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CAPITAL ASSISTANCE PAPER

Proposal and Recommendations
for the Review of the
Development Loan Committee

GUATEMALA - RURAL ELECTRIFICATION LOAN

520-4-019

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D.C. 20523

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AID-DLC/P-976

June 3, 1971

MEMORANDUM FOR THE DEVELOPMENT LOAN COMMITTEE

SUBJECT: Guatemala - Rural Electrification Loan

Attached for your review are the recommendations for authorization of a loan in an amount not to exceed \$7,000,000 to the Instituto Nacional de Electrificacion of Guatemala to assist in financing the foreign exchange and local currency costs of a program of rural electrification, including construction of a transmission line and distribution facilities.

This loan proposal is scheduled for consideration by the Development Loan Staff Committee at a meeting on Thursday, June 10, 1971.

Rachel R. Agee
Secretary
Development Loan Committee

Attachments:

Summary and Recommendations
Project Analysis
Annexes I - IV

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GUATEMALA - RURAL ELECTRIFICATION LOAN

Table of Contents

<u>SUMMARY AND RECOMMENDATIONS</u>	Page 1
<u>SECTION I - GENERAL DESCRIPTION OF THE PROJECT</u>	Page 5
<u>SECTION II - THE BORROWER</u>	Page 8
A. Scope of Authority	Page 8
B. General Program	Page 9
C. Organization and Management	Page 10
<u>SECTION III - ENGINEERING ANALYSIS</u>	Page 11
A. Detailed Description of Project	Page 11
1. Area A	Page 11
2. Area B	Page 12
3. Area C	Page 12
4. Transmission Tie Line	Page 13
B. Engineering Analysis	Page 14
1. Studies	Page 14
2. Engineering Services	Page 14
3. Design Standards	Page 15
4. Construction Standards	Page 15
5. Materials	Page 16
6. Construction of Sub-Projects	Page 16
7. Retail Rates	Page 16
8. Technical Feasibility	Page 17
9. Method of Operating Sub-Projects	Page 17
C. Environmental Effects	Page 17a

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<u>SECTION IV - SOCIAL ASPECTS OF PROJECT</u>	Page 18
<u>SECTION V - ECONOMIC JUSTIFICATION</u>	Page 19
A. The National Plan	Page 19
B. The Pipeline and the GOG's Debt Service Capacity	Page 20
C. Feasibility of Project	Page 22
<u>SECTION VI - FINANCIAL ANALYSIS</u>	Page 23
A. Financial Plan and Project Costs	Page 23
B. Analyses of Sub-Projects	Page 24
C. Significance to INDE and IBRD	Page 25
<u>SECTION VII - IMPLEMENTATION PLAN</u>	Page 27
A. Project Execution	Page 27
B. Loan Conditions and Covenants	Page 28
<u>ANNEXES</u>	
I. Statutory Checklist	
II. Response to CAEC, Director's Certification	
III. Miscellaneous Exhibits	
IV. Draft Authorization	

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AID-DIG/P-976
June 3, 1971

GUATEMALA
RURAL ELECTRIFICATION
SUMMARY AND RECOMMENDATIONS

I. BORROWER

The Borrower will be the Instituto Nacional de Electrificación which will have responsibility for execution of the Project. INDE is an autonomous public entity owned by the Government of Guatemala and was established to produce, transmit, and distribute electrical power throughout the Republic. The Government of Guatemala will guarantee the loan.

II. THE LOAN

Up to \$7,000,000, with terms of 30-year amortization including a 10 year grace period, with interest charged at 2% during the grace period and at 3% thereafter. The Loan will finance all the foreign-exchange costs of the Project; less than 32% of the local costs; and just over 60% of the total Project cost.

III. THE PROJECT

The Project is an acceleration of INDE's program of rural electrification, and includes four sub-projects: construction of a transmission line and associated sub-stations to take power from the Central Zone, where power is expected to continue to be in surplus, to the Western Zone, where power is in short supply; and construction of distribution facilities in three Indian highland areas, two in the Western Zone and one in the North. INDE expects to complete the Project within five years.

IV. PURPOSE

The Project is intended to provide, for the first time, the ample, reliable electrical power essential to the development of mechanized village industry, to the implementation of modern agricultural practices, and to a rapid improvement in the standard of living in these heavily populated rural centers.

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V. FINANCIAL PLAN

The total cost of the Project will be \$11,600,000, of which the AID Loan will provide \$7,000,000 (60%) and the GOG the balance. Loan funds will finance up to \$2,130,000 (32%) of the local (CACM) costs of the Project.

	AID Loan (x10 ³)			GOG/LC	TOTAL (x10 ³)
	LC	FX	Total		
Transmission	\$ 660	\$ 1,006	\$ 1,666	\$ 1,600	\$ 3,266
Sub-Stations	---	1,220	1,220	362	1,582
Distribution	1,470	2,630	4,100	1,786	5,886
Buildings and General Plant	---	12	12	193	205
Organization & Promotion	---	---	---	170	170
SUB-TOTAL	<u>2,130</u>	<u>4,868</u>	<u>6,998</u>	<u>4,111</u>	<u>11,109</u>
Interest Dur- ing Construction	---	---	---	479	479
TOTAL	\$ 2,130	\$ 4,868	\$ 6,998	\$ 4,590	\$11,588

VI. OTHER SOURCES OF FINANCING

Formal statements of "no interest" have been received from EXIM, IDB, and the IBRD. It appears that AID is the only free-world source of financing for this Project on the concessional terms required.

VII. STATUTORY CRITERIA

All statutory criteria have been met.

VIII. VIEWS OF THE COUNTRY TEAM

The Project is considered an excellent complement to the National Development Plan, 1971-75, both as a prompt response to the CIAP recommendation that the Plan activities be increased, and as a multiplier of the benefits attainable through other on-going AID-financed projects (Rural Development Loan - \$23 Million; INFOM Loan - \$2.1 Million; and a series of Grant-funded projects).

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IX. ISSUES

None.

X. RECOMMENDATION

That a \$7,000,000 Loan to the Republic of Guatemala be authorized to finance this Project, subject to the following terms and conditions:

A. Loan Terms

Recommended terms and interest are: 30-year amortization period including a 10-year grace period, with interest charged at 2% during the grace period and at 3% thereafter.

B. Other Conditions

1. Prior to the first disbursement or issuance of commitment documents, the Borrower will submit a financial plan including the allocation to INDE for the Project of not less than \$4,000,000 over the Project execution term.

2. Prior to the first disbursement or issuance of commitment documents to finance construction under each sub-project, INDE will submit in form and substance satisfactory to AID:

a. evidence that all necessary land and rights-of-way have been obtained for the subproject;

b. in instances in which INDE will perform the construction: final plans, specifications, and costs;

c. in instances in which independent contractors will perform the construction: bid documents, and contracts with acceptable contractors; and

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4

d. for each distribution system, an updated feasibility study including the rate schedule to be applied, and a financial and construction plan.

3. Equipment, materials, and services financed under the Loan will have their source and origin in the United States, Guatemala, the Central American Common Market, or other independent free-world countries included in AID Geographic Code 941.

4. The two-step loan option will be offered to the GOG, with repayment scheduled at forty (40) years including a ten year grace period and interest at two (2%) percent during the grace period and three (3%) percent thereafter.

5. The Loan shall be subject to such other terms and conditions as AID may deem advisable.

PROJECT COMMITTEE

Capital Development Office	Charles R. Connolly, Jr., USAID/G Ronald Emmet Bobel, LA/DR
Engineering Office	Robert E. Davis, USAID/G Chris L. Schultz, LA/DR
Economic Section	Alan Cohen, USAID/G
Financial Analyst	Len Poth, ROCAP
Regional Legal Advisor	Robert Parker, ROCAP
Approved:	
Deputy Director, USAID/G Director, USAID/G	Harlan A. Harrison Robert E. Culbertson

SECTION I

General Description of the Project

The Project consists of two major elements: (1) the construction of electric distribution systems in three separate areas of rural Guatemala and (2) a transmission line to take power from the Central Zone which has a surplus of power to the Western Zone where power is in short supply.

The three areas to be electrified are included in the long range plan developed for the electrification of Guatemala. Electricity is very limited in each of these areas, and the introduction of ample, reliable power will be a significant step in the economic development of the areas. These areas fall within the Indian Departments of Las Verapaces (Baja Verapaz and Alta Verapaz), Huehuetenango, and San Marcos, which have made comparatively little development progress, and are in need of infrastructure as well as electrification.

The 66 KV transmission line between Escuintla and Retalhuleu is needed immediately by INDE to relieve the deficiency of power in the Western Zone by bringing in surplus power from the Central Zone. In addition to relieving the power shortage in the Western Zone this 66 KV line will become a part of the transmission line supplying power to the Huehuetenango Project area and to future power projects contemplated for the south coast.

INDE has endeavoured to provide electric service in some rural areas of Guatemala, but this has been on a limited scale because of the lack of funds for that purpose. In anticipation of improved future availability of funds, INDE during the last three years has constructed some 33 KV and 66 KV transmission lines and associated substations in areas of the central and western zones, and some extensions of distribution lines have been made to rural consumers. However since the National Plan for Electrification has not scheduled such activity until after 1980, when the resources of INDE are expected to be available for this purpose, no transmission lines have been built to bring power into the Project areas. This project will in effect allow INDE to accelerate its program in certain areas by as much as ten years, thereby bringing about social, civic and economic development benefits which heretofore had not been considered possible.

SUMMARY OF PROJECT

Sub-Project	Transmission (Km)		Substations (KVA)		Distribution Main Lines
	34.5 KV	66 KV	66 KV	34.5 KV	7.6/13.2 KV (Km)
Area A (Las Verapaces)	--	175	7,500	2,500	513
Area B (Huehuetenango)	108	115	7,500	3,000	690
Area C (San Marcos)	--	--	3,000*	--	132
Escuintla-Retalhuleu Transmission	--	110	--	--	--
TOTAL	108 Kms	400 Kms	18,000KVA	5,500 KVA	1,335 Kms.

*: Increase Over Existing Capacity.

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PROJECT DETAILS AND ESTIMATE OF COST

	AREA "A"	AREA "B"	AREA "C"	Escuintla- Retalhuleu
Provincial Seats	18	37	12	
Villages and group of houses	634	120	70	
Farms	116	-	8	
Population	92 363	209 110	14 600	
Estimate Demand first year (KW)	1 172	214	339	
Estimate Demand fifth year (KW)	3 891	3 019	727	
Estimate Demand tenth year (KW)	4 743	3 502	800	
Primary 7.6/13.2 KV 3Ø Lines (Km.)	303.8	457.0	62.0	
Primary 7.6 KV 1Ø Lines (Km.)	208.9	232.0	70.0	
Transmission Lines 66 KV (Km.)	175.0	115.0	---	110.0
Transmission Line 33.4 KV (Km.)	--	108.0	---	
Substations 66/33 KV (KVA)		2 500.0	---	
Substations 66/13.2 KV (KVA)	7 500	5 000	---	
Substation 34.5/13.2 KV (KVA)	2 500	3 000		
Estimate Cost (\$ x 10³)				
Substations	710	872		
Transmission Lines 66 KV and 33 KV	1 307	1 231		825
3 Ø 7.6/13.2 KV Primary Line	770	1 141	155	
1 Ø 7.6 KV Primary Line	313	349	87	
Distribution System in towns and Villages				
	1 553	1 266	184	
Total Cost	4 653	4 859	426	825

Total Cost Three Groups

10 763

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SECTION II - THE IMPLEMENTING AGENCY

A. Scope of Authority

The Implementing Agency will be the Instituto Nacional de Electrificación (INDE), an autonomous agency created in May 1959 under Law No. 1287. INDE, which is located within the ministerial structure of the Ministry of Communications & Public Works, was created with the character of a decentralized state entity which enjoys functional autonomy, legal status, special funds and the full capacity to acquire rights and contract obligations in its field of competence. Under the law INDE has the government responsibility for planning, control and execution of electrification programs in Guatemala.

The Law 1287 states that there was a need for an agency such as INDE because of the continuing large deficit in electric energy. This situation apparently developed because the private electric companies had not provided sufficient generating capacity or had not made plans for installing the additional capacity needed in the country's development. While this power deficit was most notable in the Central Zone the same situation existed in other parts of the country, not only with respect to generation but also to transmission lines and distribution systems.

INDE has the following major functions:

1. Analyse and resolve the electric power problems of Guatemala.
2. Coordinate with municipal and private electric companies to assure electrification through rational and technically sound procedures.
3. Manage hydraulic resources on a national scale, promoting the use of electricity for domestic, industrial and commercial uses as a substitute for imported fuels and to stop the destruction of forests.
4. Conserve and protect the hydraulic resources of the country through regulating the use of water.

5. Supervise and control the activities of the municipal and private companies to assure that they do not adversely affect the national program of electrification as projected by INDE.
6. Regulate the operation and distribution of electric energy of the municipal and private companies in order to benefit the greatest number of people and with the object of forming in the future a national electric system based on large hydroelectric developments.
7. Assist the municipal companies in the successful completion of their objectives.

B. General Program:

INDE began its operation in 1959 and was functioning effectively by 1961. In addition to acquiring existing small hydroelectric plants, INDE developed an emergency program to install thermal plants to provide generating capacity while large hydroelectric plants were being developed. Major projects to date include the construction of the 60 MW Jurún-Marinalá hydroelectric plant, with a \$15 million IBRD loan, to provide power to the Central Zone; and the construction of a 33 MW gas turbine plant, also to provide power in the Central Zone, with a \$7 million IBRD loan. Pre-feasibility studies of large hydroelectric projects which will provide power to the Western and Eastern Zones as well as the Central Zone are underway.

Annex III, Exhibit 1, shows the location of INDE's generating plants and existing and proposed transmission lines. Annex III, Exhibit 2 is a single line diagram of the existing generation and transmission system in Guatemala. Annex III, Exhibit 3 is a single line diagram of the generation and transmission system in Guatemala after the completion of the construction in this Project. Major projects undertaken by INDE and the sources of financing are shown in Annex III, Exhibit 4.

In addition to INDE's activities in providing generating capacity and distributing electricity in towns and villages outside of the central Guatemala City area, INDE also sells blocks of power

to municipal companies for distribution. In areas where electric service is poor or where there is no electric service being provided INDE has contributed to the rehabilitation of local electric companies, the installation of small isolated systems, and the preparation of local and regional systems for their eventual integration into the national electric system.

The major generating capacity is owned by INDE and Empresa Eléctrica de Guatemala (EEG), an American Foreign Power Company subsidiary, with a number of small plants being owned by municipal and private enterprises. The only private company which operates under a specific license is EEG. This license will expire in 1972. Other important privately owned electric companies are in Chimaltenango, Puerto de San José, and Puerto Barrios. The other companies are municipality-owned, and operate without specific license, the manager in most cases being the Mayor of the town in which service is provided. While these independent entities have had an important role in the national development of electricity so far, the demands of national over local priorities are expected to bring about their ultimate absorption into the INDE system.

C. Organization and Management

An organizational chart of INDE is included as Annex III, Exhibit 5. INDE has a present staff of 2,800 employees, of which approximately 12% are classified as technical or professional personnel. The following table gives a breakdown in terms of their functions.

<u>Function</u>	<u>Number</u>
Civil Eng.	34
Electric Eng.	15
Mechanical Eng.	2
Industrial Eng.	1
Lawyer	4
Economist	3
Technical (not Prof.)*	300
Skilled labor	500
Unskilled labor	1,931
	<hr/> *2,800

*Includes 8 Directors

SECTION III: ENGINEERING ANALYSIS

A. Detailed Description of the Project

The Project consists of four separate parts, three of which consist of the electrification of defined rural areas and the fourth being a transmission line to connect the power supply in the Central Zone to the Western Zone where there is a power shortage. A map showing the location of each rural area is included as Annex III, Exhibit 6. The route of the transmission line is shown in Annex III, Exhibit 7.

A summary of details and estimate cost of the Project is given in Annex III, Exhibit 8.

A description of each area and the transmission line follows:

1. Las Verapaces

The proposed program of servicing this area consisting of the Departments of Alta Verapaz and Baja Verapaz provides for the construction of a 66 KV transmission line extending from Sanarate to Pantún to Telemán, a total distance of 175 Kms., three 66 KV substations totaling 10,000 KVA, 512 Kms. of 7.6/13.2 KV primary distribution line, and extensions to 18 towns and 750 villages and farms. The area has a population of 92,363. A map of the area is given in Annex III, Exhibit 9.

A tabulation showing the 12-year projections for the consumers by class, annual consumption and expected revenue is given in Annex III, Exhibit 10.

Distribution systems were recently built by INDE in two towns, San Cristobal Verapaz and San Pedro Carchá, with a combined population of 9,300, but service is unsatisfactory because the local generating plant is not dependable. These two towns will be served from the proposed transmission lines.

The estimated cost of the proposed construction is \$5,031,000 of which \$2,172,000 is foreign exchange costs and \$2,859,000 is local or CACH costs. AID is being requested to provide loan

funds for all the foreign exchange and 32% of the local or CACM costs, for a total of \$3,093,000.

2. North of Huehuetenango and Quiché

The Departments of Huehuetenango and Quiché are considered among the least developed of the country. Electric service is practically non-existent. The proposed program of electrification provides for a 115 Km. 66 KV transmission line from Retalhuleu to Huehuetenango and a total of 108 Km. of 34.5 KV transmission line from the Huehuetenango substation to load centers at Soloma, Rio Blanco and San Sebastián H. Two 66 KV substations totaling 7,500 KVA and three 34.5 KV substations totaling 4,500 KVA will be built at load centers. Distribution lines will consist of 689 Km. of 7.6/13.2 KV primary line and extensions to 37 towns and 18,500 consumers. The area has a population of 209,110. A map of the area is given in Annex III, Exhibit 11. A tabulation showing the 12-year projection for the consumers by class, annual consumption and expected revenue is given in Annex III, Exhibit 12.

The estimated cost of the proposed construction is \$5,230,000 of which \$2,303,000 is foreign exchange costs and \$2,927,000 is local or CACM costs. AID is being requested to provide loan funds for all the foreign exchange costs and 42% of the local or CACM costs for a total of \$3,241,000.

3. San Marcos

This area is the least developed of the areas to be electrified. The proposed program to serve this area consists of a 3000 KVA addition to the substation at El Porvenir hydroelectric plant, 132 Km. of 7.6/13.2 KV primary distribution line, and extensions to 12 towns and over 70 villages and farms. The area has a population of 14,600 of which 3,500 will be served under the proposed construction. A map of the area is given in Annex III, Exhibit 13. A tabulation showing the 12-year projection for the consumers by class, annual consumption and expected revenue is given in Annex III, Exhibit 14.

The estimated cost of the proposed construction is \$502,000 of which \$195,000 is foreign exchange costs and \$307,000 is local or CACM costs. AID is being requested to provide loan funds for all the foreign exchange costs and 36% the local or CACM costs for a total of \$301,000.

4. Transmission Tie Line

The proposed 66 KV transmission line between Escuintla and Retalhuleu, a distance of 110 Km., is needed immediately to alleviate the power shortage in the Western Zone of Guatemala. A surplus of power generated by hydroelectric and thermal plants located in the Central Zone can be used to eliminate the deficiencies of power expected in the Western Zone beginning in mid-1972. In addition to providing a solution to the immediate power shortage in the Western Zone, the transmission line will also be required to provide power to the Huehuetenango project which will be served over the 66 KV transmission line from Retalhuleu to the Huehuetenango substation.

The Escuintla-Retalhuleu transmission line will be a segment in the INDE transmission grid. It will also be one source of power for the south coast, a highly developed agricultural area. Following another route a second 66 KV transmission line from Escuintla to Retalhuleu is to be built in the future when the south coastal area is electrified.

Because of the urgent need for the Escuintla-Retalhuleu transmission line to relieve the power deficit in the Western Zone, INDE began its planning for this line early in 1970. In early 1971 INDE began the survey of the line and most of the plan and profile drawings have been completed. On the basis of the completed plan and profile data, poles of local manufacture were placed on order to permit construction to start. The line of H-frame construction using concrete poles with 16 meter base pole, steel crossarm, 266.8 MCM ACSR conductor and two static wires. INDE began to install poles with its own forces during April, 1971. In view of the urgent need for this line and because a delay in beginning construction would result in an unnecessary power shortage in the Western Zone, the material costs incurred after the date of this loan authorization will be eligible for financing under this loan. Conductor insulators and hardware items have not yet been placed under order, and will be obtained under AID procedures as a foreign exchange cost.

The route of the 66 KV transmission line is given in Annex III, Exhibit 7.

The estimated cost of the proposed transmission line is \$825,000, of which \$198,000 is foreign exchange costs and \$627,000 is local or CACM costs. AID is being requested to finance all the foreign exchange costs, since no material or equipment from non-local sources has been ordered; and 27% of the local or CACM costs incurred after the date of application to AID for loan funds, for a total of \$363,000.

B. Engineering Analysis

1. Studies

INDE in 1969 prepared the Plan Nacional de Electrificación in which details were given for developing over a period of 10 years a national system of transmission and distribution. The rural aspects of the country's development is covered in detail and the proposed transmission and distribution facilities are based on the regional studies which are included in this plan. In these three areas electric service is practically non-existent except for a few isolated small installations. The Plan evaluates the existing service and the ability of existing entities including INDE to serve the area. Power requirements for the individual zones has been projected for the 10 year period and plans developed for the installation of generation, transmission and distribution capacity to meet those demands. The areas being considered are those which it appears will be benefited the most through a program of electrification.

A review of the separate detailed studies made by INDE for each area in support of this Project shows that enough cost and financial projections have been made to indicate the Project is technically, economically, and financially feasible. The plans for each area are well prepared and are based on reliable information. The primary distribution lines in each area have been designed to serve the loads expected during the first 10 years of operation.

2. Engineering Services

INDE has a well-qualified staff of engineers and is capable of performing the engineering for the 66 KV and 33 KV

transmission lines and the distribution lines in the Project. The transmission line between Escuintla and Retalhuleu is being engineered and poles are being installed. Detailed plans for the transmission and distribution lines in the three areas have not been prepared, although sufficient engineering has been done to develop satisfactory cost estimates. The nature of this type of programming is such that it is not practical to develop final detailed designs until immediately preceding construction in each area. A provision of the Loan Agreement will require INDE to submit to AID final plans and specifications (including updated feasibility studies), a plan for financing, and a plan for construction, for approval prior to initiating action involving AID funds.

3. Design Standards

INDE has recognized the value of standardization of technical standards in the electrical industry, not only in Guatemala but as it affects the future development of the industry in all of Central America. Accordingly INDE in 1967 adopted standards patterned after those used by the utility industry in the United States, and applies them in the design and construction of all its electric facilities.

INDE has adopted the voltage standards used in the United States. A review of INDE's standards shows the following examples:

Transmission voltages:

34.5 KV.
66 KV.
138 KV.

Distribution lines:

Primary: Urban and Rural 7.6/13.2 KV grounded wye.
Secondary: 120/240 volts.

Distribution systems are designed for not more than 10% voltage drop or regulation not exceeding 8% at loads to be expected during the first 10 years of operation. In this way expensive rebuilding is avoided as the system expands and the use of electricity increases.

4. Construction Standards

INDE has developed standards for rural line construction

which are similar to those used by the utility industry in the United States for comparable lines. Concrete poles are the basic line structure, with wooden crossarms, porcelain insulators and ACSR conductor standard items. With the exception of concrete poles and associated hardware the balance of the materials are specified according to U.S. standards.

5. Materials

Materials and equipment are to a great extent available either in Guatemala or the Central American Common Market. Concrete and wood poles, most hardware items, and small sizes of conductor used in distribution lines are produced locally or in the CACM. Transformers, transmission size conductors, insulators, meters and protective equipment must be obtained outside the CACM from the United States or other Code 941 countries. U.S. Government-owned excess property will be procured whenever possible.

6. Construction of Sub-Projects

INDE has construction crews capable of building the lines proposed in this project. INDE as a rule does its construction with its own forces, but does use contractors when the construction load is too large for its crews. Competent local contractors are available in Guatemala, but the work will be open to bidding by other CACM and eligible worldwide contractors.

Guatemala has two seasons, one wet and one dry. INDE will program the construction of the lines so that the major part will be done during the dry season, between January and May.

INDE plans to complete the construction included in this loan within five years from the date of the loan agreement. Annex III, Exhibit 15 is INDE's plan for carrying out the Project.

7. Retail Rates

INDE has established a policy to apply the same retail rate schedule to all like customers within its service area. This policy will be applied to the three areas in this project. The rates are reasonable and are comparable to retail rates found in the United States. Proposed rate schedules are given in Annex III, Exhibit 16.

8. Technical Feasibility

INDE has developed a plan for extending electric service to unserved rural areas and also improving isolated existing systems. This involves replacement of obsolete generating equipment with power from transmission lines and the rebuilding of rundown distribution facilities. By so doing the standards of service are raised to 24-hour service at adequate capacities, so that dependable service is provided.

Load projections have been based on studies made by INDE and are made in the context of its experience in other areas where electricity has been introduced for the first time. INDE's Project material details the reasonable method used by INDE in its analysis of future load growth. Annex III, Exhibits 10, 12, and 14 tabulate the load projections for the three areas.

Costs of materials, equipment, and construction have been obtained from INDE records of recent construction activities and material procurement. On the basis of the preliminary design and plan for construction there should be no problem in developing final design and cost data.

9. Method of Operation

INDE plans to operate the three distribution systems separately, each with its own administrative and operational staff. INDE will provide technical services to each system, including legal and auditing personnel and training for department specialists.

During the construction and initial operation of each system the work will be done by staff personnel familiar with rural construction. The people selected for this work will be given special training in the promotion, organization, and execution of rural electrification programs.

INDE has established a priority list of the distribution lines in each area, so that those lines expected to produce the greatest revenue per kilometer will be built first. As soon as sections of line are completed they will be energized to serve consumers along those sections without waiting for the entire area to be built.

An organization chart for a typical system is included as Annex III, Exhibit 17.

C. Environmental Effects

Because construction activities will be financed under this loan, it will have some impact on the environment of the affected areas. Due to the remoteness and typography of the areas involved, it is difficult at this time to assess this impact. Nevertheless, we believe that because of the type of work to be performed (placement of power line poles), the overall adverse impact on the environment will be minimal. In addition, because of the borrowing country's state of development in relation to the expected economic returns to be derived from this project, the limited adverse environmental impact would appear to be warranted under the circumstances.

SECTION IV - SOCIAL AND POLITICAL ASPECTS

In a speech made in Dallas, Texas on February 16, 1971, AID Assistant Administrator Lane Dwinnell described "the close link between electric power growth and economic progress" and said "In addition to assisting rural cooperatives, AID has made many loans for power plants, both urban and rural, as well as for urban distribution systems. Yet the importance in social terms of bringing electricity to the rural villages far outweighs the relative amounts of money spent." Assistant Administrator Dwinnell went on to say: "The most important probable social benefit in this case is the provision of power to the small farmer on terms he can afford, which helps him to avoid being gobbled up by his richer neighbors. But the introduction of power into rural areas also works in other ways, to stem the movement of people towards the already-overcrowded cities by encouraging the growth of mechanized village industry, and also by increasing the amenities of village life in the many ways that electricity can."

These remarks are directly applicable to this Project, which places the location, preparation, and construction of distribution systems in a set of priorities in which social concerns are as significant as the traditional financial and economic considerations. The Indian highland areas to be served by these three distribution systems are among the least developed -- and most ignored -- sections of the country. It is the policy of the present GOG administration to change past priorities to favor rural areas and particularly the highlands. This project follows the multi-project Rural Development Plan, begun in 1970, and shares this social emphasis with other AID Loan projects (017 INFCM-1970, and Rural Health Services, now under consideration). Further discussion of the relationship between this Project and other AID-financed activities follows in Annex II, Response to CAEC.

SECTION V - ECONOMIC JUSTIFICATION

A. The National Plan 1971-75

Guatemala has embarked on the most carefully elaborated, consistent and ambitious planned effort to set this country on the road to development ever put together here. If realized, the Plan would bring about moderately high (7.8% annual) sustained GDP growth, and substantial, albeit non-radical, attack on distributive injustice. Under CIAP leadership AID is basing its assistance on a policy of firm support for the Plan. But even realization of the Plan would leave Guatemala with tremendous development needs.

The Plan is based on a set of policy proposals, many of which have been effected by the Government, and an ambitious public investment plan^{1/}, the first year of which is fairly accurately reflected in the 1971 Budget. The investment plan calls for \$450 million investment during 1971-75, three times that achieved during 1965-69. Foreign borrowing is projected to cover just under 50% of the investment.

Two thirds of domestically financed public investment, the gross counterpart to foreign borrowing, is expected to come from income of the Central Government and its autonomous agencies. The financial burden on public revenues is compounded by the projected increase of 10-12.5 percent annually of current socio-economic expenditures.

To meet its revenue needs, the Plan outlines a dynamic administrative reform campaign supplemented by minor loophole-plugging legislative changes. Without reforms, revenue should rise 5.3% annually; with the reforms, the annual revenue increase is projected at 9.5%. Revenue increases of this magnitude have been sustained since 1968 and a continuation of this trend appears feasible. Therefore, the Government will not be stymied in its planned efforts by shortages of counterpart resources.

^{1/} See Annex III, Exhibit 20.

The Plan concentrates public investment on directly productive activities, especially agriculture, reasoning that infrastructure is approaching levels sufficient for the country's economy and the productive base is not yet large enough to support a massive attack on Guatemala's social problems. Neither infrastructure nor social development is ignored, however. Social expenditures are given priority in current budget projections. It is out of increased allocations to social development activities already projected in the Plan that the major part of the counterpart for this Project will come. Although the Project itself is additional to those included in the Plan, allocation of counterpart resources to it will not impinge on the availability of counterpart for other projects.

The major constraint to fulfillment of the National Plan is the Government's limited management ability. This Project will be undertaken by an autonomous agency, however, which has excellent managerial competence and which does not have major project responsibilities within the original plan. The management needs of the Project should not, therefore, detract from the Government's ability to carry out its other activities.

B. The Pipeline and the GOG's Debt Service Capacity

During the last few years Guatemala has undertaken a substantial amount of foreign borrowing, and has done so at a rate exceeding its ability to execute foreign-financed projects. The pipeline grew from less than \$10 million at the end of 1965 to \$100 million at the end of 1970. During that period the Government drew down about \$66 million of loan resources.

Prior to 1966 the Government experience with official foreign borrowing had been sporadic and relatively slight, and it has taken time for the Government to develop the requisite administrative capacity. Drawdowns amounted to \$12 million in 1967, \$15 million in each 1968 and 1969 and 21 million in 1970. In 1971 drawdowns, budgeted at \$31 million, will probably approach \$28 million. Increasing experience is resulting in a more rapid use of funds.

The National Plan calls for an investment effort in 1971-75 nearly three times as large, overall and with respect to foreign borrowing, as that of 1966-1970. Whether the plan is fully realized, clearly there will be a great expansion of public investment during the next five years. It would be inconsistent with the Plan, and with our own projections, not to expect a large and rapidly growing pipeline at the beginning of this investment expansion.

The Plan calls for the pipeline to reach \$140 million by the end of 1971 and to decrease by \$15-30 million per year over the succeeding four years. Current projections of loan authorizations and drawdowns indicate that even with this Project and others that will complement the Plan, the pipeline will not expand as rapidly as originally thought. It may be expected that the pipeline will fluctuate around \$120 million over the next two years, and decline thereafter.

Repayment of the loan will be an obligation of the Instituto Nacional de Electrificación with a guarantee of Republic of Guatemala, which is current in meeting its external debt service obligations.

Guatemala's medium and long-term external public debt is approaching \$100 million. The Mission expects it to rise slowly from this level during the current decade.

The annual debt service obligation is currently about \$15 million and during the decade is expected to rise about \$20 million - \$25 million as drawdowns accelerate, grace periods expire, and the effects of higher interest rates are felt.

Foreign exchange earnings now approximate \$250 million annually. Even allowing for eventual decreases in returns from coffee and cotton, which now contribute 50% of the total, these also are expected to rise gradually in the future.

Consequently it appears that the ratio of debt service to export earnings, currently 5.4%, may stabilize at around 8% throughout the amortization term of this Loan, providing an ample foreign-exchange cover.

It therefore appears that there are reasonable prospects of repayment.

C. Economic Feasibility of the Project

By 1976, when the distribution system financed by this Project will have been completed, about 225,000 Highland Village and rural inhabitants will be receiving good quality, moderately priced electric power. Most of the power will be used for illumination, but the Project participants are also expected rapidly to adopt the use of electricity for small household appliances and some light industrial machinery. The latter may include corn meal mills, wood and metal working equipment and artisanry equipment. The project will initially reach 1/5 to 1/4 of the population of the Huehuetenango-Quiché and Verapaz regions and about half that ratio in San Marcos.

While electricity will lower some production costs and, therefore, stimulate production--it will especially complement the artisanry project of the Rural Development Plan--most of the direct benefits will accrue in the form of increased living standards among the Project participants. At the margin, the immediate social benefits equal the users' payments for the electricity. These marginal social benefits, net of costs including depreciation and interest on the AID loan, discounted over 40 years, provide the investor, INDE, with a financial rate of return in excess of 6%.

From an overall, social, viewpoint the return is greater. Those whose living standards improve in excess of their payments for electricity will enjoy a consumer surplus. Society will benefit from the reduction of the relative attractiveness of migration out of the hinterland. Other socio-political benefits are also not reflected in INDE's own internal rate of return. The Project meets the criteria of economic feasibility.

SECTION VI - FINANCIAL ANALYSIS

A. Working Capital of 1954

The following is a summary of the financial analysis of the working capital of the project for the year 1954. The working capital is defined as the difference between the current assets and the current liabilities. The current assets are the assets which are expected to be converted into cash within one year. The current liabilities are the liabilities which are expected to be paid within one year. The working capital is a measure of the project's ability to meet its short-term obligations. The working capital of the project for the year 1954 is estimated to be \$1,000,000. This is based on the following assumptions: (1) The project will receive a total of \$5,000,000 in revenue during the year. (2) The project will incur a total of \$4,000,000 in operating expenses during the year. (3) The project will have a total of \$1,000,000 in current assets at the beginning of the year. (4) The project will have a total of \$1,000,000 in current liabilities at the beginning of the year. (5) The project will have a total of \$1,000,000 in current assets at the end of the year. (6) The project will have a total of \$1,000,000 in current liabilities at the end of the year. The working capital of the project for the year 1954 is therefore estimated to be \$1,000,000.

	1953	1954	1955	1956	1957
Current Assets	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Current Liabilities	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Working Capital	0	0	0	0	0
Revenue	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000
Operating Expenses	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
Net Income	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Depreciation	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Working Capital	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000

B. Analyses of Sub-Projects

The following table presents a cost breakdown by sub-project, indicating the source and application of funds and showing local-currency and foreign exchange requirements.

RURAL ELECTRIFICATION SUB-PROJECT COSTS

('000)

	<u>A.I.D.</u>			<u>GOG</u>	<u>TOTAL</u>
	<u>\$</u>	<u>Q</u>	<u>Total</u>	<u>Q</u>	<u>\$</u>
1. Las Verapaces	\$2,172	\$ 921	\$3,093	\$1,938	\$5,031
2. Huehuetenango	\$2,303	938	3,241	1,989	5,230
3. San Marcos	\$ 195	106	301	201	502
4. Transmission Line	<u>\$ 198</u>	<u>165</u>	<u>363</u>	<u>462</u>	<u>825</u>
TOTALS	\$4,868	\$2,130	\$6,998	\$4,590	\$11,588

Projected Income Statements and Cash-flows for twelve years for the three distribution systems, separately and consolidated, are presented in Annex III, Exhibits 18 and 19. These projections indicate that without depreciation charges all three sub-projects will operate profitably in the third year; but that with depreciation charged only the Las Verapaces sub-project will become profitable within the first twelve years, although the three sub-projects considered together will become profitable at about the seventh year. The cash-flow projections indicate that the sub-projects will have a positive cash position from the second year of operations, which will allow them to meet

all operating expenses and interest payments during the years in which they are functioning in the red. From these analyses it appears that the sub-projects are of a marginal financial feasibility, and that concessional financing is necessary for their eventual success. Thirty year terms were utilized in making these projections, and given the projected operating results, these are considered to be the minimum necessary to ensure reasonable financial feasibility. Longer terms, while more advantageous, would not result in significantly different operating results. Therefore, a two-step loan is proposed with the borrower receiving thirty-year terms and the GOG, if it so elects, forty year terms. Interest rates would remain the same under either procedure.

This condition is not unusual for this type of project since rural electrification has a record of a low rate of return in the beginning years of operation. As consumers develop uses for electricity the consumption per user increases and revenues increase accordingly. It was not unusual in the early years of rural electrification in the United States for rural systems to operate first 8 to 10 years at a deficit. In such areas a strong promotional program can help in increasing use of electricity by all the users.

Revenues have been based on load projections made by INDE and the application of the proposed rates. Costs of operation appear to be reasonable and take into consideration conditions to be experienced on each sub-project. Proper consideration has been given to maintenance and replacement cost and the projections can be considered acceptable.

In those years when a deficit operation is experienced by the Project as a whole the GOG has agreed to eliminate the deficit through support from the national budget.

C. Significance of Project to INDE and IBRD

As shown in Annex III, Exhibits 21 and 22, INDE has a total assets of over \$54 million, invested capital exceeding \$36 million, and earned slightly over \$2 million last year. The effects of this Project on INDE's overall return on capital, both

in the early deficit years and later, are not expected to materially affect INDE's attempt to raise its rate of return to the 9% sought by the IBRD in conjunction with its two previous loans to INDE. An Assistant Manager of INDE discussed this point in detail with an IBRD representative during a recent meeting in Honduras, and reportedly received assurance that the IBRD would have no objection to this Project and the AID financing.

Of more importance to INDE will be the impact of this Project in the areas of rural electrification, designated by INDE's founding law as one of the company's primary purposes. INDE is now serving about 1,500,000 customers. This Project will increase INDE's customer rolls by about twenty percent, with all of the 300,000 new customers located in rural areas.

SECTION VII - IMPLEMENTATION PLAN

A. Project Execution

1. Sub-Project Approval

USAID has determined that INDE is capable of analyzing the needs for electric distribution facilities in any area and has the capacity to design and carry out the construction of those facilities. Therefore, prior to disbursement of loan funds for the distribution sub-projects INDE will submit to USAID for approval updated economic and feasibility data for each sub-project. This data will include construction plans and schedules, cost estimates and appropriate financial analyses.

2. Project Construction

INDE will provide the engineering and supervisory services for construction of the facilities in each sub-project. INDE will follow procedures established by AID in the procurement of material and equipment and construction contracts. Contracts for materials and equipment and construction of facilities will be subject to USAID approval prior to execution. A Project timetable is presented in Annex III, Exhibit 15.

3. Reporting

INDE will submit quarterly reports of progress on all sub-projects in accordance with AID requirements.

4. USAID Monitoring Responsibilities

The monitoring of the design and construction phases of the Project will be carried out by USAID Engineering Division with back-up by AID/W when required.

5. Disbursement of Loan Funds

Disbursement of Loan funds for Dollar costs will be effected through the AID Letter of Commitment or other customary AID procedures. Disbursement of Loan funds to finance local (Guatemala and Central American Common Market) costs will be made pursuant to requests received from the Borrower and approved by the USAID/G Controller. Disbursement to finance these costs will be subject to AID/W authorization prior to such disbursements being approved by the USAID Controller.

B. Loan Conditions and Covenants

1. Prior to the first disbursement or issuance of Commitment documents, the Borrower will submit a financial plan including the allocation to INDE for the Project of not less than \$4,600,000 over the Project execution term.

2. Prior to the first disbursement or issuance of commitment documents to finance construction under each sub-project, INDE will submit in form and substance satisfactory to AID:

a. Evidence that all necessary land and rights-of-way have been obtained for the sub-project;

b. in instances in which INDE will perform the construction: final plans, specifications, and costs;

c. in instances in which independent contractors will perform the construction: bid documents and contracts with acceptable contractors; and

d. for each distribution system, an updated feasibility study including the rate schedule to be applied, and a financial and construction plan.

UNCLASSIFIED

29

3. Equipment, materials, and services financed under the Loan will have their source and origin in the United States, Guatemala, the Central American Common Market, or other independent free-world countries included in AID Geographic Code 941.

4. The two-step loan option will be offered to the GOG, with repayment scheduled at forty (40) years including a ten year grace period and interest at two (2%) percent during the grace period and three (3%) percent thereafter.

5. The Loan shall be subject to such other terms and conditions as AID may deem adviseable.

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CHECKLIST OF STATUTORY CRITERIA

(Alliance for Progress)

In the right-hand margin, for each item write answer or, as appropriate, a summary of required discussion. As necessary, reference the section(s) of the Capital Assistance Paper, or other clearly identified and available document, in which the matter is further discussed. This form may be made a part of the Capital Assistance Paper.

The following abbreviations are used:

FAA - Foreign Assistance Act of 1961, as amended.

App. - Foreign Assistance and Related Agencies Appropriations Act, 1971.

MMA - Merchant Marine Act of 1936, as amended

COUNTRY PERFORMANCEProgress Towards Country Goals1. FAA § 208; §.251(b).

A. Describe extent to which country is:

(1) Making appropriate efforts to increase food production and improve means for food storage and distribution.

(2) Creating a favorable climate for foreign and domestic private enterprise and investment.

(1) Guatemala has underway a major national program to improve food production, storage, and distribution, begun with a reorganization of the Ministry of Agriculture, the founding of a grain marketing institute, and the combining of the government-owned Ag. banks into one new entity with over \$20 million available for production credits for small and medium farmers.

(2) The continuing flow of new plant investment and the recent approval of International Nickel's \$200 million-plus project "EXMIBAL" demonstrates that Guatemala has created a favorable climate for enterprise and investment.

(3) Increasing the public's role in the developmental process.

(3) This Project will bring ample, reliable electric power to approximately 300,000 rural customers not presently served. Other projects underway are approaching the small and medium farmer with modern Ag. practices and promoting the establishment of cooperatives.

(4) (a) Allocating available budgetary resources to development.

(4)(a) The Government is undertaking a 5-year Development Plan which will triple public investment and simultaneously provide substantial increases in social and economic current expenditures.

(b) Diverting such resources for unnecessary military expenditure (see also Item No. 16.) and intervention in affairs of other free and independent nations. (See also Item No. 14 .

(4)(b) Guatemala does not appear to be making unnecessary military expenditures nor preparing to intervene in the affairs of any other free and independent nation.

(5) Willing to contribute funds to the project or program.

(5) Guatemala will put up \$4.6 million or almost 40% of the total cost of this Project.

(6) Making economic, social, and political reforms such as tax collection improvements and changes in land tenure arrangements, and making progress toward respect for the rule of law, freedom of expression and of the press, and recognizing the importance of individual freedom, initiative, and private enterprise.

(6) Guatemala has underway a real property tax improvement program (AID Loan 520-L-014) which has already generated new revenues; is improving the land fitting system as part of the Rural Development Program (AID Loan 520-L-018); and has a free press.

(7) Adhering to the principles of the Act of Bogota and Charter of Punta del Este.

(7) Guatemala adheres to these principles.

(8) Attempting to repatriate capital invested in other countries by its own citizens.

(8) By continuing a course of political stability and promoting economic development, Guatemala is attempting to induce its citizens to repatriate their capital held overseas.

(9) Otherwise responding to the vital economic, political, and social concerns of its people, and demonstrating a clear determination to take effective self-help measures.

(9) The focus of this Project on the customarily ignored Indian highlands demonstrates the GOG's interest in and responsiveness to the needs of the Guatemalan people.

B. Are above factors taken into account in the furnishing of the subject assistance?

B. Yes.

Treatment of U.S. Citizens

2. FAA § 620(c). If assistance is to government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) debt is not denied or contested by such government?
2. The GOG is not known to be indebted to any U.S. citizen in any such manner.
3. FAA § 620(e)(1). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing-ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities?
3. The GOG (including government agencies and subdivisions) has not taken any such action since January 1, 1962.

4. FAA § 620(o); Fishermen's Protective Act. § 5. *If country has seized, or imposed any penalty or sanction against, any U.S. fishing vessel on account of its fishing activities in international waters,*
4. Guatemala has not seized or imposed any penalty or sanction against any U.S. fishing vessel on account of its fishing activities in international waters.
- a. *has any deduction required by Fishermen's Protective Act been made?*
- a. N.A.
- b. *has complete denial of assistance been considered by A.I.D. Administrator?*
- b. N.A.

Relations with U.S. Government and Other Nations

5. FAA § 620(d). *If assistance is for any productive enterprise which will compete in the U.S. with U.S. enterprise, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?*
5. N.A.
6. FAA § 620(j). *Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction by mob action, of U.S. property?*
6. Guatemala has not permitted, or failed to take adequate measures to prevent, such damage or destruction.

7. FAA § 620(l). *If the country has failed to institute the investment guaranty program for the specific risks of expropriation, in convertibility or confiscation, has the A.I.D. administration within the past year considered denying assistance to such government for this reason?*
7. Guatemala has instituted the investment guaranty program.
8. FAA § 620(q). *Is the government of the recipient country in default on interest or principal of any A.I.D. loan to the country?*
8. No.
9. FAA § 620(t). *Has the country severed diplomatic relations with U.S.? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption?*
9. No.
10. FAA § 620(u). *What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearage taken into account by the A.I.D. Administrator in determining the current A.I.D. Operating Year Budget?*
10. Guatemala is current in its U.N. obligations.
11. FAA § 620(a). *Does recipient country furnish assistance to Cuba or fail to take appropriate steps to prevent ships or aircraft under its flag from carrying cargoes to or from Cuba?*
11. No.

12. FAA § 620(b). If assistance is to a government, has the Secretary of State determined that it is not controlled by the international Communist movement? 12. Yes.
13. FAA § 620(f). Is recipient country a Communist country? 13. No.
14. FAA § 620(i). Is recipient country in any way involved in (a) subversion of, or military aggression against, the U.S. or any country receiving U.S. assistance, or (b) the planning of such subversion or aggression? 14. No.
15. FAA § 620(n). Does recipient country furnish goods to North Viet-Nam or permit ships or aircraft under its flag to carry cargoes to or from North Viet-Nam? 15. No.

Military Expenditures

16. FAA § 620(s). What percentage of country budget is for military expenditures? How much of foreign exchange resources spent on military equipment? How much spent for the purchase of sophisticated weapons systems? (Consideration of these points to be coordinated with PPC/MAS.) 16. 9.4% of the 1971 GOG Budget is allocated for military expenditures. Foreign exchange expenditures of equipment are generally \$1-2 million per year. In 1970 the GOG devoted \$5 million of a budget surplus to the purchase of jet aircraft.

CONDITIONS OF THE LOAN

General Conditions

17. FAA § 201(a). Information and conditions on national loans and liability (under laws of country and U.S.) of lending and receiving terms of the loan.

17. This paragraph shall apply to loans made under the laws of the country and U.S. and the terms and conditions of the loan.

18. FAA § 201(b)(2); § 201(c). Information and conditions on country's economic and industrial conditions. If loan is not made pursuant to a multilateral plan, and the amount of the loan exceeds \$100,000, the country submitting to U.S. an application for such funds together with assurance to indicate that funds will be used to an economically and industrially sound manner.

18. The applicant may have to provide information on the economic and industrial conditions of the country and the amount of the loan. If the loan exceeds \$100,000, the country must also provide an application for such funds together with assurance to indicate that funds will be used to an economically and industrially sound manner.

19. FAA § 251(b). Information and conclusion on capacity of the country to repay the loan, including reasonableness of repayment prospects.
19. Guatemala is current in meeting its external debt service obligations. It appears reasonably certain that the country's record and foreign exchange prospects warrant the conclusion that the Loan will be repaid.
20. FAA § 211(a)(1). Prior to signing of loan will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the Government of the assistance?
20. (a) Such plans have been developed.
- (b) a reasonably firm estimate has been developed.
21. FAA § 211(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purposes of loan?
21. Congressional ratification of the Loan will be required. The three AID Loans signed with the present GOG were ratified promptly.
22. FAA § 211(a). If loan is for capital assistance, and all U.S. assistance to project has exceeded \$1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project?
22. Yes (See Annex II).
23. FAA § 241(b). Information and conclusion on availability of financing from other free-world sources, including private sources within the United States.
23. The concessional financing required for this Project is not available from other free-world sources.

Loan's Relationship to Achievement
of Country and Regional Goals

24. FAA § 207; § 251(a). Extent to which assistance reflects appropriate emphasis on; (a) encouraging development of democratic economic, political, and social institutions; (b) self-help in meeting the country's food needs; (c) improving availability of trained manpower in the country; (d) programs designed to meet the country's health needs, or (e) other important areas of economic, political, and social development, including industry; free labor unions, cooperatives, and voluntary agencies; transportation and communication; planning and public administration; urban development; and modernization of existing laws.
24. (a) This Project may lead to the formation of electric consumer coops.
- (b) Electrification will allow modernized production and processing methods.
- (c) Administrators will be trained by INDE to run the three distribution systems.
- (d) Project will supply power to existing and future hospitals and smaller health facilities.
- (e) Availability of power will stimulate mechanized village-level industry.
25. FAA § 209. Is project acceptable of execution as part of regional project? If so why is project not executed?
25. No.
26. FAA § 251(b)(3). Information and conclusion on activity's relationship to, and consistency with, other development activities, and its contribution to realizable long-range objectives.
26. This Project complements the national Development Plan, and will accelerate the attainment of the Plan's income and distribution goals.

AID 1240-2

27. FAA § 251(b)(7). *Information and conclusion on whether or not the activity to be financed will contribute to the achievement of self-sustaining growth.*
27. INDE as a profitable public agency has demonstrated self-sustaining growth. This Project will accelerate that growth.
28. FAA § 281(a). *Describe extent to which the loan will contribute to the objective of assuring maximum participation in the task of economic development on the part of the people of the country, through the encouragement of democratic, private, and local governmental institutions.*
28. This Project may lead to the formation of electric coops throughout INDE's rural service area.
29. FAA § 281(b). *Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civic education and training in skills required for effective participation in governmental and political processes essential to self-government.*
29. This Project will accelerate the work of a successful, development-oriented Guatemalan institution.

AID 1240-2

30. FAA § 601(a). *Information and conclusions whether loan will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture, and commerce; and (f) strengthen free labor unions.*
30. The availability of electric power may be expected to contribute towards all these goals except (f), strengthen free labor unions.
31. FAA § 619. *If assistance is for newly independent country; is it furnished through multilateral organizations or plans to the maximum extent appropriate?*
31. N.A.
32. FAA § 251(h). *Information and conclusion on whether the activity is consistent with the findings and recommendations of the Inter-American Committee for the Alliance for Progress in its annual review of national development activities.*
32. This Project is a specific response to the February, 1971 CIAP recommendation that the scope of the National Development Plan be amplified.
33. FAA § 251(g). *Information and conclusion on use of loan to assist in promoting the cooperative movement in Latin America.*
33. The formation of electric coops is seen as an ultimate result of this Project.

AID 1240-2

34. FAA § 209; § 251(b)(8).
Information and conclusion whether assistance will encourage regional development programs, and contribute to the economic and political integration of Latin America.

34. Through its strengthening of the Guatemalan economy this Project will encourage regional development and integration programs.

Loan's Effect on U.S. and A.I.D. Program

35. FAA § 251(b)(4); § 102.
Information and conclusion on possible effects of loan on U.S. economy, with special reference to areas of substantial labor surplus, and extent to which U.S. commodities and assistance are furnished in a manner consistent with improving the U.S. balance of payments position.

35. This Loan will not have an adverse effect on the U.S. economy or on areas of substantial labor surplus. It is expected that U.S. supplies will furnish the bulk of the goods to be imported.

36. FAA § 601(b). *Information and conclusion on how the loan will encourage U.S. private trade and investment abroad and how it will encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).*

36. The improved rural economy resulting from this project should encourage more U.S. trade and investment in Guatemala (such as the newly formed LAAD private investment company).

37. FAA § 601(d). *If a capital project, are engineering and professional services of U.S. firms and their affiliates used to the maximum extent consistent with the national interest?*
37. Yes (See Section III-B).
38. FAA § 602. *Information and conclusion whether U.S. small business will participate equitably in the furnishing of goods and services finance by the loan.*
38. The U.S. small business community will be advised, through the Small Business Notification of all real opportunities to participate in this Project.
39. FAA § 620(h). *Will the loan promote or assist the foreign aid projects or activities of the Communist-Bloc countries?*
39. No.
40. FAA § 621. *If technical assistance is financed by the loan, information and conclusion whether such assistance will be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis. If the facilities of other Federal agencies will be utilized, information and conclusion on whether they are particularly suitable, are not competitive with private enterprise, and can be made available without undue interference with domestic programs.*
40. N.A.

41. FAA § 252(a). Total amount of money under loan which is going directly to private enterprise, is going to intermediate credit institutions or other borrowers for use by private enterprise, is being used to finance imports from private sources, or is otherwise being used to finance procurements from private sources.
41. A substantial amount of the Loan will go to finance procurement from private sources (See Section III-B-6).

Loan's Compliance with Specific Requirements

42. FAA § 201(d). Is interest rate of loan at least 2% per annum during grace period and at least 3% per annum thereafter?
42. Yes.
43. FAA § 608(a). Information on measures to be taken to utilize U.S. Government excess personal property in lieu of the procurement of new items.
43. U.S.G-owned excess property will be procured whenever possible. Because of the nature of the Project, however, little procurement of USG-owned excess property is expected.
44. FAA § 604(a). Will all commodity procurement financed under the loan be from U.S. except as otherwise determined by the President?
44. Procurement will be from the U.S., Guatemala, the Central American Common Market, and all other Code 941 countries, as determined by the President.

45. FAA § 604(b). What provision is made to prevent financing commodity procurement in bulk at prices higher than adjusted U.S. market price?
45. No bulk commodity procurement is contemplated under this Loan.
46. FAA § 604(d). If the host country discriminates against U.S. marine insurance companies, will loan agreement require that marine insurance be placed in the U.S. on commodities financed by the loan?
46. Yes.
47. FAA § 604(e). If off-shore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity?
47. None is anticipated.
48. FAA § 611(b); App. § 101. If loan finances water or water-related land resource construction project or program, is there a benefit-cost computation made, insofar as practicable, in accordance with the procedures set forth in the Memorandum of the President dated May 15, 1962?
48. N.A.
49. FAA § 611(c). If contracts for construction are to be financed, what provision will be made that they be let on a competitive basis to maximum extent practicable?
49. Public formal Invitations for Bids will be advertized, pursuant to local law and the AID Capital Projects Guidelines.

50. FAA § 620(g). What provision is there against use of subject assistance to compensate owners for expropriated or nationalized property?
50. The Loan Agreement will preclude such use of Loan funds.
51. FAA § 612(b); § 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.
51. The GOG will make a substantial local-currency contribution (see Section VI). There are no foreign currencies owned by the USA and available for this Project.
52. App. B 104. Will any loan funds be used to pay pensions; etc., for military personnel?
52. No.

AID 1240-2

53. App. § 106. *If loan is for capital project, is there provision for A.I.D. approval of all contractors and contract terms?* 53. Yes.
54. App. § 108. *Will any loan funds be used to pay U.N. assessments?* 54. No.
55. App. § 109. *Compliance with regulations on employment of U.S. and local personnel for funds obligated after April 30, 1964 (Regulation 7).* 55. Regulation 7 will be complied with.
56. FAA § 636(i). *Will any loan funds be used to finance purchase, long-term lease, or exchange of motor vehicle manufactured outside the United States, or any guaranty of such a transaction?* 56. No.
57. App. § 401. *Will any loan funds be used for publicity or propaganda purposes within U.S. not authorized by the Congress?* 57. No.

58. *FAA § 620(k). If construction of productive enterprise, will aggregate value of assistance to be furnished by U.S. exceed \$100 million?* 58. No.
59. *FAA § 612(d). Does the U.S. own excess foreign currency and, if so, what arrangements have been made for its release?* 59. No.
60. *MMA § 901.b. Compliance with requirement that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed with funds made available under this loan shall be transported on privately owned U.S. flag commercial vessels to the extent that such vessels are available at fair and reasonable rates.* 60. The Loan Agreement will require such compliance.

ANNEX II

RESPONSE TO CAEC and DIRECTOR'S CERTIFICATION

A. Response to CAEC

The CAEC reviewed this proposal on April 16, 1971, and approved an Intensive Review to address the following five points:

- "1. Complete analysis should be made of INDE including following:
 - a. Organizational structure including capabilities in management, planning, engineering, accounting, financial planning, etc.
 - b. Discussion of experience and analysis of INDE's past performance including Rural Electrification activities.
 - c. Financial position, including review and analysis of financial statements and conclusions regarding rate structure. In this regard proposed rate structure under AID-financed project should be fully justified -- especially if subsidized rates proposed.
 - d. Method of operations such as responsibilities for final design, supervision and construction. With specific regard this project discuss plan for construction and administration of system."

Response: INDE's organization structure has been analysed and evaluated, with the conclusion reached that INDE is capable

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ANNEX II, Page 2 of 5

of executing this Project as planned. INDE's past performance was examined, and a summary of specific completed projects is presented in Annex III, Exhibit 4. Their experience includes the successful execution of two IBRD-financed construction projects. INDE's financial position and proposed rate structures were reviewed. The company's financial picture is favorable, and the company does not and will not use subsidized rates. The operating plan for this Project is described in detail in Sections III and VII of the Loan Paper.

- "2. Discuss alternatives considered and indicate why project proposed is considered best alternative at this time. CAEC focused particularly on rationale for concentrating on distribution system in low income area rather than providing at least portion of loan for highly productive Pacific coastal area."

Response: This construction in a low-income area should not be considered an alternative but rather an antecedent to construction along the Pacific coast. The Project foresees the construction of distribution systems along the higher-income Pacific coastal areas (see Annex III, Exhibit 6) as well as in the lower-income Indian highlands for which this financing is requested. It is INDE's intention to prepare and present the Pacific coast project for financing in 1972. This highlands Project was selected on the basis of project readiness, and is justified on that basis (see Section III-B) and the high social impact anticipated (see Section IV).

- "3. With regard preceding point, relation of this Project to GOG development plans and other AID activities (Rural Sector Loan, Health Loan, etc.) should be fully discussed."

Response: as mentioned in several places in this Loan Paper, this Project is closely aligned with the goals and activities included in the National Development Plan (Section V), and has specific ties to several AID-financed activities, including:

UNCLASSIFIED

(a) Loan 500-1-018, Rural Development, 100 million. This loan has as its primary goal the modernization of agriculture in Guatemala, with major emphasis to be given to the improvement of farming practices in the Indian highlands. Electrification of rural areas will facilitate the establishment of small agricultural units feasible by increased farm production, and by processing operations more closely to production areas will allow for the income derived from value added during processing to accrue to these rural areas.

(b) Loan 500-1-017, INECOM, 500 million. This loan is assisting in the establishment of a fund to finance small public works projects (water supply, sewage, electricity houses) in the 119 smallest (small and very small) municipalities throughout Guatemala. A number of these municipalities are in the Los Volcanes, Huituncomul, and San Marcos areas to be covered by this project; and some other municipalities will be covered in INECOM's road and water supply project.

(c) Rural Health Services, 50.5 million, under consideration. This loan will finance a pilot project covering of the cost of a nationwide health services program, including a new class of medical workers -- the health assistants -- operating out of a network of small "health centers" and smaller "health posts" which eventually will cover 100% of Guatemala's 325 municipalities. Again a major part of the cost will be directed at the Indian highlands, as part of the National Rural Development Program.

(d) Grant-Funded Initiatives. The Project will finance a series of grant-funded activities which are of high relevance to the needs of the Indian population. Emphasis is agricultural credit, production, and marketing, and development by projects in primary rural education, agricultural extension, family health, public administration, at the rural municipal level, and others.

*4. Adequacy of GOS/INECOM contribution should be reviewed and proper assurances included that GOS/INECOM contributions will be made on time and in full.

disbursements from AID Loan. Related point concerns assurances that GOG financial support for INDE will, as case may be, remain or rise to adequate levels.

Response: Assurance of the availability of the total GOG contribution to the Project will be received as a Condition Precedent to Initial Disbursement of Loan funds; drawdowns of GOG and Loan funds on a pari-passu basis will be controlled by disbursing Loan funds against a fixed percentage of eligible costs included in monthly vouchers, as was the case under the Malaria Eradication Loan (011) to Guatemala.

*5. Loan Paper should discuss and justify borrowing arrangements and terms. Assume Loan will be made to INDE with two-step option to GOG. Loan Paper should discuss relationship of Loan terms to financial payout.

Response: The necessity for concessional financing is discussed in Section VI B, Analysis of Sub-projects. Proposed is a two-step loan with INDE receiving 30 year terms. This payback period was developed based on cash flow projections which showed that if reasonable financial results are to be achieved, concessional terms were necessary, although not to the fullest extent permissible under AID's legislation (40 years).

CERTIFICATION PURSUANT TO SECTION 611(e) OF THE
FOREIGN ASSISTANCE ACT OF 1961, AS AMENDED

I, Robert E. Culbertson, the principal officer of the Agency for International Development in Guatemala, having taken into account, among other things, the maintenance and utilization of projects in Guatemala previously financed or assisted by the United States, do hereby certify that in my judgment Guatemala has both the financial capability and the human resources capability to effectively maintain and utilize the capital assistance project, Rural Electrification.

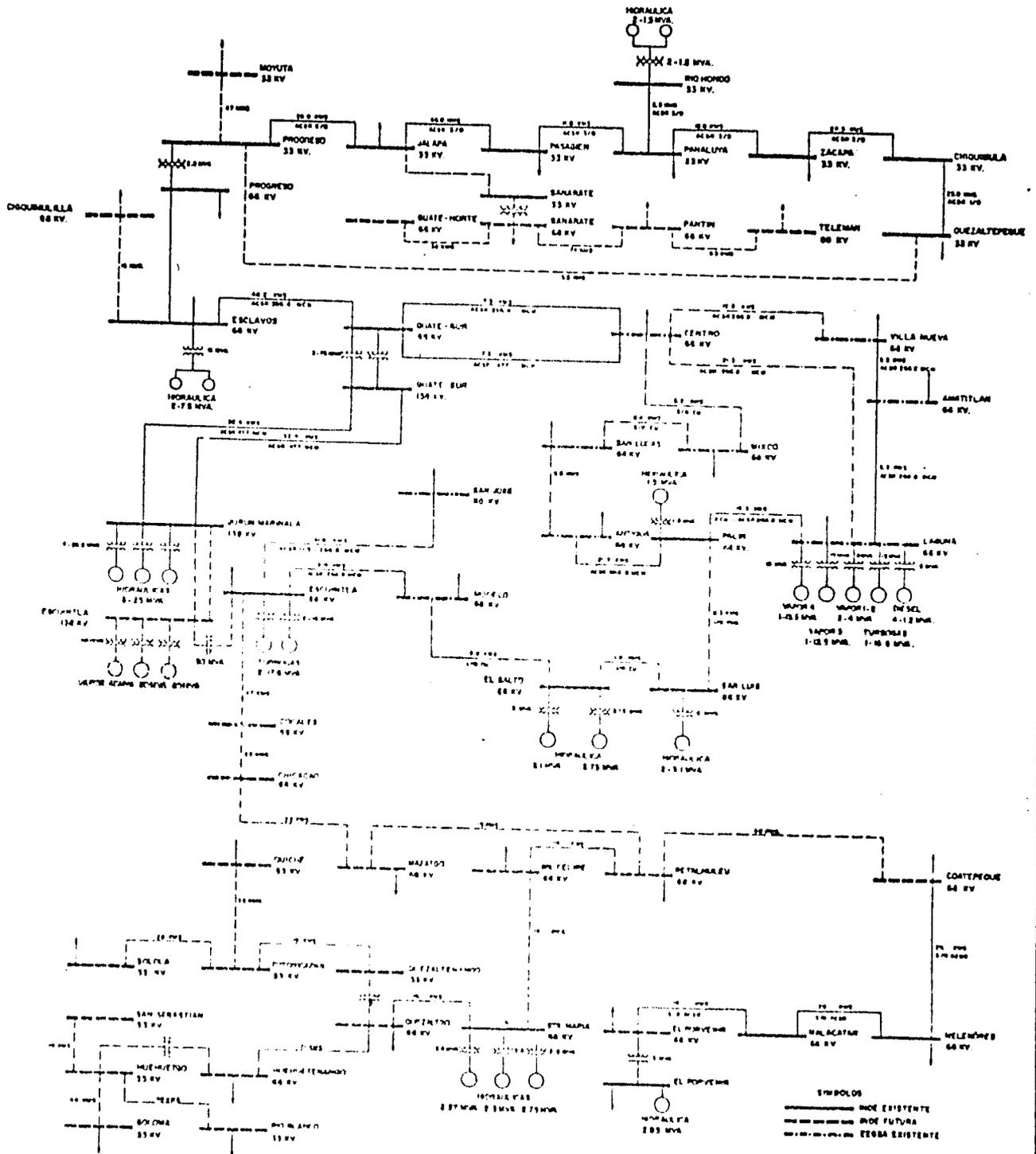
This judgment is based upon the improving implementation record of AID-financed projects in Guatemala and the quality of the planning which has gone into this new project.

(signed) 
(date) May 25, 1971

Miscellaneous Exhibits

- 1 Map: INDE's Generating Plants and Transmission Lines
- 2 Line Diagram: Generation and Transmission System Now
- 3 Line Diagram: Generation and Transmission System After Project
- 4 INDE's Major Projects
- 5 Organization Chart: INDE
- 6 Map: Project Distribution Areas
- 7 Map: Route of Transmission Line
- 8 Cost Details
- 9 Map: Las Verapaces Area
- 10 Table: Las Verapaces Consumption
- 11 Map: Huehuetenango Area
- 12 Table: Huehuetenango Consumption
- 13 Map: San Marcos Area
- 14 Table: San Marcos Consumption
- 15 Chart: Implementation Plan
- 16 INDE's Rate Schedule
- 17 Organization Chart: Distribution System
- 18 Financial Data: Three Distribution Systems - Income Projections
- 19 Financial Data: Three Distribution Systems - Cash Flow
- 20 Table: National Plan, 1971-75
- 21 Financial Data: INDE's 1970 Income Statement
- 22 Financial Data: INDE's 1970 Balance Sheet

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ANNEX III
Exhibit 3



INSTITUTO NACIONAL DE ELECTRIFICACION

DIAGRAMA UNIFILAR SIMPLIFICADO - GENERACION Y TRANSMISION

No. 13

07

ELABORO:
ING. RENE WOC

DISEÑO:
K. H. KEYDFEL, G. A. OROZCO

GUATEMALA, ABRIL DE 1971

120

PRESENT SYSTEM

AND

INDE'S ACCOMPLISHMENTS

SINCE 1959

When INDE was created in May of 1959 it took over a scattering of hydro and thermal plants, (some of which have been in operation since 1896), and started on a plan of unification which will eventually tie all of Guatemala together in a nationwide grid system.

After taking over government run plants at Santa María (5.9 MW) and Río Hondo (2.4 MW) in 1960 INDE purchased hydro plants producing 12.1 MW of electricity from the Empresa Eléctrica de Guatemala in 1967. Starting in 1964 INDE also began a construction program to augment its power producing capacity in an effort to stay ahead of the ever growing demand for electrical power. Since 1964 INDE has built the following plants:

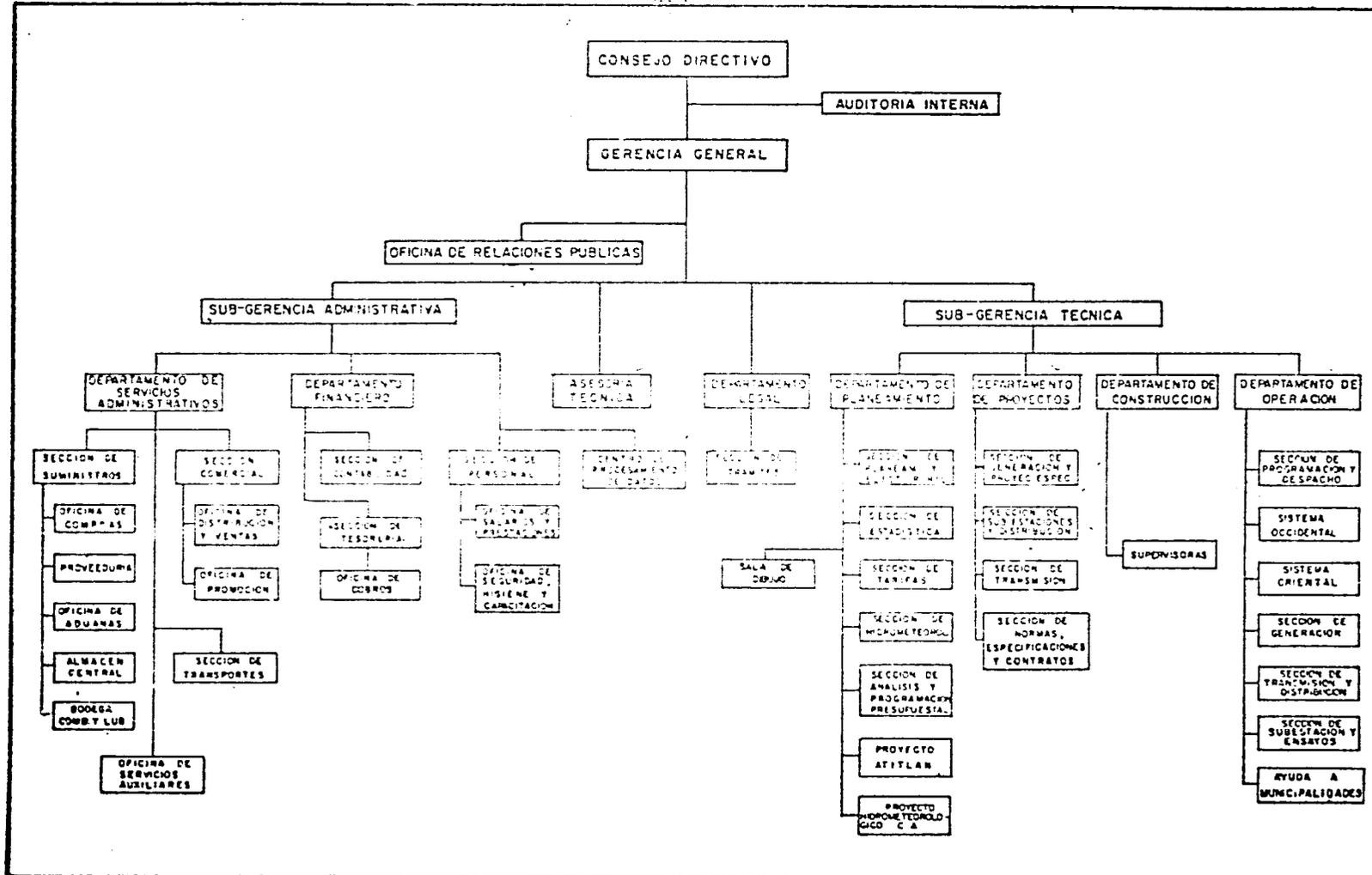
1964	Diesel - San Felipe	2.4 MW
1965	Turbo-Gas - Guacalate #1	12.5 MW
1966	Hydro - Los Esclavos	13.0 MW
1967	Hydro - El Porvenir	2.2 MW
1968	Turbo-Gas - Guacalate #2	12.5 MW
1969	Hydro - Jurún Marinalá	60.0 MW
1971	Thermal - Escuintla	33.0 MW

In addition to the construction of power plants several thousands of miles of transmission and distribution lines have been built. INDE now has:

14 Kms. of Single Circuit 138 KV lines
32 Kms. of Double Circuit 138 KV lines
7 Kms. of Double Circuit 69 KV lines
295 Kms. of Single Circuit 66 KV lines
146 Kms. of Double Circuit 66 KV lines
499 Kms. of Single Circuit 33 KV lines
43 Kms. of Double Circuit 33 KV lines
1370 Kms. of Triple Phase 13.2 KV lines
565 Kms. of Single Phase 7.6 KV lines
660 Kms. of Distribution Networks

INDE is now serving about 1,500,000 people out of a total population of about 5,000,000. The expansion planned under this loan will bring the total population served up to about 2,000,000 people.

ORGANIZACION ADMINISTRATIVA DEL INDE



UNCLASSIFIED
ANNEX III
Exhibit 5



INSTITUTO NACIONAL DE ELECTRIFICACION GUATEMALA C.A.		LOCALIZACION GEOGRAFICA DE LOS SISTEMAS REGIONALES		No 2
DEPARTAMENTO DE PLANEAMIENTO		ELABORO: LUIS ARMAS B.	DIBUJO: LUIS ARMAS B.	

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ANNEX III
Exhibit 8
Page 1 of 3

COST ESTIMATES

Concrete poles are used almost exclusively in utility work in Guatemala because only one plant for the treatment of wood poles is located in Guatemala. Poles treated at that plant cost 60% to 70% of the cost of a locally manufactured concrete poles of the same height. Untreated wood poles have a life of only one to two years and consequently are not suited to utility line construction because of the recurring replacement cost.

The general specifications and standards for rural electrification are in accord with INDE's normal practices. A brief description of typical components of a system are given along with an average cost and use made of each average cost.

1. Transmission Substations

Standard substations fall into three voltage categories: (1) 66 KV - 33 KV, (2) 66 KV - 7.6/13.2 KV, and (3) 33 KV - 7.6/13.2 KV. All substations are outdoor type using structures of concrete or galvanized steel, and circuit protection on both high and low voltage sides. The average cost installed of each type substation is as follows:

66 KV - 33 KV:	\$60.00/KVA
66 KV - 7.6/13.2	\$55.00/KVA
33 KV - 7.6/13.2	\$40.00/KVA

2. 66 KV Transmission Line

Base pole in 66 KV transmission line is a 16-meter concrete pole. Depending on certain line characteristics such as conductor size and average span, either single-pole or H-frame structures are used.

Line conductors are ACSR between 4/0 and 336 MCM. Strings of six 10-inch diameter insulators are standard. Single or double static wires are used according to type of structure.

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ANNEX III
Exhibit 8
Page 2 of 3

The average cost of a kilometer of single-pole 66 KV line is \$7,300.00.

3. 33 KV Transmission Line

Design similar to the 66 KV design except that the base pole is 12-meters and standard insulation is a string of three 10-inch diameter insulators. The average cost of a kilometer of single pole 33 KV line is \$3,500.00.

4. 7.6/13.2 KV Distribution Line

The basic poles used in 7.6/13.2 KV 3-phase distribution lines are 10 and 12-meter concrete poles. Depending on type of individual structure insulators are pin-type or 6-inch diameter suspension type. Conductors are ACSR between #2 and #3/0 AWG.

The design characteristics of single-phase 7.6 KV lines are similar to the 3-phase 7.6/13.2 KV lines. They are constructed in such a manner that in case of necessity they can be converted without difficulty to multi-phase lines.

Average unit costs of 7.6/13.2 KV distribution lines are:

7.6/13.2 KV 3-phase line: \$2,500/Km.
7.6 KV 1-phase line: \$1,500/Km.

4. Towns, Villages and Clusters of Small Houses

For distribution networks in towns an estimate is made of the length of primary lines and services needed in each individual case. Based on data which INDE has compiled as a result of its experience a figure of \$3,500 to \$5,000 per kilometer of primary line according to characteristics of the population in the town.

In the villages and clusters of small houses of which there are a great number it is impractical for cost estimating purposes to determine the lengths of lines necessary in each case. INDE on the basis of its experience has established a criterion of one kilometer of distribution network at an average cost of \$3,000 for each village or cluster of small houses.

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DATE 11/11/03

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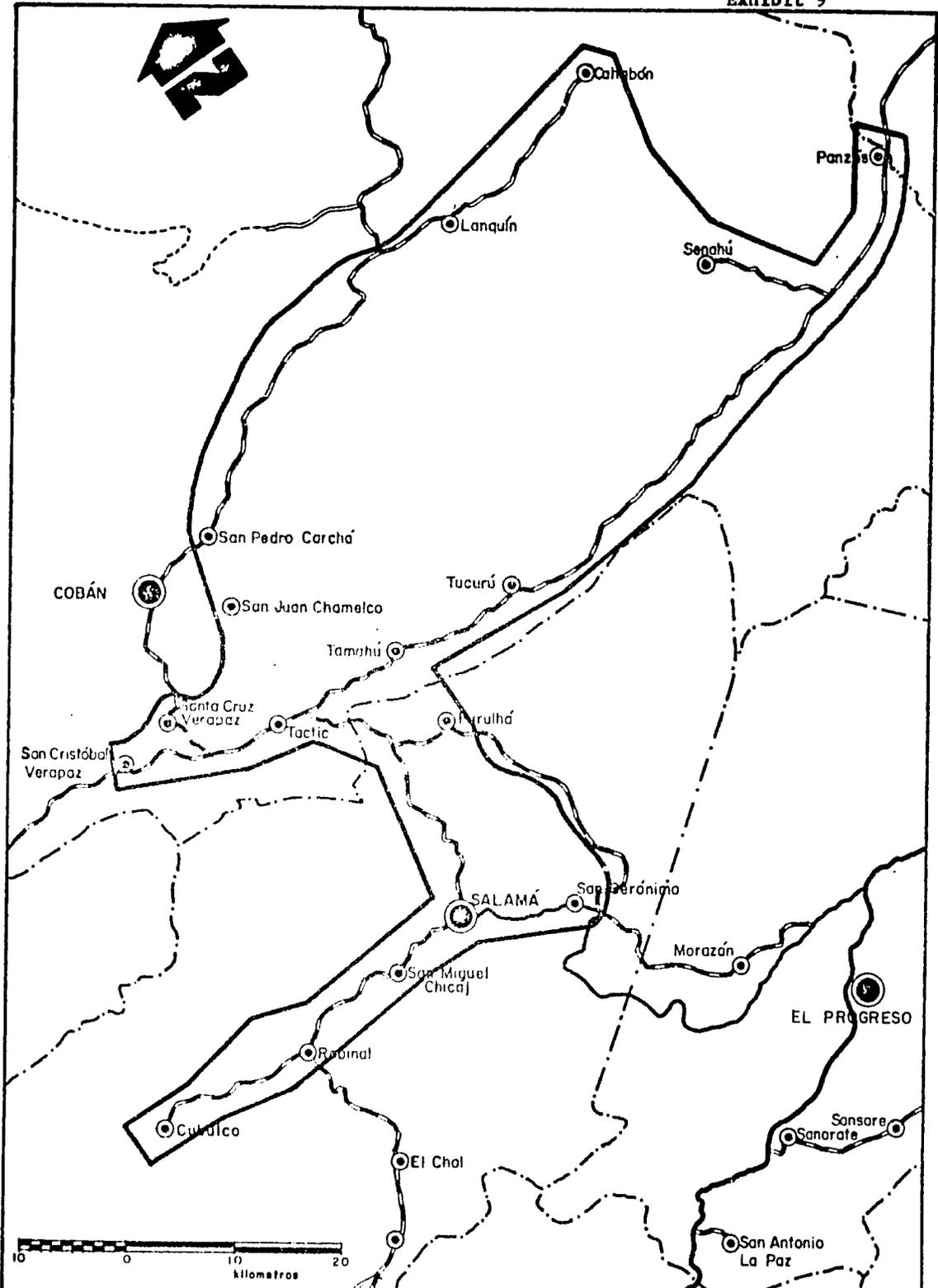
PAGE 2 OF 2

5. Connections to Large Farms

INDE has determined the number of farms connected to the 7.6/13.2 KV lines and has taken into consideration the average factor as well as the separation between each type of farm in arriving at an average cost to serve each farm. An average cost of \$2,150.00 per farm is detailed as follows:

1. Km 7.6 KV lines	\$1,500.00
100 meters 120/240 Volt Secondary	300.00
1 10KVA 1-phase transformer	350.00
TOTAL	\$2,150.00

The average unit costs as described above are applied to the preliminary estimates of the kind and length of lines needed for the systems under consideration. The number of estimation is reasonable and satisfactory. It is a method in common use in the utility industry in the United States.



<p>INSTITUTO NACIONAL DE ELECTRIFICACION GUATEMALA C.A.</p>	<p>SISTEMA REGIONAL LAS VERAPACES</p>		<p>No 3</p>
<p>DEPARTAMENTO DE PLANEAMIENTO</p>	<p>ELABORADO LUIS ARMAS B</p>	<p>DIBUJO LUIS ARMAS B</p>	<p>FECHA: ABRIL, 1971</p>

PLAN LAS VERAPACES

PROYECCION DE VENTAS

(Miles de Quetzales)

	1	2	3	4	5	6	7	8	9	10	11	12
<u>GENERAL</u>												
Total KWH		875 434	2,000 749	3,647 245	4,672 010	5,455 044	6,011 484	6,598 334	7,126 121	7,696 116	8,311 753	8,976 818
No. Usuarios		2 700	6 840	11 223	15 649	18 345	20 125	21 511	22 801	24 170	25 619	27 159
KWH/Usuario		324	293	325	299	297	299	307	313	318	324	331
Ventas (7.25¢ /KWH)		63.5	145.1	264.4	338.7	395.5	435.8	478.4	516.6	558.0	602.6	650.8
<u>INDUSTRIAL</u>												
Total KWH		247 920	1,087 038	1,387 175	1,411 766	1,521 602	1,552 027	1,582 946	1,616 502	1,649 026	1,681 993	1,712 627
No. Usuarios		36	59	116	130	130	130	130	130	130	130	130
KWH/Usuario		6 887	18 424	11 958	10 860	11 705	11 939	12 177	12 435	12 685	12 938	13 174
Ventas (4.30¢ /KWH)		10.7	46.7	59.6	60.7	65.4	66.7	68.1	69.5	70.9	72.3	73.6
<u>ALUMBRADO PUBLICO</u>												
Total KWH		628 464	1,222 020	1,975 380	2,726 112	2,726 112	2,726 112	2,726 112	2,726 112	2,726 112	2,726 112	2,726 112
No. Usuarios		39	80	112	136	136	136	136	136	136	136	136
KWH/Usuario		16 028	15 275	17 637	20 045	20 045	20 045	20 045	20 045	20 045	20 045	20 045
Ventas (3.33¢ /KWH)		20.8	40.7	65.2	90.8	90.8	90.8	90.8	90.8	90.8	90.8	90.8
<u>FINCAS</u>												
Total KWH		997 106	1,843 659	2,365 284	2,794 611	3,104 385	3,289 359	3,450 693	3,604 124	3,766 051	3,931 453	4,112 317
No. Usuarios		19	58	79	102	115	115	117	118	119	121	122
KWH/Usuario		52 479	31 787	29 940	27 400	26 995	28 603	2 949	3 054	3 165	3 249	3 371
Ventas (5.20¢ /KWH)		51.8	95.9	123.0	145.3	161.4	171.0	179.4	187.4	195.8	204.4	213.8
<u>TRECS</u>												
Total KWH		102 000	172 040	295 502	389 406	397 307	405 263	415 411	421 702	430 136	438 746	447 498
No. Usuarios		48	82	145	189	189	189	189	189	189	189	189
KWH/Usuario		2 125	2 198	2 038	2 060	2 102	2 144	2 198	2 231	2 276	2 321	2 368
Ventas (6.20¢ /KWH)		6.3	10.7	18.3	24.1	24.6	25.1	25.8	26.1	26.7	27.2	27.7
<u>TOTALES</u>												
KWH		2,847 924	6,325 506	9,670 586	11,994 105	13,315 790	13,984 245	14,773 496	15,494 561	16,267 441	17,090 057	17,975 372
Usuarios		2 842	7 119	11 675	16 006	18 915	20 657	22 083	23 374	24 746	26 195	27 736
Centavos/KWH		5.38	5.36	5.49	5.52	5.54	5.65	5.70	5.75	5.79	5.84	5.80
Miles de Quetzales		153.1	339.1	531.1	659.6	737.7	789.4	842.5	890.4	942.2	997.3	1056.7

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ANNEX III
Exhibit 10

PROYECCION DE VENTAS
PLAN HUEHUETENANGO - QUICHE
(Cifras en miles de Quetzales)

GENERAL:

Total kWh
No. usuarios
kWh/usuario
Ventas (7.25) x 10³

	1	2	3	4	5	6	7	8	9	10	11	12
Total kWh	262 408	1 656 928	3 061 760	4 433 637	5 453 242	6 174 059	6 711 242	7 172 995	7 634 831	8 111 085	8 617 374	9 168 154
No. usuarios	757	4 766	9 006	13 178	16 126	19 114	19 348	20 329	21 286	22 248	23 247	24 292
kWh/usuario	347	348	340	340	338	341	347	353	359	365	371	377
Ventas (7.25) x 10 ³	19.0	120.1	222.0	325.1	395.4	447.6	486.6	520.0	553.5	588.1	624.8	664.7

INDUSTRIAL:

Total kWh
No. Usuarios
kWh/usuario
Ventas (4.30)x10³

Total kWh												
No. Usuarios												
kWh/usuario												
Ventas (4.30)x10 ³												

ALUMBRADO PUBLICO:

Total kWh
No. usuarios
kWh/usuario
Ventas (c/3.33) x 10³

Total kWh	179 580	1 067 851	1456 404	2 074 106	2 158 903	2 216 544	2 216 544	2 216 544	2 216 544	2 216 544	2 216 544	2 216 544
No. usuarios	4	43	78	140	168	184	192	195	196	196	196	196
kWh/usuario	44 895	24 334	18 672	14 815	12 851	12 046	11 545	11 367	11 309	11 309	11 309	11 309
Ventas (c/3.33) x 10 ³	6.0	25.6	48.5	69.1	71.9	73.8	73.8	73.8	73.8	73.8	73.8	73.8

FINCAS:

Total kWh
No. usuarios
kWh/usuario
Ventas (45.20) x 10³

Total kWh												
No. usuarios												
kWh/usuario												
Ventas (45.20) x 10 ³												

OTROS:

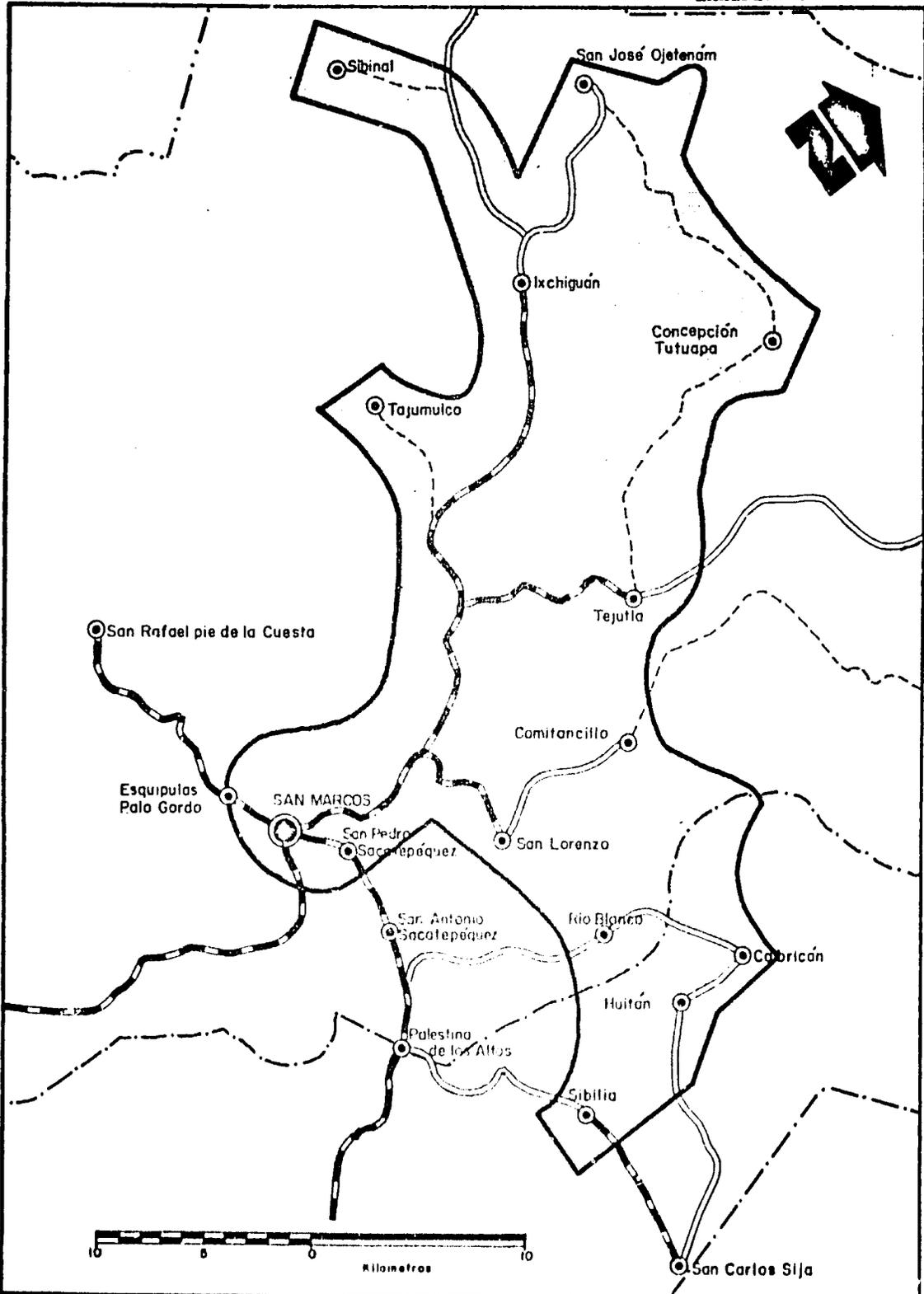
Total kWh
No. usuario
kWh/usuario
Ventas (4 620) x 10³

Total kWh	84 000	358 580	523 602	689 126	750 096	789 925	805 723	821 836	838 275	855 040	872 141	889 584
No. usuario	19	114	189	267	323	352	366	373	375	375	375	375
kWh/usuario	4 421	3 145	2 770	2 581	2 325	2 244	2 201	2 203	2 235	2 280	2 326	2 372
Ventas (4 620) x 10 ³	5.2	22.2	32.5	42.7	46.6	49.0	50.0	51.0	52.0	53.0	54.0	55.1

TOTALES:

kWh	525 988	3 083 359	5 541 766	7 246 869	8 363 051	9 130 527	9 733 509	10 211 375	10 689 650	11 182 669	11 706 059	12 274 282
Usuarios	776	4 880	9 195	13 445	16 449	18 466	19 714	20 702	21 661	22 623	23 622	24 687
Centavos/kWh	5.74	5.77	6.0	6.0	6.1	6.2	6.3	6.3	6.4	6.4	6.4	6.5
Quetzalesx10 ³	30.2	177.9	303.0	436.9	513.9	570.4	610.4	644.8	679.3	714.9	752.6	793.6

UNCLASSIFIED
ANNEX III
Exhibit 12.



INSTITUTO NACIONAL DE ELECTRIFICACION GUATEMALA C.A.	SISTEMA REGIONAL SAN MARCOS		No 5
DEPARTAMENTO DE PLANEAMIENTO	LLABORO LUIS ARMAS D	DIBUJO LUIS ARMAS D.	FECHA ABRIL, 1971

PLAN SAN MARCOS

PROYECCION DE VENTAS
(Miles de Quetzales)

	1	2	3	4	5	6	7	8	9	10	11	12
<u>GENERAL</u>												
Total KWH	223,000	463,000	610,000	698,000	733,000	770,000	808,000	849,000	891,000	936,000	982,000	1,031,000
No. Usuarios	855	1,727	2,276	2,604	2,682	2,763	2,845	2,931	3,019	3,109	3,203	3,299
KWH/Usuario	261	268	268	268	273	279	284	290	295	301	307	313
Ventas (7.95¢/KWH)	17.5	35.3	47.9	54.8	57.5	60.4	63.4	66.6	69.9	73.5	77.1	80.9
<u>INDUSTRIAL</u>												
Total KWH	168,000	331,000	334,000	340,000	348,000	354,000	361,000	369,000	376,000	384,000	392,000	399,000
No. Usuarios	11	21	21	22	22	22	22	22	22	22	22	22
KWH/Usuario	15,273	15,762	15,905	15,455	15,818	16,091	16,409	16,773	17,091	17,455	17,818	18,136
Ventas (4.30¢/KWH)	7.2	14.2	14.4	14.6	15.0	15.2	15.5	15.9	16.2	16.5	16.9	17.2
<u>ALCOMERADO PUBLICO</u>												
Total KWH	187,000	267,000	267,000	267,000	267,000	267,000	267,000	267,000	267,000	267,000	267,000	267,000
No. Usuarios	14	25	25	25	25	25	25	25	25	25	25	25
KWH/Usuario	13,360	10,680	10,680	10,680	10,680	10,680	10,680	10,680	10,680	10,680	10,680	10,680
Ventas (3.33¢/KWH)	6.2	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9
<u>FINCAS</u>												
Total KWH	323,000	453,000	541,000	588,000	606,000	624,000	643,000	662,000	682,000	702,000	723,000	745,000
No. Usuarios	6	7	8	8	8	8	8	8	8	8	8	8
KWH/Usuario	53,833	64,714	67,625	73,500	75,750	78,000	80,375	82,750	85,250	87,750	90,375	93,125
Ventas (5.40¢/KWH)	17.4	24.5	29.2	31.8	32.7	33.7	34.7	35.7	36.8	37.9	39.0	40.2
<u>OTROS</u>												
Total KWH	60,000	117,000	119,000	122,000	124,000	127,000	129,000	132,000	134,000	138,000	140,000	143,000
No. Usuarios	30	58	58	58	58	58	58	58	58	58	58	58
KWH/Usuario	2,000	2,012	2,047	2,098	2,133	2,184	2,219	2,270	2,305	2,374	2,408	2,460
Ventas (6.20¢/KWH)	3.7	7.3	7.4	7.6	7.9	7.9	8.0	8.2	8.3	8.6	8.7	8.9
<u>TOTALES</u>												
KWH	961,000	1,631,000	1,871,000	2,015,000	2,078,000	2,142,000	2,208,000	2,279,000	2,350,000	2,427,000	2,504,000	2,585,000
Usuarios	916	1,838	2,388	2,717	2,795	2,876	2,958	3,044	3,132	3,222	3,316	3,412
Centavos/KWH	5.41	5.59	5.76	5.84	5.87	5.89	5.91	5.94	5.96	5.99	6.01	6.04
QUETZALES	52.0	91.2	107.8	117.7	122.0	126.1	130.5	135.3	140.1	145.4	150.6	156.10

UNCLASSIFIED
ANNEX III
Exhibit 14

IMPLEMENTATION PLAN

Activity	Start	End	Responsible	Status	Notes
1. Review of current situation					
2. Identification of key areas for improvement					
3. Development of implementation plan					
4. Approval of implementation plan					
5. Implementation of plan					
6. Monitoring and evaluation					
7. Reporting and communication					
8. Review and adjustment					
9. Final evaluation					
10. Conclusion					

UNCLASSIFIED

ANNEX III
Exhibit 16
Page 1 of 2

PROPOSED RETAIL RATES

General Use

First	12 KWH		Q1.00 (Minimum Charge)
Next	28 KWH	at	0.07/KWH
Next	80 KWH	at	0.05/KWH
Next	120 KWH	at	0.04/KWH
Over	240 KWH	at	0.032/KWH

Intermediate User

This rate is applicable to consumers with a demand between 4 and 50 KW and with a consumption of energy over 1,000 KWH per month. The demand and energy usage is normally metered but if it is considered convenient the demand portion can be estimated according to Article 55 of the General Rules of Electric Service of INDE.

Monthly Charge

a. Demand Charge

Q11.00 for first 4 KW of demand.
Q 2.75 for each KW of additional demand.

b. Energy Charge

First 50 KWH/KW of demand - no charge.
Next 100 KWH/KW of demand at Q0.03.
All over 150 KWH/KW of demand at Q0.02.

Large User

This rate is applied to consumers with a demand greater than 50 KW. Under this rate the user provides the required transformer at his expense.

UNCLASSIFIED

UNCLASSIFIED

ANNEX III
Exhibit 16
Page 2 of 2

Monthly Charge

a. Demand charge:

Q138.00 first 50 KW of demand.
Q 2.75 each KW of additional demand.

b. Energy charge:

First 10,000 KW or less Q200.00
Next 10,000 KWH at Q0.02/KWH
All over 20,000 KWH at Q0.0125/KWH.

Nixtamal Mills

This rate is applicable only for service to nixtamal mills using a maximum of 1,000 KWH per month:

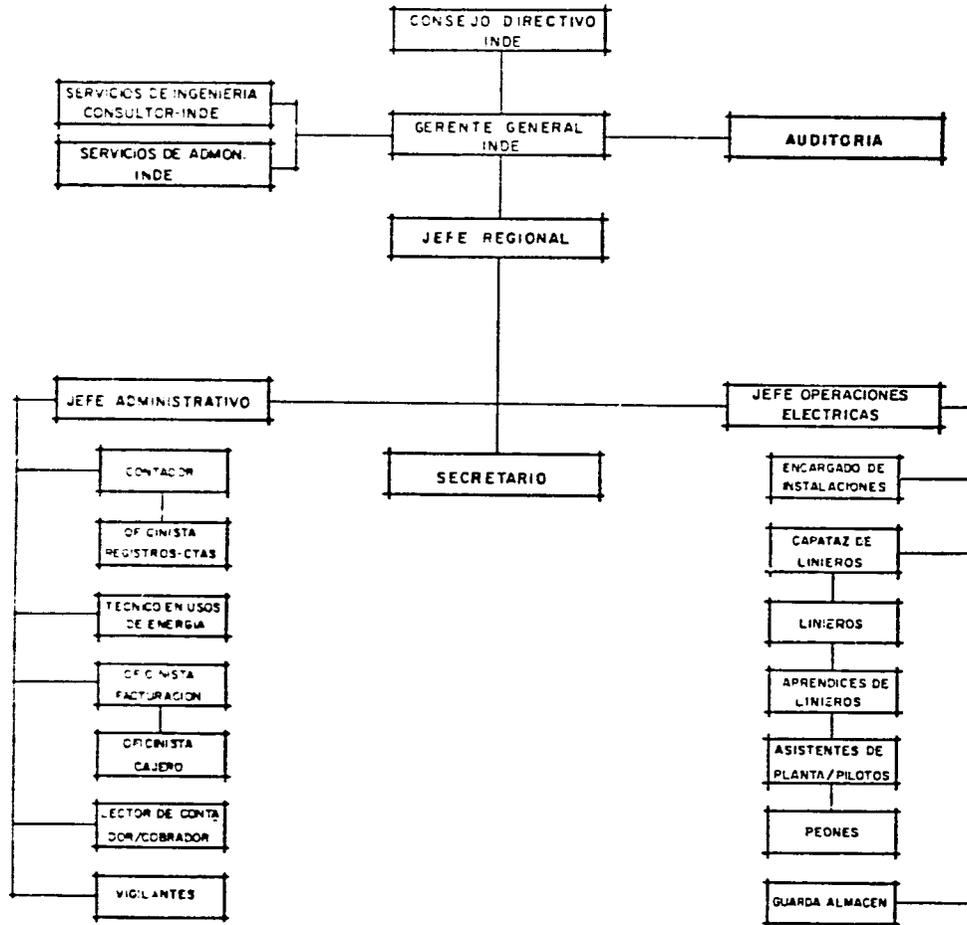
Monthly Charge

First 200 KWH Q7.00 (minimum charge).
All over 200 KWH at Q0.035/KWH.

Public Street Lighting

This rate is 1.2 centavos monthly per watt of installed lamps and allows lighting service from 5 p.m. to 6 a.m. of the following day.

ORGANIZACION OPERATIVA TIPICA DE LOS SISTEMAS REGIONALES



INCOME FROM OPERATIONS

	1	2	3	4	5	6	7	8	9	10	11	12
<u>Income Before Depreciation</u> (+ Inc.)												
San Marcos	(1.3)	(2.3)	5.6	9.6	11.6	12.5	13.7	15.3	16.7	18.7	16.4	17.9
Cumulative	(3.6)	2.0	11.6	23.2	35.7	49.4	64.7	81.4	100.1	116.5	134.4	
Las Verapaces		14.5	103.4	151.8	173.5	181.9	204.9	228.3	249.4	272.5	251.7	283.4
		14.5	117.9	269.7	4.432	6.251	8.300	1058.3	1307.7	1580.2	1831.9	2115.3
Baebuetenango	(33.4)	(0.3)	84.9	102.7	109.8	120.1	137.4	152.7	168.2	184.6	155.0	179.5
	(33.7)	51.2	153.9	263.7	383.8	521.2	673.9	842.1	1026.7	1181.7	1361.2	
Total	<u>(22.8)</u>	<u>171.1</u>	<u>435.2</u>	<u>4719.9</u>	<u>6670.5</u>	<u>8870.6</u>	<u>1796.9</u>	<u>2231.2</u>	<u>2707.0</u>	<u>3130.1</u>	<u>3610.9</u>	
<u>Income With Depreciation</u>												
San Marcos	(5.2)	(18.5)	(28.1)	(33.7)	(37.3)	(40.0)	(41.5)	(41.4)	(39.9)	(36.4)	(35.2)	(32.5)
Baebuetenango	(33.4)	(40.7)	(41.4)	(41.4)	(63.0)	(83.5)	(86.7)	(74.6)	(47.0)	(3.0)	(11.4)	(50.3)
Las Verapaces		(32.3)	(22.9)	13.0	51.6	93.6	158.6	247.0	356.5	489.1	600.9	744.4
Total	<u>(38.6)</u>	<u>(91.5)</u>	<u>(92.4)</u>	<u>(62.1)</u>	<u>(48.7)</u>	<u>(29.9)</u>	<u>30.4</u>	<u>131.0</u>	<u>259.6</u>	<u>449.7</u>	<u>554.3</u>	<u>661.6</u>

C A S H F L O W

	1	2	3	4	5	6	7	8	9	10	11	12
<u>Cash Balance (without Depreciation)</u>												
San Marcos	16.8	22.4	11.3	(2.3)	(1.5)	(1.1)	(0.4)	0.7	1.6	3.0	(16.6)	(15.7)
(cumulative)	16.8	39.2	50.5	48.2	46.7	45.6	45.2	45.9	47.5	50.5	33.9	18.2
Las Verapaces		32.0	110.0	168.0	196.0	109.0	123.0	139.0	155.0	172.0	(22.0)	3.0
		32.0	142.0	310.0	506.0	615.0	738.0	877.0	1032.0	1204.0	1182.0	1185.0
Quehuetenango	(2.0)	44.0	136.0	186.0	215.0	112.0	129.0	143.0	158.0	173.0	(31.0)	(13.0)
	(2.0)	42.0	178.0	364.0	579.0	691.0	820.0	963.0	1121.0	1294.0	1263.0	1250.0
	14.8				1131.7	1351.6	1603.2	1885.9	2200.5	2548.5	2478.9	2453.2
<u>Accumulated Depreciation</u>												
San Marcos	3.9	14.9	30.1	45.3	60.5	75.7	90.9	106.1	121.3	136.5	151.7	166.9
Las Verapaces					392.0	531.0	671.0	811.0	951.0	1091.0	1231.0	1371.0
Quehuetenango					327.0	467.0	608.0	749.0	889.0	1030.0	1170.0	1311.0
					779.5	1073.7	1369.9	1666.1	1961.3	2257.5	2552.7	2848.9

SUMMARY OF PUBLIC INVESTMENT PLAN
1971-1975
(000 Q)

	1971	1972	1973	1974	1975	Total	%
I- SOURCE	79 033.3	74 517.5	91 554.8	85 954.0	100 989.2	433 759.8	100.0
A- Central Government	27 182.2	27 205.8	28 715.7	35 612.4	26 987.7	155 354.8	34.2
a) Net Savings	10 206.8	12 052.7	15 473.1	26 405.9	24 318.6	93 677.1	
b) Domestic Debt	16 275.4	14 953.1	8 973.6	9 206.5	12 669.1	61 477.7	
D- Autonomous Agency Savings	14 627.1	13 283.0	15 628.6	15 010.8	23 674.2	82 701.8	18.2
C- External Financing	37 224.0	44 413.7	47 739.5	45 320.8	49 327.2	215 712.2	47.6
a) Loans	35 348.0	43 413.7	45 739.5	44 330.8	49 124.2	211 212.2	
b) Grants	750.0	1 000.0	1 000.0	1 000.0	750.0	4 500.0	
II- USES	79 033.3	74 517.5	91 554.8	85 954.0	100 989.2	433 759.8	
A- Physical Investment	68 510.4	73 015.4	83 000.1	81 070.9	93 116.4	402 672.2	100.0
1. Agriculture	7 970.1	9 237.1	11 525.3	13 920.0	15 071.3	59 003.2	14.7
2. Industry							
3. Tourism	1 000.0	2 000.0	2 700.0	1 000.0	500.0	8 000.0	2.0
4. Natural Resources	2 403.2	1 033.7	953.4	870.9	805.0	6 965.2	1.7
5. Education	6 635.9	6 204.6	6 081.0	6 080.0	6 080.0	30 802.5	7.7
6. Health	3 953.0	10 115.5	11 188.7	12 541.1	11 627.0	55 040.6	13.7
7. Housing	4 263.7	3 441.4	3 432.2	4 135.0	4 305.0	19 609.3	4.9
8. Transportation	16 303.6	16 337.0	13 070.0	16 403.0	22 403.4	65 435.8	21.2
9. Telecommunications	6 950.9	5 719.9	7 161.0	5 093.0	5 659.1	30 512.5	7.6
10. Power	6 134.9	9 303.0	12 014.6	12 513.0	9 773.0	50 118.5	12.4
11. Municipalities	6 057.0	7 203.5	8 024.1	9 600.9	12 397.7	43 203.2	10.7
12. Others	1 683.8	2 703.3	2 306.2	3 391.2	3 570.9	13 722.4	3.4
B- Financial Investment	10 573.9	10 502.1	11 174.7	10 603.1	7 812.8	51 087.6	100.0
1. Agricultural Dev. Bank	5 473.9	3 627.1	3 029.7	2 975.1	2 577.8	18 103.6	35.8
2. Commodity Price Inst.	1 500.0	2 000.0	2 000.0	2 500.0	1 000.0	9 000.0	17.6
3. Industrial Financiera	1 500.0	3 000.0	3 000.0	3 500.0	1 500.0	12 500.0	24.5
4. Livestock Programs	2 000.0	2 425.0	2 345.0	1 735.0	2 735.0	11 300.0	22.1

UNCLASSIFIED
Annex III
Exhibit 20

(INCOME STATEMENT)

INSTITUTO NACIONAL DE ELECTRIFICACION

I. N. E. E.

ESTADO DE INGRESOS Y GASTOS

Del 1o. de Enero al 31 de Diciembre de 1971.

INGRESOS DE EXPLOTACION

Ventas de Energía Eléctrica

Sistema Oriental
Sistema Central
Sistema Occidental

Q. 267,744.00
4,734,888.19
202,454.17

Q. 5,005,086.36

GASTOS DE EXPLOTACION

Sistema Oriental
Sistema Central
Sistema Occidental

261,744.11
7,716,711.41
211,528.21

Q. 8,289,983.73

UTILIDAD EN EXPLOTACION:

Q. 2,327,912.63

GASTOS DE ADMINISTRACION

197,448.48

UTILIDAD EN OPERACION:

2,130,464.15

OTROS GASTOS

Donativos
Cuentas Incoobrables

34,768.24
27,382.08

Q. 62,150.32

Q. 2,068,313.83

OTROS PRODUCTOS

Trabajos a terceros, ventas, intereses, etc.

Q. 6,719.99

UTILIDAD DEL EJERCICIO:

Q. 2,075,033.82

Guatemala, 27 de Abril de 1971.-

Dr. José Osorio López Vique
Jefe Gerencia Contabilidad



Vo. Bo.:

Lic. Mario Ver Miquetum
Jefe Depto. Financiero

JULY/82-

INSTITUTO NACIONAL DE ELECTRIFICACION
Departamento de Contabilidad
JEFATURA

INSTITUTO NACIONAL DE ELECTRIFICACION

I. E. D. E.

BALANCE GENERAL CONSOLIDADO AL 31 DE DICIEMBRE DE 1970.

UNCLASIFICADO
ANEXO III
EXHIBIT 22

<u>ACTIVO:</u>		<u>PASIVO:</u>	
<u>ACTIVO FIJO:</u>			
<u>ACTIVOS EN OPERACION</u>			
Sistema Oriental	Q. 4.743,600.95		
(-) Depreciación Acumulada	<u>884,278.83</u>	Q. 3,859,322.12	
Sistema Central	26,120,323.41		
(-) Depreciación Acumulada	<u>1,896,473.62</u>	24,223,849.79	
Sistema Occidental	6,306,159.54		
(-) Depreciación Acumulada	<u>1,348,269.52</u>	4,957,890.02	
Oficinas Centrales	697,349.10		
(-) Depreciación Acumulada	<u>674,734.17</u>	22,623,055.85	
		<u>69,784.93</u>	Q. 42,753,775.60
<u>ACTIVO CIRCULANTE:</u>			
Caja y Bancos		502,708.69	
Cajas Chicas		30,261.45	
Material y Suministros		2,523,123.41	
Reservas para Adelantado		27,653.73	
Documentos por Cobrar (Cartas de Crédito)		469,807.52	
Cuentas por Cobrar	1,103,643.70		
(-) Reserva para Ctas. Incoables	<u>31,132.34</u>	1,072,511.36	4,691,495.16
<u>TRANSACCIONES EN PROCESO:</u>			
Sistema Oriental	1,034,650.32		
Sistema Central	2,273,366.27		
Sistema Occidental	<u>214,800.72</u>	3,522,817.31	6,780,233.67
Proyectos y Retenciones			
<u>OTROS ACTIVOS:</u>			
Derechos Diversos (agua y teléfono)		3,370.51	
<u>ACTIVO FINANCIERO:</u>			
Cargos Diferidos		74,636.04	
		<u>34,263,722.30</u>	
			<u>Q. 34,263,722.30</u>
<u>PASIVO A LARGO PLAZO:</u>			
<u>Préstamos de Organismos Internacionales</u>			
IBRD No. 21-00-01	Q. 3,150,000.00		
(-) Amortizaciones	<u>170,000.00</u>	2,980,000.00	
IBR? No. 487-00	13,000,000.00		
(-) Saldo por utilizar	<u>2,672,000.00</u>	10,328,000.00	
IBR? No. 545-00	7,000,000.00		
(-) Saldo por utilizar	<u>3,828,174.68</u>	6,471,825.32	18,127,325.32
<u>PASIVO CIRCULANTE:</u>			
Obligaciones y Cuentas por Pagar		1,454,175.25	
Reservaciones por Pagar (Sueldos y Dietas no Realizadas)		1,484.87	
Retenciones a Contratistas		122,752.80	
Documentos a Emitir		1,409,713.39	
Depósitos Varios		<u>27,158.61</u>	1,974,976.92
<u>OTROS PASIVOS: (Depósitos de Clientes)</u>			
			63,128.30
<u>PASIVO FINANCIERO:</u>			
Créditos Diferidos		37,880.35	
Ingresos por Distribuir		<u>1,361.20</u>	69,241.55
<u>PATRIMONIO:</u>			
Capital al la. de Enero de 1970		29,808,071.01	
Más Aportes del Estado y otros		<u>4,888,874.14</u>	34,696,945.15
Capital Neto:			34,696,945.15
UTILIDAD Ejercicio 1970		<u>1,086,057.43</u>	35,783,002.58
			<u>Q. 34,696,945.15</u>

Durazno, 27 de Abril de 1971-

[Firma]
Sr. José María López Vial
Jefe de Oficina Ejecutiva

[Firma]
Lic. Mario Vaz Argente
Jefe de Oficina Ejecutiva

Instituto Nacional de Electrificación
Departamento Ejecutivo
JEFATURA

[Firma]
Lic. Carlos Castro Rivas
Auditor Interno

[Firma]
Sr. José María López Vial
Jefe de Oficina Ejecutiva

JEM/ma-

LOAN AUTHORIZATION

Provided from: Alliance for Progress Funds

GUATEMALA: Rural Electrification

Pursuant to the authority vested in the Deputy U.S. Coordinator, Alliance for Progress, by the Foreign Assistance Act of 1961, as amended, and the delegations of authority issued thereunder, I hereby authorize the establishment of a loan pursuant to Part I, Chapter 2, Title VI, Alliance for Progress, of said Act to the Instituto Nacional de Electrificacion, INDE, ("Borrower") of not to exceed seven million United States Dollars (\$7,000,000), said loan to be guaranteed by the Republic of Guatemala ("Guarantor"), to assist in financing the United States dollar and local currency costs of a project ("Project") to provide ample, reliable electric power to certain rural areas as part of an overall rural electrification plan, the loan to be subject to the following terms and conditions.

1. Interest and Terms of Repayment:

(a) Borrower shall repay the loan to the Agency for International Development ("A.I.D.") in United States dollars within thirty (30) years from the date of the first disbursement under the loan, including a grace period of not to exceed ten (10) years. Borrower shall pay to A.I.D. in United States dollars on the disbursed balance of the loan interest of two percent (2%) per annum during the grace period and three percent (3%) per annum thereafter.

2. Other Terms and Conditions:

(a) Goods, services (except for Ocean shipping) and marine insurance financed under the loan shall have their source and origin in countries which are members of the Central American Common Market or in countries included in Code 941 of the A.I.D. Geographic Code Book. Marine Insurance may be financed under the loan only if it is obtained on a competitive basis and any claims thereunder are payable in freely convertible currencies. Ocean shipping financed under the loan shall be procured in any countries included in Code 941 of the A.I.D. Geographic Code Book, excluding countries which are members of the Central American Common Market.

b) United States dollars utilized under the loan to finance local currency costs shall be made available pursuant to procedures satisfactory to A.I.D.

(c) Prior to the first disbursement or issuance of commitment documents, the Borrower will submit a financial plan including the allocation to INDE for the Project of not less than \$4,600,000 over the Project execution term.

(d) Prior to the first disbursement or issuance of commitment documents to finance construction under each subproject, INDE will submit in form and substance satisfactory to AID:

- (1) evidence that all necessary land and rights-of-way have been obtained for the sub-project;
- (2) in instances in which INDE will perform the construction: final plans, specifications, and costs;
- (3) in instances in which independent contractors will perform the construction: bid documents, and contracts with acceptable contractors; and
- (4) for each distribution system, an updated feasibility study including the rate schedule to be applied, and a financial and construction plan.

(e) The two-step loan option will be offered to the GOG, with repayment scheduled at forty (40) years including a ten year grace period and interest at two (2%) percent during the grace period and three (3%) percent thereafter.

(f) The Loan shall be subject to such other terms and conditions as A.I.D. may deem advisable.

Deputy U.S. Coordinator

Date