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

CAPITAL ASSISTANCE PAPER

Proposal and Recommendations
For the Review of the
Development Loan Committee

PARAGUAY: PEDRO JUAN CABALLERO ELECTRIFICATION PROJECT

AID-DLC/P-856

UNCLASSIFIED

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

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AID-DLC/P-856
July 10, 1969

MEMORANDUM FOR THE DEVELOPMENT LOAN COMMITTEE

SUBJECT: Paraguay: Pedro Juan Caballero Electrification Project

Attached is a revised ANNEX I to the subject Capital Assistance Paper.

The recommendations for authorization of a loan in an amount not to exceed $425,000 to the Administracion Nacional de Electricidad to assist in financing the U.S. dollar costs of the construction and installation of a central electric power station and distribution system in the city of Pedro Juan Caballero, Paraguay, were sent to you on June 25, 1969.

Rachel C. Rogers
Assistant Secretary
Development Loan Committee

Attachment: Revised July 10, 1969
ANNEX I

Previously Distributed: June 25, 1969
Summary and Recommendations
Project Analysis
ANNEXES I-V

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June 25, 1969

PARAGUAY - PEDRO JUAN CABALLERO ELECTRIFICATION PROJECT

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June 25, 1969

PARAGUAY - PEDRO JUAN CABALLERO ELECTRIFICATION PROJECT

SUMMARY AND RECOMMENDATIONS

1. BORROWER: Administration Nacional de Electricidad (ANDE), the national electrification agency of Paraguay.

2. GUARANTOR: The Government of Paraguay (Central Bank).

3. AMOUNT OF LOAN: Not to exceed $425,000, the dollar component of the Project.

4. TOTAL COST OF PROJECT: $562,000 (equivalent). A summary of estimated costs is presented in Section VII. The sources of funds will be as follows:

Borrower's Contribution:	$137,000	(equivalent)
A.I.D. Loan Request :	$425,000*	
	$562,000	

*100% to be used for Dollar Costs of the Project.

5. PROJECT DESCRIPTION: The installation of a central station power plant (with diesel generation) and construction of a distribution system to serve the community of Pedro Juan Caballero in northeastern Paraguay. The project will provide immediate electric service (by 1970) to this most rapidly growing interior city, while longrange hydroelectric power sources continue to be explored.

6. PURPOSE OF PROJECT: The proposed ysytem will serve the following purposes:

(1) Provide an immediate source of electrical energy to the rapidly growing agricultural and commercial center of Amambay,

(2) thereby fomenting additional investment and economic expansion,

(3) raising the standard of living for many residents through public lighting and the availability of electricity for private homes. The estimated number of consumers in 1970 is 791, growing to over 1500 in 1972.

(4) The system will provide capacity and energy sufficient to meet the load demands from 1970-1973 as forecast by ANDE and AID consultants.

7. ALTERNATIVE SOURCES OF FINANCING: The EXIMBANK and InterAmerican Development Bank have indicated that they are not interested in financing the project. The proposed interest rate on external financing precludes the possibility of obtaining conventional bank financing.

8. VIEWS OF COUNTRY TEAM: The Country Team strongly recommends approval of this project as a high priority element in the development of Paraguay. Early affirmative action on this proposal is recommended in view of the long history of U.S. involvement and delays; and the considerable advantages which a successful project would mean to all parties.

9. STATUTORY CRITERIA: All statutory criteria have been met.

10. PROJECT JUSTIFICATION:

a) Studies conducted by ANDE and NRECA specialists (see Section I) confirm the demand for immediate generation of 766 KWh in the area. A market analysis is located in the Economic Section of this paper.

b) In order to meet the present demand the system should be of thermal generation. Hydro development which still remains a possibility in the area will be more costly and could not deliver power for several more years, given the delays required to obtain adequate water flow data and the more lengthy construction period.

c) Electrification of Pedro Juan Caballero has been given priority by the Country Team and ANDE for these reasons:

(1) It is the fourth largest city in Paraguay and is the fastest growing interior city. It is the only major city without a power system.

(2) Its development is consistant with the objectives of avoiding overcentralization of population around the capital and promoting the colonization and development of rich agricultural lands of the interior.

11. RECOMMENDATION: Authorization of a loan to ANDE not to exceed four hundred and seventy-four thousand U.S. dollars (425,000) to be guaranteed by the GOP and repayable at 5% interest over 25 years including a five year grace period on amortization. The proposed loan should be subject to the additional conditions set forth in the draft Loan Authorization, ANNEX V.

Project Committee: Loan Officer: Ronald A. Clark, USAID/P
Coop. Specialist: James Roff "
Economist: Edward T. Costello "
Program Evaluator: Claire Dodson "

Drafting Officers: Ronald A. Clark, James Roof, Edward T. Costello

Revised June 1969 by Ronald A. Clark and Chris L. Schultz, LA/DR EngD.

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June 25, 1969

PARAGUAY - PEDRO JUAN CABALLERO ELECTRIFICATION PROJECT

SECTION I - HISTORY AND BACKGROUND

In response to a request from the community of Pedro Juan Caballero (PJC) and the GOP, USAID/Paraguay made available the services of L.E. Weaver of the National Rural Electric Association (NRECA) in 1964 to survey the prospects for rural electrification in Paraguay. His report dated November 9, 1964 recommended that a pilot REA" project to be development in PJC. As a result, Task Order 49 was established between USAID and NRECA to develop a program for REA cooperatives in Paraguay and specifically to study the PJC area.

On October 31, 1965 the Cooperativa Eléctrica Amambay Limitada (CEAL) was organized and received its charter form the GOP Ministry of Agriculture.

A phase II report by Charles Halcomb of the NRECA provided guidelines for the organization of CEAL and described its legal relationship to the Administración Nacional de Electricidad (ANDE), the national electrification agency. The report also outlined the potential electricity service area for a project in Pedro Juan Caballero. The Halcomb paper also includes resumes of the then current officers of the cooperative, most of whom are still active in the promotion of the project.

Based on these initial NRECA studies it was concluded that a hydroelectric system would be most feasible to supply low cost central station power to the area. A further study was submitted in April 1966 by Mr. Sjoberg of NRECA. This phase III study details the costs, payments, financing, and engineering features of an electric project. This report was presented in June of 1966 along with a report by the consulting team of Caldwell Richards and Sorensen which concentrated on the engineering features of a hydroelectric generating system.1/

In the Richards-Sorensen study it was concluded that it would be necessary to collect more adequate data on the water flow at the two proposed dam sites (on the Aquidabán and Ypané Rivers). After consultation with AID/Washington it was determined that measurement of water flow over a period of two years would be necessary before the project could be shown to be feasible. Equipment for measuring water flow was ordered in February, 1967 and received in April with some parts missing. For this an others reasons it was not until October, 1967 that a contract with ANDE was signed for installation and supervision of the water meters.

In view of the length of time that would be necessary before the feasibility of a hydroelectric project would be apparent it was mutually agreed by USAID, ANDE and CEAL that the feasibility of a thermo-electric generating system should be established. If feasible, it could be the first step in a two step project with future power to be provided by a local hydroelectric system or the importation of a Brazilian power. Accordingly, in November and December of 1967, the Mission undertook an economic feasibility analysis of the area and the proposed system while ANDE began the technical feasibility study which was completed in March 1968. It is these two studies that form the basis for this loan proposal.

1/ All NRECA studies referenced herein are available in the files of AID/W and were reviewed by the LA/CD engineering staff when submitted.

Studies on the water flow in the two rivers and discussions with USAID/Brazil on the possibility of obtaining electricity from the Brazilian Urubupungá complex are continuing. However, at present neither source can provide power to the region. As discussed earlier, the dams will be considered once adequate water flow data shows the availability of sufficient quantities water through all seasons, but these findings will not be available for 2 more years. In the case of Brazilian power, some direct contacts with the Brazilians and communications with USAID/Rio indicates that extending power to Ponta Porá within the next few years is not likely, largely due to the scarcity of local currency. However, the results of these investigations should constitute a foundation for future efforts to organize the second stage of the project when the level of demand grows sufficiently to warrant a establishment of a more permanent supply of power.

The Project consists of the establishment of a central station thermo-electric power generation and distribution system in the Paraguayan community of Pedro Juan Caballero (PJC). This Community, on the Brazilian frontier in north-eastern Paraguay is the fourth largest population center in the country. It is also the fastest-growing interior town and the only one of any size with no electric power system. A fuller description of the community and proposed service area is found on page 11.

The purpose of the Project is to provide electric service to major agro-industrial producers; public institutions and smaller consumers near the City Center and to expand the system rapidly as population and consumer demand grow.

The facility is to be built on a 26,500 sq. ft. site near the point where the principal access road enters the town. Two buildings are planned, including the engine room and generation control building (100 sq. mtrs.) and an office and warehouse combination (104 sq. mtrs.). The buildings are to be of simple design and will be constructed mostly of inexpensive local materials. ANDE project number 010-40,000-3642/2 contains general standards and construction specifications for use in building these structures. The Borrower has available all necessary construction equipment. It is noted that the undertaking is rather modest. No cranes or other large heavy construction equipment will be needed.

Initally, ANDE proposed that there be a generation capacity of 800 KW using 2-400 KW steam boilers, and 400 KW steam turbine generator with a 400 KW diesel stanby and peak-demand generator. AID/W raised substantial objections to the planned use of a wood-burning system during its Internal Review of this project. These objections were based on a lack of showing that the taking of wood in such quantities as would be required could be done without undue loss of valuable forest resources and opinions of engineers and other technicians that an all diesel system would be preferable. As a result the project was revised to an all-diesel system.

Power will be generated by two more standard-sized engines of 500 KW capacity. The engines will be mounted on steel bases in the power house, which will also hold accessories and control equipment. Specifications for the engines and generators are detailed in the ANDE plan. For a discussion of engineering considerations see Section IV of this paper.

The generating capacity is based on the Borrower's estimate of consumer demand (see Exhibit 4 of ANNEX III). As analyzed in the Economic Section of this paper (pages 19-23), the Project Committee found the Borrower's estimates to be well-calculated. In brief, it is calculated that the total consumption of power will climb from 771 KW in the first year of operation to 2.519 KW in the seventh year. After taking into account the load factor, peak power demand is expected to grow from 318.3 KW the first year, to 945.8 KW in the seventh year. Therefore, barring more rapid growth of consumer demand, the 1000 KW plant should be able to service consumers through the sixth year without further investment to expand generating capacity. The Borrower has included in its cost projections a 50% expansion of generating capacity in the sixth year of operation.

It should be noted that the load pattern used in estimating demand and production levels is based on field investigations in the service area and actual load curves in Paraguayan towns with characteristics similar to PJC. These curves show maxi-

mun demand for very short periods each day with dramatic peaks in consumption during early evening hours. Thus, while one 500 KW generator should meet expected peak demands initially the second generator will be available to provide back-up service during the start-up period and will be needed regularly within two and a half years when demand will pass the 500 KW level.

The total cost of the project is estimated to be $562,000 equivalent. Of this, $425,000 will be provided by an AID development loan. It is proposed that repayment be made over 25 years at 5% interest including a 5-year grace period on principal payments. The residual $137,000 and any additional funds needed will be contributed by the Borrower (ANDE). The Borrower will be required to provide a financial plan and evidence of local cost commitments satisfactory to AID prior to first disbursement of the loan funds.

A discussion of financial considerations is found in Section VI below.

SECTION III - THE BORROWER

The proposed borrower of the AID loan is ANDE, the national electric power agency in Paraguay. Exhibit II of the Phase II report by Halcomb of NRECA dated May 6, 1966 describes in detail Law 966 which created the agency and sets forth its powers and functions. Basically, the agency is run as an autonomous entity within the GOP. It is charged with the responsibility of providing electric power to the communities of Paraguay and is given authority to set rates and license public power systems.

The borrower is the principle supplier of electric energy in Paraguay and has grown rapidly and increased its services dramatically since it was established in 1955. The efficient distribution system in the capital area compares well to most systems in Latin America. ANDE's competent handling to date of the ambitions ACARAY hydroelectric generation and long-range distribution system attests to the high quality of management of the agency.

ANDE generally is considered by members of the country team to be one of the best organized and operated agencies in Paraguay. Headed by Engineer Debernardi, the agency has demonstrated its ability to avoid debilitating political involvement and yet it enjoys the full backing and support of the GOP.

Some indication of the standing of this agency is reflected in the record of lending by the Inter-American Development Bank. IDB has given two loans each for more than $14 million ($14,500,000 and $14,150,000) for the 180,000 KW Acaray system in eastern Paraguay.

Among other divisions ANDE maintain a staff of competent electrical and civil engineers, most of them educated and trained in Europe or the United States.

The agency is currently operating a 35,000 KW thermal generation and distribution system in Asuncion. The long range development scheme of ANDE includes a high tension distribution system to tie in with the Brazilian network in the State of Paraná and a similar connecting line to serve the Misiones district of Argentina. These international features of the ACARAY development represent a major step toward regional integration of the economies of the three nations.

For Paraguay itself, the ACARAY development will mean more efficient power for the capital and in a few years will make electricity available for the first time to 43 large communities in the heavily populated triangle southeast of Asuncion.

While Acaray power cannot be made available to smaller towns and outlying cities for many years to come, ANDE is planning a program to assist isolated and smaller communities with thermal generation systems, based largely on the work done to date by the Agency and the citizens of Pedro Juan Caballero.

The Borrower's Request, a letter from Engineer Debernardi, President of ANDE, in addition to requesting the proposed loan for the PJC project, includes a request for an additional $981,400 in A.I.D. funds to finance the above mentioned program. This request was discussed on the staff level in Washington and it was decided that the plans for the electrification of other small towns did not meet the requirements of FAA Section 611. Therefore, the present loan proposal is limited to meeting the demand for electricity only in the community of Pedro Juan Caballero. A copy of the Borrower's Request is presented as ANNEX IV.

The Borrower proposes that the cooperative (CEAL) described in Section I, should continue to play a role in the implementation of this project. CEAL was unable to raise more than $30,000 equivalent, and recognized that it was incapable of carrying out a project of this size. Therefore, at a meeting in PJC on May 6, 1968 with ANDE and USAID officials, the Directors of CEAL endorsed the ANDE project proposal. There was also a tentative agreement that in order to encourage rapid expansion of the system, CEAL would constitute itself as a financial agency to assist marginal consumers in defraying the initial costs of installing electricity in their homes. CEAL will use its ₲2 million ($30,000) as a revolving loan fund. The less affluent homeowners will be eligible to borrow the cost of internal installation (estimated to average ₲4,000 - ₲6,000 ($32-48) for modest homes. In this way initial consumption should be maximized and marginal (medium to small income) homeowners who can afford the ongoing cost of electricity but who might be detered from starting service will be able to hook-up much sooner. While not essential to the success of the Project, USAID/P has encouraged continued cooperation between the GOP and community leaders and sees this arrangement as a way to maintain public interest in seeking improvements and recognize the important role CEAL played in initiating the Project.

ANDE is hopeful that this concept of community contribution and participation in installing thermo-electric systems will be workable in other isolated communities as well, in the future.

The financial status of the Borrower was reviewed with the Division of Project Analysis of the IDB. The finding was that ANDE is in very good condition, with adequate reserves and a reasonable debt-equity ratio. Over half of the liabilities consist of debt servicing to the IDB for the ACARAY hydroelectric project and most other debts consist of credits from suppliers of equipment for that project. With a $488,000 increase in revenues and a sizeable reduction in operating costs, ANDE's net income, before debt servicing is accounted for, rose $553,000, equivalent during 1968. The net increase in cash available rose by $320,000 during the year. Based on an analysis of the independent audit report covering CY 1968, the Borrower appears to be in sound financial condition and capable of undertaking the proposed project. [See financial data in the supplement to ANNEX II.]

SECTION IV - ENGINEERING ANALYSIS

A. Description of Project

This project consists of the construction of a 1000 KW diesel-electric generating plant and the distribution facilities needed to serve an area of approximately 3 square kilometers containing 150 square blocks in the town of Pedro Juan Caballero. The electric service will be made available to major agro-industrial producers, public institutions and small residential consumers near the center of town. The distribution system will consist of approximately 1 km of 23 kw primary line and 6 km of 220/380 volt secondary line. The power plant consisting of 2-500 kw diesel-electric generating units will be located at the edge of town. It is expected that during the first year of operation a total of 791 users will be served having a system demand of 320 kw. At the end of 10 years of operation it is estimated that there will be over 2700 users having a total system demand of 950 kw.

B. Engineering Analysis

1. Studies

a. There is no central station electric service in Pedro Juan Caballero. A number of privately owned generators in and around the town are the only sources of electric energy. A study was made of the feasibility of forming an electric cooperative to serve the Pedro Juan Caballero area in early 1966. This study made by NRECA under PIO/T 526-050-3-6008 Task Order No. 49 to the AID/NRECA contract AID/csd 225 determined that a feasible project could be developed with power to be supplied from a hydro-electric plant to be built as a part of the project. However, the feasibility of the hydro-electric plant could not be established definitely until water flow records were obtained to substantiate the assumptions made by the hydro-electric engineer.

Because of the time required to obtain these water flow records, ANDE wished to proceed with the electrification of Pedro Juan Caballero using a thermal source of electricity until such time as a hydro electric plant could be supported technically and economically. Consequently, ANDE in 1968 prepared a Technical and Economic Feasibility Study of a project to serve a concentrated portion of the town of Pedro Juan Caballero. This study proposed the use of a wood-fired steam generating plant in conjunction with diesel-electric generation, a plan which A.I.D. did not consider to be technically satisfactory and requested the study be revised to reflect the use of all diesel-electric generation. In the time available to ANDE to make the required revisions it was unable to provide a detailed study to support its planned project. Nevertheless sufficient engineering data is available in the original ANDE feasibility study to allow AID to make an adequate analysis of a project using a diesel-electric generating plant to serve the area over the proposed distribution system.

2. Engineering Plan for Execution of Project

a. Engineering Services

ANDE will be responsible for the engineering services in connection with the design and construction of the power plant and distribution lines. ANDE is qualified in this respect since it has done similar work in the design, construction and operation of its facilities throughout Paraguay. The designs prepared by ANDE will be subject to review by AID before construction proceeds.

b. Design and Construction Standards

The power plant will be designed in accordance with similar plants of ANDE. Similarly, the distribution lines will be designed and constructed to the standards used by ANDE in its distribution facilities in Paraguay. ANDE standards are similar to those used by the electric utility industry in the U.S.

c. Construction

Construction of the power plant and distribution facilities will be done by local personnel under the supervision of experienced ANDE technicians. It is expected that the U.S. supplier of the diesel-electric engine/generator will provide installation supervision of that equipment as a part of the equipment contract. The construction of the lines is not complex and no difficulty is expected in that regard.

d. Technical Feasibility

The primary distribution voltage of 23 kv is an ANDE standard voltage as is the 220/380 volt secondary supply. The projections of consumer demands is based on field investigations made during the preparations of the various feasibility studies and adjusted to reflect the experience of ANDE in serving comparable Paraguayan towns under similar conditions. The projections appear to be conservative and the proposed generation and distribution facilities will be adequate to serve the estimated loads. The distribution primary system has sufficient capacity to be expanded without expensive rebuilding if the load growth exceeds the estimate rate within the next ten to fifteen years. The generating plant can be expanded as necessary to provide additional generating capacity.

Cost estimates were based on U.S. experience insofar as the generating plant is concerned with some increases to reflect local conditions.

The cost of the distribution facilities is based on cost estimates experienced by ANDE in its own construction and the costs developed in the NRECA study. A detailed breakdown of the distribution facilities is given in ANNEX III.

The major components of the generating plant will be obtained from the U.S. With the exception of poles which are available locally, all materials and equipment for the distribution facilities will be obtained from the U.S. manufactured to U.S. standards.

Engineering reports and plans submitted in support of the request for AID funds are in sufficient detail to indicate the project is technically sound. Cost estimates of the distribution line and power plant were developed in a logical manner and can be considered reasonably firm. No changes will be required in the plans submitted for the distribution facilities and warehouse. The design of the power plant will need some modification for all-diesel operation. This is not a major problem because the complex steam boiler and turbine components will be eliminated and the proposed diesel-electric generating section expanded to include the additional diesel-electric facilities. Therefore, the requirements set forth in FAA 611 (a) (1) have been met.

e. Retail Rates

The retail rates to be placed into effect will be those established in Asuncion in accordance with the policy of ANDE to maintain the same rates for electric service throughout Paraguay. Because of the isolated operation of the Pedro Juan Caballero facilities it is likely that the rate schedule will not provide sufficient revenues to make this isolated operation self-sufficient until the system is expanded to serve the entire Pedro Juan Caballero area. ANDE has agreed to absorb the difference in revenues and cost of operation until such time as the system is self sufficient.

f. Operation of Project

The Pedro Juan Caballero system will be operated by ANDE as a part of its distribution facilities in Paraguay. As such it has personnel qualified in utility management and operations which can be assigned to the system.

D. Supporting Facilities

In addition to the power plant building a combination office and warehouse building will be constructed adjacent to the power plant. All construction costs including material will be financed from local currency contributions. Cost estimates were made on the basis of experience in building similar buildings in Paraguay.

SECTION V - ECONOMIC ANALYSIS

A. SERVICE AREA

Pedro J. Caballero, (PJC) is located in the Northeast portion of Paraguay adjacent to the Brazilian border town of Punta Porá. The two towns have a combined urban population of about 29,000 and are divided by a wide avenue which serves as the international border. Although commerce between the two cities is supposed to be limited to normal household items there is no surveillance of the border and goods and traffic of every description move freely across the border. The Brazilian cruzeiro and the Paraguayan Guaraní circulated freely in both towns.

The proposed service area for this project consists of urban PJC which covers 3 squares Km. and contains 150 square blocks and about 3,000 dwellings (see Map 1).

In contrast to Pedro Juan Caballero, Punta Porá has had electricity since 1928 when a 90 KWH (72 KW) turbine was installed. Over the years the capacity has been increased and is now 1,080 KVA (864 KW) but this is still insufficient for the needs of the town. The Punta Porá system has 1,200 users which represents about 40% of the dwellings in the town, and sells 170,000 KWH monthly.

The only sources of power now in the PJC area are privately owned generators which have an estimated combined capacity of 276 KW, and industrial engines totalling 300 HP. (223 KW). Outside the service area several large agricultural processing plants produce an additional 224 KW. The cost of producing this power is estimated at Gs.20-25 (16-20 cents) per KWH.

B. POPULATION

Pedro Juan Caballero is the capital and largest city of the Department of Amambay. The Department is a relatively underdeveloped area of some 5,000 square miles. According to the official census of 1950 (See Table I) the Department had a population of 18,160 with 11,514 or 63% living in the PJC District (approximately 1/3 of the area). The 1962 census showed that the population of the Department had increased to 34,505 or 75% of the Department.

The figures indicate that between 1950 and 1962 the urban population of PJC grew from 3,968 to 10,355 or an increase of 161% (8.32% compound rate per year). At the same time the rural population of the District of PJC increased from 7,546 to 15,570 or an increase of 106% (6.21 per year compounded).

Concentrating on the change in urban population, and comparing it to changes in other Districts, Table II indicates that only two areas, both suburbes of Asunción, have exceeded the rate experienced by PJC. Therefore, PJC is the most rapidly growing urban center of the interior. The changes in population of PJC since the last census can only be estimated. In early 1966 Sjoberg estimated the population to be 16,000.[a] In mid 1967 the Municipality of Pedro J. Caballero estimated the population at 20,000.

TABLE I

POPULATION OF THE DEPARTMENT OF AMAMBAY

1950 and 1962

	Census of 1962			Census of 1950		
	Total	Urban	Rural	Total	Urban	Rural
Amambay	34,505	12,943	21,562	18,160	5,662	12,498
P.J. Caballero	25,925	10,355	15,570	11,514	3,968	7,546
Capitán Bado	3,968	257	3,711	2,872	210	2,662
Bella Vista	4,612	2,331	2,281	3,774	1,484	2,990

Source: Boletín Estadístico del Paraguay, Dec. 1966, p. 68.

TABLE II

THE GROWTH OF URBAN CENTERS IN PARAGUAY

1950 and 1962

Name			Percent change
Capital	201,340	288,882	44 %
Villarrica	14,680	16,121	10 %
Encarnación	13,321	18,745	41 %
Concepción	14,640	18,232	24 %
Coronel Oviedo	5,804	9,468	63 %
Pilar	5,061	5,317	5 %
Fernando de la Mora	1,752	10,194	482 %
Caacupé	3,739	6,329	69 %
Lambaré (urban and rural)	4,094	20,778	408 %
Villa Hayes	2,242	4,712	110 %
Pedro Juan Caballero	3,968	10,355	161 %

a/ Paul J. Sjoberg, Engineering and Economic Feasibility Study for C.E.A.L., Phase III Report, April, 1966.

Source: Boletín Estadístico del Paraguay, Dec. 1966

If one applies the inter-census growth rate of 8.32% to the years since the last census then the 1967 population would be 15,215 and in 1968 it would reach 16,481. Since this estimate is considered to have as much authenticity as the others, and since it is a relatively conservative one, the 1967 figure is used later when forecasting the demand for electric power.

C. GEOGRAPHY AND CLIMATE

PJC and the surrounding area is relatively level. Approximately 20 Km. west of the city the land becomes rolling and in some places is quite hilly and rough. The elevation of the city is 2,000 feet (645 mts.) above sea level, while some elevations in the hilly portion approach 2,500 feet. The soil in the level portion has a very low Ph content and is not suitable for farming without soil improvement. The hilly area where all of the agricultural activity is located is of good soil quality and is devoted to the cultivation of wheat, yerbamate, beans, dry rice, corn, and coffee. The soil in the level area is quite sandy with a water table from 1 to 20 meters below the surface. This should be a great potential for irrigation as electric power becomes available.

The climate of PJC can be compared to that of central Florida. Summer highs and lows vary between 18° and 30° centigrade, while winter variations range between 5° and 27°. Freezing or frost conditions occur every few years damaging some crops, notably coffee. The average rainfull is about 61 inches, and is fairly well distributed throughout the year, and because the area is well drained presents no flood problems. Severe windstorms are uncommon in the area and frost or ice will not offer problems for power line construction. Lightning is moderately severe during thundershowers and adequate protection of electrical facilities must be considered.

D. TRANSPORTATION AND COMMUNICATIONS

PJC is connected by Route V, a recently improved dirt road, to the river port of Concepción (1962 pop. 18,232). Until the recently completed (June 1967) Pedro J. Caballero-Coronel Oviedo road was open, virtually all of PJC's commerce passed through the port of Concepción for shipment downriver. However, with the new overland route the time and expense of shipment between Asunción and PJC has been considerably shortened, while at the same time the marketing area for the zone's products has been considerably widened. At Coronel Oviedo, 403 Km. south of PJC, one encounters the Asunción-Pto. Pte. Stroessner Highway which runs west to Asunción and east through Paraguay and Brazil to the Atlantic port of Paranaguá where Paraguay has free port privileges. Hence, the completion of the Coronel Oviedo-PJC route has provided PJC with a variety of transportation alternatives and put it in touch with major export centers. PJC is also served by an airline operated by the military (Transporte Aereo Militar) which furnishes round trip service between Asunción and PJC 5 times weekly at a very reasonable price (approximately $20 round trip). The airfield is of

dirt (grass) construction with no navigational aid facilities. There are long-run plans for moving and improving the airport, but at this time no concrete information is available. Decision has been made on the GOP's request for U.S. assistance.

PJC has telegraphic connections with other major cities of Paraguay. At the time there is no public telephone service in the town. The army does have a telephone connection with Concepción (214 Km. to the West), but reception is poor and unreliable.

The adjacent Brazilian town of Punta Porá also has an airfield and has service to the major Brazilian cities. Punta Porá is linked with the Brazilian highway system extending north into Matto Grosso, and east toward the State of Sao Paulo. The Brazilian Railroad also connects Punta Porá with Campo Grande and the main track of the Brazilian Nortwest Railway running from Sao Paulo through the State of Matto Grosso to Corumbá (on the Paraguay River).

Some 80 Km. to the northwest of PJC is the Paraguayan border town of Bella Vista where, under a recent agreement, the Brazilian government will construct a bridge over the Rio Apa and Paraguay will widen and improve the road from Route V to Bella Vista. The bridge and road will complete another important link of the Brazilia-Asunción highway, and will place the Department of Amambay at the cross-roads of Brazilian-Paraguayan commerce.

E. AGRICULTURE

1. Coffee. The oldest and most important agricultural activity in and around the district of Pedro J. Caballero is coffee growing and processing. Since virtually all of Paraguay's coffee comes from this area, and since virtually all of it is exported in the form of untoasted beans, the national data on exports can be used as indicators of production in the Pedro J. Caballero area [a]. The following Table presents these figures from 1961.

COFFEE EXPORTS, PARAGUAY 1961-1967

(Metric tons)

Year	Total	Green Beans	Toasted Beans
1961	1,810	1,810	-
1962	5,269	5,266	3
1963	6,162	6,138	24
1964	4,953	4,936	17
1965	5,417	5,199	217
1966	2,856	2,850	6
1967	2,385	2,299	86

Recently, the International Coffee Association awarded Paraguay an annual export quota of 70,000 sacks (4,200 metric tons). Due to frost damage, the harvest in 1967 is only expected to reach 20,000 sacks, while that for 1968 is estimated at 50,000 sacks. Hence, for the next two years, at least, all of Paraguay's production of coffee can be exported under the quota. Also, over the period from 1961 to 1965 the average yearly harvest has been about 4,600 tons. Hence, so long as the present quota is maintained, Paraguay should be able to export most of her coffee production.

However, one of the conditions to receiving the quota was that Paraguay assure the commission that the number of trees planted would not be increased. Assuming that this condition is adhered to, the exports of coffee can be expected to level off (aside from losses caused by frost) within the next several years. Hence, although coffee cannot be counted on as a growth-oriented industry, it should continue to play an important although relatively declining role in the economy of the area.

2. Yerba Mate - "Mate" (tea) the national drink of Paraguay is made from the dried leaves and twigs of the Ilex Paraguayensis tree. The product is cultivated extensively in the department and is exported in its crude state although some drying and toasting is done in the area. Much of the yerba mate from the area is consumed within Paraguay with the remainder being exported to Argentina and Brazil. At the present time the production of yerba mate in the area is about 1,300 tons annually. Unlike coffee, yerba mate is not affected by frost and as a result there are no violent fluctuations in production. Exports, however, are determined in large part by Argentine import quotas. Mate exports in 1966 were 13,074 tons as compared to 6,495 tons in 1962, or an increase of a 100% in 4 years, but fell sharply to 4,971 tons in 1967. Because of the growth of substitute beverages the long run prospects for yerba mate are not particularly promising. However, the growing of tea is receiving greater emphasis, and given the similarities of the two crops, it is likely that tea growing will tend to replace mate production.

3. Soybeans - The next most important product in the zone is soybeans from which soybean oil is extracted. There are approximately 1,500 hectares of soybeans under cultivation with yields averaging between 1,500 and 2,000 kilos per hectare. The official figures of the Central Bank do not show any soybean oil exports, as such. However, a small quantity of soybean cakes (animal food) is exported (1,198 tons in 1966) and the largest oil processing plant in Paraguay is giving added emphasis to soybean oil production and is expanding its processing facilities.

4. Dry Rice - In the PJC zone there are about 2,000 hectares of dry rice - a variety which does not require irrigation and closely resembles wheat.

At the present time yields vary between 1,500 and 2,000 kilos per hectare with all production being consumed locally. Given the shortage of cereals and the popularity of rice in Paraguay, the prospects for rice production are quite good. Also, even if the internal markets are satisfied, an unlikely prospect in the foreseeable future, there is a potential export market for rice.

5. Wheat - At the present time wheat is the most promising crop in Paraguay and one which is receiving priority emphasis from Paraguayan and international institutions alike. (See AID Agricultural Credit Loan Paper (Second Tranche) May 1968). In 1966 there were about 1,500 hectares of wheat under cultivation in the zone, with the 1968 area expected to reach 2,000 hectares [a]. Due to the introduction of several new high-yield disease resistent varieties yields have been increasing from 1,000 to 1,300 - 1,500 kilos per hectare.

Virtually all of the wheat produced in the zone is ground, processed and consumed locally. The future prospects for wheat are very good. Since 1959 Paraguay has been importing wheat and flour at the rate of $ 4 to $ 7 million per year and at the present time domestic wheat only provides about 10% of the nations requirements. In 1966 wheat imports represented about 9% of total recorded imports, and required an amount of foreign exchange equivalent to earnings received from the sale of all oleaginous oils.

6. Other Crops and Agricultural Products - Aside from the crops listed above, the zone also produces a considerable quantity of corn (3,000 hect.), and a type of bean (habilla) which is a staple in Brazil, and for which there is considerable demand. High quality fruits and vegetables are raised in quantity in the Japanese Colonies about 20 Km. away and sold through several agricultural cooperatives in the city. Farm animals (hogs, chickens and cattle) are raised in the area for local consumption, but are not considered important cash crops. Only one-tenth of one percent of Paraguay's cattle are located in the entire department.

7. Timber Products - In the Pedro J. Caballero zone there are extensive stands of timber. The most plentiful varieties are Lapacho and Peroba. Lapacho is a strong high density wood which is used extensively for construction purposes. Because of its hardness and strenght it is virtually rot and insect proof and is used in its untreated form for fencing and utility poles. Peroba, also a hardwood, and also found in the zone is primary suited for interior use. At the present time considerable quantities are exported to Brazil and used for doors, windows, and parquet flooring.

Conclusion - Pedro J. Caballero is the center of an important and growing agricultural region. The city can be expected to expand as production increases, and, as electricity is introduced into the city, become more and more important as an agricultural staging, processing, and exporting center.

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a/ The goal of the National Wheat Program is 20,000 hectares in 1968, PJC is expected to account for 10% of the total.

One indication of the importance accorded to agriculture, and agricultural based industries is the amount of credit which P.J.C. branch of the National Development Bank (the only bank in town) has supplied to the area. The following table indicates, that with the exception of 1966, loan activity has been increasing rapidly. The 1967 agricultural loans are expected to exceed those of 1966 with wheat loans (for machinery and seed) receiving added emphasis.

TABLE III

Loan Activity of the National

Development Bank in Pedro J. Caballero, 1964-1967

(In Thousands of ₲s.)

	Agricultural b/	Industrial/Comm. c/	Total
1963 a/	434	N.A.	N.A.
1964	11,432	5,770	17,202
1965	31,082	22,493	53,575
1966	19,994	40,000	63,994
1967 (first 6 mos.)	9,050	32,400	41,450

a/ Loan activity was begun in 1963
b/ Medium term (1-2 years)
c/ Short term, mostly 90 days

F. INDUSTRY AND COMMERCE

1. Coffee Processing - The industry in and around Pedro J. Caballero is basically agriculturally oriented. The largest single industry is coffee processing. In the service area itself there is one large processing plant with its own electric generating capacity of 56 KW. This plant employs 30 people and processes the coffee from two plantations (720,000 trees). The plant generally operates 24 hrs. pr. day during the 4 or 5 month harvest season. Along the route to Concepción, 12 to 15 Km. from PJC, there are 4 other coffee processing plants whose average size is about the same as the one located within the city. Although not scheduled to be hooked up to the proposed central power system initially, it is expected that within several years power lines will be extended to include these processing plants.

As indicated earlier, coffee production should level off in the near future, so the growth possibilities of these industries is limited. However, they will continue to be the basic industries of the town and large users of electric power.

2. Lumber - The next most important industry in the area is lumber and wood products. In mid 1967 there were nine sawmills in the zone, 5 of which were within the service area with a combined electricity generating capacity of 89 KW. These sawmills are typically joined to a carpentry shop where windows, doors, and furniture are manufactured.

Because of the heavy demand for building materials (80% of the houses in the area are of wood construction) all of the production is used locally. There are excellent stands of timber in the hilly portion of the zone, and along the main highway leading to Concepción. The sawmills and carpentry shops are expected to be the most consistent users of electric power since their operations are not seasonal.

[redacted]

3. Grinding Mills - Within the service area are six mills which grind or process wheat, rice, corn and mate and which have a combined power potential of 134 KW. In the surrounding agricultural areas there are approximately 15 other such establishments which use either animal power or small internal combustion engines. In the earlier discussion of agricultural production in the zone it was shown that cereals is a growth-oriented industry. As this production increases the industries which process these products will grow accordingly, as will their demand for electric power.

4. Service and Commercial Establishments - Within the PJC-Punta Porá area there are the usual commercial and business establishments which one would expect to find in any metropolitan area of 29,000 inhabitants. In the service area there are 29 major commercial enterprises, including food and clothing stores, restaurants, repair shops.

There are also 215 minor establishments which are typically located in private dwellings and deal in provisions and personal services.

Concerning the ability of the area to support a growing commercial sector little data is available. The loan data presented in Table III indicates that loans to both the commercial and industrial sectors (no further breakdown is possible) have increased markedly since 1963. Savings data, which should give at least an indication of the growth of income in the area, is presented below and indicates that savings (deposited in the BNF) have been more than doubling every year since 1963.

Savings Deposited in the
Pedro J. Caballero Branch of
the BNF., 1963 - 1967

(Thousands of ₲s.)

Year	Amount
1963	141.9
1964	574.1
1965	1,364.5
1966	3,014.0
1967 (first 6 mos.)	3,667.1

Some of these savings are of Brazilian origin since the guaraní has been stable while the cruzeiro has not. However, regardless of the origin of the savings, the important thing is that savings, and presumably income, have been increasing markedly in the area and every year there are more savings made available for investment purposes. So long as this trend continues, and there is little reason to think it will not, the economy of the area should continue to experience the beneficial effects of increased investment.

G. Demand for Electric Power in Pedro Juan Caballero

The development of sound estimates of present and future consumer demand was a critical phase in the preparation of this proposed project. Before presenting USAID's calculations, which were employed by ANDE in making the cost projections of the project, it may be useful to summarize the approach taken by the USAID economist and technical staff.

Two categories were identified and calculated separately: residential users and industrial users.

1. Residential Users

A direct public survey of potential residential demand was not employed because of the workload it would have entailed to obtain sufficient samples to offer a basis for designing the project. It was also felt that until the project was approved, local expectations should not be raised any more than necessary, especially in view of the history of this project and its delays.

The approach taken was as follows:

1. population estimated and growth projected,
2. number of dwellings calculated and projected,
3. probable percentage of residential users established,
4. types and number of industrial users projected,
5. type and quantity of power identified, by user category,
6. total power demand projected,
7. hours of use and peak load requirements estimated and projected.

Population of PJC

As indicated in Section VI-B above, USAID considers the best estimate of population in PJC to be the 1962 Census figure (10,355) projected by applying the intercensus growth rate (8.3% per year).

However, since this estimate provided the basis for calculating consumer demand and therefore could affect the feasibility of the entire project a conservative approach was taken. A compund growth rate of 8% was applied for the years 1962-1967. This was justified on the basis that PJC has continued

to experience rapid growth to date and there has been no noticeable drop off in the level of new activity. However, for the years 1968 - 1972 a 5% rate has been assumed, with the projected rate fropping to 4% for years 1973 - 1979.

Thus, the population projections for the period studied by ANDE (in designing the project system) are:

Year	Population
1970	16,775
1971	17,614
1972	18,945
1973	19,420
1974	20,197
1975	21,005
1976	21,845
1977	22,719
1978	23,628
1979	24,600

Number of Dwellings

The 1962 Census indicated that the average number of occupants per dwelling in the urban area of the Department of Amambay was 5.3. At that time PJC had 80% of the urban population of the Department. Therefore the 5.3 ratio was employed in USAID calculations and resulted in these projections:

Year	Dwellings
1970	3165
1971	3323
1972	3490
1973	3664
1974	3881
1975	3963
1976	4122
1977	4287
1978	4458
1979	4640

Number Residential Users (Consumers)

In his study Sjoberg estimated that 1,525 dwellings, including residences and business houses, would purchase power in the first year of service. If his population estimate of 16,000 is divided by the 5.3 figure, we find that Sjoberg's calculations were on the basis of 3,019 dwellings. Therefore, for his estimate of users to be valid, 50.5% of the dwellings would have to be hooked-up the first year. This percentage seems much too high.

In contrast, in ANDE's study of the electrification of 42 towns in the interior, it was calculated that only 8.6% of the existing dwellings would be serviced the first year. However, ANDE itself agrees that the initial demand in PJC will be much higher since there are already many houses and businesses in the city which have electricity supplied by small privately-owned generators. These present users are expected to purchase less expensive public power and the lower price is also expected to attract many new consumers who either have been unable to invest in a generator or found the cost of maintaining one prohibitive. Both ANDE and the cooperative have agreed that the initial hook-up charge should be kept as low as possible to encourage wider subscription. These factors and the fact that the community of PJC has displayed growing wealth led USAID to estimated that 25% of the buildings will be connected within the first year of service.

To project the expansion of the system over the first ten years, the first three of which will be financed by this project, USAID relied modified the studies done by ANDE in accordance with specific conditions in PJC. According to ANDE calculations, after 10 years 70% of the buildings would be electrified.

USAID technicians considered this figure too high to be applied to the present project, primarily since the ANDE study contemplated the sale of lower priced hydro-power. It was also noted that in Asuncion, which has had ANDE supplied power for many years, the proportion of dwelling electrified is between 50 and 60 per cent. Therefore, it has been calculated that a maximum of 60% of the dwellings would be electrified after 10 years. Starting with 25% and adjusting the proportions of the intermiediate years on a rising curve but with decreasing intensity until the 60% figure is obtained, the proportion of dwellings electrified each year is projected as follows:

1970 - 25%	1975 - 52%
1971 - 34%	1976 - 55%
1972 - 40%	1977 - 57%
1973 - 45%	1978 - 59%
1974 - 49%	1979 - 60%

By applying these averages to the number of projected dwellings we have the following estimated figures of residential and commercial consumers.

Year	Consumers	Year	Consumers
1970	791	1975	2,060
1971	1,130	1976	2,268
1972	1,396	1977	2,443
1973	1,648	1978	2,630
1974	1,902	1979	2,786

Residential Light and Power Demand

Based on ANDE's experience in the cities of Villarrica and Encarnación, the level of demand and pattern of usage have been estimated for the first ten years of service. These estimates for residential power demand were based upon

the above projections as to the number of probable users during each year.

The findings are that 350w per customer will be the likely level of demand during the first five years. During these years it is calculated that there will be a low consumption by new consumers compensated by an increased consumption by the earlier service subscribers. Tables showing the Villarrica and Encarnación experience are presented in ANNEX III along with a summary table showing the projections for PJC.

After the fifth year, an increase equivalent to a compound annual rate of 2% is estimated for PJC. By the tenth year of service the average level of consumption per dwelling is calculated to reach 385 W.

The average residential use pattern is summarized below:

Use	Installed Capacity	Maximum Demand
Lights and Household Appliances	500 W	60% : 300 W
Small Motors and Pumps	50 W	70% : 35 W
Public lighting (with an equal area serviced as that of the dwellings)	15 W	100% : 15W

In analyzing the data for PJC presented in ANNEX III, it can be seen that the residential power "Load Factor" is estimated at 0,25. This is greater than the factor used by ANDE in the Plan of Electrification of the Interior and is based on experience in Villarrica and Encarnación which have from the beginning have had load factor values superior to the 13% foreseen in the Plan. During its first years Concepción had a load factor of around 50%.

The load factor taken for the first year is considered to be conservative, and the annual increase estimated to be equivalent to a compound rate of 2%. With this estimate, a factor of 30% is obtained for the tenth year, which is considered very reasonable.

Total residential demand is calculated for 1970 to be 277 KW (791 dwellings hooked-up x 350 W maximum demand). (Detailed calculations on the hourly use of residential power are available in the ANDE technical feasibility study which is transmitted for reference with this CAP).

2. Industrial Users

In addition to 17 businesses (9 shops, shoe repair, etc; 6 jewelers, 2 movie theaters) that have expressed an interest in public power, and which are included under the residential power category, there are 14 industrial operations which are expected to immediately begin using project electricity:

No.	Industry	Installed Capacity (KW)
6	rice and grain mills	134
1	coffee processing plant	56
2	hospitals	145
5	saw mills	89
14		424 KW

ANDE calculates (page 7 of Technical Feasibility Study) that when the installed capacity of these plants is reduced by the simultaneity factor, the total demand will be 206 KW. However, since many of these users are expected to continue to use their present equipment at least part time, or until it is amortized and can be disposed of or written off, and others will take time to change over to project service, it is estimated that only 40% of the maximum load of 206 KW will be generated by the project the first year. At the end of 5 years it is expected that 100% of this power demand will be met by the project. However during the first 5 years a 7% growth of industrial demand has also been calculated. These calculations are fully detailed in the ANDE study for the first 10 years of service.

The finding was that the total first year industrial demand would be 82.6 KW (40% of 206 KW).

3. Total Power Demand

Based on the projected patterns of use for both residential and industrial users, it has been calculated that in 1970, the first year of service, total consumption will be 771 KW hours during a total of 2,426 hours (see Exhibit 4, ANNEX III). By the end of 1972 the total demand will be 1394 KW hours.

SECTION VI - FINANCIAL ANALYSIS

1. FINANCIAL REQUIRMENTS OF PROJECT

The total estimated project cost is $562,000 equivalent of which $425,000 will be funded by this loan. One hundred percent of the AID loan proceeds will spent for dollar costs of the Project. The Borrower will contribute all of the local currency costs.

The breakdown of estimated costs in dollar equivalent is as follows:

	Dollar Costs	Local Costs	Total
1000 KW diesel-electric generating plant	$277,000	$31,000	$303,000
Distribution Facilities	148,000	17,500	165,500
Office-warehouse		14,000	14,000
Engineering Supervision 6%		10,000	10,000
General and Administrative 3%		14,500	14,500
Working Capital and Inventory		50,000	50,000
Total	$425,000	$137,000	$562,000

2. FINANCIAL PROJECTIONS

In March of 1968, ANDE completed its technical feasibility study and submitted it to USAID. Aside from the laborious task of translating the report so that it might be reviewed more easily in AID/W, it was necessary to ask ANDE to modify the financial calculation.

The original calculations were based

upon the more concessional terms for AID assistance. USAID informed ANDE that the interest rate proposed by AID/W technicians was 5%. The Borrower has accepted that modification. This paper, as revised, contains new Source and Application and Cash Flow projections based upon the revised rate of interest and the changes resulting from planning for an all-diesel system. These new calculation are added to ANNEX II as a SUPPLEMENT.

3. EVALUATION OF PROJECTIONS

ANDE has indicated the desire to try to maintain the rates charged for service in the PJC area at the same levels as those in the capital area (Asuncion). The projections in ANNEX II are based on the assumption that ANDE and the GOP would maintain the rates at that level and absorb the annual loss (which averages $22,000 per year) until the demand and level of consumption rise sufficiently.

The Project Committee believes this plan is workable and should be accepted since the Borrower is willing to subsidise the Project to the extent necessary. Analysis of the projections also indicates that by levying a rate 15% higher than planned, revenue would be more than sufficient to keep the project in the black. This increase (from 6¢ per KWh to 6.9¢ per KWh) would not appear to effect the demand projections.

4. PROSPECTS OF REPAYMENT

These calculations also demonstrate that the cash flow will be adequate to service the debt to A.I.D. Combined with the sound condition of the Borrower (See Section III) and the willingness of the Government of Paraguay to guaranty repayment, the prospects for repayment are good.

Since ANDE is an administrative (and regulatory) agency within the Government of Paraguay, no two step provision

is recommended. It is believed to be unlikely that A.I.D. will have to enforce the GOP guaranty.

5. ALTERNATIVE FREE WORLD SOURCES OF FINANCING

The Borrower has indicated that it is unable to obtain the necessary financing from private sources. It is improbable that other Free World financing institutions would be able to fund this project on the concessional terms required to make the project viable.

Eximbank has expressed no interest in financing this project.

SECTION VII - IMPACT ON U.S. ECONOMY

The proposed project will directly benefit the U.S. economy through the sale of $425,000 worth of U.S. products. It is probable that without concessional AID financing none of the above purchases from US vendors would take place.

Since no AID loan funds will be converted to cover local costs, there will be no negative impact on the U.S. balance of payments. Considering the long range prospects for replacement parts from U.S. vendors, the net impact on foreign exchange will be favorable.

SECTION VIII - IMPLEMENTATION PLAN

It is projected that the loan agreement will be signed (and all conditions precedent met) within 60 days after presentation of the draft agreement to the Borrower.

Assuming that the CAP is approved by the end of FY 1969 and the agreement presented in July 1969, the loan contract should be signed no later than September 1969. ANDE has projected that the project would be completed by February of 1971 with A.I.D. Loan fund disbursements beginning in December 1969. It is planned that a good part of the local cost construction can take place in the first months after loan authorization and signing. As indicated in ANNEX V adequate implementation plan will be required by A.I.D. prior to first disbursement. USAID is confident that ANDE is capable of constructing the facility within the time projected, with service beginning in early 1971.

The USAID Mission will have primary responsibility for monitoring, with back-up technical assistance provided as required by AID/W LA/DR Engineers.

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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 by the Foreign Assistance Act of 1968.

App. - Foreign Assistance and Related Agencies Appropriations Act, 1969.

COUNTRY PERFORMANCE

Progress Towards Country Goals

1. *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.

The Government of Paraguay has placed increasing emphasis on food production through the expansion of agriculture and the opening of the interior with roads to bring farms and markets closer together. A new agency with responsibility to develop plans for adequate storage for increased production was established in 1967. The national government and the city of Asuncion are currently exploring with a private U.S. investor the possibility of modernizing the central retail market place and constructing a modern accessible wholesale produce storage and market place.

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

With the need for capital investment and expansion far outstripping available private capital, the government continues open encouragement to foreign investors. Evidence is given by the GOP's strong support for pending Extended Risk Guaranty projects and by the import tax exemptions offered to foreign as well as local agricultural producers.

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(3) Increasing the public's role in the developmental process.	The GOP continues strong efforts to develop the interior by providing land to colonists and technical assistance to small producers. In addition, the government has indicated agreement with the need for a Private Development Bank (Financiera) with private ownership and management (now being established with AID advice). Also the Government supported the private Housing Guaranty project just authorized for construction of 500 private homes.
(4) (a) Allocating available budgetary resources to development.	With a history of inadequate local capital to support externally assisted development projects, the GOP is now following CIAP and free world lending agencies' advice in raising revenue and increasing self-help commitments.
(b) Diverting such resources for unnecessary military expenditure (See also Item No. 18.) and intervention in affairs of other free and independent nations. (See also Item No. 17.)	There is no known intervention in other countries' affairs; the level of military expenditures was reviewed by AID/W and found to be within acceptable limits.
(5) Willing to contribute funds to the project or program.	The GOP and ANDE will contribute all of the local currency required for the Project.

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(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.	In July 1967, a Law of Accounting and Fiscal Control was approved by the National Congress and is now being implemented. A $2,341,000 increase in excise collections over 1966 took place in 1967, following a campaign of taxpayer compliance. The draft Budget Reform Law was approved in February 1968, will have to be passed prior to disbursement of this loan. This law will permit the reorganization of the central budget office.
(7) Adhering to the principles of the Act of Bogota and Charter of Punta del Este.	The GOP is adhering to the principles of the Act and Charter.
(8) Attempting to repatriate capital invested in other countries by its own citizens.	Paraguayan progress has been dependent upon capital investment from abroad. Very little Paraguayan capital is believed to be invested abroad.
(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.	A new Constitution was adopted in 1967 which by providing a bi-cameral legislature, increases popular participation in government. The most recent elections (February 1968) were found by impartial observers to be fair and honestly conducted. The GOP has demonstrated its determination to implement CIAP and AID recommended self-help measures
B. Are above factors taken into account in the furnishing of the subject assistance?	The Country Team has considered the above factors in reviewing this project.

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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?*

(a) No.

(b) No.

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?*

No.

4. *App. §.106. If country attempts to create distinctions because of their race or religion among Americans in granting personal or commercial access or other rights otherwise available to U.S. citizens generally, what steps (will be) (have been) taken during loan negotiations to influence elimination of such distinctions?*

Not applicable.

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5. *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,*	Not applicable.
a. has any deduction required by Fishermen's Protective Act been made?	Not applicable.
b. has complete denial of assistance been considered by A.I.D. Administrator?	Not applicable
Relations with U.S. Government and Other Nations	Not applicable.
6. *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?*	
7. *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?*	There have been no incidents of damage to U.S. property by mob action in Paraguay.

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8. *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?*	Not applicable. Paraguay signed a Specific Risk Guaranty agreement with the United States Government.
9. *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?*	As of this writing payments are current. A Special Fund is being established by the GOP to assure timely debt service to the U.S. Government.
10. *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?*	No.
11. *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?*	The GOP is current in UN obligations.
12. *FAA §.620(a); App. §.107(a) and (b). Does recipient country furnish assistance to Cuba, sell strategic material to Cuba, or permit ships or aircraft under its flag to carry cargoes to or from Cuba.*	No.

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13. *FAA §.620(b). If assistance is to a government, has Secretary of State determined that it is not controlled by the international Communist movement.*	Yes.
14. *FAA §.620(f), App.§.109. Does recipient country have a communist government*	No.
15. *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.*	No.
16. *FAA §.620(n); App. 107(b) and 116. 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?*	No.

Military Expenditures

17. *FAA §.620(s). What percentage of country budget is for military expenditures? How much of foreign exchange resources spent on military equipment? Is U.S. P.L. 480 or development assistance used for military purposes? Are country's resources devoted to unnecessary military expenditures to a degree which materially interferes with*	AID/W conducted a review of military expenditures and concluded that the percentage of the GOP budget for this purpose and the amount of foreign exchange spent on military equipment, were within reasonable limits. No U.S. P.L. 480 or development assistance funds are used for military purposes. The extent of military expenditure was found not to violate the provisions of the Symington Amendment.

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its development? (Consideration of these points to be coordinated with PPC/MAS.)

18. *FAA §.620(v). App. §.119. How much spent by country during current U.S. fiscal year for sophisticated military equipment purchased since January 1, 1968? Has corresponding amount been deducted from current OYB, or is the weapons purchase determined by the President to be important to U.S. national security? (Responses to these questions to be coordinated with PPC/MAS.)*

There has been no procurement of sophisticated military equipment by the Government of Paraguay.

CONDITIONS OF THE LOAN

General Soundness

19. *FAA §.201(d). Information and conclusion on reasonableness and legality (under laws of country and U.S.) of lending and relending terms of the loan.*

The proposed project is within the authority of Borrower under local law and within the scope of lending authorized by the U.S. FAA and the terms are found to be reasonable.

20. *FAA §.251(b)(2); §.251(e). Information and conclusion on activity's economic and technical soundness. If loan is not made pursuant to a multilateral plan, and the amount of the loan exceeds $100,000, has country submitted to A.I.D. an application for such funds together with assurances to indicate that funds will be used in an economically and technically sound manner.*

Based on the economic and technical analyses in Sections IV and V of the Loan Paper, it is concluded that the proposed project is sound. Borrower's application is found in ANNEX IV of the CAP.

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21. FAA §.251(b). *Information and conclusion on capacity of the country to repay the loan, including reasonableness of repayment prospects.*	See pages 5 & 24 of the CAP. Conclusion is that the capacity and prospects for repayment are affirmative.
22. FAA §.611(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 U.S. of the assistance?*	Affirmative. See top of page 9 of CAP.
23. FAA §.611(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?*	Early ratification by the GOP Congress is expected. Prior loans have been approved in a reasonable period of time.
24. FAA §.611(e). *If loan is for capital assistance, and all U.S. assistance to project now exceeds $1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project?*	Not applicable.
25. FAA §.251(b). *Information and conclusion on availability of financing from other free-world sources, including private sources within the United States.*	See page 25 of CAP. Conclusion is that alternative free-world financing is unavailable.

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Loan's Relationship to Achievement of Country and Regional Goals

26. *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.*

The project will encourage development of democratic economic, political, and social institutions by making possible more rapid expansion of commerce and industry, raising living standards and strengthening the cooperative in the community and providing additional jobs.

Through the Borrower, the GOP is required to put up 100% of the local costs of this project. This is in contrast to AID funded electric projects in other countries where the AID loan was partially used for local costs.

New skilled personnel will be trained by the Borrower to manage and maintain the project.

This loan does not directly meet health needs. Indirectly it will contribute to better conditions through light, heat and use of modern technology and will also provide power to a local hospital.

It will directly support the electric cooperative by providing an ongoing function for it. The project also will be a major step toward modernization of the community.

27. *FAA §.209. Is project susceptible of execution as part of regional project? If so why is project not so executed?*

Not now susceptible as regional project. When Brazilian large scale power grid becomes available sometime in the as yet unplanned future, power may be supplied to Pedro Juan on a regional basis. At that time the diesels would be moved to another location in Paraguay.

28. *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.*

See Section VI - Relationship to AID Strategy.

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29. 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.*	The project is designed to pay for itself over the period of the AID loan, with sufficient reserves to be accumulated to offset part of the costs of further expansion. The purpose of the project includes the promotion of more rapid economic growth.
30. 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.*	Availability of electricity in the interior should lead to expansion of private economic and social enterprises and institutions and increase the local community's capacity to support further development.
31. 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.*	The project is aimed at meeting the need and local demand for electricity; it will utilize local leadership in implementation; recognize the ability of a community to mobilize resources and initiate a project. It will require the training of men to serve as local managers and technicians.

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32. *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.*	The loan will (a) encourage new and expanded production on the border with Brazil, thereby increasing international trade, (b) foster initiative and competition as business and trade expands, (c) encourage growth of cooperatives in other communities based on the success of CEAL in bringing electricity to PJC, (d) guarantee uniformly prived power to all consumers thereby avoiding monopolistic advantages to the larger enterprises who might control private power sources, (e) improve technical efficiency in all areas where electricity is used, (f) the loan has no bearing on labor unions.
33. *FAA §.619. If assistance is for newly independent country; is it furnished through multilateral organizations or plans to the maximum extent appropriate?*	Not applicable.
34. *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.*	By encouraging growth of activities in an interior region and making possible more rapid expansion of agricultural production and processing, this loan is consistent with the findings and recommendations of CIAP.
35. *FAA §.251(g). Information and conclusion on use of loan to assist in promoting the cooperative movement in Latin America.*	By recognizing the efforts of CEAL and meeting its demands for immediate electric power in PJC, and by involving the Cooperative in implementation of the project, this loan should promote the use of cooperatives in Paraguay.

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36. *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.*

Further economic and political integration between the regions of Matto Grosso, Brazil and Amambay, Paraguay should result from the electrification of PJC. Already there is little distinction between the adjoining communities and the project should promote further economic integration and trade.

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

37. *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.*

100% of the proposed loan will be returned to the U.S. in the form of dollar procurement.

38. *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).*

Based on the experience of U.S. procurement under the original loan, it is noted that the bulk of the funds will go to U.S. firms that manufacture and sale farm implements and supplies. These contracts with private U.S. firms enhance the prospects of other direct investment by them and other U.S. investors. Also, it should be noted that U.S. investors may qualify as sub-borrowers under the loan for the purpose of agricultural production.

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39. *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?*	Engineering and general feasibility surveys by U.S. consultants were employed during the initial phase of this project (See Section I).
40. *FAA §.602. Information and conclusion whether U.S. small business will participate equitably in the furnishing of goods and services finance by the loan.*	Compliance with the Small Business Notification requirement will be a condition of the loan agreement.
41. *FAA §.620(h). Will the loan promote or assist the foreign aid projects or activities of the Communist-Bloc countries?*	No.
42. *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.*	Not applicable.

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43. *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.*

100% of the loan funds will go to the national electric power agency to finance the imports needed in the project, from private U.S. sources.

Loan's Compliance with Specific Requirements

44. *FAA §.201(d). Is interest rate of loan at least 2% per annum during grace period and at least 3% per annum thereafter?*

yes

45. *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.*

Current excess property lists indicate type of equipment to be financed if not available as surplus. Further check on availability will be made before disbursement.

46. *FAA §.604(a); App. §.108. Will all commodity procurement financed under the loan be from U.S. except as otherwise determined by the President?*

No conflict with restrictions of commodity procurement.

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47. *FAA §.604(b). What provision is made to prevent financing commodity procurement in bulk at prices higher than adjusted U.S. market price?*	Not applicable
48. *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?*	This provision will be applied to the project loan.
49. *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?*	Not applicable.
50. *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?*	Not applicable.
51. *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?*	AID funds not to be used for construction. Most all improvements will be made by ANDE with assistance from Army Engineers.

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52. *FAA §.620(g). What provision is there against use of subject assistance to compensate owners for expropriated or nationalized property?*	Not applicable.
53. *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.*	Not applicable.
54. *App. §.104. Will any loan funds be used to pay pensions, etc., for military personnel?*	Under proposed loan, funds will not be authorized to pay pensions or any other benefits to military personnel.
55. *App. §.111. Compliance with requirements for security clearance of U.S. citizen contract personnel.*	Not applicable.

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56. App. §.112. *If loan is for capital project, is there provision for A.I.D. approval of all contractors and contract terms?*	Not applicable. (See page 8 of CAP)
57. App. §.114. *Will any loan funds be used to pay U.N. assessments?*	No
58. App. §.115. *Compliance with regulations on employment of U.S. and local personnel for funds obligated after April 30, 1964 (Regulation 7).*	Not applicable
59. 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?*	No
60. App. §.401. *Will any loan funds be used for publicity or propaganda purposes within U.S. not authorized by the Congress?*	No

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61. *FAA §.620(k). If construction of productive enterprise, will aggregate value of assistance to be furnished by U.S. exceed $100 million?*

PROFIT AND LOSS STATEMENT

(in thousands of U.S.$)

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
REVENUE	57.7	114.0	133.2	138.7	162.9	182.9	182.9	202.2	209.0	228.0
Operation	14.0	14.4	14.8	15.2	15.7	26.9	27.7	28.5	29.4	30.3
Fuel	27.0	38.8	48.8	58.5	68.9	77.6	88.2	97.7	108.6	118.6
Maintenance	9.3	9.6	9.9	10.3	10.6	14.2	14.7	15.2	15.8	16.3
Administration	10.9	9.8	10.0	10.3	10.6	10.9	11.2	11.6	11.9	12.3
Insurance	7.9	7.9	7.9	7.9	7.9	10.0	10.0	10.0	10.0	10.[illegible]
TOTAL OPERATING EXPENSES	69.0	80.5	91.4	102.2	113.7	139.6	151.8	163.0	175.7	187.5
Depreciation	9.0	18.3	18.3	18.3	19.1	20.0	25.1	25.6	26.4	27.3
Replacement Reserve	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
TOTAL FIXED CHARGES	12.0	23.3	23.3	23.3	24.1	25.0	30.1	30.6	31.4	32.3
TOTAL COST	81.0	103.8	114.7	125.5	138.7	164.6	181.9	193.6	207.1	219.8
Net Profit or (Loss) before interest	(23.3)	10.2	18.5	13.2	24.2	18.3	1.0	8.6	1.9	8.2
Interest & Principal on A.I.D. Loan	2.3	20.0	21.3	21.3	42.5	41.5	40.5	39.5	38.5	37.5
NET PROFIT OR (LOSS)	(25.6)	(9.8)	(2.8)	(8.1)	(18.3)	(23.2)	(39.5)	(30.9)	(36.6)	(29.3)

As calculated by ANDE less the reserve for non-collectable accounts. (See p 8 and 9 of ANNEX II in original CAP on file in AID/W LA/DR)

FINANCIAL PROJECTION (CASH FLOW)
(in thousands of US$)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Cash receipts (net profit before int.)	---	---	18.2	18.5	13.2	24.2	18.3	1.0	8.6	1.9	8.2
Depreciation	---	9.0	18.3	18.3	18.8	19.1	20.0	25.1	25.6	26.4	27.3
AID loan funds	45.0	350.0	30.0								
ANDE contribution	30.0	130.0	5.0	2.0	3.0						
Replacement reserve	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Other financing	---	----	----	----	19.6	21.2	128.2	15.1	19.8	21.2	12.6
TOTAL RECEIPTS	80.0	494.0	68.5	42.8	57.1	69.5	161.5	46.2	50.0	54.5	53.1
Cash disbursements (net loss before int.)	---	23.3	---								
Construction	75.0	480.0	35.0	1.0	20.6	21.2	128.2	15.1	19.8	21.2	12.6
Debt service (to AID)	----	2.3	20.0	21.3	21.3	42.5	41.5	50.5	39.5	38.5	37.5
TOTAL DISBURSEMENTS	75.0	505.6	55.0	22.3	41.9	63.7	169.7	55.6	69.3	59.7	50.1
Increase in cash	5.0	14.0	13.3	20.5	15.2	5.8	(8.2)	(9.4)	(9.3)	(5.2)	3.0
Balance beginning	50.0	55.0	69.0	82.3	102.8	118.0	123.8	115.6	106.2	96.9	91.7
Balance End of Year	55.0	69.0	82.3	102.8	118.0	123.8	115.6	106.2	96.9	91.7	94.7

ADMINISTRACION NACIONAL DE ELECTRICIDAD (ANDE)

Balances Generales al 31 de diciembre de 1968 y 1967

	Año 1968 ₲	Año 1967 ₲
ACTIVO FIJO		
Bienes e instalaciones en servicio (Nota 1)	6.711.437.316	2.047.734.657
Depreciación acumulada (Nota 1)	(819.910.235)	(775.721.879)
	5.891.527.081	1.272.012.778
Obras en construcción	167.101.298	3.256.433.295
	6.058.628.379	4.528.446.073
INVERSIONES Y FONDOS		
Inmuebles	17.067.800	18.350.400
Inversiones varias (Nota 2)	40.008.946	44.955.164
	57.076.746	63.305.564
ACTIVOS CORRIENTES Y ACUMULADOS		
Caja y bancos	99.500.952	65.624.200
Cuentas por cobrar consumidores (Nota 2)	104.574.410	134.110.826
Otras cuentas por cobrar (Nota 2)	24.625.232	11.989.813
Materiales y equipos (Nota 2)	115.305.400	102.086.963
Otros activos corrientes y acumulados	761.845	615.079
	344.567.843	314.426.882
CARGOS DIFERIDOS	54.516.596	[illegible]
	6.515.789.556	4.914.381.347

	Año 1968 ₲	Año 1967 ₲
PATRIMONIO		
Capital (Notas 3 y 4)	1.600.000.000	1.300.000.000
Reserva de capital (Nota 4)	5.149.883	5.149.883
Aportes no reembolsables	33.778.034	27.875.528
Superávit acumulado al ejercicio anterior	10.632.573	61.872.229
Utilidad del ejercicio	356.999.493	226.048.043
	1.986.559.983	1.620.945.683
DEUDAS A LARGO PLAZO (Notas 5 y 7)		
Banco Interamericano de Desarrollo	2.133.508.244	1.446.357.596
Otros créditos del exterior	2.076.965.934	1.578.138.663
Deudas locales	46.963.518	67.087.856
	4.257.437.696	3.091.584.115
PASIVOS CORRIENTES Y ACUMULADOS		
Cuentas varias por pagar	105.978.379	88.798.165
Porción corriente de la deuda a largo plazo	58.485.583	50.760.540
	164.463.962	139.558.705
CREDITOS DIFERIDOS VARIOS	33.213.050	3.413.173
RESERVAS ESPECIALES		
Para mantenimiento diferido	24.155.098	22.315.892
Para indemnizaciones por despidos	18.478.178	14.402.236
Para autoseguros	21.359.831	12.239.543
Para daños y perjuicios	1.458.918	1.922.000
Para desvalorización inversiones - Inmuebles	7.662.810	8.000.000
	73.114.865	58.879.671
	6.514.789.556	1.914.381.347

CUENTAS DE ORDEN

Contrato equipo electrónico Itaipú, pagarés emitidos	[illegible]	[illegible]

Las notas que se acompañan son parte integrante de los estados financieros.

UNCLASSIFIED

ADMINISTRACION NACIONAL DE ELECTRICIDAD (ANDE)

Cuadros de resultados por los ejercicios finalizados el 31 de diciembre de 1968 y 1967

	Año 1968 ₲	Año 1967 ₲
INGRESOS DE EXPLOTACION		
Ingresos por venta de energía:		
Residencial	470.125.481	425.391.084
Industrial	145.179.507	129.037.453
Fiscal	24.000.000	24.000.000
Municipal	2.845.315	2.620.716
Tracción	2.127.374	3.4[illegible].386
Alumbrado público	35.224.335	34.315.074
	679.506.012	618.781.713
Otros ingresos de explotación	9.913.336	10.066.329
	689.419.348	628.848.042
GASTOS DE EXPLOTACION		
Generación	286.898.744	280.494.570
Distribución	54.930.645	48.276.076
Consumidores	32.323.827	48.794.517
Administración y gastos generales	47.198.628	47.347.040
Depreciación	56.219.643	61.263.348
	477.571.487	486.175.551
Ingreso neto de explotación	211.847.861	142.672.491
INGRESOS AJENOS A EXPLOTACION		
Intereses durante la construcción (Nota 8)	286.211.321	180.202.851
Varios	20.688.716	13.700.510
	306.900.037	193.903.361
GASTOS AJENOS A EXPLOTACION		
Intereses de deuda a largo plazo	160.804.855	106.833.510
Varios	943.550	3.694.299
	161.748.405	110.527.809
Utilidad del ejercicio	356.999.493	226.048.043

SITUACION FINANCIERA Y PATRIMONIAL

A continuación presentamos los balancos generales al 31 de diciembre de 1968 y 1967:

	Ejercicio 1968 $ (.000)	Ejercicio 1967 $ (.000)	Aumento (Disminución) $ (.000)
Activo corriente			
Caja y bancos	99.501	60.624	38.877
Cuentas por cobrar	129.000	146.401	(17.401)
Otros activos corrientes	762	615	147
	229.263	207.640	21.623
Menos:			
Pasivo corriente			
Deudas a corto plazo	164.464	139.559	24.905
Créditos diferidos	33.213	3.413	29.800
	197.677	142.972	54.705
CAPITAL OPERATIVO	31.586	64.668	(33.082)
Más:			
Activo no corriente			
Activo fijo			
Materiales y equipos	6.058.628	4.528.446	1.530.182
Inversiones y fondos	115.305	102.087	13.218
Cargos diferidos	57.077	63.306	(6.229)
	54.517	12.903	41.614
	6.285.527	4.706.742	1.578.785
Menos:			
Pasivo no corriente			
Deudas a largo plazo	4.257.438	3.091.584	1.165.854
Reservas especiales	73.115	58.880	14.235
	4.330.553	3.150.464	1.180.089
CAPITAL NO OPERATIVO	1.954.974	1.556.278	398.696
PATRIMONIO NETO			
Capital	1.600.000	1.300.000	300.000
Reserva de capital	5.150	5.150	-
Superávit acumulado	367.632	287.920	79.712
Aportes no reembolsables	13.778	27.876	(14.098)
	1.986.560	1.620.946	365.314

ESTADO DE VARIACION DE RECURSOS FINANCIEROS

Seguidamente presentamos un estado de variación de los recursos financieros en base a los balances comparativos de los ejercicios 1967 y 1968.

Recursos provenientes de:	₲ (.000)	₲ (.000)
Aumento en el Patrimonio neto		
Utilidad del ejercicio	356.999	
Provisiones	17.016	
Reservas especiales	14.235	
Depreciaciones, netas de ₲ 12.032 por bajas de activo fijo	44.188	
Ajustes correspondientes a años anteriores acreditados a superávit acumulado	2.712	
Aportes no reembolsables	5.902	
	441.052	
Menos: Intereses durante la construcción	286.211	154.841
Aumento de deudas a largo plazo		
Préstamo B.I.D.	687.150	
Otros préstamos	478.704	1.165.854
Aumento de deudas a corto plazo y créditos diferidos		54.705
Disminución de cuentas a cobrar		5.216
Disminución de inversiones y fondos		6.398
		1.387.014
Recursos aplicados a:		
Aumento de activos fijos		
Obras Acaray	1.495.038	
Otros bienes e instalaciones	79.332	
	1.574.370	
Menos: Intereses durante la construcción	286.211	1.288.159
Aumento de cargos diferidos		41.614
Otros incrementos de activos		18.364
		1.348.137
Aumento de fondos disponibles		38.877
		1.387.014

DETAIL COST ESTIMATE

ITEM	MATERIAL US (AID)	MATERIAL LOCAL	LOCAL	TOTAL
1000 KW diesel-electric generating Plant	$277,000	---	$31,000	$308,000
1 Km. 3-phase 23KV primary line	2,700	1,000	1,730	5,430
6 Km. 220/380 volt secondary line	6,300	4,000	5,700	16,000
Distribution Transformers	14,500	---	1,220	15,720
1500 Meters and Service Connections	118,500	---	3,000	121,500
150 Street Lights	6,000	---	850	6,850
1 Office-warehouse	---	7,000	7,000	14,000
Engineering Supervision 6%	---	---	10,000	10,000
General Administrative 3%	---	---	14,500	14,500
Working Capital	---	---	50,000	50,000
TOTAL	$425,000	$12,000	$125,000	$562,000

DETAIL COST ESTIMATES

GENERATING PLANT

2 - 500 KW Diesel-electric generating plant including land, building, foundations, fuel storage, generating units, switchgear and 1000 KVA plant substation @ $280.00/KW	$280,000
Contingency 10%	28,000
	$308,000

U.S. Cost	$277,000
Local Cost	31,000
TOTAL	$308,000

DISTRIBUTION FACILITIES

1 Km - 23 KV - 3-phase #4 ACSR City Construction

NUMBER	ITEM	MATERIAL U.S.	MATERIAL L.C.	LABOR	TOTAL
50	Pole	-	$1000	$250	$1250
35	Tangent Pole top units	$415	-	60	475
10	Angle or dead-end units	890	-	100	990
21,400 ft.	#4ACSR	695	-	80	775
15	Anchor-guy units	350	-	75	425
SUB TOTAL		$2350	$1000	$565	$3915
Engineering 10%		-	-	390	390
Overhead 10%		-	-	390	390
Contingency 15% and 10%		$350	-	390	740
TOTAL		$2,700	$1,000	$1,735	$5,435

DISTRIBUTION FACILITIES

1 Km 220/380 Volt #4 ACSR Secondary

NUMBER	ITEM	MATERIAL U.S.	MATERIAL L.C.	LABOR	TOTAL
50	Pole	-	$660	$250	$910
50	Secondary Units	$420	-	150	570
8	Anchor-Guy Units	180	-	40	220
10,700 Ft.	#4 ACSR	310	-	40	350
SUB TOTAL		$910	$660	$480	$2050
Engineering 10%		-	-	200	200
Overhead 10%		-	-	200	200
Contingency 15%		$140	-	70	210
TOTAL		$1,050	$660	$950	$2,660
6 Km 220/380 Volts		$6,300	$4,000	$5,700	$16,000

DISTRIBUTION FACILITIES

Transformer Units 23 KV/220/380 V

NUMBER	SIZE	MATERIAL UNIT COST	MATERIAL TOTAL COST	LABOR UNIT COST	LABOR TOTAL COST	TOTAL
8	25KVA	$700	$5600	$40	$320	$5920
7	50KVA	900	6300	50	350	6650
2	100KVA	1300	2600	275	550	3150
			$14,500		$1,220	$15,720

Meters and Service Connections

	MATERIAL	LABOR	TOTAL
1-Meter, loop and Service Drop	79	20	99
1500 Units =	$118,500	$3,000	$121,500

DISTRIBUTION FACILITIES

Street Lights

	MATERIAL	LABOR	TOTAL
1 Mercury Vapor Unit	$105	$10	$115
1 Incandescent Unit	30	5	35
20 Mercury Vapor Units	$2100	$200	$2300
130 Incandescent Units	3900	650	4550
TOTAL	$6000	$850	$6850

ADMINISTRACION NACIONAL DE ELECTRICIDAD
CENTENARIO DE LA EPOPEYA NACIONAL 1864 / 1870

DIRECCIONES:
CALLE ESTRELLA 786
CASILLA DE CORREO 604
TELEGRAFICA: ANDE
TELEX: 042 ANDE ASN

ASUNCION, (Paraguay) 23 de mayo de 1968

SIRVASE CITAR Nº P. 6179

Señor
Peter M. Cody
Jefe de la Misión Económica de los
Estados Unidos en el Paraguay,
Asunción

Muy señor nuestro:

Por la presente tenemos el agrado de dirigirnos a usted, con el objeto de solicitar la cooperación financiera de esa Institución para llevar a cabo un amplio programa de Electrificación en el interior de nuestro país, que ya fuera objeto de prolongadas conversaciones entre nuestras partes.

Dentro del programa citado, cabe dar el primer lugar al abastecimiento de energía a la localidad de Pedro Juan Caballero.

Pedro Juan Caballero está situada en la región Nordeste del Paraguay y es la capital y ciudad más grande del Departamento de Amambay. Su población constituye el 75% de la del Departamento, en tanto que la tasa de crecimiento urbano es inferior a solamente dos áreas, suburbanas estas de Asunción, en toda la República.

Pedro Juan Caballero constituye el centro de acopio de los productos de la vasta y fértil zona circundante, debido a que está unido a los centros principales de consumo mediante varios caminos. El consumo interno de café del Paraguay es abastecido con casi exclusividad por el café producido en la zona, en tanto que 10% de la producción total de trigo de la República habrá de provenir de esta región. El hecho que los ahorros depositados en el banco de Pedro Juan Caballero se han duplicado anualmente, desde 1962, pueden dar un índice de la actividad de la zona.

De implementarse el programa que nos ocupa, la población que se estima habrá de ser servida para el año 1979 es de 14.700 habitantes, o sea el 60% de la población existente ese año, da

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mantenerse la tasa de crecimiento, y aproximadamente el 100% de la población actual.

Además de Pedro Juan Caballero, el programa incluye a un número relevante de poblaciones menores del interior.

Las poblaciones del Paraguay en la región Oriental, que son susceptibles de obtener servicio de energía eléctrica son aproximadamente 100, de las cuales 43 han sido incluídas en la Primera etapa del Plan Nacional de Electrificación debido a que, por su ubicación geográfica y por razones económicas, pueden conectarse al sistema Acaray-Asunción en condiciones técnico económicas razonables.

La Administración Nacional de Electricidad ya ha obtenido la financiación para la electrificación de estas 43 localidades. Ahora bién, si ANDE insistiese en esperar a conectar a las redes del sistema Acaray, al resto de las poblaciones (aproximadamente 57) se crearía un círculo vicioso, en cuanto que en estas poblaciones no se puede crear un mercado de consumo, por no disponer de energía, y no se puede darles energía, en cuanto no tienen un adecuado mercado.

La única posibilidad de romper este círculo vicioso, que crea condiciones de atraso y de disparidad de desarrollo en nuestro país, es la de comenzar dando a estas localidades un tipo de servicio que exija inversiones iniciales menores que la interconexión con el sistema Acaray, otorgando una calidad inferior a la del sistema interconectado, sea por estar limitado a un cierto número de horas por día, sea porque limitaría la potencia disponible para cada población. Esta solución se puede lograr mediante la instalación de pequeñas centrales con grupos electrógenos que alimenten redes de distribución relativamente reducidas.

Considerando que el dotar a una población de servicio de energía eléctrica, crea condiciones favorables para su desarrollo, el dar este servicio a estas poblaciones alejadas, o aún a aquellas en futuros planes de electrificación, además de crear condiciones más propicias de mercado, ayuda a mejorar su nivel de vida creando condiciones propicias para un nivel educacional elevado, obras de acción social, e incentivación de las pequeñas actividades artesanas, que no tendrían lugar sin la electrificación.

El presente programa, además de Pedro Juan Caballero, prevé el suministro de energía a esas localidades con una población aproximada total de 100.000 habitantes, de los cuales 30.000 serían directamente beneficiados con el suministro de energía al cabo de 3 años de servicio, y el resto recibiría importantes beneficios de tipo indirecto.

La suma global necesaria para llevar a cabo este programa sería de US$ equivalentes 1.907.000, de los cuales US$ equivalentes 1.455.300 corresponden a gastos en moneda extranjera y US$ equivalentes 451.700 a gastos en moneda nacional. Estos gastos se dividen en:

Programa	Moneda extranjera	Moneda Nacional	Total
Pedro Juan Caballero	473.900	138.500	612.400
Otras localidades	981.400	313.200	1.294.600
Total	1.455.300	451.700	1.907.000

Proponemos que, por esa Institución, sean financiadas la totalidad de los gastos en moneda extranjera (US$ 1.455.300), y por esta ANDE la totalidad de los gastos en Moneda Nacional (US$ 451.700). La Ingeniería sería totalmente realizada por esta ANDE.

En vista del extraordinario esfuerzo que esta realización supone de parte de ANDE, sea bajo el aspecto del completo aporte de los gastos locales, sea bajo el concepto de la absorción de las inevitables y cuantiosas pérdidas financieras que supondrá la apertura de este mercado virgen, aún totalmente impreparado para el consumo, solicitamos que las condiciones de amortización e intereses de los préstamos a otorgarse sean mantenidas en el nivel más favorable posible, para balancear, aunque sea parcialmente, el esfuerzo realizado por nuestra parte.

Una solución favorable de la presente solicitud, supondrá la participación de esa institución en uno de los programas de fomento y desarrollo de mayor importancia y de más visibles resultados en nuestro país.

Adjuntamos copias de los documentos titulados:

1. Estudio de factibilidad Técnico-Económica de un Sistema de

ADMINISTRACION NACIONAL DE ELECTRICIDAD

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Generación y Distribución de Energía Eléctrica para la Ciudad de Pedro Juan Caballero.

2. Suministro de Energía Eléctrica a Poblaciones del Interior Mediante Grupos Electrógenos.

Con tal motivo, hacemos propicia la oportunidad de saludarle con las expresiones de nuestra consideración más distinguida,

ADMINISTRACION NACIONAL DE ELECTRICIDAD

Ing. ENZO DEBERNARDI
Presidente

/mmp
Adj.

DRAFT

LOAN AUTHORIZATION

Provided from: Alliance for Progress Funds
PARAGUAY: Pedro Juan Caballero Electrification Project

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 ("Loan") pursuant to Part I, Chapter 2, Title VI, Alliance for Progress, to the Administracion Nacional de Electricidad ("Borrower") of not to exceed four hundred and twenty-five thousand United States dollars ($425,000) to assist in financing the U.S. dollar costs of the construction and installation of a central electric power station and distribution system in the city of Pedro Juan Caballero, Paraguay ("Project"), this Loan to be subject to the following terms and conditions:

A. Interest and Terms of Repayment.

1. Borrower shall repay the Loan to the Agency for International Development ("A.I.D.") in United States Dollars within twenty-five (25) years from the first disbursement under the Loan, including a grace period of not to exceed five (5) years. Borrower shall pay to A.I.D. in United States dollars on the disbursed balance of the Loan interest of five percent (5%) per annum.

2. If prior to the end of the grace period the Government of Paraguay ("Government") so elects, the Borrower shall fulfill its dollar obligations under the Loan by paying to Government in currency of Paraguay the equivalent, determined as of a time and in a manner satisfactory to A.I.D., of the United States dollar payments payable to A.I.D. under (1) above and the Government shall pay to A.I.D.:

(i) the equivalent in United States dollars determined as of the time and in a manner calculated to obtain repayment of all dollars disbursed plus interest, of all amounts paid to Government as follows:

a. all interest immediately upon receipt subject to Government's right to retain all payments in excess of two percent (2%) per annum during a grace period of not to exceed ten (10) years from the first disbursement under the Loan ("Government grace period") and all payments in excess of three percent (3%) per annum thereafter.

b. principal within forty (40) years, including the Government grace period.

(ii) interest in United States dollars of two percent (2%) per annum during the Government grace period, and three percent (3%) per annum thereafter on all amounts of outstanding principal paid by Borrower to Government from the respective dates of such payments of principal.

B. Other Terms and Conditions:

1. The Government of Paraguay shall guarantee repayment of the A.I.D. loan.

2. Prior to the execution of the Loan Agreement, Borrower shall be current in payments of all debts owed by it to A.I.D. or predecessor agencies.

3. Prior to the first disbursement or issuance of the first commitment documents, Borrower shall furnish A.I.D., in form and substance satisfactory to A.I.D. detailed designs of the generating plant and distribution facilities, a construction schedule and detail plan for operation and maintenance of the Project system.

4. Prior to the first disbursement or issuance of the first commitment document, Borrower shall show evidence of the availability, from sources acceptable to A.I.D., of the guarani equivalent of at least one hundred thirty-seven thousand United States dollars ($137,000), and Borrower shall also provide or cause to be provided, any additional resources which are necessary for the timely completion of the Project.

5. Borrower periodically shall consult with A.I.D. concerning its implementation of the project and shall submit regular reports to A.I.D. as specified in the Loan Agreement.

6. No U.S. dollars under this loan shall be utilized to finance local currency costs.

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

Deputy U.S. Coordinator
Alliance for Progress

Date