ul>	<ul style="list-style-type: none"> <li>The Bill was formally introduced in the State Assembly on 23 March 2001, but could not be passed by the Assembly as originally envisaged due to unforeseen socio-political events in the State at that time and subsequent dissolution of the Assembly in July 2002. The Bill was re-introduced in the new Assembly and passed on 26 March 2003. It was signed by the President of India on 3 May 2003</li> </ul>	<ul style="list-style-type: none"> <li>The Gujarat Electricity Industry (Reorganization and Regulation) Act 2001, the "Act", came into force on 16 May 2003.</li> <li>GERC established under the 1998 central Act, is deemed to be the first commission under the May 2003 Act.</li> <li>The rules and regulations drafted under the Act were also notified in the Official Gazette by the State in July 1999.</li> </ul>	<p>An appropriate legal framework has been created in the state, which inter-alia, provides for an independent regulatory body for the power sector, with wide ranging powers, restructuring of the Gujarat Electricity Board (GEB) and development of a competitive business environment.</p> <p>The state level Act of 2003 has been saved in the Electricity Act 2003.</p> <p>Reforms are continuing process and the Government of Gujarat is continuously monitoring the progress.</p>
2. Tariff and revenue realization	<ul style="list-style-type: none"> <li>First tariff order was awarded by GERC on 10 October 2000.</li> <li>Draft action plan for metering all consumers in the state in a phased manner was sent to all consumers in</li> </ul>	<ul style="list-style-type: none"> <li>The Government of Gujarat made payments amounting to Rupees (Rs) 22.09 billion, to GEB, against arrears owing to GEB towards subsidy and subvention till 31 March 2000; and (ii) paid Rs365.4 million</li> </ul>	<ul style="list-style-type: none"> <li>GEB filed the second tariff submission on 26 September 2003.</li> </ul>	<p>GERC has consistently focused on tariff rationalization, which includes aligning the tariffs with cost of supply, reduction of cross-subsidies and improving cost coverage. Already, in the last four years, the cross subsidy to the domestic consumers has been brought down from Rs1.38 per kilowatt-hour (kWh) in fiscal year</p>

Policy Areas/Objectives	Conditions Fulfilled			Current Status and Observations
	First Tranche Release (December 2000)	Second Tranche Release (December 2003)	Third and Final Tranche Release (December 2003)	
	accordance with GERC's Order.	<p>to GEB towards the outstanding dues of municipalities for the period from 1 April 2000 to 31 March 2001.</p> <ul style="list-style-type: none"> <li>Action plan for metering all consumers in the state in a phased manner over a period of three years was filed with GERC on 30 November 2000. This was approved by GERC in its ruling of August 2002.</li> </ul>		<p>(FY) 2003 to Rs0.23 per kWh in FY2007.</p> <p>Since its inception GERC has so far issued four tariff orders. The commission has notified 25 regulations, which include licensing for transmission, distribution and trading, open access, power system management standard, standard of performance of distribution licensee, power purchase of renewable sources of energy and multi-year tariff (MYT) framework. The adoption of MYT framework provides better regulatory certainty and improved investment environment to the utilities. Through its Order of August 2006, GERC has brought all generating stations created in the state excluding the central sector generating stations, distribution licensees and other persons under the purview of Intra-state Availability Based Tariffs. This would help in improving efficiency and grid discipline in the sector.</p> <p>Revenue realization of the utilities has increased over the year. This has been possible through various</p>

Policy Areas/Objectives	Conditions Fulfilled			Current Status and Observations
	First Tranche Release (December 2000)	Second Tranche Release (December 2003)	Third and Final Tranche Release (December 2003)	
				<p>policy and regulatory interventions. The deficit of Rs0.17 paise between the cost of supply and average realization in FY2003 has become a surplus of Rs0.06 paise in FY2007.</p> <p>There has also been improvement in aggregate technical and commercial (AT&amp;C) losses and in collection efficiency over the years. There has also been significant progress in metering. As per the Government of Gujarat records, 100% metering has been completed up to 11 kilovolt (kV) feeders and regular energy audit work has started.</p> <p>Tariff rationalization has also helped in reduction of subsidy from Rs18.0 billion in FY2003 to Rs11.0 billion in FY2007. As against a revenue deficit (gap between cost of supply and realization) of Rs0.74 per unit in FY2002 and Rs0.17 in FY2003, there was a revenue surplus of Rs0.06 per unit in FY2007. The fact that this has been achieved in spite of increase in real terms of the energy consumption in the subsidized</p>

Policy Areas/Objectives	Conditions Fulfilled			Current Status and Observations
	First Tranche Release (December 2000)	Second Tranche Release (December 2003)	Third and Final Tranche Release (December 2003)	
				<p>category of consumers is a reflection of the overall improvement in the performance of the power sector in the state. The SDP has contributed to this significantly.</p> <p>GERC has also progressively brought down transmission charges, wheeling charges and cross subsidy charges for open access customers. This will contribute to competition and increased availability of power.</p> <p>100% metering has been achieved for all category of consumers except the agriculture category. As per the present plans, 100 % metering of distribution transformers supplying power to agriculture consumers is expected to be achieved by December 2010. Progress in metering is also monitored by the GERC.</p>
3. Restructuring and Reorganization of GEB and the State's power sector.	<ul style="list-style-type: none"> <li>Incorporation and establishment of the Gujarat State Electricity Corporation Limited (GSECL) took place in on 12 August 1993 and</li> </ul>	<ul style="list-style-type: none"> <li>Transfer of the assets and management of Utran power station from GEB to GSECL took effect on 1 August 2002, following the</li> </ul>	<ul style="list-style-type: none"> <li>Transfer of the transmission assets from GEB to the Gujarat Energy Transmission Corporation Limited (GETCL) took place on</li> </ul>	The Gujarat Electricity Industry (Re-organization and Regulation) Act, 2003, was passed by the Government of Gujarat in October 2003 to restructure the Electricity Industry with an aim to improve

Policy Areas/Objectives	Conditions Fulfilled			Current Status and Observations
	First Tranche Release (December 2000)	Second Tranche Release (December 2003)	Third and Final Tranche Release (December 2003)	
	<p>of GETCL on 19 May 1999. Constitution of the Board of Directors took place on 21 March 1998 and 25 November 2000 respectively. The Boards have 15 directors of which 3 are from non-governmental sector and who are experts in their fields</p> <ul style="list-style-type: none"> <li>The state government approved the structure, human resources and budget of GERC for the next five years on 1 December 2000.</li> </ul>	<p>Government of Gujarat approval of 19 December 2001 and that of Gandhinagar power station on 1 October 2003, following notification of the Government of Gujarat of 26 September 2003.</p>	<p>1st April 2005, following the Government of Gujarat notification of 26 October 2003.</p> <ul style="list-style-type: none"> <li>The draft final Reorganization Plan for GEB, submitted in July 2002, was approved by the Asian Development Bank (ADB) in October 2002. Solicitation for privatization of at least one identified distribution area of GEB, as originally envisaged, was not part of the recommended Plan.</li> </ul>	<p>efficiency in management and delivery of services to consumers. Accordingly GEB has been reorganized effective from 1 April 2005 in to seven companies with functional responsibilities of trading, generation, transmission and distribution. The companies incorporated are:</p> <ol style="list-style-type: none"> <li>1. GUVNL</li> <li>2. GSECL</li> <li>3. GETCL</li> <li>4. UGVCL</li> <li>5. DGVCL</li> <li>6. MGVCL</li> <li>7. PGVCL</li> </ol> <p>Under the provisions of the said Acts, the state government framed the Gujarat Electricity Industry Re-organization &amp; Comprehensive Transfer Scheme, 2003, (the Transfer Scheme) in October for transfer of assets and liabilities etc. of erstwhile GEB to the successor entities. The provisional opening balance sheet as on 31 March 2004 of the six transferee companies containing the value of assets and liabilities transferred from erstwhile GEB to the transferee companies was notified</p>

Policy Areas/Objectives	Conditions Fulfilled			Current Status and Observations
	First Tranche Release (December 2000)	Second Tranche Release (December 2003)	Third and Final Tranche Release (December 2003)	
				<p>in December 2004.</p> <p>Assets of the Board were disaggregated into six companies – one each in generation and transmission and four in distribution. As a part of the above exercise, all the generation plants of GEB have been transferred to GSECL, which was a company already, in existence since 1993.</p> <p>Final opening balance sheets, as transferred by erstwhile GEB, became effective from 1st April, 2005.</p> <p>GUVNL remained shell company and is responsible for residual functions (other than generation, transmission and distribution) including trading.</p> <p>The Board includes independent directors and has professionals with background of engineering, finance, management, cost accountancy etc.</p>

Policy Areas/Objectives	Conditions Fulfilled			Current Status and Observations
	First Tranche Release (December 2000)	Second Tranche Release (December 2003)	Third and Final Tranche Release (December 2003)	
4. Fiscal Reforms	<ul style="list-style-type: none"> <li>The Government of Gujarat paid Rs967.9 million to GEB towards outstanding dues of electricity bills to municipalities as on 31 March 2000 vide the Government of Gujarat GR dated 6 December 2000.</li> </ul>	<ul style="list-style-type: none"> <li>The Government of Gujarat (i) reduced the electricity duty on the highest slab from 60% to 45% as part of the rationalization process; and (ii) abolished with effect from April 2002 the prevailing levy of 3-4% on the tax on sale of electricity from 1 April 2002. This affected the state exchequer to the extent of Rs3,220 million, which was substantially higher than the second tranche condition of Rs1,500 million.</li> </ul>		<p>2006-07 is the second financial year post operationalization of the companies. The performance of GUVNL and its subsidiary companies (sector) as a whole is encouraging. The state government outlined various measures to improve the financial health as well as the internal efficiencies. As a result, the sector has been able to book a profit after tax of Rs2.2 billion for FY2007 as against loss of Rs6.22 billion in FY2002.</p> <p>The progressive rationalization of tariffs over the years has helped in reducing the government subsidy mainly on account of concessional tariff and free supply from Rs18.05 billion in FY2003 to Rs11.0 billion in FY2007. The Government is also making regular payments of subsidy as per the assessments of GERC on a year to year basis.</p>

ABT = Availability Based Tariffs, AT&C = Aggregate Technical and Commercial, CERC = Central Electricity Regulatory Commission, DGVCL = Dakshin Gujarat Vij Company Limited, GERC = Gujarat Electricity Regulatory Commission, GEB = Gujarat Electricity Board, GSECL = Gujarat State Electricity Corporation Limited, GETCL = Gujarat Energy Transmission Corporation Limited, GUVNL = Gujarat Urja Vikas Nigam Limited, MYT = Multi Year Tariff, MGVCL = Madhya Gujarat Vij Company Limited, PGVCL = Paschim Gujarat Vij Company Limited, UGVCL = Uttar Gujarat Vij Company Limited.

Source: Government of Gujarat and Gujarat Urja Vikas Nigam Limited.

## SECTOR DEVELOPMENT PROGRAM FRAMEWORK

Design Summary	Targets	Achievement	Remarks
<p><b>1. Goal</b></p> <p>1.1 To meet present and future demands for electrical energy in Gujarat</p>	<ul style="list-style-type: none"> <li>• No load shedding by 2005</li> <li>• No applications for electrical connection pending for more than 2 months by 2005</li> </ul>	<ul style="list-style-type: none"> <li>• In the year fiscal year (FY) 2007, there were no scheduled power cuts. However, in FY08, one additional holiday for high tension/low tension (HT/LT) non-continuous process industries has been imposed. Unscheduled power cuts are imposed as and when required, as per the requirements of system conditions.</li> <li>• Total numbers of new applications pending for more than 2 months were approximately 1,200 during FY2008. It has been observed that often delays are in cases where extension of mains, augmentation or installation of transformers and commissioning of new sub-stations is required. GERC has brought out the standards of performance for distribution licensees, and monitors the performance on a regular basis.</li> </ul>	<p>Availability of power has increased as a result of improvement in supply and operational efficiencies. Gujarat has been fortunate enough to be in a reasonably comfortable position as far as availability of power is concerned. Load-shedding or power cuts in the urban areas are almost zero, although due to rise in demand during harvesting season, power supply is sometimes rationed in rural areas.</p> <p>Limited number of pending connection applications reflect the efficiency and the service levels attained by the distribution companies.</p>
<p><b>2.0 Purpose</b></p> <p>2.1 To expand and strengthen network</p>	<ul style="list-style-type: none"> <li>• Network to be able to handle 12,000 megawatts (MW) peak load in 2012</li> </ul>	<ul style="list-style-type: none"> <li>• The actual transmission capacity in the state for the year 2005-06 was 15,686 megavolt amperes (MVA).</li> <li>• The peak demand met was 9,197 MW in December 2007. The network is capable of handling about 12,000 MW of power.</li> </ul>	<p>The expansion of transmission system has been commensurate to the requirements in the state. Further, improvement in sub-station and lines availability has helped in catering to higher system load, which has been made possible through</p>

Design Summary	Targets	Achievement	Remarks
2.2 To collect adequate revenue for O&M and expansion	<ul style="list-style-type: none"> <li>• Return on equity (ROE) to be greater than 15%</li> <li>• Self-financing ratio (SFR) to be greater than 40%</li> </ul>	<ul style="list-style-type: none"> <li>• The regulations provide for 14% return on equity.</li> <li>• SFR is estimated to be in the range of 19-20% as per the balance sheet and audited accounts statement.</li> </ul>	<p>deployment of modern operation &amp; maintenance (O&amp;M) techniques.</p> <p>Improvement in the financial and technical performance of state power sector has been one of the most significant transformations in recent times. The concerted efforts by the Gujarat Electricity Board (GEB) and its successor entities on various fronts such as improvement in collection efficiency, reduction in per unit gap between average cost to serve and realization etc. has enabled it to earn a net profit of Rs2.2 billion in FY2007.</p> <p>Improved SFR as a result of the impact of the on-going initiatives to improve the financial position of the sector, would help attain better ability and autonomy to finance new investments in the sector, in future.</p>
2.3 To establish sustainable and efficient power sector institution(s)	<ul style="list-style-type: none"> <li>• Functional segregation of the GEB and incorporation of successor entities under Companies' Act 1956. Board members to include experts from related fields.</li> </ul>	<ul style="list-style-type: none"> <li>• GEB has been reorganized with effect from 1st April 2005 into six companies i.e. one generation company, one transmission company and four distribution companies.</li> <li>• A new Corporation named GUVNL was incorporated in December 2004 to carry out the residual functions (including power trading) of the erstwhile GEB. GUVNL continues to</li> </ul>	<p>All the corporate entities are functioning independently with separate Board of Directors. The Board includes independent directors and has professionals with background of engineering, finance, management, cost accountancy etc.</p> <p>GERC is issuing separate tariff orders for each company.</p>

Design Summary	Targets	Achievement	Remarks
	<ul style="list-style-type: none"> <li>Establish an independent statutory regulatory authority</li> </ul>	<p>exist as a shell company and holds old liabilities on its books.</p> <ul style="list-style-type: none"> <li>The Government of Gujarat constituted the GERC in November, 1998 under the ERC Act, 1998. The Electricity Regulatory Commission (ERC) Act, 1998 has been repealed after the enactment of the Electricity Act, 2003. The Gujarat Electricity Regulatory Commission (GERC) created under the provisions of the ERC Act, 1998 is now deemed to be established under sub-section (i) section 3 of the Gujarat Electricity Industry (Reorganization and Regulation) Act, 2003 and in terms of Section 82 of the Electricity Act, 2003.</li> </ul>	
<p>2.4 To reduce the sector's fiscal deficits and make the sector contribute to the fiscal consolidation of Gujarat state's finances.</p>	<ul style="list-style-type: none"> <li>Limit subsidization and increase cost recovery.</li> <li>Improve sector efficiencies.</li> </ul>	<ul style="list-style-type: none"> <li>GEB was in financial crisis prior to initiation of reforms. The main reason of this loss being un-metered power supply to agricultural sector, high transmission and distribution losses and high cost of power purchased from independent power producers. During the reform period financial health of GEB and its successor companies have shown noticeable improvement. In FY2007 they recorded a net profit of Rs2.2 billion.</li> <li>The improvement in performance of the sector has also brought down financial burden on the state</li> </ul>	<p>Gujarat is the second state after Andhra Pradesh, where state owned companies in the power sector have turned around in their second financial year after operationalization as companies.</p> <p>This has been made possible due to revision of retail tariffs and increase in internal efficiencies. The actual achievement of reduction in transmission and distribution (T&amp;D) losses has been more than the target as per the financial restructuring plan (FRP), which is a</p>

Design Summary	Targets	Achievement	Remarks
		<p>government. The subsidy support provided by the state government declined from Rs18.0 billion in FY 2003 to Rs11.0 billion in FY2007. As a proportion of state fiscal deficit, the subsidy provision has declined from 29.9% in FY2003 to 18.4% in FY2007. This improvement in the financial health of the sector was made possible by increase in per unit revenue realization and reduction in cost per unit. Revenue realization increased from Rs2.41 per unit in FY2000 to Rs3.79 per unit in FY2007.</p> <ul style="list-style-type: none"> <li>• Cost reduction has been driven by (i) reduction in T&amp;D losses (losses declined from 34.02% in FY2002 to 22.23% in FY2008, which is less than the target of 25.83% as per the FRP); (ii) improvement in PLF of generating stations; and (iii) renegotiation of the power purchase agreements (PPAs).</li> </ul>	<p>crucial factor in turning around the distribution companies in two years after their creation.</p>
<p>3.0 Components/Outputs 3.1 New institutions established</p>	<ul style="list-style-type: none"> <li>• Regulatory authority, generation company, transmission company, independent profit centers</li> </ul>	<ul style="list-style-type: none"> <li>• GERC established in November 1998.</li> <li>• GSECL was incorporated in August 1993 as a wholly owned subsidiary of GEB with the objectives to initiate a process of restructuring of power sector in the state.</li> <li>• GETCL was set up in May 1999 as a wholly owned subsidiary of GEB to undertake planning and co-ordination of activities of transmission, Load Dispatch functions in the state.</li> <li>• GUVNL was incorporated as a</li> </ul>	<p>Preparation of FRP by the Government of Gujarat on its own was a good step. It helped in ensuring the optimum functioning of the independent entities, and also contributed to achieving the objectives of SDP.</p>

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		<p>Government of Gujarat Company. GUVNL was established as a Holding Company and became operational effective 1 April 2005. GUVNL holds 100% shares in the other six companies.</p> <ul style="list-style-type: none"> <li>• Four distribution companies established to undertake the electricity sub-transmission distribution and retail supply.</li> <li>• The Boards of the new sector entities have been constituted. The organizational structure of the successor companies has also been finalized.</li> <li>• Final balance sheets have been prepared.</li> <li>• GEB has created three independent distribution circles at Kheda, Mehesana, and Rajkot as Profit Centers with accountability.</li> </ul>																			
3.2 New plant installed	<ul style="list-style-type: none"> <li>• Establishment of transmission lines: <ul style="list-style-type: none"> <li>- 1,293 ckt-km 400/220 kV</li> <li>- 783 ckt-km 132/66 kV</li> <li>- 278 ckt-km 11/0.415 kV</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• The existing transmission capacity as of March 2007 is given below:</li> </ul> <table border="1" data-bbox="934 1079 1438 1299"> <thead> <tr> <th>System Voltage</th> <th>No. of Substation</th> <th>Transmission lines in kms.</th> </tr> </thead> <tbody> <tr> <td>400 kV</td> <td>9</td> <td>1,846.7</td> </tr> <tr> <td>220 kV</td> <td>65</td> <td>11,895.1</td> </tr> <tr> <td>132 kV</td> <td>48</td> <td>45,51.5</td> </tr> <tr> <td>66 kV</td> <td>756</td> <td>16,807.1</td> </tr> <tr> <td><b>Total</b></td> <td><b>878</b></td> <td><b>35,104.4</b></td> </tr> </tbody> </table>	System Voltage	No. of Substation	Transmission lines in kms.	400 kV	9	1,846.7	220 kV	65	11,895.1	132 kV	48	45,51.5	66 kV	756	16,807.1	<b>Total</b>	<b>878</b>	<b>35,104.4</b>	<p>The augmentation and improvements in transmission and distribution network has helped the state in meeting higher peak demand, achieving higher system availability for lines, and substantial improvement in voltage profile in distribution system.</p>
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	<ul style="list-style-type: none"> <li>• Substation capacity augmented by 950 MVA</li>   <li>• New generating capacity installed               <ul style="list-style-type: none"> <li>- 500 MW by GEB/GSECL</li> <li>- 4,000 MW by independent power producers</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• New generation capacity installed during 2002-03 to 2007-08 is given below:               <ul style="list-style-type: none"> <li>- GEB - 219 MW</li> <li>- IPPs - 250 MW</li> </ul> </li>   <li>• The following transmission and distribution works were completed under the project scope:               <ul style="list-style-type: none"> <li>- 512.5 kms of 220 kV transmission lines</li> <li>- 1 220 kV Chitrod substation,</li> <li>- 17 100 MVA, 220/66 kV transformers</li> <li>- 3 100 MVA, 220/132 kV transformers</li> <li>- 65 66 kV substations</li> <li>- 748 kms of 66 kV lines</li> <li>- 1 400 kV substation at Rajkot</li> <li>- 2 315 MVA, 400/220 kV transformers</li> <li>- 60 kms of 400 kV transmission line</li> <li>- 4,476 kms of 11 kV lines and 3,402 kms of 0.4 kV distribution lines</li> <li>- 23,857 CRGO distribution transformers replacement by Amorphous Transformers</li> <li>- 3,206 single and three phase meters</li> </ul> </li> </ul>	

Design Summary	Targets	Achievement	Remarks
3.3 New consumers connected	<ul style="list-style-type: none"> <li>• Consumers connected <ul style="list-style-type: none"> <li>- Residential – 223,000</li> <li>- Commercial – 72,000</li> <li>- Industrial – 13,000</li> <li>- Others – 23,000</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Total number of consumers added during FY2001 and FY2007 are: <ul style="list-style-type: none"> <li>- Residential – 1,379,009</li> <li>- Commercial – 239,549</li> <li>- Industrial – 14,070</li> <li>- Others – 127,788</li> </ul> </li> </ul>	<p>The sector has seen sizeable increase in number of new customers during FY2001 and FY2007. During this period, the increase has been over 25% for domestic, commercial, and industrial HT consumers resulting in significant growth in demand for more power.</p>
3.4 System loss reduced	<ul style="list-style-type: none"> <li>• Less than 18 percent of dispatch by 2005.</li> <li>• 490 MVAR of capacitors installed</li> </ul>	<ul style="list-style-type: none"> <li>• As against the target of achieving 18% of losses by 2005 at the time of appraisal, except for one distribution company (PGVCL), other distribution companies (GDVCL, MGVCL and UGVCL) have already able to limit their losses in the range of 16.5-19.5% in FY2007. The transmission losses have declined from 4.41% in FY2004 to 3.84% in FY2008.</li> <li>• 710 MVAR capacity of capacitors have been added during 2002-03 to 2007-08.</li> </ul>	<p>Since the commencement of SDP, significant and remarkable reductions in distribution losses have been achieved through sustained and concerted efforts by distribution companies. This was possible on account of feeder wise monitoring of each activity relating to loss reduction, in-depth analysis at each stage, use of efficient DTs etc. Meters are also provided on transformers centre for better control on system and to identify weak pockets with high distribution losses. Continuous efforts are being made for the prevention of theft of energy by the vigilance team of distribution companies.</p> <p>The reduction in loss level over the years has helped in reducing the power purchase requirements. The GERC is regularly monitoring the loss level and has set the target of 16.74%, 15.59%, 16.95% and 30.22% of distribution losses for</p>

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			<p>MGVCL, DGVCL, UGVCL and PGVCL respectively for the year FY2008. A target of 4.35% of transmission loss has been set for the year FY2008. As against 4.35%, the state has already achieved the 3.84% of transmission loss for the year FY2008.</p>
<p>3.5 Use of electricity for irrigation reduced</p>	<ul style="list-style-type: none"> <li>Percentage of electricity use reduced to 25% of all energy sold, through conversion of irrigation systems</li> </ul>	<ul style="list-style-type: none"> <li>Drip irrigation component has been shifted from GEB to GGRCL which started functioning in September 2005.</li> </ul>	<p>Implementation of drip irrigation systems in the state by GGRCL has been remarkable.</p> <p>As against the initial target of 4,000 ha under the loan, GGRCL has already implemented drip irrigation systems in nearly 100,000 ha of agriculture land in the state by FY2008. The company is targeting to add additional 100,000 ha of drip irrigation systems during 2008-09. As per the initial findings of the study conducted for GGRCL, the benefits of drip irrigation systems in the state include - better crop survival, greater yields, efficient nutrient distribution, improved crop quality, less electricity and water consumption, less labor requirements etc.</p>

Design Summary	Targets	Achievement	Remarks
3.6 Power system properly maintained	<ul style="list-style-type: none"> <li>Maximum loss of 72 hours per year for any consumer</li> </ul>	Reduction in the system average interruption duration index (SAIDI) reflects the improvements in supply. The distribution companies have reported SAIDI in the range of 4-30 for April-June quarter of 2008.	<p>There has been significant improvement in the quality and quantity of supply through augmentation and modernization of the transmission and distribution system.</p> <p>Scheduled and unscheduled power cuts have declined due to reduction in distribution transformer failure rate.</p> <p>The system operating performances are being monitored by the GERC and western regional power committee on regular basis. Also due to implementation of availability based tariff regime and grid code in the country, it is expected that the system improvement schemes are regularly implemented enabling the system operated within optimum frequency and voltages.</p>
3.7 Tariffs restructured and raised	<ul style="list-style-type: none"> <li>Average tariff (excluding duties and taxes) increased from the present Rs2.20/kWh to Rs3.56/ kWh by FY2006</li> </ul>	<ul style="list-style-type: none"> <li>The average tariff has increased from Rs2.20 per unit to Rs3.26 per unit for FY2008 as approved by the GERC.</li> </ul>	The retail tariffs have progressively been rationalized by the GERC to reflect cost of supply of electricity. The GERC has also introduced the Intra-State availability-based tariffs (ABT) in 2006 bringing generating stations of state, distribution licensees and other persons under its purview. This would improve the efficiency in the State sector

Design Summary	Targets	Achievement	Remarks
			<p>generators and overall grid discipline.</p> <p>Overall improvement in the financial health of the sector has been possible due to (i) reduction in T&amp;D losses; (ii) improvement in the system efficiency; and (iii) renegotiation of the PPAs.</p>
<p>3.8 System established for regular tariff adjustments</p>	<ul style="list-style-type: none"> <li>Automatic tariff adjustment linked to fuel costs/power purchase costs</li> </ul>	<ul style="list-style-type: none"> <li>GERC has approved a new formula, which allows recovery of fuel price fluctuations and variations in the cost of power purchase from other utilities. This new formula is applicable on quarterly basis starting from July 2004.</li> </ul>	<p>This regulatory provision has allowed automatic pass through of incremental cost on account of increase in price of fuel and price of power purchase, thereby, reduced the risks associated with increase in fuel and power purchase cost. The automatic pass-through provides several important benefits to utilities and customers. It would reduce the volatility of GEB's operating margins by shortening the lag between costs incurred and receipts earned to pay such costs. It would also reduce the perceived risk of having inadequate cash flow with the GEB. Moreover, it would avoid exposure to occasional large rate shocks that can occur if rising fuel and power purchase costs are deferred and accumulated over long periods of time.</p>
<p>3.9 Effective billing and collection</p>	<ul style="list-style-type: none"> <li>Collection/Billing ratio &gt; 99 percent</li> </ul>	<ul style="list-style-type: none"> <li>Collection efficiency has improved from less than 80% in FY2002 to 100% in three (UGVCL, PGVCL, DGVCL) of</li> </ul>	<p>All the distribution companies are pursuing the policy of achieving the 100% metering and collection</p>

Design Summary	Targets	Achievement	Remarks
		<p>its four distribution companies in FY2008 due to improved metering, computerized billing and collection system in the state. Collection efficiency of MGVCL is 95% for the year FY2008.</p>	<p>efficiency. The improvements in the collection efficiency have been remarkable.</p>
<p>3.10 Metering of all consumers</p>	<ul style="list-style-type: none"> <li>All consumers to be metered by 2003</li> </ul>	<ul style="list-style-type: none"> <li>All domestic, commercial and industrial (HT &amp; LT) are metered.</li> </ul>	<p>The progress made in providing the metered supply to various consumers is remarkable. 100% metering of feeders and consumers is also in line with the objectives of distribution reforms.</p> <p>The metering of the largest segment, unmetered agriculture consumers, needs to be taken up on a priority basis. As a first step to monitor the energy flows, the distribution companies have started providing meters on distribution transformers supplying power exclusively to agriculture category. Distribution companies are planning to complete the transformer centre metering by December 2010. Further, since 2000, all new agriculture connections are released with energy meters only.</p>
<p>4.0 Activities 4.1 Final Project Report drafted by GEB on 1 October 2000 4.2 State Government of</p>	<p>5.0 Inputs 5.1 Finance: - Foreign exchange \$200.0 million</p>	<ul style="list-style-type: none"> <li>Finance : <ul style="list-style-type: none"> <li>- Foreign exchange \$109.06 million with cancellations of \$90.94 million</li> <li>- Local currency \$41.18 million</li> </ul> </li> </ul>	

Design Summary	Targets	Achievement	Remarks
Policy Matrix approval by 1 December 2000 4.3 Announcement of GERC's first tariff award on 10 October 2000 4.4 Preparation of corporatization plan and revised delegation of powers/incentives by GEB by 31 December 2001 4.5 State Government's approval of reorganization plan by 30 June 2001 4.6 Implementation of pilot project for conversion of irrigation systems	- Local currency of \$110.2 million 5.2 Consulting Services—50 person-months	<ul style="list-style-type: none"> <li>Consulting Services—41.7 person-months</li> </ul>	

ABT = availability-based tariffs, ckt-km = Circuit Kilometers, DGVCL = Dakshin Gujarat Vij Company Limited, FRP = Financial Restructuring Plan, GSECL = Gujarat State Electricity Corporation Limited, GUVNL = Gujarat Urja Vikas Nigam Limited, GEB = Gujarat Electricity Board, GGRCL = Gujarat Green Revolution Company Limited, GERC = Gujarat Electricity Regulatory Commission, GETCL = Gujarat Energy Transmission Corporation Limited, GETCO = Gujarat Energy Transmission Corporation Limited, HT = High Tension, kV = Kilovolt, LT = Low Tension, MGVCL = Madhya Gujarat Vij Company Limited, MWs = megawatts, MVA = megavolt amperes, MVA<sub>r</sub> = megavolt amperes (reactive), O&M = operation and maintenance, PPAs = Power Purchase Agreements, PGVCL = Paschim Gujarat Vij Company Limited, PLF = Plant Load Factor, ROE = Return on Equity, SAIDI = System Average Interruption Duration Index, SFR = Self Financing Ratio, T&D = Transmission and Distribution, UGVCL = Uttar Gujarat Vij Company Limited.

Source: Government of Gujarat and Gujarat Urja Vikas Nigam Limited.

**COST BREAKDOWN BY PROJECT COMPONENTS**  
(\$ million)

Item	Appraisal Estimate			Actual		
	Foreign	Local	Total	Foreign	Local	Total
<b>A. Project Component</b>						
1. Transmission Systems Linked with the Private Sector Power Projects and for Systems Improvement	72.90	37.80	110.70	41.76	9.38	51.14
2. Transmission and Distribution Works Associated with Kheda (Anand), Rajkot, and Mehesana Distribution Circles	76.90	38.60	115.50	61.22	17.69	78.91
3. Drip Irrigation System	7.80	2.60	10.40	0.00	0.00	0.00
<b>Subtotal (A)</b>	<b>157.60</b>	<b>79.00</b>	<b>236.60</b>	<b>102.98</b>	<b>27.07</b>	<b>130.06</b>
<b>B. Contingencies</b>						
1. Physical and Price	24.90	15.90	40.80	0.00	0.00	0.00
<b>C. Interest During Construction, Commitment Charges and Front End Fees</b>						
	17.50	15.30	32.80	6.07	14.11	20.18
<b>Total</b>	<b>200.00</b>	<b>110.20</b>	<b>310.20</b>	<b>109.06</b>	<b>41.18</b>	<b>150.24</b>

Source: Gujarat Urja Vikas Nigam Limited.

## SUMMARY OF CONTRACTS

PCSS No.	Category No.	Item Description	Contract Amount (\$)	Contract Disbursed (\$)
0001	01A	Supply of 400 (kilovolt) kV tower materials (lot I)	1,112,878	1,112,878
0002	01A	Supply of tower materials (lot II)	3,118,555	3,118,555
0003	01A	Supply of GSS earthwire (lot IV)	158,289	158,289
0004	01A	Supply of ACSR conductors (lot III)	1,682,082	1,682,082
0005	01A	Supply of ACSR moose conductors (lot I)	2,701,398	2,701,398
0006	01A	Supply of ACSR ZEBRA conductor (lot II)	7,474,654	7,474,654
0007	01A	Supply of 160 KN antifog disc insulators (lot I)	539,459	539,459
0008	01A	Supply of 120 KN antifog insulators (lot II)	833,519	833,519
0009	01A	Supply of 90 KN antifog insulators (lot III)	1,374,199	1,374,199
0011	01A	Supply of 7 sets of 400 kV SF6 breakers (lot I)	372,583	372,583
0012	01A	Supply of 220 kV and 132 kV SF6 gas circuit breakers	924,131	924,131
0014	01A	Supply and erection of 400 kV power transformers	1,666,634	1,666,634
0015	01A	Supply of 382 Sets of 66 kV SF6 circuit breakers (lot III)	4,399,970	4,399,970
0017	01A	Supply of 220 kV lightning arrestors (lot II) 102 Nos.	96,352	96,352
0018	01A	Supply of 66 kV lightning arrestors (lot III)	99,109	99,109
0019	01A	400 kV current transformers (24); 220kV current transformers (108) with structures, clamps	867,376	867,376
0020	01A	Supply of 3 Nos. 220/132kV, 100 MVA power transformers 20 Nos. 220/66kV, 100 MVA power transformers	11,213,634	11,213,634
0022	01A	Supply of 66 kV current transformers (1,152 Nos.) and 66 kV potential transformers	1,047,595	1,047,595
0023	01A	Supply of 220 kV isolators (lot II)	590,757	590,757
0024	01A	Supply of 400 kV isolators (lot I)	381,272	381,272
0026	01A	Supply of 66 kV isolators (lot III)	788,401	788,401
0035	01A	Supply of 12 sets of 400 kV capacitor voltage transformers - 42 sets of 220 kV CVT with structures, clamps	317,904	317,904
0010	01B	Supply of all aluminium alloy (AAA) conductors	6,337,468	6,337,468
0013	01B	Supply of 3 CORE XLPE cables	2,212,036	2,212,036
0016	01B	Supply of 400kV lightning arrestors (lot-I)	36,513	36,513
0021	01B	11/0.433 kV, 500 kVA distribution transformers (8 Nos.); 200 kVA distribution transformers (577 Nos.)	973,068	973,068
0025	01B	Supply of 11 kV VCB	2,633,587	2,633,587
0028	01B	Supply of 11kV, 3 CORE, 185 MM2 XLPE cables (dry gas cured) - Repeat order to PCSS 0013	136,619	136,619
0029	01B	Supply of 11,690 Nos. 11kV/0.433kV, 100 kVA copper for HV/LV wind, amor distribution transformers	24,455,219	24,455,219
0030	01B	Supply of 11,690 NOS. 11kV/0.433kV, 63kVA copper for HV/LV, amor distribution transformers	16,461,997	16,461,997
0034	01B	Supply of three phase LT static meters, HT static meters, MRI for both LT and HT static meters	378,506	378,506
0036	01B	Supply of 5,865 kilometers (KMs) of 55 SQ MM all aluminium alloy conductor (rabbit) and related services (lot I)	1,601,110	1,601,110
0037	01B	Supply of 1,483 KMs of 100 SQMM all aluminium alloy conductor (dog) and related services (lot II)	735,270	735,270
0039	01B	Supply of GI pin for 11 kV disc insulators hardware and 11 kV pin insulator hardwares	165,696	165,696
0040	01B	Supply of MS angle, MS Flat, MS Round bar, MS Channel for additional project I and II	514,648	514,648
0041	01B	Supply of 253 MT of 100 MM x 116 MM, 11 meters long M.S. Beam for additional projects I and II	105,502	105,502
0042	01B	Supply of 112 Nos. 11 kV indorr 500 MVA single feeder panesl with 1,250 amps VCB	448,886	448,886
0043	01B	Supply of 11kV PIN insulators; 11kV disc insulator Guy insulators	268,702	268,702
0044	01B	Supply of 3.5 core 25 sqmm 50 sqmm, 70 sqmm and 150 sqmm LT PVC cables	105,383	105,383
0045	01B	Supply of 35,000 nos. of PSC Poles (8 metres x 200 kgs)	766,614	766,614
0046	01B	Supply of 25,63,100 kVA L.T. distribution boxes	516,284	516,284
0047	01B	Supply of wide area network for data communication	865,418	865,418
0048	01B	Supply of metal meter boxes for single phase meters for Rajkot district (lot I)	336,969	336,969
0049	01B	Supply of 125,000 Nos. metal meter boxes for single phase meters (lot II)	190,387	190,387
0050	01B	Supply of metal meter boxes for single phase meter	200,111	200,111
0051	01B	Supply of universal accu check metere (lot I)	580,119	580,119
0052	01B	Supply of H.T. static meters with remote metering system (lot III)	198,140	198,140
0000	02	Front end fees	2,000,000	2,000,000
0000	03	Interest during construction	4,078,404	4,078,404

No.= number, PCSS = procurement contrat summary sheet.

Source: loan financial information system of Asian Development Bank.

**ANNUAL AVERAGE EXCHANGE RATE**

<b>Year</b>	<b>Indian Rupee for every United States Dollar</b>
2000	43.33
2001	45.61
2002	47.53
2003	48.27
2004	45.33
2005	44.11
2006	45.33
2007	39.54

Source: Reserve Bank of India.

**PROJECT FINANCING PLAN**  
(\$ million)

Source	Appraisal Estimate			Actual		
	Foreign	Local	Total	Foreign	Local	Total
ADB	200.00	0.00	200.00	109.06	0.00	109.06
GEB	0.00	110.20	110.20	0.00	41.18	41.18
<b>Total</b>	<b>200.00</b>	<b>110.20</b>	<b>310.20</b>	<b>109.06</b>	<b>41.18</b>	<b>150.24</b>

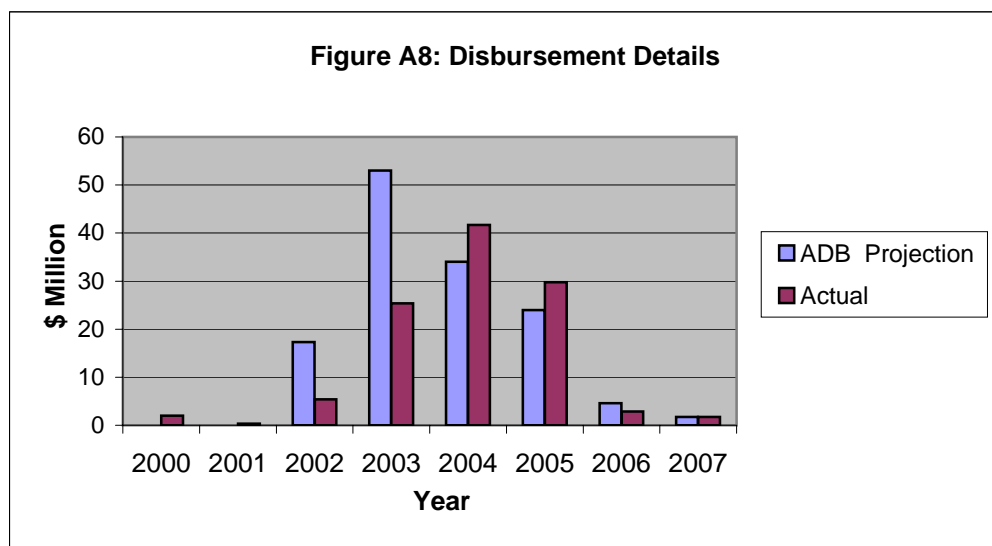
ADB = Asian Development Bank, GEB = Gujarat Electricity Board.  
Source: Gujarat Urja Vikas Nigam Limited.

**PROJECTED AND ACTUAL DISBURSEMENTS OF LOAN PROCEEDS**  
(\$ million)

Calendar Year	Projected <sup>a</sup>		Actual	
	For the Year	Cumulative	For the Year	Cumulative
2000	0.00	0.00	2.00	2.00
2001	0.00	0.00	0.31	2.31
2002	17.30	17.30	5.36	7.68
2003	53.00	70.30	25.36	33.04
2004	34.00	104.30	41.66	74.69
2005	24.00	128.30	29.74	104.44
2006	4.60	132.90	2.89	107.33
2007	1.70	134.60	1.73	109.06

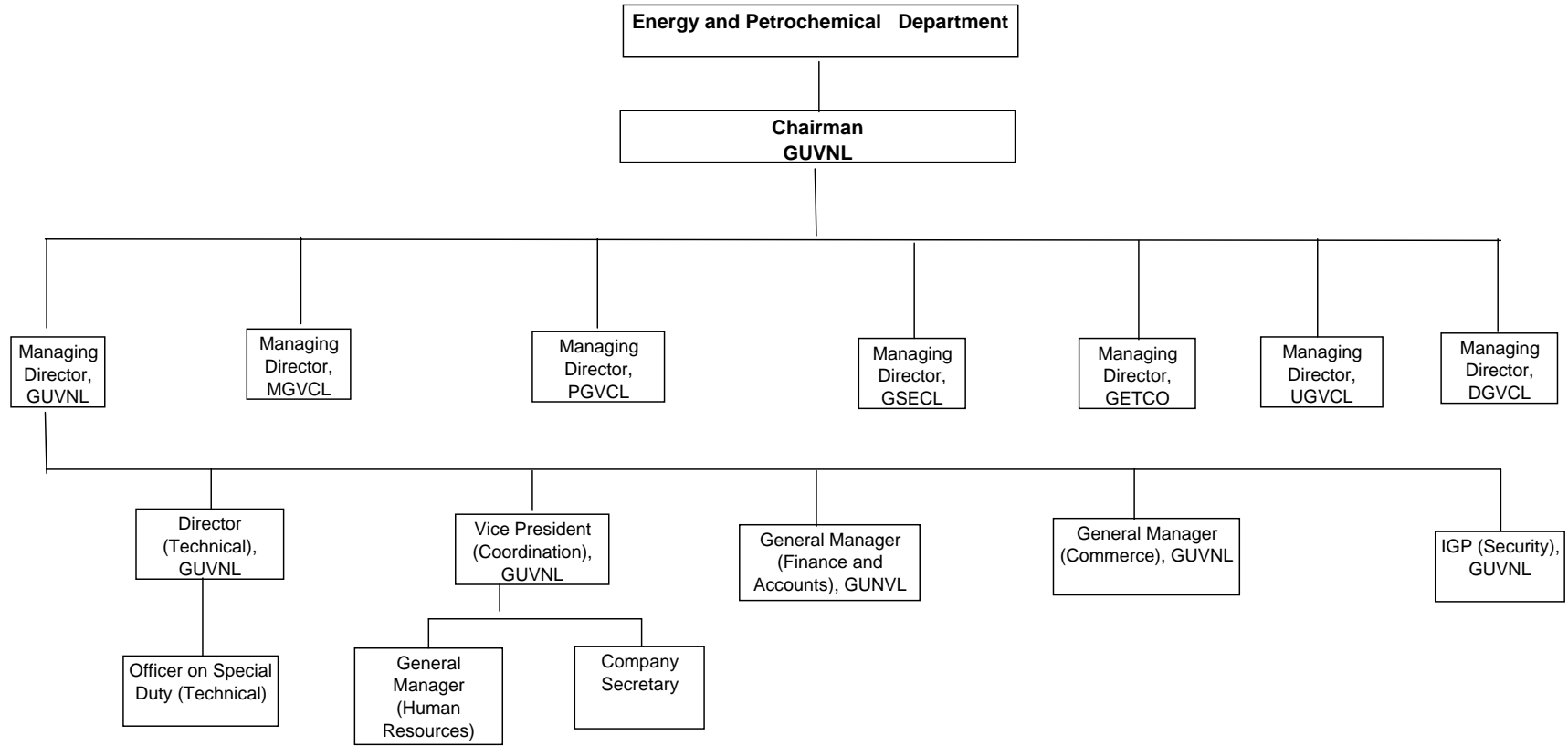
<sup>a</sup> Projections are made in the Asian Development Bank's loan financial information system.

Source: Asian Development Bank loan financial information system.





## ORGANIZATION CHART



DGVCL = Dakshin Gujarat Vj Company Limited, GUVNL = Gujarat Urja Vikas Nigam Limited, GSECL = Gujarat State Electricity Corporation Limited, GETCO = Gujarat Electric Transmission Corporation Limited  
 MG VCL = Madhya Gujarat Vj Company Limited, PG VCL = Paschim Gujarat Vj Company Limited, UG VCL = Uttar Gujarat Vj Company Limited.

Source: Gujarat Urja Vikas Nigam Limited.

**STATUS OF COMPLIANCE WITH MAJOR LOAN COVENANTS**

<b>Srl</b>	<b>Covenant</b>	<b>Reference in Loan / Project Agreements</b>	<b>Status of Compliance</b>
1.	The Borrower shall cause the State and Gujarat Electricity Board (GEB) to carry out the Project with due diligence and efficiency and in conformity with sound administrative, financial, engineering, environmental and energy practices.	Article (Art) IV, Section (Sec) 4.01 (a) of the Loan Agreement (LA)	Complied with.
2.	In the carrying out of the Project and operation of the Project facilities, the Borrower shall perform, or cause to be performed, all obligations set forth in the LA	Art IV, Sec 4.01 (a) of LA	Complied with.
3.	The Borrower shall ensure that the activities of its departments and agencies with respect to the carrying out of the Project and operation of the Project facilities are conducted and coordinated in accordance with sound administrative policies and procedures.	Art IV, Sec 4.01 (a) of LA	Complied with.
4.	The Borrower shall furnish, or cause to be furnished, to the Bank all such reports and information as the Bank shall reasonably request concerning (i) the Loan and the expenditure of the proceeds and maintenance of the services thereof (ii) the goods and services and other items of expenditure financed out of the proceeds of the Loan (iii) the Project (iv) the administration, operations and financial condition of the State and GEB and any other agencies of the Borrower responsible for carrying out of the Project and operation of the Project facilities, or part thereof (v) financial and economic conditions in the territory of the Borrower and the international balance-of-payments position of the Borrower and (vi) any other matters relating to the purposes of the Loan.	Art IV, Sec 4.03 of LA	Complied with.
5.	The Borrower shall enable the Bank's representatives to inspect the Project, the goods financed out of the proceeds of the Loan, and any relevant records and documents	Art IV, Sec 4.04 of LA	Complied with.
6.	Project Implementation: The State and GEB (or its successor entities in accordance with paragraph 7 of this Schedule) shall be the Project Executing Agency and shall be responsible for the execution of the Project. GEB shall create separate groups (implementing groups) within thirty (30) days of Effective Date to implement the various parts of the Project as detailed under Schedule 1 to the LA.	Schedule (Sch) 5, para 1 of LA	Complied with.
7.	The Board of the GEB assisted by its Planning group shall be responsible to monitor the implementation of the Project on a quarterly basis and direct suitable action as may be required to support the implementing groups.	Schedule (Sch) 5, para 2 of LA	Complied with.

Srl	Covenant	Reference in Loan / Project Agreements	Status of Compliance
8.	<p>Progress reports and operational monitoring</p> <p>Direct supervision and monitoring of the operational performance of the Project shall be the responsibility of GEB which shall provide quarterly reports to the State and the Bank within 30 days from the close of each quarter. The Bank will review the implementation and operation of the Project based on the reports provided and meet with the Borrower, the State and GEB semi-annually to review the Project progress. The Bank will also monitor the overall financial and technical performance of the State's power sector and its fiscal position.</p>	Sch 5, para 3 of LA	Complied with.
9.	<p>Drip Irrigation</p> <p>Within 3 months of Effective Date, GEB shall appoint the Water Resources Engineering and Management Institute of M.S. University at Baroda or any other competent consultant under its own financing (the Consultant) to undertake the design of the drip irrigation systems for the areas identified, prepare specifications for the materials to be procured, coordinate with GEB for the procurement, oversee installation, and provide post installation monitoring and assistance to GEB and the farmers for a period of two years.</p>	Sch 5, paras 4 (a) and 4 (b) of LA	<p>GEB had recruited consultants under its own financing. The consultants assisted GEB in preparing drip irrigation system design and bid documents. Subsequently, this component was dropped from the scope of the Project.</p>
	<p>To enable beneficiary participation during Project implementation, the State shall constitute a review committee within 6 months of Effective Date that shall comprise representatives of the State, GEB, the Consultant and concerned village leaders and farmers</p>		<p>Complied with. Six meetings of Electricity Consumers' Consultative Form of Gujarat held during the implementation of the Project.</p>
10.	<p>Environment and Social Measures</p> <p>The State and GEB shall ensure that the Project is undertaken in compliance with all applicable rules and regulations and comply with all applicable environment assessment procedures under the environmental guidelines of the Bank, the Borrower and the State. GEB shall provide to the Bank an annual report consisting of (i) monitoring results; and (ii) copies of permits, licenses and clearances that may be issued by the Gujarat State Pollution Control Board and other state/national agencies responsible for enforcement of environmental safety regulation and standards in the State. If any of the Project components have been cited for violation of laws or</p>	Sch 5, para 5 (a) of LA	<p>Complied with. GEB has been submitting the status of relevant approvals along with quarterly progress reports.</p>

Srl	Covenant	Reference in Loan / Project Agreements	Status of Compliance
	standards, the report will include a certification from the relevant agency that the defect has been corrected or that a time-bound action plan for its correction has been accepted		
11.	While it is agreed that there is no significant rehabilitation or resettlement requirement for works to be executed under the Project, specific Land Acquisition and Resettlement Plans to be applied by GEB (or its successor entities) for compensating those affected by the Project will be drawn up by them for each component during Project execution in accordance with the Bank's Involuntary Resettlement Policy 1995.	Sch 5, para 5 (b) of LA	No resettlement issues.
12.	Agreements with successor entity(ies) of GEB Owing to the functional segregation of the GEB under the Program, if at any time in the interest of proper implementation of the Project it is found necessary by the Bank the State and GEB, GEB shall transfer its rights obligations under this LA and the Project Agreement to GETCL or its successor entity(ies) as required, with prior approval of and on such terms, conditions and arrangements as acceptable to the Bank, wherefore GETCL or such successor entity as the case may be, shall be deemed to be substituted for GEB for the purposes of the LA and the Project Agreement.	Sch 5, para 7 of LA	Complied with.
13.	The State shall limit agricultural subsidies to Rs. 11 billion each year.	Sch 5, para 8 of LA	The progressive rationalization of tariffs over the years has helped in reducing the government subsidy from Rs18.05 billion in FY2003 to Rs11.0 billion in FY2006.
14.	The State and GEB shall make available, promptly as needed, the funds, facilities, services, equipment, land and other resources which are required, in addition to the proceeds of the Loan, for the carrying out of the Project and operation and maintenance of the Project facilities.	Project Agreement (PA), Article (Art) II, Section (Sec) 2.02 (a)	Complied with.
15.	Except as the Bank may otherwise agree, with respect to the Loan proceeds made available by the Borrower to the State, the State shall onlend such proceeds to GEB with an interest at the rate of twelve percent (12%) per annum with a term of twenty (20) years including a grace period of five (5) years.	PA, Art II, Sec 2.02 (b)	Complied with.

Srl	Covenant	Reference in Loan / Project Agreements	Status of Compliance
16.	In the carrying out of the Project, the State and GEB shall employ competent and qualified consultants and contractors, acceptable to the Bank, to an extent and upon terms and conditions satisfactory to the Bank	PA, Art II, Sec 2.03 (a)	Complied with.
17.	Except as the Bank may otherwise agree, all goods and services to be financed out of the proceeds of the Loan shall be procured in accordance with the provisions of Schedule 4 to the LA. The Bank may refuse to finance a contract where goods or services have not been procured under procedures substantially in accordance with those agreed between the Borrower and the Bank or where the terms and conditions of the contract are not satisfactory to the Bank.	PA, Art II, Sec 2.03 (b)	Complied with.
18.	GEB shall carry out the Project in accordance with plans, design standards, specifications, work schedules and construction methods acceptable to the Bank. GEB shall furnish, or cause to be furnished, to the Bank, promptly after their preparation, such plans, design standards, specifications and work schedules, and any material modifications subsequently made therein, in such detail as the Bank shall reasonably request.	PA, Art II, Sec 2.04	Complied with.
19.	Without limiting the generality of the foregoing, GEB undertakes to insure, or cause to be insured, the goods to be imported for the Project and to be financed out of the proceeds of the Loan against hazards incident to the acquisition, transportation and delivery thereof to the place of use or installation, and for such insurance any indemnity shall be payable in a currency freely usable to replace or repair such goods.	PA, Art II, Sec 2.05 (b)	Complied with.
20.	GEB shall maintain, or cause to be maintained, records and accounts adequate to identify the goods and services and other items of expenditure financed out of the proceeds of the Loan, to disclose the use thereof in the Project, to record the progress of the Project (including the cost thereof) and to reflect, in accordance with consistently maintained sound accounting principles, its operations and financial condition.	PA, Art II, Sec 2.06	Complied with.
21.	The State and GEB shall furnish to the Bank all such reports and information as the Bank shall reasonably request concerning (i) the Loan and the expenditure of the proceeds thereof; (ii) the goods and services and other items of expenditure financed out of such proceeds; (iii) the Project; (iv) the administration, operations and financial condition of the State and GEB to the extent relevant to the Project; and (v) any other matters relating to the purposes of the Loan.	PA, Art II, Sec 2.08 (a)	Complied with.

Srl	Covenant	Reference in Loan / Project Agreements	Status of Compliance
22.	Without limiting the generality of the foregoing, GEB shall furnish to the Bank through the State, quarterly reports on the execution of the Project and on the operation and management of the Project facilities. Such reports shall be submitted in such form and in such detail and within such a period as the Bank shall reasonably request, and shall indicate, among other things, progress made and problems encountered during the quarter under review, steps taken or proposed to be taken to remedy these problems, and proposed program of activities and expected progress during the following quarter. The reports shall also include a summary financial account for the Project comprising Project expenditures during the period to date and total expenditure to date.	PA, Art II, Sec 2.08 (b)	Complied with.
23.	Promptly after physical completion of the Project, but in any event not later than three (3) months thereafter or such later date as the Bank may agree for this purpose, GEB through the State shall prepare and furnish to the Bank a report, in such form and in such detail as the Bank shall reasonably request, on the execution and initial operation of the Project, including its cost, the performance by through the State of their respective obligations under this Project Agreement and the accomplishment of the purposes of the Loan.	PA, Art II, Sec 2.08 (c)	Delayed compliance of PCR submission.
24.	The State as applicable, and GEB shall (i) maintain separate accounts for the Project and for its overall operations; (ii) have such accounts and GEB's financial statements (balance sheet, statement of income and expenses, and related statements, Sources of application of funds statement) audited annually, in accordance with appropriate auditing standards consistently applied, by independent auditors whose qualifications, experience and terms of reference are acceptable to the Bank; and (iii) furnish to the Bank, promptly after their preparation but in any event not later than six (6) months after the close of the fiscal year to which they relate, unaudited copies of such accounts and financial statements, and not later than nine (9) months after the close of the fiscal year to which they relate, certified copies of such statements and the report of the auditors relating thereto (including the auditors' opinion on the use of the Loan proceeds and compliance with the covenants of the LA), all in the English language. The State and GEB shall furnish to the Bank such further information concerning such accounts and financial statements and the audit thereof as the Bank shall from time to time reasonably request.	PA, Art II, Sec 2.09 (a)	Complied with but for some delays as below: (i) the audited financial statement (AFS) for FY2003/04 submitted on 4 April 2005.  The AFS for FY2004/05 submitted on 10 July 2006 and audited project accounts (APA) submitted on 17 August 2006.

Srl	Covenant	Reference in Loan / Project Agreements	Status of Compliance
25.	The State and GEB shall enable the Bank, upon the Bank's request, to discuss the State's and GEB's financial statements and their financial affairs from time to time with the State's and GEB's auditors, and shall authorize and require any representative of such auditors to participate in any such discussions requested by the Bank, provided that any such discussion shall be conducted only in the presence of an authorized officer of the State and GEB unless the State and GEB shall otherwise agree	PA, Art II, Sec 2.09 (b)	Complied with.
26.	The State and GEB shall enable the Bank's representatives to inspect the Project, the goods financed out of the proceeds of the Loan, all other plants, sites, works, properties and equipment of the State and GEB, and any relevant records and documents.	PA, Art II, Sec 2.10	Complied with.
27.	GEB shall at all times conduct its business in accordance with sound administrative, financial, environmental and energy practices, and under the supervision of competent and experienced management and personnel.	PA, Art II, Sec 2.11 (b)	Complied with.
28.	Except as the Bank may otherwise agree, the State and GEB shall apply the proceeds of the Loan to the financing of expenditures on the Project in accordance with the provisions of the LA and this Project Agreement, and shall ensure that all goods and services financed out of such proceeds are used exclusively in the carrying out of the Project	PA, Art II, Sec 2.13	Complied with.
29.	Except as the Bank may otherwise agree, the Borrower shall cause all goods and services financed out of the proceeds of the Loan to be used exclusively in the carrying out of the Project	PA, Art II, Sec 3.04	Complied with.

## FINANCIAL AND ECONOMIC EVALUATION

1. The major assumptions used in the financial and economic evaluation of the investment project are discussed in this appendix.

### A. Financial Evaluation

2. The financial evaluation of the Project was carried out using the concept of financial cost incurred and benefits streams realized on a project component basis.<sup>21</sup> Costs and benefits were evaluated for all the components of the Project as a whole. All costs and revenues in the calculations are expressed at constant March 2008 prices.

3. The capital costs considered include all capital expenditure for the project components including interest during construction for financial evaluation.

4. The cost of capital is calculated for the Project as a whole. The Project is financed by foreign debt (Asian Development Bank [ADB] loan) and local debt. The cost of debt for the Project in rupees (Rs) is 11.50% for the ADB loan and 9.59% for the domestic commercial loan. The weighted average cost of capital estimated in real terms and shown in Table A12.1.

**Table A12.1: Weighted Average Cost of Capital**  
(Rs million)

Source	Amount	Cost (%)	Weighted (%)
ADB Loan	3,516.0	11.50	5.83
Domestic Commercial Loan	2,034.4	9.59	1.60
Weighted Average Cost of Capital	5,550.4		7.43

ADB = Asian Development Bank  
Source: Gujarat Urja Vikas Nigam Limited

### 1. Capital Cost

5. All three components (Parts A, B, and C) have been completed and have started yielding benefits. No salvage value has been assumed at the end of useful life of various components. A total cost of Rs5,993 million is utilized as per the schedule presented in Table A12.2.

**Table A12.2: Disbursement Schedule**  
(Rs million)

Item	2002/03	2003/04	2004/05	2005/06	2006/07	Total
Components						
A, B and C	456	1,684	2,687	942	224	5,993

Source: Gujarat Urja Vikas Nigam Limited

6. The above figures do not include interest and commitment charges during construction.

<sup>21</sup> Part A: Transmission System linked with the Private Sector Power Projects and for System Improvement; (ii) Parts B and C: Transmission and Distribution works associated with Kheda (Anand), Rajkot, and Mahesana distribution circles.

## 2. Sales Revenue

### a. Sales/Revenue Volume

7. There has been a noticeable increase in the volume of electricity carried over the transmission system in Gujarat due to the establishment of new lines and substations and the upgrading of existing systems. The increase in revenue is attributable to the additional savings on account of investments (ADB and non-ADB funding), increased availability of input energy, increase in retail tariffs, and other efficiency improvements in the system. Improvements in overall internal efficiencies and additional input energy have been the main contributors to improved revenue collection. Eighty percent of the incremental benefits are attributable to the capital investment during the given year. Out of this amount, the benefits that accrued due to ADB's funding have been assumed to be in proportion to ADB's share of funding in the total investment by the GEB in the given year. This translates into an additional incremental sales volume of 413 million kilo watt-hour (million kWh) and 427 million kWh by the fiscal year (FY) 2007 and FY2008, respectively.

### b. Tariff<sup>22</sup>

8. The revenues corresponding to incremental power sales are computed assuming the actual overall average retail tariff from 2002/03 to 2005/06.<sup>23</sup> For the years FY2007 and FY2008, the projected tariffs are assumed for estimating the benefits.

## 3. Operating Cost

9. An annual operating cost has been assumed to be 1.78% of total capital costs for all three components. An operating cost of 1.78% is assumed based on the actual operating costs incurred in recent years.

## 4. Financial Internal Rate of Return

10. At the time of appraisal, the FIRR was estimated as 8.9%, which was higher than the weighted average cost of capital of 6.20% in real terms. The FIRR at project completion is estimated to be 9.90%, which is still higher than the revised weighted average cost of capital of 7.43% at project completion in real terms.

## B. Economic Evaluation

11. The economic analysis was carried out on the basis of economic benefits of power consumption to the final consumers represented by their willingness to pay,<sup>24</sup> as applicable.

12. The economic analysis was carried out using the world price numeraire. The economic costs were derived from the financial costs by deducting taxes and duties. The costs were separated into foreign exchange, indirect foreign exchange, and local currency costs. Local costs were further separated and a specific conversion factor of 0.95 was used for unskilled

<sup>22</sup> Tariff is regulated by the Gujarat Electricity Regulatory Commission.

<sup>23</sup> Source: Gujarat Electricity Regulatory Commission.

<sup>24</sup> 2008 willingness to pay estimates for domestic, industrial, and commercial consumers are Rs3.4/kWh, Rs5.3/kWh and Rs4.3/kWh respectively for the Western Region. The average rate of Rs4.94/kWh is derived using the current category-wise consumption in the four communities.

labor. Total labor cost was assumed to be 10% of the local currency costs, and unskilled labor costs were assumed to be 35% of the total labor costs.

13. The economic evaluation of the Parts A, B, and C together is based on the economic benefits due to increased incremental consumption valued using the consumers' estimated willingness to pay. The economic internal rate of return at project completion is estimated as 22.0%, against 25.36% at appraisal. The economic benefits of project components are valued at the differential of willingness-to-pay and the average tariff.

**Table A12.3: Financial Internal Rates of Return of Project Components A, B, and C**  
(Rs million)

<b>Fiscal Year</b>	<b>Capital Investment</b>	<b>Incremental Energy Savings (million kWh)</b>	<b>Average Tariff (Rs/kWh)</b>	<b>Total Revenue</b>	<b>O&amp;M Cost</b>	<b>Profit Before Tax</b>	<b>Net Benefits</b>
2001	121						(121)
2002	19						(19)
2003	718	33	2.55	66	15	51	(667)
2004	2,418	111	2.95	261	58	203	(2215)
2005	3,598	231	2.95	544	122	422	(3176)
2006	1,187	349	2.96	826	143	683	(504)
2007	267	407	3.24	1,055	148	907	640
2008		421	3.24	1,091	148	943	943
2009		421	3.24	1,091	148	943	943
2010		421	3.24	1,091	148	943	943
2011		421	3.24	1,091	148	943	943
2012		421	3.24	1,091	148	943	943
2013		421	3.24	1,091	148	943	943
2014		421	3.24	1,091	148	943	943
2015		421	3.24	1,091	148	943	943
2016		421	3.24	1,091	148	943	943
2017		421	3.24	1,091	148	943	943
2018		421	3.24	1,091	148	943	943
2019		421	3.24	1,091	148	943	943
2020		421	3.24	1,091	148	943	943
2021		421	3.24	1,091	148	943	943
2022		421	3.24	1,091	148	943	943
2023		421	3.24	1,091	148	943	943
2024		421	3.24	1,091	148	943	943
2025		421	3.24	1,091	148	943	943
2026		421	3.24	1,091	148	943	943
	8,327						
<b>Financial Internal Rate of Return</b>							<b>9.9%</b>

( ) = negative, kWh = kilowatt-hour, O&M = operation and maintenance.

Source: Gujarat Urja Vikas Nigam Limited.

**Table A12:4: Economic Internal Rates of Return of Project Components A, B, and C**  
(Rs million)

<b>Fiscal Year</b>	<b>Capital Investment</b>	<b>Incremental Energy Savings (million kWh)</b>	<b>Total Revenue</b>	<b>O&amp;M Cost</b>	<b>Profit Before Tax</b>	<b>Net Benefits</b>
2003	660	33	129	12	117	(543)
2004	2,214	111	437	51	386	(1828)
2005	3,293	231	911	110	801	(2491)
2006	1,085	349	1,379	129	1,250	165
2007	244	407	1,608	133	1,475	1,231
2008		421	1,663	133	1,530	1,530
2009		421	1,663	133	1,530	1,530
2010		421	1,663	133	1,530	1,530
2011		421	1,663	133	1,530	1,530
2012		421	1,663	133	1,530	1,530
2013		421	1,663	133	1,530	1,530
2014		421	1,663	133	1,530	1,530
2015		421	1,663	133	1,530	1,530
2016		421	1,663	133	1,530	1,530
2017		421	1,663	133	1,530	1,530
2018		421	1,663	133	1,530	1,530
2019		421	1,663	133	1,530	1,530
2020		421	1,663	133	1,530	1,530
2021		421	1,663	133	1,530	1,530
2022		421	1,663	133	1,530	1,530
2023		421	1,663	133	1,530	1,530
2024		421	1,663	133	1,530	1,530
2025		421	1,663	133	1,530	1,530
2026		421	1,663	133	1,530	1,530
	<b>7,495</b>					
<b>Economic Internal Rate of Return</b>						<b>22.0%</b>

( ) = negative, kWh = kilowatt-hour, O&M = operation and maintenance, WTP = willingness to pay.  
Source: Gujarat Urja Vikas Nigam Limited.