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**National Electric Power  
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# **Unbundling NEPA Finance and Accounts**

Submitted By:

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A BECHTEL TECHNOLOGY & CONSULTING COMPANY

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## Executive Summary

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### INTRODUCTION

This report has been prepared by Nexant for the National Electric Power Authority of Nigeria (NEPA), with funding provided by the US Agency for International Development (USAID). The Nexant scope of work covers advice on functional unbundling of the NEPA Finance and Accounts organization to support the company's overall strategy for restructuring into Business Units, and assistance implementing a pilot program for F&A unbundling at the Lagos Distribution and Marketing Zone.

The objectives of this report are 1) to summarize recommendations for F&A functional unbundling, 2) to demonstrate the process of accounts unbundling to the Generation, Transmission and D&M Sectors and to the Lagos Zone pilot BU, and 3) to provide examples of F&A organization structures at utility companies in other countries.

F&A unbundling entails devolving the F&A organization to the Business Unit level, enhancing F&A functions at the BUs, and allocating the accounts to the BUs. Unbundling will require new organizational structures and new roles and responsibilities for F&A at Headquarters and in the field divisions, and it will require fundamental changes to existing practices in accounting, budgeting, cash management and financial reporting at each level.

F&A unbundling is vital for each Business Unit to take responsibility for managing not only its operational performance but also its financial performance, as if it were an independent enterprise. Regional managers will be empowered to improve business operations only if they are involved in the financial decision making process, have more control over their budgets, and are better informed about their costs and revenues. In the long run, NEPA's internal restructuring program for the F&A organization will contribute to better overall performance for NEPA, and it will ease the transition from Business Unit to subsidiary, and from subsidiary to private company.

### UNBUNDLING F&A TO BUSINESS UNITS

Nexant's recommendations on unbundling the F&A organization anticipate that NEPA will form the following Business Units during the pre-privatization period:

- **Transmission Sector** – The Transmission Sector will form a single Business Unit managed centrally, whereas Transmission Regions and Stations will remain as Operating Units. This is consistent with the government's policy to establish a single transmission company for Nigeria.
- **Generation Sector** – This report addresses F&A unbundling to a single Business Unit at the Generation Sector in the near term pre-privatization, however the recommended unbundling approach applies equally if NEPA decides to form Business Units on a regional or plant basis.
- **Distribution & Marketing Sector** – This report addresses F&A unbundling at the D&M Sector level and at the Lagos D&M Zone, which will be unbundled from the Sector as a pilot BU. For Zones to function as BUs there will need to be significant strengthening of management capabilities and a fundamental restructuring of the Zone vis-à-vis the Sector, the Districts and the Undertakings. Therefore it is not practical to

immediately devolve F&A to all the Zones until they are properly staffed and empowered to manage the regional D&M businesses. Also, the government has not decided how the Sector will be split up into regional companies. The Lagos Zone pilot will implement F&A functionality similar to what would be required at an independent distribution company in anticipation of the Zone implementing all of the various capabilities required for full BU functionality.

The following steps are required to devolve the F&A organization from the Headquarters to the BUs, strengthen the F&A functions at the BUs and introduce commercial F&A practices throughout the organization:

- Reduce the size of HQ F&A while strengthening F&A at the BUs through new recruitment and redeployment of F&A staff from HQ.
- Provide required training for new F&A functions to be implemented at the BUs.
- Allocate resources for basic MIS and IT systems and related training.
- Set operational and financial performance measurement targets for each BU.
- Introduce new policies and procedures for more meaningful and realistic budgeting, and engage BUs in the resource allocation decision-making process.
- Increase spending authority at each level of the organization consistent with a higher degree of regional autonomy.
- Introduce accounting consolidation at the BU level.
- Introduce quarterly reporting of operational, financial and budget performance at the BU level.

As NEPA's internal restructuring progresses, the responsibilities of the F&A organizations at the BU level will increase, in particular for the following functions:

- accounting for unbundled costs, assets and liabilities;
- consolidating trial balances;
- financial management reporting;
- consolidating and reviewing the budgets for the Operating Units;
- justifying requests for funds for capital investment projects; and
- managing funds according to higher spending authority limits.

### **ACCOUNTS UNBUNDLING**

In order for BU managers to take ownership and responsibility for their performance they must track their costs and revenues, and exert some degree of control over both. Accounts unbundling to the BU level will arm management with information on costs, assets and liabilities, and provide the means to evaluate BU profitability.

Accounts unbundling is the process of determining the full financial cost ("cost-of-service") for owning and operating the Business Unit. Cost-of-service includes the BU's own costs as well as the costs of services supplied by other units. The calculation includes both capital-

related costs (interest, depreciation and return-on-equity) and operating costs (fuel, O&M, materials, labour and taxes).

Cost-of-service is an important benchmark for budgeting and transfer pricing between BUs, and the financial information can be used for monitoring BU performance. Knowing the cost-of-service for a D&M BU as well as the energy actually delivered, as measured by the grid metering system that is currently being implemented system-wide, will provide the means to track the performance of the D&M BUs. Employee incentives can be designed to reward BUs based on monitored performance.

A computer spreadsheet model has been developed to demonstrate accounts unbundling to the Generation, Transmission and D&M Sectors and to the Lagos Zone pilot BU. The spreadsheet calculates the cost-of-service and the profit and loss statements for each division. NEPA should adopt this modelling, and revise and extend the analysis as needed. The key steps for enhancing the accounts unbundling modelling are as follows:

- Develop realistic assumptions and reliable operational and financial data.
- Establish fixed assets registers at the BU level.
- “Clean up the books” at all levels of the organization by allocating debts and liabilities, writing off irrecoverable electricity receivables and accounting for all liabilities.

Table ES-1 presents results for the cost-of-service modelling by Sector for 2001, and compares these results with current tariff levels and estimated marginal cost. Looking to the future, NEPA’s true financial requirements are likely to be close to marginal cost because of the need to replace most of the existing infrastructure and expand the system rapidly. Cost-of-service provides a floor for revenue requirements. The table shows that the current tariff level averaging N3.3 per kilowatt-hour of energy billed is only 65% of the estimated cost-of-service, and less than half of the full marginal cost of N9.0 per kilowatt-hour.

**Table ES-1: Benchmarks for Transfer Pricing between Sectors**

Sector	Tariff <sup>1</sup>	Cost-of-Service	Marginal Cost <sup>2</sup>
Generation – naira/kWh of energy sent out	0.8	1.4	--
Transmission – naira/kWh of energy to D&M	0.3	0.5	--
Dist. & Mrktng – naira/kWh of energy billed	1.6	2.4	--
Total System <sup>3</sup> – naira/kWh of energy billed	3.3	5.1	6.9 to 9.0
Notes:			
1. Current tariff level based on NEPA Financial Review (Dhalla, December 2000).			
2. Higher marginal cost based on historic T&D losses. Lower estimate assumes 50% reduction in losses.			
3. Cost-of-service assumes no subsidy from FGN.			

The structure of cost-of-service by Sector provides a benchmark for allocating NEPA’s revenues to the Sectors, i.e. transfer pricing. In the table, the column labelled “Tariff” shows

what the transfer price would be to each Sector if the available revenue were allocated to the Sectors based on relative cost-of-service.

Ideally, the transfer price would be structured as a multi-part tariff with demand and energy charges. The spreadsheet model developed for this project has the capability to classify costs as demand-, energy- and customer-related, and this information can be used by NEPA for more detailed transfer price design.

The cost unbundling results show that whereas the D&M Sector is loss-making as a whole, Lagos Zone is making a net profit. It should be noted that from a marginal cost perspective none of the Zones, Lagos included, are collecting adequate revenues to meet the full financial requirements to expand the business, nevertheless Lagos' financial results exceed the norm. The difference between Lagos Zone's performance and the performance of the rest of the Sector is related to the uniform national tariff used across Nigeria – Lagos has a higher paying customer mix. This points out that in the future when a transfer pricing scheme is instituted for D&M BUs at the Zone level, there will be a need for a compensation mechanism to reallocate revenues between Zones due to variations in customer profiles and the Zones' "own" costs.

#### **NEXT STEPS FOR NEPA**

NEPA has initiated the process of unbundling Finance and Accounts. Management can keep up this momentum and accelerate the process by assigning internal working groups to implement the following key steps:

- Develop an action plan to implement pilot unbundling at the Sectors and the Lagos Zone pilot BU. The action plan for Lagos Zone should encompass not only F&A but also the other functions of the Zone and Operating Units under the Zone.
- Implement new F&A staffing, training, procedures, reporting and information flows.
- Strengthen the budgeting and funds management processes to empower the BUs.
- Identify operational and financial performance measurements, and set targets for the BUs.
- Extend unbundling of the D&M Sector to other Zones in addition to the Lagos Zone pilot BU.

**1.1 BACKGROUND**

Nexant has been contracted by USAID to provide technical assistance to the National Electric Power Authority (NEPA), at the request of the NEPA Chairman in October 2000. The current project is a follow-up to the project Improving the Management of NEPA, Phase I, which was completed by Nexant in July 2000. Nexant provides a consulting team to work with NEPA management on the following activities:

- Advice on unbundling the Finance and Accounts organization to support the company's overall strategy for restructuring into Business Units;
- Assistance implementing a pilot program for F&A unbundling at the Lagos Distribution & Marketing Zone;
- Recommendations on management initiatives to provide employee incentives for improved operations; and
- Advice on establishing the newly-created Corporate Planning Department at Headquarters.

In addition to Nexant, two other teams were recruited for the project. A NEPA Counterpart Team, consisting of senior management staff from the F&A organizations at Headquarters and at Lagos Zone, is responsible for interfacing with the consultants, providing information and experience-based recommendations and implementing action plans for organizational change. And the Nigerian accounting and consulting firm Akintola Williams Deloitte Touche is responsible for investigating the F&A organizations at Headquarters and in the field, and for making specific detailed recommendations to NEPA management on F&A unbundling and new processes, functions and job descriptions.

**1.2 OBJECTIVES**

The overall objective of the USAID technical assistance is to advise the NEPA management team on key initiatives to reshape the company for improved performance during the transition to restructuring and privatization. The current phase of work is focused on functional and accounts unbundling of the F&A organization to the Generation, Transmission and D&M Sectors. Unbundling entails devolving the F&A organization to the Business Unit level, enhancing F&A functions at the BUs, and allocating the accounts to the BUs.

F&A unbundling is vital for each Business Unit to take responsibility for managing not only its operational performance, but also its financial performance, as if it were an independent enterprise. It should be noted that F&A unbundling in isolation is not enough, and much work remains to restructure other core processes and organizations to the Business Unit level in addition to F&A. In the long run, NEPA's internal restructuring program will contribute to better overall performance for NEPA, and it will ease the transition from Business Unit to subsidiary, and from subsidiary to private company.

Besides the long run impact, the F&A unbundling exercise should have immediate impact on operational efficiency. In particular, it will address the following key priorities established by NEPA management at the start of the project: 1) establishing the means to track the financial performance of the Distribution & Marketing divisions based on energy actually

distributed, as measured by the grid metering system currently being implemented system-wide; and 2) reforming the dysfunctional system whereby local managers have to seek permission in Abuja for even minor expenditures, and budgets carry little weight for the actual disbursement of funds.

### **1.3 RESTRUCTURING NEPA INTO BUSINESS UNITS**

NEPA is broadly organized into the following hierarchical levels:

- Headquarters – a strong Headquarters organization historically has exerted a high degree of control over the regional operating units.
- Sectors – the Distribution & Marketing, Generation and Transmission Sectors are functional divisions that will provide executive oversight for the regional operating units. NEPA is increasing the span of control at the Sectors as a first step for internal restructuring of the company along business lines.
- Distribution & Marketing Zones – In the present company structure, the Zones have limited responsibility for coordination of local Operating Units (Districts and Undertakings). In the restructuring model under consideration, some Zones would qualify for Business Unit status with increased authority for the financial and operational performance of the local Operating Units. This would require a major redefinition of responsibilities between the Sector and the Zone, and between the Zone and the Operating Units.
- Transmission and Generation Regions – Under the present company structure, the Regions have limited responsibilities for oversight and coordination of transmission and generation Operating Units at the facility level.
- D&M Districts and Undertakings, Transmission Stations and Generation Stations – these divisions are classified as Operating Units responsible for local system operating performance.

NEPA is taking the first step to devolve management control of the company to the Sectors, and eventually to regional BUs. By doing so, NEPA is anticipating the future market structure envisioned in the National Electric Power Policy (National Council on Privatization, December 2000). The policy includes the following key restructuring elements: 1) the separation of transmission and dispatch from generation; 2) the establishment of a transmission company; 3) the establishment of a number of competing, privately owned generation companies from existing NEPA generating facilities; and 4) the establishment of a number of distribution and sales companies which will also be privatized.

NEPA's plan for internal restructuring aims to improve operations in the near term by strengthening management capability at the regional level and de-emphasizing command-and-control from Headquarters. Despite the difficulties to restructure the company quickly in the wake of years of under-funding and mismanagement, there is significant potential to improve performance in the near term by enhancing regional capabilities and responsibilities. International experience shows that utility companies, in particular distribution companies, are best managed at the regional level close to the customers, rather than in one centralized location, especially for a country as large as Nigeria.

Nexant's recommendations on unbundling the F&A organization and functions anticipate that NEPA will form the following Business Units during the pre-privatization period:

- **Transmission Sector** – The Transmission Sector will form a single Business Unit managed centrally, whereas Regions and Stations will remain as operating units. This is consistent with the government's policy to establish a single transmission company for Nigeria.
- **Generation Sector** – The Generation Sector organization will be a Business Unit under NEPA's near term plan for internal restructuring. There is a question whether any of the divisions under the Sector should be carved out of the Sector and established as BUs in the near term while the future structure for the generation sector is still under review at the policy level. There are currently three Generation Regions that could be established as BUs: the Egbin Thermal Power Plant, the Delta Region thermal power plants, and the hydro stations.

Nexant's recommendations anticipate a single Business Unit at the Generation Sector level in the immediate term, however the recommended F&A unbundling approach applies equally if NEPA decides to form Business Units for each Region. Before restructuring beyond the Sector level, decision-makers should carefully analyze management and technical issues, such as the need for coordinated hydro and thermal operations and the rationale for regional management. In the event that the Regions are established as BUs, then the NEPA organization at the Sector level should shrink accordingly.

- **Distribution & Marketing Sector** – The restructuring scenario for the D&M Sector is relatively complicated. The Sector itself will be a Business Unit, however which of the operating units should be elevated to Business Units, and the timing to establish full functionality at new BUs, is not obvious at the present time. Nexant and NEPA management agreed to address F&A unbundling at the Lagos Zone as a pilot that can be quickly replicated throughout the D&M organization. As a BU, the Zone will take responsibility for management oversight of the region, whereas the Districts and Undertakings will remain as operating units. It should be noted that this is a major change from the status quo, since Headquarters has traditionally exerted overall management responsibility for all aspects of the regional business. Key considerations for restructuring D&M are discussed in the next section.

The evolving plan for internal unbundling into Business Units envisions new management capabilities instituted at the BU level, transfer pricing between BUs, and new incentive mechanisms to encourage management initiative and empowerment for improved operations, cost efficiency, reliability and customer service.

#### **1.4 KEY ISSUES FOR RESTRUCTURING D&M**

According to the National Electric Power Policy, the Distribution Sector will be split into a number of distribution and sales companies that will eventually be privatized. It is generally agreed that Nigeria is too large and diverse to control the Sector remotely from NEPA Headquarters according to the current practice.

The challenge is how to introduce the restructuring of the Sector. All of the field divisions, i.e. Zones, Districts and Undertakings, currently function more-or-less as operating units,

resulting in a shortage of regional management of the Sector. The operating units have had mixed performance providing their two main business lines, the “wires business” (engineering, operations, maintenance and construction) and the retail supply business (marketing, metering, billing and collections). Judging from the Distribution Sector’s chronic poor collections performance, the field divisions may be poorly equipped to handle the management challenges of the retail supply business. Although the roots of the problems are many, one contributing factor is that the retail side is neglected and mismanaged under the current approach whereby engineering-oriented field managers split time between the wires business and the retail supply business. On the positive side, the field divisions seem better equipped to handle the technical challenges of the wires business.

Since the central command-and-control model is deficient, and field management is not empowered to independently run the business, it is recommended that NEPA should begin the process to elevate some of the regional divisions to BU status on a par with the Sector and strengthen regional management capabilities. The Sector would shrink as regional BUs would be carved out. As NEPA moves forward with internal restructuring of the D&M Sector into regional BUs, the following key issues must be resolved:

- Which Zones, or possibly some Districts, will be elevated to BU status, and when?
- What should be the process and the timing for transitioning from Sector control to regional BUs?
- Would the GM for the regional BU report to the Sector ED or to the MD?
- What should be the spending authority limits for the regional BUs?
- How to train and recruit regional BU management staff?
- How to restructure core functions including finance and accounting, engineering, procurement, human resources, administration etc.?
- What functions should be centralized in the regional BUs and what functions should be devolved to operating divisions of the BUs?
- Should the Distribution Sector be organized into separate line organizations for the wires business and the retail supply business? What would be the implications for restructuring the regional BUs and the Sector?
- What functions could/should be outsourced?

## **1.5 UNBUNDLING OF NEPA FINANCE AND ACCOUNTS**

The Nexant scope of work addresses functional unbundling of the Finance and Accounts organization. A key underlying assumption for the project is that management of F&A will shift from Headquarters to the BU level, initially to the Sectors and ultimately to regional BUs as they are spun out from the Sectors.

Figure 1-1 depicts the recommended management structure for each level of F&A. The hierarchical structure of the F&A organization reflects the delegation of authority from Headquarters to Business Units to Operating Units. At the Headquarters level, the ED F&A is the highest ranking financial officer for the company responsible for finance, treasury, accounts consolidation and financial reporting. To the maximum extent possible, the

Headquarters F&A is devolved to the BUs, initially at the Sector level and at the Lagos Zone pilot BU.

At the BU level, the top financial officer would be a General Manager (for Distribution & Marketing Sector) or Assistant General Manager (for Transmission and Generation Sectors and for Lagos Zone BU). At the Operating Unit level, the top F&A position would be a Senior Manager. From an administrative standpoint, all of the non-Headquarters F&A staff would report through their business line organizations, e.g. the GM F&A at the D&M Sector would report to the ED D&M. In addition to these administrative reporting relationships, the F&A organization at all levels of the company would be linked together by “dotted line” relationships for the necessary flow of information and functional interaction.

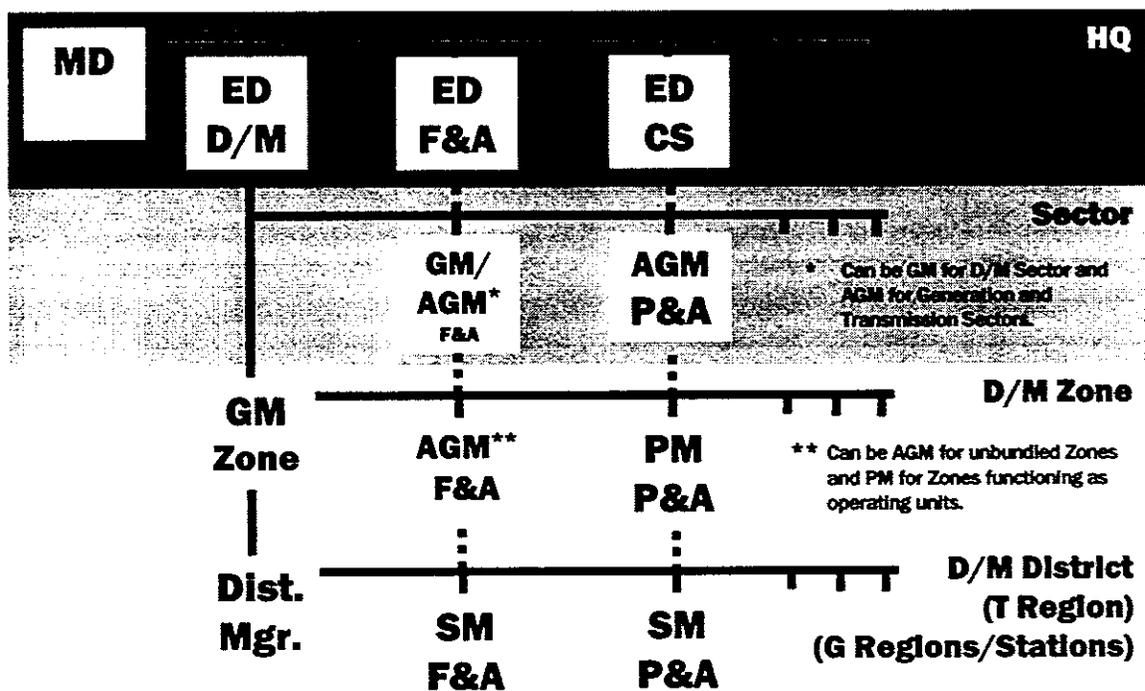


Figure 1-1: Recommended Hierarchy for NEPA F&A Organization

The F&A organizations at the BU level will be responsible not only for routine accounting and budgeting, but also for assisting BU management to track costs, revenues and financial performance, and this in turn will require accurate accounting of all of the BU's costs, assets and liabilities. The objectives of accounts unbundling to the BU level are to:

- Identify BU cost-of-service, i.e. the full financial costs to own and operate the business, including a fair allocation of the cost of services supplied by other NEPA divisions.
- Allocate revenues to the BUs so as to determine their profitability.
- Establish a more transparent and effective system of budgeting and monitoring.

- Make the BUs accountable for their operational and financial performance.
- Provide benchmark financial information for transfer pricing between the BUs.

## 1.6 OVERVIEW OF REPORT

The main objectives of this report are as follows: 1) summarize recommendations for functional unbundling of the NEPA Finance and Accounts organization; 2) demonstrate the process of unbundling accounts to the Sectors and to the Lagos Zone pilot BU, and provide quantitative results that can be used as benchmarks for budgeting and transfer pricing between BUs; and 3) provide examples of how F&A is organized at selected utility companies in other countries.

The report is organized into the following sections:

- Section 2: Unbundling the NEPA F&A Organization – Provides recommendations for functional unbundling of the F&A organization, and recommends new F&A processes to implement at each level of the organization: Headquarters, Sectors, Unbundled Zones and Operating Units. It also provides a list of activities for NEPA to implement the F&A unbundling program.
- Section 3: Accounts Unbundling and Transfer Pricing – Demonstrates the process of unbundling NEPA's accounts to the Sector level, and provides the cost-of-service and profit and loss statement for each Sector based on budget and accounting data provided by NEPA. This section also evaluates appropriate benchmarks for internal transfer pricing between the Generation, Transmission and Distribution & Marketing Sectors, including cost-of-service and marginal cost.
- Section 4: Pilot Unbundling of the Lagos Zone – Provides an Action Plan for establishing new F&A function at the Lagos Zone pilot BU, and presents the cost-of-service and profit and loss statement for the Zone, based on accounts unbundling modeling.
- Section 5: International Examples of F&A Unbundling – Provides four examples of utility companies that have unbundled F&A to the BU level. The examples include two state-owned, vertically integrated utility companies that more-or-less resemble NEPA, ZESA of Zimbabwe and Electricite Viet Nam, and two investor-owned combined transmission and distribution utility companies from the US, National Grid USA in Massachusetts and Pacific Gas & Electric Company in California.
- Appendix A: Computer Model for Accounts Unbundling and Transfer Pricing – Provides the inputs and outputs for the accounts unbundling spreadsheet model.

## **Section 2**

## **Unbundling the Finance and Accounts Organization**

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### **2.1 OVERVIEW**

NEPA management has committed to restructure the company along functional business lines for generation, transmission and distribution & marketing. Many steps remain to be taken in order to equip the Sectors to function more independently of Headquarters in Abuja. This is particularly true in the area of Finance and Accounting. At present the F&A organization handles all accounting and finance functions for NEPA and operates as a service organization to the operating units. Many of the F&A functions currently provided at Headquarters F&A could be devolved to the functional divisions.

Nexant, in association with the local consulting and accounting firm Akintola Williams Deloitte Touche and with the vital input and advice from the NEPA Counterpart Team, have developed recommendations for devolving F&A down to the Business Unit level. In developing these recommendations, the team is cognizant that there will be difficulties implementing F&A unbundling. The following bottlenecks must be overcome during the unbundling process in order to ensure its success.

### **2.2 BOTTLENECKS FOR F&A FUNCTIONAL UNBUNDLING**

In the ideal, F&A would be unbundled immediately down to the BU level to pave the way for restructuring and privatization, however this may not be practical under the current situation and therefore the recommendations in this section have accounted for the following key bottlenecks:

- **Regional business management capabilities** – Business management functions at the regional operating units are under-developed. Since F&A is largely a management support function, much of the F&A functionality should be located at the same level as the management of the business line. Therefore, until the regional operating units are able to take full management control of the enterprise, there is reduced rationale to devolve F&A downward from the Sector level.
- **Revenue predictability** – NEPA's financial condition is so precarious that it is difficult, if not impossible, for NEPA to fund each unit according to its full cost-of-service. It is the current practice for NEPA to provide budgeted operating expenses, including payroll costs, directly to the Districts and Undertakings. This recently adopted process has already contributed to a significant increase in financial independence at these operating levels but only as related to budgeted operating expenses. Revenues necessary to fund capital expenditures are still controlled at Headquarters F&A leaving the lower levels of the organization unable to properly plan and execute capital projects. This is a significant impediment to meaningful business planning at the BU level.
- **Spending authority** – Spending authority limits in the field are too low by any reasonable standard if the regional units are to be more autonomous. Spending authority limits need to be reviewed and revised upward at each level of the organization, with appropriate oversight and internal auditing.
- **Financial management capabilities** – Since the regional operating units have not had to manage their own finances, financial management capabilities at the lower levels of the organization are underdeveloped. The financial functions that traditionally have

been performed in the operating units consist mainly of reporting operating results to the Headquarters F&A where information is analyzed and consolidated. Under a devolved F&A structure, the accounting functions will grow considerably and will include, at a minimum, the preparation and consolidation of financial statements including balance sheets and profit and loss statements, where applicable.

These increased responsibilities will require more sophisticated accounting skills than may currently exist. A preliminary inventory of capabilities within the Lagos Zone F&A organization indicates that the following skills need to be implemented or enhanced to support BU operations: cost accounting, capital budgeting, revenue accounting, demand forecasting, financial planning and financial reporting. Until these staffing deficiencies can be corrected through intensive training of existing staff and where required, the hiring or redeployment of experienced staff, it will be difficult to successfully devolve some of the accounting and financial functions to the lower levels.

- MIS and IT Systems – NEPA’s Management Information Systems (MIS) are inadequate for financial management and reporting, and the information technology (IT) system is too slow and antiquated. A decentralized F&A function will require that information flow between lower levels be greatly improved in order that the BUs can properly monitor the performance of the local accounting units. This requirement dictates that an MIS be designed and implemented to include sufficient communications capabilities between all levels of the organization.

In addition to MIS, an improved IT system must be implemented before the lower levels can be expected to perform their new accounting functions. Most of the accounting functions currently being performed at Operating Units are strictly manual but the new functions will require more sophisticated computing equipment if reports are to be produced accurately and in a timely manner.

### **2.3 RECOMMENDATIONS FOR F&A FUNCTIONAL UNBUNDLING**

Nexant’s recommendations cover the following aspects of F&A unbundling: 1) revising the F&A organizational structure at various levels within NEPA; 2) new functions of the F&A units at these levels; and 3) addressing specific issues that arise out of the revised structure.

There are changes required at each level of NEPA F&A. At present, most of the F&A functions are performed at the Headquarters. Under the devolved structure, some of these functions will be performed at the Sector level and others will be handled at Zones, Districts and Undertakings. The following sections summarize the consulting team’s recommendations for changes at each level of the F&A organization: Headquarters, Sectors, regional unbundled BUs (which are yet to be formed, starting with the Lagos Zone pilot), and Operating Units.

#### **2.3.1 F&A Organization Structure at Headquarters**

The current structure of the Headquarters F&A organization is shown in Figure 2-1. The unit is headed by an Executive Director and has two direct reports: a General Manager for Investment and Treasury (I&T) and a GM heading the Finance and Accounting (F&A) Department.

It is recommended that the Headquarters F&A organization be redeployed to create a smaller organization based on the following reasoning:

- 1) Many of the functions currently performed in the Headquarters Unit will be performed in the Sectors through the devolvement of F&A functionality. A discussion of the functions that are suggested to be devolved to the operating sectors and business units is provided below.
- 2) Some of the existing functions are recommended for either deletion or combination with other existing functions. The reasons for these recommendations are also provided below.

The recommended structure for the Headquarters F&A organization is shown in Figure 2-2. This structure reflects an organization headed by an Executive Director as before, but with only one General Manager. While the existing F&A organization has four Assistant General Managers and fourteen Principal Managers, the recommended organization has only two Assistant General Managers and seven Principal Managers.

The main organizational changes are:

- The GM at HQ now has considerably reduced responsibilities, which are primarily related to consolidation issues and handling the accounts specifically associated with the operations of the Headquarters Sector.
- The three PMs associated with Investments are combined into one PM for Business Ventures.
- The PM, Superannuation, has been transferred to Corporate Services.
- The PM, Forex has been redefined as PM, Capital Finance and Loans, to better reflect the actual responsibilities of this department.
- A new PM has been added to the recommended structure. This position will develop and manage the implementation and operation of the Management Information System.

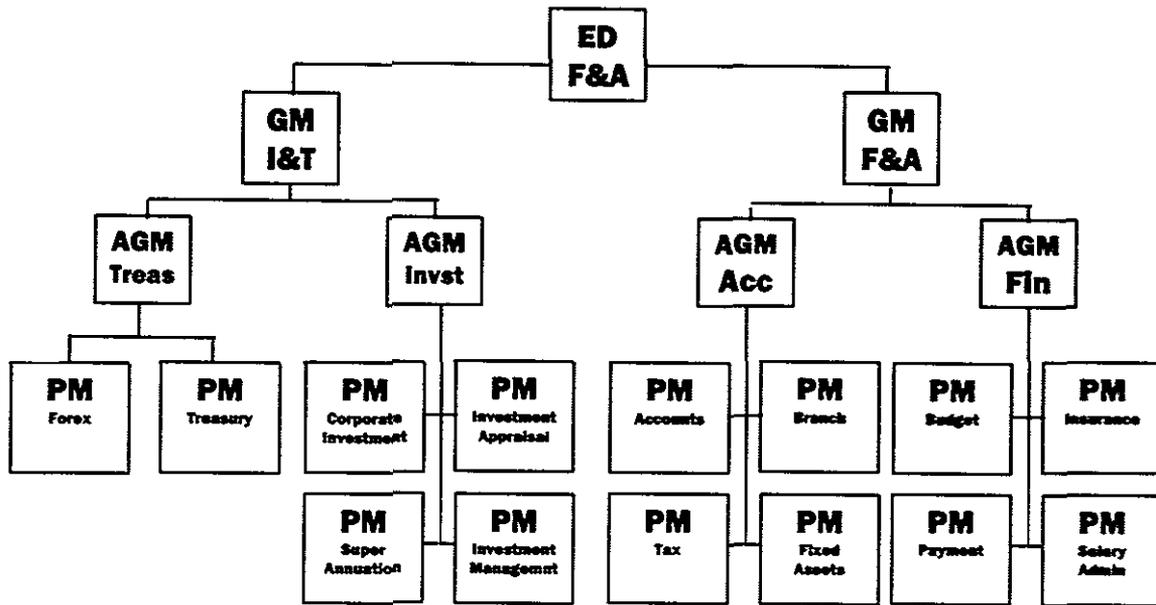
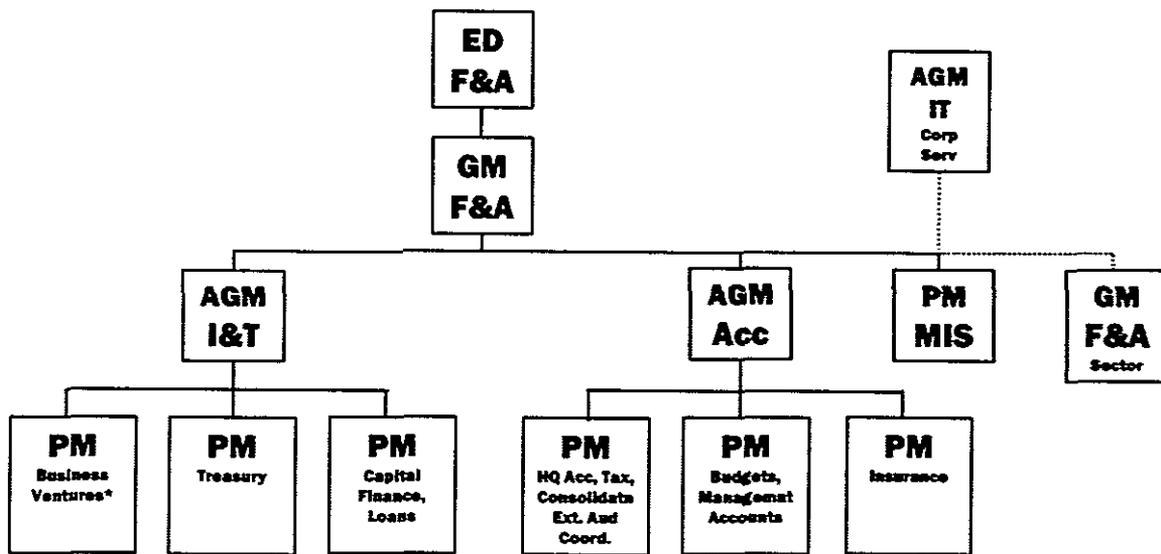


Figure 2-1: Current F&A Organization at Headquarters



\* Non-core business ventures should be divested.

Figure 2-2: Recommended F&A Organization at Headquarters

In the recommended HQ organization chart, the dotted line relationship represents either joint reporting responsibilities in the case of the PM MIS who reports to both the GM F&A and the AGM IT, or functional reporting requirements in the case of the GM F&A D&M and the AGMs F&A from the Transmission and Generation Sectors, who all work directly with the GM at Headquarters on F&A organization-wide initiatives.

Note that the downsizing of the Investment branch of the Headquarters F&A organization assumes that certain non-core business activities will be divested to allow more focus on the core needs of NEPA.

### **2.3.2 F&A Functions at Headquarters**

There will be two departments in Headquarters F&A: Investment and Treasury and Accounting. (The name for the I&T Department is subject to review.) Each of these departments will have three PMs, and the PMs will have the following responsibilities:

- Investment and Treasury Department – The Investment and Treasury Department will have three subordinate groups: Business Ventures, Treasury and Capital Finance and Loans. The PM for Business Ventures will have responsibility for managing all aspects of NEPA's involvement in businesses outside of transmission, generation and distribution. The Business Ventures Group will handle investment appraisal, evaluation and management. Under the current organization, these functions are handled by three groups led by PMs, but the level of activity in these areas does not justify such a large commitment of valuable accounting and analytic resources.

The PM for the treasury function will provide the same services that the existing PM Treasury provides. These include cash management; collection and management of receipts from consumers forwarded from D&M Districts and Undertakings; negotiation of short-term loans; and management of the distribution of the imprests to operating units.

The PM Capital Finance and Loans will have responsibility for managing the foreign exchange transactions, providing letters of credit when necessary, managing the funds provided by the Government of Nigeria or other investors and coordinating the capital budget allocation process when adequate funds are not available to fund the entire capital program. Note that at the present time it is advisable to centralize the receipt and disbursement of funds sourced from government, donors and loans at the Headquarters level rather than trying to devolve this responsibility down to the Sectors.

- Accounting Department – The Accounting department will have three subordinate groups. One PM will be responsible for the following accounting activities: accounting for the costs of Headquarters staff; consolidation of the accounts returning from the Sectors into a NEPA Consolidated account; managing the tax liabilities of NEPA; and coordinating the External Audit function on behalf of the Board of Directors.

A second PM will be responsible for the following accounting functions: coordination of the budget process for all of NEPA; preparation of the budget for HQ operations; and preparation of management accounts for NEPA. There is significant scope to improve the company-wide budget process, and the PM at HQ should work with the other company divisions to revamp the budgeting process. In general, the annual budget process will work as follows: HQ F&A will coordinate bottom-up budget requests from Sectors, and

Sectors will coordinate for Zones and Regions; and a Working Group consisting of the MD and the EDs will determine the annual budget allocation with approval of the Technical Board.

A third PM, who already exists under the current organization, will be responsible for all of the insurance issues at NEPA.

### 2.3.3 F&A Organization at Business Units

It has been the consulting team's consistent view that the target for devolution of the F&A functions should be the BU level. In the case of D&M, the Zones should be the focal point for unbundling, based on the assumption that increasing functionality at the regional level is necessary to pave the way for eventual privatization of distribution companies. It is highly unlikely that the Distribution and Marketing Sector will be privatized as a single unit – it seems much more likely that the D&M Sector will be privatized at the regional level.

While it may be desirable to immediately build up the F&A capabilities at each Zone, Nexant finds that NEPA lacks the necessary accounting resources to properly staff the lower levels to function as independent accounting units immediately. It is for this reason that the team now recommends that the F&A functions at the Sector level be properly staffed with well-qualified accountants and budget analysts to carry out the F&A functions. The Team also recommends that NEPA begin training staff at the lower levels throughout the organization so that the F&A functions can be devolved successfully to the lower levels of the company as the unbundling process proceeds.

With time, some Zones will graduate to BUs and at that point they will require more refined F&A capabilities. Nexant recommends two different organization structures at the D&M Zones depending on whether or not the particular Zone has graduated to a BU and the F&A staff have been sufficiently trained for increased responsibilities. At the point when the Zone would be unbundled from the Sector, its F&A group would then take over the F&A functions from the Sector, and therefore the organization would need to replicate the Sector functionality.

At present, the F&A functions at the Sectors and Zones are minimal and are handled by Principal Managers. These functions relate primarily to accounting for costs incurred within the Sectors and Zones. If Sectors and Zones are to be established as BUs with greater financial autonomy, the F&A organizations at these levels must be enhanced considerably.

Figure 2-3 shows the recommended structure for the F&A organization at the Sector level, and Figure 2-4 shows the recommended structure for the F&A organization at an unbundled Zone. The organization structures are virtually the same, reflecting the fact that the unbundled Zone is considered a BU on a par with the Sector.

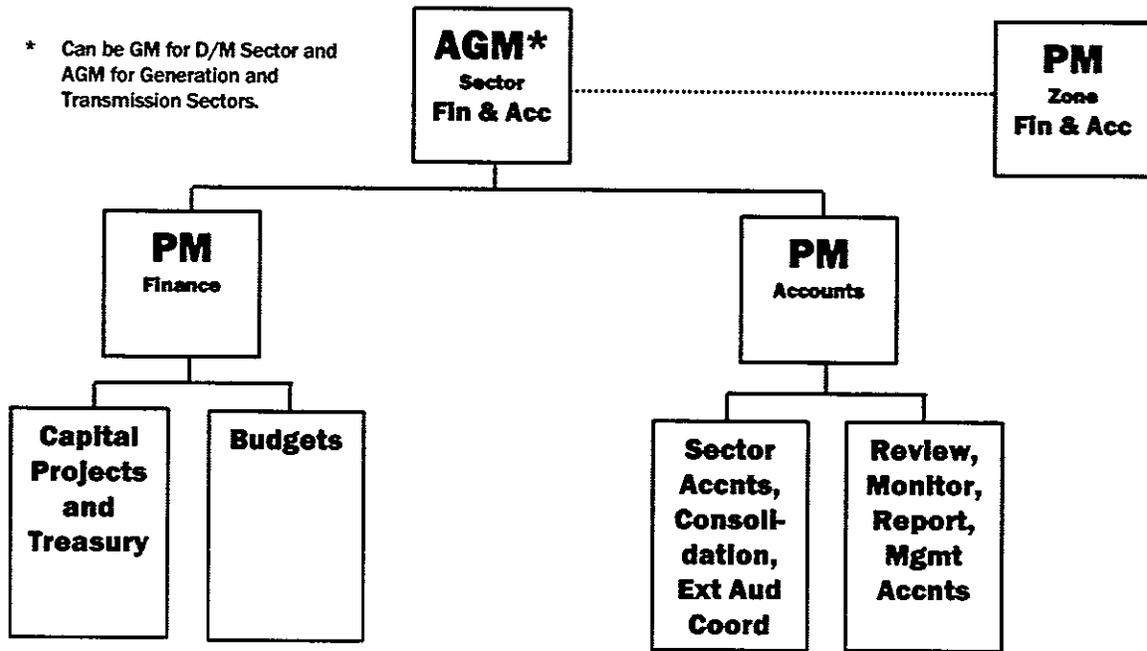


Figure 2-3: Recommended F&A Organization at the Sector Level

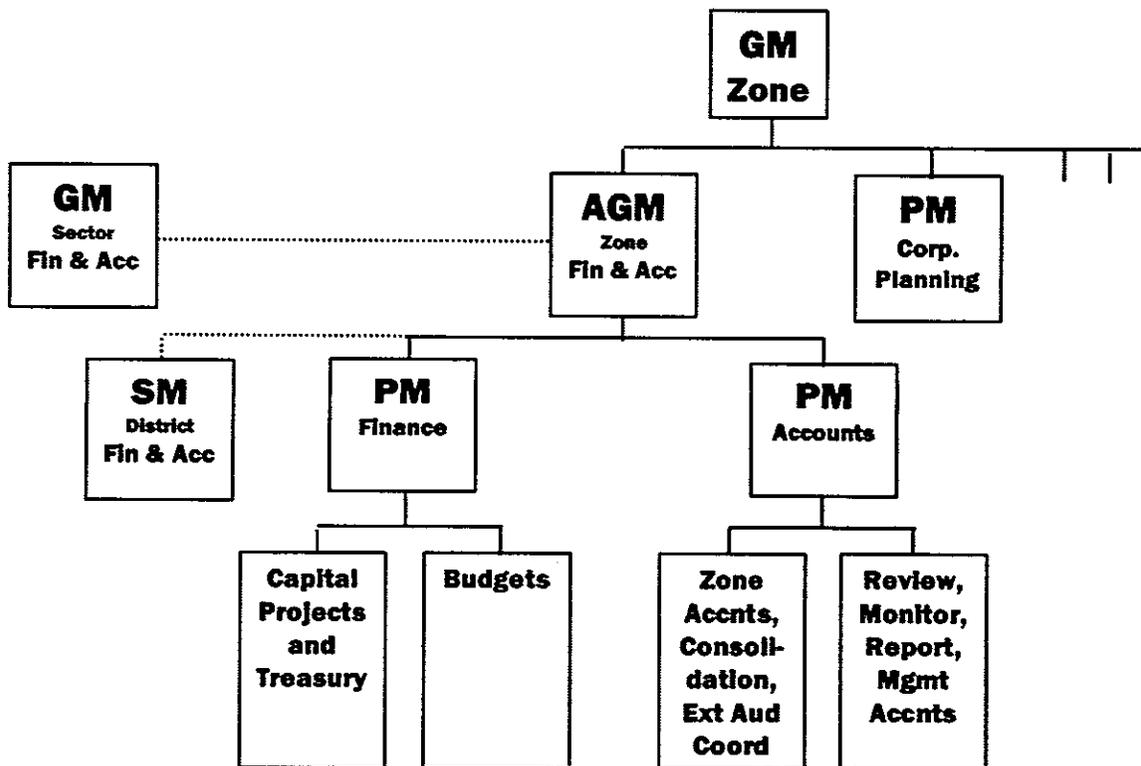


Figure 2-3: Recommended F&A Organization at an Unbundled Zone

The F&A organization at the Sector level can be headed by a GM for the D&M Sector and AGMs for the Transmission and Generation Sectors. The higher-level position in the D&M Sector is justified by the fact that the D&M Sector has a major responsibility for managing the collections from consumers whereas at present the other Sectors have no responsibility for revenues. The top F&A position at an unbundled Zone can be at the AGM level.

Note the dotted line relationships shown between the senior F&A position at the Sector level and the senior F&A positions at the next higher and next lower levels of the organization. These dotted lines are intended to represent functional rather than administrative relationships. Functional relationships must be maintained across all levels of F&A to allow accounting and finance information, as well as accounting policies and procedures, to flow efficiently within the organization.

Note that the organization chart for the unbundled Zone includes a PM, Corporate Planning. This position is shown here, even though it is not part of the F&A organization, to emphasize that an unbundled Zone organization will require the full complement of skilled management staff, as if the Zone were a standalone utility company. Of course there will be additional organizational changes not shown on the chart to transform the Zone from an Operating Unit into a Business Unit.

#### 2.3.4 F&A Functions at Business Units

The following sections discuss the new F&A functions that will be required at the BUs, and describe how the new functions differ from the status quo.

##### 1) *Account for unbundled costs, assets and liabilities*

Under NEPA's accounting framework, Zones, Regions and Districts account for those expenditures funded by the system of imprests. The imprests cover payroll and day-to-day costs. In addition, D&M Districts account for revenues and cash receipts.

With the functional unbundling of NEPA into BUs and the empowerment of the BUs to manage their businesses, the accounting information requirements for BU management decision-making will increase. The current accounting process is inadequate because certain costs, assets and liabilities are accounted for at Headquarters rather than the BU level, and common costs are accounted for at Headquarters. Without a full accounting of costs, assets and liabilities, the financial information is incomplete and as such provides management with a limited view of financial performance.

NEPA should undertake a process of accounts unbundling whereby Business Units account for those costs, assets and liabilities from which they derive benefit. On completion of this exercise, costs, assets and liabilities, formerly accounted for at Headquarters, will be accounted for at the entity responsible for that asset, liability or cost. The consequence of this is that the accounts prepared at the Business Units will reflect underlying financial performance.

Accounts unbundling to the Sectors and to the Lagos Zone pilot BU is demonstrated later in this report. The accounts unbundling framework can be revised and expanded by NEPA F&A as the basis for the new process of accounts unbundling. Once the process has been

implemented, from that point forward the Business Units can maintain their own accounts and financial reporting.

2) *Consolidate trial balances monthly*

Under NEPA's current organization structure, all operating units have an accounting capability. On a monthly basis, they finalize their trial balances, which are then forwarded to Headquarters for consolidation. These consolidated results are for NEPA as a whole. With functional unbundling of NEPA into Generation, Transmission and D&M BUs, and the empowerment of the BUs to manage their businesses, the current system needs to be revised to provide consolidated accounting information on a BU basis.

A bottom-up system of trial balance consolidation should be implemented, as set forth below:

- Operating Units prepare their own trial balances on a monthly basis. However, instead of being forwarded to Headquarters, these trial balances are forwarded to the BUs to which the OUs report.
- BUs (Sectors and unbundled Zones) receive trial balances from the OUs that they manage, consolidate the OU trial balances with their own and prepare financial reports for the entire BU. This consolidated accounting information is available for decision-making by BU management. The BU financial information is in turn forwarded to Headquarters.
- Headquarters F&A receives financial reports from the BUs that it monitors. HQ consolidates the trial balance for the entire company for management reporting to the MD and the Board.

3) *Financial Management Reporting*

Financial Management Reporting at Zones, Regions and Districts is largely focused on cash receipts and cash expenditure, and significantly less focused on the financial performance of the entities. If NEPA fully implements cost unbundling and bottom-up trial balance consolidation, the accounting information generated at the BUs will be reflective of both a) the operations that the entity is now empowered to manage and b) the underlying financial performance. The opportunity is then for Financial Management Reports to be prepared that will help management better understand BU performance.

Recommended reports for the BU level will include: 1) profit and loss statements showing the entity's financial performance, inclusive of all costs, inclusive of the OUs under the BU; and 2) balance sheets showing the financial position, including assets and liabilities, of the entity, inclusive of the OUs under the BU.

4) *Consolidate and Review Operating Unit budgets*

Zones and Regions under the current accounting framework already have a pivotal role in the budgeting process, through the review and moderation of the OU operational budgets for salaries and other operating expenses, and the capital budget, which is for capital projects funded by internally generated revenues.

Nexant recommends that this pivotal role be enhanced. Specifically the Business Unit should: 1) review and moderate the budgets from each Operating Unit in isolation, to ensure

that it is internally consistent and aligned with the business strategy for that Operating Unit; and 2) prepare consolidated operating and capital budgets for the BU overall, and review and moderate these consolidated budgets such they are aligned with the BU's business plan for the year.

This alignment of the consolidated budgets to the Business Unit's strategy is critical – it is the Operating Units that will implement the strategy, but if the resources are not planned for, funded and in place, then that strategy is likely to fail. A later section of this report presents several examples of utility companies that have organized the Budget Group under the Business Planning Group at BU Headquarters. This is an effective approach to ensure that the Budget is managed consistent with the business strategy.

5) *Justify requests for funds for capital investment projects*

Capital is limited and to make the most of these limited resources capital projects need to be carefully prioritized. Business Units are the appropriate level within the hierarchy to both a) prioritize capital investment requests and b) justify these requests to the executive level. The rationale for this is that the Business Unit's management team is responsible for the overall performance of the regional enterprise, including its Operating Units.

The Operating Units will identify various capital projects to the BU management, then it is the role of the BU to prioritize these projects in line with its overall strategic plan. Once prioritized, the BU management will need to justify these potential capital projects at the executive level, whose role is to allocate capital between the competing Business Units, for the overall benefit of NEPA. Should the Business Unit's proposed capital projects be implemented, the BU can be assessed on the success or failure of the projects to achieve the goals laid out in the BU's business plan.

6) *Manage Funds*

Under NEPA's accounting framework, Zones, Regions and Districts manage their imprest accounts. However, Headquarters funding of the imprests has been sporadic, compromising the original intention that imprests were to be funded to the level of the operating budget.

Funds management can be improved to provide more predictability, thereby helping each Operating Unit to administer its imprest in line with its operational budget in order to achieve the strategy underpinning the budget. The following funds management mechanisms should be implemented: 1) NEPA HQ should directly transfer imprests to Operating Units twice monthly by standing order from HQ Treasury, in the amounts approved in the operational budget; and 2) the approved capital budget for projects funded by internally generated revenues (IGR) should be directly transferred from HQ treasury to Sectors on a pre-agreed schedule, and Sectors should promptly allocate the funds to Zones and Regions.

7) *Report treasury activities to Sectors and HQ*

So long as NEPA is a single entity, albeit internally restructured, the centralized management of cash will continue to be an important issue. This is because all divisions are interdependent for supply of electricity to the consumer, and the failure of one through the lack of cash would have consequences far beyond that division. Therefore, treasury reports

prepared by the Business Units should continue to be consolidated at HQ. This will allow effective overall cash management both at the BU level and at Headquarters, and preserve the flexibility for the executive level to transfer funds between divisions when needed because of emergencies or unforeseen circumstances.

#### 8) *Revenue Accounting and Cash Receipt Accounting*

Revenue accounting and cash receipt accounting are primarily the responsibility of the D&M Operating Units that issue invoices and collect cash from customers. However, if regional BUs are going to manage the business overall, then the BUs must monitor these accounts for the OUs for which they have responsibility, and investigate any variances from targets. These functions will be critical for holding the BUs accountable for their performance.

### 2.3.5 F&A Organization at Operating Units

Operating Units can retain the F&A organizational structure that is currently in place. Note that this applies equally to the F&A organizations in the D&M Zones that will not be unbundled from the Sector.

Figure 2-4 shows the existing F&A organization for a District with a PM and two SMs. It is possible that some operating units will be able to handle their F&A requirements with an even smaller organization or a single individual responsible for budgets and accounts. Highly automated utilities often have a single individual with combined responsibilities for budgets and accounts at the OU level, however this may be difficult to achieve at NEPA because of the lack of computerization and IT automation.

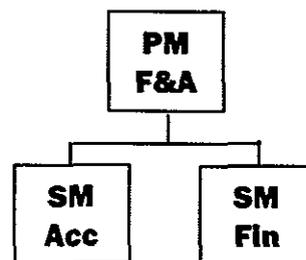


Figure 2-4: Recommended F&A Organization at an Operating Unit

### 2.3.6 Key Issues and Recommendations for F&A Operations

The following sections provide recommendations for day-to-day F&A operations.

#### 1) *Reporting relationship between F&A Headquarters and BUs*

While unbundled Sectors and Business Units will have a high degree of autonomy in managing their respective affairs, nonetheless it is critical that definite lines of communication be maintained between Headquarters and the BUs. For instance, the GM,

F&A for the D&M Sector will report directly to the ED for that Sector for managerial direction but it is important that this GM maintain a functional reporting relationship with the ED, F&A Headquarters. This relationship will facilitate efficient transfer of accounting returns to the Headquarters office and will provide a conduit for accounting policy statements from the ED to lower level accounting units.

### 2) *Managing funds*

Someday the DBUs will keep their collections and purchase generation and transmission services from the GBUs and the transmission entity. However, given the present circumstances it is not practical to leap to this future state. Today's reality dictates the following approaches to manage funds:

- **Tariff revenues** – The existing system whereby all revenues collected by Districts and Undertakings are transferred to HQ should be maintained until such time as the sector is fully restructured with contracts between the DBUs and the GBUs. Lacking formalized contacts, there would be endless disputes about how much of the cash flow the DBUs would keep and how much they would pass on to the generation and transmission sectors. Therefore, HQ F&A will continue to manage the distribution of funds to all of the BUs according to approved budgets.
- **Disbursement of operating budgets** – The approved operating budgets, including salaries, should continue to be directly transferred to operating units under standing orders to NEPA's local banks.
- **Management of capital project funds from internally generated revenues** – Under the current system, apart from the approved budgetary monthly imprest cash transfers for operating expenditures, all other spending is controlled centrally at Headquarters F&A. Like the operating budgets, the approved capital budget for projects to be funded from internally generated sources also should be disbursed directly to BUs from HQ Treasury on a pre-agreed schedule. BUs will be responsible for allocation of funds to OUs based on their internal priorities. If, during the budget year, a shortfall occurs in the expected capital funds from internal sources, the EDs and the MD will jointly reallocate those funds based on the overall priorities of NEPA. Reallocation meetings can be held according to a regular quarterly schedule.
- **Management of funds for capital projects sourced from Government, donors and loans** – The HQ F&A will be responsible for managing the disbursement of these funds. The HQ F&A will handle receipt, cash management, interest accrual and repayment if applicable, and repayment of loans as required.

### 3) *Budgeting Process*

Under the current budgeting process, annual operating and capital budgets are prepared by each Operating Unit and submitted to the next level for review and consolidation. Consolidated budgets for NEPA are prepared at Headquarters and adjusted (mostly downwards) to match anticipated cash inflows. Operating Units are not involved or consulted on decisions taken at Headquarters and consequently funds are allocated inappropriately across budget line items. Budget proposals put forward at each level of the organization tend to be inflated in the certain knowledge that the final budgetary allocations will be trimmed to a large degree.

NEPA's budgeting process has serious weaknesses and budgets are not used as an effective management tool to control and monitor expenditures. There is an urgent need to introduce new budget procedures that are transparent and effective in control and resource allocation based on commercial principles.

The main weaknesses with the existing budgeting system can be summarized as follows:

- Lack of proper guidelines and instructions.
- Weak linkage to a strategic plan for the BU.
- Unrealistic estimates of anticipated cash inflows from electricity sales on which business units make their budget estimates for operating and capital expenditures.
- Budget submissions are inflated as a safeguard against anticipated cuts at HQ.
- Lack of co-ordination and consultation between HQ and field.
- No transparency in decisions made at HQ during budget finalization (mainly concerning expenditure cuts).
- No linkage between performance and budget allocation. For example, generating plants operating at lower capacity are funded to the same degree as when they were operating at higher capacity.
- No performance measurement targets.
- No effective review or monitoring of actual expenditure against budgets.
- Apart from imprest cash transfers for operating expenditures, all other spending is controlled centrally at HQ.

Table 2-1 provides recommended measures to strengthen the budgeting process. It is recommended that the budget for the second half of the current year should be drawn up using these new procedures.

**Table 2-1: Measures to Strengthen the Budgeting Process**

<b>Process</b>	<b>Recommendation</b>
Bottom-up budget coordination	Headquarters F&A will coordinate the company-wide budget process with budget input from BUs, initially the Sectors. Each individual Sector will develop its budget and will submit it to HQ F&A, which in turn will compile the budget into an overall budget for submittal to the Technical Board for consideration. Sectors and business units should be more engaged in the decision-making process at HQ and all EDs should agree upon final budgetary allocations.
Handling budget shortfalls	If budget requests are more than is expected to be available, the HQ F&A will work with the Sector EDs to reduce budgets as required. Sector EDs will meet with the MD and ED F&A on a quarterly basis to review actual expenditures as compared to those budgeted to determine if new allocations should be made because of either shortfalls in revenue collections or unexpected surpluses.

Process	Recommendation
BU budget autonomy	Business Units should be given greater autonomy over expenditure and they should be made more accountable for their budgets.
Budget staff redeployment	The budget function should be strengthened at BUs through redeployment of budget staff from HQ.
Communications	Budget policies, guidelines and instructions should be fully discussed and agreed upon between all EDs.
Tie budget to estimated cash inflow	Budget allocations for operating and capital expenditure should be based on anticipated cash inflows and agreed upon by all EDs. In other words, make expenditure plans more consistent with available cash resources.
Revenue estimates	Improving revenue estimates will require the following processes: <ul style="list-style-type: none"> <li>▪ Generation should provide forecasts of energy supply to D&amp;M.</li> <li>▪ D&amp;M should forecast revenue collection based on realistic estimates for losses, sales, revenue and collection rates.</li> <li>▪ Collection targets should be agreed upon between D&amp;M HQ and Zones.</li> </ul>
Updating cash flow forecasts	Monthly cash flow forecasts should be prepared and linked to budgeted expenditure at each level of the organization.
Linking budgets to BU performance	Budget allocations should be linked to operational and financial performance. Operational and financial performance targets should be set for each BU. BUs should be rewarded or penalized for exceeding or not meeting budgeted performance targets. For example, a BU achieving a better than forecast collection rate should be given a share of the additional revenue inflows. Employee bonuses should be linked to BU performance.
Prioritizing projects and programs	IGR funded capital projects of business units should be prioritized on commercial principles. Plans for rehabilitation, reinforcement and expansion should be ranked in terms of technical needs (e.g. reliability impact) and economic considerations and financial returns (rate of return, pay back period, etc).
Budget reallocation at the BU level	Guidelines for augmentation (which must be approved by the MD at present) and reallocation between budget line items ("virament", which is not permitted at present) must be reviewed to provide more flexibility at the BU level, as long as adequate safeguards are built in.
Budget reporting and monitoring	An effective system of regular reporting (say quarterly to start with) and monitoring of actual expenditure against budgets should be introduced at the business unit, sector and HQ levels. Management should report on performance and major variances should be explained and corrective actions recommended.

#### 4) *Spending authority limits*

Inappropriate low spending limits is a major bottleneck for efficient regional operations because of the time and effort required to get anything approved. Spending authority limits at all levels of NEPA should be reviewed to determine if they are still appropriate. The costs

of good and services have significantly escalated since the existing spending limits were set. Additionally, the devaluation of the Naira during this period has increased greatly the nominal costs of goods and services. Consideration should be given to indexing the spending limits to inflation and the Naira exchange rate.

#### 5) *Combining the F&A and P&A (Personnel & Administration) operations*

F&A and P&A should not be combined at any level of NEPA. Each of these organizations has great importance within NEPA and combining them would dilute one or both of their importance. The P&A function is particularly sensitive in that NEPA may have to go through a period of staff retrenchment as it moves towards internal restructuring and privatization. The P&A organization will be called upon to take critical decisions during this period and will need management which is focused on the needs of this function.

## 2.4 INTERNAL AUDIT ORGANIZATION

Internal audit is a necessary corporate function which will assist NEPA's Board of Directors in the discharge of their duties by verifying that the corporate policies and procedures are being consistently followed, and assessing whether directives from NEPA's Board of Directors have been implemented and that the results achieved are compatible with the established goals. An effective Internal Audit function will enable NEPA's Board of Directors to fulfill their responsibilities, and, importantly, gives assurance to the organization's stakeholders that the Board is fulfilling its responsibilities.

Internal Audit is currently organized as follows:

- Headquarters – HQ handles the following Internal Audit functions: administration of the Internal Audit function for NEPA as a whole; investigation of suspected irregularities at outstations where the independence of the decentralized internal auditors may be compromised; and pre-payment auditing of transactions prior to payment.
- Zones – Zones handle internal auditing of all the outstations within the Zone and pre-payment auditing of transactions prior to payment.
- Stores – Stores Internal Audit handles auditing of goods received and goods dispatched and conducting stock takes.
- Computer Audit – Computer Audit, which is based in Lagos, handles auditing of existing computer hardware and software and auditing of computer hardware and software to be implemented.

The internal restructuring of NEPA should be used as an opportunity to review the Internal Audit Department. Any restructuring of the department will need to take into account that Internal Audit is required to focus on the corporate legal entity, which is NEPA as a whole, while at the same time the organization is devolving to the field. Accordingly, Internal Audit should be structured as follows:

- Headquarters Internal Audit – HQ will be responsible for the following: completeness, adequacy and quality of internal audit within NEPA; the internal audit framework, including policies and procedures; internal auditing at Headquarters; and conducting investigations at Business Units and Operating Units, where conflicts of

interest might arise for BU internal auditors. HQ Internal Audit will report to the NEPA Board of Directors or an Audit Committee of the Board.

- BU Internal Audit – Reporting to the Internal Audit Department at Headquarters, the internal audit organizations at the BU level will be responsible for internal auditing of divisions within their regions.
- Specialist internal audit groups – There will be special internal audit groups reporting to HQ Internal Audit for auditing stores and computer hardware and software.

This structure of Internal Audit both satisfies the need for NEPA as a whole to be internally audited in a uniform controlled fashion, whilst at the same time establishing internal audit functionality at the Business Unit level to monitor the activities, and address the specific issues of those Business Units.

Besides the reorganization of Internal Audit, the following issues should be addressed to make IA more responsive to the needs of the organization:

- Remit and Authority – The Internal Audit Department has no official remit, which has caused some Outstations to refuse to be audited. Nexant recommends that, unless otherwise done so, an official remit from the Board of Directors be developed for the Internal Audit function.
- Code of Conduct – NEPA's existing code of conduct dates from the 1970's and is out of date. The internal auditor's code of conduct should be updated and rewritten.
- Auditing Procedures – Audit programmes are developed, and audit work executed, according to the experience of the personnel. At NEPA, formalized audit programmes and procedures are either out of date or do not exist. This has resulted in a dependence on senior staff, and sub-optimum internal auditing. Formalized audit programmes and procedures should be developed.
- Training – There is little funding to train the internal auditors on developments in internal audit best practices. This has resulted in internal auditors not being aware of developments worldwide, with the potential implication that internal audits being undertaken are sub-optimal. NEPA must find a way to adequately train its internal auditors.
- Funding – Internal auditors' traveling expenses are budgeted at the Zone level, and are not part of the Internal Audit budget. This has resulted in the internal auditors having to seek funds from their Zone to travel and conduct audits. This has sometimes resulted in the failure of internal audits to be performed as the Zones have refused to fund the expenses. At the very least this issue affects the independence of the internal auditor. Funding of internal auditors must be made independent of the entity that is being audited.

## **2.5 NEXT STEPS FOR IMPLEMENTING F&A UNBUNDLING**

NEPA has initiated the process of unbundling F&A. The Chairman, the Board and the MD have all strongly endorsed enhancing regional management of the company through internal restructuring. Nexant and Akintola Williams have provided their recommendations, and a series of in-house cost unbundling and restructuring studies have been completed.

NEPA can keep up this momentum and accelerate the process by assigning internal working groups to implement the following key steps:

- Develop an action plan to implement pilot unbundling at Lagos Zone. This action plan will encompass not only F&A but also the other functions of the Zone and Operating Units under the Zone.
- Authorize NEPA F&A Counterpart Team to work on implementation of F&A unbundling to the Sectors and the Lagos Zone Pilot BU.
- Determine the responsibilities of the F&A staff at the BU level.
- Develop any required new procedures, reporting and information flow, both internal and external to the BU.
- Analyze computerization requirements and develop recommendations.
- Evaluate staffing requirements, develop job descriptions and a staffing plan and implement the plan.
- Provide required staff training to strengthen the F&A organization at the BU level.
- Strengthen the budgeting process.
- Increase spending authority limits at BUs and OUs consistent with enhanced regional management autonomy.
- Restructure Internal Audit according to best international practices.
- Identify operational and performance measurements, and set targets for the BUs.
- Develop a system of quarterly reporting of operational and financial performance by BUs.
- Appoint the PM for MIS and authorize an MIS Task Team to design and implement an MIS system.
- Identify basic IT, systems and training needs.
- Consider extending unbundling of the D&M Sector to other Zones in addition to the Lagos Zone pilot BU.

**3.1 OVERVIEW**

The purpose of this section is to demonstrate accounts unbundling to support the internal restructuring of NEPA into Business Units. Accounts unbundling is the process of allocating costs, assets and liabilities to the various company divisions. It serves as the basis for financial management, cost accounting and transfer pricing at the BU level.

NEPA intends to unbundle accounts from the Headquarters to the Business Units. As described in the previous section, during the initial phase of internal restructuring the BUs are defined as the Generation, Transmission and Distribution & Marketing Sectors and the Lagos Zone Pilot BU. This section presents the methodology and results for accounts unbundling to the Sectors. Accounts unbundling for the Lagos Zone pilot is presented in the next section.

**3.1.1 Current System: Centralized Accounting**

Under the current system, accounting, financial reporting and budget functions are highly centralized at NEPA Headquarters. The generation, transmission and distribution businesses are best characterized as operating units subject to strict central budget controls enforced by central budget rationing. Internal processes for financial management and cost accounting are summarized as follows:

- **Financial Management** – Financial performance is reported and reviewed only at the Headquarters level, where consolidated financial statements of NEPA are produced once a year. However, the annual financial statements do not serve any meaningful purpose for management as these are usually completed six months after the year-end and published six months thereafter. Periodic management accounts are not prepared. In summary, financial controls are lacking at all levels of the organization. Financial decision-making is centralized at HQ.
- **Accounting for Costs, Assets and Liabilities** – Operational and maintenance costs are aggregated at headquarters and published in the annual financial statements by core activity (generation, transmission and distribution & marketing). Administrative and general overhead expenses of operating units, area offices and headquarters are not allocated by activity. Fixed assets registers are maintained at Headquarters by core activity. FGN and donor funded investments, loans, major supplier accounts (such as gas), VAT payments, pension liabilities and bad debt provisions are accounted for at headquarters. Balance sheets and cash flows are reported for NEPA as a whole, but not for any of the divisions.

Self-Accounting Undertakings (152 in all) submit their monthly trial balances, revenue and operating expenditure returns, capital works returns and treasury (cash receipts, remittances and imprest account) reports to Headquarters for consolidation. All accounting records at Undertakings are manually kept and the general ledger software and computer hardware at Headquarters is outdated and totally inadequate. However, the basic accounting structure is sound and the accounts coding is capable of generating accounting information by category at every level of the business.

### **3.1.2 The Way Forward**

The unbundling of NEPA's accounts, the devolving of F&A functions and responsibilities from Headquarters to BUs and the establishment of the BUs as profit centres are key prerequisites to the restructuring, commercialization and subsequent separation of NEPA's core activities into independent and autonomous companies.

Under the new environment of internally unbundled generation, transmission and distribution BUs, accountability and responsibility will be devolved downwards and management performance will be judged at each level of the organization. Management performance will be measured in terms of operational and financial results. Local management will be able to take ownership and responsibility for their actions only if they are involved in the decision making process, have more control over their budgets, and are better informed about their costs and revenues.

## **3.2 OBJECTIVES OF ACCOUNTS UNBUNDLING & TRANSFER PRICING**

### **3.2.1 Key Objectives**

The objectives of accounts unbundling and transfer pricing are to:

- Identify BU cost-of-service, i.e. the full financial costs to own and operate the business, including a fair allocation of the cost of services supplied by other NEPA divisions.
- Allocate revenues to the BUs so as to determine their profitability.
- Establish a more transparent and effective system of budgeting and monitoring.
- Make the BUs accountable for their operational and financial performance.

### **3.2.2 Recommendations**

To achieve the key objectives of accounts unbundling, we recommend the following actions:

- Establish a system of allocating corporate costs to the business units on a fair and equitable basis. Corporate costs incurred at Headquarters and Sector head offices will consist of: 1) administrative and general costs; 2) interest and other financial charges; and 3) depreciation of fixed assets of headquarters and sector offices.
- Identify assets and liabilities of each business.
- Establish a mechanism for allocating assets and liabilities retained at Headquarters to the business units on a fair and equitable basis.
- Introduce a system of transfer pricing that will allocate revenues to BUs and establish a basis for profit measurement for each BU.
- Strengthen the budgeting process through the following measures: 1) co-ordination between the Generation, Transmission and Distribution and Marketing Sectors; 2) realistic and forward looking expectations of revenue collection and allocation of expected revenue flows to business units, which will form the basis of their operating and capital expenditure budgets; 3) performance based budgeting; 4) linking projected cash flows to budgeted expenditures on a monthly basis; and 5) effective monitoring of actuals against budgets.
- Establish operational and financial performance measurements.

- Introduce a culture of regular and timely reporting of operational and financial performance all along the chain. We recommend quarterly reporting during the initial phase of twelve months and monthly reporting thereafter. Consolidated reports should be submitted to HQ within 45 days of quarter-end in the initial phase and 30 days thereafter. The process should be put in place as soon as possible.

The flow of accounting data and budget preparation (present and recommended) is illustrated in Figure 3-1.

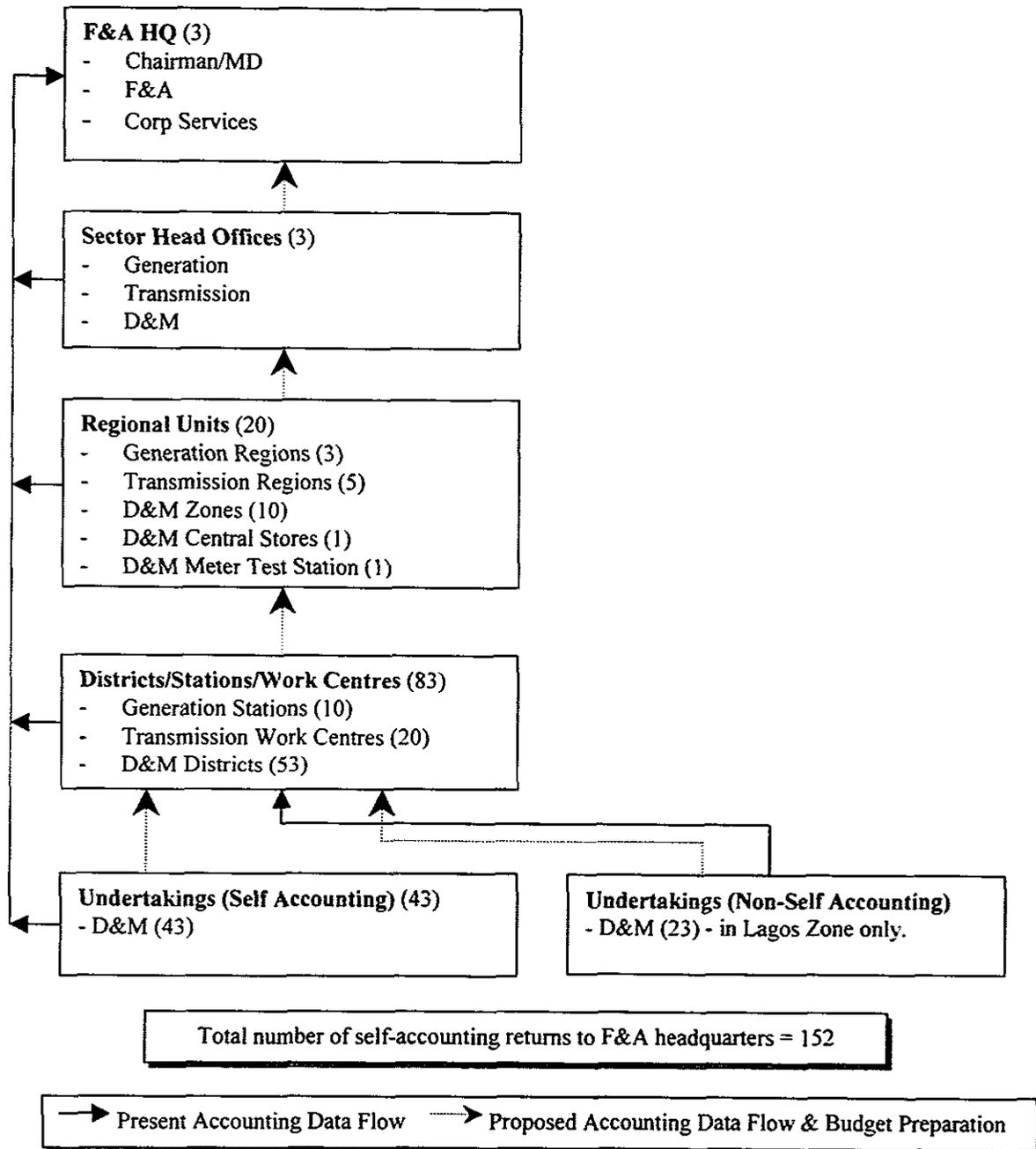


Figure 3-1 NEPA: Flow of Accounting Data & Budget Preparation

### **3.3 METHODOLOGY FOR ACCOUNTS UNBUNDLING & TRANSFER PRICING**

The objective of the accounts unbundling exercise is to allocate all costs, assets and liabilities accounted for at levels above BUs to the BUs on a fair and equitable basis. This process is necessary to determine the true cost-of-service at each BU and establish transfer prices between generation, transmission and distribution businesses. Financial statements that reflect an accurate view of operations and financial position of each BU can then be presented.

#### **3.3.1 Overview of Computer Model to Allocate Costs, Assets and Liabilities**

Nexant has developed a computer Excel spreadsheet model to automate the following tasks:

- Determine the cost-of-service for the Generation, Transmission and D&M Sectors.
- Establish cost-of-service based transfer prices for each Sector.
- Allocate retail revenue to each business, pro-rated to transfer prices.
- Present statements of profit and loss account and cash flow by Sector.
- Carry out all of the above tasks for the Lagos Zone pilot BU, as described in the next section.

The results of the model for the years 1999, 2000 and 2001 are summarized below. The full output of the model is attached as Appendix A.

#### **3.3.2 Sources of Data**

Operational and financial data obtained from the following sources has been used in the model:

- NEPA's audited 1998 and draft 1999 financial statements
- NEPA's approved 2000 and draft 2001 operating and capital budgets
- Annual technical reports for generation and transmission grid operations for 1998 and 1999 issued by National Control Centre (NCC), Osogbo
- 1999 annual report issued by Distribution and Marketing Sector
- NEPA Financial Review Draft Report (G. Dhalla, December 2000)
- NEPA: Retail Tariff Study Draft Report (Economic Consulting Associates, December 2000)
- Quarterly Distribution and Marketing report for Lagos Zone for the second quarter 2000
- Lagos Zone cash collection report, January to November 2000
- Third quarter 2000 sales and billing returns for Lagos Zone
- Operating expenses for Lagos Zone, January to November 2000
- Various other financial data provided by NEPA's Finance and Accounts department

### 3.3.3 Cost-of-Service

Cost-of-service based revenue requirements are comprised of capital costs and operating costs. Table 3-1 shows a breakdown of the capital and operating costs for a utility company. The Nexant cost-of-service model compiles these costs for all levels of the company, and then allocates these costs to the BUs based on causality.

<u>Capital Costs</u>	<u>Operating Costs</u>
<ul style="list-style-type: none"> <li>▪ Interest on Debt</li> <li>▪ Depreciation</li> <li>▪ Return on equity</li> </ul>	<ul style="list-style-type: none"> <li>▪ Fuel</li> <li>▪ Purchased power</li> <li>▪ Maintenance &amp; operations</li> <li>▪ Materials and supplies</li> <li>▪ Labor</li> <li>▪ Taxes</li> </ul>

**Table 3-1: Cost-of-Service Components**

Figure 3-2 depicts the allocation of costs to the Sectors, and the build-up of costs from generation to transmission to distribution and finally to the end customers. Note that each Sector's cost-of-service includes not only its own internal costs, but also a fair allocation of Headquarters costs.

Determining the cost-of-service for the Sectors is straightforward for the most part, however the following relatively complex issues must be addressed:

- Fair allocation of liabilities;
- Allocating the costs of shared services between BUs, for example maintenance crews that work on both transmission and distribution facilities; and
- Allocation of HQ administration costs, operating costs, fixed assets and liabilities.
- Appropriate return on equity
- Allowance for bad debts

The bases for allocating NEPA's assets and liabilities to the Sectors are detailed below.

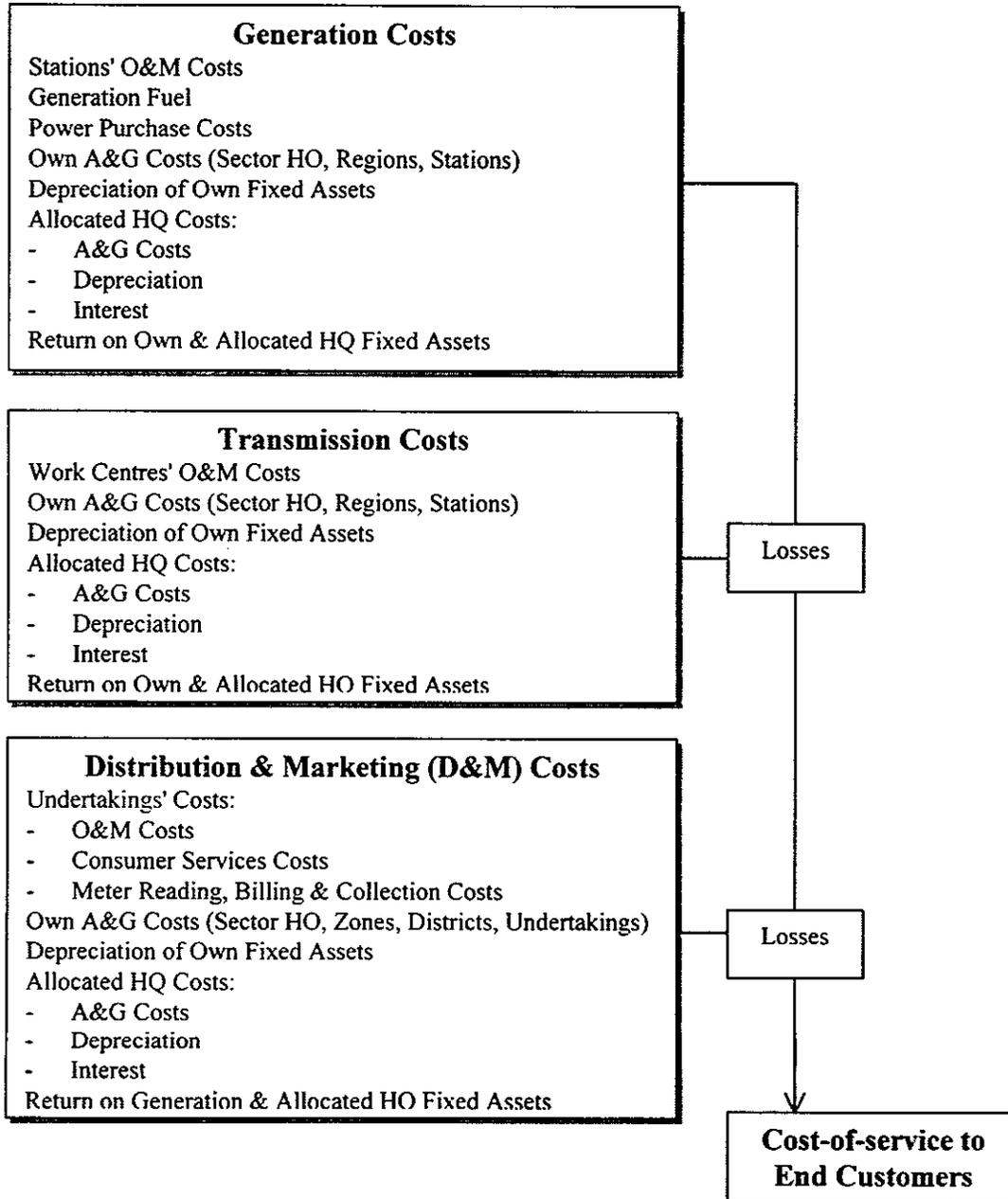


Figure 3-2 Cost-of-Service

**3.3.4 Basis of Allocation of Costs to each Sector**

1. Operational & Maintenance Costs: Sector "own" costs.
2. Generation Fuel Costs: all to Generation Sector.
3. Power Purchase Costs: all to Generation Sector.
4. Administrative & General (A&G) Costs:

$$\text{Sector A\&G Costs} + \frac{\text{Sector O\&M and A\&G Costs}}{\text{Combined Sectors' O\&M and A\&G Costs}} \times \text{HQ A\&G Costs}$$

5. Interest Charges:

$$\frac{\text{Total Loans identified to Sector}}{\text{Total NEPA loans}} \times \text{Total NEPA Interest}$$

6. Deprecation Charge:

$$\text{Sector Depreciation} + \frac{\text{Sector Depreciation}}{\text{Combined Sectors' Depreciation}} \times \text{HQ Depreciation}$$

**3.3.5 3.3.5 Basis of Allocation of Other Operating Revenue**

1. FGN Subsidy for Emergency Power Program Capacity Costs: all to Generation Sector.
2. Reconnection Fees, Service Connection Fees, etc: all to Distribution & Marketing Sector.

**3.3.6 3.3.6 Basis of Allocation of NEPA Assets and Liabilities**

1. Gross Fixed Assets:

$$\text{Sector Gross Fixed Assets} + \frac{\text{Sector Gross Fixed Assets}}{\text{Combined Sectors' Gross FA}} \times \text{HQ Gross Fixed Assets}$$

2. Accumulated Depreciation:

$$\text{Sector Acc. Depreciation} + \frac{\text{Sector Acc. Depreciation}}{\text{Combined Sectors' Acc. Depr}} \times \text{HQ Acc. Depreciation}$$

## 3. Work in Progress (WIP):

$$\text{Sector WIP} + \frac{\text{Sector Capital Expenditure}}{\text{Total NEPA Capital Expenditure}} \times \text{HQ WIP}$$

## 4. Loans: as identified for each Sector.

## 5. Stores: Total NEPA Stores x Share of Sector Stores at 6/30/00.

## 6. Debtors: Total NEPA Debtors x Sector Share of Total NEPA Cost of Electricity Supply.

## 7. Creditors: Total NEPA Creditors x Sector Share of Total NEPA O&amp;M and A&amp;G Costs.

**3.3.7 Basis of Allocation of Cash Flow Items**

## 1. Capital Expenditure (Capex):

$$\text{Sector Capex} + \frac{\text{Sector Net Fixed Assets}}{\text{Total NEPA Net Fixed Assets}} \times \text{HQ Capex}$$

## 2. FGN Financing of Capital Expenditure (Capex):

$$\text{FGN Financing for Sector Capex} + \frac{\text{Sector Capex}}{\text{Tot NEPA Capex}} \times \text{FGN Financing for HQ Capex}$$

## 3. Debt Service Paid:

$$\frac{\text{Total Sector Loans}}{\text{Total NEPA Loans}} \times \text{Total NEPA Debt Service Paid}$$

## 4. Bad Debts (or Uncollected Billing):

$$\frac{\text{Billed Revenue Allocated to Sector}}{\text{Total Billed Revenue}} \times \text{Bad Debts (Uncollected Billing)}$$

**3.3.8 Return on Equity**

Cost-of-service includes return on equity. Return on equity for each Sector is calculated on the basis of the following formula:

$$\text{Rate of Return specified for Sector} \times \text{Average Equity Employed during the year}$$

Equity is defined as the sum of net fixed assets, work in progress, working capital (stores, debtors less creditors) less loans. It should be noted that fixed assets are stated at historical

book values to December 31, 1999 and price-indexed from 2000 onwards for forecast inflation and exchange rate movements. The following rates of return have been assumed for each of the three Sectors:

- Generation Sector 12%
- Transmission Sector 8%
- Distribution & Marketing Sector 20%

The above rates may be altered as considered appropriate. In our assessments of the rates of returns for each business, we have applied the following rationale:

- That the transmission business will remain in public hands and that the Government will not expect commercial returns, if any.
- Due to the relatively high asset base value of existing generating plants, returns on generation assets are set at rates lower than D&M rates in recognition of the fact that the generation business is not as complex to manage as the D&M business.
- Investors in D&M will expect much higher returns on their less capital-intensive business relative to generation.
- Rates of return should be moderated for the foreseeable future due to operational inefficiencies of NEPA.

### 3.3.9 Bad Debts or Uncollected Billing

The cost-of-service formula does not make any allowance for bad debts or uncollected billing. This is designed to provide incentives to the utility to improve its collection rate and to ensure that NEPA's inefficiencies in this respect are not passed on to those customers who pay their bills. An efficient utility should collect between 95% and 99% of its customer billings and a case could be argued for a small percentage of billing to be considered as an allowable expense in tariff setting, recognizing that this is an inevitable cost of doing business.

Since D&M does not collect all of its billings to customers, it is inevitable that it will not be in a position to pay in full for the energy supply costs of generation and transmission. Projected bad debts or uncollected customer billings are therefore allocated to sectors based on their respective share of total NEPA revenue in determining the profitability and cash flow of each sector.

Electricity receivables, as recorded in NEPA's book, are grossly overstated as a large part of the debt stock will not be collected. We recommend that a proper assessment is undertaken to determine the true extent of recoverable debts and that the balance be written off. Adequate bad debt provisions should be made in the financial statements in the future.

### 3.3.10 Illustrative Chart showing Flow of Electricity, Costs and Transfer Prices

Figure 3-3 provides a diagram showing the flow of electricity from generation through T&D to the customer, and the flow of Naira from customers to D&M to Transmission to Generation. This diagram illustrates transfer pricing principles.

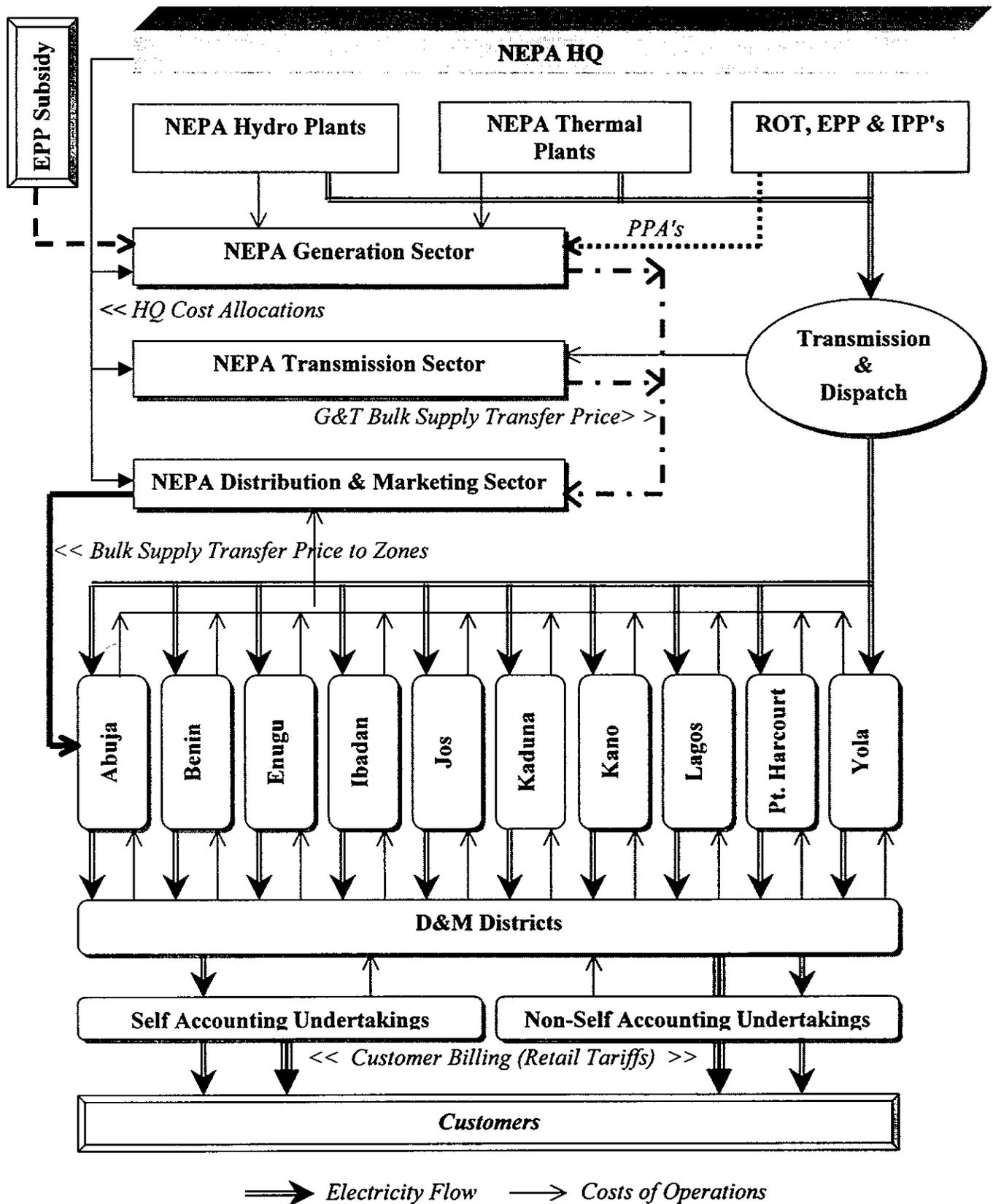


Figure 3-3 NEPA: Flow of Electricity, Costs and Transfer Prices

### **3.3.11 Classification of Costs**

For designing multi-part transfer prices with energy, demand and customer components, each cost category must be classified as either demand-, energy- or customer accounts-related. The appendix provides the classification of utility cost categories used in this study. Note that all transmission and distribution costs have been classified as demand related due to insufficient data to properly analyze the split of such costs between fixed and variable elements. In any case, the majority of T&D costs are considered to be capacity related.

We have built the capability for cost classification into the modelling to provide NEPA with the flexibility to complete the analysis if needed. In addition, we provide some indicative results later in this section.

## **3.4 RESULTS FOR ACCOUNTS UNBUNDLING TO SECTORS**

### **3.4.1 Cost-of-service based Transfer Prices**

The accounts unbundling model produces the cost-of-service for each Sector for 2000 and 2001. The modelling itself is straightforward, based on the foregoing methodology. The data and the assumptions behind the modelling are too voluminous to describe in detail. Instead, we provide a full tabulation of the model inputs and outputs in the appendix. Additional description of underlying modelling assumptions is provided in the NEPA Financial Review Draft Report (Dhalla, March 2000). The model will be handed over to NEPA staff to familiarize themselves with the theory and data so that they can replicate the study as needed in the future.

Transfer price results for years 2000 and 2001 are summarized in Table 3-2 and compared with budget figures. The transfer pricing information is broken down as follows:

1. Transfer price based on full recovery of cost-of-service (net of FGN subsidy).
2. Revenue shortfall, being the difference between cost-of-service and end customer tariffs.
3. Final transfer prices based on total system weighted average end customer tariff.
4. Allocation of total system weighted average end customer tariff to the Generation, Transmission and D&M Sectors.

**Table 3-2**  
**Cost-of-service based Transfer Prices & Revenue Shortfalls**  
**for 2000 and 2001 (as forecast)**

	2000		2001	
	NEPA Budget	Financial Study	NEPA Budget	Financial Study
<b><i>Energy Supply</i></b>				
Energy Sent Out (GWh)	14,123	14,123	15,779	15,779
Energy Delivered to Distribution (GWh)	13,275	13,275	14,832	14,832
Energy Sales (GWh)	9,377	9,377	10,730	10,730
<b><i>1. Cost-of-service based Transfer Prices (full recovery)</i></b>				
Generation (N/kWh of Energy Sent Out)	0.86	0.86	1.17	1.17
Transmission (N/kWh of Energy delivered to Distribution)	0.34	0.37	0.52	0.51
G & T (N/kWh of Energy delivered to Distribution)	1.26	1.28	1.76	1.75
Distribution & Marketing (N/kWh of Energy Billed)	1.83	2.06	2.25	2.39
Total System (N/kWh of Energy Billed) - net FGN Subsidy	3.60	3.88	4.68	4.81
Total System (N/kWh of Energy Billed) - before of FGN Subsidy			4.96	5.09
<b><i>2. Revenue Shortfall</i></b>				
Generation (N/kWh of Energy Sent Out)	0.08	0.13	0.32	0.16
Transmission (N/kWh of Energy delivered to Distribution)	0.02	0.06	0.14	0.07
G & T (N/kWh of Energy delivered to Distribution)	0.09	0.19	0.48	0.23
Distribution & Marketing (N/kWh of Energy Billed)	0.16	0.31	0.62	0.32
Total System (N/kWh of Energy Billed) - net FGN Subsidy	0.30	0.58	1.28	0.65
Total System (N/kWh of Energy Billed) - before of FGN Subsidy			1.56	0.93
<b><i>3. Final Transfer Prices based on Customer Tariffs</i></b>				
Generation (N/kWh of Energy Sent Out)	0.78	0.73	0.85	1.01
Transmission (N/kWh of Energy delivered to Distribution)	0.32	0.31	0.38	0.44
G & T (N/kWh of Energy delivered to Distribution)	1.15	1.09	1.28	1.52
Distribution & Marketing (N/kWh of Energy Billed)	1.67	1.75	1.63	2.07
Total System (N/kWh of Energy Billed)	3.30	3.30	3.40	4.16
<b><i>4. Allocation of Weighted Av Tariff (N/kWh Energy Billed)</i></b>				
Generation	1.18	1.10	1.25	1.49
Transmission	0.45	0.44	0.52	0.60
Distribution & Marketing	1.67	1.76	1.63	2.07
Total System	3.30	3.30	3.40	4.16

## Notes:

1. Transmission losses are assumed at 6.0% and total transmission and distribution losses are assumed at 33.6% for 2000 and at 32.0% for 2001. According to the NCC annual technical reports, transmission losses were 9.8% and 15.5% in 1998 and 1999 respectively. NCC's reported losses are considered to be unrealistically high.

The following observations can be drawn from the model results:

- Present tariffs are inadequate to meet NEPA's cost-of-service, including modest returns on net capital employed (equity). The revenue shortfall in 2001 would increase from 0.65 N/kWh to 1.51 N/kWh of energy billed if the proposed tariff increases incorporated in the study were not implemented.
- Cost-of-service would be much higher if generally accepted practices for systems maintenance were undertaken. Present neglect of the system due to cash constraints has the effect of understating the "true" cost-of-service. On the other hand, NEPA's current operational inefficiencies are reflected in the cost-of-service.

- Approximately 25% of billings are currently uncollected and such lost revenues are not reflected in the above costs. "Realized" revenue is thus only 75% of billed weighted average revenue and the "true" shortfall in revenue is 1.25 times the figures shown in the above table.

NEPA is faced with different potential approaches to transfer pricing. The current practice of centralized budgeting allocates available funds to company divisions based on a subjective assessment of relative need. Cost-of-service based transfer pricing is an alternative approach that might be viewed as less subjective and easier to administrate. Another advantage is that eventually, when the BUs are set up as independent subsidiaries, some or all of them may be subject to cost-of-service regulation. Therefore migrating to cost-of-service based transfer pricing would be consistent with the probable future regulatory regime.

### 3.4.2 Cost-of-service Components

The constituent components of cost-of-service for each Sector, including operating costs, "other" operating revenues, depreciation, interest and return on investment, are shown in Table 3-3.

**Table 3-3**  
**Summary Cost-of-Service**  
**All Costs in Naira billions for 2001**

	Gen	Trans	D&M	NEPA	Gen	Trans	D&M	NEPA
Operating Costs	12.4	4.6	20.3	37.3	67%	62%	79%	72%
Other Op Revenue	(3.0)	-	(0.4)	(3.4)	(16%)	-	(2%)	(6%)
Depreciation	4.4	1.0	1.2	6.6	24%	13%	5%	13%
Interest	0.9	0.1	0.2	1.2	5%	1%	1%	2%
Return	3.8	1.8	4.3	9.9	20%	24%	17%	19%
Total Cost-of-service	18.5	7.5	25.6	51.6	100%	100%	100%	100%
% Share	35%	14%	51%	100%				
Share of Costs:								
Demand	74%	100%	80%	81%				
Energy	26%	-	-	9%				
Customer Accounts	-	-	20%	10%				

### 3.4.3 Multi-part Transfer Prices

Transfer prices in this study are presented in terms of energy (i.e. per kWh) only. A proper electricity pricing structure would require bulk costs of supply to be recovered through separate demand and energy charges. Ideally, the structure of internal bulk supply tariffs should reflect the underlying structure of cost-of-service. Therefore, fixed costs, which are dependent on the capacity required to meet consumer demand but are uninfluenced with the energy supplied, should be recovered through a fixed charge per unit of demand. Variable costs, which depend on the actual energy supplied, should be recovered through an energy charge.

Although we have attempted to split the cost-of-service between demand, energy and maintenance of customer accounts, we have refrained from presenting a complex structure of bulk supply tariffs as this is beyond the scope of this study. A detailed tariff design study is

needed to address this issue, amongst many other issues. Table 3-4 shows an indicative split of costs of supply, expressed in kWh of billed energy.

**Table 3-4**  
**Structure of Cost-of-service expressed in Naira/kWh of Billed Energy**  
**Year 2000**

	Demand	Energy	Customer Accounts	Total
Generation (N/kWh)	1.27	0.45	-	1.72
Transmission (N/kWh)	0.70	-	-	0.70
Distribution & Marketing (N/kWh)	1.91	-	0.48	2.39
Total System (N/kWh)	3.88	0.45	0.48	4.81
Equivalent to	\$205/kWh/Year <sup>1</sup>		N143/Month/ Customer	

Notes:

1. Assumes a system load factor of 64%.

#### 3.4.4 Marginal Cost based Tariffs

Marginal or economic cost based tariffs are designed to promote economic efficiency. Marginal cost is the incremental cost of meeting additional demand. In NEPA's current state of deterioration and underdevelopment, the true financial requirements for each of the Sectors is likely to be close to marginal cost, however the current tariff levels are too low to support marginal cost-based transfer pricing between the Sectors.

The NEPA Retail Tariff Study Draft Report (Economic Consulting Associates, December 2000) estimated the overall weighted average marginal costs to be 9.0 N/kWh in 2001. This number reflects the historic high level of system losses. If, however, losses were about half of present levels, the marginal cost would fall to 6.9 N/kWh. This compares to a cost-of-service based revenue requirement of 5.1 N/kWh before FGN subsidy.

#### 3.4.5 Cash Flow based Revenue Requirements and Tariffs

NEPA's revenue requirements may also be considered in terms of its cash flow requirements made up of the following:

- Cash operating expenses (O&M and A&G).
- Working capital requirements.
- Debt service, including repayment of loan principal.
- Investments financed from own resources.
- Exceptional charges, such as retrenchment costs.
- Dividends (not applicable at present).

In contrast, revenue requirements under the cost-of-service approach makes allowances for depreciation to provide for asset renewal and replacement.

The NEPA Financial Review Draft Report estimates NEPA's overall revenue requirements for 2001 and 2002 to be 4.2 N/kWh and 6.2 N/kWh respectively. This compares with the present weighted average revenue of 3.3 N/kWh. The study calls for three quarterly tariff

increases of 22% plus price and exchange rate indexation, as from April 1, 2001, plus 50% improvement in collections performance. The proposed cumulative nominal increase to October 1, 2002 will be about 90%.

The projected weighted average revenue for 2002 of 6.2N/kWh compares favorably to the estimated marginal cost of 6.9N/kWh.

### 3.4.6 Income statements, Cash Flows and Key Ratios by Sector

Table 3-5 provides summary income statements, cash flows and key ratios by Sector for 2001.

**Table 3-5**  
**Summary Income Statements, Cash Flows & Key Ratios by Sector**  
**(Forecasts for 2001, based on NEPA Financial Study)**

All revenues & costs are stated in Naira billions.				
	Gen	Trans	D&M	NEPA
<b>Income Statements</b>				
Electricity Revenue:				
Based on Present tariffs	12.7	5.1	35.4	35.4
Additional Revenue from Proposed Tariff Increases	3.3	1.4	9.3	9.3
<b>Total Electricity Revenue</b>	<b>16.0</b>	<b>6.5</b>	<b>44.7</b>	<b>44.7</b>
Other operating Revenue	3.0	-	0.4	3.4
<b>Total Operating Revenue</b>	<b>19.0</b>	<b>6.5</b>	<b>45.1</b>	<b>48.1</b>
Operating Expenses:				
Power Purchase	6.3	-	22.5	6.3
Operations & Maintenance	3.3	2.2	11.0	16.5
Administrative & General	2.8	2.4	9.3	14.5
Bad Debts	2.9	1.2	4.0	8.1
Depreciation	4.4	1.0	1.2	6.6
<b>Total Operating Expenses</b>	<b>19.7</b>	<b>6.8</b>	<b>48.0</b>	<b>52.0</b>
<b>Operating (Loss)</b>	<b>(0.7)</b>	<b>(0.3)</b>	<b>(2.9)</b>	<b>(3.9)</b>
Interest	0.8	0.1	0.2	1.2
<b>Net (Loss) before Exceptional Charges</b>	<b>(1.6)</b>	<b>(0.4)</b>	<b>(3.1)</b>	<b>(5.1)</b>
<b>Cash Flows</b>				
<b>Net Cash Flow from Operations</b>	<b>4.1</b>	<b>1.4</b>	<b>1.3</b>	<b>6.8</b>
Debt Service	(2.4)	(0.4)	(0.6)	(3.4)
Capital Expenditure from Own Resources	(1.0)	(1.7)	(0.6)	(3.3)
<b>Cash Surplus/(Shortfall)</b>	<b>0.7</b>	<b>(0.7)</b>	<b>0.1</b>	<b>0.1</b>
Exceptional Charges				(1.7)
<b>Net (Decrease) in Cash Balance</b>				<b>(1.6)</b>
<b>Net Cash Balance at Year end</b>				<b>0.7</b>
<b>Ratios</b>				
<b>Operating Margin</b>	<b>- 3.8%</b>	<b>- 3.8%</b>	<b>- 6.4%</b>	<b>- 8.0%</b>
<b>Return on Equity</b>	<b>- 5.0%</b>	<b>- 1.1%</b>	<b>- 14.3%</b>	<b>- 5.7%</b>
<b>Debt Service Cover (times)</b>				<b>0.8</b>
<b>Self-financing Ratio</b>				<b>8.4%</b>

Note that the financial projections provided in the table incorporate additional electricity revenues of N9.3 billion from proposed tariff increases. The projected operational expenditure could not be met from existing tariffs.

The Financial Review recommends the financial restructuring of NEPA's loan portfolio and other overdue obligations and the cleaning up of the balance sheet. In determining the future revenue requirements of NEPA, a net debt write-off of N33.9 billion has been assumed. The debt write off involves deferred debt service due to the Government (representing accumulated and unpaid debt service due to external lenders and assumed by Government), amounts due to the National Gas Company (difference between gas price charged by NGC and 3 N/Mcf paid by NEPA since 1994) less electricity dues of Government. These recommendations are reflected in the figures provided in our report.

#### **3.4.7 Recommendations**

We recommend that the accounts unbundling computer model be adopted by NEPA to determine cost-of-service based revenue requirements and transfer prices between each business. Transfer prices should be established annually at the time of budget preparation and revised, if necessary, during the year. A committee consisting of AGM Accounts at HQ and F&A heads of the Generation, Transmission and Distribution & Marketing Sectors should assume responsibility for the model.

We also recommend that each Business Unit should adopt the transfer prices as determined by the committee and record its revenue and cost of energy sold and purchased. Such revenues and costs should be reported by BU's in their income statements to be contained in the regular financial and management reports.

#### **3.5 NEXT STEPS FOR NEPA**

The following actions are recommended for NEPA:

- Study the financial model in readiness for joint review and discussions with Nexant.
- Update asset register through end of year 2000 as a basis for allocating assets to Business Units.
- Begin the process of establishing fixed assets registers for each Zone.
- Identify HQ assets and liabilities that can be directly related to BUs.
- Adopt the spreadsheet model for accounts unbundling and transfer pricing, and enhance model as required.

## Section 4

## Unbundling F&A at Lagos Zone Pilot Business Unit

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At the start of this project it was agreed that a pilot program would be undertaken at Lagos Zone in the Distribution and Marketing Sector to establish the unit as a full-fledged unbundled Business Unit. Under the BU model, Lagos Zone would be given more autonomy and greater oversight over District operations within its franchise territory, and Lagos Zone would be responsible for financial management of the regional D&M business. The most senior F&A position would be upgraded from a Principal Manager to an Assistant General Manager to underscore the needed authority and significance of the finance function in the hitherto engineering-dominated organization.

### 4.1 NEW F&A FUNCTIONS & ORGANIZATION AT LAGOS ZONE

The following new F&A functions are recommended for implementation at Lagos Zone:

- Setting operational and performance targets in consultation with Districts and D&M HQ.
- Maintaining registers of and accounting for fixed assets within the Zone.
- Accounting for energy purchase costs based on bulk transfer prices established at the corporate level.
- Consolidating the accounting and financial data of its Districts.
- Reviewing and monitoring operational and financial performance of its Districts.
- Regular (quarterly in the initial phase) reporting of consolidated operational and financial performance and cash flows of the Zone to D&M HQ.
- Exercising greater authority over budget allocations for the Zone with respect to IGR funded capital projects and performance related allocations.
- Managing added treasury responsibilities and taking greater control of banking arrangements, within specified limits set by HQ.
- Regular (quarterly in the initial phase) reporting of actual expenditure against budgets to the executive level.

In addition to enhancing F&A, other functions will need to be upgraded at the BU. For example, a new corporate planning department is recommended for Lagos Zone. The department will be headed by a PM, with administrative reporting to the Zonal GM and a "dotted line" relationship to the corporate planning department at D&M HQ.

Figure 4-1 shows the proposed flow of accounting data and budget preparation within the Lagos Zone.

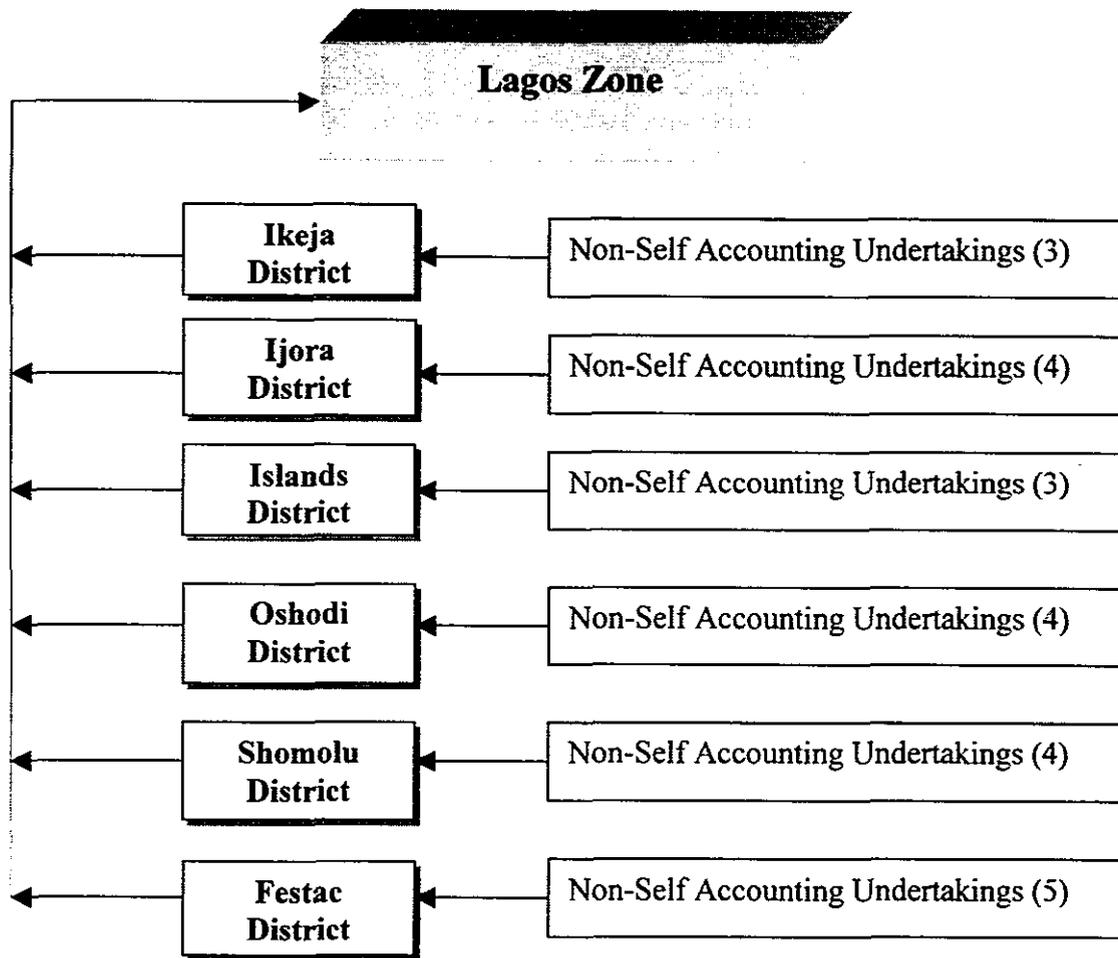


Figure 4-1 Lagos Zone: Proposed Flow of Accounting Data & Budget Preparation

#### 4.2 F&A ACTION PLAN FOR LAGOS ZONE PILOT

Table 4-1 presents a recommended implementation action plan to establish a full-fledged unbundled Lagos Zone. A short implementation timeframe is necessary so as to maintain the momentum for change and establish a precedent that can be replicated throughout the organization as soon as possible.

**Table 4-1**  
**Lagos Zone F&A Unbundling Implementation Action Plan**

	<i>Action</i>	<i>Completion Date</i>
1.	Appoint an AGM for F&A and PM Zone Corporate Planning	April 15
2.	Identify staffing requirements to undertake all existing and new F&A functions.	March 31
3.	Provide additional F&A staff through redeployment of HQ F&A staff and/or new recruitment.	May 15
4.	Identify basic IT systems and training needs.	April 30
5.	Identify and set operational & financial performance targets.	May 31
6.	Increase span of control over IGR funded investments.	July 1
7.	Account for energy costs based on agreed transfer prices and unbundled assets and liabilities.	2 <sup>nd</sup> Quarter 2001
8.	Evaluate bad debts for write-off.	April 30
9.	Clean up the books of account of the Zone and all Districts for inaccurate accounting of the past and non-existent assets and liabilities.	May 31
10.	Maintain registers and account for fixed assets.	June 30
11.	Submit plan for new budget approach (guidelines for operating budget and zero based budgeting methodology for capital budgeting)	April 30
	Work with Zone GM, Zone, new PM Corporate Planning and District Managers to rationalize Zone budget with strategic plan.	June 30
12.	Submit operating and capital budgets for 2 <sup>nd</sup> half 2001 under new reporting format, including monthly cash flows.	June 30
13.	Financial consolidation of Districts and first quarterly reporting of operational & financial performance and cash flows.	2 <sup>nd</sup> Quarter 2001
14.	First quarterly reporting of actual expenditure against budgets, including variance analysis and performance measurement targets.	2 <sup>nd</sup> Quarter 2001

### **4.3 ALLOCATION OF COSTS, ASSETS & LIABILITIES TO LAGOS ZONE**

#### **4.3.1 Basis of Allocation of Costs**

1. Power Purchase Costs:  
Enron Power - priced at actual contracted costs.  
All Other Power - priced at transfer prices, excluding Enron costs.
2. Operational & Maintenance, Meter Reading & Billing and Consumer Services Costs:  
Lagos "Own" Costs.
3. Administrative & General (A&G) Costs:  
Lagos A&G Costs + (Lagos Share of Delivered Energy to D&M x D&M A&G Costs)
4. Interest Charges: D&M Interest Charges x Lagos Share of D&M Net Fixed Assets.
5. Depreciation Charge: D&M Depreciation Charge x Lagos Share of Billed Energy in 2000.

#### **4.3.2 Basis of Allocation of Other Operating Revenue**

1. Reconnection Fees, Service Connection Fees, etc: Lagos "Own" Other Operating Revenue.

#### **4.3.3 Basis of Allocation of NEPA Assets and Liabilities**

1. Gross Fixed Assets: D&M Gross Fixed Assets x Lagos Share of Billed Energy in 2000.
2. Accumulated Depreciation: D&M Net Fixed Assets x Lagos Share of Billed Energy in 2000.
3. Work in Progress (WIP): D&M Work in Progress x Lagos Share of Billed Energy in 2000.
4. Loans: D&M Loans x Lagos Share of D&M Net Fixed Assets.
5. Stores: D&M Stores x Lagos Share of D&M Net Fixed Assets.
6. Debtors: D&M Debtors x Lagos Share of Total Customer Billing.  
Creditors: D&M Creditors x Lagos Share of Total D&M O&M and A&G Costs.

#### **4.3.4 Basis of Allocation of Cash Flow Items**

1. Capital Expenditure (Capex):  
D&M Capex x Lagos Share of Billed Energy in 2000.
2. FGN Financing of Capital Expenditure (Capex):  
D&M FGN Financing of Capex x Lagos Share of Billed Energy in 2000.  
Debt Service Paid:  
D&M Debt Service Paid x Lagos Share of Loans.
3. Bad Debts (or Uncollected Billing):  
Uniform Assumed Rate of Non-Collection x Lagos Zone Billing for Year

#### 4.4 COST-OF-SERVICE RESULTS

##### 4.4.1 Cost-of-service Revenue Requirements for Lagos Zone

Table 4-2 provides a breakdown of the cost-of-service revenue requirements for Lagos Zone. Cost-of-service, billed revenue and revenue surpluses and shortfalls per kWh sales are also indicated.

**Table 4-2**  
**Lagos Zone: Costs of Supply based Revenue Requirements**  
**for 2000 and 2001 (as forecast)**

	2000		2001	
	NEPA Budget	Financial Study	NEPA Budget	Financial Study
<b><i>Costs of Supply (in Naira billions)</i></b>				
Operating Costs (net of FGN Subsidy)	7.1	7.9	10.1	11.7
Other Op Revenue	(0.1)	(0.1)	(0.2)	(0.2)
Depreciation	0.2	0.3	0.3	0.3
Interest	0.1	0.1	0.1	0.1
Return on Equity	1.1	1.3	1.3	1.5
<b>Total Costs of Supply (net of FGN Subsidy)</b>	<b>8.4</b>	<b>9.5</b>	<b>11.7</b>	<b>13.4</b>
<b>Cost-of-service (N/kWh Sales)</b>	<b>3.30</b>	<b>3.74</b>	<b>3.49</b>	<b>4.01</b>
<b>Billed Electricity Revenue (N/kWh Sales)</b>	<b>4.34</b>	<b>4.34</b>	<b>4.34</b>	<b>5.48</b>
<b>Revenue Surplus (N/kWh Sales)</b>	<b>1.04</b>	<b>0.60</b>	<b>0.85</b>	<b>1.47</b>

#### 4.4.2 Income Statements, Cash Flows and Key Ratios for Lagos Zone

Table 4-3 provides income statements, cash flows and key ratios for Lagos Zone for 2000 and 2001.

**Table 4-3**  
**Lagos Zone: Income Statements, Cash Flows & Key Ratios**  
**for 2000 and 2001 (as forecast)**

All revenues & costs are stated in Naira billions.	2000		2001	
	NEPA Budget	Financial Study	NEPA Budget	Financial Study
<b>Delivered Energy (GWh):</b>				
Enron Power	-	-	1,040	1,040
Other Power	3,493	3,493	3,493	3,493
<b>Total Delivered Energy</b>	<b>3,493</b>	<b>3,493</b>	<b>4,533</b>	<b>4,533</b>
<b>Energy Sales (GWh)</b>	<b>2,529</b>	<b>2,529</b>	<b>3,355</b>	<b>3,355</b>

<b>Income Statements</b>				
<b>Electricity Revenue:</b>				
Based on Present Tariffs	11.0	11.0	14.6	14.5
Additional Revenue from Proposed Tariff Increases	-	-	-	3.8
<b>Total Electricity Revenue</b>	<b>11.0</b>	<b>11.0</b>	<b>14.6</b>	<b>18.3</b>
Other Operating Revenue	0.1	0.1	0.2	0.2
<b>Total Operating Revenue</b>	<b>11.1</b>	<b>11.1</b>	<b>14.8</b>	<b>18.5</b>
<b>Operating Expenses:</b>				
Power Purchase (after FGN Subsidy)	4.0	3.8	5.8	7.1
Operations & Maintenance	1.0	1.9	1.5	1.4
Meter Reading & Billing	0.3	0.2	0.4	0.4
Consumer Services	0.4	0.4	0.5	0.5
Administrative & General (Lagos Own)	0.8	0.8	1.0	1.1
Administrative & General (Share of HQ & D&M HO)	0.6	0.8	0.9	1.2
Bad Debts	2.0	2.0	2.7	3.4
Depreciation	0.2	0.3	0.3	0.3
<b>Total Operating Expenses</b>	<b>9.3</b>	<b>10.2</b>	<b>13.1</b>	<b>15.4</b>
<b>Operating Income</b>	<b>1.8</b>	<b>0.9</b>	<b>1.7</b>	<b>3.1</b>
Interest	0.1	0.1	0.2	0.1
<b>Net Income before Exceptional Charges</b>	<b>1.7</b>	<b>0.8</b>	<b>1.5</b>	<b>3.0</b>

<b>Cash Flows</b>				
<b>Net Cash Flow from Operations</b>	<b>(1.8)</b>	<b>1.5</b>	<b>1.9</b>	<b>2.6</b>
Enron Security Deposit	(0.6)	(0.6)	(0.1)	(0.1)
Debt Service	(0.1)	(0.1)	(0.2)	(0.2)
Capital Expenditure from Own Resources	(4.2)	(3.3)	(3.6)	(2.8)
<b>Cash Surplus/(Shortfall)</b>	<b>(6.7)</b>	<b>(2.5)</b>	<b>(2.0)</b>	<b>(0.5)</b>

<b>Ratios</b>				
<b>Weighted Average Electricity Revenue (N/kWh)</b>	<b>4.34</b>	<b>4.34</b>	<b>4.34</b>	<b>5.48</b>
<b>Weighted Average Operating Income (N/kWh)</b>	<b>0.79</b>	<b>0.49</b>	<b>0.58</b>	<b>0.93</b>
<b>Operating Margin</b>	<b>16.5%</b>	<b>8.6%</b>	<b>11.1%</b>	<b>16.8%</b>
<b>Return on Equity (with historical fixed asset values)</b>	<b>32.5%</b>	<b>13.2%</b>	<b>22.4%</b>	<b>40.6%</b>
<b>Debt Service Cover (times)</b>			<b>11.6</b>	<b>20.4</b>
<b>Self-financing Ratio</b>			<b>37.6%</b>	<b>63.4%</b>

#### 4.5 OBSERVATIONS ON LAGOS ZONE'S PERFORMANCE

The following observations highlight some key issues that concern Lagos Zone (and indeed other Zones in Distribution & Marketing). These issues will need to be addressed as internal restructuring moves forward.

- How much of the available power in 2001, in particular Enron power, will be made available to Lagos? In the above analysis, we have assumed that all of Enron power will be available for Lagos Zone and that power from other sources will be maintained at the same level as in 2000. On this basis: (a) energy delivered to Lagos Zone in 2001 will increase from 26.3% in 2000 to 30.6% of total power delivery to D&M, and (b) energy supply to Lagos Zone in 2001 will increase by nearly 30% over the previous year.
- In line with current Government policy of having uniform national tariffs at the retail level for customers on the interconnected system, we have assumed that a similar policy will apply at the bulk level. In other words, uniform bulk supply transfer prices will apply to all D&M Zones. However, the application of such a policy raises the following key issues:
  - Uniform prices will not fully reflect the cost-of-service.
  - D&M Zones with costs above the national average will be unable to meet acceptable rates of return. Conversely, D&M Zones with costs below the national average may well earn excessive profits.
  - Customer profiles of individual Zones will determine their overall profitability and financial viability. Zones that serve more of the rural community with heavy residential load will be less profitable than Zones serving high-density areas with a sizeable industrial and commercial load.

It is beyond the scope of this study to go into the complex tariff issues that have been raised above. The policy of uniform national tariffs has to be accepted for this study. Under these circumstances, the financial viability of all the D&M Zones has to be addressed. One solution would be to devise a compensation mechanism that will transfer revenues between profitable and non-profitable Zones.

The extent of the problem within Nigeria can be illustrated by the financial results of Lagos Zone, as shown above. The following observations can be made:

- The weighted average retail revenue of Lagos Zone is 31% higher than the national weighted average. On the other hand, the present weighted average retail revenue for Lagos Zone is only 63% of the estimated total system weighted average marginal cost-of-service.
- The operating margin in 2001 for Lagos Zone is forecast at 17% compared to a negative 6% for D&M as a whole.
- Forecasts for 2001 show a net profit of N3 billion for Lagos Zone against a net loss of N3 billion for the D&M Sector.

A compensation mechanism can take the form of allocating revenues to each Zone based on the national weighted average retail revenue. Differences between such revenues and actual

billed revenues would then be transferred between Zones. On this basis, the forecast profit of N3 billion for Lagos Zone in 2001 would be transformed to a net loss of N0.5 billion.

#### **4.6 NEXT STEPS FOR LAGOS ZONE**

The following actions are recommended for Lagos Zone:

- Study the financial model and conduct joint review and discussions with Nexant.
- Develop an Action Plan for the F&A Next Steps identified in this report.
- Implement the Action Plan for F&A Unbundling at Lagos Zone.

**5.1 INTRODUCTION**

This section provides four international examples of F&A unbundling: the Zimbabwe Electricity Supply Authority (ZESA), which is a state-owned, vertically integrated electric utility company; National Grid USA in Massachusetts, an investor-owned transmission and distribution company; Pacific Gas & Electric Company in California, an investor-owned vertically-integrated electricity and gas utility company; and Electricite Viet Nam, a state-owned, vertically integrated electric utility company.

These utilities demonstrate different approaches to unbundling F&A to the BU level. Out of the sample presented here, Electricite Viet Nam most closely resembles NEPA in terms of company structure and status of sector restructuring, however each of the four utilities provide interesting case studies for NEPA to consider as it develops its own unique approach to internal restructuring and F&A unbundling.

**5.2 ZIMBABWE CASE STUDY**

The power sector in Zimbabwe is in the initial stages of reform. A draft Electricity White Paper is under consideration by the Government. The key elements of the reform program, as envisaged in the White Paper, are 1) the restructuring and unbundling of ZESA, 2) independent regulation, 3) privatization policy and action plan, and 4) a separate rural electrification entity managing the rural electrification program.

The restructuring and unbundling of ZESA has started, with the following actions taken or in process:

- Seven separate divisions have been created: Generation, Transmission, Distribution and Supply, Rural Electrification, Technical Services (comprising of non-core activities such as transport, project management, engineering services), National Training Center and Management Services (comprising of headquarter functions).
- The largest power plant, Hwange coal fired power station (840 MW) has been transferred to a separate and a newly established company. The Hwange power station has been chosen as the first candidate for privatization within the short term. The next phase will involve the privatization of the other remaining large power plant, Kariba South hydro power station (666 MW).
- Financially viable non-core activities will be privatized.
- The transmission business will operate according to the single buyer model in the initial phase before being broken up into a telecommunications company (a separate company has already been established), a transmission infrastructure business and an independent system operator.
- The distribution business will be operated by the existing five regional units and eventually split into smaller distribution areas.
- In the later stages, the wires and supply businesses will be separated, and eventually privatized.

The first stage of restructuring involving accounts unbundling is under implementation. Each business will have its own financial statements. The physical separation of assets, liabilities and staff will follow the initial unbundling.

ZESA's accounting and financial management reporting systems are fairly advanced and its underlying accounting records are maintained in such a way as to make the accounts unbundling task relatively simple. The only problematic area concerns the restructuring and allocation of its sizeable long-term debt and a large accumulation of debt owed for its power supplies from ESKOM of South Africa and others. Power stations and area offices have always been established as separate cost centers and they account for their own assets, liabilities (excluding debt which is accounted for at headquarters) and costs.

In the near term, power purchase agreements will be entered into between each of the two main power stations and the transmission business and internal transfer prices will be applied between transmission and distribution. Each business will account for its energy costs and revenues. Non-core businesses will charge for their services.

ZESA's electricity tariffs are protected from the effects of inflation, exchange rate movements and fuel price changes by way of automatic tariff adjustments on a quarterly basis. ZESA has a strong Corporate Planning Department and one of its main tasks concerns tariff analysis and design. The availability of detailed and reliable cost of supply data and experienced tariff staff will facilitate the task of setting bulk supply tariffs between generation, transmission and distribution.

### **5.3 NATIONAL GRID USA CASE STUDY**

National Grid USA, formerly known as New England Electric System, provides electricity to 1.7 million residential, commercial, industrial, and municipal customers in Massachusetts, Rhode Island, and New Hampshire.

National Grid USA is primarily a transmission and distribution company. The distribution company subsidiaries operate and maintain distribution power lines and substations; provide metering, billing, and customer services; design and build distribution-related facilities; and provide related products and services including energy efficiency programs for customers. The transmission subsidiary is the operator of electricity transmission facilities in the states of Massachusetts, Rhode Island, New Hampshire, and Vermont. The transmission subsidiary also holds the corporation's remaining interests in generating units that are currently being divested.

The following organization review focuses on one of National Grid's distribution company subsidiaries. The company is organized as an autonomous DBU comparable to the possible future structure of an unbundled NEPA Zone. This particular DBU structure provides an example of separating the wires business and the retail supply business all the way from the HQ level down to the operating units.

The National Grid USA DBU organization is instructive for NEPA because there has been some discussion in Nigeria about separating the wires and the retail supply functions. NEPA's distribution operating units (Districts and Undertakings) currently handle both functions with mixed success. It is generally accepted that the organization is better equipped to handle the technical challenges of the wires business, and less equipped to handle the

management challenges of the retail supply business. This is demonstrated by NEPA's chronic poor results for collections performance. Setting up a separate division for retail supply is one possible means of refocusing management expertise on the retail supply business.

It may be possible to separate the retail supply organization within NEPA, or even outsource all or some of the functions, however before starting down this path NEPA management should carefully plan the reorganization, as it will have a major impact on most functions within the DBU including Finance and Accounts.

### 5.3.1 Organizational Structure

Figure 5-1 shows the overall organization structure for one of the National Grid distribution companies, which can be compared to a NEPA DBU. There is a single division for the Operating Companies, and support divisions for Financial Services, Legal and Administration. Note that most F&A functions are centralized in the Financial Services division at DBU HQ. Functional units in the Operating Companies typically have a single budget analyst who reports to the local manager and feeds accounting and budget information up to HQ.

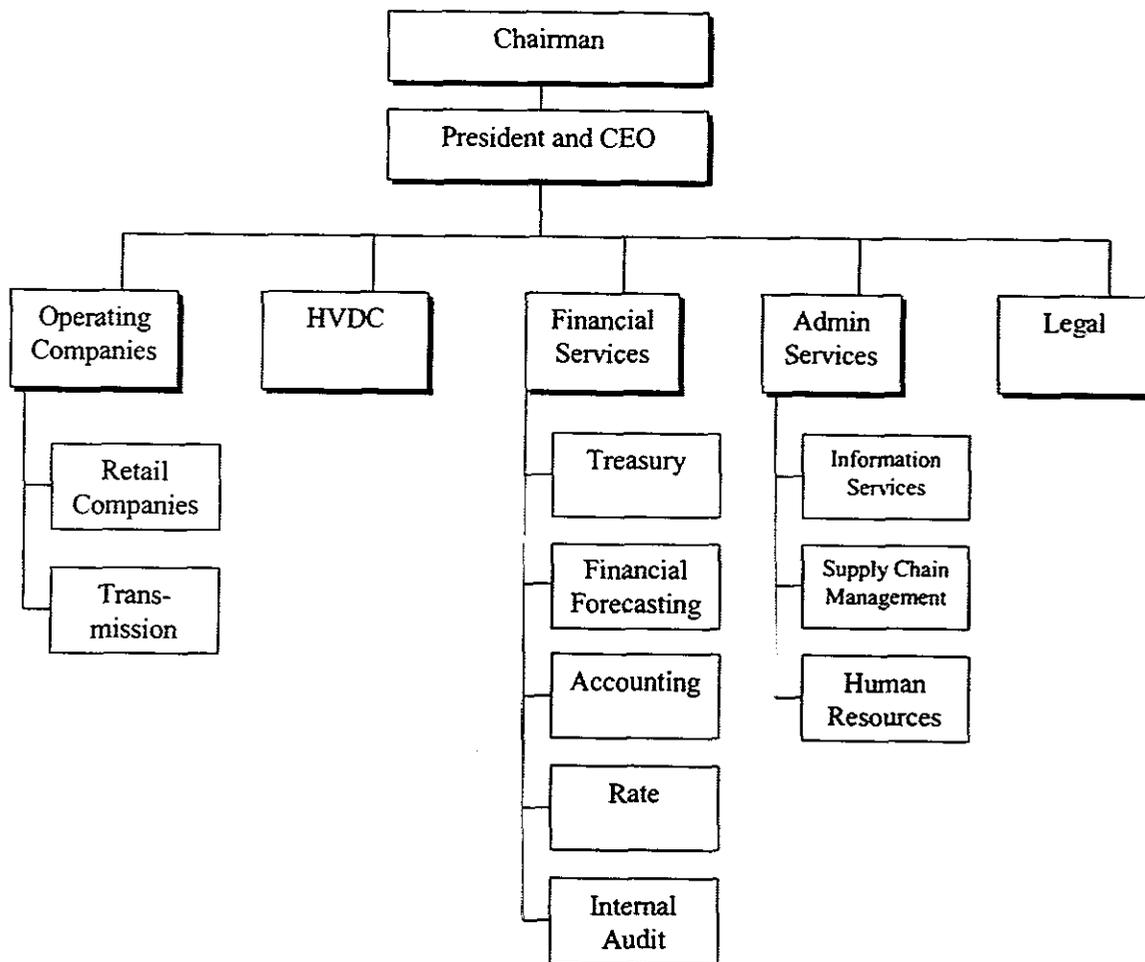


Figure 5-1 Distribution Company Organization Structure

Figure 5-2 presents the organization chart for the “Retail Companies”, which can be thought of as operating units of the DBU. Note that retail services, customer services and operations are all separate line organizations reporting to a specialized manager at DBU HQ, who in turn reports to the VP for the Operating Companies Division. By setting up the organization in this way, National Grid USA has effectively separated the “wires business,” which consists of the Operations Division, and the retail supply business, which consists of the Retail, Business and Customer Service Divisions.

Figures 5-3 and 5-4 present the organization structures for Accounting and for Treasury and Finance, respectively. National Grid USA demonstrates a straightforward, efficient organization structure for a DBU.

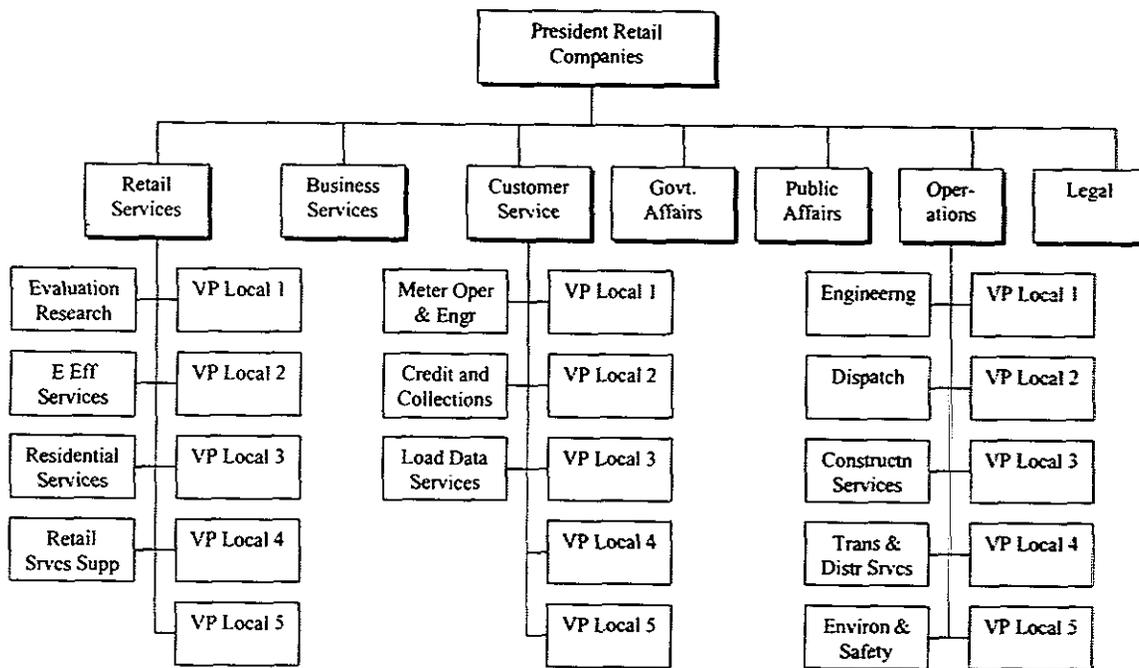


Figure 5-2 Retail Companies Organization

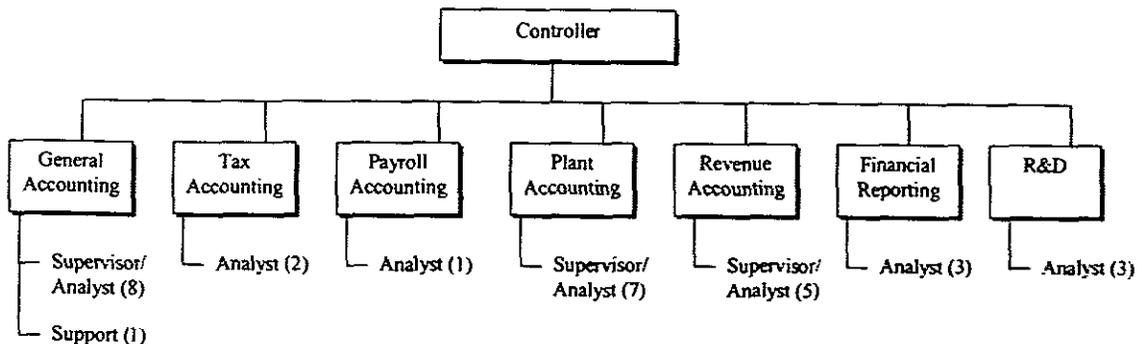


Figure 5-3 Accounting Organization

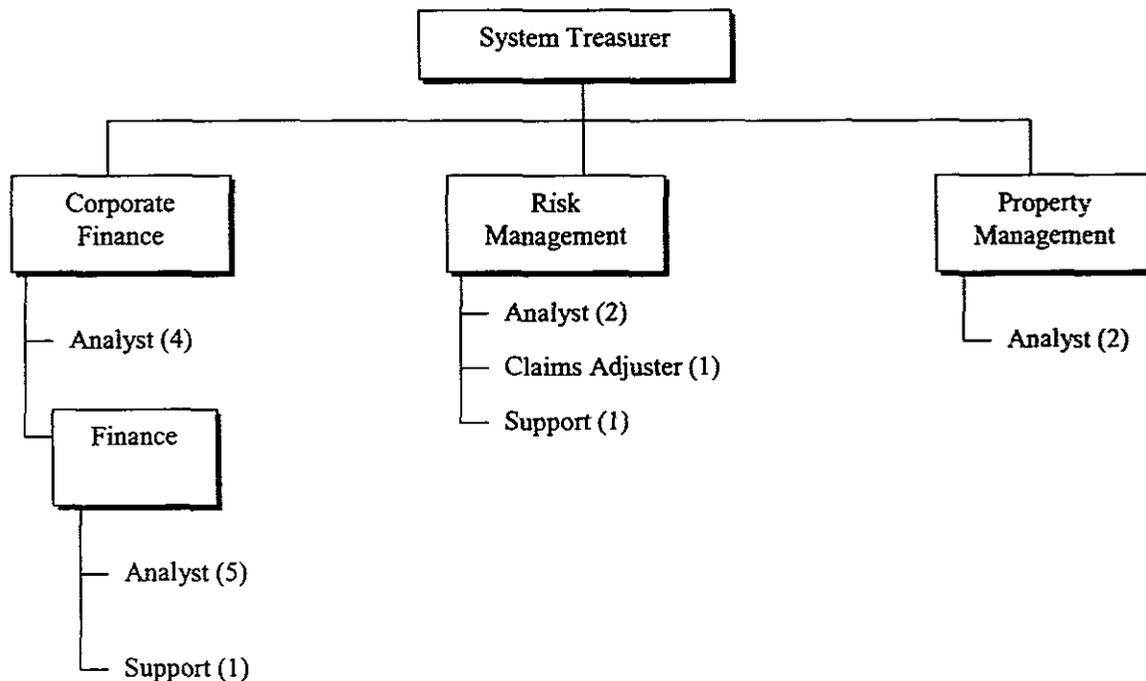


Figure 5-4 Treasury and Finance Organization

#### 5.4 PACIFIC GAS & ELECTRIC COMPANY CASE STUDY

Pacific Gas and Electric Company (PG&E) in Northern California provides an example of an organization structure for a vertically integrated electric utility that is unbundled into business units. Although there are strong differences between PG&E and NEPA, especially in the degree of automation of basic business practices within the organization, nonetheless PG&E's approach to unbundling finance and accounts is a point of comparison for NEPA.

PG&E's distribution business unit is structured to separate the wires business and the retail supply business. Both enterprises report to the Senior Vice President heading the DBU, but the field organizations are almost completely separated except for essential communications linkages and some shared services at the DBU HQ. Aside from the operational advantages, a second reason for the separation is that in California the wires business is regulated differently from the retail supply business. The wires business is a local monopoly subject to a traditional cost-plus revenue mechanism, whereas the retail supply business is unregulated and competitive.

##### 5.4.1 Overview of PG&E

PG&E Company is a wholly owned subsidiary of PG&E Corporation, a holding company that markets energy services and products throughout North America. PG&E Utility Company and PG&E Corporation both maintain their headquarters in San Francisco, California.

There are 21,500 employees who carry out PG&E's primary business—the generation, transmission and delivery of energy. The company provides natural gas and electric service to approximately 12 million people in Northern and Central California, or about one in every 20 Americans. Table 5-1 provides a high level comparison between PG&E and NEPA. Figure 5-5 shows the corporate level organization.

Table 5-1 Comparison between PG&amp;E and NEPA

Category	PG&E	NEPA
Population of Service Territory	12 million	110 million
Size of Service Territory	70,000 sq. mi.	574,000 sq. mi.
Electricity Generation (1998)	80,000 GWh	16,000 GWh
Ownership	Investor-owned	Govt. of Nigeria
Regulated?	Yes	No

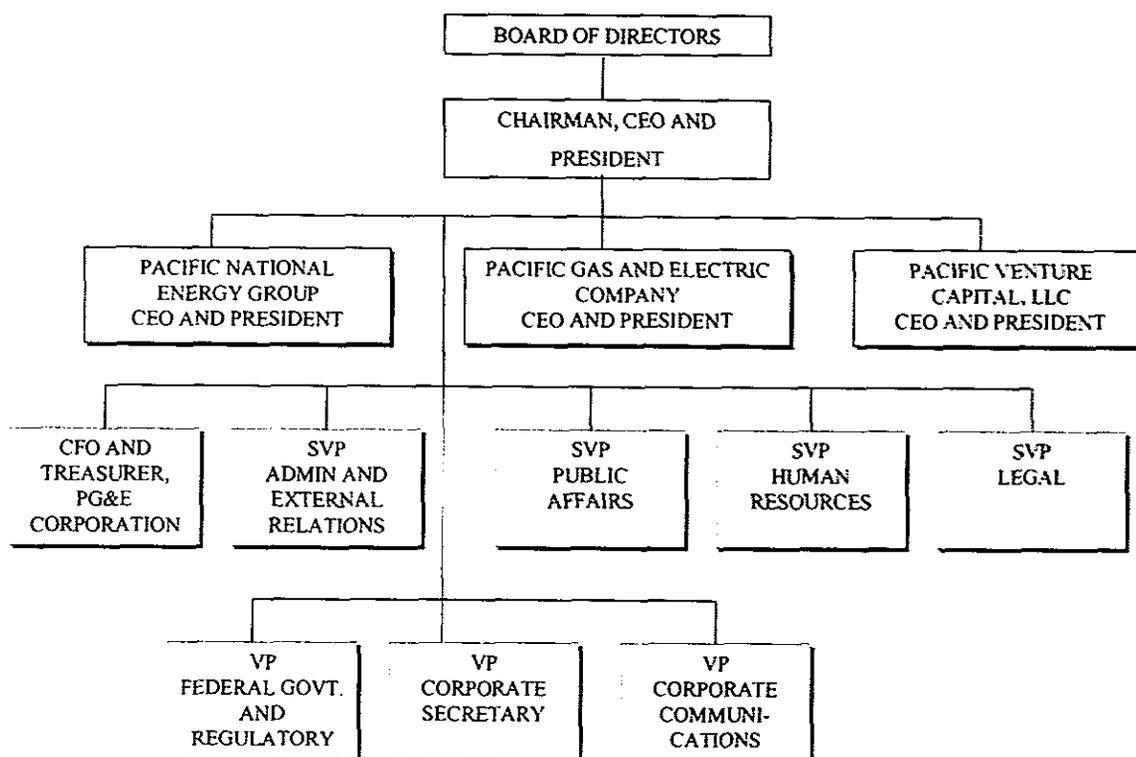


Figure 5-5 PG&amp;E Corporation Organization

The PG&E Corporation is structured according to the following hierarchy:

- Corporate level – PG&E Corporation is the holding company for the subsidiaries, including the utility company PG&E.
- Utility Company Level – PG&E Company owns and operates generation, transmission and distribution facilities and sells power to its customer base.
- Business Unit Level – PG&E has semi-autonomous Business Units for Generation and for Utility Operations. Utility Operations includes both transmission and distribution, with distribution split into two separate operating organizations, one for the retail supply business (sales and marketing) and one for the wires business (operations, maintenance and construction) plus several support departments.

### 5.4.2 Structure of Finance and Accounts

The PG&E utility company is essentially vertically integrated with centralized F&A groups serving the operating divisions. In this sense, PG&E is not necessarily a role model for unbundling NEPA F&A on a regional basis. However PG&E's organization structure, as described below, demonstrates the following approaches that may have application in Nigeria as the NEPA restructuring evolves:

- PG&E Corporation is an example of a utility holding company.
- PG&E F&A is highly streamlined and automated.
- PG&E Company has essentially separated the retail supply business from the wires business, and the F&A function is structured accordingly.
- PG&E's organization demonstrates possible approaches to organizing other utility functions besides F&A, such as HR, Administration, Regulatory Relations, engineering, operations etc. NEPA will have its own unique approach to restructuring, however it is always useful to consider alternatives that have been successfully implemented elsewhere.

### 5.4.3 F&A at the Corporate Level

The Chief Financial Officer and Treasurer is the highest-ranking F&A position at the corporate level. Figure 5-6 shows the structure of Finance and Treasury at the corporate level and Figure 5-7 shows Corporate Accounting, which is a department under the Controller. The chief F&A functions at the corporate level are as follows:

- Banking and Money Management for the corporation.
- Corporate Accounting, which includes corporate HQ Budget, Payroll, Consolidation, General Ledger and Financial and Management Reporting. Note the relatively large department at the corporate level for Financial and Management Reporting, which prepares financials for the entire corporation.

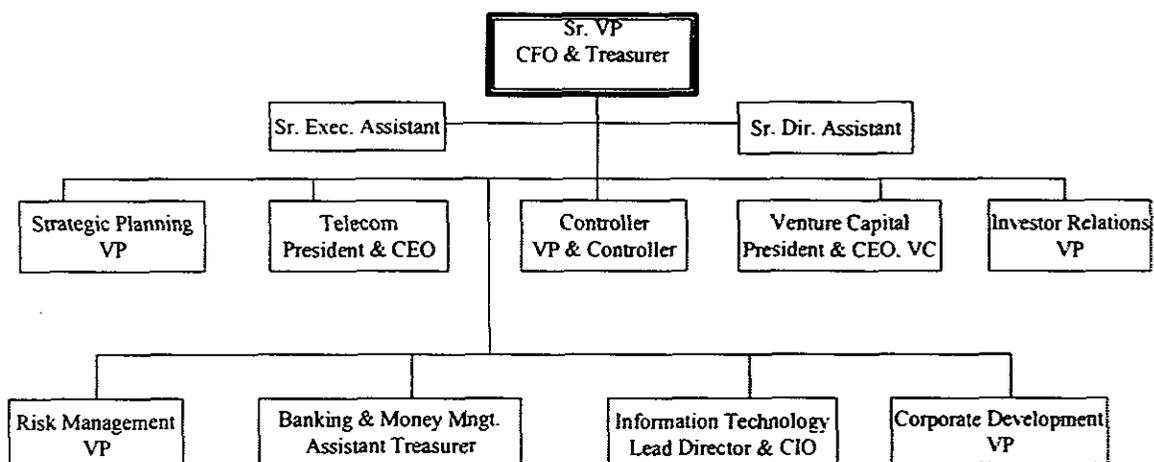


Figure 5-6 Corporate Finance and Treasury Organization

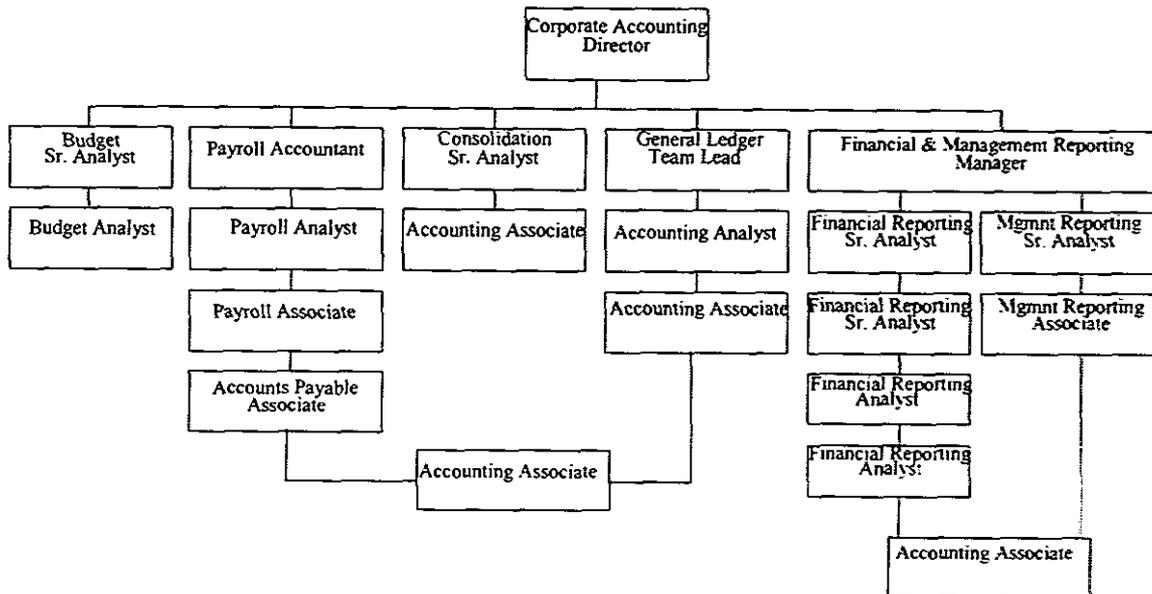
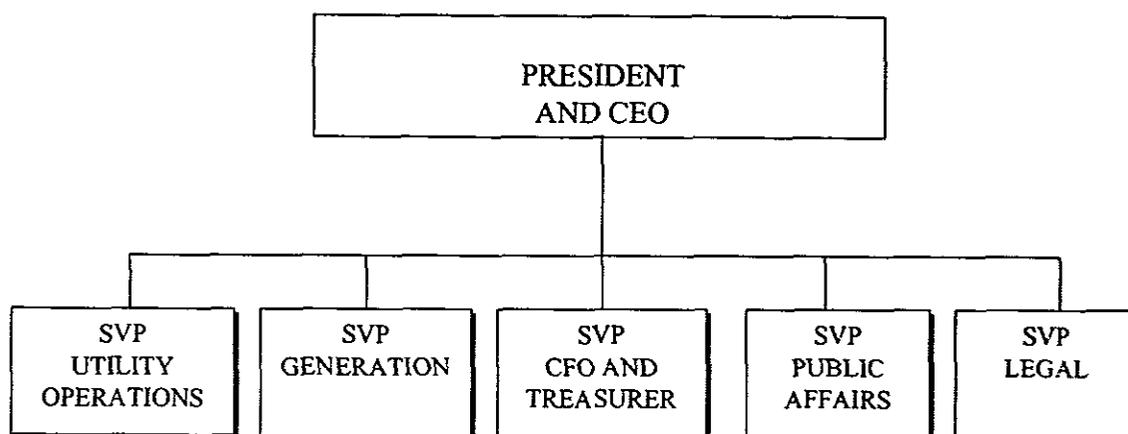


Figure 5-7 Corporate Accounting Organization

#### 5.4.4 F&A at the Utility Company Level

Figure 5-8 shows the utility company level organization. The major divisions are as follows:

- Utility Operations – Utility Operations provides the following services: 1) Customer Services (sales and marketing) and 2) distribution and transmission operations, maintenance and construction (“the wires business”). Utility Operations is considered to be a semi-autonomous business unit. Note that at the present time both transmission and distribution are managed together in the same BU, however PG&E is reportedly discussing transfer of the transmission business to the state of California.
- Generation – The Generation division manages PG&E’s power plants, which include thermal, hydro and nuclear facilities. Generation is considered to be a semi-autonomous BU.
- Finance and Treasury – The Chief Financial Officer and Treasurer is the highest-ranking F&A position at the utility company level. Many of the company’s F&A functions are centralized under the CFO.
- The other divisions at the company level are Public Affairs and Legal.



Note: Utility operations includes transmission, distribution and customer services/sales.

**Figure 5-8 Utility Company Level Organization**

Figure 5-9 shows the company level Finance and Treasury organization. At PG&E, the F&A function is essentially independent from the corporation except for banking, money management and financial reporting. The following departments are responsible for the F&A functions at the company level:

- Business and Financial Planning – consolidates the company business plan, determines financial requirements and procures outside financing as required.
- Controller – manages the overall budget, capital accounting, accounts payable, payroll and corporate accounting. Figures 5-10 through 5-15 present the organization charts for the Controller and all of the groups reporting to the Controller. From these organization charts it is apparent that most F&A functions for the company are centralized under the Chief Financial Officer.
- Capital and Expense Programs – manages company-wide capital and expense initiatives, such as guidelines for economic evaluation.

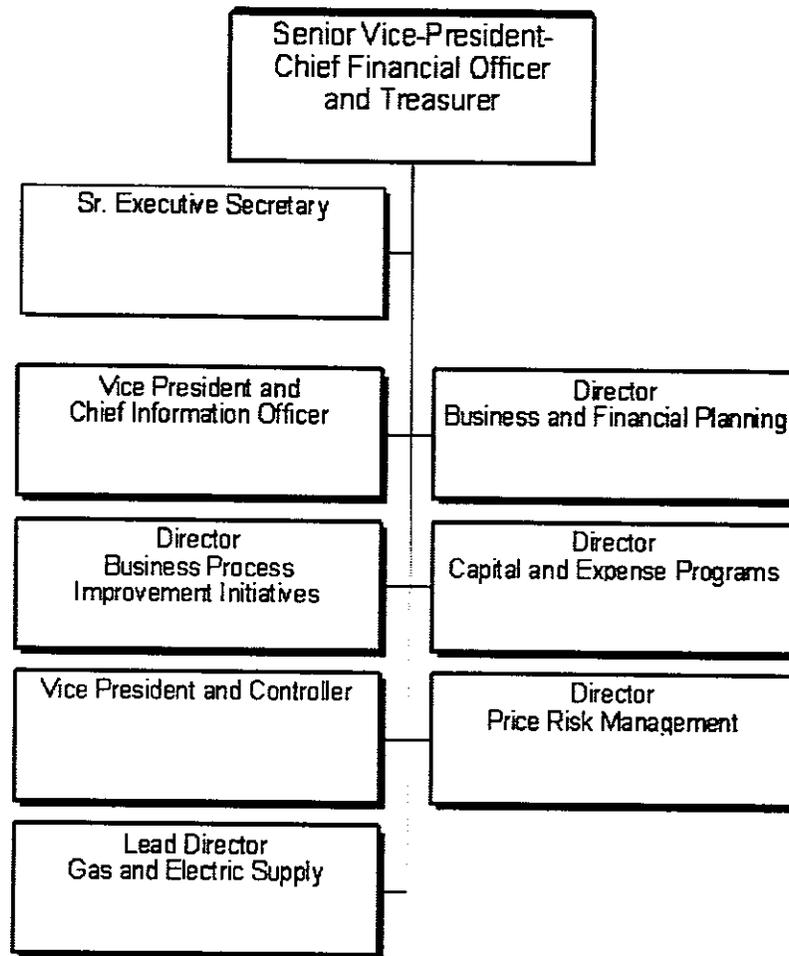


Figure 5-9 Utility Company Finance and Treasury Organization

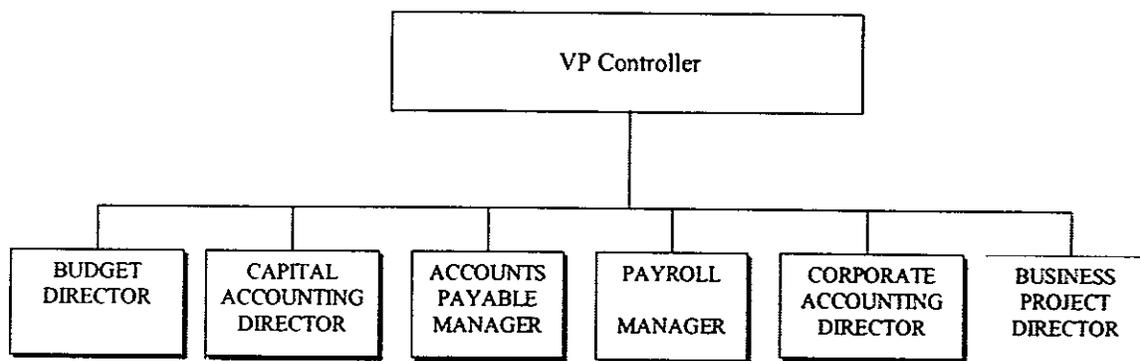


Figure 5-10 Controller Organization

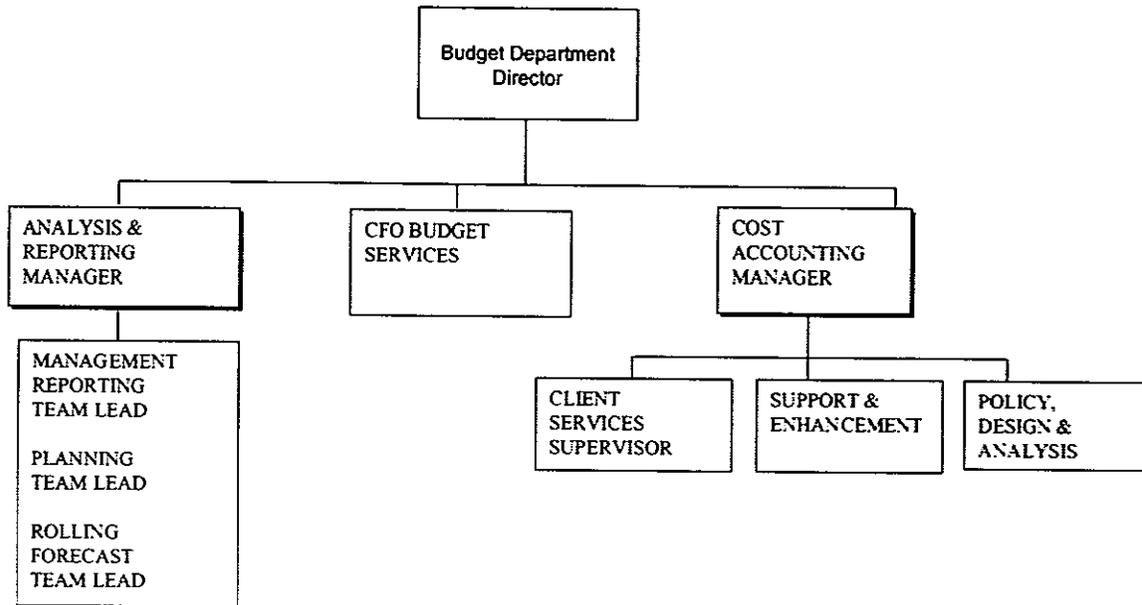


Figure 5-11 Budget Department Organization

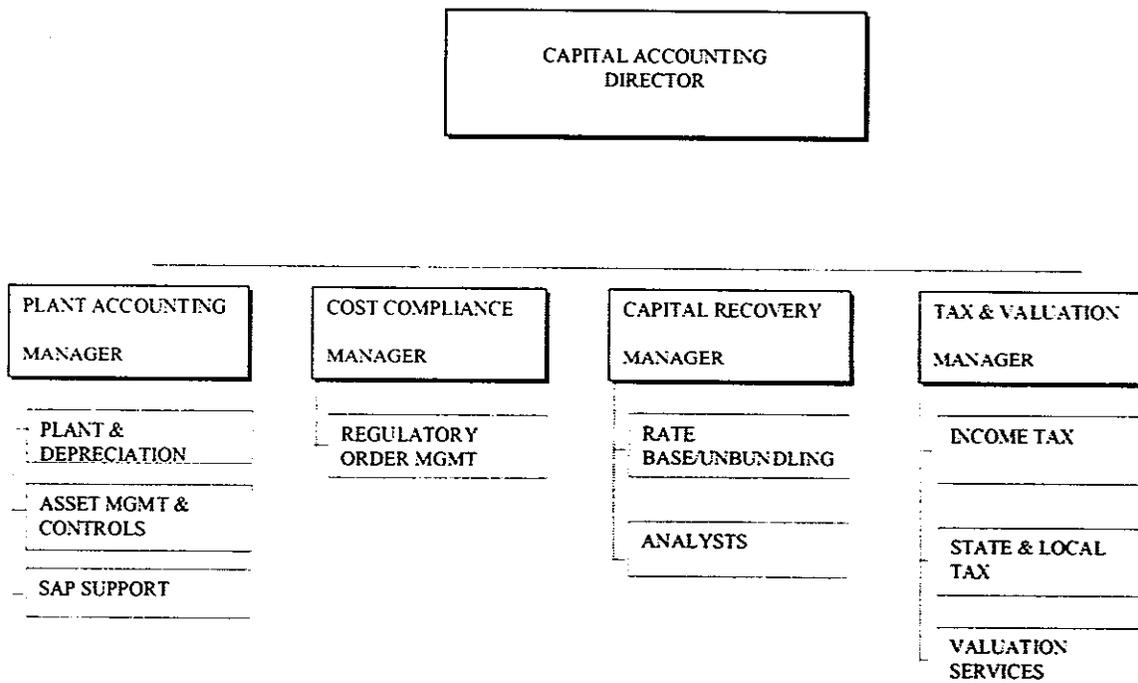


Figure 5-12 Capital Accounting Department Organization

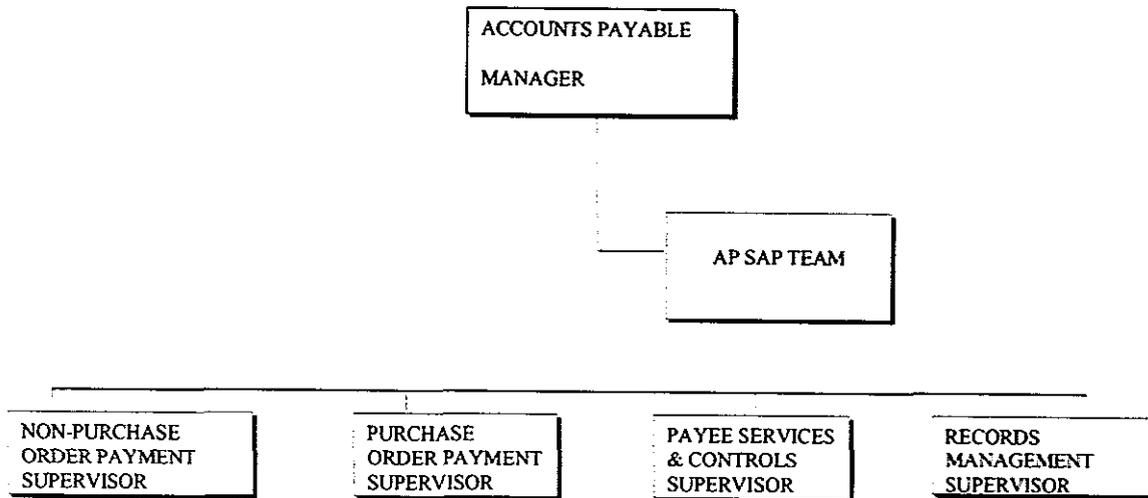


Figure 5-13 Accounts Payable Department Organization

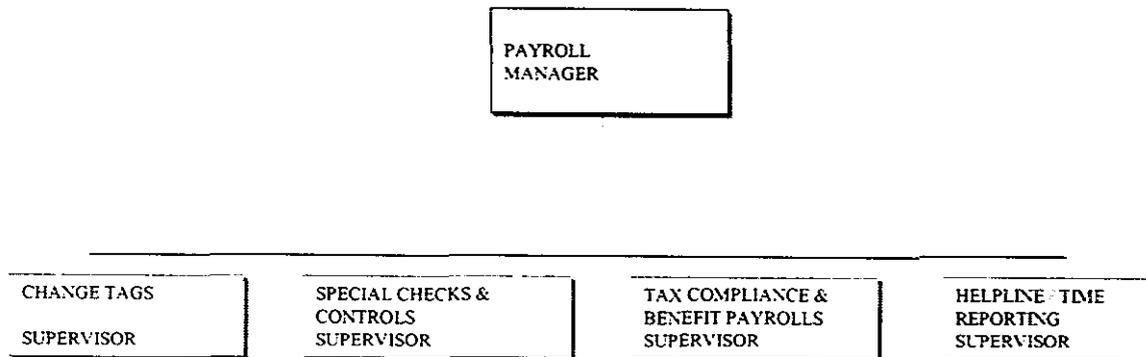


Figure 5-14 Payroll Department Organization

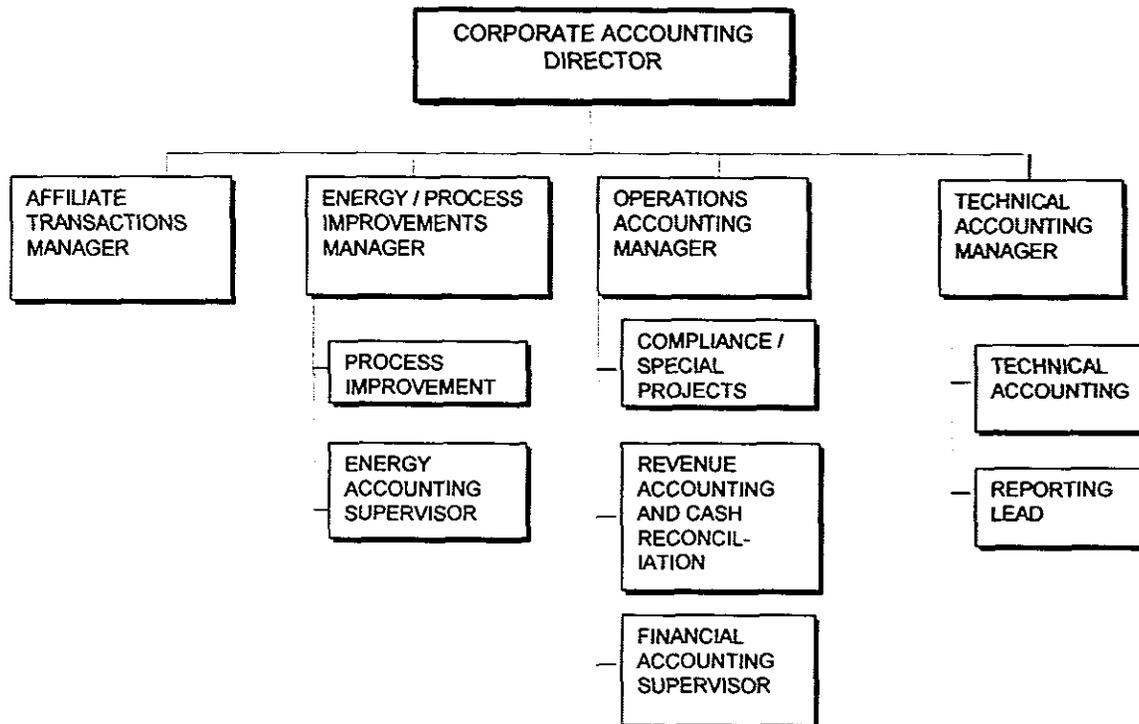


Figure 5-15 Corporate Accounting Department Organization

#### 5.4.5 F&A at the Utility Operations Business Unit

Figure 5-16 shows the organization of the Utility Operations Business Unit for transmission and distribution. Many of the F&A functions serving the BU are centralized at the company HQ, however three F&A-related departments are maintained at the BU HQ: Business Planning (management review and consolidation of budgets and accounts), Customer Revenue Transactions (billing, collections, customer records etc.) and Rates and Accounts Services. Figures 5-17 to 5-19 show the organization structures for these three departments.

The regional operating units under the BU maintain rudimentary F&A functions for business planning, budgeting and basic accounting for expense and capital programs. These groups report to the Accounting and Financial Management Group within the Business Planning Department at BU HQ.

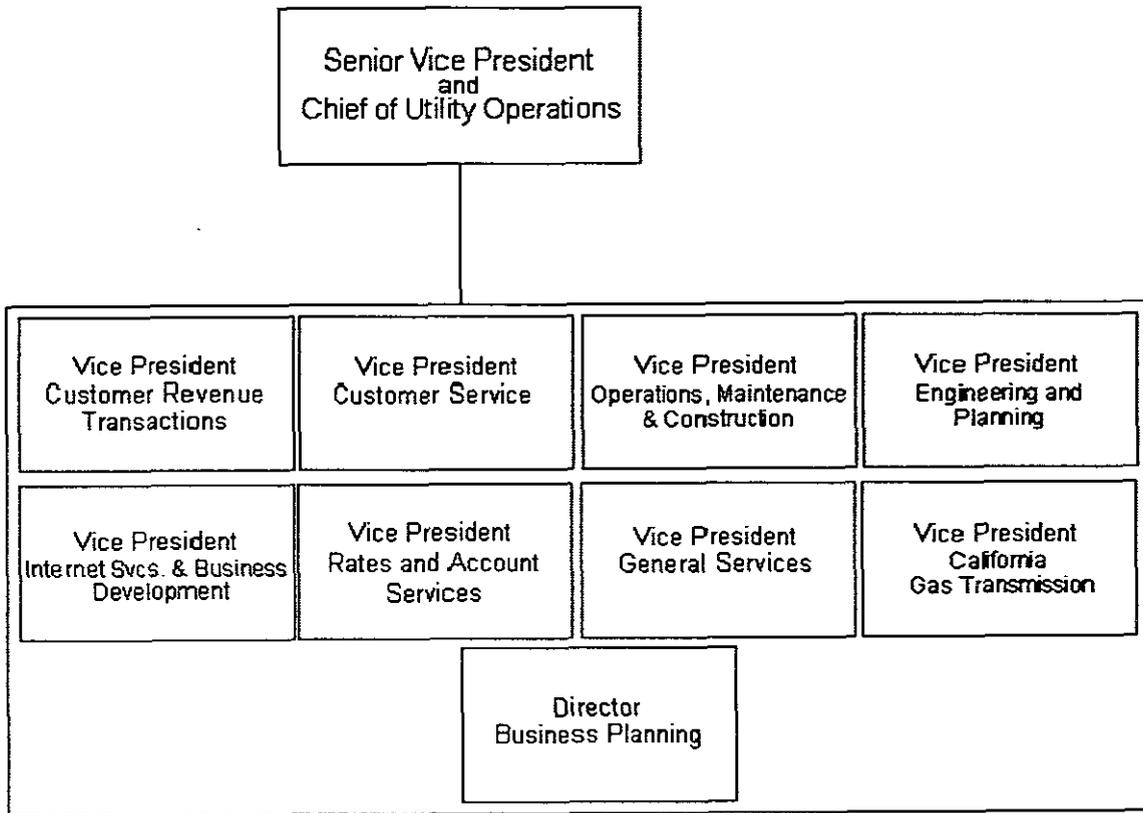


Figure 5-16 Utility Operations Organization

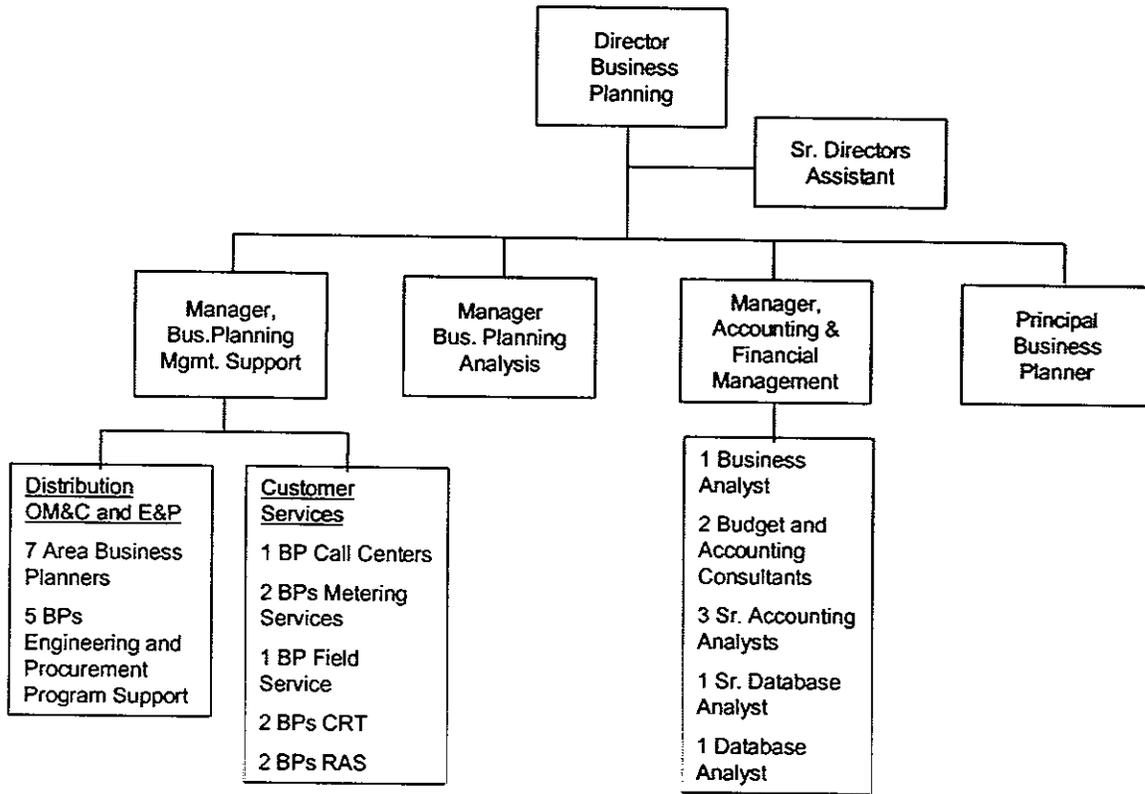


Figure 5-17 Business Planning Department Organization

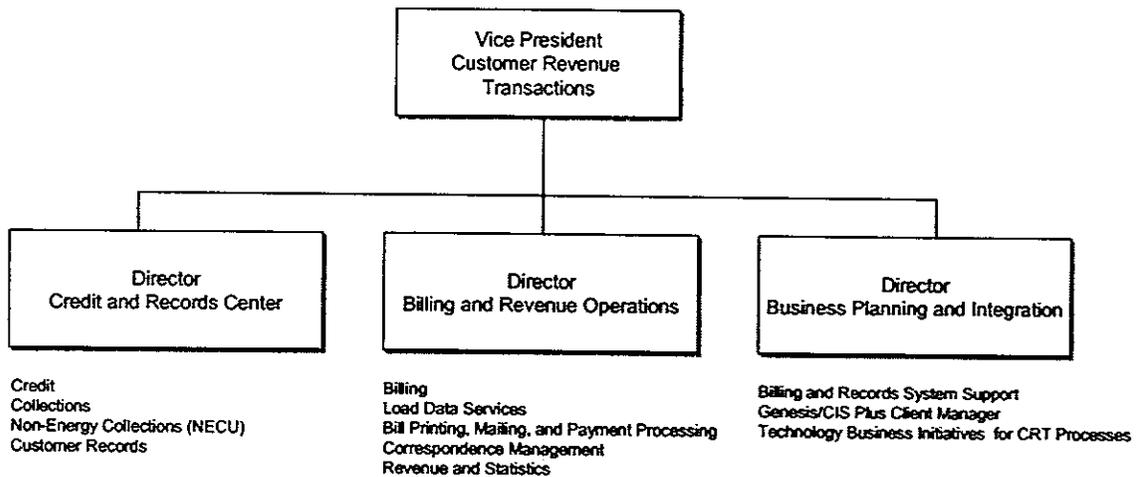
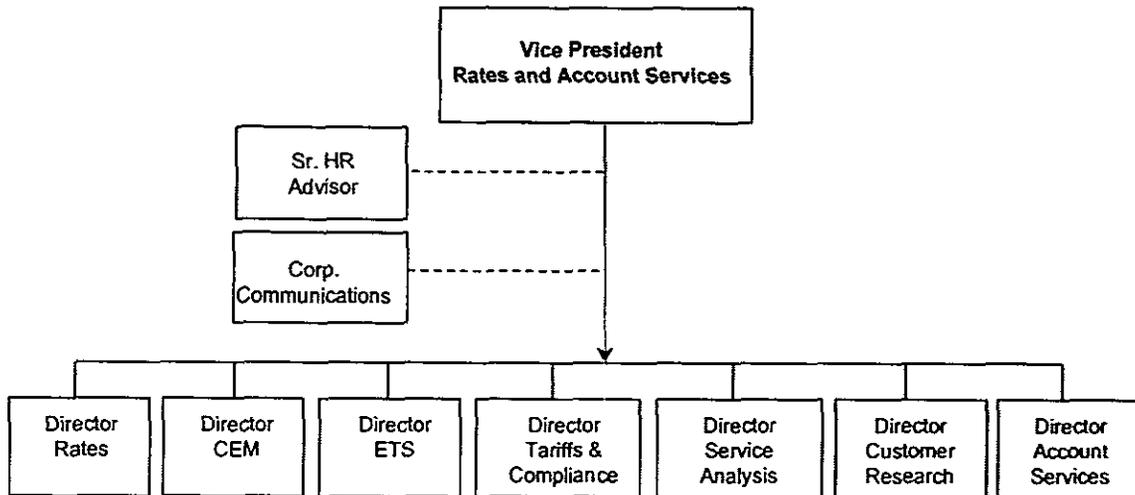


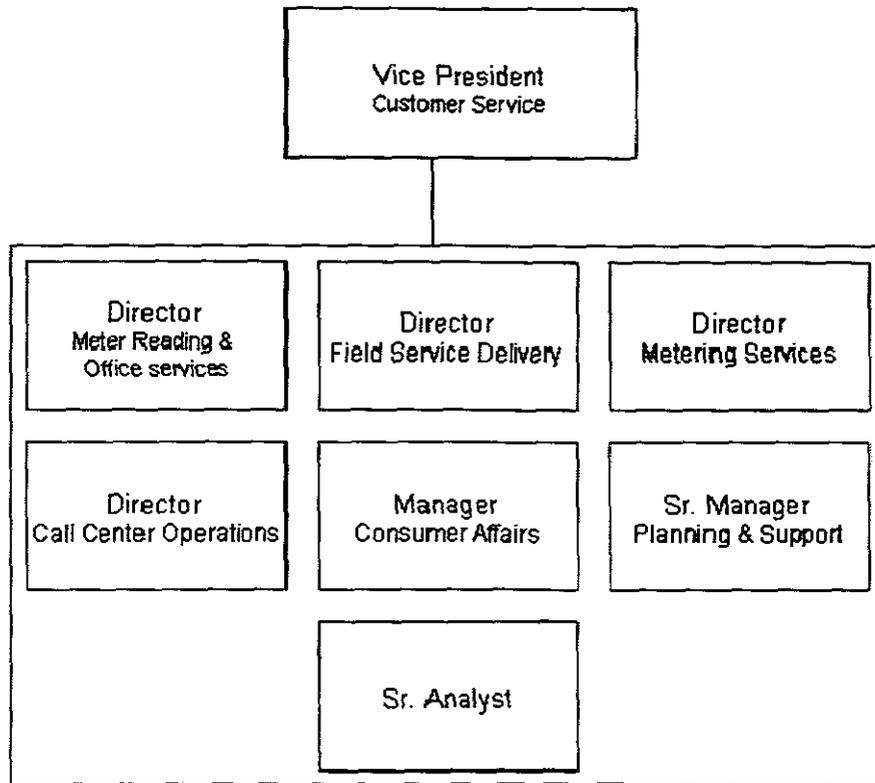
Figure 5-18 Customer Revenue Transactions Department Organization



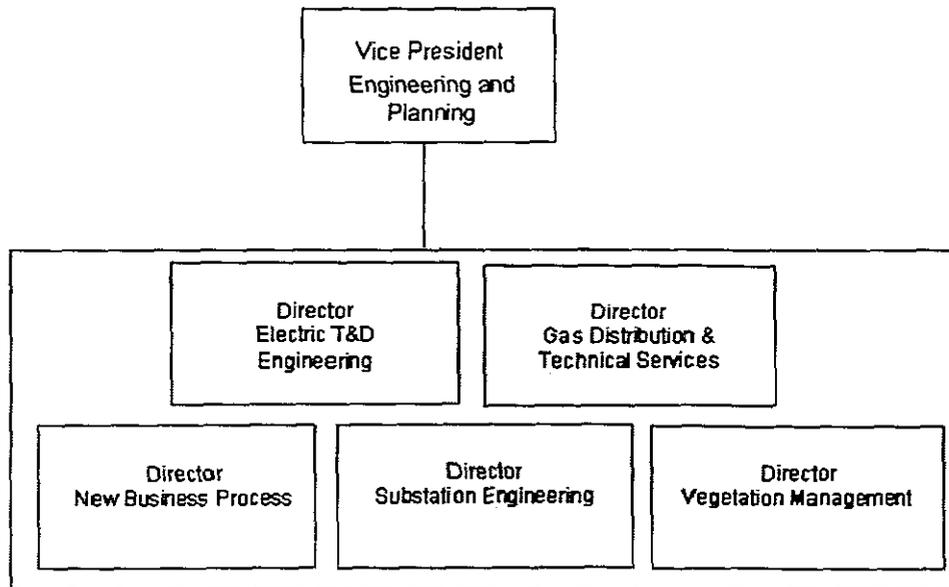
**Figure 5-19 Rates and Account Services Department Organization**

Figures 5-20 through 5-24 show the organization structures for the other departments within the Utility Operations BU. Note that at the BU level, the departments associated with the retail supply business, i.e. Customer Revenue Transactions, Customer Service and Rates and Account Services, are managed centrally for the entire BU and the line organizations are separated in the field. Likewise, the departments associated with the wires business are managed centrally for the entire BU.

This separation eliminates the field management positions with broad responsibilities for all aspects of the business in favor of more specialized field management positions. Under this dual structure to the BU, efficient communications are essential. PG&E makes maximum use of modern communications and IT technologies to ensure that field operations are smoothly coordinated.



**Figure 5-20 Customer Service Department Organization**



**Figure 5-21 Engineering and Planning Department Organization**

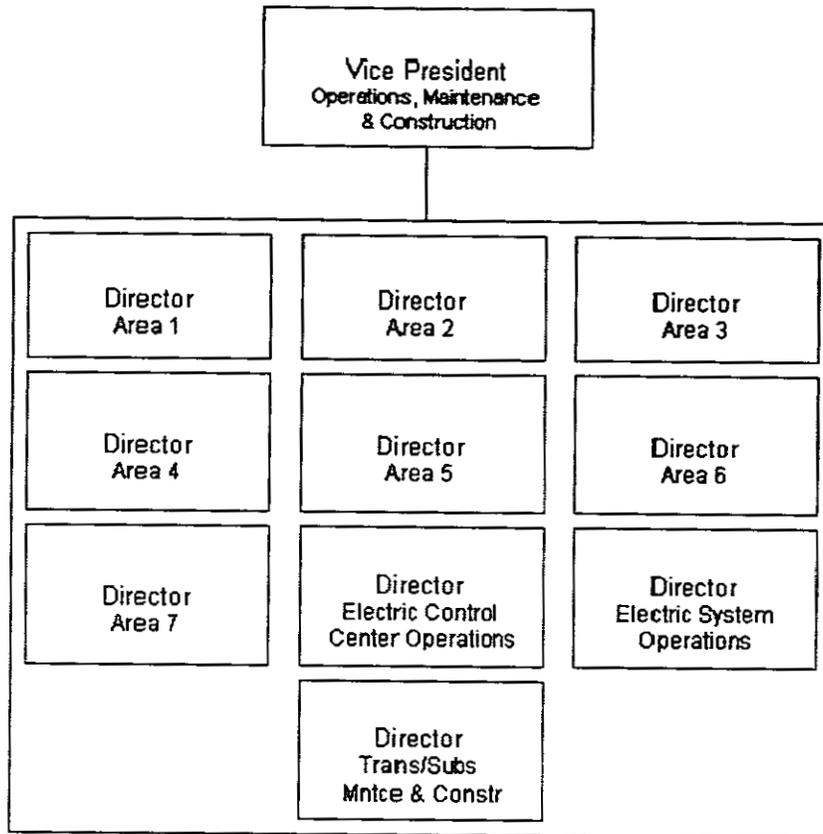


Figure 5-22 Operations, Maintenance and Construction Department Organization

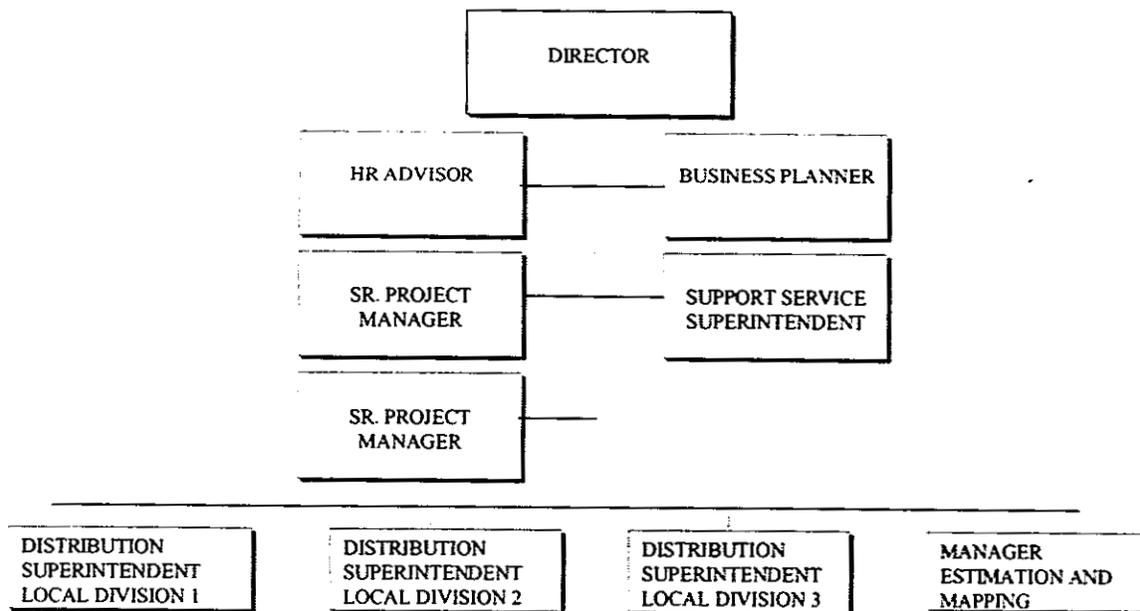


Figure 5-23 Area Level O&M and Construction Department Organization

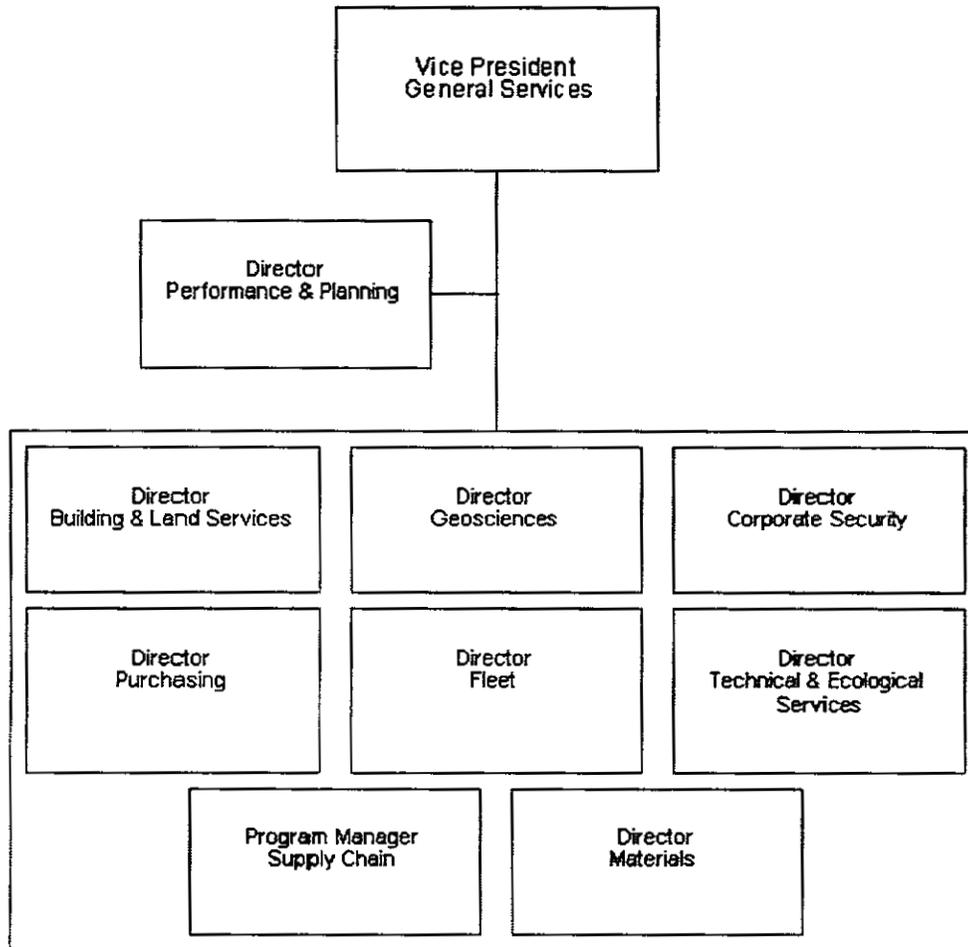


Figure 5-24 General Services Department Organization

## 5.5 VIETNAM CASE STUDY

### 5.5.1 Overview of Vietnam Electricity Sector

Vietnam has a single state-owned vertically integrated electricity company, Electricite Viet Nam (EVN). Like NEPA, EVN is an under performing, under funded and highly centralized state monopoly struggling to provide reliable electricity service to a growing population of consumers. As shown in Table 5-2, EVN is similar to NEPA in size and customer demographics. EVN is slightly ahead of Nigeria in its push to decentralize, corporatize and inject market competition in the sector, and this makes Vietnam an interesting example for Nigeria.

**Table 5-2 Comparison between EVN and NEPA**

Category	Vietnam	Nigeria
Population of Country	80 million	110 million
Size of Country	128,000 sq. mi.	574,000 sq. mi.
Electric Generation Capacity	5 gigawatts	4 gigawatts
Electricity Generation (1998)	21,000 GWh	16,000 GWh
Thermal:Hydro Generation Mix	20:80	60:40
No. of Distribution BUs	6	10
Ownership	Govt. of Vietnam	Govt. of Nigeria
Structure	Vert. Integrated	Vert. Integrated
Independent Regulation?	No	No
BOT IPPs?	Yes	Yes

### 5.5.2 Overview: Structure of EVN

Figure 5-25 provides the high-level organization structure for EVN. Management of EVN is handled by a Board, Director General and a team of Deputy DGs. Members of the Board and the DG are appointed by the Prime Minister. Headquarters departments provide assistance to the DG in areas such as planning, finance and accounting, commercial operations, procurement, generation, legal, personnel etc.

Outside of the Headquarters organization, EVN consists of over 30 separate divisions, each with its own charter and each reporting to EVN's Director General. These divisions are classified into two categories: *independent* and *dependent* accounting units.

The dependent accounting units of EVN include 13 power plants, 4 transmission companies, the national load dispatching center and several support service units such as R&D and the Computer Center. All these dependent accounting units record their operating expenses and report directly to EVN Headquarters for consolidation and monthly accounts.

The independent accounting units of EVN include 6 distribution companies ("PCs"), 4 construction companies, 2 engineering companies and several service companies. Independent accounting units maintain their own accounting records and are accountable directly to the Director General.

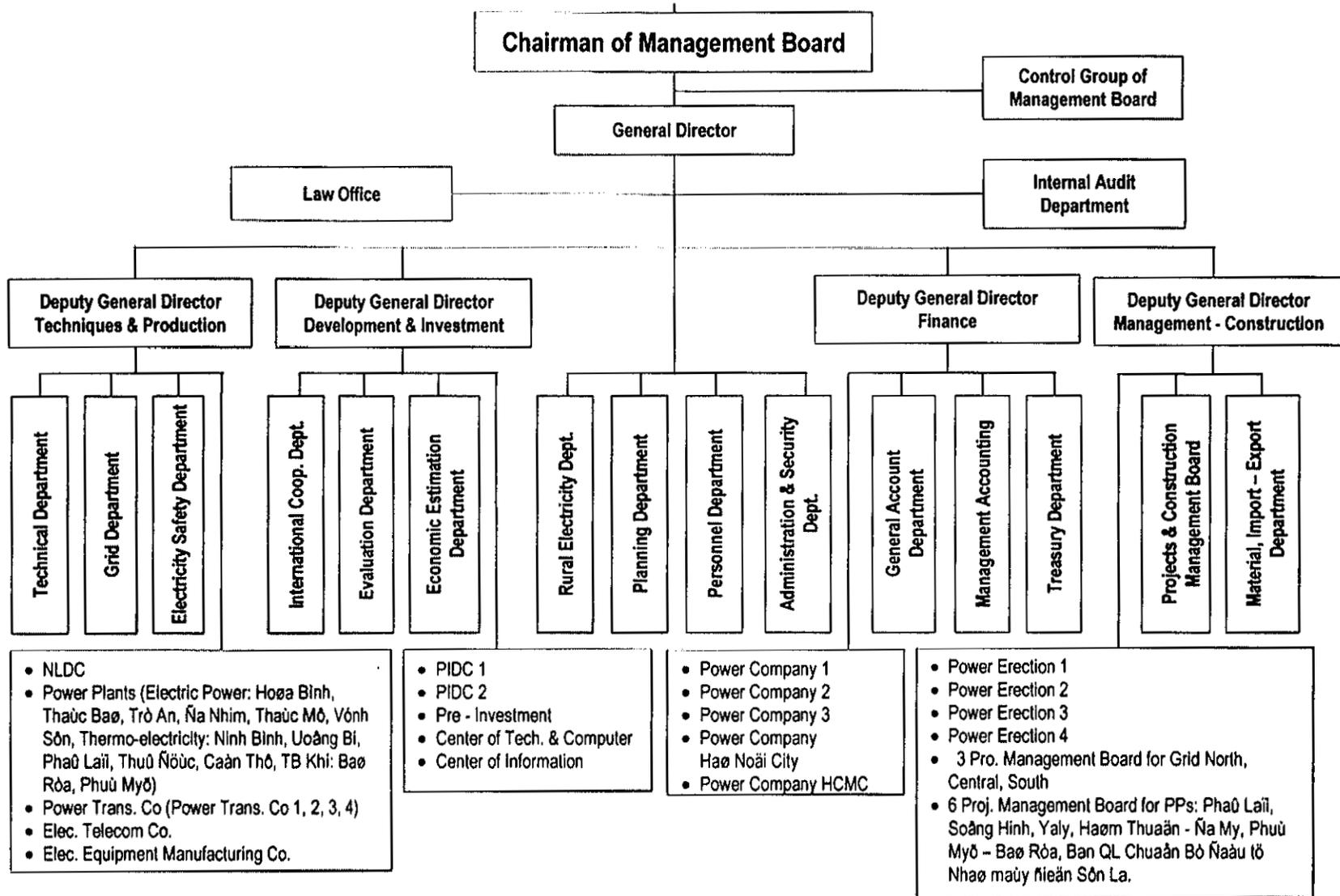


Figure 5-25 Proposed EVN Organization

Despite the distinction between independent and dependent accounting units, EVN's functional units for generation, transmission/dispatch and distribution are all best characterized as operating units subject to stringent central budget controls enforced by central budget rationing. The PCs have some limited authority for accounting, human resources and business management however other key business functions such as finance and procurement, are controlled by the corporate center. The generating plants are strictly operating units reporting to the corporate center.

EVN has implemented transfer pricing mechanisms for generation and distribution. However, because of the lack of funding for EVN overall, the transfer price is not fully funded and cannot be used to simulate a profit incentive. It does not create autonomy for the functional units. The transfer pricing mechanism should become increasingly effective when the electric sector achieves cost-based tariffs and EVN is able to guarantee the prices and rewards built into the internal contracts.

### 5.5.3 Autonomy for EVN DBUs

The six power distribution companies are responsible for distribution operations and purchasing bulk power from EVN's generation and transmission groups for retailing to end-use consumers.

Under the status quo, the PCs are operating divisions of EVN. The role of the management of the PCs is to ensure efficient operations. Under this system, results are encouraged by measuring performance against a norm for cost efficiency, loss reduction, customer service, etc., and providing a bonus system to reward the employees of divisions exceeding the norm.

Autonomy for the PCs requires cost-based transfer pricing. Under this mechanism, distribution divisions "pay" the central organization based on the system marginal cost of power supply to the division. System marginal cost can be used as the actual transfer price in the market-based system, or as a shadow price in a hybrid system. Tariffs to consumers are based on the local cost-of-service, including both the transfer payment to the central organization and the cost to own and operate the PC, with appropriate adjustments to reflect national interests.

Currently, funding for the Power Companies is determined by the difference between what the PCs collect in retail tariff revenues and what they pay for generation and transmission according to the bulk supply price. Retail tariffs are set by the government and do not necessarily represent the full cost of power. The bulk supply price is an internal accounting mechanism for re-distribution of resources, and does not reflect the costs of generation and transmission of power supply to each individual PC. Therefore the residual revenues to the PCs can be characterized as centrally administered budget allocation of funds.

EVN's internal revenue allocation mechanism is problematic because it potentially under funds the PCs, and it does not provide a strictly market-based stimulus for PC management. It does, however 1) impose a fixed budget, which in turn encourages fiscal austerity, and 2) encourage the PCs to manage their revenues and improve collections subject to central oversight.

### 5.5.4 Evolving Electricity Market Structure

EVN is evolving towards the “single buyer” market structure, as detailed in a recent Asian Development Bank technical assistance project report (Nexant, 1999). Under the single buyer structure, internal markets for generation and distribution of electricity are established by creating autonomous units for power plants, distribution divisions and central functions. The framework for this internal markets approach is depicted graphically in Figure 5-26.

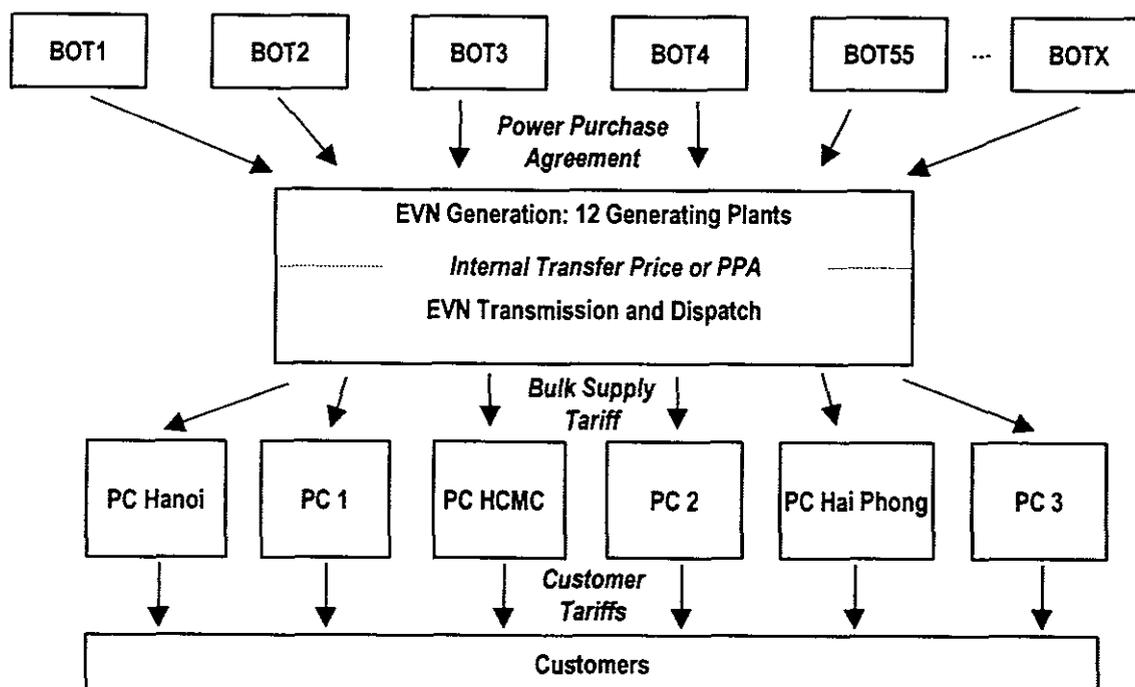


Figure 5-26 Framework of Internal and External Contracts

The central organization operates as a government agency or regulated monopoly controlling transmission, dispatch, hourly power transactions, acquisition of power supplies, and various accounting and controlling functions. The central agency “buys” from the generating resources and “sells” to the distribution divisions. The single buyer is favored for Vietnam in the immediate term primarily as a means to allocate the benefits of government subsidized hydroelectricity to all the PCs.

Under the single buyer model, transfer pricing can be structured to take into account the functional units’ expected costs, operating constraints, and performance, and the system’s average and marginal costs. The single buyer structure requires the following elements governing the flow of funds to the electric sector organizations:

- Power purchase agreements between the single buyer and the generators;
- Price regulation of distribution/supply services;
- Price regulation of transmission/dispatch services; and

- Tariffs for final consumption based on the revenues required to pay generators, the distribution company and the transmission company according to the pricing terms in the PPAs and regulated revenue mechanisms.

The internal market mechanism operates according to the following rules:

- Each existing generating plant, or aggregated set of plants, has a separate transfer pricing mechanism or contract with the centralized power purchasing agency. The contract recognizes the remaining economic life of the plant. The contract specifies pricing, reliability requirements, dispatch and curtailment provisions, etc. Appropriate cost and performance incentives can be built into these contracts. Separate generating divisions maintain their own planning and accounting functions.
- New power suppliers acquire a contract with the electric company through a competitive bidding process that takes into account the attributes of the new power plant and the avoided costs to the electric company.
- Each distribution division in the system has a contract with the corporate center governing the division's base revenues. All distribution divisions have a common contract or tariff containing built-in organizational incentives and rewards for cost efficiency, quality distribution services, service reliability, worker productivity and safety. The challenge of designing the contract is to motivate each division to strong performance while maintaining cooperation among divisions.
- The central business units, which include transmission, dispatch, power purchasing, finance and accounting and other functions, are regulated by the state, and staff members are rewarded/sanctioned depending on their performance.
- Engineering, maintenance and procurement can be structured as autonomous business units, as centralized corporate functions, or as sections within each business unit.

In practice this structure works in the following manner. The distributor collects the revenues, based on regulated uniform national tariffs. The revenues are transferred to the single buyer who allocates the funds to generators, the distributors and the transmission company based on the prices in the power purchase agreements and the regulated revenue requirements for distribution and transmission services. As a practical matter the system requires a balancing account mechanism to correct for variations between actual and forecasted revenues.

Price regulation of generation, distribution and transmission units can be based on standard cost, cost-of-service or a hybrid of the two approaches. The key objective is to provide a revenue target that stimulates efficient decision-making by management of the functional unit.

The standard cost approach is a form of benchmark regulation. The standard cost of providing utility services is determined based on engineering estimates or comparisons with other similar utilities. The result of this process is the idealized financial requirement for the utility. By basing the amount of revenues to be received by each entity on standard costs rather than on actual costs, the regulatory authority attempts to create an incentive for the entity to reduce its actual costs below its designated standard costs. In theory, different incentives can be correlated to different types of standard costs.

Cost-of-service is a specific process for determining the utility's revenue target based on accounting, budget and asset information. The components of cost-of-service are operating expenses, depreciation, profit on assets, cost of debt, and taxes. Due to the effects of inflation in Vietnam, it is necessary to evaluate cost-of-service on the basis of the replacement cost of the existing assets, less physical depreciation. Cost-of-service based on estimated asset replacement cost can be considered a variety of standard cost.

The pace of transition to autonomous business units depends on the overall reform of the electric sector, in particular, progress in the following areas:

- Link consumer prices for electric services to the costs of providing the services, so that the industry can be self-financing. The key step is to transition to higher, cost-reflective tariffs based on the full cost of providing services.
- Establish adequate financial performance for EVN business units.
- Adopt commercial practices at EVN business units to demonstrate the organizational capabilities required to manage private investment.
- Implement appropriate sector restructuring and associated regulation.

### **5.5.5 Comparison to Thailand Electricity Market Structure**

EGAT in neighboring Thailand is a vertically-integrated state-owned electric utility. EGAT has established business units for distribution, transmission, generating plants, maintenance, engineering and mining. Other functional groups are operating units, including policy and planning, accounting and finance, administration, construction, hydro and demand-side management.

EGAT business units are profit centers subject to standard cost price caps, fixed transfer prices or power purchase agreements. The business units have a significant amount of autonomy, and develop their own management plans.

There are currently only two EGAT distribution business units. MEA covers Bangkok and surroundings and PEA covers the rest of Thailand. A recent policy study recommends further dis-aggregation of distribution and supply into a total of 9 DBUs (Arthur Andersen, March 2000). The DBUs would be subject to "benchmark competition" to stimulate performance improvement. Benchmark competition involves setting meaningful performance targets for each DBU based on comparative analysis of the enterprises.

### **5.5.6 EVN Organizational Structure**

At EVN, the General Director manages the company and reports to the Management Board. There are four Deputy General Directors for the following functions: 1) generation and transmission operations; 2) research, development and investments; 3) finance; and 4) construction and project management.

The six DBUs (PCs) are under the Finance organization, however the Directors of the PCs report directly to the General Director. Under this reporting scheme, there is no sector-level organization for distribution, in contrast to generation and transmission, which are combined under a single organization at the HQ level.

## 5.5.7 EVN Finance and Accounting Organization Structure

### 5.5.7.1 F&A at Headquarters

The HQ Finance and Accounting Department is a staff office organizing the company's accounting work and assisting the EVN General Director in financial and economic management. The HQ F&A organization serves as focal point for F&A activities at BUs and operating divisions and has the following responsibilities:

#### *A. Price and financial work:*

1. Based on EVN Plan, working out financial and credit plan of EVN; directing the affiliate units in establishing financial plans and organizing examination thereof.
2. Taking necessary measures to ensure income and expenditure balance; raising domestic and foreign funds; maintaining financial resources for EVN operations; organizing management and utilization of funds and resources.
3. Organizing the implementation of domestic and overseas credit services; making payment and allocation of funds to the affiliate units of EVN; making sufficient regulated payment to the State budget.
4. Directing professional operation of Financial Company.
5. Carrying out management and distribution of various funds from profit and other incomes to the affiliate units.
6. Guiding, checking and observing the utilization and examining the construction investment capital balance of the affiliate units of EVN.
7. Executing regular financial checks in EVN.
8. Studying, developing and managing electricity tariff alternatives and electricity price policy to submit to the State for approval; suggesting internal electricity sale price in EVN and price proposals for other products and services.
9. Organizing the development, guidance and application of financial norms in EVN.
10. Directing and examining the execution of asset management system in EVN.
11. Participating in examining the plans of the affiliate units of EVN.
12. Taking charge of financial, accounting and salary work of EVN head office.

#### *B. Accounting work:*

1. Directing the accounting work in EVN.
2. Implementing the accounting work in EVN.
3. Executing the accounting work on operation cost, import-export business overhead cost and other unforeseen expenses in EVN head office.
4. Assisting EVN in examination and appraisal of balance sheets and profit and loss statements of the affiliate units.
5. Studying the application of advanced accounting methods and information technology in EVN in order to improve the efficiency and quality of the accounting work; studying to improve and to ceaselessly perfect the accounting mechanism in EVN.

#### *C. Organizing the professional training and education of financial and accounting work in EVN.*

Figure 5-27 presents the HQ finance organization. The HQ organization is divided into three separate departments as follows:

- Treasury Department – cash budgeting, cash receipt, disbursement, bank transactions
- Management Accounting Department – management reporting, company-wide guidelines and strategies for finance and accounting in the divisions
- General Accounting Department – customer revenue accounting, company-wide consolidation, loans and investments, HQ office accounts etc.

### **5.5.7.2 F&A at the PCs**

Figure 5-28 presents the recommended organization chart for one of the PCs (Nexant 1999). The top position at the PC is a Director reporting to EVN's General Director. Two Deputy Directors report to the PC's Director, one for the operating organization and one for the finance organization. In addition to the operating and finance organizations, there are 3 other departments that report to the Director of the PC: the External Economic Department, the Administration and Security Department and the Personnel Department. The heads of these departments are one rank below Deputy Directors.

Figure 5-29 presents a generalized F&A organization chart for a PC. (The PCs are comparable to NEPA distribution and marketing zones.) The F&A organization is split into the following 5 departments:

- General Accounting Department – loans, construction projects, office accounts, consolidation for subsidiaries and districts, import-export accounts, records
- Consumer Accounting Department – customer services, meter reading, preparing invoices, cash accounting and accounts receivable, accounts payable, rural electricity
- Information Technology Department
- Management Accounting – management reporting, setting up business strategies, policies and systems for managing F&A
- Treasury Department – cash planning, capital distribution, bank transactions, cashier

Note from the foregoing discussion that EVN provides a high degree of functionality at the PC level, consistent with a relatively high degree of regional autonomy in the distribution sector. The PCs are meant to operate as semi-autonomous DBUs responsible for managing their operating unit subsidiaries and reporting results up to the corporate center for consolidation.

### **5.5.7.3 F&A at the Operating Units**

Figure 5-30 presents a generalized organization chart for F&A at an EVN Electricity Branch (EB). (The EBs are comparable to NEPA D&M Districts and Undertakings.) The F&A organization is divided into the following two main branches:

- General Accounting – construction accounting, material and fixed assets accounting, general accounts, budget, payments, payroll and cashier
- Customer Accounting – customer services, meter reading and management, information technology and collections

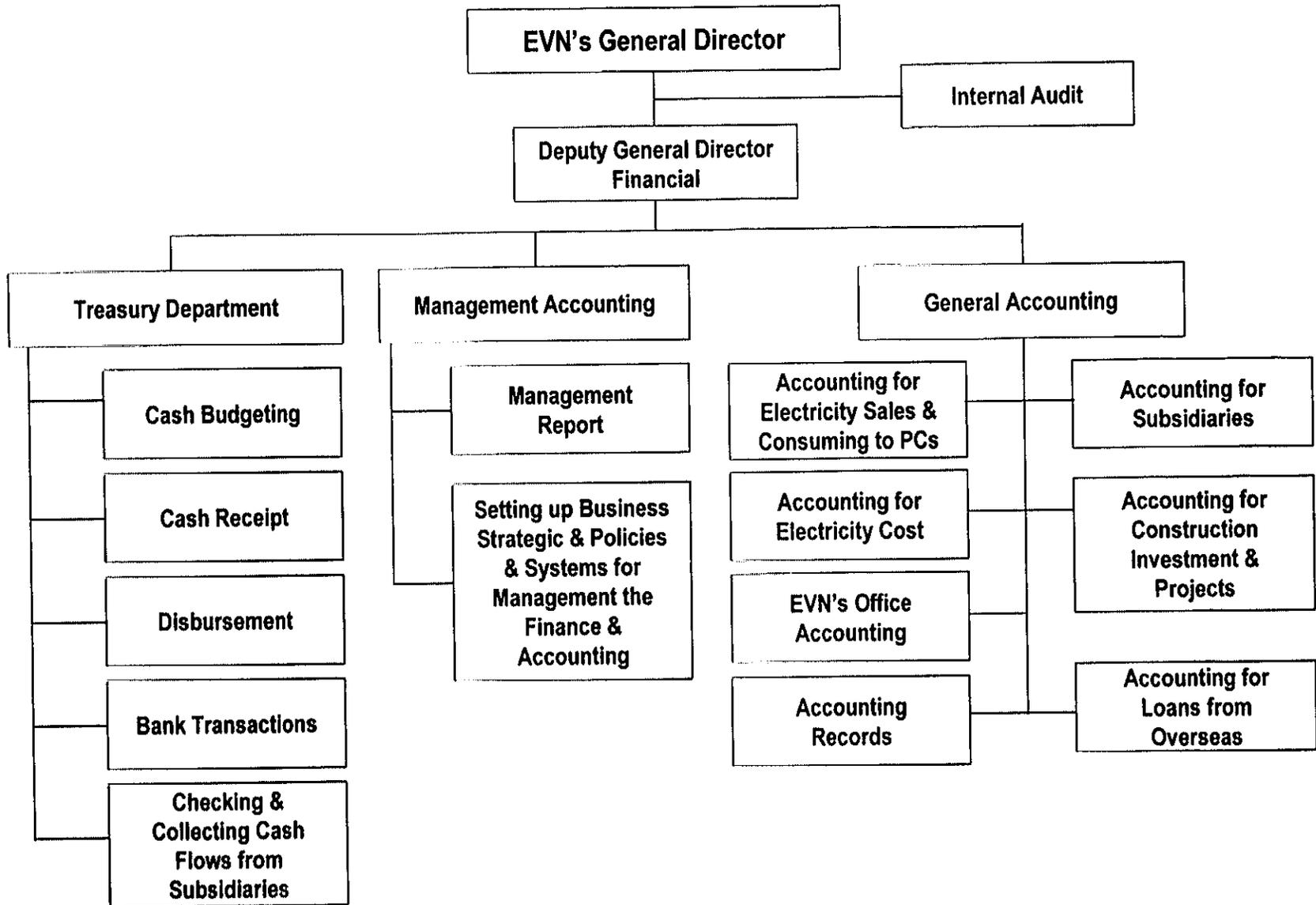


Figure 5-27 Proposed EVN Financial and Accounting Organization

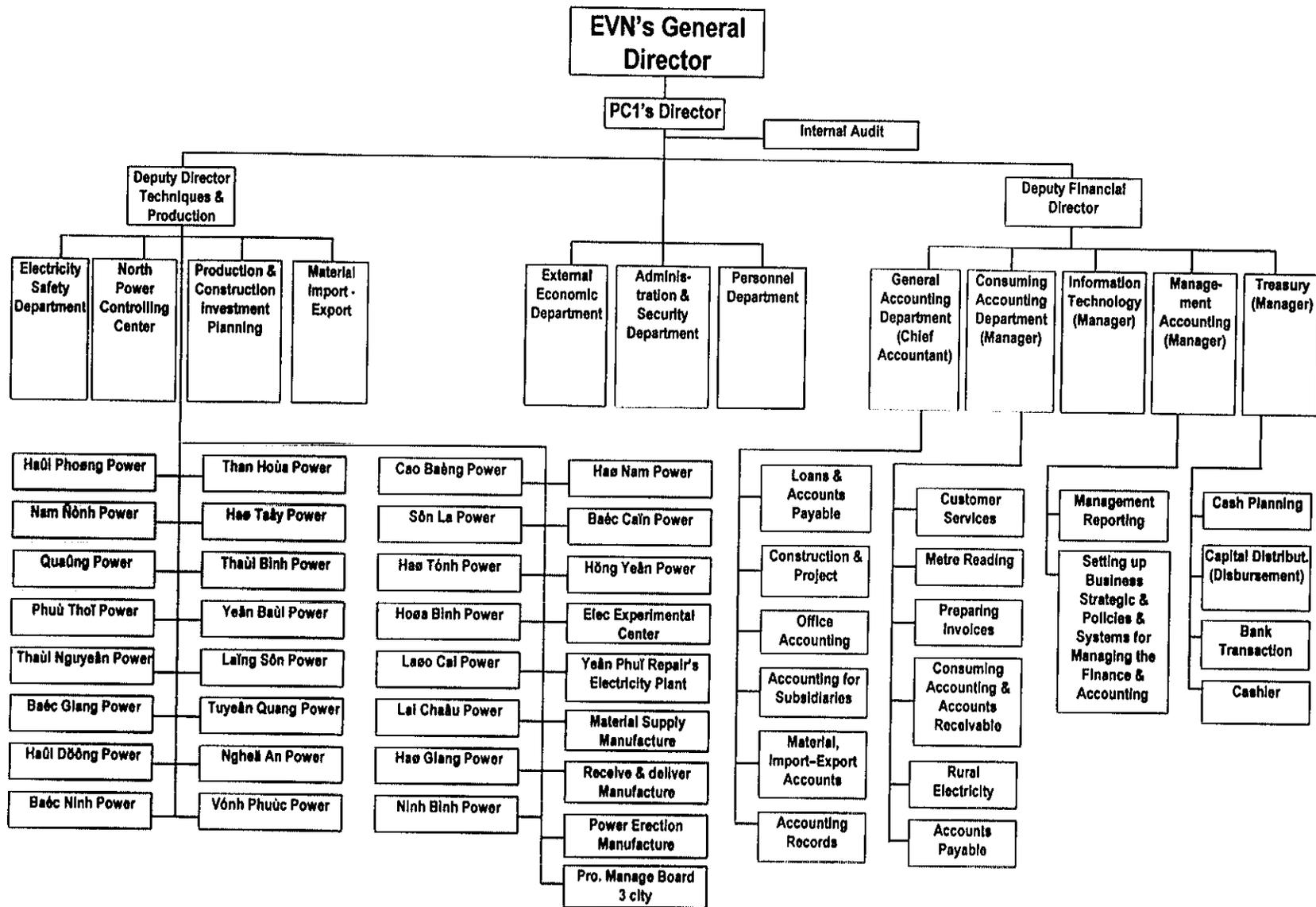


Figure 5-28 Proposed PC1 Organization

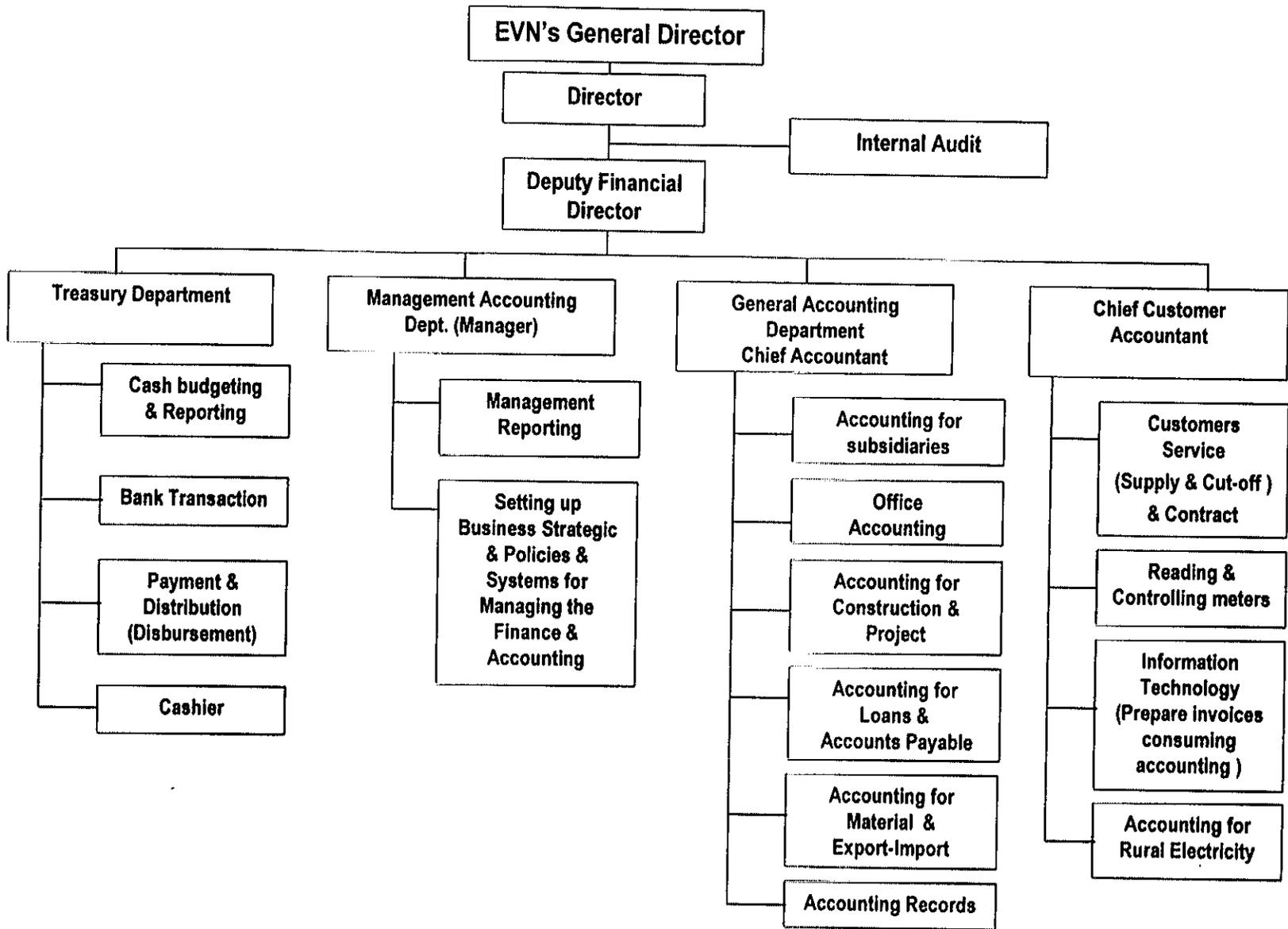


Figure 5-29 Proposed PC Financial and Accounting Organization

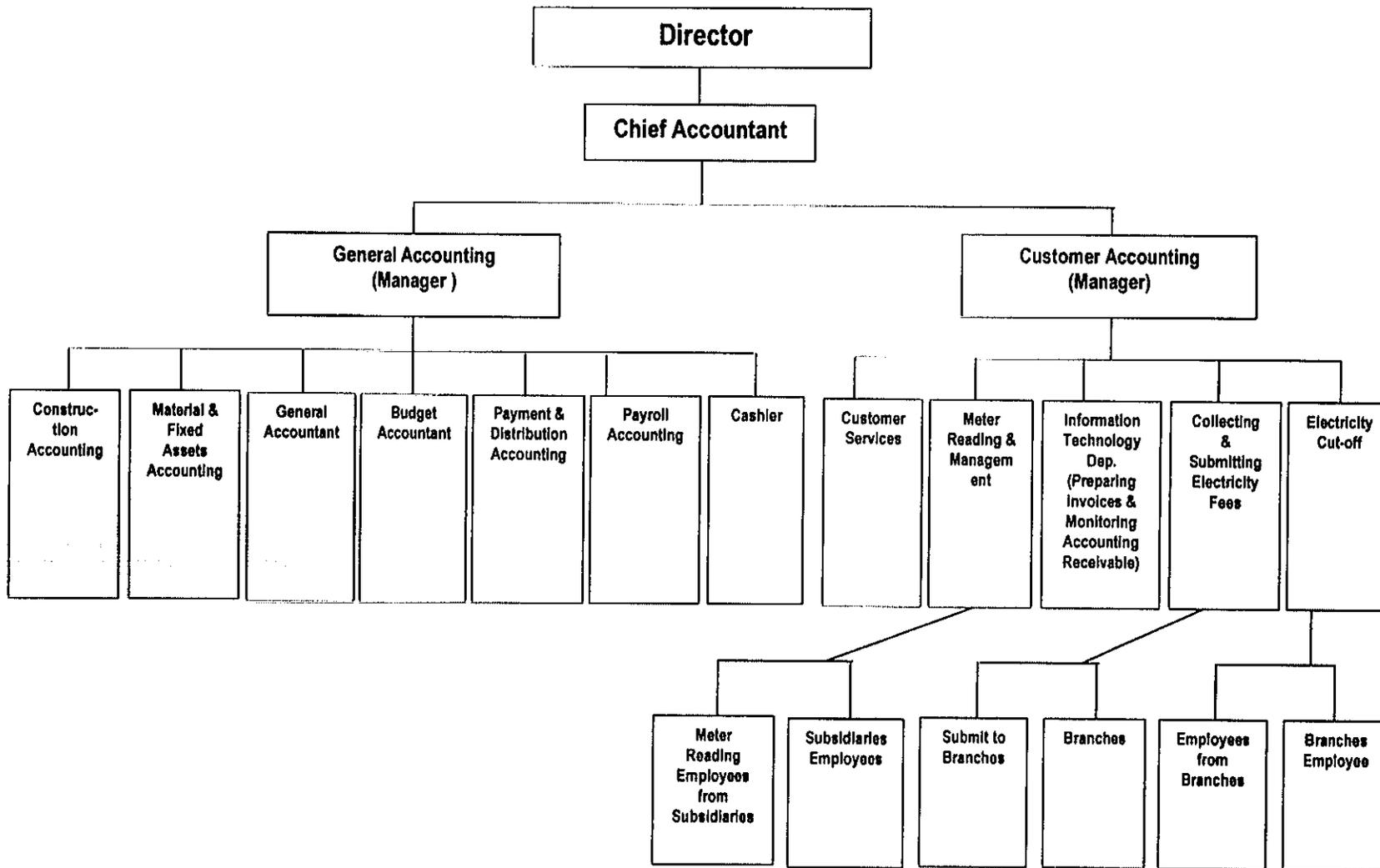


Figure 5-30 Proposed Ebs Financial and Accounting Organization

**COMPUTER MODEL FOR ACCOUNTS UNBUNDLING AND TRANSFER PRICING**

This appendix presents the computer spreadsheet model for accounts unbundling. The first page provides an index followed by sets of tables for outputs and inputs.

**National Electric Power Authority (NEPA)**  
**Model to Allocate Costs, Assets & Liabilities to Sectors and Lagos Zone and Establish Bulk Transfer Prices**  
**Index of Worksheets**

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TAB TITLE	DESCRIPTION
<b><u>Outputs</u></b>	
NEPA P&L	NEPA Income Statements
NEPA CF	NEPA Cash Flows
Transfer Prices	Bulk Supply Transfer Prices
NEPA RR	NEPA Revenue Requirements
Lagos P&L	Lagos Income Statements
Lagos CF	Lagos Cash Flows
Lagos RR	Lagos Revenue Requirements
<b><u>Data Inputs</u></b>	
E&B Data	Energy & Billing Data Inputs
O&M Inputs	O&M Cost Data Inputs
Fin Data Inputs	Financial Data Inputs
Lagos Data Inputs	Data Inputs for Lagos
<b><u>Calculated Data Inputs</u></b>	
Calc Data Inputs	Calculated Values based on Data Inputs
Calc O&M	Calculated O&M Cost Data Inputs
Allocation Factors	Allocation factors For Functionalization and Classification of Costs
Cost Allocations	Cost Allocations by Functions by Demand, Energy and Customer Accounts

**National Electric Power Authority (NEPA)  
Cost Allocations**

(all costs are expressed in Hairs '000)

This worksheet identifies costs by Demand, Energy, and Customer categories

		1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b>Step 2: Final Costs by Category of Expense, including allocation of A&amp;G Costs using "A&amp;G Sub-Fn" allocators developed in "Allocations Factors" worksheet.</b>						
<b>Generation</b>						
<u>Operations</u>						
Fuel	<i>Energy</i>	1,046,978	309,629	1,065,717	1,331,554	937,309
Other Production Operation Expenses	<i>Energy</i>	1,879,955	2,881,072	2,052,591	5,023,440	2,794,398
<i>Operations, Sub-Total</i>		2,926,933	3,190,701	3,118,308	6,354,994	3,731,707
<u>Purchased Power</u>						
Purchased Power Expenses	<i>Demand</i>	0	0	0	3,665,072	5,251,378
	<i>Energy</i>	48,203	34,650	63,476	166,210	1,095,894
Other Purchased Power Expenses	<i>Demand</i>	0	0	0	0	0
<i>Purchased Power, Sub-Total</i>		48,203	34,650	63,476	3,831,282	6,347,272
<b>Total Operations</b>						
<u>Maintenance, Total</u>	<i>Demand</i>	1,572,594	1,126,426	1,717,006	875,776	2,337,532
<b>Total Generation</b>	Total	4,547,730	4,351,777	4,898,789	11,062,052	12,416,510
	of which:					
	<i>Demand</i>	1,572,594	1,126,426	1,717,006	4,540,848	7,588,910
	<i>Energy</i>	2,975,136	3,225,351	3,181,784	6,521,204	4,827,600
<b>Transmission</b>						
<u>Operations</u>						
Transmission Of Electricity By Others	<i>Demand</i>	0	0	0	0	0
Other Expenses	<i>Demand</i>	1,715,259	2,207,348	1,872,772	3,375,077	2,549,591
<i>Total Operations</i>		1,715,259	2,207,348	1,872,772	3,375,077	2,549,591
<u>Maintenance, Total</u>						
<b>Total Transmission</b>	Total	3,074,412	2,766,809	3,356,736	4,008,113	4,569,860
	of which:					
	<i>Demand</i>	3,074,412	2,766,809	3,356,736	4,008,113	4,569,860
	<i>Energy</i>	0	0	0	0	0
<b>Distribution</b>						
<u>Operations</u>						
Meter Expenses	<i>Customer</i>	1,833,872	2,455,599	2,002,277	3,602,844	2,725,899
Other Expenses	<i>Demand</i>	5,486,947	7,620,758	5,990,814	11,589,272	8,155,894
<i>Total Operations</i>		7,320,820	10,076,357	7,993,090	15,192,116	10,881,793
<u>Maintenance</u>						
Meter Expenses	<i>Customer</i>	37,097	40,929	40,504	96,098	55,142
Other Expenses	<i>Demand</i>	4,451,130	1,296,917	4,859,878	1,523,827	6,616,238
<i>Total Maintenance</i>		4,488,228	1,337,846	4,900,381	1,619,924	6,671,379
<b>Total Distribution</b>	Total	11,809,047	11,414,203	12,893,472	16,812,041	17,553,173
	of which:					
	<i>Demand</i>	9,938,078	8,917,675	10,850,692	13,113,099	14,772,131
	<i>Customer</i>	1,870,969	2,496,528	2,042,780	3,698,942	2,781,041
<b>Customer Accounts</b>						
Meter Reading	<i>Customer</i>	1,833,872	2,455,599	2,002,277	3,602,844	2,725,899
Customer Records And Collection Exp.	<i>Customer</i>	0	0	0	0	0
Other Customer Accounts	<i>Customer</i>	0	0	0	0	0
<b>Total Customer Accounts</b>	Total	1,833,872	2,455,599	2,002,277	3,602,844	2,725,899
<b>Total O &amp; M Costs identified by Demand, Energy &amp; Customer categories:</b>						
	<i>Demand</i>	14,585,085	12,810,909	15,924,433	21,662,060	26,930,901
	<i>Energy</i>	2,975,136	3,225,351	3,181,784	6,521,204	4,827,600
	<i>Customer</i>	3,704,841	4,952,127	4,045,057	7,301,786	5,506,941
	<b>Total</b>	21,265,062	20,988,388	23,151,274	35,485,050	37,265,442
	<i>Demand</i>	69%	61%	69%	61%	72%
	<i>Energy</i>	14%	15%	14%	18%	13%
	<i>Customer</i>	17%	24%	17%	21%	15%
	<b>Total</b>	100%	100%	100%	100%	100%

**National Electric Power Authority (NEPA)  
Cost Allocations**

(all costs are expressed in Naira '000)

This worksheet identifies costs by Demand, Energy, and Customer categories

	1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b>Administrative &amp; General (A&amp;G) Cost Allocations to Functions</b>					
Step 1: Allocation of HQ A&G Costs to GTDM using "A&G Fn." allocators developed in "Cost-Allocations" worksheet.					
<b>Generation</b>					
Outstations & Sector HO Costs	1,198,030	1,424,969	1,308,045	2,078,358	1,780,773
HQ Cost Allocation	649,170	664,200	708,784	860,714	964,938
Total Generation	1,847,200	2,089,169	2,016,829	2,939,072	2,745,711
<b>Transmission</b>					
Outstations & Sector HO Costs	1,057,231	927,033	1,154,316	1,471,584	1,571,486
HQ Cost Allocation	578,071	458,569	631,155	584,796	859,254
Total Transmission	1,635,301	1,385,602	1,785,471	2,056,380	2,430,740
<b>Distribution</b>					
Outstations & Sector HO Costs	3,222,069	3,411,684	3,517,951	4,711,632	4,789,339
HQ Cost Allocation	2,220,412	1,891,781	2,424,312	2,452,929	3,300,459
Total Distribution	5,442,481	5,303,465	5,942,264	7,164,561	8,089,798
<b>Customer Accounts</b>					
Outstations & Sector HO Costs	500,367	733,974	546,316	1,009,709	743,755
HQ Cost Allocation	344,816	406,989	376,481	525,666	512,541
Total Customer Accounts	845,184	1,140,963	922,797	1,535,376	1,256,296
<b>Total A&amp;G Costs</b>	<b>9,770,166</b>	<b>9,919,199</b>	<b>10,667,360</b>	<b>13,695,389</b>	<b>14,522,544</b>

National Electric Power Authority (NEPA)  
Allocation Factors for Functionalizing and Classifying Costs

	1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b>A&amp;G Sub-Fn. Allocator</b>					
<b>Generation</b>					
<u>Operations</u>					
Fuel					
Other Production Operation Expenses	54.45%	71.89%	54.45%	85.15%	54.45%
<i>Operations, Sub-Total</i>	54.45%	71.89%	54.45%	85.15%	54.45%
<u>Purchased Power</u>					
Purchased Power Expenses					
Other Purchased Power Expenses	0.00%	0.00%	0.00%	0.00%	0.00%
<i>Purchased Power, Sub-Total</i>	0.00%	0.00%	0.00%	0.00%	0.00%
<b>Total Operations</b>	54.45%	71.89%	54.45%	85.15%	54.45%
<b>Maintenance, Total</b>	45.55%	28.11%	45.55%	14.85%	45.55%
<b>Total Generation</b>	100.00%	100.00%	100.00%	100.00%	100.00%
<b>Transmission</b>					
<u>Operations</u>					
Transmission Of Electricity By Others	0.00%	0.00%	0.00%	0.00%	0.00%
Other Expenses	55.79%	79.78%	55.79%	84.21%	55.79%
<b>Total Operations</b>	55.79%	79.78%	55.79%	84.21%	55.79%
<b>Maintenance, Total</b>	44.21%	20.22%	44.21%	15.79%	44.21%
<b>Total Transmission</b>	100.00%	100.00%	100.00%	100.00%	100.00%
<b>Distribution</b>					
<u>Operations</u>					
Meter Expenses	15.53%	21.51%	15.53%	21.43%	15.53%
Other Expenses	46.46%	66.77%	46.46%	68.93%	46.46%
<b>Total Operations</b>	61.99%	88.28%	61.99%	90.36%	61.99%
<u>Maintenance</u>					
Meter Expenses	0.31%	0.36%	0.31%	0.57%	0.31%
Other Expenses	37.69%	11.36%	37.69%	9.06%	37.69%
<b>Total Maintenance</b>	38.01%	11.72%	38.01%	9.64%	38.01%
<b>Total Distribution</b>	100.00%	100.00%	100.00%	100.00%	100.00%
<b>Customer Accounts</b>					
Meter Reading	100.00%	100.00%	100.00%	100.00%	100.00%
Customer Records And Collection Exp.	0.00%	0.00%	0.00%	0.00%	0.00%
Other Customer Accounts	0.00%	0.00%	0.00%	0.00%	0.00%
<b>Total Customer Accounts</b>	100.00%	100.00%	100.00%	100.00%	100.00%

**National Electric Power Authority (NEPA)**  
**Allocation Factors for Functionalizing and Classifying Costs**

	1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b>Allocation of A&amp;G (Head Quarter) Costs to Generation, Transmission, Distribution and Customer and Allocation factors for further classification to Demand, Energy and Customer</b>					
A&G/HQ costs are allocated to GTDC functions based on function expense to total O&M expense less fuel purchase costs and purchased power costs					
A&G/HQ costs are allocated to GTDC sub-functions based on sub-function expense to function expense less fuel purchase costs and purchased power costs					
A&G Fn. Allocator					
<b>Generation</b>					
<u>Operations</u>					
Fuel					
Other Production Operation Expenses					
<i>Operations, Sub-Total</i>					
<u>Purchased Power</u>					
Purchased Power Expenses					
Other Purchased Power Expenses					
<i>Purchased Power, Sub-Total</i>					
<i>Total Operations</i>					
<u>Maintenance, Total</u>					
<b>Total Generation</b>					
	17.12%	19.41%	17.12%	19.46%	17.12%
<b>Transmission</b>					
<u>Operations</u>					
Transmission Of Electricity By Others					
Other Expenses					
<i>Total Operations</i>					
<u>Maintenance, Total</u>					
<b>Total Transmission</b>					
	15.24%	13.40%	15.24%	13.22%	15.24%
<b>Distribution</b>					
<u>Operations</u>					
Meter Expenses					
Other Expenses					
<i>Total Operations</i>					
<u>Maintenance</u>					
Meter Expenses					
Other Expenses					
<i>Total Maintenance</i>					
<b>Total Distribution</b>					
	58.55%	55.29%	58.55%	55.44%	58.55%
<b>Customer Accounts</b>					
Meter Reading					
Customer Records And Collection Exp.					
Other Customer Accounts					
<b>Total Customer Accounts</b>					
	9.09%	11.89%	9.09%	11.88%	9.09%
	100.00%	100.00%	100.00%	100.00%	100.00%

**National Electric Power Authority (NEPA)**  
**Allocation Factors for Functionalizing and Classifying Costs**

		1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b>Allocation Factors for Allocating Generation, Transmission, Distribution, and Customer O&amp;M Expenses to "Demand", "Energy" and "Customer" Categories</b>						
<b>The O&amp;M Expenses in GTDC should be functionalized from the General Ledger</b>						
<b>Generation</b>						
<u>Operations</u>						
Fuel	Energy	100%	100%	100%	100%	100%
Other Production Operation Expenses	Energy	100%	100%	100%	100%	100%
<i>Operations, Sub-Total</i>						
<u>Purchased Power</u>						
Purchased Power Expenses	Demand	0%	0%	0%	96%	83%
Other Purchased Power Expenses	Energy	100%	100%	100%	4%	17%
<i>Purchased Power, Sub-Total</i>						
<b>Total Operations</b>						
<u>Maintenance, Total</u>	Demand	100%	100%	100%	100%	100%
<b>Total Generation</b>						
<b>Transmission</b>						
<u>Operations</u>						
Transmission Of Electricity By Others	Demand	100%	100%	100%	100%	100%
Other Expenses	Demand	100%	100%	100%	100%	100%
<b>Total Operations</b>						
<u>Maintenance, Total</u>	Demand	100%	100%	100%	100%	100%
<b>Total Transmission</b>						
<b>Distribution</b>						
<u>Operations</u>						
Meter Expenses	Customer	100%	100%	100%	100%	100%
Other Expenses	Demand	100%	100%	100%	100%	100%
<b>Total Operations</b>						
<u>Maintenance</u>						
Meter Expenses	Customer	100%	100%	100%	100%	100%
Other Expenses	Demand	100%	100%	100%	100%	100%
<b>Total Maintenance</b>						
<b>Total Distribution</b>						
<b>Customer Accounts</b>						
Meter Reading	Customer	100%	100%	100%	100%	100%
Customer Records And Collection Exp.	Customer	100%	100%	100%	100%	100%
Other Customer Accounts	Customer	100%	100%	100%	100%	100%
<b>Total Customer Accounts</b>						

**National Electric Power Authority (NEPA)**  
**Calculated O&M and A&G Costs**  
*(all costs are expressed in Naira '000)*

	1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b>Generation</b>					
<u>Operations</u>					
Fuel	1,046,978	309,629	1,065,717	1,331,554	937,309
Other Production Operation Expenses	874,132	1,379,126	954,404	2,520,692	1,299,325
<i>Operations, Sub-Total</i>	1,921,110	1,688,755	2,020,120	3,852,246	2,236,634
<u>Purchased Power</u>					
Purchased Power Expenses	48,203	34,650	63,476	3,831,282	6,347,272
Other Purchased Power Expenses	0	0	0	0	0
<i>Purchased Power, Sub-Total</i>	48,203	34,650	63,476	3,831,282	6,347,272
<b>Total Operations</b>	1,969,313	1,723,405	2,083,596	7,683,528	8,583,905
<u>Maintenance</u>					
Maintenance expenses	731,217	539,203	798,365	439,452	1,086,894
<b>Total Generation</b>	2,700,530	2,262,608	2,881,961	8,122,980	9,670,799
<b>Transmission</b>					
<u>Operations</u>					
Transmission Of Electricity By Others	0	0	0	0	0
Other Expenses	802,901	1,101,921	876,631	1,643,479	1,193,446
<i>Total Operations</i>	802,901	1,101,921	876,631	1,643,479	1,193,446
<u>Maintenance</u>					
Maintenance expenses	636,210	279,286	694,633	308,254	945,674
<b>Total Transmission</b>	1,439,111	1,381,207	1,571,265	1,951,733	2,139,120
<b>Distribution</b>					
<u>Operations</u>					
Meter Expenses	988,689	1,314,636	1,079,480	2,067,469	1,469,604
Other Expenses	2,958,157	4,079,869	3,229,805	6,650,428	4,397,056
<i>Total Operations</i>	3,946,846	5,394,505	4,309,284	8,717,897	5,866,660
<u>Maintenance</u>					
Meter Expenses	20,000	21,912	21,837	55,145	29,728
Other Expenses	2,399,721	694,321	2,620,087	874,438	3,566,987
<i>Total Maintenance</i>	2,419,721	716,233	2,641,924	929,583	3,596,715
<b>Total Distribution</b>	6,366,567	6,110,738	6,951,208	9,647,480	9,463,375
<b>Customer Accounts</b>					
Meter Reading	988,689	1,314,636	1,079,480	2,067,469	1,469,604
Customer Records And Collection Exp.	0	0	0	0	0
Other Customer Accounts	0	0	0	0	0
<b>Total Customer Accounts</b>	988,689	1,314,636	1,079,480	2,067,469	1,469,604
<b>Total Operation And Maintenance Expenses</b>	11,494,896	11,069,189	12,483,913	21,789,661	22,742,897
<b>Administrative &amp; General (Total NEPA)</b>					
Generation (Outstations & Sector HO)	1,198,030	1,424,969	1,308,045	2,078,358	1,780,773
Transmission (Outstations & Sector HO)	1,057,231	927,033	1,154,316	1,471,584	1,571,486
Distribution & Marketing (Outstations & Sector HO)	3,722,436	4,145,658	4,064,267	5,721,341	5,533,093
Headquarters	3,792,469	3,421,539	4,140,731	4,424,106	5,637,192
<b>Total Administrative &amp; General (Total NEPA)</b>	9,770,166	9,919,199	10,667,360	13,695,389	14,522,544
<b>Total Operating Expenses (O&amp;M + A&amp;G)</b>	21,265,062	20,988,388	23,151,274	35,485,050	37,265,442

**National Electric Power Authority (NEPA)  
Calculated Data Inputs**  
(all costs are expressed in Naira '000)

Base Data	1998	1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b>Working Capital (excl Cash) Allocated to GTDM</b>						
Generation	9,545,402	8,396,523	8,276,940	8,276,940	6,660,259	7,905,984
Transmission	4,615,319	4,059,821	3,992,159	3,992,159	3,307,152	3,371,386
Distribution and Marketing	8,954,063	7,876,357	8,566,650	8,566,650	3,315,104	5,487,540
Total NEPA	23,114,784	20,332,701	20,835,749	20,835,749	13,282,515	16,764,910
			per Fin Study			
<b>Allocation Factors for Stores (based on actual data at 6/30/00)</b>						
Generation	29%	29%	29%	29%	29%	29%
Transmission	22%	22%	22%	22%	22%	22%
Distribution and Marketing	49%	49%	49%	49%	49%	49%
Notes:						
Stores allocated on basis of net fixed assets.						
Debtors allocated on basis of transfer prices.						
Creditors allocated on basis of respective O&M cost allocation factors..						
<b>Cash/Bank Balances at end of year (total NEPA)</b>	3,595,658	11,786,568		2,335,264		707,340
<b>Rate Base (average of opening and closing net fixed assets plus WIP plus working capital less loans)</b>						
Generation		15,192,394	24,400,057	21,514,683	36,913,109	31,669,427
Transmission		9,680,811	16,452,828	14,317,972	43,055,502	35,899,665
Distribution and Marketing		12,085,539	13,235,252	17,011,542	12,277,080	21,718,638
Total NEPA		36,958,745	54,088,136	52,844,196	92,245,692	89,287,930
<b>Return on Rate Base</b>						
Generation		1,823,087	2,928,007	2,581,762	4,429,573	3,800,331
Transmission		484,041	822,641	715,899	2,152,775	1,794,993
Distribution and Marketing		2,417,108	2,647,050	3,402,308	2,455,416	4,343,728
Total NEPA		4,724,236	6,397,699	6,699,969	9,037,764	9,939,052
<b>Government Subsidy</b>						
Lagos State Subsidy for Enron Capacity Payments						
		US\$ millions equivalent N'000				32.91
		Lagos State Subsidy 0.33333333			1,165,521	1,165,521
		Balance of Subsidy to be provided by FGN			1,834,479	1,834,479
		Total FGN Subsidy provided for in 2001 FGN Budget (assumed to include Lagos State)			0	0
				as per Fin Study		
				0	3,000,000	3,000,000

**National Electric Power Authority (NEPA)  
Calculated Data Inputs**

*(all costs are expressed in Naira '000)*

Base Data	1998	1999	2000	2000	2001	2001
		Actual Draft FS	NEPA Budget	Fin Study Estimates	NEPA Budget	Fin Study Estimates
<b>FGN Financing of Capital Expenditure by GTDM (including Allocated HQ Capex)</b>						
Generation			16,160,984	13,437,059	11,400,000	12,279,492
Transmission			11,798,741	11,789,886	38,100,000	33,341,487
Distribution and Marketing			1,257,550	1,261,533	1,000,000	2,761,324
Total NEPA			29,217,275	26,488,478	50,500,000	48,382,304
<b>Work in Progress at end of year</b>						
Generation	833,256	1,717,069	16,312,132	13,358,189	13,434,000	12,783,097
Transmission	1,602,070	2,496,347	13,154,764	12,050,142	40,350,000	35,077,175
Distribution and Marketing	2,020,963	3,071,178	1,546,646	1,523,271	2,575,000	3,051,262
Head Quarter	3,725,219	3,907,854	1,057,890	911,138	1,909,590	1,115,438
Total NEPA WIP	8,181,508	11,192,448	32,071,432	27,842,740	58,268,590	52,026,972
Total GTDM WIP	4,456,289	7,284,594	31,013,542	26,931,602	56,359,000	50,911,534
<b>WIP at end of year by GTDM (including Allocated HQ Capex)</b>						
Generation	2,201,022	3,151,891	16,869,556	13,808,399	13,907,402	13,067,752
Transmission	2,828,895	3,783,319	13,596,581	12,447,906	41,694,435	35,835,907
Distribution and Marketing	3,151,591	4,257,237	1,605,295	1,586,435	2,666,753	3,123,313
Total NEPA	8,181,508	11,192,448	32,071,432	27,842,740	58,268,590	52,026,972
<b>Calculated Depreciation Charge by Function (including allocated HQ Depreciation)</b>						
Generation		2,636,755	3,399,586	3,187,857	3,900,468	4,424,320
Transmission		491,137	761,127	566,577	1,196,642	1,003,544
Distribution and Marketing		410,844	619,345	1,025,623	1,132,953	1,160,012
Total NEPA		3,538,735	4,780,057	4,780,057	6,230,063	6,587,875
<b>Calculated O&amp;M Expenses by Function</b>						
Generation					8,122,980	
Transmission					1,951,733	
Distribution and Marketing					9,647,480	
Head Quarters					13,695,389	
<b>O&amp;M Expenses by Function (incl. Allocated HQ costs)</b>						
Generation					10,467,268	
Transmission					4,039,265	
Distribution and Marketing					17,665,846	
<b>Outstanding Loans at end of year (excluding overdue &amp; unpaid) Allocated to GTD</b>						
Generation		11,268,439	9,474,849	9,474,849	8,428,147	8,428,147
Transmission		1,802,050	1,515,219	1,515,219	1,347,830	1,347,830
Distribution and Marketing		2,939,340	2,471,487	2,471,487	2,198,458	2,198,458
Total NEPA		16,009,829	13,461,555	13,461,555	11,974,435	11,974,435
<b>Interest Charges Allocated to GTD</b>						
Generation		1,521,248	1,407,690	1,502,287	1,993,993	848,845
Transmission		243,278	225,118	240,246	318,880	135,747
Distribution and Marketing		396,813	367,192	391,867	520,127	221,419
Total NEPA		2,161,339	2,000,000	2,134,400	2,833,000	1,206,011
<b>Debt Service Paid - Allocated to GTD</b>						
Generation		307,332	721,469	721,469	2,384,261	2,384,261
Transmission		49,149	115,377	115,377	381,291	381,291
Distribution and Marketing		80,167	188,193	188,193	621,928	621,928
Total NEPA		436,647	1,025,040	1,025,040	3,387,480	3,387,480
Other Operating Revenue (all relating to D&M)		349,198	per Fin Study 370,150	370,150	per Fin Study 395,690	395,690
Bad Debts (or Uncollected Billing)		8,615,402	8,219,577	8,219,577	6,560,608	8,071,290
Bad Debts as % of Current Year Billing		24.7%	26.0%	26.0%	17.5%	17.5%

**National Electric Power Authority (NEPA)  
Calculated Data Inputs**

(all costs are expressed in Naira '000)

Base Data	1998	1999	2000	2000	2001	2001
		Actual Draft FS	NEPA Budget	Fin Study Estimates	NEPA Budget	Fin Study Estimates
<b>Calculated Gross Asset by Function</b>						
Generation	18,284,796	23,756,432	25,473,501	25,523,649	41,785,633	40,642,970
Transmission	4,414,181	5,318,783	7,815,130	5,714,442	20,969,894	18,158,880
Distribution and Marketing	3,552,455	4,328,006	7,399,184	15,842,410	8,945,830	18,458,807
Head Quarter	3,967,886	4,508,288	8,416,142	4,843,655	9,474,032	6,089,005
Total NEPA Assets	30,219,318	37,911,509	49,103,957	51,924,156	81,175,389	83,349,663
Total GTDM Assets	26,251,432	33,403,221	40,687,815	47,080,501	71,701,357	77,260,658
<b>Calculated Depreciation Charge by Function</b>						
Generation	1,667,340	2,216,094	2,995,320	2,711,248	3,231,949	3,788,871
Transmission	296,532	412,782	670,617	481,870	991,544	859,409
Distribution and Marketing	273,844	345,299	545,695	872,285	938,771	993,403
Head Quarter	480,922	564,560	568,426	714,654	1,067,798	946,193
Total NEPA Assets	2,718,638	3,538,735	4,780,057	4,780,057	6,230,063	6,587,875
Total GTDM Assets	2,237,716	2,974,175	4,211,632	4,065,403	5,162,265	5,641,683
<b>Calculated Accumulated Depreciation by Function</b>						
Generation	6,233,203	9,110,885	12,106,205	12,499,883	15,338,155	17,151,246
Transmission	1,122,964	1,689,702	2,360,319	2,297,267	3,351,863	3,315,187
Distribution and Marketing	1,059,386	1,584,207	2,129,902	2,574,340	3,068,673	3,745,372
Head Quarter	2,089,526	2,125,247	2,693,673	2,997,996	3,761,470	4,151,051
Total NEPA Assets	10,505,079	14,510,041	19,290,098	20,369,486	25,520,161	28,362,856
Total GTDM Assets	8,415,553	12,384,794	16,596,426	17,371,490	21,758,691	24,211,805
<b>Calculated Net Assets by Function</b>						
Generation	12,051,593	14,645,547	13,367,296	13,023,766	26,447,478	23,491,725
Transmission	3,291,217	3,629,081	5,454,811	3,417,175	17,618,031	14,843,693
Distribution and Marketing	2,493,069	2,743,799	5,269,282	13,268,071	5,877,157	14,713,435
Head Quarter	1,878,360	2,383,041	5,722,469	1,845,659	5,712,562	1,937,954
Total NEPA Assets	19,714,239	23,401,468	29,813,859	31,554,671	55,655,228	54,986,807
Total GTDM Assets	17,835,879	21,018,427	24,091,389	29,709,012	49,942,666	53,048,853
<b>Gross HQ Assets Allocated to GTDM</b>						
Generation	2,763,734	3,206,303	5,269,111	2,625,880	5,521,212	3,203,121
Transmission	667,200	717,853	1,616,534	587,903	2,770,791	1,431,123
Distribution and Marketing	536,951	584,132	1,530,497	1,629,872	1,182,029	1,454,761
<b>Gross GTDM Assets (including Allocated HQ Assets)</b>						
Generation	21,048,530	26,962,735	30,742,612	28,149,529	47,306,845	43,846,091
Transmission	5,081,381	6,036,636	9,431,664	6,302,345	23,740,685	19,590,004
Distribution and Marketing	4,089,406	4,912,138	8,929,681	17,472,282	10,127,859	19,913,568
Total NEPA	30,219,318	37,911,509	49,103,957	51,924,156	81,175,389	83,349,663
<b>Net HQ Assets Allocated to GTDM</b>						
Generation	1,269,196	1,660,492	3,175,157	809,096	3,025,126	858,188
Transmission	346,610	411,460	1,295,691	212,290	2,015,193	542,262
Distribution and Marketing	262,554	311,088	1,251,622	824,273	672,243	537,504
Total	1,878,360	2,383,041	5,722,469	1,845,659	5,712,562	1,937,954
<b>Net GTDM Assets (including Allocated HQ Assets)</b>						
Generation	13,320,789	16,306,039	16,542,453	13,832,862	29,472,604	24,349,913
Transmission	3,637,827	4,040,541	6,750,502	3,629,465	19,633,224	15,385,956
Distribution and Marketing	2,755,623	3,054,887	6,520,904	14,092,343	6,549,400	15,250,939
Total NEPA	19,714,239	23,401,468	29,813,859	31,554,671	55,655,228	54,986,807
<b>Capital Expenditure by GTDM (including Allocated HQ Capex)</b>						
Generation	2,016,969	1,158,883	16,899,111	13,757,612	14,445,236	13,277,049
Transmission	1,809,132	1,039,467	13,394,293	12,154,942	41,023,637	35,389,287
Distribution and Marketing	1,667,276	957,961	1,778,028	1,930,186	2,799,717	3,360,636
Total NEPA	5,493,377	3,156,311	32,071,432	27,842,740	58,268,590	52,026,972

**National Electric Power Authority (NEPA) - Distribution & Marketing Lagos Zone  
Data Inputs**

(all costs are expressed in Naira '000)

	1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b><u>Energy &amp; Billing</u></b>					
<b><u>Distribution of Enron and Other Sources of Power to Lagos Zone in 2001</u></b>					
	Enron	All Other	Total		
<b>Total NEPA (MWh)</b>					
Energy Sent Out	1,072,310	14,706,446	15,778,756		
Transmission Losses	3.0%	6.2%	6.0%		
Energy delivered to Distribution	1,040,141	13,791,890	14,832,031		
Distribution Losses (over S.O.)	26.0%	26.0%	26.0%		
Billed Energy	769,704	9,959,850	10,729,554		
<b>Lagos Zone (MWh)</b>					
% of Billed Energy	100.0%	25.3%	31.3%		
		same units as in 2000			
Energy delivered to Lagos Zone	1,040,141	3,493,095	4,533,236		
Distribution Losses (over S.O.)	26.0%	26.0%	26.0%		
Billed Energy	769,704	2,584,890	3,354,595		
<b>Power Purchase Costs</b>					
Capacity Payments	3,496,564	1,754,814	5,251,378		
Energy Charge	0	86,217	86,217		
Fuel Cost	131,560	878,117	1,009,677		
Total PP Costs	3,628,124	2,719,148	6,347,272		
Allocation to Lagos Zone	100%	0%			
Allocation to Lagos Zone	3,628,124	0	3,628,124		
<b>Subsidies for EPP Capacity Payments</b>					
Lagos State	1,165,521	0	1,165,521		
FGN (remaining)	831,991	1,002,488	1,834,479		
Total Subsidy	1,997,512	1,002,488	3,000,000		
Allocation to Lagos Zone	100%	0%			
Allocation to Lagos Zone	1,997,512	0	1,997,512		

**National Electric Power Authority (NEPA) - Distribution & Marketing Lagos Zone**  
**Data Inputs**

(all costs are expressed in Naira '000)

		1999	2000	2000	2001	2001
		Actual	NEPA	Fin Study	NEPA	Fin Study
		Draft FS	Budget	Estimates	Budget	Estimates
<b><u>Energy &amp; Billing</u></b>						
<b><u>Fixed Assets and Depreciation Allocated to Lagos Zone</u></b>						
(actual)						
Total Allocations to D&M Sector						
Gross Fixed Assets at end of year		4,912,138	8,929,681	17,472,282	10,127,859	19,913,568
Accumulated Depreciation at end of year		1,857,251	2,408,777	3,379,938	3,578,459	4,662,629
Net Fixed Assets at end of year		3,054,887	6,520,904	14,092,343	6,549,400	15,250,939
Depreciation Charge for year		410,844	619,345	1,025,623	1,132,953	1,160,012
Capital Expenditure for year		1,158,883	16,899,111	13,757,612	14,445,236	13,277,049
FGN Financing of Capital Expenditure			1,257,550	1,261,533	1,000,000	2,761,324
Work in Progress at end of year		4,257,237	1,605,295	1,586,435	2,666,753	3,123,313
Allocations to Lagos Zone						
	Basis of Allocation					
Gross Fixed Assets at end of year	Energy Sales	27.0%	1,324,747	2,408,232	4,712,073	2,731,367
Accumulated Depreciation at end of year	Energy Sales	27.0%	500,879	649,620	911,530	965,069
Net Fixed Assets at end of year	Energy Sales	27.0%	823,868	1,758,613	3,800,543	1,766,298
Depreciation Charge for year	Energy Sales	27.0%	110,800	167,030	276,599	305,544
Capital Expenditure for year	Energy Sales	27.0%	312,537	4,557,496	3,710,270	3,895,714
FGN Financing of Capital Expenditure	Energy Sales	27.0%		339,147	340,221	269,688
Work in Progress at end of year	Energy Sales	27.0%	1,148,128	432,930	427,843	719,193
<b><u>Interest Charges Allocated to Lagos Zone</u></b>						
Total Allocation to D&M Sector						
			396,813	367,192	391,867	520,127
	Basis of Allocation	Net Fixed Assets	27.0%	27.0%	27.0%	27.0%
Allocation to Lagos Zone						
			107,016	99,027	105,682	140,272
<b><u>Loans at end of year Allocated to Lagos Zone</u></b>						
Total Allocation to D&M Sector						
			2,939,340	2,471,487	2,471,487	2,198,458
Allocation to Lagos Zone (based on Net Fixed Assets)						
			792,706	666,532	666,532	592,899
<b><u>Debt Service Payments during year Allocated to Lagos Zone</u></b>						
Total Allocation to D&M Sector						
			80,167	188,193	188,193	621,928
Allocation to Lagos Zone (based on closing loan balance)						
			21,620	50,754	50,754	167,727
<b><u>Working Capital Allocated to Lagos Zone</u></b>						
Total Allocations to D&M Sector						
Stores		8,393,883	7,636,250	7,636,250	8,171,904	8,171,904
Debtors		10,177,236	9,270,256	9,270,256	8,233,804	10,084,808
Creditors		(10,694,762)	(8,339,855)	(8,339,855)	(12,769,172)	(12,769,172)
Total Working Capital excluding Cash		7,876,357	8,566,650	8,566,650	3,636,536	5,487,540
Allocations to Lagos Zone						
	Basis of Allocation					
Stores	Net Fixed Assets		2,263,734	2,059,409	2,203,869	2,203,869
Debtors	Electricity Revenue		3,387,921	3,288,043	3,288,043	3,385,652
Creditors	O&M Costs		(1,540,538)	(1,478,656)	(1,478,656)	(1,586,601)
Total Working Capital excluding Cash			4,111,117	3,868,796	3,868,796	4,002,919
Debtor Days (debtors over annual billing)			104	104	104	81
<b><u>Rate Base (average of opening and closing net fixed assets plus WIP plus working capital less loans)</u></b>						
Lagos Zone						
			5,342,106	6,412,229	6,663,081	7,510,985
<b><u>Return on Rate Base</u></b>						
Lagos Zone						
			1,068,421	1,282,446	1,332,616	1,502,197
Rate of Return						
			20.0%	20.0%	20.0%	20.0%

**National Electric Power Authority (NEPA) - Distribution & Marketing Lagos Zone**  
Data Inputs

(all costs are expressed in Naira '000)

	2000				1999	2000	2000	2001	2001
	Actual Jan-June	Actual July-Sept	Derived Oct-Dec	Fin Study Jan-Dec	Actual Draft FS	NEPA Budget	2000 Fin Study Estimates	NEPA Budget	2001 Fin Study Estimates
<b>Energy &amp; Billing</b>									
<b>Total NEPA</b>	2000								
Number of Customers					2,690,427		2,740,427		2,980,310
Energy Generated	7,048,822	3,759,541	3,632,297	14,440,660	16,291,961		14,440,660		14,514,075
Energy Purchased	39,420	19,710	19,710	78,840	66,970		78,840		1,685,880
Auxiliary Consumption	(198,375)	(99,188)	(99,188)	(396,751)	(425,332)		(396,751)		(421,199)
Energy Sent Out	6,889,867	3,680,063	3,552,819	14,122,749	15,933,599		14,122,749		15,778,756
Transr	6.0% (413,392)	(220,804)	(213,169)	(847,365)	(956,016)		(847,365)		(946,725)
Energy delivered to Distribution	6,476,475	3,459,259	3,339,650	13,275,384	14,977,583		13,275,384		14,832,031
Distribution Losses	(1,901,699)	(1,015,748)	(980,627)	(3,898,074)	(4,638,964)		(3,898,074)		(4,102,477)
Billed Energy	4,574,776	2,443,511	2,359,023	9,377,309	10,338,619		9,377,309		10,729,554
Distribution Losses (over S.O.)	27.6%	27.6%	27.6%	27.6%	29.1%		27.6%		26.0%
Total T&D Losses	33.6%	33.6%	33.6%	33.6%	35.1%		33.6%		32.0%
Billed Revenue					34,052,415		30,945,932	36,480,485	44,681,498
Average Billed Revenue					3.29		3.30		4.16
% Increase in Billed Revenue							0.2%		26.2%
<b>Lagos Zone</b>									
Number of Customers					494,588	at 6/30/00>	586,018	637,315	637,315
No of Customers in Lagos Zone as % of Total NEPA					18.4%	21.4%	21.4%	21.4%	21.4%
Energy Delivered to Lagos Zone	1,734,188	894,925	863,982	3,493,095	3,684,548	3,493,095	3,493,095	4,533,236	4,533,236
Lagos as % of Energy delivered to D&M				26.3%	24.6%	26.3%	26.3%	30.6%	30.6%
Billed Energy	1,255,528	647,914	625,511	2,528,952	2,611,816	2,528,952	2,528,952	3,354,595	3,354,595
Lagos as % of NEPA Billed Ener	27.4%	26.5%	26.5%	27.0%	25.3%	27.0%	27.0%	31.3%	31.3%
Billed Revenue	4,830,932	2,890,079			11,335,777	10,976,134	10,976,134	14,559,579	18,372,553
Lagos as % of Total NEPA Billed Revenue					33.3%	35.5%	35.5%	41.1%	41.1%
Average Billed Revenue	3.85	4.46			4.34	4.34	4.34	4.34	5.48
					as for 1999	as for 1999	as for 1999	escalated by NEPA Incr	
<b>Operations &amp; Maintenance Costs - Lagos Zone</b>									
	2000								
	Actual Jan-Nov	Pro-rated Dec	Est Actual Jan-Dec	Budget Jan-Dec		Est Actual			
Operations	1,746,848	145,571	1,892,419	1,022,959	1,022,959	1,892,419	1,536,170	1,392,656	
Meter Reading & Billing	196,848	16,404	213,252	281,361	281,361	213,252	379,515	383,045	
Consumer Services	360,220	30,018	390,238	372,574	372,574	390,238	456,571	507,222	
Admin & General	773,561	64,463	838,024	828,933	828,933	838,024	1,021,859	1,128,509	
Total Lagos Costs	3,077,477	256,456	3,333,933	2,505,827	2,403,125	2,505,827	3,333,933	3,394,115	3,411,433
					derived based on 00 budget				
<b>A&amp;G Costs of D&amp;M Sector HO and Headquarters Allocated to Lagos Zone</b>									
Total Costs of All D&M Zones					10,615,132	11,068,789	11,589,920	16,896,134	15,778,517
Lagos Share of Total Delivered Energy to Distribution					24.6%	26.3%	26.3%	30.6%	30.6%
A&G Costs of D&M Sector HO					462,559	502,243	505,036	540,155	687,556
A&G Costs of HQ allocated to D&M Sector					2,220,412	1,891,781	2,424,312	2,452,929	3,300,459
Total					2,682,971	2,394,024	2,929,348	2,993,084	3,988,015
A&G Costs of D&M Sector HO and Headquarters Allocated to Lagos Zone					660,022	629,929	770,787	914,801	1,218,890
<b>Other Operating Income Allocated to Lagos Zone</b>									
Total D&M					349	370	370	396	396
Allocation to Lagos Zone		Electricity Revenue			116	131	131	163	163
<b>Bad Debts (i.e. Uncollected Billing)</b>									
As % of Current Year Billing						17.0%	17.0%	17.5%	17.5%
Cash Collection in Year						9,567,596	9,567,596	12,605,585	15,906,833

**National Electric Power Authority (NEPA)**  
**Other Financial Data Inputs**  
*(all costs are expressed in Naira '000)*

Base Data for NEPA Sectors	1998	1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b>Outstanding Loans at end of year (excluding overdue &amp; unpaid)</b>						
Generation	70.4%	11,268,439				
Transmission	11.3%	1,802,050				
Distribution and Marketing	18.4%	2,939,340				
Head Quarter	0.0%	0				
Total NEPA	100.0%	16,009,829		13,461,555		11,974,435
Note: Ovedue and unpaid debt service is excluded from above as no interest is charged on them and due to the proposed write-off of such accumulated debt.						
<b>Interest charges</b>						
Effective Interest Rate on Closing Debt		2,161,339 13.5%	2,000,000	2,134,400 15.9%	2,833,000	1,206,011 10.1%
Note: Per NEPA 200 budget, total interest is provided at N600 million. This is unrealistic and therefore a figure of N2 billion has been assumed.						
<b>Debt Service Paid during year</b>		436,647		1,025,040		3,387,480
<b>Other Operating Revenue (all relating to D&amp;M)</b>		349,198		370,150		395,690
<b>Assumed Escalation Rates</b>						
Annual cost escalation rate		15.0%		9.2%		36.1%
Annual average depreciation rate (based on opening gross value)		11.7%	12.6%	12.6%	12.7%	12.7%
VAT on Electricity Bills		5.0%	5.0%	5.0%	5.0%	5.0%
<b>Return on Rate Base</b>						
Generation		12.0%	12.0%	12.0%	12.0%	12.0%
Transmission		5.0%	5.0%	5.0%	5.0%	5.0%
Distribution & Marketing		20.0%	20.0%	20.0%	20.0%	20.0%
<b>Loss Factors</b>						
Transmission Losses (1999 = reported)		15.5%		6.0%		6.0%
Distribution Losses (1999 = reported)		19.6%		27.6%		26.0%

**National Electric Power Authority (NEPA)**  
**Other Financial Data Inputs**  
*(all costs are expressed in Naira '000)*

Base Data for NEPA Sectors	1998	1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b>Capital Expenditure</b>						
Generation		907,820	16,312,132	13,358,189	13,434,000	12,783,097
Transmission		977,255	13,154,764	12,050,142	40,350,000	35,077,175
Distribution and Marketing		910,925	1,546,646	1,523,271	2,575,000	3,051,262
Head Quarter		360,311	1,057,890	911,138	1,909,590	1,115,438
<b>Total NEPA</b>	<b>5,493,377</b>	<b>3,156,311</b>	<b>32,071,432</b>	<b>27,842,740</b>	<b>58,268,590</b>	<b>52,026,972</b>
<b>FGN Financing of Capital Expenditure</b>						
Generation			15,900,000	13,212,950	11,400,000	12,143,942
Transmission			11,591,884	11,591,884	38,100,000	32,980,186
Distribution and Marketing			1,230,091	1,230,091	1,000,000	2,727,014
Head Quarter			495,300	453,553	0	531,161
<b>Total NEPA</b>			<b>29,217,275</b>	<b>26,488,478</b>	<b>50,500,000</b>	<b>48,382,304</b>
<b>Gross Fixed Assets by Function (Closing)</b>						
Generation	18,284,796	23,756,432		25,523,649		40,642,970
Transmission	4,414,181	5,318,783		5,714,442		18,158,880
Distribution and Marketing	3,552,455	4,328,006		15,842,410		18,458,807
Head Quarter	3,967,886	4,508,288		4,843,655		6,089,005
<b>Total NEPA</b>	<b>30,219,318</b>	<b>37,911,509</b>		<b>51,924,155</b>		<b>83,349,663</b>
<b>Accumulated Depreciation by Function (Closing)</b>						
Generation	6,233,203	9,110,885		12,499,883		17,151,246
Transmission	1,122,964	1,689,702		2,297,267		3,315,187
Distribution and Marketing	1,059,386	1,584,207		2,574,340		3,745,372
Head Quarter	2,089,526	2,125,247		2,997,996		4,151,051
<b>Total NEPA</b>	<b>10,505,079</b>	<b>14,510,041</b>		<b>20,369,486</b>		<b>28,362,856</b>
<b>Depreciation Charge by Function</b>						
Generation	1,667,340	2,216,094		2,711,248		3,788,871
Transmission	296,532	412,782		481,870		859,409
Distribution and Marketing	273,844	345,299		872,285		993,403
Head Quarter	480,922	564,560		714,654		946,193
<b>Total NEPA</b>	<b>2,718,638</b>	<b>3,538,735</b>		<b>4,780,057</b>		<b>6,587,875</b>
<b>Work in Progress at end of year</b>						
Generation	833,256	1,717,069		13,358,189		12,783,097
Transmission	1,602,070	2,496,347		12,050,142		35,077,175
Distribution and Marketing	2,020,963	3,071,178		1,523,271		3,051,262
Head Quarter	3,725,219	3,907,854		911,138		1,115,438
<b>Total NEPA</b>	<b>8,181,508</b>	<b>11,192,448</b>		<b>27,842,740</b>		<b>52,026,972</b>
<b>Working Capital (excl Cash) at end of year (total NEPA)</b> (excluding overdue debt service and short-term portion of loans)						
Stores	12,612,446	17,122,749		15,577,247	16,669,933	16,669,933
Debtors	23,455,675	19,021,236		17,588,260	15,490,704	18,973,099
Creditors	(12,953,337)	(15,811,284)		(12,329,757)	(18,878,121)	(18,878,121)
<b>Total</b>	<b>23,114,784</b>	<b>20,332,701</b>		<b>20,835,749</b>	<b>13,282,515</b>	<b>16,764,910</b>
Note: Additional bad debt provision of N6 billion has been deducted from accounts receivable as at 12/31/99 (not reflected in fin statements).						
<b>Cash/Bank Balances at end of year (total NEPA)</b>	<b>3,595,658</b>	<b>11,786,568</b>		<b>2,335,264</b>		<b>707,340</b>
<b>Make-up of Stores at June 30, 2000 (actual)</b>						
Generation	2,792,417	23%				
Transmission	2,158,766	18%				
Distribution and Marketing	4,761,174	39%				
Head Quarter	2,464,246	20%				
<b>Total NEPA</b>	<b>12,176,603</b>	<b>100%</b>				
<b>Total GTDM</b>	<b>9,712,357</b>					

**National Electric Power Authority (NEPA)**  
**Other Financial Data Inputs**  
*(all costs are expressed in Naira '000)*

Base Data for NEPA Sectors	1998	1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b>Outstanding Loans at end of year (excluding overdue &amp; unpaid)</b>						
Generation	70.4%	11,268,439				
Transmission	11.3%	1,802,050				
Distribution and Marketing	18.4%	2,939,340				
Head Quarter	0.0%	0				
<b>Total NEPA</b>	<b>100.0%</b>	<b>16,009,829</b>		<b>13,461,555</b>		<b>11,974,435</b>
Note: Ovedue and unpaid debt service is excluded from above as no interest is charged on them and due to the proposed write-off of such accumulated debt.						
<b>Interest charges</b>		2,161,339	2,000,000	2,134,400	2,833,000	1,206,011
Effective Interest Rate on Closing Debt		13.5%		15.9%		10.1%
Note: Per NEPA 200 budget, total interest is provided at N600 million. This is unrealistic and therefore a figure of N2 billion has been assumed.						
<b>Debt Service Paid during year</b>		436,647		1,025,040		3,387,480
<b>Other Operating Revenue (all relating to D&amp;M)</b>		349,198		370,150		395,690
<b>Assumed Escalation Rates</b>						
Annual cost escalation rate		15.0%		9.2%		36.1%
Annual average depreciation rate (based on opening gross value)		11.7%	12.6%	12.6%	12.7%	12.7%
VAT on Electricity Bills		5.0%	5.0%	5.0%	5.0%	5.0%
<b>Return on Rate Base</b>						
Generation		12.0%	12.0%	12.0%	12.0%	12.0%
Transmission		5.0%	5.0%	5.0%	5.0%	5.0%
Distribution & Marketing		20.0%	20.0%	20.0%	20.0%	20.0%
<b>Loss Factors</b>						
Transmission Losses (1999 = reported)		15.5%		6.0%		6.0%
Distribution Losses (1999 = reported)		19.6%		27.6%		26.0%

**National Electric Power Authority (NEPA)**  
**Other Financial Data Inputs**  
*(all costs are expressed in Naira '000)*

Base Data for NEPA Sectors	1998	1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b>Capital Expenditure</b>						
Generation		907,820	16,312,132	13,358,189	13,434,000	12,783,097
Transmission		977,255	13,154,764	12,050,142	40,350,000	35,077,175
Distribution and Marketing		910,925	1,546,646	1,523,271	2,575,000	3,051,262
Head Quarter		360,311	1,057,890	911,138	1,909,590	1,115,438
<b>Total NEPA</b>	<b>5,493,377</b>	<b>3,156,311</b>	<b>32,071,432</b>	<b>27,842,740</b>	<b>58,268,590</b>	<b>52,026,972</b>
<b>FGN Financing of Capital Expenditure</b>						
Generation			15,900,000	13,212,950	11,400,000	12,143,942
Transmission			11,591,884	11,591,884	38,100,000	32,980,186
Distribution and Marketing			1,230,091	1,230,091	1,000,000	2,727,014
Head Quarter			495,300	453,553	0	531,161
<b>Total NEPA</b>			<b>29,217,275</b>	<b>26,488,478</b>	<b>50,500,000</b>	<b>48,382,304</b>
<b>Gross Fixed Assets by Function (Closing)</b>						
Generation	18,284,796	23,756,432		25,523,649		40,642,970
Transmission	4,414,181	5,318,783		5,714,442		18,158,880
Distribution and Marketing	3,552,455	4,328,006		15,842,410		18,458,807
Head Quarter	3,967,886	4,508,288		4,843,655		6,089,005
<b>Total NEPA</b>	<b>30,219,318</b>	<b>37,911,509</b>		<b>51,924,156</b>		<b>83,349,663</b>
<b>Accumulated Depreciation by Function (Closing)</b>						
Generation	6,233,203	9,110,885		12,499,883		17,151,246
Transmission	1,122,964	1,689,702		2,297,267		3,315,187
Distribution and Marketing	1,059,386	1,584,207		2,574,340		3,745,372
Head Quarter	2,089,526	2,125,247		2,997,996		4,151,051
<b>Total NEPA</b>	<b>10,505,079</b>	<b>14,510,041</b>		<b>20,369,486</b>		<b>28,362,856</b>
<b>Depreciation Charge by Function</b>						
Generation	1,667,340	2,216,094		2,711,248		3,788,871
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Distribution and Marketing	273,844	345,299		872,285		993,403
Head Quarter	480,922	564,560		714,654		946,193
<b>Total NEPA</b>	<b>2,718,638</b>	<b>3,538,735</b>		<b>4,780,057</b>		<b>6,587,875</b>
<b>Work in Progress at end of year</b>						
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Head Quarter	3,725,219	3,907,854		911,138		1,115,438
<b>Total NEPA</b>	<b>8,181,508</b>	<b>11,192,448</b>		<b>27,842,740</b>		<b>52,026,972</b>
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Creditors	(12,953,337)	(15,811,284)		(12,329,757)	(18,878,121)	(18,878,121)
<b>Total</b>	<b>23,114,784</b>	<b>20,332,701</b>		<b>20,835,749</b>	<b>13,282,515</b>	<b>16,764,910</b>
Note: Additional bad debt provision of N6 billion has been deducted from accounts receivable as at 12/31/99 (not reflected in fin satatements).						
<b>Cash/Bank Balances at end of year (total NEPA)</b>	<b>3,595,658</b>	<b>11,786,568</b>		<b>2,335,264</b>		<b>707,340</b>
<b>Make-up of Stores at June 30, 2000 (actual)</b>						
Generation	2,792,417	23%				
Transmission	2,158,766	18%				
Distribution and Marketing	4,761,174	39%				
Head Quarter	2,464,246	20%				
<b>Total NEPA</b>	<b>12,176,603</b>	<b>100%</b>				
<b>Total GTDM</b>	<b>9,712,357</b>					

**National Electric Power Authority (NEPA)**  
**O&M and A&G Cost Inputs - Sum of Costs as per below Classification**  
(all costs are expressed in Naira '000)

	1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b><u>Inputs for Operating Expenses (excluding Depreciation) - from NEPA records</u></b>					
<b>Generation</b>					
Direct Costs					
Fuel	1,046,978	309,629	1,065,717	1,331,554	937,309
Maintenance	731,217	539,203	798,365	439,452	1,086,894
All Other Operations	874,132	1,379,126	954,404	2,520,692	1,299,325
Total Direct Costs	2,652,327	2,227,958	2,818,485	4,291,698	3,323,527
Administrative & General (A&G)					
Outstations	318,714	991,420	347,982	1,448,261	473,742
Sector Head Office	879,316	433,549	960,064	630,097	1,307,031
Total A&G	1,198,030	1,424,969	1,308,045	2,078,358	1,780,773
<b>Total Generation Department</b>	<b>3,850,357</b>	<b>3,652,927</b>	<b>4,126,530</b>	<b>6,370,056</b>	<b>5,104,300</b>
<b>Power Purchase</b>	<b>48,203</b>	<b>34,650</b>	<b>63,476</b>	<b>3,831,282</b>	<b>6,347,272</b>
<b>Transmission</b>					
Direct Costs					
Maintenance	636,210	279,286	694,633	308,254	945,674
All Other Operations	802,901	1,101,921	876,631	1,643,479	1,193,446
Total Direct Costs	1,439,111	1,381,207	1,571,265	1,951,733	2,139,120
Administrative & General (A&G)					
Outstations	680,381	567,738	742,860	1,082,081	1,011,330
Sector Head Office	376,850	359,295	411,456	389,503	560,156
Total A&G	1,057,231	927,033	1,154,316	1,471,584	1,571,486
<b>Total Transmission Department</b>	<b>2,496,342</b>	<b>2,308,240</b>	<b>2,725,581</b>	<b>3,423,317</b>	<b>3,710,606</b>
<b>Distribution &amp; Marketing</b>					
Direct Costs					
Meter Expenses	988,689	1,314,636	1,079,480	2,067,469	1,469,604
Meter Maintenance	20,000	21,912	21,837	55,145	29,728
Maintenance	2,399,721	694,321	2,620,087	874,438	3,566,987
All Other Operations	2,958,157	4,079,869	3,229,805	6,650,428	4,397,056
Customer Accounts	988,689	1,314,636	1,079,480	2,067,469	1,469,604
Total Direct Costs	7,355,255	7,425,374	8,030,688	11,714,948	10,932,979
Administrative & General (A&G)					
Outstations	3,259,877	3,643,415	3,559,232	5,181,186	4,845,538
Sector Head Office	462,559	502,243	505,036	540,155	687,556
Total A&G	3,722,436	4,145,658	4,064,267	5,721,341	5,533,093
<b>Total Distribution &amp; Marketing Department</b>	<b>11,077,691</b>	<b>11,571,032</b>	<b>12,094,955</b>	<b>17,436,289</b>	<b>16,466,072</b>
<b>Headquarters (Chairman, MD/CE, F&amp;A, CS)</b>					
Administrative & General (A&G)					
Total A&G	3,792,469	3,421,539	4,140,731	4,424,106	5,637,192
<b>Total Operating Expenses excluding Depreciation (NEPA)</b>	<b>21,265,062</b>	<b>20,988,388</b>	<b>23,151,274</b>	<b>35,485,050</b>	<b>37,265,442</b>
<b><u>Analysis of Purchased Power Costs</u></b>					
<b>Enron</b>					
			Av ER for 01>>>		106.23
Capacity Payments	0	0	0	3,665,072	3,496,564
Fuel Charge	0	0	0	131,560	131,560
Energy Charge excluding Fuel	0	0	0	0	0
<b>Another (K&amp;M/H&amp;W)</b>					
Capacity Payments	0	0	0	0	1,147,308
Fuel Charge	0	0	0	0	41,765
Energy Charge excluding Fuel	0	0	0	0	0
<b>Aggreko/Geometric</b>					
Capacity Payments	0	0	0	0	607,507
Fuel Charge	0	0	0	0	836,352
Energy Charge excluding Fuel	0	0	0	0	18,357
<b>Cogeneration (NESCO)</b>					
Capacity Payments	0	0	0	0	
Fuel Charge	0	0	0	0	
Energy Charge excluding Fuel (split not available, assured)	48,203	34,650	63,476	34,650	67,860
<b>Total Purchased Power Cost</b>					
Capacity Payments	0	0	0	3,665,072	5,251,378
Fuel Charge	0	0	0	131,560	1,009,677
Energy Charge excluding Fuel	48,203	34,650	63,476	34,650	86,217
Total Cost	48,203	34,650	63,476	3,831,282	6,347,272
<b>Percentage Share of Costs:</b>					
Capacity	0.0%	0.0%	0.0%	95.7%	82.7%
Energy (incl fuel)	100.0%	100.0%	100.0%	4.3%	17.3%

**National Electric Power Authority (NEPA)**  
**O&M and A&G Cost Inputs - Sum of Costs as per below Classification**  
(all costs are expressed in Naira '000)

	1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b>Generation</b>					
<u>Operations</u>					
Fuel	1,046,978	309,629	1,065,717	1,331,554	937,309
Other Production Operation Expenses	874,132	1,379,126	954,404	2,520,692	1,299,325
<b>Operations, Sub-Total</b>	<b>1,921,110</b>	<b>1,688,755</b>	<b>2,020,120</b>	<b>3,852,246</b>	<b>2,236,634</b>
<u>Purchased Power</u>					
Purchased Power Expenses	48,203	34,650	63,476	3,831,282	6,347,272
Other Purchased Power Expenses	0	0	0	0	0
<b>Purchased Power, Sub-Total</b>	<b>48,203</b>	<b>34,650</b>	<b>63,476</b>	<b>3,831,282</b>	<b>6,347,272</b>
<b>Total Operations</b>	<b>1,969,313</b>	<b>1,723,405</b>	<b>2,083,596</b>	<b>7,683,528</b>	<b>8,583,905</b>
<u>Maintenance</u>					
Maintenance expenses	731,217	539,203	798,365	439,452	1,086,894
<b>Total Generation</b>	<b>2,700,530</b>	<b>2,262,608</b>	<b>2,881,961</b>	<b>8,122,980</b>	<b>9,670,799</b>
<b>Transmission</b>					
<u>Operations</u>					
Transmission Of Electricity By Others	0	0	0	0	0
Other Operational Expenses	802,901	1,101,921	876,631	1,643,479	1,193,446
<b>Total Operations</b>	<b>802,901</b>	<b>1,101,921</b>	<b>876,631</b>	<b>1,643,479</b>	<b>1,193,446</b>
<u>Maintenance</u>					
Maintenance expenses	636,210	279,286	694,633	308,254	945,674
<b>Total Transmission</b>	<b>1,439,111</b>	<b>1,381,207</b>	<b>1,571,265</b>	<b>1,951,733</b>	<b>2,139,120</b>
<b>Distribution</b>					
<u>Operations</u>					
Meter Expenses	988,689	1,314,636	1,079,480	2,067,469	1,469,604
Other Operational Expenses	2,958,157	4,079,869	3,229,805	6,650,428	4,397,055
<b>Total Operations</b>	<b>3,946,846</b>	<b>5,394,505</b>	<b>4,309,284</b>	<b>8,717,897</b>	<b>5,866,659</b>
<u>Maintenance</u>					
Meter Expenses	20,000	21,912	21,837	55,145	29,728
Other Expenses	2,399,721	694,321	2,620,087	874,438	3,565,987
<b>Total Maintenance</b>	<b>2,419,721</b>	<b>716,233</b>	<b>2,641,924</b>	<b>929,583</b>	<b>3,595,715</b>
<b>Total Distribution</b>	<b>6,366,567</b>	<b>6,110,738</b>	<b>6,951,208</b>	<b>9,647,480</b>	<b>9,462,375</b>
<b>Customer Accounts</b>					
Meter Reading	988,689	1,314,636	1,079,480	2,067,469	1,469,604
Customer Records And Collection Exp.					
Other Customer Accounts					
<b>Total Customer Accounts</b>	<b>988,689</b>	<b>1,314,636</b>	<b>1,079,480</b>	<b>2,067,469</b>	<b>1,469,604</b>
<b>Total Operation And Maintenance Expenses</b>	<b>11,494,896</b>	<b>11,069,189</b>	<b>12,483,913</b>	<b>21,789,661</b>	<b>22,742,897</b>
<b>Administrative &amp; General (Total NEPA)</b>					
Generation (Outstations & Sector HO)	1,198,030	1,424,969	1,308,045	2,078,358	1,780,773
Transmission (Outstations & Sector HO)	1,057,231	927,033	1,154,316	1,471,584	1,571,486
Distribution & Marketing (Outstations & Sector HO)	3,722,436	4,145,658	4,064,267	5,721,341	5,533,093
Headquarters	3,792,469	3,421,539	4,140,731	4,424,106	5,637,192
<b>Total Administrative &amp; General (Total NEPA)</b>	<b>9,770,166</b>	<b>9,919,199</b>	<b>10,667,360</b>	<b>13,695,389</b>	<b>14,522,544</b>
<b>Total Operating Expenses (O&amp;M + A&amp;G)</b>	<b>21,265,062</b>	<b>20,988,388</b>	<b>23,151,274</b>	<b>35,485,050</b>	<b>37,265,442</b>
<b>Other Expenses</b>					
<u>RR&amp;I</u>					
Depreciation	3,539,636		4,780,057		6,587,875
Interest	2,161,339				
<b>Total Other Expenses</b>	<b>5,700,975</b>		<b>4,780,057</b>		<b>6,587,875</b>

Note: Amortization of exchange losses is classified as depreciation (1999 cost = 2,200,637)

**National Electric Power Authority (NEPA)**  
**Annual Electricity, Generation, Purchase, Sales, Revenues**

	1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b>AVAILABLE POWER</b>					
<b>GENERATED MWH</b>					
Region 1					
Region 2					
Region 3					
Total Generated	16,291,961		14,440,660		14,514,075
<b>PURCHASED POWER</b>	66,970		78,840		1,685,880
<b>GROSS MWH</b>	16,358,931		14,519,500		16,199,955
<b>PLANT &amp; AUX. USE MWH</b>	425,332		396,751		421,199
<b>POWER IMPORTS MWH</b>	0		0		0
<b>NET ENERGY AVAILABLE (sent out), MWH</b>	15,933,599	14,122,749	14,122,749	15,778,756	15,778,756
		as per Fin Study		as per Fin Study	
<b>TRANSMISSION LOSSES (see note below)</b>	15.5%	6.0%	6.0%	6.0%	6.0%
Note: According to NEPA's NCC reports, trans losses in 1998 & 1999 were 9.8% & 15.5% respectively. Such levels are considered to be unrealistically high and thus 6% losses were assumed in the financial study.					
<b>ENERGY DELIVERED TO DISTRIBUTION MWH</b>	13,463,891	13,275,384	13,275,384	14,832,031	14,832,031
		as per Fin Study		as per Fin Study	
<b>BILLED MWH</b>					
RESIDENTIAL	5,894,085				
COMMERCIAL	2,470,827				
INDUSTRIAL	1,717,767				
STREET LIGHTS	23,690				
Total Domestic	10,106,369				
Exports	232,251				
<b>TOTAL MWH BILLED</b>	10,338,619	9,377,309	9,377,309	10,729,554	10,729,554
		as per Fin Study		as per Fin Study	
<b>TOTAL T&amp;D LOSSES</b>	35.1%	33.6%	33.6%	32.0%	32.0%
		as per Fin Study		as per Fin Study	
<b>WEIGHTED AVERAGE REVENUE</b>	3.29	3.30	3.30	3.40	4.16
		as per Fin Study			
<b>BILLED REVENUE</b>					
RESIDENTIAL	12,094,759				
COMMERCIAL	11,149,706				
INDUSTRIAL	9,877,703				
STREET LIGHTS	102,563				
Total Domestic	33,224,731	30,125,837	30,125,837	35,615,463	43,816,476
Exports	827,684	820,096	820,096	865,022	865,022
<b>TOTAL REVENUE BILLED</b>	34,052,415	30,945,932	30,945,932	36,480,485	44,681,498
Note: All figures per fin.statements, except street lights per distribution. Overbilling (1238700) taken against residential.					
<b>COLLECTION RATE (domestic)</b>	78.6%	76%	76%	80%	80%
		as per Fin Study		as per Fin Study	
<b>REVENUE COLLECTED (excl VAT)</b>	26,953,105	23,715,731	23,715,731	29,357,392	35,918,202
Note: Revenue collected in 1999 per Distribution Dept is 27,981,371.					

**National Electric Power Authority (NEPA) - Distribution & Marketing Lagos Zone  
Revenue Requirements and Tariffs**  
(all figures are expressed in Naira millions)

	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b><u>Energy delivered to Lagos Zone (GWh)</u></b>				
Enron Power	0	0	1,040	1,040
Non-Enron Power	3,493	3,493	3,493	3,493
<b>Total</b>	<b>3,493</b>	<b>3,493</b>	<b>4,533</b>	<b>4,533</b>
<b><u>Electricity Sales (GWh)</u></b>				
Enron Power	0	0	770	770
Non-Enron Power	2,529	2,529	2,585	2,585
<b>Total</b>	<b>2,529</b>	<b>2,529</b>	<b>3,355</b>	<b>3,355</b>
<b><u>Revenue Requirements based on Costs of Supply</u></b>				
<b>Power Purchase (net of FGN Subsidy)</b>				
Enron Power	0	0	1,868	1,868
Other Power Supply	4,015	3,815	3,922	5,228
<b>Total Power Purchase</b>	<b>4,015</b>	<b>3,815</b>	<b>5,790</b>	<b>7,095</b>
<b>Operations &amp; Maintenance</b>				
Lagos Own Costs	2,506	3,334	3,394	3,411
Allocated A&G Costs of Sector HO & HQ	630	771	915	1,219
<b>Total</b>	<b>3,136</b>	<b>4,105</b>	<b>4,309</b>	<b>4,630</b>
Other Operating revenue	(131)	(131)	(163)	(163)
Depreciation	167	277	306	313
Interest	99	106	140	60
Return on Equity	1,068	1,282	1,333	1,502
<b>Total Revenue Requirements</b>	<b>8,354</b>	<b>9,453</b>	<b>11,714</b>	<b>13,438</b>
<b>Electricity Revenue as Billed (based on Current/Proposed Tariffs) (N/kWh)</b>	<b>10,976</b>	<b>10,976</b>	<b>14,560</b>	<b>18,373</b>
<b>Revenue (Shortfall)/Surplus (after FGN Subsidy)</b>	<b>2,623</b>	<b>1,523</b>	<b>2,845</b>	<b>4,935</b>
<b><u>Revenue Requirements based on Costs of Supply (after FGN Subsidy) (N/kWh)</u></b>	<b>3.30</b>	<b>3.74</b>	<b>3.49</b>	<b>4.01</b>
<b><u>Electricity Revenue as Billed (based on Current/Proposed Tariffs) (N/kWh)</u></b>	<b>4.34</b>	<b>4.34</b>	<b>4.34</b>	<b>5.48</b>
<b><u>Revenue (Shortfall)/Surplus (after FGN Subsidy) (N/kWh)</u></b>	<b>1.04</b>	<b>0.60</b>	<b>0.85</b>	<b>1.47</b>

**National Electric Power Authority (NEPA) - Distribution & Marketing Lagos Zone**  
**Revenue Requirements and Tariffs**  
(all figures are expressed in Naira millions)

	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b><u>Energy delivered to Lagos Zone (GWh)</u></b>				
Enron Power	0	0	1,040	1,040
Non-Enron Power	3,493	3,493	3,493	3,493
<b>Total</b>	<b>3,493</b>	<b>3,493</b>	<b>4,533</b>	<b>4,533</b>
<b><u>Electricity Sales (GWh)</u></b>				
Enron Power	0	0	770	770
Non-Enron Power	2,529	2,529	2,585	2,585
<b>Total</b>	<b>2,529</b>	<b>2,529</b>	<b>3,355</b>	<b>3,355</b>
<b><u>Revenue Requirements based on Costs of Supply</u></b>				
<b>Power Purchase (net of FGN Subsidy)</b>				
Enron Power	0	0	1,868	1,868
Other Power Supply	4,015	3,815	3,922	5,228
<b>Total Power Purchase</b>	<b>4,015</b>	<b>3,815</b>	<b>5,790</b>	<b>7,095</b>
<b>Operations &amp; Maintenance</b>				
Lagos Own Costs	2,506	3,334	3,394	3,411
Allocated A&G Costs of Sector HO & HQ	630	771	915	1,219
<b>Total</b>	<b>3,136</b>	<b>4,105</b>	<b>4,309</b>	<b>4,630</b>
Other Operating revenue	(131)	(131)	(163)	(163)
Depreciation	167	277	306	313
Interest	99	106	140	60
Return on Equity	1,068	1,282	1,333	1,502
<b>Total Revenue Requirements</b>	<b>8,354</b>	<b>9,453</b>	<b>11,714</b>	<b>13,438</b>
<b>Electricity Revenue as Billed (based on Current/Proposed Tariffs) (N/kWh)</b>	<b>10,976</b>	<b>10,976</b>	<b>14,560</b>	<b>18,373</b>
<b>Revenue (Shortfall)/Surplus (after FGN Subsidy)</b>	<b>2,623</b>	<b>1,523</b>	<b>2,845</b>	<b>4,935</b>
<b><u>Revenue Requirements based on Costs of Supply (after FGN Subsidy) (N/kWh)</u></b>	<b>3.30</b>	<b>3.74</b>	<b>3.49</b>	<b>4.01</b>
<b><u>Electricity Revenue as Billed (based on Current/Proposed Tariffs) (N/kWh)</u></b>	<b>4.34</b>	<b>4.34</b>	<b>4.34</b>	<b>5.48</b>
<b><u>Revenue (Shortfall)/Surplus (after FGN Subsidy) (N/kWh)</u></b>	<b>1.04</b>	<b>0.60</b>	<b>0.85</b>	<b>1.47</b>

**National Electric Power Authority (NEPA) - Distribution & Marketing Lagos Zone  
Cash Flow Statements**

*(all figures are expressed in Naira millions)*

	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
Operating Income/(Loss) after Bad Debts & before Depreciation	2,000	1,231	1,942	3,425
Working Capital Movements (excl Cash)	(3,869)	242	(134)	(895)
Consumer Contributions & Deposits	55	55	0	0
Net Cash Flow from Operations (totals of above)	(1,814)	1,528	1,807	2,530
Enron Security Deposit	(585)	(585)	(50)	(50)
Debt Service Paid	(51)	(51)	(168)	(168)
<b>Net Cash Flow Available for Capital Expenditure</b>	<b>(2,450)</b>	<b>893</b>	<b>1,590</b>	<b>2,312</b>
Capital Expenditure	(4,557)	(3,710)	(3,896)	(3,581)
Less: FGN Financing	339	340	270	745
Less: Borrowing	0	0	0	0
<b>Balance = Capital Expenditure financed from Own Resources (IGR)</b>	<b>(4,218)</b>	<b>(3,370)</b>	<b>(3,626)</b>	<b>(2,836)</b>
<b>Net Cash Inflow/(Outflow)</b>	<b>(6,668)</b>	<b>(2,477)</b>	<b>(2,036)</b>	<b>(524)</b>
<b>Ratios</b>				
Debt Service Cover (before Exceptional Charges)			11.6	20.4
Self-financing Ratio (before Exceptional Charges)			37.6%	63.4%

**National Electric Power Authority (NEPA)**  
**Cost of Supply based Revenue Requirements**  
(all figures are expressed in Naira millions)

		1999	2000	2000	2001	2001
		Actual	NEPA	Fin Study	NEPA	Fin Study
		Draft FS	Budget	Estimates	Budget	Estimates
<b>O &amp; M and A&amp;G Costs</b>						
Generation	Demand	1,573	1,126	1,717	4,541	7,589
	Energy	2,975	3,225	3,182	6,521	4,828
	Total	4,548	4,352	4,899	11,062	12,417
Transmission	Demand	3,074	2,767	3,357	4,008	4,570
	Energy	0	0	0	0	0
	Total	3,074	2,767	3,357	4,008	4,570
Distribution	Demand	9,938	8,918	10,851	13,113	14,772
	Energy	0	0	0	0	0
	Customer	1,871	2,497	2,043	3,699	2,781
Customer Accounts	Total	11,809	11,414	12,893	16,812	17,553
	Demand	0	0	0	0	0
	Energy	0	0	0	0	0
	Customer	1,834	2,456	2,002	3,603	2,726
	Total	1,834	2,456	2,002	3,603	2,726
<b>Other Operating Revenue</b>						
Generation (FGN Subsidy for EPP Costs)	Demand	0	0	0	(3,000)	(3,000)
Distribution (Reconnection fees, etc)	Customer	(349)	(370)	(370)	(396)	(396)
	Total	(349)	(370)	(370)	(3,396)	(3,396)
<b>Depreciation</b>						
Generation		2,637	3,400	3,188	3,900	4,424
Transmission		491	761	567	1,197	1,004
Distribution		411	619	1,026	1,133	1,160
Total NEPA		3,539	4,780	4,780	6,230	6,588
<b>Interest</b>						
Generation		1,521	1,408	1,502	1,994	849
Transmission		243	225	240	319	136
Distribution		397	367	392	520	221
Total NEPA		2,161	2,000	2,134	2,833	1,206
<b>Return on Equity</b>						
Generation		1,823	2,928	2,582	4,430	3,800
Transmission		484	823	716	2,153	1,795
Distribution		2,417	2,647	3,402	2,455	4,344
Total NEPA		4,724	6,398	6,700	9,038	9,939
<b>Total Revenue Requirements (O&amp;M, Depreciation, Interest &amp; Return)</b>						
Generation	Demand	7,554	8,862	8,989	11,865	13,662
	Energy	2,975	3,225	3,182	6,521	4,828
	Total	10,529	12,087	12,171	18,386	18,490
Transmission	Demand	4,293	4,576	4,879	7,676	7,504
	Energy	0	0	0	0	0
	Total	4,293	4,576	4,879	7,676	7,504
Distribution & Marketing	Demand	13,163	12,551	15,670	17,222	20,497
	Energy	0	0	0	0	0
	Customer Accounts	3,356	4,582	3,675	6,906	5,111
Total NEPA	Total	16,518	17,133	19,345	24,128	25,609
	Demand	25,009	25,989	29,539	36,763	41,664
	Energy	2,975	3,225	3,182	6,521	4,828
Total NEPA	Customer Accounts	3,356	4,582	3,675	6,906	5,111
	Total	31,340	33,796	36,396	50,190	51,603
	Demand	80%	77%	81%	73%	81%
	Energy	9%	10%	9%	13%	9%
	Customer Accounts	11%	14%	10%	14%	10%
	Total	100%	100%	100%	100%	100%

**National Electric Power Authority (NEPA) - Distribution & Marketing Lagos Zone  
Income Statements**

*(all figures are expressed in Naira millions)*

	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b>Energy delivered to Lagos Zone (GWh)</b>				
Enron Power	0	0	1,040	1,040
Non-Enron Power	3,493	3,493	3,493	3,493
<i>Total</i>	<i>3,493</i>	<i>3,493</i>	<i>4,533</i>	<i>4,533</i>
<i>As % of total NEPA</i>	<i>26.3%</i>	<i>26.3%</i>	<i>30.6%</i>	<i>30.6%</i>
<b>Electricity Sales (GWh)</b>				
Enron Power	0	0	770	770
Non-Enron Power	2,529	2,529	2,585	2,585
<i>Total</i>	<i>2,529</i>	<i>2,529</i>	<i>3,355</i>	<i>3,355</i>
<i>As % of total NEPA</i>	<i>27.0%</i>	<i>27.0%</i>	<i>31.3%</i>	<i>31.3%</i>
<b>Electricity Revenue</b>				
Revenue from present tariffs	10,976	10,976	14,560	14,560
Additional revenue from proposed tariff increases starting April 2001	0	0	0	3,813
<i>Total Electricity Revenue</i>	<i>10,976</i>	<i>10,976</i>	<i>14,560</i>	<i>18,373</i>
<i>As % of total NEPA</i>	<i>35.5%</i>	<i>35.5%</i>	<i>41.1%</i>	<i>41.1%</i>
<b>Other Operating Revenue (Reconnection fees, etc)</b>	<b>131</b>	<b>131</b>	<b>163</b>	<b>163</b>
<b>Total Operating Revenue</b>	<b>11,107</b>	<b>11,107</b>	<b>14,722</b>	<b>18,535</b>
<b>Operating &amp; Maintenance Costs (excluding Depreciation)</b>				
Power Purchase (net of FGN Subsidy for EPP Capacity Payments)				
Enron Power	0	0	1,868	1,868
Other Power Supply	4,015	3,815	3,922	5,228
<i>Total Power Purchase</i>	<i>4,015</i>	<i>3,815</i>	<i>5,790</i>	<i>7,095</i>
Operations & Maintenance	1,023	1,892	1,536	1,393
Meter Reading & Billing	281	213	380	383
Consumer Services	373	390	457	507
Administrative & General:				
Lagos Own Costs	829	838	1,022	1,129
Allocated A&G Costs of D&M Sector	630	771	915	1,219
<i>Total A&amp;G Costs</i>	<i>1,459</i>	<i>1,609</i>	<i>1,937</i>	<i>2,347</i>
<b>Total Operations &amp; Maintenance Costs excluding Depreciation</b>	<b>7,150</b>	<b>7,919</b>	<b>10,099</b>	<b>11,725</b>
<b>Operating Income/(Loss) before Bad Debts &amp; Depreciation</b>	<b>3,957</b>	<b>3,188</b>	<b>4,624</b>	<b>6,810</b>
<b>Bad &amp; Doubtful Debts</b>	<b>1,957</b>	<b>1,957</b>	<b>2,682</b>	<b>3,384</b>
<b>Operating Income/(Loss) after Bad Debts &amp; before Depreciation</b>	<b>2,000</b>	<b>1,231</b>	<b>1,942</b>	<b>3,425</b>
<b>Depreciation</b>	<b>167</b>	<b>277</b>	<b>306</b>	<b>313</b>
<b>Operating Income/(Loss) after Bad Debts &amp; Depreciation</b>	<b>1,833</b>	<b>954</b>	<b>1,636</b>	<b>3,113</b>
<b>Interest</b>	<b>99</b>	<b>106</b>	<b>140</b>	<b>60</b>
<b>Net Income/(Loss) before Exceptional Charges</b>	<b>1,734</b>	<b>848</b>	<b>1,496</b>	<b>3,053</b>
<b>Net Income/(Loss) before Exceptional Charges - if NO tariff increases in 2001</b>			<b>1,496</b>	<b>(760)</b>
<b>Ratios</b>				
<i>Weighted Average Electricity Revenue (N/kWh)</i>	<i>4.34</i>	<i>4.34</i>	<i>4.34</i>	<i>5.48</i>
<i>Weighted Average Operating Income after Bad Debts &amp; Depn (N/kWh)</i>	<i>0.79</i>	<i>0.49</i>	<i>0.58</i>	<i>0.93</i>
<i>Operating Margin (Op Income after Bad Debts &amp; Depn over Op Revenue)</i>	<i>16.5%</i>	<i>8.6%</i>	<i>11.1%</i>	<i>16.8%</i>
<i>Return on Equity (Net Income over Av Equity)</i>	<i>32.5%</i>	<i>13.2%</i>	<i>22.4%</i>	<i>40.6%</i>

**National Electric Power Authority (NEPA)**  
**Costs of Supply & Transfer Prices**  
(all costs are expressed in Naira millions)

	1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b><u>Allocation of Weighted Av Tariff (based on Cost of Supply after FGN Subsidy)</u></b>					
Generation	1.11	1.18	1.10	1.25	1.49
Transmission	0.45	0.45	0.44	0.52	0.61
Distribution & Marketing	1.74	1.67	1.75	1.63	2.07
Total NEPA	3.29	3.30	3.30	3.40	4.16
<b><u>Costs of Supply (after FGN Subsidy) Split between Demand, Energy &amp; Customer Accounts (all expressed in terms of N/kWh Billed)</u></b>					
Generation	0.73	0.95	0.96	1.11	1.27
	0.29	0.34	0.34	0.61	0.45
	1.02	1.29	1.30	1.71	1.72
Transmission	0.42	0.49	0.52	0.72	0.70
	0.00	0.00	0.00	0.00	0.00
	0.42	0.49	0.52	0.72	0.70
Distribution & Marketing	1.27	1.34	1.67	1.61	1.91
	0.00	0.00	0.00	0.00	0.00
	0.32	0.49	0.39	0.64	0.48
	1.60	1.83	2.06	2.25	2.39
Total NEPA	2.42	2.77	3.15	3.43	3.88
	0.29	0.34	0.34	0.61	0.45
	0.32	0.49	0.39	0.64	0.48
	3.03	3.60	3.88	4.68	4.81

**National Electric Power Authority (NEPA)**  
**Costs of Supply & Transfer Prices**  
(all costs are expressed in Naira millions)

	1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates	2001	
						Enron	All Other
<b>Electricity Sales (GWh)</b>							
Energy Sent Out	15,934	14,123	14,123	15,779	15,779	1,072	14,706
Energy Delivered to Distribution	13,464	13,275	13,275	14,832	14,832	1,040	13,792
Energy Billed	10,339	9,377	9,377	10,730	10,730	770	9,960
<b>Costs of Supply (O&amp;M, A&amp;G, Depreciation, Interest &amp; Return less Other Operating Revenue)</b>							
Generation (including purchased power, net of FGN Subsidy)	10,529	12,087	12,171	18,386	18,490	1,631	16,859
Transmission	4,293	4,576	4,879	7,676	7,504	526	6,978
Distribution	16,518	17,133	19,345	24,128	25,609		
Total NEPA Costs of Supply	31,340	33,796	36,396	50,190	51,603		
Weighted Average Cost of Supply (N/kWh)	3.0	3.60	3.88	4.68	4.81		
<b>Costs of Supply (O&amp;M, A&amp;G, Depreciation, Interest &amp; Return less Other Operating Revenue) - % Share by Function</b>							
Generation (including purchased power, net of FGN Subsidy)	34%	36%	33%	37%	36%		
Transmission	14%	14%	13%	15%	15%		
Distribution	53%	51%	53%	48%	50%		
<b>Costs of Supply (O&amp;M, A&amp;G, Depreciation, Interest &amp; Return less Other Operating Revenue) - % Share by Category</b>							
Demand	80%	77%	81%	73%	81%		
Energy	9%	10%	9%	13%	9%		
Customer Accounts	11%	14%	10%	14%	10%		
<b>Transfer Prices based on Costs of Supply (after FGN Subsidy)</b>							
Generation N/kWh of Energy Sent Out	0.66	0.86	0.86	1.17	1.17	1.52	1.15
Transmission N/kWh of Energy Delivered to Distribution	0.32	0.34	0.37	0.52	0.51	0.51	0.51
Generation & Transmission N/kWh of Energy Delivered to Distribution		1.26	1.28	1.76	1.75	2.07	1.73
Distribution N/kWh of Energy Billed	1.60	1.83	2.06	2.25	2.39		
Total NEPA Cost of Supply N/kWh of Energy Billed	3.03	3.60	3.88	4.68	4.81		
<b>Electricity Revenue as Billed (based on Current/Proposed Tariffs)</b>							
Based on present tariffs	34,052	30,946	30,946	36,480	35,408		
Proposed tariff increase starting April 2001	0	0	0	0	9,273		
Total NEPA - Billed Electricity Revenue	34,052	30,946	30,946	36,480	44,681		
Weighted Average Revenue (N/kWh)	3.3	3.30	3.30	3.40	4.16		
<b>Revenue (Shortfall)/Surplus (after FGN Subsidy)</b>							
Generation	911	(1,019)	(1,822)	(5,022)	(2,480)	(219)	(2,261)
Transmission	372	(386)	(731)	(2,097)	(1,006)	(71)	(936)
Distribution & Marketing	1,430	(1,445)	(2,897)	(6,591)	(3,435)		
Total NEPA - Revenue (Shortfall)/Surplus after FGN Subsidy	2,712	(2,850)	(5,450)	(13,710)	(6,921)		
<b>Adjusted Revenue (based on final Billed Revenue, allocated on CoS basis)</b>							
Generation	11,440	11,068	10,348	13,364	16,010	1,412	14,598
Transmission	4,664	4,190	4,149	5,580	6,498	456	6,042
Distribution & Marketing	17,948	15,688	16,449	17,537	22,174		
Total NEPA - Billed Electricity Revenue	34,052	30,946	30,946	36,480	44,681		
<b>Final Transfer Prices (based on Present/Proposed end Customer Tariffs)</b>							
Generation N/kWh of Energy Sent Out	0.72	0.78	0.73	0.85	1.01	1.32	0.99
Transmission N/kWh of Energy Delivered to Distribution	0.35	0.32	0.31	0.38	0.44	0.44	0.44
Generation & Transmission N/kWh of Energy Delivered to Distribution	1.20	1.15	1.09	1.28	1.52	1.80	1.50
Distribution N/kWh of Energy Billed	1.74	1.67	1.75	1.63	2.07		
Weighted Av Revenue (NI N/kWh of Energy Billed)	3.29	3.30	3.30	3.40	4.16		
<b>Weighted Average Revenue (Shortfall)/Surplus (N/kWh)</b>							
Generation	0.09	(0.11)	(0.19)	(0.47)	(0.23)		
Transmission	0.04	(0.04)	(0.08)	(0.20)	(0.09)		
Distribution & Marketing	0.14	(0.15)	(0.31)	(0.61)	(0.32)		
Total NEPA - Revenue (Shortfall)/Surplus after FGN Subsidy	0.26	(0.30)	(0.58)	(1.28)	(0.65)		

**National Electric Power Authority (NEPA)  
Cash Flow Statements**

(all figures are expressed in Naira millions)

	1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b>Operating Income/(Loss) after Bad Debts &amp; before Depreciation</b>					
Generation	3,998	3,776	2,701	2,898	3,701
Transmission	410	310	(310)	568	754
Distribution & Marketing	113	(1,978)	(2,446)	(5,636)	(1,715)
Total NEPA	4,521	2,108	(55)	(2,169)	2,740
<b>Working Capital Movements (excl Cash)</b>					
Generation	1,149	120	120	1,617	371
Transmission	555	68	68	685	621
Distribution & Marketing	1,078	(7,064)	(7,064)	5,252	3,079
Total NEPA	2,782	(6,877)	(6,877)	7,553	4,071
<b>Enron Security Deposit (Distribution &amp; Marketing)</b>	0	(585)	(585)	(50)	(50)
<b>Consumer Contributions &amp; Deposits (Distribution &amp; Marketing)</b>	22	156	156	0	0
<b>Net Cash Flow from Operations (totals of above)</b>					
Generation	5,147	3,896	2,821	4,515	4,072
Transmission	965	378	(242)	1,253	1,375
Distribution & Marketing	1,213	(9,472)	(9,939)	(434)	1,314
Total NEPA	7,325	(5,198)	(7,361)	5,334	6,761
<b>Debt Service Paid</b>					
Generation	(307)	(721)	(721)	(2,384)	(2,384)
Transmission	(49)	(115)	(115)	(381)	(381)
Distribution & Marketing	(80)	(188)	(188)	(622)	(622)
Total NEPA	(437)	(1,025)	(1,025)	(3,387)	(3,387)
<b>Net Cash Flow after Debt Service</b>					
Generation	4,839	3,174	2,099	2,131	1,688
Transmission	916	262	(358)	872	994
Distribution & Marketing	1,133	(9,660)	(10,127)	(1,056)	692
Total NEPA	6,889	(6,223)	(8,386)	1,946	3,374
<b>Exceptional Charges</b>	0	0	0	0	(1,824)
<b>Other Movements</b>	565	0	289	0	124
<b>Net Cash Flow Available for Capital Expenditure</b>	7,454	(6,223)	(8,097)	1,946	1,673
<b>Capital Expenditure</b>					
Generation	(1,159)	(16,899)	(13,758)	(14,445)	(13,277)
Transmission	(1,039)	(13,394)	(12,155)	(41,024)	(35,389)
Distribution & Marketing	(958)	(1,778)	(1,930)	(2,800)	(3,351)
Total NEPA	(3,156)	(32,071)	(27,843)	(58,269)	(52,027)
<b>FGN Contribution to Investments (total NEPA)</b>					
Generation		16,161	13,437	11,400	12,279
Transmission		11,799	11,790	38,100	33,341
Distribution & Marketing		1,258	1,262	1,000	2,761
Total NEPA	2,206	29,217	26,488	50,500	48,382
<b>Borrowing</b>					
Generation		0	0	0	0
Transmission		0	0	0	343
Distribution & Marketing		0	0	0	0
Total NEPA	1,688	0	0	0	343
<b>Balance = Capital Expenditure financed from Own Resources (IGR)</b>					
Generation		(738)	(321)	(3,045)	(998)
Transmission		(1,596)	(365)	(2,924)	(1,705)
Distribution & Marketing		(520)	(669)	(1,800)	(599)
Total NEPA	737	(2,854)	(1,354)	(7,769)	(3,302)
<b>Increase/(Decrease) in Cash Balances</b>	8,191	(9,077)	(9,451)	(5,822)	(1,628)
<b>Net Cash Balance at Year End</b>	11,787	(5,481)	2,335	(11,304)	707
<b>Ratios</b>					
<b>Debt Service Cover (before Exceptional Charges)</b>				(0.6)	0.8
<b>Self-financing Ratio (before Exceptional Charges)</b>				4.3%	8.4%

**National Electric Power Authority (NEPA)  
Income Statements**

(all revenues and costs are expressed in Naira millions)

	1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b>Ratios</b>					
<i>Allocation of Weighted Average Electricity Revenue in terms of Unit Sales to end Customers (N/kWh)</i>					
Generation	1.11	1.18	1.10	1.25	1.49
Transmission	0.45	0.45	0.44	0.52	0.61
Distribution & Marketing	1.74	1.67	1.75	1.63	2.07
<b>Total NEPA</b>	<b>3.29</b>	<b>3.30</b>	<b>3.30</b>	<b>3.40</b>	<b>4.16</b>
<i>Weighted Average Operating Income after Bad Debts &amp; Depreciation in terms of Unit Sales to end Customers (N/kWh)</i>					
Generation	0.13	0.04	(0.05)	(0.09)	(0.07)
Transmission	(0.01)	(0.05)	(0.09)	(0.06)	(0.02)
Distribution & Marketing	(0.03)	(0.28)	(0.37)	(0.63)	(0.27)
<b>Total NEPA</b>	<b>0.10</b>	<b>(0.28)</b>	<b>(0.52)</b>	<b>(0.78)</b>	<b>(0.36)</b>
<i>Operating Margin (Op Income after Bad Debts &amp; Depreciation over Operating Revenue)</i>					
Generation	12%	3%	-5%	-6%	-4%
Transmission	-2%	-11%	-21%	-11%	-4%
Distribution & Marketing	-1%	-8%	-11%	-18%	-6%
<b>Total NEPA</b>	<b>3%</b>	<b>-9%</b>	<b>-15%</b>	<b>-21%</b>	<b>-8%</b>
<i>Return on Equity (Net Income over Av Equity)</i>					
Generation	-1.1%	-4.2%	-9.2%	-8.1%	-5.0%
Transmission	-3.4%	-4.1%	-7.8%	-2.2%	-1.1%
Distribution & Marketing	-5.7%	-22.4%	-22.7%	-59.4%	-14.3%
<b>Total NEPA</b>	<b>-3.2%</b>	<b>-8.6%</b>	<b>-13.2%</b>	<b>-12.2%</b>	<b>-5.7%</b>

**National Electric Power Authority (NEPA)  
Income Statements**

(all revenues and costs are expressed in Naira millions)

	1999 Actual Draft FS	2000 NEPA Budget	2000 Fin Study Estimates	2001 NEPA Budget	2001 Fin Study Estimates
<b>Electricity Revenue as Billed (based on Present/Proposed Tariffs)</b>					
Generation	11,440	11,068	10,348	13,364	16,010
Transmission	4,664	4,190	4,149	5,580	6,498
Distribution & Marketing	34,052	30,946	30,946	36,480	44,681
Less: Generation & Transmission Billing to D&M	(16,104)	(15,258)	(14,497)	(18,943)	(22,508)
Net Billing of Distribution & Marketing	17,948	15,688	16,449	17,537	22,174
<b>Total NEPA - Billed Electricity Revenue to end Customers</b>	<b>34,052</b>	<b>30,946</b>	<b>30,946</b>	<b>36,480</b>	<b>44,681</b>
Including additional revenue from proposed tariff increases starting April 2001				0	9,273
<b>Other Operating Revenue</b>					
Generation (FGN subsidy for EPP Costs)	0	0	0	3,000	3,000
Transmission	0	0	0	0	0
Distribution & Marketing (Reconnection fees, etc)	349	370	370	396	396
<b>Total NEPA - Other Operating Revenue</b>	<b>349</b>	<b>370</b>	<b>370</b>	<b>3,396</b>	<b>3,396</b>
<b>Operating &amp; Maintenance Costs (excluding Depreciation)</b>					
Generation	4,548	4,352	4,899	11,062	12,417
Transmission	3,074	2,767	3,357	4,008	4,570
Distribution & Marketing	13,643	13,870	14,896	20,415	20,279
<b>Total NEPA - O&amp;M Costs excluding Depreciation</b>	<b>21,265</b>	<b>20,988</b>	<b>23,151</b>	<b>35,485</b>	<b>37,265</b>
<b>Operating Income/(Loss) before Bad Debts &amp; Depreciation</b>					
Generation	6,892	6,716	5,450	5,302	6,594
Transmission	1,590	1,423	792	1,571	1,928
Distribution & Marketing	4,654	2,189	1,923	(2,482)	2,290
<b>Total NEPA - Op Income/(Loss) before Bad Debts &amp; Depn</b>	<b>13,137</b>	<b>10,328</b>	<b>8,165</b>	<b>4,391</b>	<b>10,812</b>
<b>Bad &amp; Doubtful Debts</b>					
Generation	2,894	2,940	2,749	2,403	2,892
Transmission	1,180	1,113	1,102	1,003	1,174
Distribution & Marketing	4,541	4,167	4,369	3,154	4,005
<b>Total NEPA - Bad &amp; Doubtful Debts</b>	<b>8,615</b>	<b>8,220</b>	<b>8,220</b>	<b>6,561</b>	<b>8,071</b>
<b>Operating Income/(Loss) after Bad Debts &amp; before Depreciation</b>					
Generation	3,998	3,776	2,701	2,898	3,701
Transmission	410	310	(310)	568	754
Distribution & Marketing	113	(1,978)	(2,446)	(5,636)	(1,715)
<b>Total NEPA - Op Income/(Loss) after Bad Debts &amp; before Depreciation</b>	<b>4,521</b>	<b>2,108</b>	<b>(55)</b>	<b>(2,169)</b>	<b>2,740</b>
<b>Depreciation</b>					
Generation	2,637	3,400	3,188	3,900	4,424
Transmission	491	761	567	1,197	1,004
Distribution & Marketing	411	619	1,026	1,133	1,160
<b>Total NEPA - Depreciation</b>	<b>3,539</b>	<b>4,780</b>	<b>4,780</b>	<b>6,230</b>	<b>6,588</b>
<b>Operating Income/(Loss) after Bad Debts &amp; Depreciation</b>					
Generation	1,361	377	(487)	(1,002)	(723)
Transmission	(81)	(451)	(876)	(629)	(249)
Distribution & Marketing	(297)	(2,598)	(3,471)	(6,769)	(2,875)
<b>Total NEPA - Op Income/(Loss) after Bad Debts &amp; Depreciation</b>	<b>982</b>	<b>(2,672)</b>	<b>(4,835)</b>	<b>(8,400)</b>	<b>(3,847)</b>
<b>Interest</b>					
Generation	1,521	1,408	1,502	1,994	849
Transmission	243	225	240	319	136
Distribution & Marketing	397	367	392	520	221
<b>Total NEPA - Interest</b>	<b>2,161</b>	<b>2,000</b>	<b>2,134</b>	<b>2,833</b>	<b>1,206</b>
<b>Net Income/(Loss) before Exceptional Charges</b>					
Generation	(160)	(1,031)	(1,989)	(2,996)	(1,572)
Transmission	(325)	(676)	(1,117)	(947)	(385)
Distribution & Marketing	(694)	(2,965)	(3,863)	(7,289)	(3,096)
<b>Total NEPA - Net Income/(Loss)</b>	<b>(1,179)</b>	<b>(4,672)</b>	<b>(6,969)</b>	<b>(11,233)</b>	<b>(5,053)</b>
<b>Net Income/(Loss) before Exceptional Charges - if NO tariff increases in 2001</b>				<b>(11,233)</b>	<b>(14,326)</b>