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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

492-T-036

492-248

PHILIPPINES - RURAL ELECTRIFICATION - III

AID-DLC/P-2061

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

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December 10, 1974

MEMORANDUM FOR THE DEVELOPMENT LOAN COMMITTEE

SUBJECT: Philippines - Rural Electrification III

Attached for your review are recommendations for authorization of a loan to the Government of the Republic of the Philippines through the National Economic Development Authority (Borrower) for the National Electrification Administration (Beneficiary) of not to exceed Twenty Million Dollars (\$20,000,000). The proceeds of this loan will be used (a) to permit the Beneficiary to finance the foreign exchange costs of certain engineering and other professional services required to continue development of its institutional and managerial capabilities and (b) to permit the Beneficiary to reloan the remainder of said proceeds to a number of new or existing rural electric cooperatives to finance the foreign exchange costs of certain goods and services required by said cooperatives for the development of their distribution systems.

This loan proposal is scheduled for consideration by the Development Loan Staff Committee on Monday, December 16, 1974. Also please note your concurrence or objection is due by close of business Thursday, December 19, 1974. If you are a voting member a poll sheet has been enclosed for your response.

Development Loan Committee
Office of Development
Program Review

Attachments:

Summary and Recommendations
Project Analysis
ANNEXES i - XV

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Philippines - Rural Electrification III

SUMMARY AND RECOMMENDATIONS

1. Borrower-Beneficiary - the Government of the Republic of the Philippines (GOP) will be the Borrower. The Executing Agencies will be (a) the National Electrification Administration (NEA), an autonomous public corporation created for the purpose of developing and implementing a national plan to bring electric service to all segments of rural Philippines, and (b) a number of rural electric cooperatives which will be the ultimate beneficiaries.

2. Loan

a. Amount: Not to exceed \$20,000,000.

b. Terms: The Government of the Philippines will repay the loan within 40 years, including a ten year grace period. Interest will be 2% annually during the grace period and 3% thereafter.

The GOP will make the loan available to the NEA or the same terms as A.I.D.'s loan to the GOP but the loan will be denominated in pesos and the maintenance of value risk will be borne by the GOP.

NEA will relend the proceeds of the loan to qualifying rural electric cooperatives on their standard sub-loan terms:

(1) For distribution cooperatives - 3% interest, 30 year repayment including 5 year grace period on principal and interest.

(2) For self-generating cooperatives - 2% interest 35 years including 5 year grace period on principal and interest.

(3) Local Cost Financing. The sub-projects financed under this loan have an estimated local cost equivalent of \$16.0 million. All of the local costs will be financed by the GOP and the loan will be utilized for solely foreign exchange costs of goods and services.

3. Background

The proposed loan is the third in a series of A.I.D. loans to the GOP for relending through NEA to individual electric cooperatives. With the proposed loan, A.I.D. assistance to NEA will total \$58 million in development loan funds and \$2.3 million in grant assistance for institutional development.

Assistance to the GOP power sector dates from A.I.D. financing of a nationwide power survey in 1965 and in addition to the loans identified above also include two pilot electric cooperative projects funded in 1967 (with development loans of \$3.4 million), loan financed feasibility studies of \$650,000, and a \$3.2 million FY 73 loan to the National Power Corporation for backbone transmission facilities on the Southern Luzon.

A.I.D.'s assistance is being provided in the context of a multilateral assistance program to the power sector initiated at the consultative group meeting in Paris in 1971. Under the agreed program IBRD, ADB, and other bilateral donors have concentrated their lending on the substantial capital requirements of central station generation and high voltage transmission requirements to build a nation-wide G and T network. A.I.D. has concentrated its assistance on distribution systems within the rural areas and through the electric cooperative mechanism.

Progress under previous A.I.D. loans has been satisfactory. The two pilot coop's funded in 1967 are completed and in commercial operation. Funds provided under the initial \$20.0 million package (loans 027 and 028) have been committed against procurement contracts and the coops are in various stages of construction. Funds provided under loan T-034 (June 1974) are in an advanced state of commitment - approximately \$8.5 million has been placed against procurement contracts and the balance is expected to be fully committed by February or March of 1975.

As of October 31, 1974 the NEA had 27 electric cooperatives in various stages of energization and operation. 153,618 homes were served or an estimated population of 1,034,000. Many of these operating systems are coop's resulting from takeover and revitalization of unsatisfactory operating private systems or systems constructed utilizing excess equipment and in-country available materials.

4. Project Description: The project consists of the construction of additional power distribution facilities within the framework of the GOP program for national rural electrification. It is anticipated that the equivalent of up to 12 new cooperative systems can be developed as a result of this loan. Commodities procured under this loan may also be used to complete or expand cooperative systems initiated under earlier loans and/or consolidate and improve franchised systems converted to cooperatives under the national rural electrification program. This project will be a continuation and expansion of the program partially financed by loans 492-H-027, 492-H-028 and 492-T-034. At the end of the project it is anticipated that operating electric cooperative will number approximately 52, including those financed under earlier AID loans and those resulting from conversion and expansion of former private franchise systems.

The project will also provide for the utilization of loan proceeds for continuation of U.S. technical assistance to NEA, the individual electric cooperatives and private Filipino engineers and contractors. Those services will be extended through continuation of contracts with (a) Stanley Consultants-providing engineering services and (b) the National Rural Electric Cooperatives Association (NRECA) providing assistance in organization and management of the individual electric cooperatives.

5. Project Justification

a. Goal - The goal of the project is to assist the GOP to further the welfare of the people in the rural areas of the Philippines by improving economic and social conditions through the provision of continuous, dependable and economic electric service on a self supporting basis.

b. Purpose - The purposes of the project are to (1) further the institutional development of the rural electric sector by developing and strengthening the capability of (a) NEA, (b) the individual electric cooperative assisted by the loan, (c) supporting institutional capacity in the private engineering consulting and contracting firms and (2) assist in the organization and construction of approximately 12 new rural electric cooperatives and partially assist in the expansion and upgrading of a number of existing rural electric cooperatives.

c. Place in the GOP Priorities: The proposed loan will assist the GOP in the attainment of a number of its development objectives set forth in its current 4 year plan. Specifically the project will (1) assist the GOP reach its power sector objectives by extending electric power to a portion of the 70% of the Philippine population now in the rural areas and without electric service. The extension of such service through electric cooperative supplements the larger GOP investment targets of developing a nationwide system of central station generation and related high voltage transmission facilities currently being assisted by various other donors. (2) Assist the GOP in its overall program objective of promoting development in the rural areas through the promotion of improved agricultural output and small scale commercial/industrial development in the rural areas, thereby supporting both the achievement of food self-sufficiency for the Philippines and increased income and employment opportunities for the agricultural and non agricultural segments of the rural Philippines.

d. Place of A.I.D. Priorities: The project is consistent with A.I.D.'s congressional mandate to assist the poor majority in the developing countries. Specifically the project falls within the provisions of Section 103 of the FAA (Food and Nutrition) which includes rural electrification as an example of the activities congress intends A.I.D. to finance thereunder.

The project is also consistent with A.I.D. program objectives for the Philippines set forth in the FY 76 FBS. As set forth in the FBS, AID's program in the Philippines focuses on two broad sector categories - population and health; and food, nutrition, and rural development. The rural electrification program supports long-term development in the rural areas by (a) improving the standard of living among the rural population (b) supporting the development and expansion of cooperatives as a vehicle for development within the rural areas and (c) by providing direct service to both the farm and small commercial/ industrial activities.

The program is also complemented by related AID priority projects such as rural roads, small scale pump irrigation, integrated area development programs and related programs aimed at increased production and improved processing and marketing of agricultural products.

70% of

e. Beneficiaries. the Philippine populace is currently without reliable and economical power and the rural areas targeted under the GOP's long-term rural electric program also include 12 of the 15 million persons in the Philippines falling within the lowest 40% income bracket. While the proposed program will only extend service to a portion of the rural population it will further the institutional development at the national and local government levels necessary for nationwide extension of these services. The project will specifically provide service to an estimated 12 new cooperatives with average customer connections of 10,000 per coop, approximately 120,000 customers or 720,000 direct beneficiaries. Since direct beneficiaries include farms, agro-industries and small-scale industries, indirect benefits in the form of improved and more economic services and increased employment opportunity will accrue to portions of the rural population not directly served by the electric systems either because they are outside the service area or because they are below the threshold income level for connection to the coop system.

Much additional survey and evaluation work needs to be done to better demonstrate the detailed impact of electrification on the rural areas served. Programs to assist the GOP in this objective are continuing and will be expanded with the implementation of the proposed loan as discussed in the text of this project paper.

6. Project Costs and Financing Arrangements: The \$20.0 million AID loan is being made available as line of credit to NEA for the foreign exchange costs of necessary commodities and services to develop the coops. The GOP will finance all of the local currency requirements. This contribution is currently estimated to be \$16 million equivalent. Commitments and disbursements by year under the loan are estimated as follows \$1,000,000

<u>L/COM</u>	<u>CY 75</u>	<u>CY 76</u>	<u>CY 77</u>
Commitments	\$15.0	\$5.0	
Disbursements		\$10.0	\$10.0

7. Other Sources of Financing: This loan is in partial response to the U.S. Government's pledge, first made on the occasion of Consultative Group meeting in Paris in April, 1971 to participate in a multilateral effort to assist the GOP effort by developing its electric power sector. The IBRD, ADB and other donors are committed to assist with other aspects of the total power program, (i.e., generation and transmission), and are presently working with NPC on additional loans to support this sector.

The Export-Import Bank has advised A.I.D. that it is not interested in financing this project.

8. Country Team Views: The Country Team views this project as being a key element of USAID/Philippines' current program, emphasizing the GOP's effort to develop the rural/agricultural sector, and accordingly recommends early authorization of the proposed loan.

9. Issues: See Section 5 of the paper.

10. Statutory Criteria: All statutory criteria have been satisfied (See Annex 12).

11. Recommendations: Authorization of a loan to the Republic of the Philippines to finance the foreign exchange costs of goods and services for the project as set forth in the draft loan authorization attached as Annex 15 is recommended.

CAPITAL ASSISTANCE COMMITTEE MEMBERS

USAID

Chairman	Richard M. Dangler
Loan Officer	Thomas E. Johnson
Engineer	Harrison L. Baker
Program Officer	Raymond Cohen
Economist	Rene R. Ruivivar

AID/W

Chairman	Alexander R. Love
Loan Officer	Laurance W. Bond
Engineer	Ray Stokely
Attorney	Stephen R. Tisa
Desk Office	Dennis M. Chandler
Special Consultant	Earl Clark

PART II - The Project

Section 1.A Background

The Philippine Government is in the process of developing a comprehensive strategy for rural development which it plans to present to the Consultative Group at the CG Paris meeting scheduled for December, 1974. Over the past two years, the total program for Philippine rural development has received increasing emphasis and allocations of government investments as well as contributions from A.I.D. and other donor agencies.

The A.I.D. assisted national rural electrification program is an integral component within the Philippine Government's comprehensive strategy for rural development. This is clearly articulated in the GOP's loan application letter requesting additional A.I.D. development loan assistance (see Annex 12). Other components of the comprehensive rural development strategy include substantially increased amounts of funding made available for rural credit, Government sponsored integrated production programs such as Masagana 99, greatly expanded agricultural credit for fertilizer and other input needs of rice and corn farmers, development of local government capabilities in planning and implementation of infrastructure facilities, a complex of programs in new irrigation facility development and a key new program oriented toward small scale industry for which a \$30 million IBRD loan is in the final stages of development. In many of these activities A.I.D. is playing a leading and catalytic role. That the comprehensive strategy is working is partially demonstrated by the remarkable recovery from the disastrous floods of 1972 and the record achievement in agricultural production achieved in 1973-74 and expected in 1974/1975.

The long-term favorable impact of the rural electrification component on the economic, social and political development of the rural areas will result from (a) improving the standard of electric services to the rural population, (b) providing a base for follow-on activities in small scale industry, pump irrigation, etc., and (c) supporting the development and acceptance of cooperatives as one vehicle for promoting development in the provincial areas.

The place of the rural electrification program in the Government's national development effort is enunciated in the current Philippine Government "Four-Year Development Plan FY 1974-77" as follows:

"One of the top priority projects of the government is the total electrification of the whole country. In the rural areas, the aim is to provide the power needs essential to increase the productivity in both agriculture and industrial activities. This will be done by

enhancing the benefits of irrigation and farm mechanization as well as by promoting the development of small and medium scale industries in the rural sector. Obviously, these programmed activities presuppose the availability of economical and continuous electric power in these areas. Likewise, providing electricity for lighting and household appliances will also contribute to raising the welfare of the rural population in terms of conveniences and comfort relative to social development, particularly to education and health.

"Consequently, with the view that, ultimately, rural development will be enhanced by the availability of economical and reliable electric power, the present rural electrification program becomes basically important to the new agrarian reform program."

The rural development aims of the GOP's Four-Year Development Plan, therefore, may be seen to closely parallel the intent of the U.S. Congress as expressed in the Foreign Assistance Act of 1973 and subsequent appropriations.

The Philippine rural electrification program is distinguished from rural electrification efforts in a number of LDC's (which essentially are based on extensions of operating profit motivated public utilities) in that it is national in scope, is utilizing the cooperative as the the vehicle for implementation and as in the parallel U. S. experience, relies heavily in the early years on extremely concessional soft-term lending to establish firmly the cooperatives' financial viability.

Rural electrification has definite social implications as well as economic which are also important in the Philippine overall developmental strategy. For many decades the Philippines was one of those areas of the world where the gap between the wealthy few and the multitude of the poor was highly visible. Narrowly held ownership of land and the facilities of production exacerbated the contrast and posed threats to stability and progress.

Formation of rural electric cooperatives is one of the steps being taken by the Philippine government to reduce the socio-economic imbalance. Part of the successful amelioration comes from providing more job opportunities and higher income in the barrios and rural towns. This hopefully will mitigate the trend of migration to Manila and other urban centers and could consequently lessen the impact of the squatter problem. Of great importance in the long run is the opportunity through successful member-owned electric cooperatives for rural people in low-income levels to own some portion of the economic structure. Accustomed to exploitation, thousands of people now-and millions later - are learning the responsibilities and enjoying the benefits of shared services through local cooperative ownership and control. By participating in the electric cooperative, by learning to speak up at local meetings, by volunteering for committee assignments, by acquiring through their own initiative plus government assistance a taste of better living,

more and more barrio folk will gain some measure of self-confidence and experience in practical rather than theoretical democracy. The effect on the political future may be as significant as the effect on the economy.

The NEA had earlier set short term targets of completing at least one cooperative backbone system in each of the 72 Philippine provinces by 1977 and having 100 cooperative systems operational serving 1,400 municipalities by 1980. More recent projections based on actual experience to date, indicate that the practical capacity of NEA is to complete the backbone cooperative systems for each province by 1982. The total estimated funding requirements through 1982 for the Phase I program is \$237 million equivalent of which \$111 million represents the foreign exchange requirement. Upon completion of the Phase I program (funding thru FY 1977, physical completion FY 1982), USAID believes NEA should be a technically viable and experienced institution and that the rural electric cooperative movement will have been sufficiently proven to maintain its own momentum thus warranting the phase out of the AID technical and financial assistance. However, concessional lending on terms similar to AID bilateral loans and/or a large measure of direct government subsidy will continue to be required if the national goal of total electrification is to be achieved. USAID strongly believes this goal is most likely to be achieved if AID continues to participate in a multilateral program of development of the power needs in which IBRD, ADB and other donor loans are used for expansion of power generation and transmission systems and AID continues through at least FY 1977 to support distribution of power to the rural areas and farms via locally owned and managed cooperatives. If this program is effected, it is estimated that loan funding by the IBRD, ADB and other sources for power generation and transmission will total slightly over \$1 Billion during the Phase I period (1971-1977) when AID will be directing its support for local power distribution via cooperatives.

The proposed \$20 million loan will leave a \$41 million foreign exchange requirement at current prices to complete the backbone system for at least one cooperative in each province to be completed under Phase I. The Mission has recommended AID financing of this near term requirement in FY 76 and FY 77. AID/W has taken issue with this approach and has requested USAID consideration of AID phase out of assistance following this loan. This will be addressed further in the DAP presentation and review.

The foreign exchange requirement to expand Phase I to meet the rapidly growing expansion of these backbone systems for nationwide coverage, the Philippine long-term goal, will require an estimated

additional \$1.6 Billion by 1994. USAID anticipated that beginning in about 1978 the Philippine government will either be in position to meet these foreign exchange costs or will turn to the IBRD and other international financing for their needs.

Local cost to Philippine domestic revenue to complete Phase I will be a dollar equivalent of \$120 million. Additional local costs to provide nationwide coverage by 1994 will be an estimated peso equivalent of \$1.3 Billion.

I.B. History

AID is assisting with electrification of the Philippines where 70% of the people, mostly in rural areas, are presently without electric service. Rural electrification in the Philippines prior to AID participation consisted primarily of short-line extensions to the country side from a small number of municipal and privately owned systems operating in the larger towns.

An AID-financed "National Electric Power Industry Survey" in 1965 recommended the initiation of a program to determine if the introduction of electricity into rural areas of the Philippines was a practicable undertaking. To develop this program, AID provided funding for a team from the National Rural Electric Cooperative Association (NRECA) to develop feasibility studies for two pilot rural electric cooperatives. NRECA was chosen for this effort because of its extensive background of electric cooperative experience in the United States.

The NRECA/AID Team surveyed 20 possible sites and finally selected for the two pilot project areas, Victorias-Manapla-Cadiz, In Negros Occidental (VRESCO) and Misamis Oriental, on Mindanao Island (MORESCO), for preparation of full feasibility studies. Upon acceptance of the feasibility studies in June 1968, the Government of the Philippines acting through the Electrification Administration made loans totaling P6.6 million for construction of MORESCO and VRESCO. Two simultaneous AID development loans totaling \$3.4 million were provided to finance the foreign exchange costs of engineering services, design and construction of the two prototype rural electric cooperatives. At the same time AID provided an additional \$350,000 in Feasibility Study loan funds for a team of NRECA consultants to generate feasibility studies as the basis for a follow-on national program of rural electrification through cooperatives.

In Fiscal Year 1972, AID authorized two loans and a grant to assist the Philippines program for rural electrification. Loan 492-H-027, dated November 15, 1971, authorized \$600,000 to provide consulting engineering services to assist NEA in developing its in-house capabilities for reviewing the work of architectural and engineering (A&E) firms, construction work, feasibility studies and the preparation of procurement bid packages. The services of the U.S. A&E were also to be made available to the local A&E firms and to the cooperatives as required.

Loan 492-H-028, dated May 2, 1972, provided 19.4 million dollars in foreign exchange for offshore procurement of materials and hardware, for acquisition of excess property and to continue the consulting engineering services beyond the two years funded out of Loan 492-H-027.

PROP No. 492-11-220-248, dated April 14, 1972, programmed \$2.3 million to continue the institutional development assistance by NRECA through Fiscal Year 1976. This grant assistance is being provided to NEA at the national level and to the rural electric cooperatives at the local level.

Assistance was also provided to NPC for an island wide planning study of Mindanao under Loan 492-H-023 - (Feasibility Studies) to develop a grid system to provide central station generation and transmission of power from the low cost hydro electric site at Lake Lanao to urban centers and the major electric cooperative sites slated for development on Mindanao. Financing of the G and T program developed by the study has been undertaken by ADB which provided loans of \$41 million in 1971. ADB is currently processing a follow-on loan for additional generation.

In addition AID Loan 492-H-032 provides financing for an expanded 69 KW transmission network extending through the provinces of Camarines Sur, Albay and Sorsogon in the Bicol Peninsula - thereby extending power brought to the area by the IBRD financed 230 KWV lines and providing a base for initiation of electric distribution projects within the area. This loan complements both the loans to NEA for distribution coopes and the current planning effort at area development in the Bicol area financed under an AID approved grant project in FY 73.

In June 1974 a second major development loan was completed (492-T-034) adding \$18,000,000 to finance additional goods and services following the same procedures established in the earlier loans.

C. Progress under previous AID Loans

The original rural electrification project funding plan called for the construction of up to 36 rural electric cooperative systems. AID allocated a total of \$20M in loan funds for goods and service plus \$5 million in the form of technical services and excess property. The Philippine Government pledged the balance of the original 92 million program from Japanese Reparations, P. 480 generated pesos, and local currency from national budget revenues.

As of October 1, 1974 \$19.4 million of AID loan funds (492-H-028), FY 72) to be used for commodities was contracted and the remaining \$600,000 (492-H-027) has been used to fund the contract with U.S. engineering firm Stanley Consultants, Inc.

Progress under the second rural electrification loan (492-T-034 FY 74), amounts to a continuation and expansion of activities under previous loans. As of November 1, 1974 about \$8 million of this \$18 M loan had been committed for procurement of conductor and another \$600,000 had been earmarked to support the continuation of the services of Stanley Consultants for another two years. The balance of the funds available under 492-T-034 FY 74 will be used to support IFB No. 4 scheduled for issuance by December 15, 1974. Letters of Credit for the full amount of loan 492-T-034 FY 74 will be issued before February 1, 1975.

NEA has made an impressive beginning in its quest for nationwide electrification. By October 1, 1974, 54 systems had been registered and loan agreements totaling ₱721M had been concluded. Over 160,000 cooperative members are now receiving electric service from 27 cooperatives considered to be in an operating status. This is estimated to provide electric power directly to over one million people. Further details of program accomplishments are set forth in Annex 2.

D. Relationship to Philippine Programs

1. Power Sector Development

Historically the responsibility for supplying electric service in the Philippines has been divided among private, Municipal and Government entities. The National Power Corporation (NPC), a Government corporation, has been functioning since before World War II and today has an extensive generation and transmission system on the islands of Luzon and Mindanao. It also operates a few small isolated diesel and hydro-electric systems at several places throughout the islands. NPC sells power at wholesale to franchise holders and to a few large industrial loads.

Manila Electric Company (MERALCO) is the most significant electric utility in the Philippines. This privately-financed company operates large generation and distribution facilities in the Greater Manila area, and accounts for about two-thirds of the Philippine retail sales. Over 500 small municipal and private franchise holders are operating in the Philippines, but most of these are supplying less than 24-hour service. Electric cooperatives, which are just coming into the power scene, make up about 5% of the electric utility business.

Development of the Power Sector prior to 1970 was on a piecemeal basis and poorly coordinated. In 1970 and 1971 a consultative group headed by the World Bank reached agreement with the Philippine Government concerning power sector support. The IBRD agreed to fund an orderly program of generation and transmission facilities for NPC in Luzon while the Asian Development Bank agreed to support similar facilities in Mindanao. AID participated in the plan by allocating funds for the development of electric cooperatives which would distribute power furnished from the NPC grid and other generation sources to the rural consumers.

Other bilateral donors are undertaking an increasing role in power sector development - again focusing on the major capital requirements for generation. France recently concluded a supplier's credit loan at approximately \$20,000,000 to NPC for 5,000 KW generators. Half of these units will support electric coops and the balance will be available to private utilities in the secondary cities. A key aspect of the program is the encouraging approach by NEA, NPC and the private utilities to the undertaking of joint generating projects. These programs will provide larger and more economical diesel generation to all parties and they provide the only hope

for the provision of economical electrification to the dispersed load centers throughout the numerous island groups in the Visayas where construction of backbone grid systems is not currently feasible.

With the advent of Martial Law in September 1972, the Government elected to shoulder all responsibilities for future large scale generation and transmission systems including the MERALCO system. Plans are now underway for NPC to add geothermal power facilities at two locations on Luzon and to investigate similar possibilities in Leyte and other areas. Hydro-electric facilities are being developed and expanded in Luzon and Mindanao. NPC is now in the final stages of plans to place orders for a 600 MW nuclear unit which is scheduled for initial operation in 1984. Several small generating plans of up to 5 MW each will continue to be added by private operators and by cooperatives until loads are developed sufficiently to support larger installation.

Future power supply efforts in the Philippines will be directed toward full utilization of hydro-electric and geothermal sources with NPC being the implementing agency. NPC is now embarking on an extensive program to develop all non-petroleum fired generation such as hydro, geothermal and nuclear, and utilization of domestic coal reserves for power production.

Wherever possible, NPC will be the primary source of wholesale power and rural electric cooperative systems will be scheduled for completion to coincide with the completion of the NPC grid facilities. Use of the earlier planned 1000-1500 KW diesel generators will be reduced and limited to very high priority areas isolated from other available sources of power.

The most current estimates for the Philippines Power sector are set forth in the Nov. 7, 1974 IBRD economic report. These estimates cover revised GOP investment priorities and financial requirements for the power sector and reflect a reevaluation by the GOP of its power requirements in light of recent developments within the world energy picture. Under this program the capital investments required to follow through on developments, including hydro, geothermal and nuclear plants, will reach nearly \$270 million over the 1974-1977 period. This comprises approximately 41% of the government's infrastructure program during this period.

The 1974 sixth power loan from the World Bank(\$61 million) will finance transmission system expansion and the 100 MW hydro unit at Pantabangan Dam in Central Luzon.

The NEA program for rural electrification -over this period comprise less than 15% of the proposed investments in the power sector. Taken in conjunction with existing plant investments in power (which was heavily focused on and major urban areas) - the electric program will be less than 10% of power sector investment - whereas it is targeted toward 70% of the population. Substantially larger investments in rural electrification will be required in the future if the rural sector is to catch up with the rapidly expanding use and requirements for investment in the urban sector.

As an illustration of these requirements, USAID and the NEA have projected the demand for capital in the rural electrification program through 1995 - the NEA target date for nationwide coverage with electric power. (Page 10).

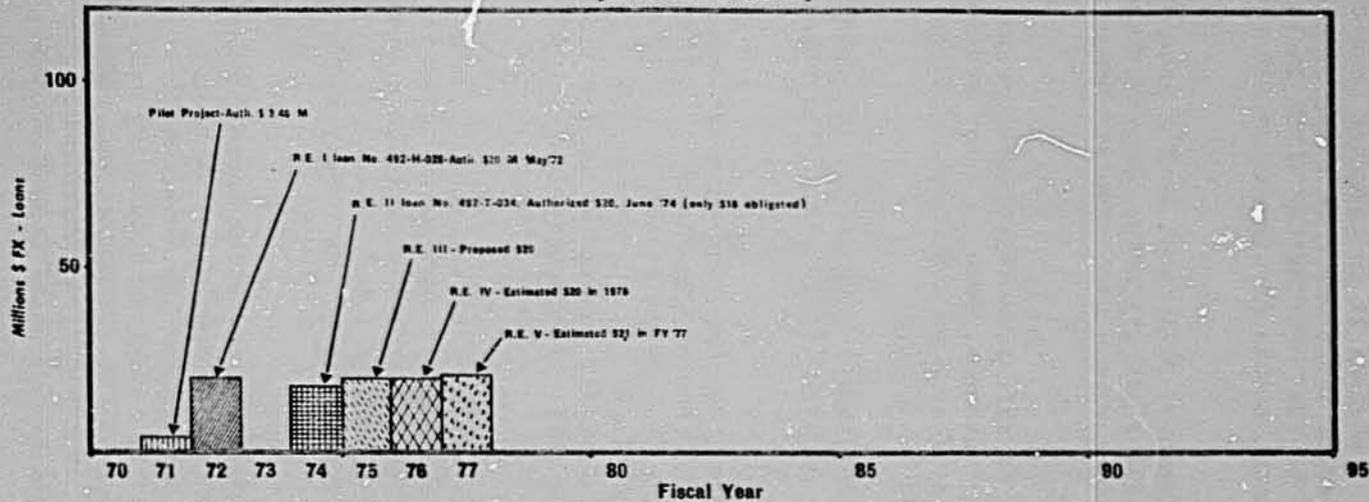
While it is doubtful that NEA will be able to sustain such an expanded program, the tasks at hand are obviously erroneous, even on a reduced investment scale. Some of the key aspects of such an investment program that must receive priority attention are as follows:

- (1) Development of an expanded-multilateral support for the rural electrification phase of the power program if even partial investment goals are to be reached.
- (2) Financial management of the electric coops and rate schedules for rural systems must be set with a focus of generating the maximum amount of internally generated funds for system expansion through capital formation by the coops themselves. If 20% of new capital requirements could be generated, internally generated funds could provide between \$10 and \$30 million year - progressively between 1980 and 1995.
- (3) An ongoing evaluation of rural electrification institutionalized within the GOP itself - must be undertaken to provide GOP planners with meaningful data on actual social and economic benefits achieved so that allocation of scarce capital between rural electrical, other parts of the power sector and other priority sector requirements can sensibly be undertaken.
- (4) Geographical dispersion of individual operating coops - based initially on a low cost "core" system with the highest economic returns - is essential to provide a basis for the development of both the management talent and capital resources within the rural areas necessary to support the program. To the extent that these functions are unduely shifted back to the central government, the program will increasingly fall short of potential accomplishments.

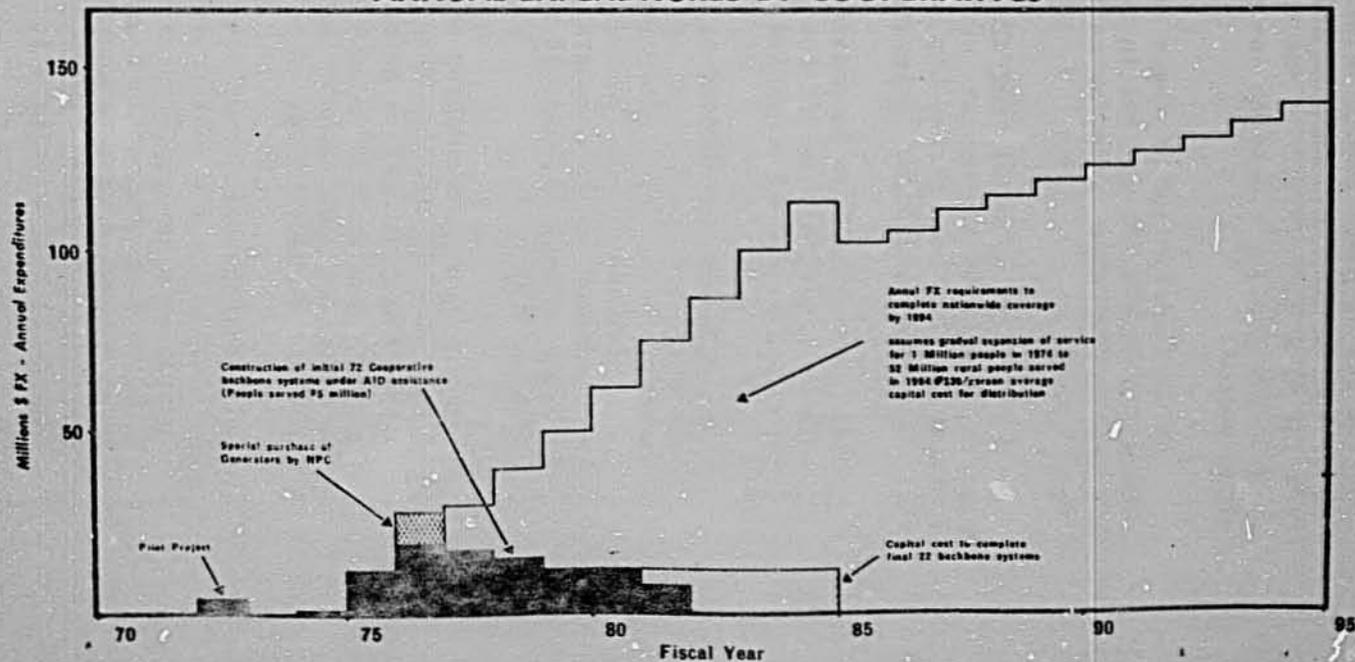
PHILIPPINE RURAL ELECTRIFICATION PROGRAM

OBLIGATIONS A.I.D. D. L. FUNDS

[actual and proposed]



ANNUAL EXPENDITURES BY COOPERATIVES



(5) The current reliance of the external manufacture and financing of commodity requirements (currently 55% of program requirements) must be reduced as rapidly as possible. Increased in country manufacture reduces foreign exchange drain, spreads the available external capital, and most importantly provides a substantial market for incountry manufacture with a large employment potential throughout the country. This concern also extends to the imported incountry trade offs for manufacture and supply of consumer and industrial goods that will develop as a result of increased power availability throughout the country.

D.2. Project Beneficiaries - Income and Employment; Relationship to Agriculture and Small Industry Programs

The goal of this project, in supporting the GOP national rural electrification program, is to further the welfare of the people in the rural areas and to increase income and employment opportunities in the rural areas by making electric power available at reasonable rates for both household amenities and increased production.

Implicit in this goal statement is the fact that the beneficiaries of the project will fall into two distinct but not necessarily mutually exclusive categories (1) those directly benefiting from the project by means of direct access to the electric service introduced into the project area and (2) the indirect beneficiaries who will over the longer run participate in the increased income and employment opportunities that will be created in the rural area. It is anticipated that the indirect beneficiaries will include a portion of the lower income population who may not yet be able to afford electric service or who do not receive direct service because they reside outside the immediate service area of the electric coop.

Since the inception of the rural electrification program in the Philippines, the government has made it abundantly clear that they were not prepared to support rural electrification if the benefits were essentially improved services to the connected customers. The overriding objective is the utilization of electric power to promote productive enterprises with the attendant creation of increased income and employment.

a. Setting

The Philippine economy, as other LDC's, has been characterized as a "dual" economy with a rapidly growing modern sector concentrated basically in the greater Manila area and to a lesser extent in secondary urban areas such as Cebu. With the exception of extractive industries and certain agricultural activities such as sugar, growth within the economy has centered in these areas. Investments in electric power to date have heavily concentrated on service to these areas and the majority of the 30% of the Philippine population served has been within these areas. The remaining 70% who are the long-term target beneficiaries of rural electrification reside in the rural areas and small municipalities.

It is within these areas that the poverty problem within the Philippines is the greatest. 12 of the 15 million Filipinos who fall within the lower 40% income bracket reside in the rural area. The geographical distribution of this population is set out in the table on page 12a extracted from the IBRD economic report and based on the 1971 household statistics. A location map of the individual regions is also included on page 12b.

Regional Population Distribution, Family Income
and Distribution of the Bottom 40 Percent in 1971

<u>Region</u>	1971 Population (mid-year)		Family Income (Pesos)			Distribution of Bottom 40% of Families		
	(million)	%	Mean	Median	C/B (%)	No. of People (Millions)	%	D/A (%)
	<u>A</u>		<u>B</u>	<u>C</u>		<u>D</u>		
<u>Philippines - Total</u>	<u>37.92</u>	<u>100.0</u>	<u>3736</u>	<u>2454</u>	<u>65.7</u>	<u>15.17</u>	<u>100.0</u>	<u>40.0</u>
<u>Northern Luzon</u>	<u>3.39</u>	<u>8.9</u>	<u>2890</u>	<u>1741</u>	<u>60.2</u>	<u>1.87</u>	<u>12.4</u>	<u>55.2</u>
Ilocos	1.87	4.9	3299	1813	55.0	0.98	6.5	52.4
Cagayan Valley	1.52	4.0	2390	1652	69.1	0.89	5.9	58.6
<u>Central Luzon</u>	<u>6.68</u>	<u>17.6</u>	<u>4895</u>	<u>3556</u>	<u>72.7</u>	<u>1.61</u>	<u>10.6</u>	<u>24.1</u>
City of Manila	1.40	3.7	7785	5202	66.8	0.10	0.6	7.1
Central Luzon	5.28	13.9	4127	3119	75.6	1.51	10.0	28.6
<u>Southern Luzon</u>	<u>10.16</u>	<u>26.8</u>	<u>3868</u>	<u>2634</u>	<u>68.1</u>	<u>3.81</u>	<u>25.0</u>	<u>37.5</u>
Southern Tagalog ^{/a}	7.12	18.8	4332	2960	68.3	2.25	14.7	31.6
Bicol	3.04	8.0	2784	1874	67.3	1.56	10.3	51.3
<u>Visayas</u>	<u>9.38</u>	<u>24.8</u>	<u>2818</u>	<u>1930</u>	<u>68.5</u>	<u>4.68</u>	<u>30.0</u>	<u>49.9</u>
Western Visayas	3.86	10.2	3206	2332	72.7	1.50	9.9	38.9
Eastern Visayas	5.52	14.6	2548	1651	64.8	3.18	21.0	57.6
<u>Mindanao</u>	<u>8.31</u>	<u>21.9</u>	<u>3382</u>	<u>2411</u>	<u>71.3</u>	<u>3.20</u>	<u>21.1</u>	<u>38.5</u>
NE Mindanao	3.14	8.3	3062	2186	71.4	1.36	9.0	43.3
SW Mindanao	5.17	13.6	3577	2549	71.3	1.84	12.1	35.6

Source: (a) Population - by interpolating 1970 Census data.

(b) Mirares, Tito A. and I. C. Belarmino, "Some Notes on the Sources of Income Disparities among Philippines Families," Journal of Philippine Statistics, Vol. 24, No. 4, 4th quarter 1973, P xv-xxii.

(c) Distribution of bottom 40 percent of families based on mission calculations using the 1971 household income-expenditure survey data.

^{/a} Includes part of the Greater Manila Area.

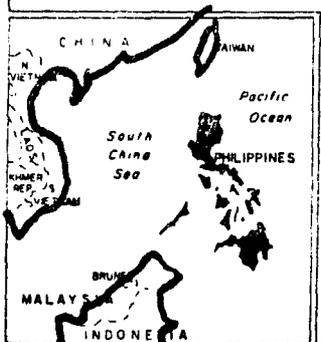
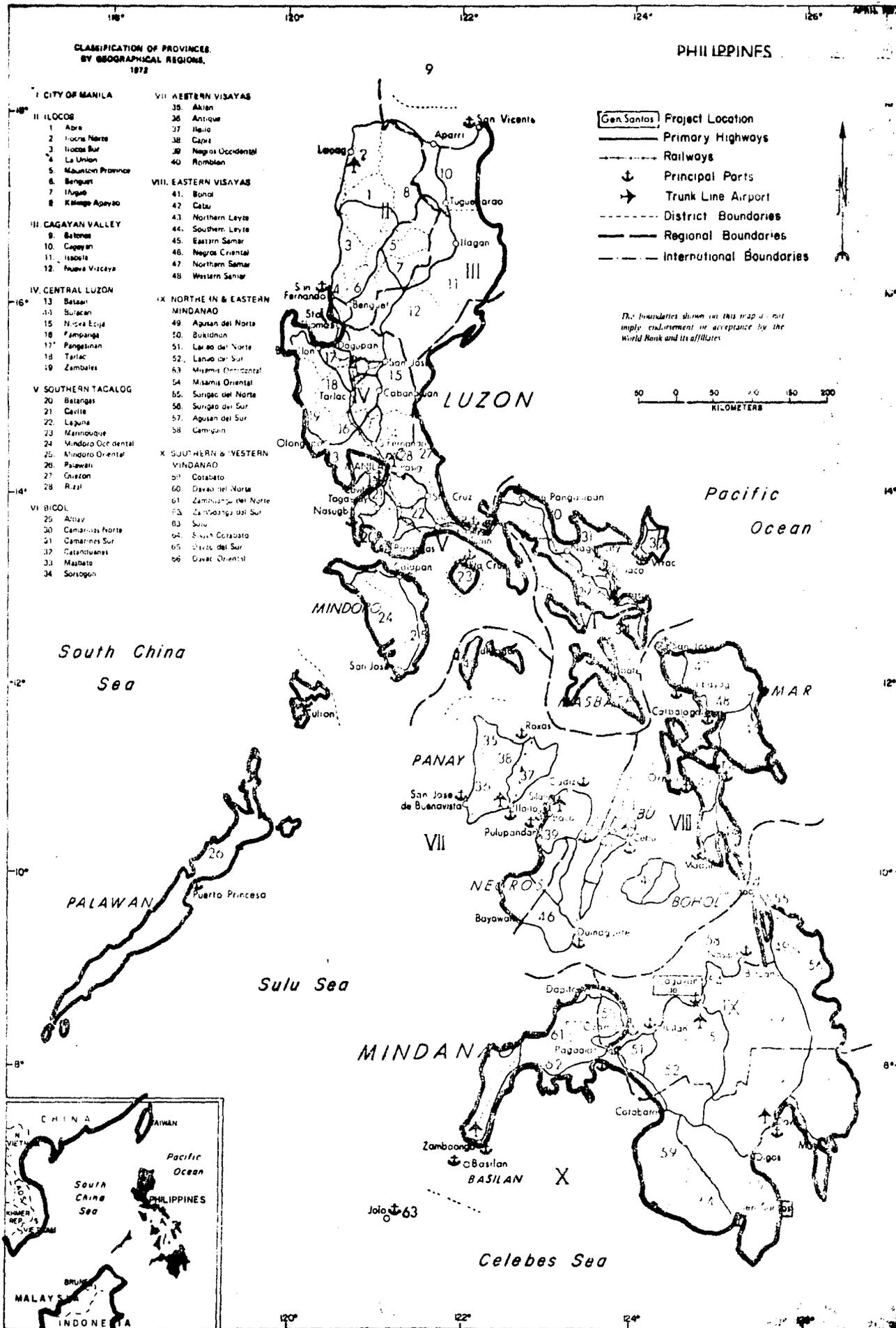
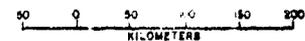
CLASSIFICATION OF PROVINCES BY GEOGRAPHICAL REGIONS, 1972

PHILIPPINES

- I. CITY OF MANILA
- II. ILOCOS
 - 1 Abra
 - 2 Ilocos Norte
 - 3 Ilocos Sur
 - 4 La Union
 - 5 Mountain Province
 - 6 Benguet
 - 7 Ifugao
 - 8 Kalinga-Apayao
- III. CAGAYAN VALLEY
 - 9 Batanes
 - 10 Cagayan
 - 11 Isabela
 - 12 Nueva Vizcaya
- IV. CENTRAL LUZON
 - 13 Bataan
 - 14 Bulacan
 - 15 Nueva Ecija
 - 16 Pangasinan
 - 17 Pampanga
 - 18 Tarlac
 - 19 Zambales
- V. SOUTHERN TACALOG
 - 20 Batangas
 - 21 Cavite
 - 22 Laguna
 - 23 Marikina
 - 24 Mindoro Occidental
 - 25 Mindoro Oriental
 - 26 Palawan
 - 27 Quezon
 - 28 Rizal
- VI. BICOL
 - 29 Albay
 - 30 Camarines Norte
 - 31 Camarines Sur
 - 32 Catanduanes
 - 33 Masbate
 - 34 Sorsogon
- VII. WESTERN VISAYAS
 - 35 Aklan
 - 36 Antique
 - 37 Iloilo
 - 38 Capiz
 - 39 Negros Occidental
 - 40 Romblon
- VIII. EASTERN VISAYAS
 - 41 Bohol
 - 42 Cebu
 - 43 Northern Leyte
 - 44 Southern Leyte
 - 45 Eastern Samar
 - 46 Negros Oriental
 - 47 Northern Samar
 - 48 Western Samar
- IX. NORTHEASTERN MINDANAO
 - 49 Agusan del Norte
 - 50 Bukidnon
 - 51 Lanao del Norte
 - 52 Lanao del Sur
 - 53 Misamis Occidental
 - 54 Misamis Oriental
 - 55 Surigao del Norte
 - 56 Surigao del Sur
 - 57 Agusan del Sur
 - 58 Compostela
- X. SOUTHERN & WESTERN MINDANAO
 - 59 Cotabato
 - 60 Davao del Norte
 - 61 Zamboanga del Norte
 - 62 Zamboanga del Sur
 - 63 Sulu
 - 64 South Cotabato
 - 65 Divisoria del Sur
 - 66 Davao Oriental

Gen. Santos Project Location
 — Primary Highways
 - - - Railways
 ⚓ Principal Ports
 ✈ Trunk Line Airport
 - - - District Boundaries
 - - - Regional Boundaries
 - - - International Boundaries

The boundaries shown on this map do not imply endorsement or acceptance by the World Bank and its affiliates



Annex I, which shows the current target areas for electric coops, indicates the essentially national coverage of the rural electric coop program and its focus on the major areas of low income incidence. Pockets of urban concentration such as Davao, Bacolod, Cagayan de Oro, Iligan City, Iloilo, Angeles City, etc., are excluded from the program and electric power development left to the private sector.

From a geographical dispersion point of view, the program is clearly oriented toward the geographical areas where the majority of the low income population reside.

b. Employment generation

The Philippines faces a difficult task in creating sufficient new job opportunities for the rapidly increasing population. Given the heavily rural concentration of the population, the largest additions to the labor force will develop in the rural areas. The GOP will either have to create job opportunities within the rural areas or witness continued migration to the urban centers as has occurred increasingly in the past. The rural urban migration pattern has already resulted in creation of the largest pool of unemployed in the urban area. As indicated in the 4 year plan - 356,000 or 56% of the 636,000 unemployed in 1971 were urban unemployed. Failure to create greater rural job opportunities therefore will likely exacerbate this problem.

Unfortunately, agriculture, the largest rural and national employer (1970 - 6.4 million) does not of itself offer a solution to this problem. The agricultural sector historically has been marked by a progressive expansion of subsistence farming into underdeveloped land areas thus both absorbing population additions into agricultural employment and providing increased food production. Sometime in the 1960's the limits of land extension were reached and the increased population will increasingly be surplus to the labor requirements of the farm sector.

IBRD estimates in their 1973 economic report indicate a new labor force addition of 3.9 million people to the labor force through the period of 1970-1980. Only 1.0 million of these will be absorbed into agriculture. 2.4 million will be absorbed by mining, manufacturing and services and an estimated 300,000 will be added to the unemployed.

Population and Employment
1960, 1970 and 1980 /a

	Number (millions)			Average Annual Growth	
	1960	1970	1980	1960-70	1970-80
Population	27.6	37.2	50.0	3.0	3.0
Labor Force	9.9	12.9	16.8	2.7	2.7
Employment	9.3	11.9	15.5	2.5	2.5
Agriculture	5.7	6.4	7.1	1.2	1.0
Mining and Manufacturing	1.2	1.5	1.9	2.3	3.0
Services	2.4	4.0	6.5	5.1	4.8
Unemployment	0.6	1.0	1.3	5.0	2.7

Creating non-agricultural employment opportunities in the rural areas is therefore a key objective of the Philippine government. Rural electrification is a key ingredient in the GOP program to create the supporting infrastructure to sustain such a program. It is insufficient of and by itself, but other supporting programs to facilitate the productive use of the power are under development.

As a footnote to the employment aspect, the rural electric program will create a number of direct employment opportunities within the coops themselves and in the expansion of the activities of the construction industry necessary for expansion of the systems. In addition increased employment opportunities will be created by developing markets for electrical goods and other materials necessary for the construction phase and by creating markets for increased consumer and industrial goods resulting from the expanded access to electric service.

c. Income and Agriculture

The potential impact on increased income from rural electrification projects is more far reaching than its direct impact on employment. While creating new non-farm employment will help the income distribution problem, rural electrification will also contribute to increased incomes in the farm sector itself - both with respect to farm incomes and agro industries. While agriculture does not provide a sufficient scope for new employment generation - it does provide the main opportunity for increasing rural incomes. This is illustrated by the fact that while agriculture will absorb directly only 25% of the new labor force, it constituted in 1970 54% of the labor force and the major portion of the population in the lower income brackets.

Rural electrification will directly support the agricultural sector in two respects (1) facilitating introduction of new small scale electric pumping projects and (2) supporting agro industrial development such as rice milling, drying and storage, food preservation and processing, poultry breeding, etc.

NEA has actively pursued pump irrigation projects in conjunction with the National Irrigation Association (NIA), the Development Academy of the Philippines (DAP), and the Provincial Development Assistance Program (PDAP). The resulting BISA Phase I program currently has proposed projects under development in 11 provinces; e.g. Ilocos Norte, Capiz, Pampanga, Abra, Lanao del Sur, Isabela, La Union, Camarines Sur, Iloilo and Laguna. In toto these projects will cover 22793 hectares and serve 14,856 farm families. Phase II will cover 12,900 hectares and serve 6,450 farm families. Expansion potential is substantial as indicated in the IBRD Ag Sector survey of 1972 with 385,000 hectares of potential pump irrigation nationwide. The two largest blocks of which fall in the lowest income areas of the Eastern Visages and Southern and Western Mindanao (approximately 150,000 ha).

Self-sufficiency of rice is estimated to require 300,000 ha of newly irrigated land between 1975 and 1980.

Pump irrigation also provides substantial benefits to the electric coop since this constitutes a large load block and one that can be served during off-peak periods, thereby improving the coops' load factor and thereby generating incremental income without equivalent incremental capital investment.

An expanded pilot pump irrigation effort is under review for AID financing in Lanao del Sur for possible FY 76 financing.

d. Small Scale Industry Program

In order to achieve the income redistribution to aid employment generation within the rural areas as set forth in GOP plans, it will be necessary for the GOP to marshal an expanded program of assistance to promote regional dispersal of industry and support to small scale industries. As noted above electric power is a key ingredient in the basic infrastructure required to support such a program.

USAID and a variety of other donors has been working with the GOP on this problem and the December 74 consultative group will review a comprehensive overall analysis by the IBRD and the GOP on Industrial Development Problems and Prospects, including coverage of regional dispersal and support of small scale industries.

As noted in this report there are 332,000 workers in industrial establishments with 20 or more workers. 156,000 of these workers are employed in the greater Manila area and another 100,000 in other parts of Luzon. Only 76,000 are located in the Visayas and Mindanao.

Significantly nearly one million workers or 71% of the manufacturing labor force is engaged in establishments of under 5 persons. Statistics on this group are not totally reliable, but the IBRD estimates that there is reasonable regional distribution of the small industry grouping.

These factors clearly indicate the substantial potential for employment generation through promotion of small scale industries in general and the desirability of geographical dispersion of larger establishments which will create opportunities for small scale manufacture geared to subcontracting and service of the larger industries.

Based on the work now completed on this program, the IBRD is now finalizing a \$30 million loan to the GOP to promote regional dispersion and support to small scale industries. One component of this loan is a \$2.5 million sub-allocation of funds to support expansion of the co-operative handicraft and cottage industries program developed by NEA under its power use program. The current status of this program is more fully discussed in Section 2F. IBRD support of this program within two years of its initiation is a real credit to NEA's efforts to date.

A second major aspect of the IBRD/GOP effort is a regional development program based on small industry promotion in the Northern Mindanao area. This program will focus on the provinces of Bukidnon, Lanao del Sur and Misamis Oriental. NEA has operating coop in Misamis Oriental and Lanao del Sur and scheduled coops in the other two provinces to be financed under AID loans. The population of this area is 2.0 million or 5% of the Philippine population. 100,000 people live in the urban center of Cagayan de Oro and Iliga. The majority of the balance live in rural areas where electric service, if it is provided, will need to be supplied by electric coops. The program is under the direction of the Board of Investments and will focus on agro-based and labor intensive small industries. Thus NEA's early coop efforts are already complementing the GOP's overall effort to disperse the benefits of its economic development program.

Based on results in the Northern Mindanao area - the GOP will extend the program to other selected areas.

Summary

The major thrust of the rural electrification program in the eyes of the GOP continues to be that of a necessary component of a long overdue program to create increased employment opportunities in the heretofore neglected rural areas of the Philippines. The GOP recognizes both the role that availability of electric power can play in promoting improved agricultural yield through irrigation, related expansion of agro-industrial development and most importantly in the creation of non-agricultural job opportunities necessary for absorption of the excess labor force that will be generated in the rural areas in the near future. The program will, we hope, help ameliorate rural urban migration with its enormous problems.

In this context, and in consideration of the promising progress in launching related programs in small scale industries, the Project Committee believes the program is on track and will over the long run assist in improving the well-being of the poor majority of the population consistent with AID's congressional mandate.

E. Philippine Economic Performance and Debt Service Capacity

With a major economic stabilization program initiated in February 1970, which included devaluation of the peso, the 30th position improved considerably and a small surplus was realized in 1970 and 1971. The capital account, however, continued to be under pressure due to heavy repayment of short and medium-term debt. Performance in 1972, while not all favorable, resulted in an overall BOP surplus of \$94 million. Developments during 1973 were unprecedented. GNP growth is officially estimated at 10 percent, compared to 4.1 percent in 1972. The BOP surplus amounted to \$671 million due mainly to large trade surplus which in turn was a result primarily of unprecedentedly high export prices. Merchandise exports are 70 percent higher than in 1972. Investment growth accelerated in 1973 reflecting increased business confidence and the salutary effects of investment incentives. Investment growth was also facilitated by greatly improved domestic savings efforts. In 1973, however, the economy had to cope with a major inflation which worsened during the second half of the year and reached an annual rate of 40%. This was caused by excess liquidity, domestic food shortages and imported inflation.

Growth prospects in 1974 and beyond are substantially less optimistic in view of the abrupt reversal of the terms of trade by mid-1974. It is estimated that the terms of trade will decline about 23% in 1973 and 1974 to a level that prevailed in 1972.

Growth prospects for the Philippine economy are correspondingly diminished and estimated GNP growth for 1974 is 7%.

The GOP has taken advantage of the recent export boom to improve its external debt structure. External debt service to export receipts has been reduced to 15% in 1974. This improvement is a welcome change from the 27% ratio in 1971.

However the reversal of the term of trade are estimated to result in a trade deficit of \$680 million in 1975. Given this deterioration in the external sector, the GOP will require capital inflows of \$2.24 billion in 1975 and 1976 if the government's growth targets are not to be reduced. Direct investments, trade finance and medium and long-term loans will account for much of this requirement - However, a resource gap of \$180 million is estimated in 1974 and \$410 million in 1975. In the event this gap is not filled by external medium and long-term credit sources the GOP will either have to resort to short-term borrowing or reduce growth targets. Resort to short-term borrowing would reduce net reserves to negligible levels by 1976.

Annex 9 provides a more detailed economic summary.

SECTION 2- Project Analysis

A. Borrower and Implementing Agencies

1. Borrower

The Borrower for the proposed loan will be the Government of the Philippines through the National Economic and Development authority. In applying for the loan, the following assurances have been given:

a. The GOP will provide local currency and other resources as may be required to enable the National Electrification Administration to implement the electrification program on a timely basis.

b. The GOP will absorb any "maintenance of foreign exchange value" risks in behalf of NEA and the rural electric cooperatives.

The GOP plans to provide the loan proceeds to NEA on the same terms as the AID loan.

2. National Electrification Administration

The implementing agency for the overall project will be the National Electrification Administration (NEA) which was established in 1969 under the provisions of R.A. 6038 and reorganized and expanded December 1, 1973 in accordance with Presidential Decree No. 269 dated August 6, 1973.

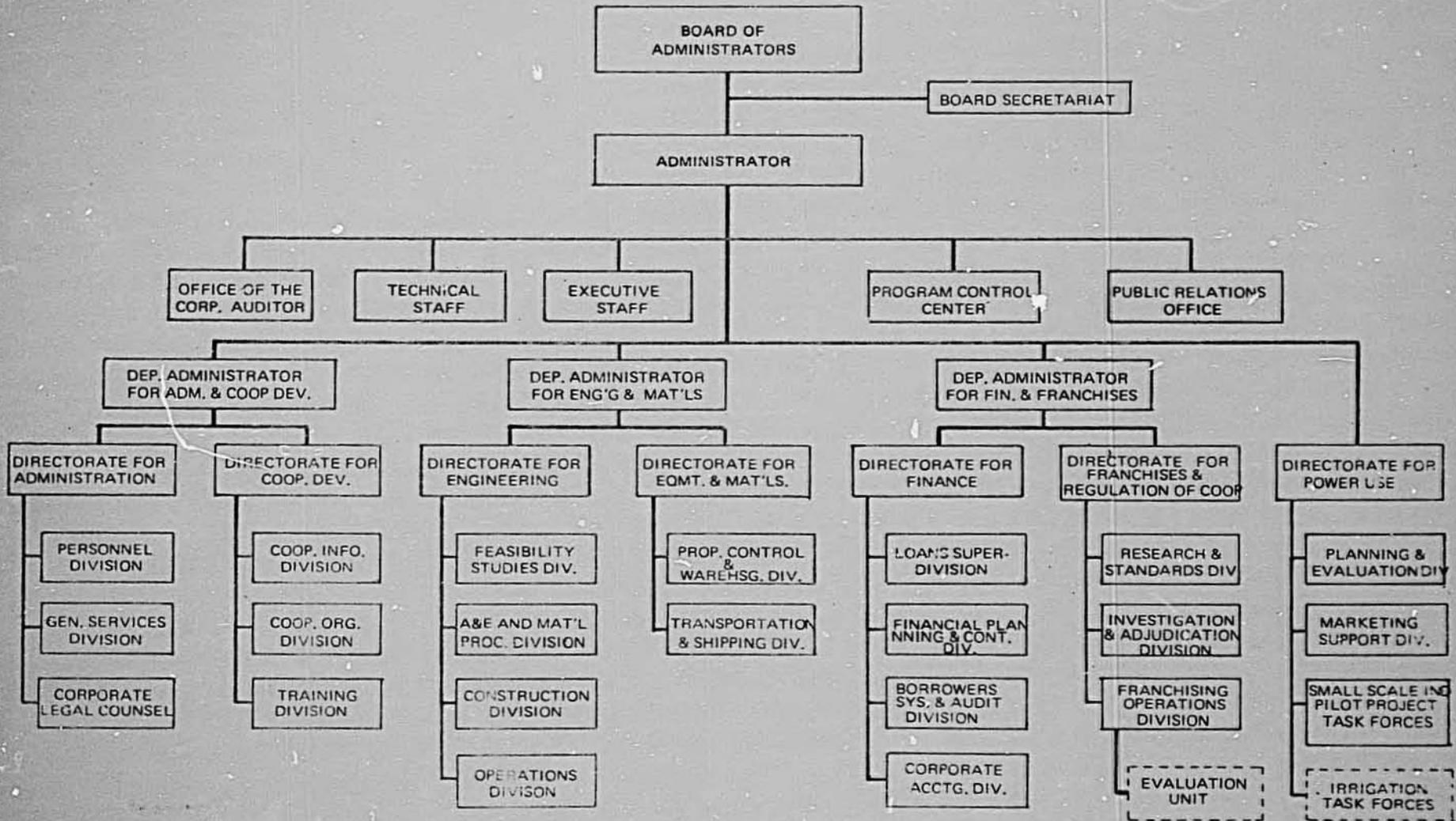
The powers of NEA are vested in a Board of Administrators headed by Mr. Ramon Ravanzo who is also General Manager of the National Power Corporation. Other members of the Board are General Ceferino Carreon, who heads several agencies related to the communication industry, Jaime Laya, Deputy Director of the National Economic and Development Authority, and Dean Alfredo Juinio, Administrator of the National Irrigation Administration.

The Administrator of NEA, Col. Pedro G. Dumol has headed the agency since July 1970. The Administrator is assisted by three Deputies who in turn supervise seven directorates covering all NEA functions. See NEA's current organization chart page 18a. As of November 1974 NEA had 400 employees. As NEA's program has progressed, Agency competence has developed most rapidly in functional areas where program demands have been the greatest. Competence in the areas of training, cooperative formation, and feasibility studies developed early. Engineering competence both within NEA and within the related local consulting firms has also now advanced to a high level of competence along with related experience in materials procurement.

Material handling and warehousing are now a prime area of focus and recent progress has been excellent with the assistance of outside consultants.

Contracting, construction management, finance and evaluation are still areas of deficiency and consulting assistance will focus increasingly on these areas as the program progresses and as these functional specialties become program constraints. To address these areas of concern, AID has provided, or is programming, specific technical assistance over and above the ongoing assistance being provided by the long term consultants - Stanly and NRECA.

NATIONAL ELECTRIFICATION ADMINISTRATION
 ORGANIZATION CHART



1 (a)

Two months of consulting assistance was provided by an AID consultant who undertook (in conjunction with NEA, USAID, the individual coops, consultants and private engineering firms) a detailed field inspection of major construction work accomplished to date. This review covered in some cases a pole by pole review of work completed to date and resulted in a detailed program for improvement of construction and construction supervision of coops.

The same consultant assisted the updated existing and potential contracting capabilities in the private sector. This was both to provide a supporting analysis of contracting capability to undertake this loan and to assist NEA expand participation of the private sector.

A financial analyst from the NESA Bureau is now on TDY in Manila to undertake a comprehensive review with NEA of revisions of the financial reporting and management of NEA's portfolio. In conjunction with this exercise a review of the performance of NEA's feasibility study section will be undertaken to insure that actual operating results from existing coops are systematically fed back into the feasibility studies; thereby allowing periodic revision and updating of feasibility studies based on actual field experience.

Discussions with NEA since the last loan approval in June of this year has also concentrated on development of a nucleus within NEA for continuing evaluation of the impact of the electric cooperatives in the rural areas. A new evaluation unit is being formed within the Department of Finance and Franchises to work on this problem. The head of this unit was brought to the U.S. this fall as a participant and spent two weeks with key officials at the World Bank who have been undertaking a two year evaluation of rural electrification projects in preparation of a major IBRD entry into this field as an active donor. The World Bank has offered to cooperate with NEA in the evaluation of their program and the development of a permanent in-house NEA capacity to continue this function.

In the overall, the project committee believes NEA's institutional progress since the first AID loan has been remarkable. Deficiencies still exist but will be handled through the continued provision of consulting assistance during the project implementation.

The annual balance sheet for NEA and explanatory information dated June 30, 1974 and attached hereto as Annex 4 shows total assets of \$296 million have been paid in the form of capital stock and capital surplus. Subscribed but unpaid capital stock as of June 30, 1974 is \$860 million of which \$482 million represents peso proceeds appropriated from general revenue or otherwise provided for and to be paid in against stock subscriptions over the next three years. This is sufficient to meet the requirements of the on-going projects, the activities to be covered by the proposed loan and subsequent activities. These subscriptions will be paid to NEA as project implementation proceeds.

It should be noted that a detailed internal financial review of NEA's operations at the present time is essentially meaningless given the large capital lending requirements of NEA's program, the deferred earning potential from individual coop loans, and the small base of existing coops. NEA is now and will continue to be for the next ten years essentially a conduit for

transfer of central government funds to the new systems.

In the second decade of NEA's existence, capital returns from coop loans and internal cash generation by the coops will become an increasingly important financial aspect of the program.

3. Rural Electric Cooperatives

The sub-borrowers of NEA and individual implementing agencies will be the rural electric cooperatives themselves. Each of these cooperatives are non-stock, non-profit membership cooperatives organized for the sole and specific purpose of supplying electric service on an area coverage basis. Most of the electric coops are registered under the provisions of Chapter II of P.D. 269, although some coops are conversions of systems established under earlier acts.

Each coop has full corporate powers required to operate as an electric utility and may generate, transmit and distribute electric power to its members (and non-members up to ten percent of the number of its membership). These coops, on the average, serve a population area of 100,000 people and an initial load of 7-7,500 customers (4 years).

The electric coops also have the authority to assist and promote power use through re-lending of NEA peso proceeds. Uses to date have been concentrated on house wiring loans for low-income families and line extensions and related costs for electric pump irrigation projects.

The rural electric coops are required to pay standard wholesale rates for power acquired from the NPC grid system. However, the coops have exemption from taxes, duties, and fees levied by the GOP or its instrumentalities, including income tax, franchise taxes, import duties, etc.

The development of the cooperatives' management capabilities is still in an early stage. NEA provides ongoing training seminars in various fields of system operations to strengthen cooperative management. NRECA advisors assist the cooperatives with their operating problems and provide good liaison between the cooperatives and NEA in Manila during these early stages of project development.

While NEA accounting records are satisfactory, the electric cooperatives (other than MORESCO, VRESCO and the take-over coops) -- are in the initial stages of setting up bookkeeping procedures and accounting systems. NEA auditing acts as a check on how the cooperatives handle their budgeting and finances. This procedure is adequate as a transitional practice. However, utilization of independent CPA firms is an essential requirement for the expanded coop system. Numerous small CPA firms exist in the Philippines and with limited training in electric coop practices, can assume this responsibility. A program to address this problem is being developed by NEA.

In response to NEA guidelines, boards of directors of the cooperatives submit copies of minutes of meetings and of policies and procedures adopted directly to NEA. Of the 50 cooperatives with general managers (including MORESCO and VRESCO), 23 have permanent appointments, 13 have general managers in probationary status and the final 14 have NEA staff members on temporary

assignment. These latter acting general managers are in recognition of a need to strengthen the cooperative management while, at the same time, giving NEA headquarters people direct exposure to the problems of cooperative management. This assignment of NEA staff to various cooperatives on a temporary basis also prepares them to assume the role now handled for NEA by the NRECA cooperative advisors.

B. Project Financial Aspects

1. Project Capital Costs

Feasibility studies for NEA's expanded coop program have now been completed for over 70 individual systems. Design standards for these systems are well established and based on modification of U.S. REA standards. The basic system approach is centered on construction of a "core" distribution system as the first stage effort; with expansion to outlying area as a second stage undertaking. A description of NEA's staged approach is set forth in Annex 8.

As NEA has gained experience in coop design - standardized material take-offs and cost estimates have been developed and computerized. The cost estimates for this loan are based on the estimated or typical distribution coop, e.g.:

Costs of Typical Electric Cooperative
based on recent FX procurement costs
and local contract costs - 9/1/74

Material of type being procured under U.S. Loan	\$ 1, 250,000*
Poles and Crossarms	151,000
Construction labor	152,000
Headquarters facilities (no power plant)	367,000
Engineer Services	73,000
Substation	180,000'
Coop overhead during construction	27,000
Contingencies	<u>200,000</u>
	\$ 2, 400,000

*Virtually 100% foreign exchange. All other costs are local currency.

The proposed development loan of \$20 million, less some additional funding of U.S. consultants, would permit construction of the equivalent of about 12 additional electric cooperatives. It is estimated that the GOP, through NEA, must provide about \$14 million in direct project costs plus another \$2 million for agency costs, all in local currencies. The agency costs include supporting funds for the two U.S. technical assistance groups, Stanley Consultants, Inc. (engineering) and the National Rural Electric Cooperative Association (management).

The financial plan for construction for 12 cooperatives plus U.S. engineering services would become (P 6.7 = \$1):

	<u>In Millions</u>		
	<u>Local Cost</u>	<u>For FX</u>	<u>Total</u>
GOP Capital appropriation	P 107		\$ 16
U.S. Development Loan		\$ 20	<u>20</u>
TOTAL COST			\$ 36

It should be pointed out, however, that commodities procured under the loan will partially be utilized to expand or complete coop systems initiated under earlier loans as well as to consolidate and improve franchised systems converted to rural electric coops under the national rural electrification program. Hence, the proposed loan is essentially a line of credit to support the national electrification program.

2. Project Financial Analysis

General

In considering the financial aspects of the individual coops it may be helpful to first summarize the characteristics of rural electric systems. Studies have been completed by the IBRD and others on the general characteristics of rural electric systems and these systems do not vary substantially from country to country.

Financial management considerations do of course vary substantially between independent rural electric utilities such as the proposed coops and extensions of rural electric service by central power authorities. The latter is the predominant pattern of rural electrification in the developing world.

Rural electric systems are characterized by high initial capital costs combined with low consumption per consumer and low loan factors in the early years. Debt service requirements are correspondingly high as a percentage of annual costs and the initial revenues are low. Comparative data from the IBRD studies in Latin America illustrate this point.

	<u>Urban</u>	<u>Rural</u>
Consumption: kWh/consumer/year	3,000	600
Load factor	50%	25% initially 40% later years
Investment in distribution/consumer	\$100	\$250
Mean per capita incomes	\$300	\$100
Average cost - cents/KWh	3 4	6 to 8 initially after 10 years
Average price - cents/KWh	3	4

Because of these characteristics, subsidies are generally necessary in the early years of the project life. Contrary to common misconception, however, subsidies of rural electric systems seldom apply to electric rates. Rural electric rate structures are normally as high as urban rates and frequently are 50% or more higher. Further upward adjustments in rates will not solve the financial problems in early years due to the prevailing low consumption and poor load factor. Beyond a point elevated rates are self-defeating and subsidies of other natures are required.

In the case of the Philippine coops, subsidies are confined to low interest long-term loans and relief from various import duties and domestic taxes. Wholesale power rates from the NPC are at the prevailing level and retail rates are equal to or in excess of rates in the major urban areas.

In rural electric programs throughout the world undertaken by national power companies, the subsidy is often masked by internal fund transfers. For example, a typical 90%, 10% urban/rural investment split in electric facilities would require only a 10% overall rate increase to the urban consumers to fully subsidize the rural programs. Capital is thus extracted from the urban sector and transferred within the power company to subsidize the rural sector without the need to resort to the central government budget mechanism. The real financial subsidy is nevertheless the same as required for isolated rural electric systems.

Once the initial investment in rural electric systems is made, financial prospects improve markedly over time. Consumer density tends to increase, individual consumption levels rise and the load factor improves. The load factor frequently doubles in 10 years thereby doubling revenues at little additional cost. Equally important is the fact that marginal costs for extension of the systems and connection of new customers drop markedly. In IBRD studies in Latin America, for example, marginal cost per consumer are \$100 as compared with initial costs of \$250. (These levels are both low at today's prices.)

The following table illustrates a 15 year pattern for a rural electric project in Ethiopia:

Distribution Network Costs

		<u>1st year</u>	<u>7th year</u>	<u>15th year</u>
Demand	KW	100	425	1,120
Capacity of Network	KW	150	1,150	1,500
Investment	\$	33,000	88,000	100,000
Investment per KW	\$/KW	<u>330</u>	<u>207</u>	<u>90</u>

Given the financial profile of rural electric systems, calculation of financial internal rates of return alone will seldom provide sufficient justification for the project. Calculation of economic returns are therefore necessary. This is discussed in Section C below and Annex 5 and provides a substantially improved picture of the electric systems,

particularly when taken in conjunction with non-quantifiable benefits and social considerations.

Philippine Experiences

Analysis that has been undertaken to date on operation of the Philippine electric coops indicate that the Philippine picture is consistent with the general model of rural electric systems. Annex 4 provides detailed analysis of the financial aspects of the Ilocos Norte cooperative and comparative data on the pilot coops at MORESCO and VRESCO. The financial internal rate of return for Ilocos is calculated @ 9.5%. Recalculated returns on MORESCO are 7.5% and VRESCO are 4.5%. The return on Ilocos is considered favorable for a rural electric system and compare with the annual return on invested capital of 9.5% being realized by National Power Corporation. MORESCO's return could be improved by raising its rate levels which are currently too low. VRESCO, however, already has a high rate level, and the low returns characterize the fact that this system is a diesel generating coop subject to higher capital cost per consumer (due to the supplemental investment requirements for diesel units) and most importantly due to the recent fuel price increases which have been passed directly to the coop.

Given the inherent problems with self-generating coops, and the recent fuel crises, NEA has radically reduced its planned investment in self-generating systems and now has a program heavily oriented to distribution coops such as Ilocos Norte and MORESCO. In addition, reduction of the program to the "core system" concept will improve the return to these systems while reducing capital costs and spreading the available resources more economically throughout the Philippines. Illustrative of this aspect is MORESCO's estimate that the last 40% of plant investment generated only 10-15% in incremental revenue; thereby reducing the overall financial return by one-third.

Other Operating Systems

NEA now has cooperatives in various stages of operation. Some of these systems are only partially energized and operating statements do not yet provide meaningful data. A number of these systems do, however, have a substantial customer load in that they are conversions of former small private utilities.

Based on a review of these coops we have selected three of the existing coops on which there is the longest and most complete operating history. These three coops are South Bataan, 1st Bulacan and South Nueva Ecija. A brief analysis of this data for these three coops is presented below in Table 1. On the basis of approximately one year's operations under NEA, a favorable trend is seen to have been established. Systems loss (unaccounted for power) has been decreased by an average of 53% while two of the three coops studied showed increases in net profit margin. Most importantly, these three systems showed an average increase in the number of connections of some 22% while at the same time showing a net increase in KWH sold of 10%. This apparent anomaly points to the fact that most of the new customers gained were those lower income family groups who are intended to be the prime beneficiaries of this and previous AID support to NEA.

Table 1 (Change in Operating DATA A/O 8/74)

	<u>Connections</u>	<u>KM Line Energized</u>	<u>KWH Sold (000)</u>	<u>System Loss (%)</u>	<u>Net Margin (P 080)</u>
So. Bataan (11 mos.)					
Change	+ 798	+124	+ 44	- 18	+ 94
% change	+ 16%	+ 62%	+ 8%	+ 95%	+558%
1st Bulacan (13 mos.)					
Change	+2774	+ 26	+102	- 32	- 54
% change	+ 25%	+ 15%	+ 17%	+ 55%	-491%
So. Nueva Ecija (8 mos.)					
Change	+2336	+ 3	+ 30	- 3	+ 12
% change	+ 24%	+ 1%	+ 4%	+ 9%	+ 40%
TOTAL Aug. % Change	+ 22%	+ 26%	+ 10%	+ 53%	+ 36%

It should be noted that the large net loss suffered in May by Bulacan is believed due to wide fluctuations in the cost of purchased power caused by the NPC energy surcharge which in turn reflects the extent to which power supplied is purchased from oil fired plants. Previous monthly data for Bulacan shows an alternating trend between profitable and unprofitable operations which on an average basis will likely result in a marginally positive net margin for this coop by the end of the calendar year.

In the case of these coops NEA sponsored conversion to coop systems has resulted in substantial improvement in system operation, and partial system expansion from internally generated funds, while maintaining a positive operating procedure.

Now that NEA has gained approximately a year's experience in administering the coops taken over in 1974, and in light of the data supplied to AID from which the above analysis is drawn, USAID is planning to work with NEA toward developing a more complete and systematic financial reporting and analysis system as an improved management tool for forward planning. USAID is currently undertaking an indepth analysis of the following aspects of NEA's present operations in order to assist in the development of an improved financial management system:

1. Analysis of present reporting standards and requirements from the coops.
2. Analysis of the manner in which NEA reviews and uses financial and statistical data received from coops, particularly in the preparation and revision of feasibility studies.

3. Analysis of NEA's present rate policy with regard to its application on an individual basis to its constituent coops.
4. An analysis of the best method of insuring NEA's rate policy requirements adequately provide for the financial viability of individual coops and especially their ability to earn enough to cover debt service to NEA and accrue a reserve for future expansion.

These and other questions will be addressed and conclusions and recommendations drawn in order to permit such improvements (where required) to be initiated in conjunction with the implementation of this and prior loans.

C. Project Economic Analysis

Given the normally low financial return to electrical cooperatives, calculation of economic returns becomes critical to both program justification and project selection. Addressing this aspect is difficult as electric power investments worldwide have traditionally been supported primarily by financial analysis. Even in the case of the substantial and successful U.S. rural electric program no supporting economic analysis was undertaken either in advance or after the fact.

In considering economic returns on rural electric projects careful attention was paid to recent IBRD survey work undertaken on existing rural electric projects in the LDC's. This extensive effort by the bank of the IBRD focused on an indepth analysis of experience in Latin America. The bank study concludes that, in general, economic analysis of rural electric systems are substantially more favorable than a simple financial analysis would indicate. Surplus benefits from farms, agro-industries and commerce add substantially to benefits and shadow pricing in many countries favor the projects.

Once these surplus benefits are developed, the projects achieve a substantially higher degree of respectability. Even here, however, it should be noted that some of the benefits cannot be accurately quantified - These include both economic and social aspects including surplus benefits to household, social considerations of concentrating on rural poverty, institutional benefits such as promoting local cooperatives and more active participation in the development process by the local population.

To illustrate the economic return in the Philippine context - an economic analysis was undertaken indepth for the Ilocos Norte coop with basic system design focused on the "core system" approach. Local economic conditions in Ilocos Norte province are less favorable economically than the average prevailing conditions throughout the Philippines. The medium family income within the region in 1971 was ₱ 1813 (\$260) versus a national median of ₱ 2454 (\$350). 52.4% of the families in the region are also in the lowest 40% income bracket nationwide.

Detailed analysis of this coop shows an economic internal rate of return at 20.32% and an economic cost benefit ratio of 1.29 utilizing an opportunity cost of capital of 15%. Indications of economic return are

thus favorable and the proposed investments in these systems appears to be justified in the context of overall GOP investment priorities and when compared with alternative investment opportunities.

Selection criteria and supporting feasibility studies will hereafter require calculation at both discounted financial and economic returns as a condition of qualification for AID financing. This will be in addition to the existing practice of calculating 10 year pro forma financial statement. Annex 5 provides a detailed description and calculations on the Ilocos Norte Coop.

D. Impact on U.S. Balance of Payments

The impact of this loan on the U.S. balance of payments should be favorable. Goods and services financed by the loan will be obtained from AID Geographic Code 941 (U.S. and lower income countries). About ninety percent of previous loan fund expenditures were for procurement from U.S. firms with the balance supplied from Taiwan and India. It is expected that essentially the same situation will prevail under the proposed loan.

Technical standards developed under earlier loans have been based essentially on U.S. design and equipment standards. The proposed program should therefore provide a good basis for future U.S. exports to the Philippines to support the substantial program expansion in rural electrification currently contemplated by the GOP. For 1977 through 1994 rural electrification investment requirements are estimated at \$1.6 billion. Given the current 55% import percentage, commodity export potential to the Philippines would account for \$880 million over this period. Even assuming a shift to greater incountry manufacture, the potential market for U.S. exports is great.

E. Project Technical Analysis

The individual subprojects financed under this loan are relatively uncomplicated rural electric distribution systems. Correspondingly there are no complex technical aspects of design or construction that warrant particular attention from an engineering design viewpoint. As noted, designs standards for rural electric systems have been established under earlier loans with the assistance of U.S. consulting engineers. These standards are based on those developed by the U.S. Rural Electrification Administration over the last 30 to 40 years and have been modified, when required, to meet local conditions.

Computerization of material costs and quantities has been completed so individual subproject requirements can readily be developed when basic system design has been completed.

The major technical aspects of the program that require close review is essentially an institutional development problem related to continued upgrading of the technical capabilities for design, construction supervision and construction within NEA. The four local engineering firms, local contractors and the coops themselves a key aspect of this problem has been the major focus since the first loan on developing the capabilities of four local ASE firms (Trans Asia, EDCOP, DECD, and Adrian Wilson) two of

whom are U.S. firms based in the Philippines but operating throughout Asia. Works of these firms is assisted and reviewed by Stanley Consultants, one of the two largest and most experienced rural electric design firms in the United States.

Progress to date, and particularly in the development of skills of NEA and the Philippine A&E firms on engineering matters continues to improve with the technical help of Stanley Consultants, assisted as appropriate on management matters by the NRECA advisors.

(1) A&E Work. Office engineering by local A&E firms and the NEA staff continues to be a bright spot as designs and specifications for additional cooperatives are prepared. The lack of fully qualified field staking and inspection personnel is still a problem, however, and special efforts are being made by Stanley Consultants through the four Philippine A&E firms to upgrade and expand this capability. Four inspection/training sessions were held in October, 1974 and were enthusiastically received. Mr. Earl Clark, formerly with AID/W, took part in all these sessions and was of immeasurable assistance. Field sessions were held at Ilocos Norte (Trans Asia), Leyte (EDCOP), Capiz (DCCD) and Lanao Sur (Adrian Wilson). Representatives of all four A&E firms attended each field session along with representatives of NRECA and NEA. USAID also was represented. A wrap-up session held in Manila on October 30, 1974 reviewed the findings of the field sessions and recommendations for improvement of this very important phase of the program were adopted. Annex 7 summarizes this training input.

(2) Construction. Prior to the arrival of material and equipment being procured under AID Loan 492-H-028, there was little opportunity to fully assess the Philippine construction capability in the field of transmission line construction. During this period NEA, by purchasing materials in the Philippines and from India, and by using excess property and Japanese Reparations commodities, did provide sufficient material to fully support construction contractors on five electrification projects. Work on these projects has been satisfactory and provide a historical measure of the ability of the Philippine construction industry to respond to the future construction program.

A graph showing the expected construction program for all rural electric cooperative distribution systems, including the ones to be financed under the proposed loan is shown in Annex 6. This construction program is based on the scheduled arrival of material under the AID Loans 492-H-028, 492-T-034, and future loans. Annex 6 indicates that the largest number of systems that will be under construction by contract at any one time will be 21. The status of current construction work and a list of construction firms qualified to perform the required work as well as additional firms most likely to be selected are also included in Annex 6.

(3) Coop Role. The individual electric coops do not undertake engineering design. The local A&E firm utilized on each subproject is under contract with the coop and responsible for design and construction

supervision. As owner of the system, the local coop does have a key role in review and acceptance of all design and construction completed. In this aspect they are also assisted by the NRECA advisor assigned to the coop.

The coop is responsible for line extensions beyond the core system and for constructing line drops. This work is done by force account for the most part. Recent field reviews of this aspect has indicated some problems with this aspect of the program. To remedy this problem A&W responsibilities will ne extended to clearly cover assistance to the coops for construction beyond the core system. Corrective measures are therefore underway and no major problems are anticipated in project implementation.

F. Project Beneficiaries:

As discussed in Section I. D. the rural electrification program will benefit both those segments of the population directly connected to the coops and indirectly those benefiting from agro-industry, irrigation and small scale industries. With completion of the 12 additional coops programmed under this third loan, a total of 52 electric coops will be completed at least through the "core" system stage. Estimates on service through the initial 36 coops financed under previous AID loans, Japanese reparations and through take-over systems indicates customer connections as follows:

<u>Date</u>	<u>House Connections</u>	<u>Population Served</u>
Dec. 1974	180,600	1.08 million
June 1975	291,900	1.75 million
June 1976	404,500	2.64 million
Potential	978,000	5.78 million

Geographical dispersion of the house connection as of October 1, 1974 is as follows:

<u>Cooperative</u>	<u>Towns</u>		<u>House Connections</u>		
	<u>:Covered:</u>	<u>:Energized:</u>	<u>Last Report:</u>	<u>This Report:</u>	<u>Total to date</u>
1. MORESCO	: 10	: 10	: 6,618	: 60	: 6,678
2. VRESCO	: 5	: 5	: 11,630	: 55	: 11,685
3. Ilocos Norte	: 10	: 8	: 2,319	:	: 2,319
4. Leyte	: 15	: 13	: 9,286	: 787	: 10,073
5. Surigao Sur	: 5	: 1	: 648	: 202	: 850
6. La Union	: 5	: 5	: 1,308	: 153	: 1,461
7. Capiz	: 10	: 9	: 2,261	: 98	: 2,359
8. Abra	: 9	: 3	: 1,355	: 65	: 1,420
9. Lanao Sur	: 17	: 8	: 1,778	: 203	: 1,981
10. Albay	: 12	: 6	: 3,894	: 152	: 4,046
11. Catanduanes	: 5	: 3	: 1,744	:	: 1,744
12. Marinduque	: 6	: 1	: 619	:	: 619
13. Comarines Sur	: 11	: 1	: 355	:	: 355
14. Pampanga	: 11	: 11	: 18,210	: 170	: 18,380
15. Bulacan	: 5	: 5	: 14,047	:	: 14,047
16. Laguna	: 11	: 11	: 11,508	:	: 11,508
17. Bataan	: 6	: 5	: 5,734	: 55	: 5,789
18. Cavite	: 5	: 5	: 17,332	:	: 17,332
19. Benguet	: 8	: 4	: 12,455	:	: 12,455
20. So. Nueva Ecija	: 8	: 8	: 12,162	:	: 12,162
21. Ilocos Sur	: 23	: 6	: 3,755	: 115	: 3,870
22. Zamboanga City	: 1	: 1	: 8,147	:	: 8,147
23. W. Samar	: 4	: 1	: 945	: 15	: 960
24. Occ. Mindoro	: 4	: 1	: 938	:	: 938
25. Aklan	: 10	: 1	: 1,659	:	: 1,659
26. Sorsogon	: 13	: 1	: 596	:	: 596
27. Mindoro Or.	: 8	: 1	: 388	:	: 388
28. Sapang Palay	:	:	: 1,887	:	: 1,887
29. Porac	: 1	: 1	: 1,630	:	: 1,630
30. San Jose City	: 1	: 1	: 2,164	:	: 2,164
31. Lubang	: 1	: 1	: 560	:	: 560
32. 6 Mexican Bos.	:	:	: 755	:	: 755
Total	240	119	158,687	1,927	160,614

The additional 12 coops financed under this loan are not yet finally selected. However, on the average these systems will serve 7,000 to 7,500 customers per system by the third year. Approximately 90,000 customers or 540,000 people. The average population within each franchise area is 100,000 or 1.2 million people in the 12 coop areas.

The two key factors affecting the actual percentage of service connections in the franchise area at (a) timing and extent of extension of service beyond the core system and (b) with service available, the individual's decision to connect into the system - essentially dependent on family income characteristics.

As indicated in the projections for the initial 36 cooperatives shown above - June 1976 connection will constitute 2.64 million out of 5.78 million connections or slightly under 46%. We do not know how many of the unconnected customers await service access and how many will fail to connect due to low income status. Moreover percentage connection by 1976 will vary amongst the individual coops. NEA estimates that in the large conversion coops on Luzon, connections will reach 85 to 90% within the next few years. But these systems are older and the income levels in the areas high by rural Philippine standards.

A key indicator as yet unknown in the Philippines is the actual "threshold" level of connection, e.g. the income level at which people elect to connect if service is available. NEA estimates the threshold household income at approximately \$350.* IBRD studies in Latin America indicate the level around \$500. These figures combined with NEA's estimate of up to 90% potential connection in coop areas would confirm the indication that the "core" system approach of necessity first serves the more densely populated areas where average income is higher. Over the long run - increased costs of extending systems into the less densely populated area may be as much of a constraint to direct service as income status. However both factors go hand in hand and there is no feasible way of starting on the low end of the spectrum.

As discussed in the section on evaluation, this aspect warrants and will receive particular attention as the new systems come into operation on a commercial scale.

Residential Consumers

The pattern of household consumption in rural homes appears similar in the Philippines to patterns that have evolved in Latin America. IBRD analysis in L.A. shows household consumption of power as a percentage of income and by use of power as follows.

* Based on survey data of three MORESCO municipalities.

<u>Municipalities</u>	<u>Low Income</u>	<u>High Income</u>
Alubijid	Pesos 200	Pesos 1,500 per month
El Salvador	Pesos 200	Pesos 1,200 per month
Languindingan	Pesos 140	Pesos 1,000 per month

Relation between Household Income and Expenditure on Electricity

Appliance	COSTS : US\$				Family income (mean)	Per capita family income	Annual cost ÷ family income
	Conne- tion 2/	Appli- ances	Elec- tricity	Annual Total 3/			
Lights (L)	13	2	6	9	430	72	2%
L+ Iron (I)	18	15	8	15	550	90	2%
L+I+Refrig. (R)	18	270	22	81	850	140	10% 4/
L+I+TV	18	240	10	62	1,000	205	6%
L+I+R+TV	18	600	40	160	2,300	320	7% 4/

1/ Source: El Salvador Study.

2/ Includes housewiring.

3/ Using 20% annuity on connections and appliances.

4/ Refrigerator sales often used to augment family income by unascertainable amounts; family income is probably underestimated.

Statistics on correlation between family income and cost of power utilized have not been generated by NEMA. Indication of utilization in the home however are similar as indicated by statistics from the MORESCO coop as of 12/73:

Item	Number	% of Connections
Connections	5,895	100
Lights	5,895	100
Electric irons	743	12.5%
Phonographs	413	7%
Refrigerator/freezer	583	9.9%

The pattern of consumption therefore appears similar. Lighting is the first and most extensive home use, electric irons are the next priority use, then food preservation and finally home entertainment.

Agriculture Agro Industry, and Small Scale Industry

While small farmer will also be residential consumer of the coops, the main productive use of electricity currently programmed for farmer benefit is small electric pump irrigation. The following table indicates programs currently in the development phase by NEA:

Status of BISA Program (Phase I)

Coop	No. of Farmers Covered	Area Covered in Has.	Actual Area Served
1. Ilocos Norte	1,251	1,102	50
2. La Union	1,353	2,490	440
3. Capiz	3,070	5,380	115
4. Abra	1,096	1,835	
5. Lanao Sur	690	1,032	112
6. Iloilo	1,316	1,729	
7. Cam. Sur/Albay	1,300	2,680	
8. Isabela	1,770	2,988	100
9. Pampanga	2,276	2,562	176
10. Laguna	634	725	
11. Cavite	100	270	
Total	14,856	*22,793	993

Phase II

1. Antique	1,000	2,000
2. Cagayan	1,000	2,000
3. Davao Norte	750	1,500
4. Leyte	950	1,900
5. Mindoro Occ.	500	1,000
6. Pangasinan	1,250	2,500
7. Quezon	500	1,000
8. Sorsogon	500	1,000
Total	6,450	12 900

As the above table indicates the proposed program under development will bring irrigation to 21,306 farm families or a farm population of approximately at 127,836. Only 993 were served as of October 1, 1974 so the program is still in its early stages. An expanded pilot program in the Lanao del Sur area is under consideration for AID financing in FY 76 if funds are available.

Small Industry

The small industry program promoted by NEA's power use division. 12 projects are under development or operating as follows:

<u>Location</u>	<u>Products</u>		<u>Potential Employment</u>
1. Albay	Fibercraft	Partial operation	300
2. Pampanga	Bamboo craft	"	212
3. La Union	Woodcraft	"	219
4. Bulacan	Embroidiery	"	179
5. Capiz	Garments	"	300
6. Aklan	Fibercraft	"	-
7. Laguna	Embroidery garments	under development	-
8. Nueva Ecija	Bamboocraft		-
	Rataan Craft		
9. Albay	Wooden furniture		-
10. Lanao Del Sur	Metal craft		-
11. Albay	Metal craft		-
12. Ilocos Sur	Tobacco curing		-

The proposed IBRD \$30 million loan for dispersion of industry and small scale industry development will provide \$2.5 million to the GOP for support and expansion of this program.

The above programs are those directly initiated by NEA's power use division. Numerous other applications are expected to develop spontaneously or with the assistance of the GOP's new thrust at small scale industry and agro-industry program.

Data is not currently available on these applications.

G. Project Environmental Aspects

The project, as a rural electrification project limited to the construction of electrical distribution networks and house connections, with no large power plants has limited potential for significant adverse environmental effects. The few excess diesel generators to be installed with AID assistance are not sufficient to materially affect the environment. The potential for these effects is addressed below.

Short-term effects are essentially those effects imposed on the environment during the construction stages of the project. Since construction activities will be limited to the installation of poles and wire in rural areas, no significant adverse impact is anticipated other than removal of trees on the 15-20 foot distribution line easements. Existing physical land characteristics and foliage will be little disturbed and there will be little chance of affecting native ecological systems.

To the rural homeowners, the project will bring electric power for better lighting and for permitting use of appliances, such as refrigerators, irons, washing machines, etc., all of which will contribute to a better quality of life for the rural people. Refrigerators, in particular, providing cold storage to prevent spoilage of food as well as providing fly-free storage of food, will assist greatly in protecting the health of rural peoples.

Part of the economic justification of the project is the potential for stimulation of industries and for pumped irrigation.

The industry to be generated is expected to be cottage-type individually small in size and relatively widely dispersed with little potential for adverse pollution of air, land or water. The larger energy consuming and polluting type of industries have located and will continue to locate in areas where there is a large source of cheap hydro-power. Electric rates in the rural electrification zones under this loan will not be attractive to the larger power-consuming industries.

The pumped-irrigation projects that might come into being as a result of this rural electrification do have environmental implications that should be addressed. However, since the environmental impact from these future irrigation projects is so site-specific, each such project should be investigated for environmental impact at that point in future time when the individual project is planned.

National resources irreversibly committed during the implementation of the project are limited to lands in rural areas that will serve as a right-of-way of distribution lines. The land area thus committed will consist of long, narrow strips of land that could be actually exploited for agricultural purposes between poles.

Annex 11 includes the full environmental discussion.

H. Role of Women

The Philippines is one of the developing countries where women are already actively involved both in the political process and the country's development efforts. Women are highly educated and play a key role in the professional community of both the public and private sector.

In the case of the Rural Electrification program women have assumed an active role in both NEA and the Coops. At NEA's level women hold key positions such as head of public relations, head of the construction division, Chief Office of the Corporation Auditor and a number of more junior professional positions.

At the Coop level women play an active role as members of the Board of Directors of many coops, and one acting Coop General Manager is a woman. Again, women also hold a number of key positions at the junior professional level within the Coops.

Based on USAID review of the policies and practices of NEA and the Coops, it is apparent that women are provided access to professional employment at all levels of the Rural Electrification program based on merit and their professional qualification.

The project Committee does not believe any particular conditions need be applied to this loan to enhance the role of women in the program.

Section 3 - Project Implementation

A. Implementation Plan

1. Summary

As in the case of the earlier Rural Electrification Loans primary responsibility for implementation of this loan will rest with NEA, drawing upon the technical assistance of NRECA and Stanley Consultants. Procurement of commodities will be initiated in advance of the completion of final system design. Procurement will be against a standard bill of materials. Commodities received will either be warehoused in the Manila area or at coop site warehouses as appropriate. NEA is rapidly gaining experience in the administration of a large and detailed procurement program under the able guidance of a materials/warehouse specialist from Stanley Consultants. The availability of large quantities of material and equipment required to construct the systems of the electric cooperatives now permits rapid completion of systems once a construction contract is signed.

2. Procurement

Commodities to be procured under this loan are essentially the same as procured under previous loans. Standard LFB documents have been developed and refined as bidding experience was gained. The standardization of designs for cooperative owned systems at the 13.2 and 69 KV levels has permitted NEA complete flexibility in adjusting quantity orders to fit the needs of the system once it is designed.

Warehouse and storage facilities at Sangley Point near Manila which have been in use since 1971 have been augmented by three warehouses in the Port Area in Manila. Pursuant to agreement with National Power Corporation, the property owners, NEA assisted by Stanley, now operates these Manila warehouse units as a receiving and trans-shipment point. Commodities arriving from overseas are checked, coded and assigned their next destination. Most of the incoming stock goes directly to storage facilities which have been constructed at the cooperative headquarters sites. Where the incoming items are not yet required at the construction site, they are consigned to the Sangley holding area until required on the project.

3. Selection of cooperative sites

At the present time over 75 sites have been selected and 51 cooperatives are organized which is more than enough to absorb the material and equipment to be procured with the proceeds of previous loans as well as the proposed loan. The actual cooperatives to be constructed will be selected from the list of cooperatives in the Electrification group marked, "(- Eligible for AID loan 492-T-034 and FY 1975 proposed loan" shown in Annex 2. As indicated in the annex, feasibility studies and design work for this group has been undertaken by the Philippine A&E firms.

AID review and approval of coop selection essentially will follow the procedures adopted for loan 492-T-034. Certification by NEA and Stanley Consultants will continue to be required before any U.S. funded material and equipment is delivered to a cooperative for its system.

4. Planning procedures for cooperative implementation

Previously, NEA, assisted by Stanley and NRECA, had performed all planning functions for the rural electrification program. The timing for A&E services, procurement, construction and administrative staffing was carried on by NEA on behalf of the cooperatives. With continued development occurring at the cooperative level, NEA has determined that the cooperatives are now in a position to prepare their own work plans which will govern their future development.

The work plan scheme was introduced on August 19, 1974 when the first group of seven cooperatives met at NEA headquarters and were instructed by NEA and the consultants on how the work plans were to be prepared. This was continued during the next five days, with the remaining 13 cooperatives in the northern part of the Philippines participating. A similar program was held on September 2-3 in Cebu where 16 cooperatives from the Visayas and Mindanao were in attendance. A total of 36 cooperatives participated in these sessions, including all those that are in operation or are about to embark on their first construction phase. Select members of the NEA's staff, representing the A&E Division, Construction and Accounting, worked with the cooperatives as they prepared the first drafts of their plans.

The sessions were enthusiastically received and produced some excellent cooperative-prepared plans for system development and staff expansion. The prepared plans have been reviewed by NEA, comments on staffing proposals have been completed, and material and equipment required to meet the system construction objectives of these plans has been allocated.

Other cooperatives, in addition to the 36 cooperatives in these first planning sessions, will be included to future planning sessions.

This exercise represents a major shift in emphasis at NEA. The initial group of cooperatives is now considered sufficiently mature to begin to exercise good judgment and NEA is fostering this change. NEA will continue to monitor all activities including the engineering, construction, financial and personnel management activities of the cooperatives, but will become more of a reviewer than a doer in actual cooperative implementation as time goes on. The only area which NEA will be more or less totally involved for a longer period of time will be in procurement, except for poles and crossarms, which the cooperatives have already undertaken.

5. Construction

Construction is moving forward at an acceptable pace but will bear close scrutiny to assure compliance with NEA established standards. The loan will permit the equivalent of up to 12 cooperatives to be constructed which in itself should be no particular burden for the construction capability of the Philippines. What must be watched carefully is the country's ability to supply construction and A&E field expertise to carry on construction work on 21 systems at any one time as indicated in Annex 6. NEA, assisted by Stanley, is stepping up its training of A&E field personnel in order to meet this new challenge. Construction of backbone facilities will be by competitive award to local contractors. In some isolated locations construction may be done by force account or the Philippines Army Engineers, if contractors are not available. Construction of facilities for this phase is relatively unsophisticated and availability of contractors is not considered to be a problem.

Philippine wood poles are being used exclusively for the needs of all the cooperatives. NEA has acted to counteract inflating prices for local timber with the assistance of the cooperatives themselves. Contracts have been made with small logging concerns, in addition to larger suppliers. for pole supply and, in some instances, cooperatives have obtained timbering licenses for selective cutting for pole procurement only. In these cases the cooperatives arrange for hauling to and from treatment plants. Poles are now being processed at the rate of about 3,000 per month.

The construction will normally consist of a step-down substation (69KV-13.2/7.6), three-phase lines, and a limited amount of single-phase lines. The construction contractor will be required to build substations, set the poles, string line and set transformers; line drops and house wiring will be handled by the coops. The proposed schedule calls for a minimum of 12 months for completion of a system being constructed by contract.

The NEA has prequalified a total of 14 firms for construction of electrical distribution lines and power plants and 31 for headquarter facilities. Consultant Earl Clark interviewed 17 representative firms in Manila qualified to do line construction and 16 of them expressed their intention to submit bids on NEA projects. Annex 6 includes a "List of Contractors" showing the contractors prequalified by NEA as well as contractors considered qualified and/or active in the electrification program by the four A&E firms in the rural electrification program. The list also identifies those firms interviewed by Mr. Clark. Mr. F.C. Gonzalez, V.P. of Romago Electric Co. and a member of the Philippine Contractors Association stated that since other work available to contractors in the Philippines is slowing down, he expects large contractors who have shown no previous interest in rural electrification will also begin to bid. NEA plans to interview several firms on the "List of Contractors" with the view of increasing the number of prequalified bidders.

In view of the above information it appears that there is an adequate number of interested contractors to permit implementation of the major portion of the backbone rural electrification projects by contract rather than by force account.

Tables showing the current status of all rural electrification construction projects are contained in pages 3 and 4 of this Annex 6.

Construction of secondary and service lines will be accomplished by force account by cooperative personnel. This procedure was followed on one of the AID-financed pilot projects and resulted in satisfactory construction. The amount of work involved can be performed by the cooperatives regular staff and completed in a timely manner to permit orderly energizing of the systems.

6. Pipeline Analysis and Implementation Schedules.

With approval of Rural Electrification, III AID will have committed \$58 million toward partial funding of NEA's Phase I program. While implementation procedures for NEA and AID actions leading up to disbursement of funds are now well developed, a substantial lead time was required to reach this stage - particularly as it related to implementation of AID's first Loan - 028. A pipeline analysis of the three loans would therefore show low disbursements at this time. This aspect of the project was carefully reviewed during project preparation and the project committee has concluded that all three loans will complete disbursement within three years of completion of conditions precedent. Thus the projects will conform to the limits currently set forth in PD 57.

Particular notation is made of the high rate of shipment of commodities under Loan 028 in recent months. For example October deliveries of commodities was \$2.8 million or 14% of the loan. Essentially all Loan 028 commodities will be shipped, and AID disbursements effected by the end of CY 75. The exceptions to this schedule are restricted to final shipments of conductor and distribution transformers due 3/1/76 and 6/1/76 respectively. These dates are contract delivery dates and the suppliers may improve on the schedules.

Loan 034 should be substantially disbursed in CY 76 and the proposed loan in CY 77.

Annex 10 provide a more detailed schedule of fund disbursements and commodity shipment schedules.

It should be noted that after shipment of commodities, and disbursement of AID's Loan, an additional average period of 12 months will be required for coop construction. This period will vary by coop and is more clearly set out in Annex 6 attachment 1 - Construction Schedule.

B. Implementation Schedule

1. Loan Authorization	December 31, 1974
2. Loan agreement negotiated and signed	January 15, 1974
3. Conditions precedent to opening first Letter of Commitment met	March 15, 1975
4. Evaluation Plan due AID/W	April 15, 1975
5. Approval first bid package	March 1975
6. First procurement award	August 1975
7. First delivery of materials	March 1976
8. Begin construction utilizing Rural Electrification III commodities	June 1976
9. Completion utilization R.E. III commodities for core system construction.	June 1978

C. Evaluation

1. Technical

As discussed earlier in the text, an evaluation of coop construction was completed in September and October by an AID consultant, Earl Clark. This review covered actual field visits to coop construction completed to date and the performance related thereto by NEA, the local coop, the Philippine A&E's and local contractors. A substantial number of deficiencies were noted during this inspection and corrective measures are being instituted to insure improved construction and supervision thereof.

No major design deficiencies have been noted to date. Design aspects are monitored on a continuing basis by Stanley Consultants who reviews all technical work by the local A&E firms on behalf of NEA and also directly assists NEA in its engineering.

A follow-on evaluation - again by Mr. Clark is tentatively scheduled for spring 1974. Periodic reviews thereafter will be undertaken as required. Mr. Clark is a recently retired AID engineer, who was project engineer on the prior AID loans. He therefore is well acquainted with the Philippines and the on-going program. In the past Mr. Clark worked for REA, and also was managing partner in his own design firm - specializing in design of rural electric systems and construction supervision.

2. Financial

Operating financial data from individual coops is just now being developed as takeover and new coops are beginning to serve a substantial population load. USAID has therefore decided it is timely to undertake a comprehensive review of NEA financial reporting and monitoring procedures. Mike Speers, a senior financial analyst from the NESA Bureau is now in Manila to begin a joint review of the financial aspects of both

operations and those of the individual coops. This review is partially discussed in Section B2 of the paper. Mr. Speers is accompanied by the project loan officer, Mr. Bond, who will participate in the review.

The on-going review will focus on coop financial reporting systems, audit capability, utilization of financial reports in upgrading feasibility preparation and coop financial projections, and rate policy as it relates both to coop performance and generation of capital for financing system expansion and/or to supplement NEA capital availabilities.

Attention will be given to computer applications for financial management of both NEA as a development bank, feasibility study work and preparation of annual and long-term projections for the individual coops.

Based on the above review, a follow-on program will be recommended for further review and/or implementation of the recommendations.

3. NEA Evaluation Unit

NEA has now established a new evaluation unit within its organization. Chief of this unit will be N. Bulatau, who's background is economics and finance. Bulatau has completed an orientation program in Washington with the IBRD public utilities personnel who undertook IBRD's evaluation of rural electrification experiences in Ecuador and who developed the IBRD's initial policy paper on Rural Electrification (See IBRD - Issues in Rural Electrification - July 1974). Mr. Bulatau also reviewed with the Bank currently unpublished studies on the economic and social impact of rural electrification projects.

The objective of Mr. Bulatau's orientation and the creation of the new evaluation unit, is to develop for NEA Board consideration and approval the scope and objectives of NEA's evaluation policy so that evaluation can be institutionalized with NEA itself. Such a plan is required as a covenant under Loan 034.

We do not yet know the full evaluation scope proposed by NEA but expect a draft plan by January 1975. For the most part we expect that professional inputs into evaluation can be obtained within the Philippines from private firms and academic sources as necessary to supplement NEA staff.

NEA has also extended an invitation to IBRD staff to visit the Philippines, review the program and assist in the evaluation phase.

4. USAID EVALUATION

In order to bring AID's evaluation of this loan and prior AID loans into a more comprehensive focus, USAID will prepare an updated evaluation plan for these loans. The updated evaluation plan will include the technical and financial reviews discussed above, NEA's own evaluation efforts discussed in para 3 above and efforts of NRECA, Stanley Consultants, Local A&E's etc. The consolidated evaluation plan will be keyed to a revised and updated Log Frame which will cover all three loans approved to date.

A draft Log Frame for the Rural Electrification III loan is shown on the following pages. Revision and expansion of the log frame, particularly as it relates to objectively verifiable indicators, will need to be based on completion of NEA's own evaluation plan. The target date for USAID submission of the evaluation plan is April 1, 1975 and instruction to USAID on the preparation of this plan will require that it be developed in the context of AIDTO CIRC A-603 - Improved Program Design and Evaluation.

PHILIPPINES RURAL ELECTRIFICATION III

LIFE OF PROJECT FROM CY75 THROUGH CY80
TOTAL U. S. FUNDING \$20,000,000 (CY75-CY78)
DATE PREPARED 12/7/74

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p><u>Program or Sector Goal: The Broader Objective to Which This Project Contributes:</u></p> <p>The goal of the project is to further the welfare of the people in the rural areas and to increase income and employment opportunities particularly among the lower 50% income group in the rural areas. This goal is among the highest priorities of the Government of the Philippines and USAID.</p>	<p><u>Measures of Goal Achievement:</u></p> <p>(1) Increase in number of rural households electrified by 1980.</p> <p>(2) Increase in employment in rural areas by 1980.</p> <p>(3) Increase in per capita purchasing power in real terms for lower 50% income group of rural areas by 1980.</p>	<p>(1) Coop and other utility records</p> <p>(2) Census and employment statistics</p> <p>(3) Census and economic data</p>	<p><u>Assumptions About Linkage Between Project Purpose and Program-Sector Goal</u></p> <p>(1) the people will accept electricity and supplying of electricity at reasonable cost does improve the quality of life.</p> <p>(2) making low-cost reliable electricity available will cause a growth in agricultural, commercial and industrial production and consequently job availability. Implicit is assumed response by the possessors of capital and entrepreneur.</p>
<p><u>Project Purpose:</u></p> <p>To make electric power available in selected rural areas at reasonable rates for both household amenities and increased production.</p>	<p><u>Conditions That Will Indicate Project Has Been Achieved: End of Project Status</u></p> <p>(1) Approximately 12 new rural electric coops operating satisfactorily by 1978.</p> <p>(2) These coops to have an average of 7,000 - 7,500 customers each by 1980.</p> <p>(3) Use of some of project inputs for assistance to existing coops by 1978.</p>	<p>(1) NEA records and field observation</p> <p>(2) New coop records</p> <p>(3) NEA records</p>	<p>(3) Increase in income and employment opportunities will result in more people in the lower 50% income group earning more in real terms.</p>
<p><u>Outputs:</u></p> <p>(1) Further institutional development of NEA coops local A & E firms and construction contractors.</p> <p>(2) Constructed core distribution systems connected to a reliable source of power.</p>	<p><u>Magnitude of Outputs</u></p> <p>(1) NEA viably handling expanded program (1975-80).</p> <p>(2) Approximately 12 new rural electric coops organized and core distribution systems constructed by 1978.</p> <p>(3) Additional local A & E firms providing acceptable consulting services to coops and/or four percent firms providing better staking and inspection services by 1975.</p> <p>(4) Construction contracts being let to competent firms as required. (20 Active contracts for total program by end 1975).</p>	<p>(1) USAID evaluation of NEA</p> <p>(2) Progress reports and field inspections by NRECA, Stanley and USAID</p> <p>(3) Field inspections by NEA, NRECA, Local Coops, Stanley and USAID.</p> <p>(4) NEA records, Local A & E and coop supervision of contractors.</p>	<p><u>Assumptions About Linkage Between Outputs And Project Purpose</u></p> <p>(1) That institutionally organizing coops and physically constructing core distribution systems will result in viable operating coops (with outside managerial assistance) capable of connecting up intended numbers of customers and economically serving their power needs</p> <p>(2) That NPC will supply power requirements as demand grows</p>
<p><u>Inputs:</u></p> <p><u>AID</u></p> <p>\$20,000,000 DL</p> <p><u>GOP</u></p> <p>\$16,000,000 Equiv. Loan to NEA</p>	<p><u>Implementation Target: (Type & Quantity)</u></p> <p>Disbursed \$10m CY76, \$10m CY77, for necessary imported materials</p> <p>1 Overall U.S. engineering consulting firm to NEA on the job full time.*</p> <p>1 Overall U.S. institutional advisor to NEA and the individual coops on the job full time.*</p> <p>Required number of local A & E firms on job when needed to design and supervise construction for individual coops.</p> <p>Required number of local contractors on job when needed to build individual coop systems.</p> <p>Necessary local materials as needed.</p>	<p>AID Records</p> <p>NEA/consultant progress reports and field observation.</p>	<p><u>Assumptions About Linkage Between Inputs And Outputs</u></p> <p>(1) Time lag between contract awards and delivery of imported equipment to Philippines will not stretch out much more than present.</p> <p>(2) Local materials and services will continue to be available as required</p> <p>(3) U. S. consulting services will continue to be available as required</p> <p>(4) NPC will provide power supply connections when needed.</p>

*Financed under prior grant and prior loan

Section 4. Conditions and Covenants

Since this is the third loan to NEA, conditions precedent, covenants and a standard three-party loan agreement between AID, the GOP and NEA have already been developed. No major modification to this format is contemplated.

In addition to the AID loan agreement, a standard NEA subloan agreement was developed under Loan 028 and updated under Loan 034. This loan agreement has been approved by AID and carries the specific terms and conditions of A.I.D.'s loan that pertain to performance by the coops themselves.

As in Loans 028 and 034, a detailed Implementation Review and Approval Procedure checklist has been developed and includes all the specific conditions that must be met for an individual coop before AID financed commodities are made available to the coop. This checklist includes key items such as review and certification of the feasibility studies by the consultants, review and certification of preliminary design, execution of the standard subloan agreement, approved rate policy, rights of way, requisite financing, etc.

Consultants for the project are, as noted, on site.

There are a number of additional items currently under discussion with NEA relating to implementation of Loans 028, 034 and the proposed loan. If not resolved, they may be included as CP's or covenants.

- (a) Follow-on field inspection of construction activity by March 1, 1975 to ascertain improvements in construction deficiencies noted during the Sept., Oct. 1974 field review by Earl Clark.
- (b) Action by NEA, including, Board policy statement if required, to insure line construction beyond the core system is under direct responsibility of the A&E firm.
- (c) Completion of the plan to initiate a training program for C.P.A. firms and initiate a policy determination to use these firms for coop annual audits.
- (d) Initiate an improvement program, if required, to correct deficiencies and institute recommendations resulting from the current financial management review.
- (e) Expand feasibility studies to include calculation of financial and economic internal rates of return in addition to standard proforma financial statements.

Other terms and conditions of the prior loans will be incorporated into the agreement as appropriate.

Section 5 - Issues

During the PRP review three main issues were raised in conjunction with the proposed loan.

1. Absorptive Capacity

Is the absorptive capacity of NEA and particularly the local contracting community adequate to utilize the additional loan at this time?

Part of the scope of Earl Clark's TDY was to assist USAID evaluate the above aspects. As discussed in the text Mr. Clark concluded that sufficient contractors were available to implement the program on schedule. NEA commitment of funds against supply contracts should be completed on Loan 034 by Feb. 1, 1975. \$8 million in orders have already been placed. Absorptive capacity is considered to be adequate to implement the proposed loan.

2. Project Beneficiaries

A request was made at the PRP review to address more fully the intended beneficiaries under this loan. This aspect is discussed in Sections I. D2 and 2F of the paper. The discussion in the CAP covers, to the extent known at this time, the direct and indirect beneficiaries of the loan and complementary programs by the GOP to insure employment generation and improvement of incomes in the rural areas.

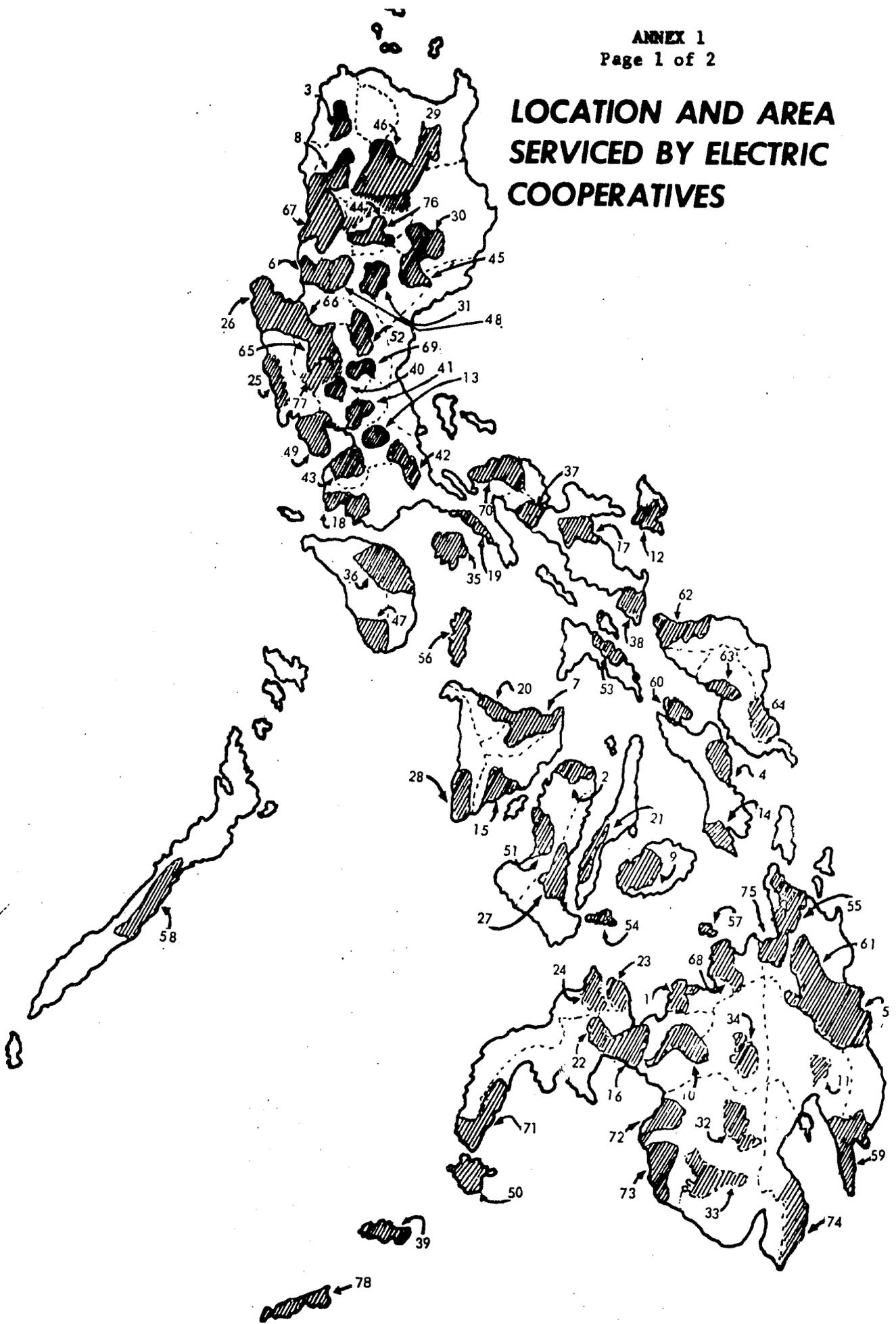
This aspect of the program will require a more detailed ongoing evaluation particularly to pinpoint such items as (a) threshold income level of connections and percent of the population who will ultimately be served and (b) actual creation of employment opportunities in agro industry, agriculture and small commercial and industrial projects in the coop areas.

3. Scope and Tenure of AID Assistance

While not directly related to the decision to finance Rural Electrification III, there was raised and, is still unresolved, a major programming issue as to whether AID should follow on with additional financing for Rural Electrification projects in the Philippines. This issue was raised also in the FBS review (FY 76) and USAID/Manila will be addressing this issue in the DAP due in AID/W in December.

In summary, USAID has proposed follow-on loans of \$20 million each in FY 76 and FY 77. AID/W has proposed no loan in FY 76 with either termination of AID assistance and phase-in of other donor participation by 1977 or possibly one follow-on loan in FY 77 if a review at that time and, funding availabilities and other investment options so indicate.

LOCATION AND AREA SERVICED BY ELECTRIC COOPERATIVES



LEGEND

Cooperative

1. MORESCO
2. VRESCO
3. Ilocos Norte
4. Leyte
5. Surigao Sur
6. La Union
7. Capiz
8. Abra
9. Bohol
10. Lanao Sur
11. Davao Norte
12. Catanduanes
13. Talim, Rizal
14. Leyte Sur
15. Iloilo
16. Lanao Norte
17. Albay
18. Batangas
19. Quezon
20. Aklan
21. Cebu
22. Zamboanga Sur
23. Misamis Occidental
24. Zamboanga Norte
25. Zambales
26. Pangasinan
27. Negros Oriental
28. Antique
29. Cagayan
30. Isabela
31. Nueva Vizcaya
32. Cotabato
33. Cotabato Sur
34. Bukidnon
35. Marinduque
36. Mindoro Oriental
37. Camarines Sur

Cooperative

38. Sorsogon
39. Sulu
40. Pampanga
41. Bulacan
42. Laguna
43. Cavite
44. Ifugao
45. Quirino
46. Kalinga-Apayao
47. Mindoro Occidental
48. Benguet
49. Bataan
50. Basilan
51. Negros Occidental
52. Nueva Ecija
53. Masbate
54. Siquijor
55. Surigao Norte
56. Romblon
57. Camiguin
58. Palawan
59. Davao Oriental
60. Biliran
61. Agusan Sur
62. Northern Samar
63. Western Samar
64. Eastern Samar
65. Tarlac
66. Central Pangasinan
67. Ilocos Sur
68. Misamis Oriental
69. So. Nueva Ecija
70. Camarines Norte
71. Zamboanga City
72. Sultan Kudarat
73. Maguindanao
74. Davao Sur
75. Agusan Norte
76. Mt. Province
77. South Tarlac
78. Tawi Tawi

STATUS OF ELECTRIC COOPERATIVES
BY STAGE OF DEVELOPMENT
(As of October 1974)

Cooperative	Funding 1/	Feasi- bility Study	Co-op Regis- tered	Amount of Loan 2/	A&E Firm 2/	Under Construc- tion	Connec- tions	Est. People Served 10/1/74
1. MORESCO	A	x	1969	12.0	AWIA	x	6,678	45,000
2. VRESCO	A	x	1969	17.8	DCCD	x	11,685	80,000
3. Ilocos Norte	B	x	7/71	15.3	TAP	x	2,319	16,000
4. Leyte	B	x	6/70	28.6	EDCOP	x	10,073	70,000
5. Surigao Sur	B	x	7/71	26.6	AWIA	x	850	6,000
6. La Union	B	x	8/71	7.7	TAP	x	1,461	10,000
7. Capiz	B	x	6/71	18.8	DCCD	x	2,359	16,000
8. Abra	B	x	3/72	8.2	TAP	x	1,420	10,000
9. Bohol	B	x	8/71	22.0	EDCOP	x		
10. Lanao Sur	B	x	9/71	10.6	AWIA	x	1,981	14,000
11. Davao Norte	B	x	7/71	17.5	AWIA	x		
12. Catanduanes	B	x	10/71	15.0	TAP	x	1,744	12,000
13. Talim, Rizal	C	x	6/70	1.8	AFP			
14. Leyte Sur	B	x	8/71	18.7	EDCOP	x		
15. Iloilo	B	x	6/71	19.8	DCCD	x		
16. Lanao Norte	B	x	5/72	23.5	AWIA	x		
17. Albay	B	x	8/72	13.8	DCCD	x	4,046	28,000
18. Batangas	B	x	6/72	16.6	TAP	x		
19. Quezon	B	x	4/72	11.5	TAP	x		
20. Aklan	B	x	4/72	16.8	DCCD	x	1,659	11,000
21. Cebu	B	x	4/72	20.6	DCCD	x		
22. Zamboanga Sur	C	x	8/72	17.1	AWIA	x		
23. Misamis Occidental	C	x	8/72	9.8	AWIA			
24. Zamboanga Norte	C	x	8/72	12.2	AWIA			
25. Zambales	B	x	6/72	8.6	TAP	x		
26. Pangasinan	B	x	9/72	11.9	TAP	x		
27. Negros Oriental	B	x	6/72	23.8	DCCD			
28. Antique	B	x	12/72	25.0	DCCD	x		

Cooperative	Funding 1/	Feasi- bility Study	Co-op Regis- tered	Amount of Loan P M	A&E Firm 2/	Under Construc- tion	Connec- tions	Est. People Served 10/1/74
29. Cagayan	C	x	11/71	20.4	AWIA			
30. Isabela	C	x	3/72	26.3	AWIA			
31. Nueva Vizcaya	C	x	9/72	11.9	AWIA			
32. Cotabato	C	x	5/72	20.0	AWIA			
33. Cotabato Sur	C	x	6/71	21.9	AWIA			
34. Bukidnon	C	x	5/72	18.4	AWIA			
35. Marinduque	B	x	3/73	20.4	DCCD			
36. Mindoro Oriental	C	x	2/73	22.0	DCCD		619	4,300
37. Camarines Sur	B	x	11/72	12.9	DCCD	x	388	2,700
38. Sorsogon	C	x	1/73	14.4	DCCD		355	2,400
39. Sulu	C	x	2/73	12.6	DCCD		596	4,100
40. Pampanga	C	x	12/72	7.0	TAP			
41. Bulacan	C	x	3/72	4.0	DCCD		18,380	12,900
42. Laguna	D	x	4/73	4.0			14,047	98,000
43. Cavite	C	x	6/73	9.4	EDCOP		11,508	80,000
							17,332	121,000
44. Ifugao	C	x			AWIA			
45. Quirino	C	x						
46. Kalinga-Apayao	D	x			DCCD			
47. Mindoro Occidental	C	x	3/74	3.0	TAP	x	938	
48. Benguet	C	x	10/73	2.0	TAP	x	12,455	6,500
49. Bataan	C	x	8/73	5.5			5,789	88,000
50. Basilan	D	x						500
51. Negros Occidental	D	x						
52. Nueva Ecija	D	x						
53. Masbate	D	x			EDCOP			
54. Siquijor	D	x						
55. Surigao del Norte	D	x						
56. Romblon	D	x						
57. Camiguin	D	x						
58. Palawan	C	x	1/74	1.0	DCCD	x		
59. Davao Oriental	D	x						
60. Biliran	D	x	7/73					
61. Agusan Sur	D	x						
62. Northern Samar	D	x						

Cooperative	Funding 1/	Feasi- bility Study	Co-op Regis- tered	Amount of Loan \$ M	ASE Firm 2/	Under Construc- tion	Connec- tions	Est. People Served 10/1/74
63. Western Samar	C	x	2/74					
64. Eastern Samar	D	x					960	6,500
65. Tarlac	C	x						
66. Central Pangasinan	C	x						
67. Ilocos Sur	C	x	1/74	2.1	TAP		3,870	27,000
68. Misamis Oriental	D	x						
69. So. Nueva Ecija	C	x	11/73	3.0	EDCOP			
70. Camarines Norte	C	x	8/74	14.2	DCCD		12,162	85,000
71. Zamboanga City	C	x	2/74	3.5	AWIA	x	8,147	57,000
72. Sultan Kudarat	D	x			AWIA			
73. Maguindanao	D	x			AWIA			
74. Davao Sur	D	x						
75. Agusan Norte	D	x						
76. Mt. Province	D	x	5/74	3.9	AWIA			
77. So. Tarlac	C	x						
78. Tawi Tawi	C	x						
TOTAL		78	.54	721	54	29	153,618	1,034,000

1/ Funding

- A. Previous AID Loans - 2 (pilot projects)
- B. AID Loan 492-H-028 - FY 72 (R.E. I) - 24
- C. Eligible for AID Loan 492-T-034 - FY 74 (R.E. II)
and FY 1975 Proposed Loan - 32
- D. Future - 20

2/ Architectural and Engineering Firms

- AWIA - Adrian Wilson Int'l.
- EDCOP - Engr. Dev. Co. of the Philippines
- DCCD - Design, Construction, Coordination and Development
- TAP - Trans Asia of the Philippines
- AFP - Armed Forces of the Philippines

HOUSE CONNECTIONS

COOPS	POTENTIAL H.C.	JUNE 1974	DEC. 1974	JUNE 1975	JUNE 1976
1. Ilocos Norte	19,000	2,200	3,000	16,800	25,500
2. Ilocos Sur	38,000	3,200	4,000	5,300	7,100
3. Abra	13,000	1,300	2,500	4,000	7,000
4. Benguet	32,000	12,100	12,300	13,100	14,400
5. La Union	14,000	1,300	4,600	5,700	13,900
6. Pangasinan	29,000		2,000	7,300	12,000
7. So. Nueva Ecija	35,000	11,600	13,100	15,000	19,000
8. Zambales	15,000		1,000	5,600	9,000
9. Bataan	13,000	5,700	6,300	19,000	22,900
10. Pampanga	56,000	17,300	19,700	22,200	32,500
11. Bulacan	29,000	13,800	15,700	32,900	40,000
12. Cavite	27,000	17,300	23,800	28,300	29,400
13. Laguna	18,000	10,000	10,100	11,000	14,000
14. Batangas	29,000		1,000	4,800	8,400
15. Quezon	13,000		1,500	6,000	9,000
16. Palawan	11,000		300	1,000	2,000
17. Marinduque	24,000	600	700	2,400	3,100
18. Albay	76,000	3,500	5,000	8,100	12,000
19. Camarines Sur	19,000	300	1,000	2,500	4,000
20. Catanduanes	16,000	1,700	1,700	3,200	5,000
21. MORSOCO	18,000	6,600	7,000	8,000	10,000
22. Zamboanga City	31,000	8,500	8,700	9,000	11,000
23. Aklan	28,000	1,600	2,000	3,700	5,000
24. Capiz	35,000	2,000	3,800	5,800	9,800
25. Leyte	56,000	9,300	10,500	13,000	18,000
26. Lanao Sur	20,000	1,200	2,000	4,300	8,000
27. Surigao Sur	19,000	1,300	1,500	2,800	4,000
28. VRESCO	52,000	11,400	11,600	12,000	14,000
29. Iloilo	31,000		700	2,500	5,700
30. Bohol	24,000		500	4,000	7,000
31. Lanao Norte	26,000		800	4,000	6,000
32. Davao del Norte	19,000			1,600	3,200
33. Cebu	21,000		600	1,700	4,000
34. So. Leyte	12,000			1,000	2,000
35. Western Samar	27,000	1,100	1,500	2,000	3,000
36. Antique	26,000			1,000	2,000
TOTAL	978,000	144,900	180,600	291,900	434,500

ANNEX 2
4 of 5

SCHEDULE OF CONSTRUCTION
(Kms. of Lines)

ANNEX 2
5 of 5

COOPERATIVE	Total through					
	FY 75	FY 76	FY 77	FY 78	FY 79	FY 80
1. Moresco	165	30				
2. Vresco	249					
3. Ilocos Norte	130	76	66	82	45	48
4. Leyte	82	84	60	59	57	57
5. Surigao Sur	19	10	25	42	61	54
6. La Union	41	11	13	13	13	13
7. Capiz	91	80	37	48	40	35
8. Alca	123	80	31	35	42	44
9. Bohol	102	50	22	22	36	57
10. Lanao Sur	162	106	13	13	18	16
11. Davao Norte	150	100	42	26	28	28
12. Cebu	80	15	10	37	47	48
13. Malinao, Rizal	79	3	3	3	3	3
14. Leyte Sur	15	106	10	26	10	49
15. Iloilo	159	100	53	72	97	76
16. Lanao Norte	158	121	100	56	18	17
17. Albay	106	90	84	109	82	79
18. Batangas	58	110	82	91	88	97
19. Quezon	50	74	90	88	116	97
20. Aklan	50	100	69	26	26	31
21. Cebu	50	90	23	67	52	58
22. Zamboanga Sur			100	59	29	29
23. Misamis Occ.		50	83	16	20	20
24. Zamboanga Norte		79	19	94	99	36
25. Zambales	113	30	11	11	23	19
26. Pangasinan	100	87	25	18	15	68
27. Negros Or.		100	106	57	22	26
28. Antique		50	123	79	24	26
29. Cagayan		89	77	58	46	49
30. Isabela		62	37	74	65	30
31. Nueva Vizcaya		60	14	19	24	166
32. Cotabato			100	100	77	31
33. Cotabato Sur			100	100	86	35
34. Bukidnon		86	133	101	141	23
35. Marinduque	52	55	54	22	24	48
36. Mindoro Or.		50	65	108	161	106
37. Canarines Sur	102	91	68	62	117	60
38. Sorsogon		50	62	82	93	51

NATIONAL ELECTRIFICATION ADMINISTRATION
Statement of Income & Expenses
For Fiscal Year Ending June 30, 1974

INCOMEOperating Income -

Interest Income - Loans, Cooperatives	P 236,360.97	
Interest Income - Loans, Private Franchises	1,881,571.48	
Interest Income - Loans, Municipal Systems	<u>3,056,787.80</u>	P5,174,720.25

Other Income -

Interest Income - DBP Savings	1,095,515.02	
Interest Income - DBP Fund Trustee	1,694,625.31	
Miscellaneous Non-Operating Income	<u>3,162.81</u>	<u>2,793,303.14</u>
TOTAL INCOME -		P7,968,023.39

E X P E N S E SOperating Expenses -

Amortization of Development Cost	P 120,883.83	
Salaries, Wages & Per Diems	2,201,169.84	
Transportation & Travel	553,212.27	
Convention, Seminar & Training Expenses	235,657.50	
Rent, Power & Water	481,963.89	
Telephone, Telegram & Postage	44,752.24	
Depreciation Expense	27,916.13	
Materials & Office Supplies Used	189,280.47	
Employee Benefits	708,052.36	
Repairs & Maintenance	61,836.81	
Special Services	118,581.98	
Education Grants	37,450.37	
Gasoline	33,503.32	
Miscellaneous Operating Expenses	<u>330,528.34</u>	P 5,144,789.35

Other Expenses -

Amortization of Government Project Cost	<u>14,977.05</u>
-----------------------------------------	------------------

TOTAL EXPENSES --

5,159,766.40

EXCESS OF INCOME OVER EXPENSES --

2,808,256.99

CERTIFIED CORRECT:

DING M. VERMUDO
Chief, Corporate Accounting
Division

NATIONAL ELECTRIFICATION ADMINISTRATION
BALANCE SHEET
June 30, 1974

A S S E T S

Current Assets -

Cash on Hand		9,679.81
Cash in Bank		58,601,482.00
Cash in Bank - DBP	₱ 57,972,264.89	
Cash in Bank - PNB	495,363.85	
Cash in Bank - Foreign	<u>135,853.26</u>	
Cash in Treasury		220,753.33
DBP Fund Trustee Accounts		30,526,640.72
NEA Trust Fund		8,098,783.58
Loans Receivable		<u>8,923,702.95</u>
Loans Receivable - Cooperative	₱ 423,578.61	
Loans Receivable - Private Franchisees	3,344,575.18	
Loans Receivable - Municipal System	<u>5,155,549.16</u>	
Accounts Receivable - Housewiring		126.71
Accounts Receivable - Construction Clearing		4,502,685.23
Due from Officers and Employees		769,471.26
Due from Government Agencies		71,251.67
Accrued Interest Receivable - DBP Savings		371,067.60
Borrowers Form Inventory		10,289.90
Materials and Office Supplies Inventory		29,551.91
Equipment and Materials Inventory		18,463,723.80
Prepaid Expenses		8,676.80
Deposit on Letters of Credit		847,189.61
Short Term Loans Receivable		<u>877,252.57</u>
Total Current Assets --		₱152,332,331.45

Long Term Loans Receivable		158,658,750.39
Investment in Subsidiaries		193,270.20
Property Plant and Equipment:		

Land		₱ 25,000.00
Office Furniture and Equipment	₱ 635,728.84	
Less: Accumulated Depreciation	<u>119,115.18</u>	516,613.66
Transportation Equipment	₱ 59,130.00	
Less: Accumulated Depreciation	<u>44,347.50</u>	14,782.50
Electric Plant and Equipment	₱ 53,625.00	
Less: Accumulated Depreciation	<u>6,435.00</u>	47,190.00
Other Property Plant & Equipment	₱ 23,347.26	
Less: Accumulated Depreciation	<u>7,791.50</u>	15,555.56
Total Property Plant and Equipment --		₱ 619,141.72

Unamortized Development Cost	₱3,626,516.97	
Less: Accumulated Amortization	<u>120,883.83</u>	3,505,631.14
Government Project Cost	₱ 449,311.60	
Less: Accumulated Amortization	<u>14,977.05</u>	434,334.59
TOTAL ASSETS --		<u>₱ 295,743,459.35</u>

LIABILITIES & CAPITAL

Current Liabilities -

Accounts Payable - General	₱ 321,693.17	
Retentions Payable	1,113,882.50	
Withholding Tax Payable	44,351.53	
Due to Government Agencies	4,668.75	
Due to Officers and Employees	30,845.34	
Other Accrued Expenses	90,273.36	
Current Liabilities - Barter System	1,009,546.50	
Current Liabilities - DBP Fund Trustee Account	29,149,556.86	
Current Liabilities - Others	<u>4,822.85</u>	
Total Current Liabilities -		₱ 31,769,040.06

Long Term Debt		7,305,773.40
Unearned Revenue		122.73
Capital Stock		140,505,911.04
Paid In Capital		2,808,256.99
Retained Earnings		<u>113,354,354.63</u>
Donated Capital		
TOTAL LIABILITIES AND CAPITAL --		<u>₱ 295,743,459.35</u>

The Ilocos Norte Rural Electric Cooperative

The Ilocos Norte Rural Electric Cooperative is a partially energized and operating cooperative. Its core distribution system is approximately fifty percent complete. By updating costs for developing the system at today's prices, it is representative as a hypothetical cooperative to illustrate the financial and economic parameters of a core distribution system.

Ilocos Norte was the first cooperative for which a detailed feasibility study was done using the core distribution system concept and is one of the first being developed under that concept. The cooperative also purchases its power from the Luzon Grid of the National Power Corporation. It is thus, in many ways, useful as an illustration for cooperatives being developed in Luzon. At the same time, Ilocos Norte Province is one of the slowest growing provinces in the Philippines with the inference being that a successful coop in Ilocos Norte is indicative of the viability of the program.

Ilocos Norte Province is located in the northwest tip of Luzon Island and covers an area of 3,400 square kilometers (1,312 square miles). It has an estimated 1974 population of 380,000 with 75 percent of the population living in the rural areas. Cultivated land totals 54,100 hectares of which 60 percent is planted to palay--rice. Other important crops are garlic, tobacco (the province is one of the major producers of Virginia tobacco for the Philippine cigarette industry), sugarcane and corn.

Principal cottage industries are cloth weaving, mat weaving, pottery, salt-making, native wine making, bamboo craft, cigar making, shellcraft, plastic and cloth bag making, and silk culture and weaving. Potential industries on the small scale are ceramics craft, fruit and vegetable processing and carpet weaving.

The terrain of Ilocos Norte is generally rugged. There are limited areas of flat land along the coast and broken terrain inland. Settlements are relatively small, averaging 13,000 people, and scattered. Before the advent of rural electrification only 5 of 19 municipalities could say they had electric service and only 16 percent of the population. The Ilocos Norte Electric Cooperative will bring, within ten years, service to at least ten municipalities and 75 percent of the population within its service area.

C. The Pilot Projects

In comparison with the MORESCO and VRESCO pilot projects, the Ilocos Norte Rural Electric Cooperative is technically most similar to MORESCO. Both are distribution cooperatives purchasing bulk power from an NPC grid. However, MORESCO receives its power from the low-cost Agus River hydro-generation as opposed to the higher cost thermal-generated power purchased by Ilocos Norte from the Luzon Grid. VRESCO, on the other hand, is self-generating cooperative with much higher power costs than either MORESCO or Ilocos Norte.

The provinces which include the service areas of all three cooperatives are predominantly agricultural. Misamis Oriental, which includes the MORESCO service area, however, has the greatest potential for industrial and economic development because of its lower cost power potential. Negros Occidental, which includes the VRESCO service area, is planted primarily to sugar cane and the largest part of the rural population consists of sugar cane workers. These workers are at the low end of the economic spectrum and the provincial population is economically similar to that of Ilocos Norte.

D. Capital Requirements for Ilocos Norte

Based upon the feasibility study using the core system concept, the system of the Ilocos Norte Rural Electric Cooperative will consist of the following lines and equipment when the facilities financed by the initial loan are in service:

Three phase 7.6/13.2 KV line	96 km.
"V" phase	20
Single phase	59
Secondary	35
Secondary underbuild	81
Services	<u>140</u>
Total lines	431 km.
No. of Consumers (4th year of operation)	7400

To arrive at an estimate for the cost of the Ilocos Norte system, several assumptions (based on historical fact) were made to reflect the inflationary impact since completion in February, 1974 of the system feasibility study. The feasibility study shows foreign exchange requirements totaling \$733,600, excluding meters and substations, and local currency requirements of ₱2,980,000. It is estimated that to build the system at today's prices it would require \$2,100,000 for foreign exchange commodities (including meters and substations) and ₱4,500,000 in local currency costs.

E. Financial Analysis

1. Terms of Debt

Ilocos Norte illustrative debt structure is shown in the financial annexes in accord with the official NEA relending terms for NPC supplied cooperatives. These involve capitalization of interest during the first five years followed by repayment over 25 years. The relending interest rate is 3%. Maintenance of value on foreign exchange loans from foreign donors is the responsibility of the GOP and is not passed on to the individual coops.

The relending rate is a concessionary rate for the Philippines. It is recognized, however, that these relending rates are not the same as are the rates of the AID loan to the GOP. It is anticipated that the stricter terms for the cooperatives will allow NEA, in years to come, build up a reserve for further lending for cooperative development before having to turn over all receipts to pay its governmental obligations.

2. Terms for the Pilot Projects

The two pilot projects discussed in Section C above have had their relending terms modified in this paper for purposes of comparison. These terms were brought into line with NEA's current relending terms for all cooperatives.

3. Table 1 below sets forth a comparison of the estimated debt coverage of the Ilocos Norte coop as well as those of the two pilot projects.

As used below, debt coverage is the total cash funds available for debt service (both principal and interest) divided by the principal and interest due that year. For example a coverage of 2.0 times indicates that the project is expected to generate 200% of the funds needed to meet debt service in that year. The table indicates that the debt coverage for Ilocos Norte is slim but adequate in the early years and becomes very satisfactory in the eighth year and beyond as the growth in operating revenues (and thus the rate of growth of the system) reaches its peak. The debt coverage for the VRESCO project is not as adequate and is forecasted to become less than adequate in the eighth year. This signals the need to re-examine the present rate structure for this project in light of the project's debt burden.

TABLE 1

Comparison of Debt Coverage*

<u>YEAR</u>	<u>Ilocos Norte</u>	<u>MORESCO</u>	<u>VRESCO</u>
1	---	0.39	1.07
2	---	0.56	1.29
3	---	1.13	2.58
4	1.31	1.96	3.46
5	1.04	2.22	2.00
6	1.07	1.76	1.34
7	1.33	1.95	1.14
8	1.86	2.29	1.00
9	2.72	2.78	0.86
10	3.64	3.42	0.45

* Assuming that MORESCO and VRESCO loans are restructured to reflect similar terms as for Ilocos Norte.

4. Tables 4, 5 and 6 summarize financial internal rate of return results for the Ilocos Norte case and that of the two pilot projects. These calculations were performed assuming a 30 year operating life for all three projects, a two year construction period and assumed a residual salvage value equivalent to 20% of the gross investment made during the life of the project. (Similar calculations were performed on the basis of a 10% salvage value. The effect of such a reduction was marginal and such lower salvage value estimate is not considered to be realistic give the type of project involved and the fact that incremental investments continue relatively far into the life of the project. The conclusion is that the higher salvage value estimate is to be preferred).

The significant differences in the rates of return for these three projects is attributable to the differences in the rate structures and the differences between loan terms discussed above. The Ilocos Norte illustrative case shows a financial return of 9.5% which is considered very favorable. This project pays no taxes and is not intended to be a profit making institution. Its proposed rate structure is designed to provide for servicing debt and to generate sufficient additional funds for future capital investments. The fact that this return is slightly below the cost of commercial money in the Philippines is attributable to the low rate of interest on debt from NEA-and, as mentioned above, that no provision for profit is necessary in this type of project. 1

5. Sensitivity Analysis-Ilocos Norte. Table 1 (Statement of Source and Application of Funds) sets out the basic sources of revenues and the principal items of cost over a ten year period for this illustrative project. Additional cost and operating data is provided by Table 2. The principal external variable cost item is the cost of power purchased from the national grid. Other internal variable cost items are O&M and general and administrative expenses. Together these variable costs account for 63% of total costs including debt service in the seventh year to be met from operating revenue. These variable costs are 57% of total revenues and the cost of purchased power is 39% of total revenues. If purchased power costs were increased by 10%, such an increase could be absorbed by the project without requiring an increase in rates to the consumer. An increase of 30% on the other hand would most likely require some increase in rates. While it is difficult to judge future energy costs for the country it is our assumption that they will not increase by as much as 30% within the next seven years. The rates assumptions discussed in paragraph C above reflect the latest estimates of energy costs in the country. Increases in either of the two internal variable cost categories are more directly within the control of the project. As these costs taken together amount to less than 50% of the costs of purchased power it is deemed unlikely

¹ These return calculations include interest in the net cash flow, thus if interest were higher, rates and revenues would have to be expanded to cover this margin. In a financial sense the returns of all three projects are considered satisfactory as all exceed the cost of money borrowed from NEA.

that increases in these costs would occur in the magnitude sufficient to require an increase in rates. (Using the same type of analysis employed for the cost of power, O&M and general and administrative costs would have to increase by some 60% to force an upward revision in rates).

6. Conclusion. Based on the above analysis it is concluded that the illustrative case built on the Ilocos Norte project reflects a satisfactory and viable financial prospect for the project and allows for sufficient margin to absorb reasonable cost increases in the future while at the same time providing sufficient funds to support ongoing investment in the expansion of the system.

ILOCOS NORTE

ANNEX 4

TABLE 1

Pesos (000)

Statement of Sources and Application of Funds

Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Sources:										
Loan Funds	1,860	2,868	1,702	1,105	1,981	2,201	2,542	2,209	3,961	5,446
Gross Revenues	540	1,102	1,544	1,999	2,495	3,351	4,301	5,375	7,070	8,473
Membership Fees	15	13	7	5	5	9	10	7	13	13
TOTAL	2,415	3,983	3,253	3,109	4,481	5,561	6,853	7,591	11,044	13,932
Applications:										
Cost of Power	241	483	660	835	1,004	1,320	1,665	2,050	2,537	3,100
O&M	66	82	113	119	153	167	212	229	293	339
Interest	---	---	---	647	689	739	796	843	940	1,079
Principal Payments	---	---	---	544	561	602	666	735	815	889
Gen'l. & Admin. Exp.	131	240	306	348	403	482	579	642	821	897
Capital Expenditures	1,860	2,868	1,702	1,105	1,981	2,201	2,542	2,209	3,961	5,446
TOTAL	2,298	3,673	2,781	3,598	4,791	5,509	6,460	6,708	9,367	11,750
Beg. Cash	---	102	399	864	370	55	96	479	1,355	3,019
+ Sources-Appl.	<u>102</u>	<u>297</u>	<u>465</u>	<u>(494)</u>	<u>(315)</u>	<u>41</u>	<u>383</u>	<u>876</u>	<u>1,664</u>	<u>2,169</u>
= Ending Cash	<u>102</u>	<u>399</u>	<u>864</u>	<u>370</u>	<u>55</u>	<u>96</u>	<u>479</u>	<u>1,355</u>	<u>3,019</u>	<u>5,188</u>
Funds Avail. for D.S.	---	---	---	1,561	1,305	1,437	1,941	2,933	4,774	7,156
TOTAL D.S.	---	---	---	1,191	1,250	1,341	1,462	1,578	1,755	1,968
Debt Coverage	---	---	---	1.31	1.04	1.07	1.33	1.86	2.72	3.64

* -Net revenues after operating expenses plus beginning cash balance before deducting principal and interest payable.

ILOCOS NORTE
PLANT INVESTMENTS & OPERATING EXPENSES
(PESOS IN 1000'S)

ANNEX 4
TABLE 2

Item	Constr. Period	Planning Year														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CUMULATIVE PLANT INVESTMENT																
Plant Beginning of Year	-	12,472	14,762	18,159	20,457	21,562	23,543	25,744	28,286	30,495	24,455	39,902	41,008	42,116	43,222	44,330
Investment During Year *	12,109	1,860	2,868	1,702	1,105	1,981	2,201	2,542	2,200	3,061	5,446	1,166	1,300	1,106	1,103	1,109
Plant End of Year **	12,472	14,762	18,159	20,457	21,562	23,543	25,744	28,286	30,495	34,456	39,902	41,008	42,116	43,222	44,330	45,439
COST OF POWER																
KWH Purchased (1000's)		2,529	5,065	6,923	8,749	10,515	13,571	6,755	20,255	24,586	29,407	30,447	33,107	35,747	38,524	47,226
Average Cost/KWH (₱)		.0951	.0953	.0954	.0954	.0955	.0973	.0982	.1012	.1022	.1054	.1076	.1098	.1120	.1142	.1164
Cost of Power		241	483	660	835	1,004	1,320	1,665	2,050	2,527	3,100	3,276	3,635	4,004	4,399	4,799
OTHER OPERATING EXPENSES																
O&M as % of Plant		.45	.45	.55	.55	.65	.75	.75	.75	.85	.85	.95	.95	1.05	1.05	1.05
O&M Expense		66	82	113	119	153	167	212	229	292	399	390	400	454	465	477
General & Admin (₱/consumed)		40	40	41	41	42	42	43	43	44	44	45	45	46	46	47
General & Admin. Expenses		131	240	306	348	403	482	579	642	821	897	959	1,001	1,065	1,108	1,175
Depr. as % of Total Plant)																
End of Year)		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Depreciation		443	545	614	647	706	772	849	915	1,034	1,197	1,230	1,263	1,297	1,330	1,363

* Includes Escalation & Contingencies
** Includes Interest at 3% thru year 3.

ILOCOS NORTE
TOTAL SYSTEM REVENUES
(IN PESOS)

ANNEX 4
TABLE 3, Page 1 of 2

Item	Planning Year														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Irrigation Pumps															
1. Average KWH/Consumer/Mo.	1,417	1,417	1,417	1,417	1,417	1,417	1,417	1,417	1,417	1,417	1,417	1,417	1,417	1,417	1,417
2. Average Revenue/Consumer/Mo.	241	241	241	241	241	241	241	241	241	241	241	241	241	241	241
3. Annual Revenue/Consumer	2,891	2,891	2,891	2,891	2,891	2,891	2,891	2,891	2,891	2,891	2,891	2,891	2,891	2,891	2,891
4. Number of Consumers	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180
5. Annual Revenue (P000)	35	69	102	139	173	208	243	278	312	347	376	405	434	462	491
Security Lights															
1. Average KWH/Consumer/Mo.	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
2. Average Revenue/Consumer/Mo.	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
3. Annual Revenue/Consumer	198	198	198	198	198	198	198	198	198	198	198	198	198	198	198
4. Number of Consumers	215	382	459	506	559	640	723	790	903	1,014	1,061	1,108	1,155	1,202	1,250
5. Annual Revenue (P000)	43	76	91	100	111	127	143	156	179	201	210	219	229	238	248
Large Commercials															
1. Average KWH/Consumer/Mo.	6,900	7,300	7,800	8,200	8,600	9,100	9,500	9,700	10,400	10,800	11,200	11,500	11,800	12,000	12,100
2. Average Revenue/Consumer/Mo.	1,537	1,679	1,794	1,886	1,978	2,093	2,185	2,277	2,392	2,484	2,576	2,645	2,714	2,760	2,783
3. Annual Revenue/Consumer	19,044	20,148	21,528	22,632	23,746	25,116	26,220	27,324	28,704	29,808	30,912	31,740	32,568	33,120	33,396
4. Number of Consumers	3	7	10	14	17	21	24	28	31	35	38	42	45	49	52
5. Annual Revenue (P000)	57	141	215	317	404	527	629	765	890	1,04	1,175	1,333	1,466	1,623	1,737
Domestic															
1. Average KWH/Consumer/Mo.	29	32	35	39	42	48	53	60	65	70	73	76	79	82	85
2. Average Revenue/Consumer/Mo.	9	9.92	10.85	12.09	13.02	14.88	16.43	18.60	20.15	21.70	22.63	23.56	24.49	25.42	26.35
3. Annual Revenue/Consumer	107.88	119.04	130.20	145.08	156.24	178.56	197.16	223.20	241.80	260.40	271.56	282.72	293.88	305.04	316.20
4. Number of Consumers	2,818	5,206	6,484	7,390	8,378	10,096	11,844	13,166	16,629	18,103	18,953	19,803	20,653	21,503	22,353
5. Annual Revenue (P000)	304	620	844	1,072	1,309	1,803	2,335	2,939	4,021	4,714	5,147	5,599	6,070	6,559	7,068

ANNEX 4
TABLE 3. Page 2 of 2

ITEM	P L A N N I N G Y E A R														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Small Commercials															
1. Average KWH/Consumer/Mo.	172	165	183	179	196	207	218	233	240	247	250	250	250	255	260
2. Average Revenue/Consumer/Mo.	48	46	51	50	55	51	61	65	67	69	70	70	71	71	73
3. Average Revenue/Consumer	578	554	615	601	659	696	732	783	806	820	840	840	857	857	874
4. Number of Consumers	133	234	279	306	335	378	424	461	521	579	591	603	615	627	639
5. Annual Revenue (P000)	77	130	172	184	221	263	311	361	420	481	496	507	527	537	558
Public Buildings															
1. Average KWH/Consumer/Mo.	70	71	76	85	93	98	105	112	119	128	134	138	142	145	147
2. Average Revenue/Consumer/Mo.	32	23+	25	28	31	32	34	37	39	42	44	46	47	48	45
3. Annual Revenue Consumer	277	281	301	337	368	398	408	444	471	507	531	546	562	574	582
4. Number of Consumers	85	156	195	221	251	303	355	394	468	543	543	543	543	543	543
5. Annual Revenue (P000)	24	44	59	74	92	118	145	175	221	275	288	297	305	312	316
Revenue Summary - All Sources (P000)															
1. Irrigation Pumps	35	69	104	139	173	208	243	278	312	347	376	405	434	463	491
2. Street Lights	43	76	91	100	111	127	143	156	179	201	210	219	229	238	248
3. Large Commercials	57	141	215	217	404	527	629	765	890	1,043	1,175	1,333	1,466	1,623	1,737
4. Domestic	304	620	844	1,072	1,309	1,803	3,335	2,939	4,021	4,714	5,147	5,599	6,070	6,559	7,066
5. Small Commercials	77	130	172	184	221	263	311	361	420	481	496	507	527	537	558
6. Public Buildings	24	44	59	74	92	118	145	175	221	275	288	297	305	312	316
7. Total Operating Revenue	540	1,080	1,483	1,886	2,310	3,046	3,806	4,674	6,043	7,961	7,692	8,360	9,031	9,732	10,418
8. Inflation Pass Thru Factor	1.20	1.02	1.04	1.06	1.08	1.10	1.13	1.15	1.17	1.20	1.22	1.24	1.27	1.29	1.32
9. Adjusted Total Operating Revenue	540	1,102	1,544	1,999	2,495	3,351	4,301	5,375	7,070	8,473	9,384	10,366	11,469	12,554	13,752

Rate Assumptions (P/KWH)

1. Irrigation Wells	.17
2. Security Lights	.30
3. Large Commercials	.23
4. Domestic	.31
5. Small Commercials	.28
6. Public Buildings	.33

Totals may not add up due to rounding.

ANNEX 4
TABLE 4

ROI PHILIPPINE RURAL ELECTRIC LOAN - ILOCOS NORTE (IN THOUSANDS)

YEAR	INVESTMENT	DEBT	FACTOR	ADJUSTED INVESTMENT	ADJUSTED RETURN
1	2494	0	1.0000	2494	0
2	0978	0	0.9132	9112	0
3	2290	117	0.8340	1909	97
4	3397	310	0.7617	2587	236
5	2294	472	0.6956	1598	328
6	1105	702	0.6352	701	445
7	1981	940	0.5801	1149	545
8	2201	1491	0.5298	1166	789
9	2542	1855	0.4838	1229	897
10	2209	2461	0.4419	976	1087
11	3961	3432	0.4035	1598	1384
12	5446	4150	0.3685	2006	1529
13	1106	4630	0.3365	372	1558
14	1108	5041	0.3073	340	1549
15	1106	5528	0.2807	310	1551
16	1108	5777	0.2563	284	1480
17	1108	6456	0.2341	259	1511
18	0	6568	0.2138	0	1404
19	0	6568	0.1952	0	1282
20	0	6568	0.1783	0	1171
21	0	6456	0.1628	0	1051
22	0	6568	0.1487	0	976
23	0	6568	0.1358	0	891
24	0	6568	0.1240	0	814
25	0	6456	0.1133	0	731
26	0	6568	0.1034	0	679
27	0	6568	0.0945	0	620
28	0	6568	0.0863	0	566
29	0	6456	0.0788	0	508
30	0	6568	0.0719	0	472
31	0	6568	0.0657	0	431
32	-9088	6568	0.0600	-545	394
TOTAL				27545	26976

PERCENTAGE IS 0.4

ROI PHILIPPINE RURAL ELECTRIC LOAN - MORESCO (IN THOUSANDS)

YEAR	INVESTMENT	RETURN	FACTOR	ADJUSTED INVESTMENT	ADJUSTED RETURN
1	2002	0	1.0000	2002	0
2	8007	0	0.9302	7448	0
3	661	511	0.8653	571	269
4	527	446	0.8050	424	359
5	650	570	0.7488	486	426
6	522	710	0.6966	363	494
7	574	843	0.6480	371	546
8	399	975	0.6028	240	587
9	336	1115	0.5607	188	625
10	336	1249	0.5216	175	651
11	336	1388	0.4852	163	673
12	336	1522	0.4513	151	686
13	0	1522	0.4199	0	639
14	0	1522	0.3906	0	594
15	0	1522	0.3633	0	552
16	0	1522	0.3380	0	514
17	0	1522	0.3144	0	478
18	0	1522	0.2925	0	445
19	0	1522	0.2720	0	414
20	0	1522	0.2531	0	385
21	0	1522	0.2354	0	358
22	0	1522	0.2190	0	333
23	0	1522	0.2037	0	310
24	0	1522	0.1895	0	288
25	0	1522	0.1763	0	268
26	0	1522	0.1640	0	249
27	0	1522	0.1525	0	232
28	0	1522	0.1419	0	215
29	0	1522	0.1320	0	200
30	0	1522	0.1228	0	186
31	0	1522	0.1142	0	173
32	-2937	1522	0.1063	-312	161
TOTAL				12270	12310

PERCENTAGE IS 7.4

ROI PHILIPPINE RURAL ELECTRIC LOAN - VRESCO (IN THOUSANDS)

YEAR	INVESTMENT	RETURN	FACTOR	ADJUSTED INVESTMENT	ADJUSTED RETURN
1	3651	0	1.0000	3651	0
2	14602	0	0.9569	13973	0
3	686	722	0.9157	628	666
4	539	836	0.8763	472	732
5	399	876	0.8386	334	734
6	399	901	0.8025	320	723
7	399	933	0.7679	306	716
8	399	1246	0.7348	293	915
9	399	1296	0.7032	280	911
10	399	1540	0.6729	268	1036
11	399	1397	0.6439	256	899
12	399	1451	0.6162	245	894
13	0	1451	0.5897	0	855
14	0	1451	0.5643	0	818
15	0	1451	0.5400	0	783
16	0	1451	0.5167	0	749
17	0	1451	0.4945	0	717
18	0	1451	0.4732	0	686
19	0	1451	0.4528	0	657
20	0	1451	0.4333	0	628
21	0	1451	0.4146	0	601
22	0	1451	0.3968	0	575
23	0	1451	0.3797	0	550
24	0	1451	0.3634	0	527
25	0	1451	0.3477	0	504
26	0	1451	0.3327	0	482
27	0	1451	0.3184	0	462
28	0	1451	0.3047	0	442
29	0	1451	0.2916	0	423
30	0	1451	0.2790	0	404
31	0	1451	0.2670	0	387
32	-4534	1451	0.2555	-1158	370
TOTAL				19848	19846

PERCENTAGE IS 4.5

Introduction and Summary

This section evaluates the economic feasibility of the Ilocos Norte sub-project and employs for this purpose the quantitative tools of cost benefit and internal rate of return analysis. A secondary purpose of the analysis is to provide some indication of the economic feasibility of the other sub-projects. The results of this economic analysis may be assumed to indicate the lower range of the B/C ratios and IRR's of other sub-projects since the Ilocos Norte sub-project is located within a region less favorably endowed than others in terms of natural resource availability. Growth of the Ilocos regional economy over the last decade has lagged behind that of other regions and in 1971, average annual family income in Ilocos (3,302) was 5% lower than the national average of 3,465. It is unlikely that this historical regional growth pattern will be reversed over the next 10 years. Thus, the economic feasibility of a rural electrification project in the Ilocos region may be somewhat weaker than projects located in other regions.

This section also discusses some important aspects of the Ilocos Norte sub-project which are not reflected in the B/C ratio or the IRR, but have a bearing on its economic and social desirability.

The analysis concludes that the Ilocos Norte project is economically feasible. The B/C ratio is greater than one (1.29) and the IRR of 20.32% is comparable to, if not greater than, the IRR's of other infrastructure projects of the GOP.

2. Methodology

For the purpose of the B/C and IRR calculations in this paper, the benefits from the project have been defined as the projected sales revenues and the incremental cost savings offered by central station electricity over alternative but less efficient sources of energy e.g. kerosene or small diesel generators. Sales revenues measure direct project benefits since they reflect the monetary valuation placed on the electric service by consumers. Cost reductions from using central station electricity imply an increase in net income or profitability for household and business consumers.

Cost reductions from using central station electricity for three classes of rural consumers are summarized in the following table:

TABLE

Cost Savings from Central Station Electricity 1/

<u>Consumer Class</u>	<u>Present Consumption</u>	<u>Cost Savings (/yr)</u>
1. Comestic or Household	197/yr. for kerosene lightening	142/Household
2. Large Commercials <u>2/</u>	Minimum-sized diesel motor generator sets of 25 KW. .61/KWH	.38/KWH
3. Pump Irrigation	Diesel 10 HP and 20 HP pumps .66/KWH equiv.	.30/KWH

An average rural household spends about 12/mo. (172/yr) on kerosene to provide lighting equivalent to that of a 10-watt electric bulb. In addition, other costs (primarily wick and lamp costs) are incurred. Total annual costs of kerosene lighting amount to about 197 as against 55 for an equivalent amount of electric lighting. Annual household cost savings from using electricity are therefore equivalent to 142 multiplied by the annual projections of household connections.

The projected commercial, industrial, and farm users of electricity to be provided by the coop presently depend on energy from auto-generated electricity or diesel and gasoline engines. By availing of coop-provided electricity, these users can save from .30-.38/KWH. Total annual savings of these users are equal to their respective annual KWH consumption multiplied by their respective annual KWH consumption multiplied by their respective cost savings.

Demand projections for the Ilocos Norte system are shown in Table 9. These projections are based on studies of an NRECA consultant, and on previous pilot rural electrification experiences. The projections for small commercials (which include rice mills) may be somewhat conservative. The projections assume that of the existing

1/ Cost reductions for other rural consumers, mainly small commercial and industrial users (loads of less than 25 KW) and public buildings, were not quantified for lack of adequate data.

2/ Commercial and industrial users with loads equal to or greater than 25 KW.

460 rice mills in Ilocos Norte, only 10 would be served in the first year, rising to 75 during the 10th year. The existing mills are powered by small gasoline or diesel engines, and could realize substantial economies by shifting to central electricity if available.

Costs are defined as the sum of: (1) initial plant investment; (2) annual capital investment from the 1st year to 15th year reflecting gradual plant build-up and increased system coverage; and (3) annual power, operating and maintenance, and general and administrative costs. The foreign exchange component accounts for approximately 70% of the total investment cost. Shadow pricing of this component was not considered necessary since under the current floating rate regime, the foreign exchange rate approximates the true scarcity value of foreign exchange. Shadow pricing the unskilled component of labor costs was not considered necessary because it is a relatively small amount.

For purposes of the B/C and IRR calculations, the project life was assumed to be 33 years. The opportunity cost of capital used to discount the benefit and cost streams to the present was 15%. This is the rate generally used by the IBRD and the ADB in their project feasibility studies.

3. Results of B/C and IRR Calculations

The B/C and IRR calculations for Ilocos Norte are shown in Tables 6 and 7. The calculations show that the benefit cost ratio is greater than one (1.29) and the IRR of 20%. The B/C ratio and the IRR demonstrate that the investment in the distribution system for Ilocos Norte appears economically feasible.

The B/C ratio and the IRR for Ilocos Norte are conservative estimates since as noted earlier, the cost savings of small commercial and industrial users and public buildings are not quantified, and the demand projections for small commercial and industrial users are on the low side.

TABLE 1

Comparative Cost Analysis of Kerosene vs. Electric Lighting^{1/}

Kerosene Lighting Costs (/yr.)

Kerosene ^{2/}	172
Wick ^{3/}	8
Capital Costs ^{4/}	<u>17</u>
Total Costs/yr.	197

Electric Lighting Costs (/yr.)

Electricity ^{5/}	6
Incandescent Bulb ^{6/}	4
Capital Costs ^{7/}	<u>45</u>
Total Costs/yr.	55

Cost Reduction/House (/yr.) 142

1/ Calculations assume that illumination provided by a standard kerosene lamp (Aladdin type) is equivalent to that of a 10-watt electric incandescent bulb.

2/ 138 liters/yr. at 1.25/liter (pre-tax)

3/ 1 wick/mo. at 0.70/wick

4/ A kerosene lamp costs 35.00 and lasts for 3 years. Interest rate assumed at 15%.

5/ 18 KWH at 0.31/KWH

6/ Costs 2.00 and lasts for 200 days assuming 5 hours daily use.

7/ Annual depreciation of house wiring (250/house) equivalent to 3%. Interest rate assumed at 15%.

TABLE 2

Comparative Cost Analysis of Self-Generated Electricity
vs. Coop-Provided Electricity (Large Commercials)^{1/}

Self-Generated Electricity (/yr.)

Energy Costs ^{2/}	33,780
Maintenance	1,125
Capital Costs ^{3/}	<u>9,375</u>
Total Costs/yr.	44,280
Cost,/KWH	0.61

Coop-Provided Electricity (P/yr.)

Cost/KWH	0.23
----------	------

Cost Reduction - 62%

- 1/ Large commercials include industries with a minimum load of 25 KW.
- 2/ Operating full load for 8 hrs./day. Assumes .712 liters/KWH and 0.65/liter (pre-tax).
- 3/ A 25 KW diesel generator costs 37,500. Assumed depreciation and interest rates are 10% and 15%, respectively.

TABLE 3
Comparative Cost Analysis of Diesel vs. Electric Pump Irrigation

Diesel Pump Irrigation:

(a) 10 HP (/yr.)	Energy Costs ^{1/} Capital Costs ^{2/}	5,460 2,500 <hr style="width: 100%;"/> Total Costs/yr. 7,960 Cost/KWH 0.66
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(b) 20 HP (/yr.)	Energy Costs ^{3/} Capital Costs ^{2/}	10,920 5,000 <hr style="width: 100%;"/> Total Costs/yr. 15,920 Cost/KWH 0.66
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Electric Pump Irrigation:

(a) 10 HP (/yr.)	Energy Costs ^{4/} Capital Costs ^{5/}	2,040 1,576 <hr style="width: 100%;"/> Total Costs/yr. 3,616 Cost/KWH 0.30
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(b) 20 HP (/yr.)	Energy Costs ^{6/} Capital Costs ^{5/}	4,080 2,800 <hr style="width: 100%;"/> Total Costs/yr. 6,880 Cost/KWH 0.29
-------------------	-----------------------------------------------------------	-------------------------------------------------------------------------------------

Cost Reduction - 54%

- 1/ 12,000 KWH/yr. at .7 liters/KWH and 0.65/liter (pre-tax).
- 2/ A 10 HP and 20 HP diesel pump costs 10,000 and 20,000, respectively. Appreciation and interest rates are assumed at 10% and 15%, respectively.
- 3/ 24,000 KWH/yr. at .7 liters/KWH and 0.65/liter (pre-tax).
- 4/ 12,000 KWH/yr. at 0.17/KWH.
- 5/ A 10 HP and 20 HP electric pump costs 5,250 and 9,450, respectively. Assumed depreciation rates for the electric motor and pump are 20% and 10%, respectively. The interest rate is assumed at 15%.
- 6/ 24,000 KWH/yr. at 0.17 KWH.

TABLE 4

ILOCOS NORTE

Pesos (000)

Cost Savings from Rural Electrification

<u>Year</u>	<u>Domestic</u> ^{1/}	<u>Large Commercials</u> ^{2/}	<u>Irrigation</u> ^{3/}	<u>Total Cost Savings</u>
0	--	--	--	--
1	400	94	73	567
2	739	233	147	1,119
3	921	356	220	1,497
4	1,049	523	294	1,866
5	1,190	667	367	2,224
6	1,434	871	441	2,746
7	1,682	1,040	514	3,236
8	1,870	1,264	588	3,722
9	2,361	1,470	661	4,492
10	2,571	1,724	734	5,029
11	2,691	1,941	796	5,428
12	2,812	2,202	857	5,871
13	2,933	2,421	918	6,272
14	3,053	2,681	979	6,713
15	3,174	2,869	1,041	7,084
16-30	3,174	2,869	1,041	7,084

1/ 142 (cost savings/house) x No. of houses

2/ 0.38 (cost savings/KWH) x Total KWH/yr.

3/ 0.36 (cost savings/KWH) x Total KWH/yr.

PV of Cost Savings (15%) : 20,824

Table 5

PROJECTED BENEFITS AND COSTS, ILOCOS NORTE SUB-PROJECT
(in thousand pesos)

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16-30
Total Benefits	-	1,107	2,221	3,041	3,865	4,719	6,097	7,537	9,097	11,562	13,502	14,812	16,237	17,741	19,267	20,836	20,836
Sales revenue	-	540	1,102	1,544	1,999	2,495	3,351	4,301	5,375	7,070	8,473	9,384	10,366	11,469	12,554	13,752	13,752
Cost savings	-	567	1,119	1,497	1,866	2,224	2,746	3,236	3,722	4,492	5,029	5,428	5,871	6,272	6,713	7,084	7,084
Domestic	-	400	739	921	1,049	1,190	1,434	1,682	1,870	2,361	2,571	2,691	2,812	2,933	3,053	3,174	3,174
Large Commercials	-	94	233	356	523	667	871	1,040	1,264	1,470	1,724	1,941	2,202	2,421	2,681	2,869	2,869
Irrigation	-	73	147	220	294	367	441	514	588	661	734	796	857	918	979	1,041	1,041
Total Costs	12,109	2,298	3,673	2,781	2,407	3,541	4,170	4,998	5,130	7,612	9,782	5,731	6,144	6,629	7,080	7,559	6,451
Capital costs	12,109	1,860	2,868	1,702	1,105	1,981	2,201	2,542	2,209	3,961	5,446	1,106	1,108	1,106	1,106	1,108	-
Current costs	-	438	805	1,079	1,302	1,560	1,969	2,456	2,921	3,651	4,336	4,625	5,036	5,523	5,972	6,451	6,451
Power costs	-	241	483	660	835	1,004	1,320	1,665	2,050	2,537	3,100	3,276	3,635	4,004	4,399	4,799	4,799
Operating and Maintenance	-	66	82	113	119	153	167	212	229	293	334	390	400	454	465	477	477
General and Administrative	-	131	240	306	348	403	482	579	642	821	897	959	1,001	1,065	1,108	1,175	1,175
Net Benefits	-12,109	-1,191	-1,452	260	1,458	1,178	1,927	2,539	3,967	3,950	3,720	9,081	10,093	11,112	12,187	13,277	14,385

Table 6

COMPUTATION OF BENEFIT COST RATIO, ILOCOS NORTE SUB-PROJECT

<u>Year</u>	<u>Benefits</u>	<u>Costs</u>	<u>Discount Factor</u> <u>(15%)</u>	<u>Discounted Benefits</u>	<u>Discounted Costs</u>
0	-	12,109	1.000		
1	1,107	2,298	.870		
2	2,221	3,673	.756		
3	3,041	2,781	.658		
4	3,865	2,407	.572		
5	4,719	3,541	.497		
6	6,097	4,170	.432		
7	7,537	4,998	.376		
8	9,097	4,998	.326		
9	11,562	7,612	.284		
10	13,502	9,782	.247		
11	14,812	5,731	.215		
12	16,237	6,144	.187		
13	17,741	6,629	.162		
14	19,267	7,080	.141		
15	20,836	7,559	.123		
16-30	20,836 <u>1/</u>	6,451 <u>1/</u>	.719		
30	10,788 <u>2/</u>		.015		
				53,770	41,804

1/ Assumed at same level from 16th-30th year.

2/ Salvage value at 30th year.

Benefit - Cost Ratio (15% Discount Rate) = 1.29

Table 7

COMPUTATION OF INTERNAL RATE OF RETURN, ILOCOS NORTE SUB-PROJECT

<u>Year</u>	<u>Net Benefits</u>	<u>Discount Factor</u> <u>20%</u>	<u>Present Value</u>	<u>Discount Factor</u> <u>21%</u>	<u>Present Value</u>
0	-12,109	1.000		1.000	
1	-1,191	.833		.826	
2	-1,452	.694		.683	
3	260	.579		.564	
4	1,458	.482		.466	
5	1,178	.402		.386	
6	1,927	.335		.3	
7	2,539	.279		.263	
8	3,967	.232		.218	
9	3,950	.194		.180	
10	3,720	.162		.149	
11	9,081	.134		.123	
12	10,093	.112		.102	
13	11,112	.093		.084	
14	12,187	.078		.069	
15	13,277	.065		.057	
16-30	14,385 <u>1/</u>	.304		.257	
30	10,788 <u>2/</u>	.004		.003	
			+472		-984

$$\text{IRR} = .2 + .01 \left(\frac{472}{472+984} \right) = 20.32\%$$

1/ Assumed at same level from 16th-30th year.

2/ Salvage value at 30th year.

CURRENT CONSTRUCTION ACTIVITIES AND LIST OF PREQUALIFIED FIRMS

Attached is a chart of the current and planned line construction activities of the rural electrification projects. The activities take account of the availability of material supplies as well as wholesale power sources. An analysis of these data shows that the maximum number of line construction contractors active at any one time is 21. An accompanying graph shows the number of line construction contracts expected to be in force at any one time.

The NEA has prequalified a total of 14 firms for construction of electrical distribution lines and power plants and 31 for headquarter facilities. Consultant Earl Clark interviewed 18 representative firms in Manila qualified to do line construction and 16 of them expressed their intention to submit bids on NEA projects. The attached "List of Contractors" shows the contractors prequalified by NEA as well as contractors considered qualified and/or active in the electrification program by the four A&E firms in the rural electrification program. The list also identifies those firms interviewed by Mr. Clark. Mr. F. C. Gonzalez, V.P. of Romago Electric Co. and a member of the Philippine Contractors Association stated that since other work available to contractors in the Philippines is slowing down, he expects large contractors who have shown no previous interest in rural electrification will also begin to bid. NEA plans to interview several firms on the "List of Contractors" with the view of increasing the number of prequalified bidders.

In view of the above information it appears that there is an adequate number of interested contractors to permit implementation of the major portion of the backbone rural electrification projects by contract rather than by force account.

Tables showing the current status of all rural electrification construction projects are contained in pages 3 and 4 of this annex.

List of Contractors
Distribution Line Construction

	<u>Prequalified by NEA</u>	<u>Interviewed by Clark</u>	<u>Job Capacity</u>
1. E.J. Nell		x	2
2. ITT Philippines	x	x	-
3. Erectors, Inc.		x	2
4. Power Consultants		x	1
5. Romago Electric	x	x	2
6. Electro-Mechanical Enterprises	x	x	1
7. E. E. Black, Ltd.	x	x	2
8. Paces Corp.	x	x	1
9. Audion Electric Co., Inc.	x	x	2
10. V. M. Garcia Construction	x	x	2
11. M. C. Engineering, Inc.	x	x	1
12. J.R.L. Construction	x	x	2
13. Trigon Engineering Corp.	x	x	1
14. Citation Engineering & Marketing Co., Inc.	x	x	3
15. Phesco, Inc.	x	x	3
16. T & D Engineering & Marketing Corp.	x	x	1
17. J. V. Angeles Construction		x	1
18. Ultralite Electrical Co., Inc.		x	-
19. Salinas Electrical Construction	x		1
20. Zambusman (Zamboanga)	x		<u>1</u>

Construction ActivitiesOctober 1, 1974

a. Status of Construction Work - Headquarters Facilities

<u>Project</u>	<u>Contractor</u>	<u>Start of Construction</u>	<u>% Completion to date</u>
1. Capiz	JV Angeles	May 7, 1973	100
2. Leyte	United Const.	June 1, 1973	100
3. Ilocos Norte	JPD Const.	June 15, 1973	100
4. Surigao Sur	EC Estrella	Aug. 1, 1973	72
5. La Union	SD Flores	Sept 10, 1973	100
6. Lanao Sur	Edmar Const.	Sept 15, 1973	55
7. Abra	SD Flores	Sept. 1, 1973	100
8. Lanao Norte	EC Estrella	Jan. 16, 1974	54
9. Davao Norte	GM Tiongco	Nov. 2, 1973	62
10. Iloilo	VM Garcia	Feb. 1, 1974	98
11. Pangasinan	Force Account	Mar. 16, 1974	67
12. Zambales	Force Account	Mar. 18, 1974	65
13. So. Leyte	Force Account	Apr. 1, 1974	33
14. Zamboanga Sur	Force Account	Apr. 8, 1974	64
15. Bohol	Force Account	Apr. 1, 1974	48
16. Albay	Force Account	Apr. 1, 1974	38
17. Aklan	Force Account	Mar. 18, 1974	68
18. Quezon	Force Account	Mar. 20, 1974	16
19. Antique	Force Account	Dec. 1, 1973	100
20. Cebu	Force Account	Apr. 26, 1974	75
21. Camarines Sur	Force Account	Apr. 1, 1974	
22. Catanduanes	JRL Const.	July 15, 1974	26
23. Batangas	Batangas Constr.	Oct. 1, 1974	

Note: Force Account covers Site Development and Multi-Purpose Building.

b. Status of Construction Work - Trans/Dist/Substation

<u>Project</u>	<u>Contractor</u>	<u>Start of Construction</u>	<u>% Completion to date</u>
1. Capiz	Audion Electric	Oct. 1, 1974	0
2. Leyte	Citation Eng'g	June 16, 1973	100
3. Ilocos Norte	Citation Eng'g	July 9, 1973	100
4. Surigao Sur	Audion Electric	Aug. 1, 1973	84
5. La Union	Electromechanical	Oct. 1, 1973	95
6. Lanao Sur	51st E Bde.	July 1973	90
7. Albay	Force Account	Nov. 1973	35
8. Abra	Force Account	Mar. 1973	18
9. Benguet*	Citation Eng'g	Feb. 18, 1973	33
10. Bohol	Trigon Eng'g		
11. Iloilo	VM Garcia	Sept. 10, 1974	40
12. Batangas	Audion Electric		

*Improvement of System

c. Status of Construction Work - Power Plant

<u>Project</u>	<u>Contractor</u>	<u>Start of Construction</u>	<u>Construction to date</u>
1. Capiz	Audion Electric	May	98
2. Leyte	Trigon Eng'g	May 28, 1973	92
3. Bohol	Trigon Eng'g	Nov. 5, 1973	64
4. *Zamboanga City	Trans-Orient Engrs'	Mar 11, 1974	90
5. *Catanduanes	Audion Electric	Aug. 1974	20
6. *Camarines Sur	Trans-Orient	June 1974	100
7. *Palawan	Trans-Orient	June 1974	100

*Rehabilitation Generator Units.

LIST OF QUALIFIED CONTRACTORS FOR ELECTRICAL DISTRIBUTION
LINES AND SUBSTATION

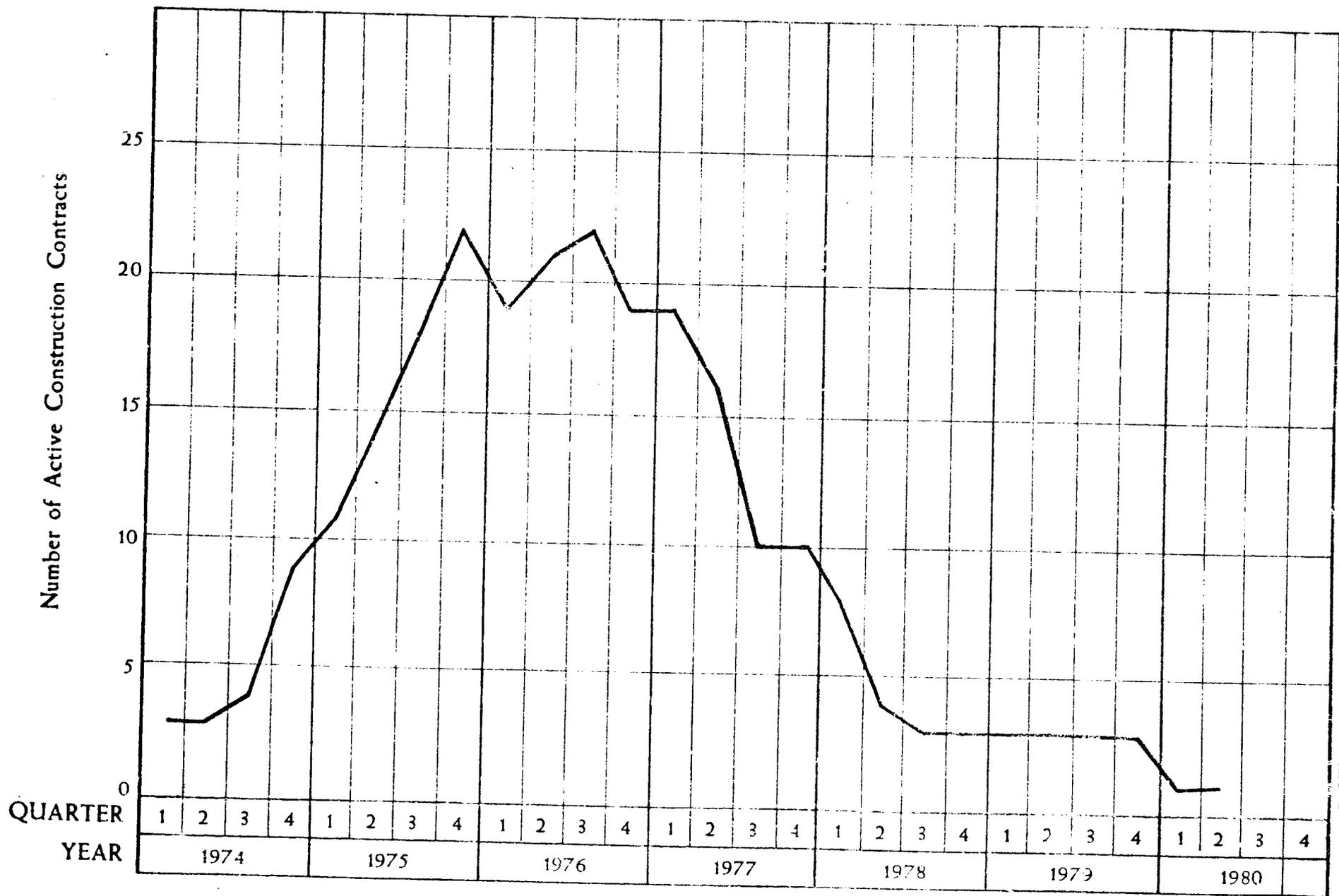
1. Paces Corporation
Sarmiento Building
678 Ayala Avenue, Makati, Rizal
2. V.M. Garcia Construction
1424 Quezon Boulevard Extension
Quezon City
3. M. C. Engineering, Inc.
121 J. Ruiz Street, San Juan
Rizal
4. Audion Electric Co., Inc.
85 Don Alejandro Rocas Avenue
Quezon City
5. ITI Philippines, Inc.
2nd Floor, Marsman Building
Buendia Avenue & Washington St.
Makati, Rizal
6. E. E. Black, Ltd.
10th Floor, Insular Life Bldg.
Ayala Avenue Cor. Paseo de Roxas
Makati, Rizal
7. Romago Electric Company, Inc.
208 Pilar, Mandaluyong
Rizal
8. J. R. L. Construction
Virac, Catanduanes
9. Trigon Engineering Corporation
399 C. Padilla Street
Cebu City
10. Citation Engineering & Marketing Co., Inc.
368-C Ben-Lor Building
Quezon Boulevard Extension
Quezon City
11. Phesco, Incorporated
73 Quezon Boulevard Extension
Quezon City
12. Electro-Mechanical Enterprises
8861-C Sampaloc Street
San Antonio Village
Makati, Rizal
13. T & D Engineering & Marketing Corp.
Bascara Building
Quezon City
14. Salinas Electrical Construction
Bacoor, Cavite

**List of Pre-Qualified Contractors
For HQ Facilities Construction**

1. J.P.D. Construction (HQ only)
2171 Florida St., Pandacan, Manila
2. J.V. Angeles Construction Corp. (HQ only)
58 Pasig Boulevard, Pasig, Rizal
3. J.D. Matias Construction (HQ only)
3576 Mag. Villamor, Bacood, Sta. Mesa, Manila
4. United Construction Co., Inc. (HQ only)
13 M. Hemady Street, Quezon City
5. Eduardo Estrella (HQ only)
449 Malvar Street, Davao City
6. E.E. Black, Ltd.
10th Floor, Insular Life, FGU Bldg.
Ayala Avenue, Makati, Rizal
7. Eligio de Guzman & Co., Inc. (HQ only)
530 Libertad Ext., Pasay City
8. Salazar Construction (HQ only)
350 Cebu Road Expressway
9. Master Builders (HQ only)
4645 Valenzuela St., Sta. Mesa, Manila
10. J.M. Hernandez & Sons, Inc. (HQ only)
547 Magtipid St., Bacood, Sta. Mesa, Manila
11. Edmar General Construction Services, Inc. (HQ only)
Feliciano Bldg., Roxas Ave., Iligan City
12. Atlantic Gulf & Pacific Co. of the Phil. (Power Plant)
Oledan Bldg., 131-133 Ayala Ave., Makati, Rizal
13. Roblete Engineering (P.P. only)
Suite 208 B.F. Goodrich Bldg., Legaspi St., Cebu City
14. PHESCO, Inc. (P.P. only)
73 Quezon Blvd. Ext., Quezon City
15. V.M. Garcia Construction (HQ only)
Q.C.D.B. Building, 1424 Q. Blvd. Ext., Q.C.
16. C.M. Pancho Construction (HQ only)
443 A. Bonifacio Street, Quezon City
17. Carlos S. David (HQ only)
Rm 304 Laperal Building, Rizal Ave., Manila
18. S.D. Flores Construction Co., Inc. (HQ only)
29 Sorsogon Street, West Avenue Section
Quezon City
19. G.M. Tiongco Construction (HQ only)
Sanang, Davao City

20. M. A. Santander Construction, Inc. (HQ & Power Plant)
711 Aurora Boulevard, Quezon City
21. J.R.L. Construction (HW & Power Plant)
Virac, Catanduanes
22. F.V. Carandang Construction, Inc. (HQ only)
Rm 310 Cattleya Bldg., Salcedo St., Legaspi Village
Makati, Rizal
23. Trigon Engineering Corporation (PP only)
399 C. Padilla Street, Cebu City
24. Batangas Construction & Supply (HQ only)
D. Silang Street, Batangas City
25. R.J. Jaymalin Construction (HQ only)
Banner Street, Pasig, Rizal
26. Engr. William L. Chan (HQ only)
71 Justice Romualdez Street, Tacloban City
27. V. C. Ponce Company, Inc. (HQ only)
Suite 606 Bank of P.I. Bldg., Plaza Cervantes
Manila
28. Briones Construction (HQ only)
635 Kalantiao Street, Kalibo, Aklan
29. Erectors Company (HQ only)
Calumpang Road, Cainta, Rizal
30. Nicolas Sebastian Construction (HQ only)
Rm 304 Lyra Bldg., 361 Quezon Blvd. Extension
Quezon City
31. Guinto-Dimson Construction Co., Inc. (HQ only)
No. 3 Poinsettia Street, Quezon City

Line Construction Contractor Activity



Joint Technical Evaluation and Inspection

Four inspection and training trips were made during which projects engineered by each of the four Philippine engineering firms working on the rural electrification program were represented. Engineers from the four firms, TAP and EDCOP, DCCD and AWIA were present for each of the inspections. Representation of National Electrification Administration (NEA), Stanley Consultants, Inc. (SCI), USAID and Consultant Earl Clark also participated. Construction by contractor and by force account were represented in the several projects visited.

Examples of good engineering planning and implementation were identified and discussed such as long span river crossing at Solsona, Ilocos Norte. Examples of poor system design work and poor field engineering were noted such as the improper location of substations, the installation of needless structures, the improper application of standard pole top assemblies and the installation of storm guying, all of which increased the cost of the project measurably and needlessly. Acceptable alternate types of construction were suggested.

Examples of construction which endangered the general public or individuals such as insufficient clearance of power lines over highways or telephone lines or of secondaries too close to buildings were also noted. A number of consumers meters were not grounded. Consumer services were taken off from transformer poles in such manner as to leave no clear climbing space where the cooperative linemen could work in safety. In a discussion of the above type of items it became apparent that the A&E contracts with the cooperatives did not require them to be responsible for consumer service facilities and they accordingly did not follow up on several problem areas which were beyond their scope of work.

Unsafe construction practices being followed by the contractor on the La Union projects were observed and discussed. The contractor had neglected to ground all conductors on the section of line on which his crews were working and his men were not only working without their safety belts but also exposed themselves to great danger by standing on top of crossarms. In addition, the cooperative had opened the switches feeding the line the contractor was working on but neglected to tag the circuit to prevent someone from accidentally energizing the line.

The NEA safety program was discussed. The need to have the participation of the A&E's in this program and to bring the safety training down to the individual employees who need it the most was recommended.

The above observations reflect the shortcomings of the A&E's of which there are many. However, the attitude of the representatives attending the inspections was very good and they have learned a great deal about what is expected of them in implementing the projects. One firm, EDCOP, whose work had been widely recognized as substandard recently made a major reorganization of the firm and present indications are that it intends to greatly improve the services which it renders.

The attached reports prepared by Consultant Earl F. Clark, contain additional detailed information that is representative of the findings during the four inspection trips as well as recommendations for corrective action.

UNITED STATES GOVERNMENT

Memorandum

ANNEX 7
Page 3 of 12

TO : Mr. H. L. Baker, CD

DATE: October 11, 1974

FROM : Earl F. Clark, AID/W

Earl F. Clark

SUBJECT: Inspection Trip to Ilocos Norte, Abra and La Union cooperatives

During the period from September 30 to October 2, 1974 inclusive, an inspection of the electrical systems of the above-named cooperatives was made by the following persons:

V. De Vera	NEA
S. Alatican	NEA
Louis Sansing	NRECA
Harry Baker	USAID
Earl Clark	AID/W
John Leavitt	Stanley Consultants
Gordon Roy	" "

Consulting Firms

L. Gutierrez	AWIA
L. Trinidad	EDCOI
B. Laset	EDCOP
R. R. Camba	DCCD
R. Del Rosario	DCCD
A. Rayala	TAP
B. Chee	TAP

Inspection of Ilocos Norte System

General

The system consists of approximately 80 km of newly constructed 7.6/13.2 KV lines served by two 5 mva 69/13.2 kv substations, one at Tangaoan and the other near Marcos. National Power Corporation is serving both substations over a single wood pole type transmission line which is presently operating at 13.2 kv. NPC will raise the transmission voltage to 69 kv as soon as certain parts are received from Japan to repair the transformer at the Marcos substation. The project engineer is Trans Asia and the construction contractor is Citation.

Headquarters and Warehouse

The cooperative headquarters and warehouse are located on an ample sized plot which is adequately drained and fenced. The construction of these facilities was satisfactory, the sizing is adequate and the overall impression is that the facilities represent a conservatively operating corporation.

The cooperative has a fairly large inventory of construction materials. The material that is stored outdoors is separated in logical groupings so that there is easy access. Boxes are sitting on pallets and the overall set-up is similar to a utility storage yard in the U.S. The warehouse has an adequate supply of bins with materials properly sorted, identified and inventory tags kept up to date. There is also considerable open floor space for piling cutouts, arresters, etc. in the cardboard shipping boxes.

Distribution Lines

The distribution lines serve an area where there is a lush growth of trees, ordinary and fruit, as well as shrubs and bushes. The right-of-way clearing was inadequate and this will be a major factor in operating and maintaining the system. In retrospect Stanley Consultants and TAP agree that an error was made initially in not insisting that ample cutting and trimming rights be obtained. This lesson is being applied at other cooperatives. In this case it will undoubtedly have to be worked out slowly as the cooperative endeavors to improve the quality of service and publicizes the cause of service interruptions.

The system was constructed with surplus, reparations and local materials and the construction crews were not able to follow standard specifications in all cases. Because of a lack of certain materials, improvisations were made, some of which are unacceptable on a long term basis. The greatest problem was connectors of assorted sizes and types. As a result copper type connectors and hot line clamps have been used on aluminum conductor. In other cases the connections are made by wrapping one conductor around the other resulting in poor joints -- a source of corrosion and radio/television interference. A supply of connectors has been received from the U.S. and the cooperative has begun to place the proper clamps on the system.

The proper separation of installed hardware from ground wires has not been achieved in numerous cases. This will require a major corrective effort over a period of time in order to clear up electrical interference.

Adequate climbing space for linemen as required by the Safety Code has not been provided in many instances. This is particularly true at distribution transformer locations where many services are taken off. The installation of ground wires on the 90° points rather than 45° points has aggravated the problem. With few exceptions, these installations will have to be modified.

The installation of single shot cutouts is almost without exception defective. Since metal wishbone crossarm braces were all that was available, the contractor was not able to get adequate separation between the phase wire and the cutout by hanging it in a conventional manner. This can be corrected by moving the cutout closer to the pole.

There are numerous instances of impaired clearance of service wires over telephone lines. Some of these telephone lines may be abandoned but a check must be made of each case to avoid the possibility of impressing a high voltage on these lines. Some of these clearances can be corrected by attaching the service higher on the house. Others will require the installation of a lift pole. The consulting engineers did not seem to have any interest in the system lying outside of their formally described scope of work; consumer services is one such item. Although the system inspection was made at selected areas only, there were instances noticed where the consumer's meter was not grounded. These are "A" type base meters and are not designed for easy grounding. It was agreed that this deficiency would be corrected by running a ground wire up the side of the building and attaching it to the service neutral.

Aluminum ground wire on the pole was carried down into the earth and attached to the driven ground rod. The aluminum will corrode quickly underground opening the system ground and causing a dangerous situation. This construction deficiency is very serious and should be rectified promptly.

Transformer grounding loops are not properly installed.

There are numerous instances in which the overhead guy is not bonded to the pole ground; in other cases the overhead guy is not bonded to the down guy. Anchor bonding wedges have been omitted in most cases because they were unavailable. These bonds should be installed as soon as possible.

The Tangaoan substation is a Japanese design obtained from reparation funds. It was obvious that the substation was not well located. It was necessary to build a double circuit feeder from this point to the location where the substation should have been built. As the load grows this will introduce added system losses and low voltage. The design of the substation did not provide the clearances from ground that the U.S. or Philippine Safety Code requires. This could only be rectified by

constructing piers several feet high which at this time is impractical. The pedestal construction is being used for Zamboanga City by AWIA. The substation has a 5 mva, load tap changer type transformer. This is a large heavy type of 3-phase transformer which cannot easily be moved. In the event that the tap changer or other part of the transformer should fail, the cooperative will experience an extended service outage. A 13.2 KV tie between the two 69 KV substations should be constructed to provide standby service when the tap changers are being maintained or in case of extended outage. The substation equipment and fence were well grounded by an adequately sized grounding bus.

On October 1, 1974 the entire inspection team and the cooperative's line superintendent met at the warehouse to discuss safety practices. The cooperative brought in a home-made grounding cluster which was suitable for line construction and maintenance purposes until the regular sets are received from the U.S. It was pleasing to note that this cooperative has started to recognize the need for safety practices without waiting for a serious accident to occur.

The NEA safety training program was discussed. It was pointed out that up to this point the training was not getting down to the individual workers who need it the most. Several of the A&E representatives have worked for industrial concerns that have established a privately funded safety program. Hence they have a good knowledge of safe practices or can easily get in touch with other Filipinos who have a wide knowledge of safety procedures. From our observations, a widespread safety program for the cooperatives and the construction contractors is necessary and should be given adequate attention. There are enough qualified persons in the Philippines to man such a program. NEA should include A&E representative at all safety training sessions.

Inspection of Abra Cooperative System

A portion of this system was inspected on October 1, 1974. This project has a consulting engineer but does all construction by force account. The engineering, particularly urban, has several deficiencies and the construction is inadequate in many respects. The project manager states that they have only one copy of the standard construction specifications and it is quite obvious that the crews are not following it. Stanley Consultants and Trans Asia stated that the cooperative made the engineer change staking based on "common sense" and other changes were just made without the engineer's knowledge. In one instance, a long span three-phase line crossing a major highway had splices in all 3-phase wires to save money instead of splicing in the previous span. In another case

the A&E had staked a long span from hilltop to hilltop which met all design requirements for distribution construction. The manager ordered the contractor to add an "H" frame double deadend structure in the bottom of the ravine cutting the proposed long span approximately in half. The structure was totally unnecessary and increased the cost of the line considerably. It also introduces uplift on the additional structure. Additional construction shortcomings were noted similar to those discussed for Ilocos Norte. Gordon Roy of Stanley Consultants states that he has given the cooperative manager a detailed list of construction deficiencies which, up to this point, has been ignored. In order to focus the manager's attention more sharply on construction errors than a listing of defects could do, we took him along on the inspection tour, pointed out numerous defects and explained the dangerous situations that result therefrom.

I believe that the general manager was a bit embarrassed to have his system inspected by such a large number of people from different organizations. However, I also believe that it may require the "firm" encouragement of NEA to get the Abra system defects corrected in any reasonable length of time and what's more important to be sure they are not repeated as force account construction proceeds.

Inspection of La Union Cooperative System

An inspection of this system was made on October 2, 1974. The cooperative is attempting to integrate the take-over systems as rapidly as possible and has a construction contractor, Electromechanical Enterprises doing the work. At this stage there is very little construction done but we did notice some construction errors that are being made and brought them to the attention of the engineer. The outstanding issue on this project is safety. We found that while the switches controlling the line being worked on by the contractor were opened at the substation, they were not tagged. The cooperative construction superintendent felt protection was adequate since no one could get in the substation but himself. This is not an acceptable way of safeguarding working crews. The contractor did not have his men working between visible system grounds that would effectively ground all phase conductors. Neither the cooperative nor the contractor had any grounding clusters. We noticed the contractor's men were equipped with safety belts but they were not used and the men were standing on top of the crossarms on the poles. There was no reason for this. Actually, all construction work can be done when belted off safely below the crossarm. While one expects to see more safety violations performed by contractor crews than by salaried cooperative crews, this type of gross violation should be curbed at once since it may influence the cooperative's own crews. The TAP resident engineer was not at the construction site as the work proceeded.

The construction of the headquarters building and warehouse is good and the yard is properly fenced. However, there is a stream (intermittent flowing) that has eroded up to the boundary fence and taken out two of the concrete posts. Immediate remedial measures must be taken as the headquarters building itself stands only a few feet away from this fence.

The substation is a Japanese design obtained from war reparations. It has many of the shortcomings of the substations at Ilocos Norte. In addition the metering equipment and alarm system have not been installed. Spare parts including fuses are not available. We noticed in the warehouse at Ilocos Norte that there was a large supply of spare parts. Hence, the trouble is a maldistribution of the spare parts that came with the overall substation shipment. There was no instruction manual available for this very complicated substation.

The superintendent did not have a copy of the NEA standard specification book. The only available copy belonged to the manager who made no use of it.

General Remarks

1. NEA is preparing a supply of grounding clusters made of odds and ends of material available at Sangley for the cooperatives to use until a supply can be obtained from the U.S.
2. The scope of the NEA contract with the A&E firms should be broadened to make the A&E responsible for all staking up to the consumer's meter.
3. NEA should review the inventory of spare parts that came with the Japanese substations and make an equitable distribution of them.
4. NEA should make a determined effort to see that each cooperative and contractor working on cooperative jobs has an adequate supply of the standard specifications books and insist that all construction be in strict conformance with them.

Attached to this report is a copy of the report prepared by Mr. Gordon S. Roy of Stanley Consultants, Inc. covering the inspection trip to the northern Luzon cooperatives.

Attachment: Copy of report prepared
by Gordon Roy, Stanley Consultants, Inc.

EFClark/bma
10/11/74

cc: AD/CD
C&R

H. L. Baker, CD

October 16, 1974

Earl F. Clark



Inspection Trip to Layte Cooperative

During the period October 8-9, 1974, an inspection of the electrical system of the above-named cooperative was made by the following people:

V. De Vera	NEA
S. Alatica	NEA
Ray Shoff	NRECA
Harry Baker	USAID
Earl Clark	AID/W
John Leavitt	Stanley Consultants
Dave Metz	" "

Consulting Firms

L. Gutierrez	AWIA
L. Trinidad	EDCOP
B. Lacer	EDCOP
L. Mantaring	DCCD
E. Abril	DCCD
A. Rayala	TAP

General

The electric system consists of approximately 180 km. of newly constructed distribution lines, a 10 unit 4.4 MW nameplate rating diesel generating plant using surplus equipment from Okinawa and a 5 MVA 4.16/13.2 KV step-up sub-station located at San Roque. In addition the cooperative took over a 4 MW nameplate diesel plant and the electric distribution system in Tacloban.

Headquarters and Warehouse

The headquarters building and warehouse are located at San Roque adjacent to the power plant on an adequately sized and drained site. The quality of construction is satisfactory. The warehouse is equipped with sufficient bins and has enough floor space to properly store the required inventory of hardware and equipment.

Generating Plant at San Roque

The plant was constructed by Trigon Engineering Corporation of Cebu. The cooperative was to supply the generating equipment that it got from Okinawa and the contractor was to supply the remaining material and equipment. He was also expected to repair the diesels and generators as necessary. Unfortunately, the contractor's bid for this work was too low and the specifications were too vague resulting in attempts by the contractor to economize and otherwise recoup his losses. He attempted to fabricate an overhead bridge crane which was not acceptable to the engineer. The crane has now been deleted from his contract. The Cooperative plans to build a portable crane to service the engines. There is a shortage of parts to repair the diesels, the evaporative coolers and the switchboards. The water well at the plant has not been accepted. The contractor is reputed to be one of the most knowledgeable in the Philippines on diesel plants and yet he has bid the job so low that he cannot do a good job.

San Roque Substation

The 5 MVA 4.16/13.2 Kv stepup substation is built on an amply sized plot adjacent to the plant. It was obtained from Japan and does not provide the clearances above ground that are considered necessary by U.S. standards. The contractor constructed the substation without a specific contract and installed completely only that portion necessary to feed one outgoing circuit. There are extra fuses, switches, lighting arresters, etc. in the warehouse and storage yard which should be installed at once before they become lost, broken or diverted to some other location.

Sufficient space is provided in the substation yard for the proposed 69 Kv stepup substation which will serve the Southern Leyte Cooperative.

Line Construction

The distribution system was inspected at selected locations and many deficiencies were noted. The distribution line parallels a telephone line for several kilometers so closely that they are in structural conflict. This should be eliminated by going to joint use of the pole line or by moving the telephone across the highway. Other deficiencies noted were as follows:

1. Down guy and anchor not installed to hold overhead stub pole.
2. Transformer grounding loops not properly installed.
3. Section of line installed without armor rods.

4. Many electrical connections made by splicing instead of with proper connectors.
5. Inadequate clearance of hardware from ground wire.
6. Use of coconut tree for service support pole.
7. Inadequate clearance of lines over highway.
8. Use of wrong pole top assembly and guying for line angle.
9. Poles out of alignment.

Takeover System - Tacloban Generating Plant

This diesel generating plant was recently taken over by the cooperative. The property had been under-maintained by the previous owner to the point that it is almost inoperable. Engines that run can barely reach half of nameplate rating. The plant cannot carry the peak load resulting in black-outs downtown during the evening. On the evening of October 8, 1974, downtown was blacked out from 7:00-8:00 and from 9:00-10:00 p.m. With proper repair parts now on order and a major overhaul of the cooling towers, the plant will gain 2000 KW in capability. This will be enough to carry the current peak but will not permit the addition of such new load that will materialize when a reliable power source exists. At present the entire plant is endangered because of a great deal of waste oil which is lying around close to the plant, cooling towers, etc. The cooperative is doing its best to "hang on" until maintenance can be undertaken.

The engine jackets are cooled by well water without treatment. The lime covers the jacket walls and aggravates the engine overheating problem.

Tacloban Distribution Plant

The cooperative recently took over this property and so has not had a chance to improve it. However, the system is so defective that remedial action must not be delayed. Distribution lines run over signboards so low that anyone touching them could easily get electrocuted. Clearance between electric and telephone lines is inadequate in countless instances. The clearances from roofs and residence windows are grossly inadequate. Trees have grown into the lines everywhere.

Items Covered in Group Discussion

1. The A&E's stressed the need for the cooperative managers to make every effort to get more generous clearing and trimming rights so that adequate clearance between trees and conductors can be obtained.

2. As a result of the problems which arise with takeover properties, large industrial and commercial loads, voltage problems, system planning, etc. there is a need for a retainer type A&E contract calling for "pay as the tasks are performed" so that the required technical expertise will be available to the cooperative on a continuing basis.
3. A number of cooperatives have constructed lines, generating plants, headquarters facilities, etc. but the jobs have not been closed out. It is necessary that the engineer and the contractor make every effort to get an agreed upon set of final documents and complete the work in a satisfactory manner as soon as possible so that the jobs can be closed out and the property properly set up on the cooperative's books. In the case of closing out contracts for buildings, substations, etc. the NEA Bulletin No. 16 applies and there is no problem if the procedures contained therein are followed. In the case of line construction, the last paragraph of Bulletin No. 16 could be applied but it is not being used. It would certainly be advantageous to close out large projects in sections. It is also conceivable that when it becomes desirable to increase the scope of an existing contract, the original portion should be closed out. This will keep the "work in progress" account down to an acceptable amount.
4. NEA should issue a bulletin covering force account construction. It should require that the design have the approval of the A&E, that the work be staked by competent technicians, that proper material be used, that the NEA specifications are followed, that the work be done in accordance with proper safety procedures, and that adequate records be kept so that the proper entries can be made in the cooperative plant accounts.

The new manager, Col. Flores, seems to have a good grasp of the problems that this cooperative faces and has already begun to take steps to remedy some of the more serious difficulties.

Philippine Model for the Development of Rural Electric Cooperatives
Col. Pedro G. Dumol

General

1. An electric cooperative is above all a business entity. While it is true that a cooperative is established to provide service for its members, a cooperative can only provide such service that it can afford. It cannot continue providing service for its members if it is continually losing money in its operations.
2. Before any electric cooperative is formed, studies must be conducted to determine its feasibility. The cooperative must be able to collect sufficient revenue not only to cover its operating and administrative expenses; but it must have some margin to pay back its loan and to finance minor expansions of its system. The cooperative must of course provide adequate, reliable and low cost electricity on an "area coverage concept."
3. In the determination of the service area of a cooperative, the primary consideration is "size". The electric industry is highly sensitive to the economies of scale (the bigger the electric system the more efficient is its operations). The area to be serviced must be big enough that the revenue justifies the hiring of qualified managers and the setting up of a maintenance unit to insure reliable power.
4. The cooperative is also a social being. To succeed it needs the cooperation and assistance of its members. The members must believe that the cooperative belongs to them. In this aspect the distance of the cooperative headquarters from its members is an important consideration. The cooperative, therefore, must not be too large so that the headquarters is not too remote from its farthest members.

The "Area Coverage" Concept

5. The "area coverage" concept in rural electrification simply stated means that the electric cooperative is bound to provide service to any person requesting connection within its service area. It must be emphasized, however, that while it is one of the primary goals of electric cooperatives to provide electric service to all the people living in its service area, the cooperative must construct lines to remote the sparsely populated areas at such a pace that the feasibility of the total system is not jeopardized. Lines to remote areas are generally uneconomical. The revenues from such lines are not sufficient to cover the cost of power, the administrative cost of reading the meters and collecting the bills, the maintenance cost and finally the amortization and interest on the lines themselves. These uneconomical lines will be built only when the "losses" from these lines can be offset by the profitable lines.

6. It may be argued that if these uneconomical lines are not built, the cooperative can reduce its rates; that the people in the poblaciones and the more densely populated areas are being made to subsidize the barrios. The argument can be refuted easily by the sociologist but there is an economic rationale for "area coverage". The economy of the urban centers is dependent upon the economy of the rural areas. If rural electrification will enhance the economic development of the barrios, then the income of the barrio people will increase and there will be an improvement in the economic activities in the poblaciones.

7. In the same manner it may be argued that the postal system is illogical in that it charges the same postage irrespective of the destination within the country. It costs the same to mail a letter from Quezon City to Manila as it does from Quezon City to a barrio in Cotabato. Certainly, the costs to the postal system of delivering these two letters are different and yet the postal system charges the same postage. The rationale is that communication is considered vital to our economic and social well-being and it will redound to the benefit of all if communication is encouraged among our people.

8. The lines to the barrios which now are uneconomical will, in a few years, become economical as the area develops. When this happens, these lines will help subsidize the construction of other lines until finally we have attained total electrification.

The Size of an Electric Cooperative Area

9. In General, a cooperative area should cover from 5-10 municipalities populated by some 100,000 - 200,000 people. The area must be contiguous and the dialect spoken similar. Furthermore, the farthest customer of the cooperative must not be more than 30 kms from the center of load of the system.

10. The criteria of 5-10 municipalities with a total population of from 100,000 - 200,000 people is primarily economic. Our initial feasibility studies indicated that this is an ideal size for the Philippines. On the other hand, the presence of industrial, commercial and agro-industrial loads in an area will permit the reduction of the required minimum size correspondingly.

11. That the area is contiguous and that the people there speak a common dialect is primarily a social consideration. People can be expected to cooperate better if they are near one another and if they speak the same language.

12. That the farthest customer will not be more than 30 kms from the load center is both an economic and social consideration. The distribution voltage for the cooperatives has been standardized at 15,000 volts and 30 kms is considered the maximum length for such distribution lines on the basis of

economics. Also, because of the condition of the roads and the transportation systems, 30 kms is considered the farthest distance a member should be from the cooperative headquarters.

Feasibility of a Cooperative

13. An electric cooperative is expected to lose money in the initial years of its operations. In general, however, its revenue after one (1) year of operation is sufficient to cover the cost of administration and operation. A cooperative to be "feasible", however, must generate enough revenue in its 7th Year to cover not only the cost of operation and administration but also the amortization on both capital and interest of its loan.

14. The seven (7) year constraint is in consonance with R.A. No. 6038 which limits the grace period for payment of loans of cooperatives to seven (7) years. It is believed that by the 7th Year the cooperative should have developed its "power use" programs so that the "non-lighting" load is substantial enough to make the system feasible.

The Phasing of Development of Cooperatives Within a Province, a Region or an Island

15. The over-all objective of the country is the attainment of total electrification. This implies that service will be provided to all persons desiring such service.

16. The following factors are mandatory in the attainment of total electrification:

- a. Establishment of island grids and the integration of power generation.
- b. The consolidation of electric distribution franchise areas.
- c. The adoption of the area coverage concept.

17. The cost of power in general, represents from 40-50% of the electric bill of a customer. The cost of power is highly sensitive to the economies of scale. The bigger the plant, the lower is the cost of generating one (1) kilowatt-hour of electricity. The integration of power generation also reduces to a minimum the total spare capacity required in the system.

18. The distribution of electricity is also sensitive to the economies of scale. The construction and maintenance of lines can be better planned and programmed when the service area is large and not constrained by political boundaries. Like power generation, big distribution systems can afford more capable management that can program expansion and maintenance requirement. Hence we can expect large systems to provide adequate, reliable and low cost power.

19. Unless the area coverage concept is adopted, total electrification will take a long, long time to attain if it can be attained at all. If lines to sparsely populated areas will be constructed only when such lines are by themselves economically feasible, the distribution franchise operators must wait until the area is developed before they will extend service to the area. The distribution franchise operators, however, should build these lines as soon as the losses from them can be reasonably absorbed by the profitable lines.

20. With the above concepts in mind, the following are the accepted policies in the phasing of construction of cooperatives within a province, a region or an island.

- a. The initial cooperatives to be formed will be developed in such a manner that it will fit into the over-all plan for the electrification of the province, region or island.
- b. The cooperative area as much as possible will represent the area to be serviced by a load center of the grid. This implies that plans should now be prepared for such island grids and the location of their load centers identified.
- c. For cooperatives that will initially generate their own power, the cooperatives relatively close to one another should try to share a power plant as much as possible. For example, the power plant for Capiz should serve not only Capiz but also Aklan. The power plant for Iloilo should, in addition, serve Antique. This also implies that the transmission lines from Capiz to Aklan and from Iloilo to Antique must be so designed as to ultimately form part of the Panay Island Grid.
- d. The NFC has adopted a policy of providing service only at 69 kv or higher. This policy greatly enhances the consolidation of small franchise systems that can be served by a load center.

The Phasing of Construction of Lines Within a Cooperative Area

21. While the feasibility study and the Architectural and Engineering plans of the electric system of a cooperative include lines thru the poblaciones and all the barrios, these lines will not be constructed at the same time. The lines will be constructed by phases.

22. The first phase shall be the construction of the lines within the poblaciones and the main lines (trunk lines) connecting the poblaciones with the power plant or substation. Phase one (1) must be so implemented that once sections of the line are completed, they may be energized immediately. Construction, therefore, should start from the power plant/substation leading out.

23. In general, phase one of the project will be constructed by contract. The NEA/cooperative will furnish the materials including the poles. The contractor shall construct the distribution lines (both primary and secondary) while the cooperative shall install the service drop and the housewiring by forced account.
24. To insure the early utilization of completed distribution lines, the cooperatives must synchronize their construction with that of the contractor. The cooperatives must form service-drop/housewiring teams.
25. The extension of lines to densely populated barrios should be done after phase one (1) has been completed or even just before phase one is completed. This will be undertaken by force account. The cooperative must form distribution line teams. It would be desirable if the linemen trained by NEA/NPC/NMYC be initially employed by the contractor of phase one (1) and as phase one (1) means completion, these linemen will be able to form the Cooperative Distribution Teams.
26. The criteria for the priority of construction is discussed in detail on page 6. As soon as the construction of phase one (1) is started, the cooperative will initiate the establishment of a priority for the construction of the subsequent lines. From this priority list NEA will approve the lines to be included in phase two (2). As soon as phase two (2) is started, the cooperative shall submit their priority for phase three (3), etc. To insure an orderly implementation of the different phases of construction, materials, labor, equipment and funds must be available to the cooperative at the right time and in the right quantity. NEA and the cooperative must agree on the priority list early enough to provide sufficient time for planning, ordering of materials and equipment, funding and finally organizing for construction.

Priority of Lines for Phase Two (2) and the Subsequent Phases

27. As soon as phase one (1) has been started, the cooperative should start on the preparation of a priority list for the construction of lines for inclusion in phase two (2).
28. Each line (lateral) extension to a barrio or group of barrios must be analyzed in terms of the following:
- a. right of way
 - b. economic and social factors including:
 - (1) number of houses that will actually be served
 - (2) the electric motor loads such as irrigation pumps
 - (3) the length of the line in kms.

29. No line will be approved for construction during phase two (2) unless its right of way (ROW) has been cleared. The people who will be supplied by a line shall have the primary responsibility for securing the ROW. Furthermore, of the lines considered for construction in phase two (2), priority will be given to lines that will supply more houses and/or house equivalent per km of line.

30. The number of houses to be served pertains only to those houses that are wired or will be wired before the service drops are installed. The number of house equivalent refers to existing motor loads or motor loads that will be installed before the service lines are constructed. In this connection, a 1 Hp motor is equivalent to 5 houses.

31. Each line, therefore, will be rated in terms of houses per km and the lines with the higher index will have higher priority in construction. The determination of the index number (N) may be expressed in the following formula:

$$N = \frac{H+H_E}{L}$$

where, H is the number of houses
H_E is the number of house equivalent
of the motor load and
L is the length of the line in kms.

Philippine Economic Situation

Recent Economic Developments

In the past two years there has been a sharp increase in the level of economic activity on the Philippines. The growth in real GNP, which had been about 5-6 percent a year for more than a decade, doubled to 10 percent in 1973, and is estimated to be about 7 percent this year. The strong recovery in 1973 was led by the international commodity boom and resultant increased export incomes in the Philippines by a strong recovery in agricultural and industrial production for the domestic market, and by an expansion in public and private investment. Underemployment and unemployment remain quite high, however, and in common with most other countries, the rate of inflation increased appreciably in the past 18 months.

The agricultural sector grew by 7 percent in 1973. Rice production in crop year 1973-74 increased by 23 percent over the level of the previous year when flood severely affected output. This increase has been mainly due to favorable weather conditions, increased use of fertilizers, more supervised credit and increased investments in supporting rural services. The Government has moved ahead with its program of agrarian reform for the nation's one million rice and corn farm tenants. By mid-1974, 176,000 land transfer certificates had been issued, mainly to tenants on the larger holdings. The Government now hopes to issue certificates to all tenants on farms above 24 hectares. There is a strong prima facie case for pressing ahead with the program in the 7-24 hectare farm size range. Implementation below the 7 hectare level will be extremely difficult and benefits less obvious, in view of the numerous owners and tenants and small parcels of land held.

The industrial sector grew by about 12 percent in 1973. Non-traditional industrial exports, which have been increasing since 1970, are estimated to have doubled in 1973 to about \$200 million. However, industrial exports have been affected by the recent slowdown in the economics of key trading partners, and earnings are expected to level off this year.

The growth in production was also assisted by increased public development outlays in 1973 made possible by a significant improvement in the financial position of the Government. The ratio of public investment to GNP is currently about 3 percent compared with 1.8 percent in FY '72. The Government has implemented a series of long needed tax reform and improvements in tax administration. As a result, the ratio of National and Local Government tax revenues to GNP has increased from an average of 9 percent in recent years to an estimated 12.4 percent in FY'74.

High prices for the Philippines' chief exports, including coconut products, sugar, copper and wood products, were largely responsible for an increase in merchandise receipts of almost 70 percent in 1973. International reserves rose by about \$600 million during the year and stood at \$876 million, equivalent to about five months of imports, at the end of the year. However, since mid-1974, a large trade deficit has appeared, largely because the growth in export prices has moderated but import prices have continued to rise rapidly. Because of the very rapid growth in export income in the past two years, and continued good debt management policies of the Government, the burden of medium and long-term debt has declined dramatically. The ratio of debt service payments to export receipts has come down to an estimated 15 percent this year, compared with a high of 27 percent in 1971.

In the latter part of 1973 inflation emerged as a major problem. Since mid-1973 consumer prices have been rising at an annual rate of more than 40 percent. This has been caused by the large increase in liquidity since the export boom began in 1973, and by a number of cost-push factors, including the higher rate of world inflation, domestic food shortages and the increased cost of petroleum. Monetary and fiscal policies have aimed at absorbing the excessive liquidity expansion, and in recent months the rate of inflation has been moderating.

The Energy Crisis

Imported petroleum provides some 97 percent of the Philippines' total energy requirements. In 1973 the equivalent of 71 million barrels of petroleum crude and petroleum products were imported at a cost of about \$230 million c.i.f. When the energy crisis developed late last year, the Government moved quickly with conservation measures to reduce non-essential consumption. In 1974 imports of petroleum and products are likely to be about 71 million barrels at a cost of about \$780 million c.i.f.

The Government has decided to accelerate the development of local energy sources, especially hydropower and geothermal energy. Supplemented with nuclear energy in the 1980's, total demand for energy is expected to grow at about 10 percent a year, and even with more rapid development of natural power sources, petroleum would still account for more than 90 percent of total energy needs by 1980.

Growth Prospects

The abrupt deterioration in the external terms of trade since the middle of 1974, and the recession in the economics of key trading partners threatens some of the Philippine' recent economic gains. The labor force continues to grow at 3 percent a year, and although employment has expanded appreciably in the past 18 months, there is still widespread unemployment and underemployment.

Priority is being given to expanding food production for the domestic market, to expanding export production and to accelerating development of local energy resources. In the case of export production, the Government recognizes that the increased cost of petroleum and other imports cannot be financed indefinitely by borrowing abroad. It is actively encouraging both local and foreign investors to expand the productive capacity of export industries and to undertake major new import-replacing investments. The Government is seeking increased support from the international financial community to help carry out its development program and to ease adjustment to higher petroleum and other import prices. Because of the substantial improvement in the external debt burden and international reserve position in the past 18 months, the Philippines now has the capacity to borrow externally larger amounts of capital in support of its development program.

Maintaining a GNP growth rate of about 7 percent a year in real terms during the next few years will depend heavily on the buoyancy of the domestic market. The prospects are for continued expansion in agriculture, with a 4-5 percent increase in production in the year ahead. Continued expansion in public and private investment demand should help sustain industrial output expansion. Increased investments will be needed in a wide range of consumer and intermediate goods industries.

The increased size of the domestic market and growing export demand would seem to justify a wider range of investments during the latter part of the decade in large-scale, capital-intensive industrial projects, particularly in mineral-based processing industries where long-term comparative advantage may be strong. A number of big projects are proposed in mining, wood processing, fertilizer, steel and shipbuilding, which are likely to push up the private investment rate from recent levels of about 16 percent of GNP to perhaps 22 percent by the latter part of the decade. A substantial amount of the funds needed for these projects would have to come from external sources. But since the individual cost of many of them will exceed \$100 million, Consultative Group members can play an important role in helping the Government to obtain suitable co-financing arrangements, both with bilateral partners and with the private sector.

The public infrastructure program that was approved last year, which called for outlays of about P12 billion at current prices in FY '74-77, has become outdated because of the subsequent rapid inflation and by changes in investment priorities as a result of the energy crisis. A new program is being finalized, with more emphasis on developing nuclear and indigenous power resources and on irrigation, feeder roads and other projects to support increased food and export production. Public investment is likely to increase by about 15 percent a year in real terms so the ratio of public investment to GNP would rise from the present level of 3 percent to about 4 percent by 1977.

The domestic savings rate should rise from an estimated 19 percent of GNP at present to perhaps 20.5 percent by 1977. Foreign savings (i.e., the current account deficit in the balance of payments) would rise from an estimated 2.5 percent of GNP this year to about 4 percent in 1977. This foreign savings gap would decline in the latter part of the decade as the proposed investments in new export and import-replacing capacity begin to bring results.

Balance of Payments

Merchandise export receipts are projected to increase by a total of about 30 percent in the next two years. Import payments are projected to increase by a total of almost 40 percent in the same period, including a 30 percent increase in prices. Under these assumptions, the trade deficit would rise from an estimated \$680 million this year to about \$1,250 million in 1976.

Actual and Projected Merchandise Imports
 (f.o.b. million \$)

<u>Commodity Group</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
<u>Total</u>	<u>1,597</u>	<u>3,200</u>	<u>3,960</u>	<u>4,610</u>
Cereals	112	194	190	150
Other consumer goods	172	275	330	370
Petroleum products	188	724	330	950
Other raw materials and inter- mediates	634	1,216	1,610	1,930
Capital goods	491	791	1,000	1,210

Source: 1973, Central Bank of the Philippines; 1974, mission estimate; 1975 and 1976, mission projection.

Actual and Projected Export Receipts
 (f.o.b. million \$)

<u>Item</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
<u>Total</u>	<u>1,871</u>	<u>2,520</u>	<u>3,140</u>	<u>3,360</u>
Coconut products	372	606	640	670
Sugar products	295	604	990	830
Forest products	444	330	350	400
Mineral products	319	501	580	730
Other Agricultural products	108	175	210	270
Manufactured exports	230	231	280	350
Non-monetary gold	103	73	90	110

Source: 1973, Central Bank of the Philippines; 1974, mission estimate; 1975 and 1976, mission projection.

Although exports are projected to grow more rapidly than imports in real terms over the next two years, this gain is more than offset by a cumulative decline in the external terms of trade of about 23 percent during 1975 and 1976. This would bring the terms of trade back to the level that prevailed in 1972, thus wiping out the gains made in the recent export price boom.

Actual and Projected External Terms of Trade
(1965 = 100)

<u>Index</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
Export price index	149.0	256.0	263.7	257.1
Import price index	149.1	259.1	303.2	337.2
Oil import index	203.0	797.8	848.7	874.2
Non-oil import index	144.1	216.5	259.4	290.5
Terms of trade - total	99.9	98.8	87.0	76.2
- non-oil	103.4	118.2	101.7	88.5

Source: 1973, Central Bank of the Philippines; 1974, mission estimate; 1975 and 1976, mission projection.

External Finance

If the projections of exports, imports and external terms of trade were to be realized, the Philippines would require a total foreign capital inflow of about \$2,340 million during 1975 and 1976 to cover the current account deficit and medium and long-term loan repayments.

Direct investment would provide about \$190 million of this. Greater use of short-term trade finance is expected because of the increased oil import bill and generally higher levels of imports. A net inflow of about \$480 million would be in line with the increase in the value of trade being financed. About \$1,080 million could be expected from supplier's credits and other medium and long-term loans to the private and public sector, including about \$280 million from project loans extended by Consultative Group members. The balance of the required capital inflow of about \$180 million in 1975 and \$410 million in 1976 would have to come from other borrowings. The Central Bank could finance the entire deficit by short and medium-term borrowing while maintaining or even increasing the level of international reserves. Net reserves, however, would be negligible by 1976.

The recent important gains in reducing the external debt burden and improving the external reserve position should not be lost now by excessive recourse to short and medium-term borrowing by the banking system. However, there is considerable scope for additional medium and long-term loans from donors to finance capital goods imports which are projected to reach \$1.2 billion in 1976. In the months ahead, the Government and aid donors alike should explore this possibility. If these efforts are unsuccessful, the Government would have to reassess its growth strategy for 1976.

If the projected inflows on the capital account are forthcoming, and if the presently identified shortfalls in foreign exchange availabilities are met with an appropriate combination of medium and long-term loan capital as suggested, management of the external debt and debt servicing should not present serious problems.

Summary Balance of Payments
(million \$)

<u>Item</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u> ^{/a}
<u>Current Account</u>	<u>-29</u>	<u>+9</u>	<u>+11</u>	<u>+475</u>	<u>-450</u>
<u>Trade Account (net)</u>	<u>-7</u>	<u>-37</u>	<u>-151</u>	<u>+274</u>	<u>-680</u>
Exports	1,083	1,149	1,109	1,871	2,520
Imports	1,090	1,186	1,260	1,597	3,200
<u>Service Account (net)</u>	<u>-141</u>	<u>-88</u>	<u>-26</u>	<u>-30</u>	<u>-40</u>
Receipts	258	264	376	582	805
Payments	399	352	402	612	845
<u>Transfers (net)</u>	<u>+119</u>	<u>+134</u>	<u>+188</u>	<u>+231</u>	<u>+270</u>
Official	26	31	36	63	70
Private	93	103	152	168	200
<u>Capital Account (net)</u>	<u>+181</u>	<u>+124</u>	<u>+174</u>	<u>+210</u>	<u>+355</u>
Direct investment	-29	-4	-22	64	80
Short-term private capital	76	92	56	74	180
Medium- and long-term private loans	94	-34	-17	-5	-10
Medium- and long-term public loans	40	70	157	77	105
<u>Errors and Omissions</u>	<u>-147</u>	<u>-144</u>	<u>-106</u>	<u>+16</u>	<u>+20</u>
<u>Overall Balance of Payments</u>	<u>+5</u>	<u>-11</u>	<u>+79</u>	<u>+701</u>	<u>-75</u>
<u>Monetary Sector, Reserves etc. (net)</u>	<u>-5</u>	<u>+11</u>	<u>-79</u>	<u>-701</u>	<u>+75</u>
Central Bank liabilities	58	4	-64	-86	+443
Central Bank assets	-130	-125	-174	-488	-500
Commercial bank liabilities (net)	35	94	136	-106	+190
SDR's	18	17	16	-	-
Use of IMF facilities	14	21	7	-21	-58

Source: Central Bank of the Philippines.

^{/a} Mission estimate.

Pipeline Analysis and Implementation Schedules

Under the proposed Rural Electrification III and prior AID loans disbursements of AID funds is tied to supplier delivery schedules. Actual construction will take on the average an additional 12 months and is set out in detail in Annex 6 -Schedule 1. The following schedules are anticipated for the three loans and are keyed to the IFB schedules and material delivery schedules shown on the following pages.

<u>CY</u>	<u>AID Loan</u>	<u>AID Disbursements</u>	<u>Utilization of Commodities</u>
1972	\$20.0		
1973			
1974	18.0	\$8.0	\$2.0
1975	20.0	21.0	10.0
1976		19.0	22.0
1977		10.0	16.5
1978			7.5
Total	<u>\$58.0</u>	<u>\$58.0</u>	<u>\$58.0</u>

DATE OF DELIVERY

<u>SEA MATERIAL SCHEDULES</u>	<u>IFB No. 1</u>		<u>IFB No. 2</u>		<u>IFB No. 3*</u>		<u>IFB No. 4</u>		<u>IFB No. 5</u>		<u>IFB No. 6</u>	
	<u>50%</u>	<u>100%</u>	<u>50%</u>	<u>100%</u>	<u>50%</u>	<u>100%</u>	<u>50%</u>	<u>100%</u>	<u>50%</u>	<u>100%</u>	<u>50%</u>	<u>100%</u>
A - Poles & Crossarms												
B - Hardware	5-23-74	9-5-74			4-1-75	7-1-75	11-1-75	1-1-76	5-1-76	7-1-76	11-1-76	1-1-77
C - Insulators	6-10-74	12-4-74			3-1-75	8-1-75	10-1-75	3-1-76	4-1-76	9-1-76	10-1-76	3-1-77
D - Conductors	7-10-74	10-8-74			8-1-75	3-1-76	3-1-76	10-1-76	9-1-76	4-1-77	3-1-77	10-1-77
E - Conductor Accessories	7-7-74	9-5-74			4-1-75	8-1-75	11-1-75	2-1-76	5-1-76	8-1-76	11-1-76	2-1-77
F - Dist. Equipment	2-16-74	4-17-74	1-2-75	3-4-75	4-1-75	7-1-75	11-1-75	1-1-76	5-1-76	7-1-76	11-1-76	1-1-77
G - Dist. Transformer	9-19-74	3-23-75	3-19-75	3-4-76	8-1-75	6-1-76	3-1-76	1-1-77	9-1-76	7-1-77	3-1-77	1-1-78
H - Oil Circuit Breakers	2-26-74	5-17-74	9-24-74	10-24-74	5-1-75	8-11-75	12-1-75	2-10-76	6-1-76	8-10-76	12-1-76	2-10-77
I - Connectors, Tools, etc.	2-16-74	4-17-74			4-1-75	7-1-75	11-1-75	1-1-76	5-1-76	7-1-76	11-1-76	1-1-77
J - Meters & Instrument Transformers	3-17-74	5-16-74			4-21-75	6-21-75	11-20-75	12-20-75	5-20-76	6-20-76	11-20-76	12-20-76
K - Instrument Meters					4-1-75	6-11-75	11-1-75	12-10-75	5-1-76	6-10-76	11-1-76	12-10-76
L - Street Lighting Equipment			1-8-75	3-8-75	4-1-75	8-11-75	11-1-75	2-20-76	5-1-76	8-20-76	11-1-76	2-20-77
M - Miscellaneous	5-8-74	7-7-74			4-1-75	7-1-75	11-1-75	1-1-76	5-1-76	7-1-76	11-1-76	1-1-77
N - Hand Tools			11-8-74	1-8-75	7-1-75	9-1-75	1-1-76	3-1-76	7-1-76	9-1-76	1-1-77	3-1-77
R - Substation Equipment					8-1-75	12-1-75	2-1-76	5-1-76	8-1-76	11-1-76	2-1-77	5-1-77
S - Substation Structures))))))))))))
T - Substation Transformers))))))	8-76	12-76))))
U - Communication Equipment												
							11-1-75	1-1-76			11-1-76	1-1-77

* Assumes L/Credit Issued 9/1/74

..... 1 FB-1 1 FB-4
 _____ 1 FB-2 xxxxxx 1 FB-5
 ++++++ 1 FB-3

DELIVERY SCHEDULE OF MATERIALS (Actual & Projected)

sheet _____ of _____

MATERIAL SCHEDULE	1973				1974				1975				1976				1977				1978				1979				1980											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
A. Poles & Crossarms																																								
B. Hardware								+++++				---				xxx																							
C. Insulators								+++++				---				xxxxxx																							
D. Conductors								+++++				+				xxxxxxx																							
E. Conductor Accessories								+++++				---				xxxxx																							
F. Dist Equipment								+++++				---				xxx																							
G. Dist Transformer								xxxxxxx																			
H. Oil Circuit Reclosers								+++++				---				xxxx																							
I. Connectors, Tools, etc								+++++				---				xxx																							
J. Meters & Instrument Transformers								+++				---				xx																							
K. Instrument Meters									+++				---				xx																							
L. Street Lighting Equipment									+++++				---				xxxxx																							
M. Miscellaneous								+++++				---				xxx																							
N. Hand Tools									+++				---				xxxx																							
R. Substation Equipment									+++++				---				xxx																							
S. Substation Structures																																								
T. Substation Transformer																											
U. Commo Equipment																															

Environmental Annex
to be distributed separately

Tanggapan ng Pangulo ng Pilipinas
(OFFICE OF THE PRESIDENT OF THE PHILIPPINES)

October 22, 1974

Mr. Thomas C. Niblock
Director
United States Agency for
International Development
Ramon Magsaysay Center
Roxas Boulevard, Manila

Sir:

The Government of the Republic of the Philippines wishes to express its gratitude to the United States government for the vigorous support it has extended to the rural electrification program through two Rural Electrification loans from the United States Agency for International Development (USAID) for rural electrification. These loans will make possible the establishment of about 40 electric cooperatives which will initially serve about 870,000 people and ultimately, serve about 6 million people.

In spite of this initial effort, there is much left to be done and the rural electrification program will remain the top priority program which His Excellency President Ferdinand E. Marcos described thus: "the cutting edge of the effort to move towards development of the country because whether the program is agricultural productivity, large scale industry, family planning, or small and medium scale industry, electrification is the principal requirement. We will not be able to succeed in our economic and social development program unless rural electrification succeeds because it is the crucial and critical project."

It is the intention of the Philippine government to pursue with undiminished vigor the goal of total electrification for the country. This would require massive funding under the same loan terms as those of the first two rural electrification loans from USAID. These terms were needed by the United States itself to develop its own rural electrification program over a period of 35 years.

In view of the foregoing the National Electrification Administration (NEA) wishes to apply, through the National Economic Development Authority, for a third USAID Development loan in

the amount of \$20 million for the continued development of the rural electrification effort. The loan will be used to finance the foreign exchange costs of the electrification program, mainly off shore procurement of electrification equipment and materials for 10-15 electric cooperatives. For this application NEA wishes to avail of the most favorable AID loan terms possible - 40 years repayment with a grace period of 10 years and with interest rates of 2% during the grace period and 3% during the remaining 30 years.

In connection with this loan, we would like to make the following assurances:

1. That GOP will provide the resources (both foreign exchange and local currency) as may be required to enable NEA to implement the electrification program on a timely basis.
2. That GOP will absorb any "maintenance of foreign exchange value" risks in behalf of NEA and the rural electric cooperatives.

We are certain that you are fully informed of the present status and the requirements for the implementation of the electrification program. We wish to point out, however, that a major side benefit of the program has been the development of the local capability to manage those aspects of the program which heretofore required the services of foreign consultants. Because of this it is possible that the need for Stanley Consultants and NRECA assistance maybe greatly diminished if not phased out in 1977 when both NEA and local A & E firms may have acquired sufficient expertise to take their place.

We request your assistance in obtaining the loan mentioned above. The loan is necessary for the continued implementation of our electrification program, and your assistance in this regard will be a vital factor.

Very truly yours,

By Authority of the President:



ROBERTO V. REYES
Acting Executive Secretary

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT
Manila, Philippines

Ramon Magsaysay Center
1680 Roxas Boulevard

Telephone: 59-80-11

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

I, THOMAS C. NIBLOCK, the principal officer of the Agency for International Development in the Philippines, having taken into account, among other things, the maintenance and utilization of projects in the Philippines previously financed or assisted by the United States, do hereby certify that, in my judgment, the Philippines has both the financial capability and the human resources capability to effectively maintain and utilize the proposed Rural Electrification Loan.

This judgment is based upon the project analysis as detailed in Philippines Rural Electrification III Capital Assistance Loan Paper and is subject to the conditions imposed therein.



Thomas C. Niblock, Director
USAID/Philippines

21 Oct 1974
Date

CHECKLIST OF STATUTORY CRITERIA

FAA - Foreign Assistance Act of 1961, as amended.

FAA, 1973 - Foreign Assistance Act of 1973

App. - Foreign Assistance and Related Programs Appropriation Act, 1974.

MMA - Merchant Marine Act of 1936, as amended.

BASIC AUTHORITY

1. FAA 103; 104; 105; 106; 107.
Is loan being made

a. for agriculture, rural development or nutrition;

b. for population planning or health;

c. for education, public administration, or human resources development;

d. to solve economic and social development problems in fields such as transportation, power, industry, urban development, and export development;

e. in support of the general economy of the recipient country or for development programs conducted by private or international organizations.

a. This loan will contribute to the factors that alleviate starvation, hunger, and malnutrition by providing electric power to irrigation systems which will enable the farmers to increase crop production. Also by providing electric power the project will encourage and directly contribute to the development of cottage industry and therefore enhance the Co-op members' capacity for self-help.

Not Applicable (N.A.)

N.A.

The project will encourage the development of cottage industries. It also provides the electric systems for distributing power supplied by generation and transmission facilities financed by IBRD, ADB and others.

N.A.

COUNTRY PERFORMANCE

Progress Towards Country Goals

2. FAA 201 (b) (5), (7) & (8); 208

A. Describe extent to which country is: A.

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

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

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

(1) Food production is top priority of the Philippine Government with goal of achieving self-sufficiency in rice and corn and accelerated production of livestock, poultry, fish, fruits and vegetables. Plans for expanded warehousing and distribution of the increased output of grains are being prepared and carried out with help from IBRD loan. The proposed project will partially contribute to this goal through support to irrigation, refrigeration, rice processing facilities, etc.

(2) See FAA 620(e)(1) Item No. 4, below.

(3) The four-year agriculture program is increasing the productive capability of Philippine farmers. The Department for Local Government and Community Development carries out programs at the barrio (village) level throughout the Philippines. A Decentralization Act providing more autonomy to the Province was enacted in 1967. The Provincial Development Assistance Program is operating in seventeen provinces.

Additionally, in an attempt to redistribute income and raise the rural standard of living, the GOP has recently embarked upon an aggressive land reform program, and is well under way with a country-wide rural electrification program.

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

(a) More than 70 percent of the national budget is allocated to social and economic development. One-fourth of the budget goes to education, nearly 10 percent to agriculture and natural resources, and almost 20 percent to transportation and communications.

(b) Diverting such resources for unnecessary military expenditure (See also Item No. 20) and intervention in affairs of other free and independent nations.) (See also Item No. 11).

(b) Less than 15 percent of the budget goes for national defense.

(5) 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.

The GOP, ever since its establishment as an independent nation in 1946, has patterned its government after that of the United States, adopting the same democratic principles and strongly supporting a free and open society. On Sept. 22, 1972 President Marcos, citing a serious threat to their system from both the extreme left and right, invoked martial law and, ruling by decree, ordered an accelerated implementation of essential reforms long needed to improve the efficiency of the government, to reduce wide-spread crime and corruption, to speed development efforts aimed primarily at improving the social and economic well-being of lower income groups. However, under Martial Law political activity and freedom of the press has been curtailed. In this regard President Marcos is inaugurating an all-encompassing nationwide land reform program. Over the last five years the GOP has increased revenues through improved administration and new tax laws.

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

(6) Approximately 45 percent of project is a local currency cost which will be financed by the GOP.

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

(7) As a result of the disastrous summer of 1972 floods, the Marcos Administration has embarked on a large scale reconstruction program with the help of USAID. This program is directly meeting the needs of the devastated communities of Luzon. Included in the program are: a school reconstruction and textbook program as well as on road building, irrigation and other infrastructure programs.

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

B. Yes.

Treatment of U.S. Citizens and Firms.

31. 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?

3. No.

4. 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?

4. The Parity Amendment, an Ordinance appended to the Philippine Constitution on March 12, 1947, and effective by its terms until July 3, 1974, permitted U.S. citizens, as distinguished from other aliens, to acquire and hold "public agricultural land" and to operate public utilities with the same rights and privileges as citizens of the Philippines. The Supreme Court of the Philippines, in a decision now being appealed, has held that the right of U.S. citizens to acquire and hold such property and to operate utilities will expire on July 3, 1974. The GOP and U.S. Embassy are currently negotiating on this point. At present there is no indication that the GOP contemplates any act contravening FAA § 620(e)(1).

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, 5. N.A.

a. has any deduction required by Fishermen's Protective Act been made?

b. has complete denial of assistance been considered by A.I.D. Administrator?

Relations with U.S. Government and Other Nations

6. FAA 620 (a). Does recipient country furnish assistance to Cuba or fail to take appropriate steps to prevent ships or aircraft under its flag from carrying cargoes to or from Cuba? 6. No.
7. FAA 620 (b). If assistance is to a government, has the Secretary of State determined that it is not controlled by the international Communist movement? 7. Yes.
8. FAA 620 (d). If assistance is for any productive enterprise which will compete in the United States with United States enterprise, is there an agreement by the recipient country to prevent export to the United States of more than 20% of the enterprise's annual production during the life of the loan? 8. N.A.
9. FAA 620 (f). Is recipient country a Communist country? 9. No.

10. FAA 620 (i). Is recipient country in any way involved in (a) subversion of, or military aggression against, the United States or any country receiving U.S. assistance, or (b) the planning of such subversion or aggression? 10. No.
11. 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? 11. The GOP has taken all reasonable measures to protect U.S. property. On infrequent occasion when damage has occurred, proper compensation has been made without delay.
12. 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? 12. The Philippines has instituted an investment guaranty program with the full range of risk coverage.
13. FAA 620 (n). Does recipient country furnish goods to North Viet-Nam or permit ships or aircraft under its flag to carry cargoes to or from North Viet-Nam? 13. No.
14. 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? 14. No.
15. FAA 620 (t). Has the country severed diplomatic relations with the United States? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption? 15. No.

16. FAA 620 (u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the A.I.D. Administrator in determining the current A.I.D. Operational Year Budget?
16. The Philippines is not in default with respect to its dues, assessments or other obligations to the U.S.
17. FAA 481. Has the government of recipient country failed to take adequate steps to prevent narcotics, drugs and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, or transported through such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the U.S. unlawfully?
17. No.
18. FAA 1973 29. If (a) military base is located in recipient country, and was constructed or is being maintained or operated with funds furnished by U.S., and (b) U.S. personnel carry out military operations from such base, has the President determined that the government of recipient country has authorized regular access to U.S. correspondents to such base?
18. Yes. (Presidential Determination No. 74-14 dated 1/20/74).

Military Expenditures

19. FAA 620 (s). What percentage of country budget is for military expenditures? How much of foreign exchange resources spent on military equipment? How much spent for the purchase of sophisticated weapons systems? (Consideration of these points is to be coordinated with the Bureau for Program and Policy Coordination, Regional Coordinators and Military Assistance Staff (PPC/RC).
19. Annual defense budgets average less than 15% of the national budget. Approximately one-third of this amount is for maintenance of peace and order. Philippine foreign exchange resources used to acquire military equipment are negligible. We know of no diversion of either development assistance or of PL 480 sales to military expenditures. We are not aware of any diversion of Philippine resources for unnecessary military expenditures.

Conditions of the Loan

General Soundness

20. FAA 201 (d) Information and conclusion on reasonableness and legality under laws of country and the United States) of lending and relending terms of the loan. 20. The rate of interest is considered reasonable and repayment of the loan with interest is within the financial capability of the borrower. Interest through the grace period will be at the rate of 2% per annum, and 3% thereafter. This rate is not higher than the applicable legal rate of interest in the Philippines.
21. FAA s 201 (b) (2); s 201 (e) Information and conclusion on activity's economic and technical soundness. If loan is not made pursuant to a multi-lateral plan, and the amount of loan exceeds \$100,00, 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? 21. All project development is covered by feasibility studies assuring viability. An application has been submitted to AID. See ANNEX _____.
22. FAA s 201 (b) (2). Information and conclusion on capacity of the country to repay the loan, including reasonableness of repayment prospects. 22. Section 1E and Annex 9 of this / paper a satisfactory future capacity on the part of the Philippines to repay this loan. The GOP is the borrower and the prospects for loan repayment are good.
23. FAA s 201 (b) (1). Information and conclusion on availability of financing from other free-world sources, including private sources within the United States. 23. Financing is not considered to be available from other sources on terms comparable to this proposed loan.
24. FAA s 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 United States of the assistance? 24. Yes.

25. FAA s 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 purpose of loan?
25. All legislative authorities exist.
26. FAA s 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?
26. Yes. See ANNEX 13.

Loan's Relationship to Achievement of Country and Regional Goals

27. FAA s 207; s 113
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; (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; or (f) integrating women into the recipient country's national economy.
27. (a) The cooperatives to be formed under the project are non-political organizations directed by the interested citizens in the community.
(b) The project will permit and encourage irrigation projects, thereby helping the Philippines increase their food production.
(c) NEA is undertaking an intensive training program for its own staff and staffs of the cooperatives. Programs are also underway to train skilled electrical workers for use by the private contracting firm.
(d) The project will facilitate installation of small potable water systems, food preservation and increased food production, thereby improving through improved water and increased nutrition, the health of the populace.
(e) Electric cooperatives will be supported by the loan. Reliable electricity at reasonable rate is essential to most development activities. This project will have a beneficial effect on most of the areas of development mentioned.
(f) See Section _____ of the paper.

28. FAA 209. Is project susceptible of execution as part of regional project? If so way is project not so executed?
28. No
29. FAA 201 (b) (4). Information and conclusion on activity's relationship to, consistency with, other development activities, and its contribution to realizable long-range objectives.
29. This other project is consistent with GOP objectives. See Part II section ID page 7 of paper.
30. FAA 201 (b) (9). Information and conclusion on whether or not the activity to be financed will contribute to the achievement of self-sustaining growth.
30. Improved electric power systems will contribute to overall standard of living, increase individual productivity and encourage industrial growth.
31. FAA 209. Information and conclusion whether assistance will encourage regional development programs.
31. N.A.
32. FAA s 111. Discuss the extent to which the loan will strengthen the participation of urban and rural poor in their country's development, and will assist in the development of cooperatives which will enable and encourage greater numbers of poor people to help themselves toward a better life.
32. This project is specifically designed to assist in the development of cooperatives. Each cooperative will be governed by its members which average 10,000 per cooperative.
33. FAA s 201 (f). If this is a project loan, describe how such project will promote the country's economic development taking into account the country's human and material resources requirements and relationship between ultimate objectives of the project and overall economic development.
33. This project is directed at long-range extension of rural electrification to help accelerage economical and social development. As discussed throughout the CAP see particularly Part II section ID.
34. FAA s 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.
34. The cooperatives to be formed under the project are non-political organizations directed by interested citizens in the communities served. See Item No. 32.

35. FAA s 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.
36. FAA 201 (b) (3). In what ways does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities?
37. 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.
38. FAA 619. If assistance is for newly independent country, is it furnished through multilateral organizations or plans to the maximum extent appropriate?
35. The program is directed at the rural population, which comprises the majority of the country's total population but has the lowest income levels. It will provide an opportunity through membership in co-operatives for direct participation in institutional development and democratic processes.
36. The program will bring economic power to currently unelectrified areas. This will promote increased agricultural business as well as small industrial production potential in the rural areas.
37. (a) Only indirectly through promotion of self-sustaining economic growth; (b) the availability of low cost power will create more opportunity for private initiative, see Section II; (c) the loan is designed to assist in the establishment of rural electric cooperatives throughout the Philippines; (d) not applicable; (e) providing electrical power where none now exists will improve the technical efficiency of rural industry and agriculture; and (f) not applicable.
38. N.A.

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

39. FAA 201 (b) (6). 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.
39. The project's output of electricity will not compete with or adversely affect the U.S. economy in any respect; the services procured will be of U.S. source and origin. Commodity procurement will be from Code 941 countries with a large percentage expected to be of U.S. source and origin.
40. FAA 202 (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.
40. The loan will be channeled through an intermediate credit institution for use by newly created private electric cooperative. Commodities and services will be from private sources.
41. 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).
41. Private enterprise is being utilized to the maximum extent practicable under this loan.
42. 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?
42. Engineering and other professional services are being provided by U.S. firms and financed under other AID projects. The loan will not be used to finance the direct costs of construction.
43. FAA 602. Information and conclusion whether U.S. small business will participate equitably in the furnishing of goods and service financed by the loan.
43. Small Business Notification procedures will be utilized.

44. FAA 620 (h). Will the loan promote or assist the foreign aid projects or activities of the Communist-Bloc countries?
44. No. The loan agreement will contain implementation control prohibiting such use.
45. 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.
45. Services financed under the loan will be from private US engineering firms and other non-governmental sources.

Loan's Compliance with Specific Requirements

46. FAA 110 (a); 208 (e). In what manner has or will the recipient country provide assurances that it will provide at least 25% of the costs of the program, project, or activity with respect to which the Loan is to be made?
46. The loan agreement will so provide and the planned administrative arrangements will assure it.
47. FAA 112. Will loan be used to finance police training or related program in recipient country?
47. No.
48. FAA 114. Will loan be used to pay for performance of abortions or to motivate or coerce persons to practice abortions?
48. No.
49. FAA 201 (b). Is the country among the 20 countries in which development loan funds may be used to make loans in this fiscal year?
49. Yes.

50. FAA 201 (d). Is interest rate of loan at least 2% per annum during grace period and at least 3% per annum thereafter? 50. Yes.
51. FAA 201 (f). If this is a project loan, what provisions have been made for appropriate participation by the recipient country's private enterprise? 51. The Philippine private sector will supply commodity and construction services for the projects. The end recipients of the proposed aid are in themselves private enterprise.
52. FAA 604 (a). Will all commodity procurement financed under the loan be from the United States except as otherwise determined by the President? 52. Commodity procurement will be limited to AID Geographic Code 941.
53. FAA 604 (b). What provision is made to prevent financing commodity procurement in bulk at prices higher than adjusted U.S. market price? 53. N.A.
54. FAA 604 (d). If the cooperating country discriminates against U.S. marine insurance companies, will loan agreement require that marine insurance be placed in the United States on commodities financed by the loan? 54. Yes.
55. FAA 604 (e). If offshore 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? 55. N.A.
56. FAA 604 (f). If loan finances a commodity import program, will arrangements be made for supplier certification to A.I.D. and A.I.D. approval of commodity as eligible and suitable? 56. N.A.

57. 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.
58. FAA s 611 (b); App. s 101. If loan finances water or water-related land resources 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?
59. FAA s 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?
60. FAA s 612 (b); s 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 United States are utilized to meet the cost of contractual and other services.
61. App. s 113. Will any of loan funds be used to acquire currency of recipient country from non-U.S. Treasury sources when excess currency of that country is on deposit in U.S. Treasury?
62. FAA s 612 (d). Does the United States own excess foreign currency and, if so, what arrangements have been made for its release?
57. U.S. Government excess property is being utilized where practicable in lieu of new items. A separate procurement fund for excess acquisition will be established under the loan.
58. N.A.
59. Construction contracts will be financed by the GOP. Competitive procedures will be utilized.
60. The GOP will provide all local currency required for completion of the project. Country owned PL 480 generations will be utilized to the maximum extent practicable, however the Philippines is not an excess currency country and foreign currency is not available to be utilized in lieu of dollars.
61. The Philippines is not an excess currency country.
62. No.

63. FAA s 620 (g). What provision is there against use of subject assistance to compensate owners for expropriated or nationalized property? 63. No. The loan agreement will limit the use of loan proceeds to procurement of eligible commodities.
64. FAA s 620 (k). If construction of productive enterprise, will aggregate value of assistance to be furnished by the United States exceed \$100 million? 64. No.
65. FAA s 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 transaction? 65. No.
66. App. s 103. Will any loan funds be used to pay pensions, etc., for military personnel? 66. No.
67. App. s 105. If loan is for capital project, is there provision for A.I.D. approval of all contractors and contract terms? 67. No. Loan proceeds will not finance construction. Terms and scope of work will be acceptable.
68. App. s 107. Will any loan funds be used to pay UN assessments? 68. No.
69. App. s 108. Compliance with regulations on employment of U.S. and local personnel. (A.I.D. Regulation 7). 69. No. Loan funds will be used to finance construction contracts.
70. App. s 110. Will any of loan funds be used to carry out provisions of FAA s s 209 (d)? 70. No.

71. App. s 114. Describe how the Committee on Appropriations of the Senate and House have been or will be notified concerning the activity, program, project, country, or other operation to be financed by the Loan.
71. A description of the project was included in the FY 1975 Congressional Presentation. Pg. 130.
72. App. s 601. Will any loan funds be used for publicity or propaganda purposes within the United States not authorized by Congress?
72. No.
73. MMA s 901. b; FAA s 640 C.
- (a) Compliance with requirement that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed with funds made available under this loan shall be transported on privately owned U.S.-flag commercial vessels are available at fair and reasonable rates.
- (b) Will grant be made to loan recipient to pay all or any portion of such differential as may exist between U.S. and foreign-flag vessel rates?
73. (a) The Loan Agreement will contain a provision requiring compliance with this requirement.
- (b) No.
74. Section 30 and 31 of PL 93-189 (FAA of 1973) Will any part of the loan be used to finance directly or indirectly military or paramilitary operations by the U.S. or by foreign forces in or over Laos, Cambodia, North Vietnam, South Vietnam, or Thailand?
74. No.
75. Section 37 of PL 93-189 (FAA of 1973); App. s.111. Will any part of this loan be used to aid or assist generally or in the reconstruction of North Vietnam?
75. No.

76. App. s 112. Will any of the funds appropriated or local currencies generated as a result of AID assistance be use for support of police or prison construction and administration in South Vietnam or for support of police training of South Vietnamese?

76. No.

77. App. s 604. Will any of the funds appropriated for this project be used to furnish petroleum fuels produced in the continental United States to Southeast Asia for use by non-U.S. nationals?

77. No.

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

ANNEX 15
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**OFFICE OF
THE ADMINISTRATOR**

Loan No. 492- -

DRAFT
LOAN AUTHORIZATION

Provided from: Food and Nutrition
(Philippines: Rural Electrification III)

Pursuant to the authority vested in me as Administrator, Agency for International Development (A.I.D.), by the Foreign Assistance Act of 1961, as amended, (the "Act") and the Delegations of Authority issued thereunder, I hereby authorize the establishment of a loan pursuant to Part I, Chapter 1, Section 103 and Chapter 2, Title I, the Development Loan Fund, to the Government of the Republic of the Philippines through the National Economic Development Authority (Borrower) for the National Electrification Administration (Beneficiary) of not to exceed Twenty Million Dollars (\$20,000,000). The proceeds of this loan will be used (a) to permit the Beneficiary to finance the foreign exchange costs of certain engineering and other professional services required to continue development of its institutional and managerial capabilities and (b) to permit the Beneficiary to relend the remainder of said proceeds to a number of new or existing rural electric cooperatives to finance the foreign exchange costs of certain goods and services required by said cooperatives for the development of their distribution systems.

1. Interest Rate and Terms of Repayment

The loan shall be repaid by the Borrower within forty (40) years after the date of the first disbursement under the loan, including a grace period not to exceed ten (10) years. The interest on the unrepaid principal balance of the loan shall be from the date of first disbursement at the rate of two percent (2%) per annum during the grace period and at the rate of three percent (3%) per annum thereafter.

2. Currency of Repayment

Provision shall be made for repayment of the loan and payment of interest in United States dollars.

3. Other Terms and Conditions

Unless A.I.D. agrees in writing,

(a) Goods and services financed under the loan shall have their source and origin in countries included in A.I.D. Geographic Code 941 (Selected Free World).

(b) No A.I.D.-financed commodities will be provided to cooperatives prior to a certification by the Beneficiary and its U.S. consultant as to the technical, economic and financial soundness of each proposed cooperative.

(c) Borrower shall reloan the proceeds of the loan to Beneficiary on terms and conditions satisfactory to AID.

(d) This loan shall be subject to such other terms and conditions as A.I.D. may deem advisable.

Daniel Parker

Date