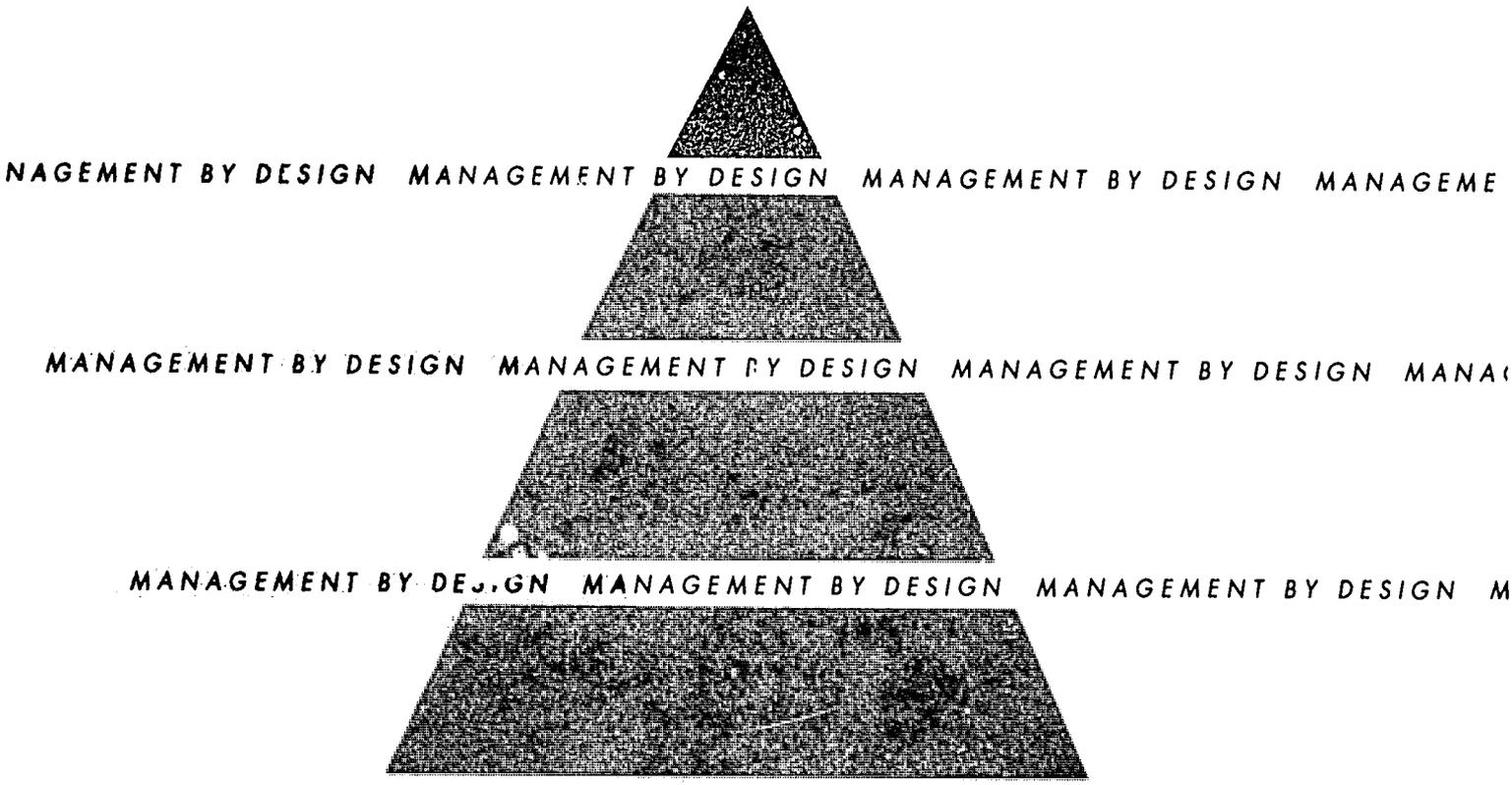


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**MID TERM EVALUATION
FINAL REPORT**

**REGIONAL UTILITIES MAINTENANCE PROJECT
No. 538 - 0138.8**



PREPARED FOR

**USAID
REGIONAL DEVELOPMENT OFFICE/CARIBBEAN**

BY
DATEX INC.

NOVEMBER 15, 1991

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Datex Inc
Management by Design

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PROJECT DATA SHEET

1. **Region:** The Eastern Caribbean
2. **Project Title:** Regional Utilities Maintenance
3. **Project Number:** 538 - 0138.8
4. **Grantees:**
 - (a) National Rural Electric Cooperative Assn.
 - (b) Caribbean Electric Utility Services Corp.
5. **Implementation:**
 - Phase I : Cooperative Agreement with NRECA
 - Phase II : Cooperative Agreement with CARILEC
 - Phase IIa: CARILEC/NRECA Contract for Technical Services
6. **Project Dates:**
 - Phase I : NRECA Agreement:
July 1, 1988 - March 15, 1990
 - Phase II : CARILEC Agreement:
August 1, 1989 - July 31, 1993
 - Phase IIa: CARILEC/NRECA Contract:
January 10, 1990 - December 15, 1990
7. **Project Funding:**
 - (a) AID Grant to NRECA: US\$1.5 million
 - (b) AID Grant to CARILEC: US\$ 3.5 million
 - (c) CARILEC Contribution: US\$45,400
8. **NRECA Agreement Amendments:**
 - No. 1: October 21, 1988
 - No. 2: August 28, 1989
 - No. 3: December 31, 1989
9. **CARILEC Agreement Amendments:**
 - No. 1: March 29, 1990
 - No. 2: June 29, 1990
 - No. 3: August 30, 1990
10. **Project Design:** USAID/RDO/C, NRECA and QUALTEC Inc.
11. **Mission Officials:**
 - Mission Director: Mosina Jordan
 - Deputy Director : Larry Armstrong
 - Chief, Infra. Office: Winfield Collins
 - Project Officer: Brinley Selliah
12. **Mid Term Evaluation:**
 - Contract: USAID/RDO/C and DATEX INC.
 - LOE: 72 person days
 - Costs: US\$ 62,072.

PREFACE

From September 1 to October 18, 1991, a two-person team from DATEX Inc, conducted the mid-term evaluation of the Regional Utilities Maintenance Project. The team members were:

Michael V. Julien, Economic Development Specialist and Team Leader, (M.Sc in Economic and Industrial Development), an independent consultant with 12 years experience in finance, design, implementation and monitoring of development projects. Mr. Julien was Chief of Party of an AID-funded venture capital project in the Caribbean from 1988-1990. His recent work included the final evaluation of an agribusiness management project in Kenya as team leader; an impact evaluation of an infrastructure project in Pakistan and design of private enterprise programs in The Gambia and East Africa.

Peter A. Borgo, Electrical Engineer (M.S in Electrical Engineering), a consultant with over 20 years exposure to systems engineering, data collection, analysis and field tests. Mr. Borgo's experience includes energy application and technology reviews, resource appraisals, training and assessments of rural electrification potential in Egypt; design and implementation of a performance monitoring plan for alternative energy program in Morocco and identification of new products and services for engineering projects in Turkey, Morocco and Egypt. Mr. Borgo has designed and evaluated USAID projects and has conducted workshops for managers and utility engineers.

The evaluators carried out on-site investigations in two phases, the first of which involved three weeks of regional travel from September 1 - 25. Prior to his arrival in Barbados, the Engineer interviewed NRECA, a US-based rural utility cooperative association involved in Project Design and responsible for the first 12 months of Project implementation.

The team was briefed by USAID's Regional Development Office (RDO/C) on September 6 and held an introductory meeting with the CARILEC Board of Directors the same day. The evaluators met with the Barbados Light and Power Company, a CARILEC member Utility and then travelled to St. Lucia, Grenada, Antigua and Montserrat to interview Utility management and assess CARILEC's training programs. In St. Lucia the team visited CARILEC's corporate offices, scanned Project files and interviewed technical/professional staff. The DATEX consultants met with the Manager and Training Coordinator in each country and in the case of Antigua, met with the Utility manager from Dominica while in Antigua. Afterwards, they returned to Barbados on September 14 for an interim AID debriefing, then travelled to St. Vincent to interview utility management. A summary of conclusions and recommendations was subsequently prepared and then presented to USAID and discussed with CARILEC's Directors on September 25.

The draft report was submitted to the Regional Development Office and CARILEC on October 7. Field copies of the final report were presented to RDO/C on October 22 and incorporated factual corrections to the draft from USAID.

We thank NRECA, the initial project manager, for its cooperation in highlighting design issues associated with the Project; the Utility managers for their explanations about Utility participation in RUMP activities and, in particular, their perspectives on CARILEC's future; Mr. Christopher Farrell, Executive Manager and Mr. Bernard Theobalds, Chairman/CARILEC for facilitating meetings to discuss our key findings and recommendations; and finally, Messrs. Brinley Selliah and Winfield Collins of RDO/C's Infrastructure Office for their insights and cooperation.

ACRONYMS

ANLEC	Anguilla Electricity Services Ltd
APUA	Antigua Public Utilities Authority
APWA	Anguilla Public Works Authority
BIMAP	Barbados Institute Of Management and Productivity
BL&P	Barbados Light and Power Company
BVIC	British Virgin Islands Electricity Corporation
CARICOM	Caribbean Community/Caribbean Common Market
CIDA	Canadian International Development Agency
CTAP	Canadian Training Awards Project
CDB	Caribbean Development Bank
CDC	Commonwealth Development Corporation
CARILEC	Caribbean Electric Utilities Services Corporation
DOMLEC	Dominica Electricity Services Ltd
DPA	Distribution Primary Analysis
EDP	Electronic Data Processing System
FP&L	Florida Power and Light Company
GRENLEC	Grenada Electricity Services Company
IIE	Institute of International Education
IMDI	International Management Development Institute
IEMS	Infrastructure Expansion and Maintenance Systems Project
LBI	Louis Berger International Inc.
LUCELEC	St. Lucia Electricity Services Company
MIS	Management Information System
MONLEC	Montserrat Electricity Services Company
NDF	National Development Foundation
NRECA	National Rural Electric Cooperative Association
OAS	Organization of American States
OECS	Organization of East Caribbean States
OFDA	Office For Disaster Assistance
OJT	On The Job Training
QUALTEC	Non Regulated Subsidiary of FP&L
RAESP	Regional Alternative Energy Systems Project
RDO/C	Regional Development Office/Caribbean
REAP	[Caribbean] Regional Energy Action Plan
RFP	Request For Proposal
RUMP	Regional Utilities Maintenance Project
SALCC	Sir Arthur Lewis Community College
SCADA	Supervisory Control and Data Acquisition System
SEAP	Small Enterprise Assistance Project
SME	Small and Medium size Enterprises
UNDP	United Nations Development Program
USAID	United States Agency for International Development
UWI	University of the West Indies
VINLEC	St. Vincent Electricity Services Corporation

CURRENCY

1991 Financial and Cost Data in US dollars

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EXECUTIVE SUMMARY

Project Profile. The Regional Utilities Maintenance Project is a USAID five-year \$ 5 million grant project established for Eastern Caribbean countries in July 1988. Principal participants are the Caribbean Electric Utilities Services Corporation, CARILEC (executing agency), nine electric utilities (project beneficiaries), the US-based National Rural Electric Cooperative Association (NRECA) and QUALTEC, a US subcontractor (technical assistance suppliers). The participating utilities are six OECS countries, Anguilla, Barbados and the British Virgin Islands.

NRECA was responsible for Phase I, a 12-month organizational development period to incorporate CARILEC, deliver power plant assistance to Grenada and Antigua and establish initial training programs. CARILEC took over the 48-month Phase II implementation in September 1989 and will continue to manage the project beyond its scheduled July 31, 1993 completion date. USAID provided \$1.5 million for Phase I under a Cooperative Agreement and has obligated \$3.5 million under a similar Agreement with CARILEC for Phase II. CARILEC had utilized about 45% of its grant resources by October 1991.

Project Purpose. The purpose of the Project is to assist ten Eastern Caribbean electric utilities develop the Caribbean Electric Utilities Services Corporation (CARILEC) to facilitate the provision of training and joint services on a sustainable basis.

Project Objective. The objectives of the Project are to improve service reliability and operational efficiency through training and technical assistance and to lower operating costs by consolidating procurement of both supplies and technical services.

Evaluation Purpose. The purpose of this evaluation is to assess the degree of accomplishment of Project objectives; identify constraints which may inhibit attainment of the objectives; recommend solutions to problems encountered, and make suggestions to improve implementation.

Methodology. The evaluation team interviewed contractors in the US, RDO/C personnel, visited seven of nine CARILEC members, reviewed project documents and explored various recommendations with financial and engineering experts. The team presented its conclusions and recommendations to USAID and the CARILEC Board of Directors for feedback prior to completion of this report.

Major Findings. The evaluation team's findings were centered on four key activities: 1) CARILEC organization and management; 2) Training, 3) Technical Assistance and 4) Joint Services.

Positive Factors:

- The approach to establishing CARILEC was well conceived and was implemented with significant effectiveness: Essential corporate decisions, such as by-laws approval, legal incorporation, appointment of Officers, Agreement content, and selection of an executive officer were all made within the first 10 months of implementation.
- CARILEC's formation was carried out more efficiently than many similar donor-funded projects in the Caribbean. It has often taken 18-24 months to make new executing agencies operational.

CARILEC started conducting business nine months after Phase I inception because of exceptional cooperation between NRECA and the utilities.

- Technical assistance (TA) was the most successful Phase I initiative. TA to the Grenada Electricity Services Limited (GRENLEC) and the Antigua Public Utilities Authority (APUA) was professionally delivered in "hands on" and practical ways by experienced engineers who were sensitive to clients' needs and deficiencies.
- CARILEC has successfully developed and managed its training programs with a high level of utility involvement. The Corporation is now quite capable of delivering high calibre basic, intermediate and technical courses to existing and new members. Within two years CARILEC's training programs have been delivered with as much efficiency as other donor projects with comparable resources and target markets in the region.

Key Concerns:

- There were two inherent flaws in Project Design. First, the utilities had minimal involvement in Project Paper development. The result: the Project Paper identified priority areas for implementation for which NRECA accepted start-up responsibility but which were never perceived as essential activities by the utilities. Second, insufficient utility involvement resulted in NRECA priorities and benchmarks in Phase I which were unattainable because of the divergence in perception between USAID, NRECA, QUALTEC and the utilities on issues such as the introduction of consulting services.
- Despite the extraordinary success of the technical assistance effort, some TA value was lost for two reasons: 1) follow-through on Technical Assistance was not part of the CARILEC/USAID Agreement and 2) there was no provision, either in terms of short term advice or funding support, under the Phase II Agreement for follow-up on the engineers' recommendations.
- NRECA and QUALTEC attained all of their contractual targets for Phase I training. These programs were apparently well received by course participants. Senior utility management were concerned about the relevancy and speed at which the courses were being conducted. More importantly, although CARILEC was to take over these programs, there was limited coordination between NRECA and CARILEC on the institutional transfer of Phase I training capability to CARILEC.
- The CARILEC Board of Directors and its management team have displayed due diligence and have shown strong enthusiasm for the organization's long term survival. However, strategic options for sustainability have not yet been analyzed by the Corporation and current plans do not reflect a financial program that addresses this concern.
- Joint Services was shelved during the first 12-18 months of Phase II. This was not considered by the CARILEC members to be an immediate utility concern at the start of the Project. Development is inhibited by a lack of coordination between the utilities and CARILEC management: The Executive Manager had encouraged start up work on a number of common services but has received limited support from the respective utilities. More importantly, an operating system has not yet been developed to facilitate efficient implementation of Joint Services.

- Key Project Paper expectations were not included in the CARILEC/USAID Cooperative Agreement. This weakened AID attempts to persuade CARILEC to adopt a multi-faceted approach to implementing training and joint services on a sustainable basis.

Development Impact. The project has led to significant improvements in technical capabilities in CARILEC member utilities. One hundred and fourteen short courses were held and 1909 employees trained over the first 36 months of implementation. Stronger synergies could be attained if the Corporation develops its Joint Services program.

The greatest impact on Utility Management occurred as a result of confidence building through seminars, workshops and meetings of senior utility management facilitated by CARILEC. This led to exchange of ideas and inter-utility camaraderie that should produce sustained cooperative efforts in Personnel Management, Financial Management and other aspects of Power Plant operations. Already, dialogue has led to sharing of information on suppliers and technology to the benefit of decision makers and staff in the utilities.

Principal Recommendations. The Evaluation team concluded its examination of RUMP activities with the following key recommendations:

Strategy for Sustainability. CARILEC should i) Increase the rate of development of Joint Services, ii) Sell services at commercial rates and iii) Broaden its membership base. To expand joint services, CARILEC will have to: 1) make it easier for the Board to approve joint services by generating proposals for specific joint services that clearly delineate cost-benefit to the members; and 2) promote its services through presentations to the member utility Boards' of Directors. Development for services like insurance, technical audits, and procurement may require the services of short-term experts.

Associate Membership. CARILEC should increase its membership from 10 to at least 20 members. Associate membership potential is between 10 to 15 utilities in the Caribbean region. These include larger companies in Jamaica, Martinique and Trinidad and smaller operations in St. Kitts/Nevis and St. Maarten. Associate Membership should be convertible to full membership, hopefully by the expiration of USAID funding.

Strategic Plan. CARILEC should develop a Strategic Plan which should establish specific milestones for revenue generation. The Board of Directors should then set performance targets and hold CARILEC management responsible for attainment of these goals.

Approval Policy. CARILEC should agree to underwrite the majority of the development costs associated with the introduction of new services. The Corporation's share of total costs should be at least equivalent to existing levels for training. Fee rates can be increased gradually to commercial levels after services have been successfully launched. Authorization to start new services should be made on a case by case basis. Consensus and majority decision-making should allow for the introduction of new services for as few as two to three members at a time.

Organization Size. CARILEC should contain its institutional size. The evaluators concur with the concern expressed by most member utilities that CARILEC may lose its flexibility to deliver services as its membership expands. An equitable balance should be maintained between in-house staff capability and the use of external contractors to provide services.

Corporate Capacity. CARILEC should use advisors from the private sector, in non-voting positions and on an honorary basis, who would provide a broader view of corporate growth prospects. The present Board consists of professional engineers with technical backgrounds.

Revenue Base. CARILEC revenue should come from a combination of "shared savings", service fees and membership dues. Shared savings should be based on a percentage of the savings which would accrue to the utilities as a result of joint procurement of goods and services. Additional fees could be generated by increasing training levies and by introducing new services such as technical audits. Dues could be increased by i) raising rates and ii) increasing membership.

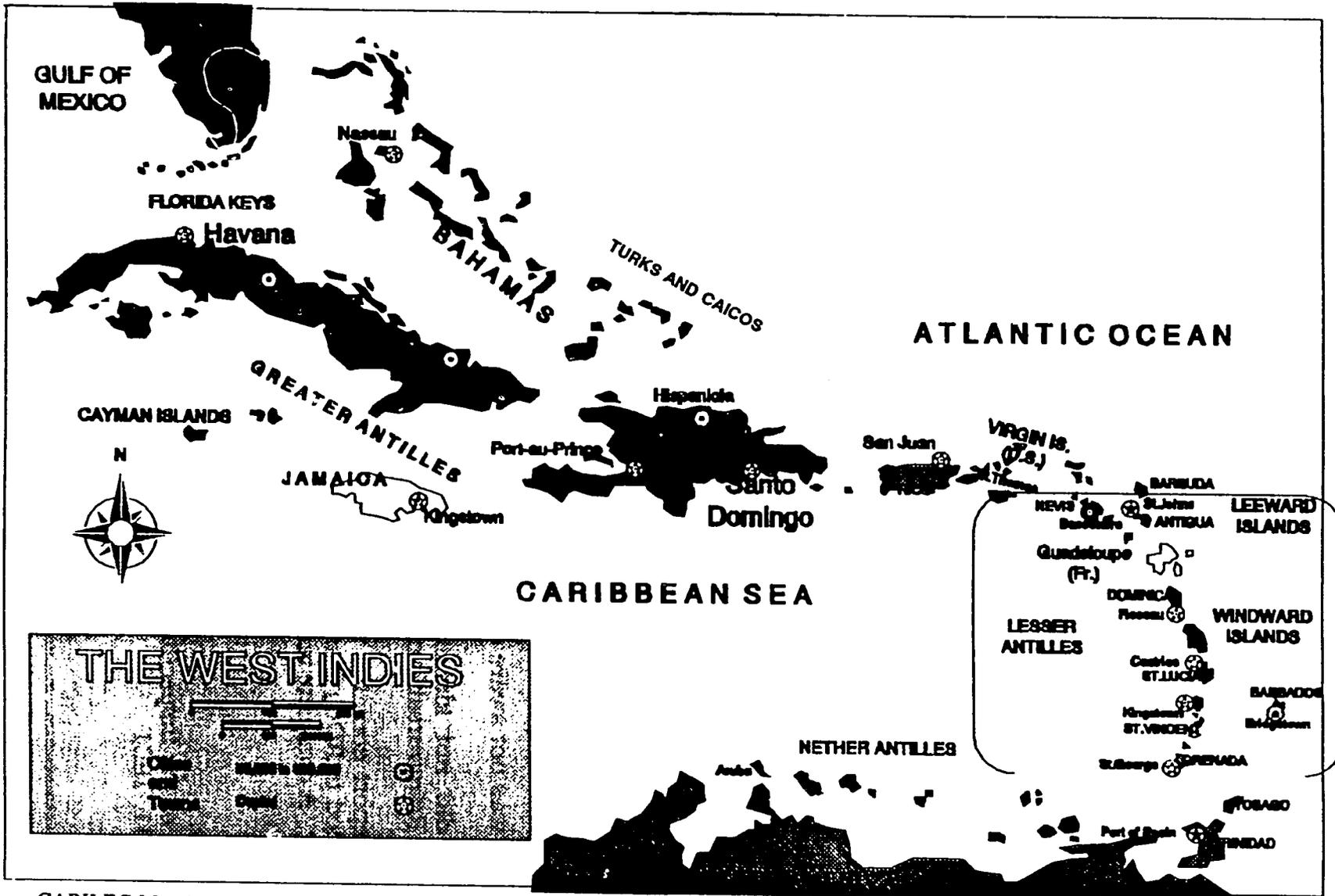
Joint Services. Training should remain as CARILEC's primary service and income generating activity. The Corporation should take a proactive role in the initiation of joint services. Recommended services in order of priority are: Audits - Technical audits have been requested by all members; Insurance - Group insurance represents the most potentially lucrative of the joint services and Procurement - even a small amount of joint procurement among a few utilities should result in a reasonable level of savings.

USAID Support and Monitoring. USAID should consider support for RUMP for three years beyond the July 31, 1993 completion date. Support should be contingent on CARILEC establishing a strategic plan and attaining specific cost and revenue milestones. These indicators should conform to a revised implementation schedule on the basis of amendments to the Project Paper and Cooperative Agreement.

Lessons Learned. The following lessons learned should be used to improve future project design and strengthen project management within RDO/C's portfolio:

1. Where project beneficiaries can be specifically identified and targeted, they should be involved in the design process; in the development of scope of work requirements for contractors and in setting benchmarks and performance targets for each proposed stage of project implementation.
2. Unattainable expectations about impact and performance occur when the need for technical assistance is mistaken for demand. Therefore, critical assumptions about potential project activities should be carefully investigated at the design stage. In the case of RUMP Joint Services, there are obvious benefits and savings to be derived from joint procurement, insurance and technical services. However, the design team, in its attempt to justify immediate provision for these services, failed to reconcile its own perceptions of need with actual demand. The outcome: almost all USAID and NRECA efforts to introduce joint services met with resistance or lack of interest on the part of the utilities.
3. Development projects should include budgeted line items for baseline data management, measurement of impact and management information systems. Impact assessment activities should be defined in grant agreements and in contractor scopes of work. Measurement should be incorporated into work plans and periodic progress reviews throughout the life of project.
4. In order to increase the likelihood of grantee implementation of a strategy for sustainability, the donor should provide funding conditionally so that the beneficiary seeks to attain clearly defined financial and institutional development milestones over the Life of Project.

MAP SHOWING CARILEC MEMBER UTILITIES



CARILEC Members:
 British Virgin Islands
 Anguilla
 Montserrat

Dominica
 St. Lucia
 St. Vincent

Grenada
 Barbados
 Antigua

CARILEC Associate Member:
 Turks and Caicos

SECTION ONE
PROJECT OVERVIEW

OBJECTIVE

The objective of this evaluation was to assess improvements in reliability, efficiency and viability of CARILEC's member utilities and to identify constraints and recommendations for future implementation. While the evaluation team covered all of the issues raised, it became apparent that the major concern and focus was the future sustainability of CARILEC itself. This priority led more to perspectives and opportunities for organizational growth than to extensive observations about reliability, efficiency or viability of the member utilities.

APPROACH

The technical approach adopted by the DATEX evaluation team is described in Appendix B., Methodology Used. The structure and major issues raised in this report were stipulated by USAID in the contractor's scope of work, Appendix C. CARILEC's response to and comments on this evaluation are contained in Appendix F.

REPORT STRUCTURE

This report consists of four sections:

SECTION ONE: PROJECT OVERVIEW

SECTION TWO: ASSESSMENT OF PROJECT PERFORMANCE

SECTION THREE: MAJOR CONCLUSIONS AND RECOMMENDATIONS

SECTION FOUR: LESSONS LEARNED AND FUTURE IMPLICATIONS

The DATEX team put considerable effort into articulating the next essential steps in the implementation process. The team's ideas are contained under Sections III, Major Conclusions and Recommendations and IV, Lessons Learned and Future Implications.

PREAMBLE

Section I provides a synopsis, drawn from the Project Paper and from discussions with senior utility management, of the history, motives and rationale which led up to the development of the Regional Utilities Maintenance Project.

It is important to note that this Project was conceived by the beneficiaries themselves in the early 1980's at a time when donor agencies were concentrating on improving physical infrastructure. At that time institutional development or assistance to 'soft' projects like CARILEC were of questionable value. Consequently, it took the utilities almost ten years to turn RUMP into a reality.

PROJECT OVERVIEW

A. BACKGROUND

The ten island nations of the Eastern Caribbean served by A.I.D.'s Regional Development Office for the Caribbean (RDO/C) are former British colonies whose economies are essentially dependent on traditional agriculture and tourism. Until recently, these countries lacked the technical knowledge and the financial resources to improve and maintain their physical infrastructure. The A.I.D. Infrastructure Expansion and Maintenance Systems (IEMS) Project was designed to help the region address these deficiencies.

The IEMS Project was authorized in September 1985 and is scheduled to end in September 1994. It was designed to provide and upgrade primary infrastructure for agriculture, manufacturing and tourism in the Eastern Caribbean (EC) region.

The Project is in its sixth year of implementation. The goal of accelerating the development of productive enterprise in the EC region was to be achieved by implementing four subprojects: 1) St. Kitts Southeast Peninsula Area Subproject, 2) Grenada Infrastructure Revitalization III Subproject, 3) St. Vincent Infrastructure Subproject and 4) Regional Utilities Maintenance Subproject (RUMP).

B. FUNDING ALLOCATION

The initial IEMS Life Of Project funding was US\$80 million. This was reduced to US\$38.7 million consisting of a US\$19.5 million grant, a US\$14.5 million loan, and US\$4.7 million in local currency equivalent by three participating countries - St. Kitts, St. Vincent, and Grenada. By September 1990, A.I.D. authorized US\$33.9 million of which US\$32.9 million has been obligated to the sub-projects in the following proportion; 38% to St. Kitts, 26% to Grenada, 9% to St. Vincent, and 15% to the Regional Utilities Maintenance subproject (RUMP). To date, US\$23 million has been spent on the four sub-projects. Approximately 12% has gone to the two core contractors, Louis Berger International (LBI) and NRECA for project management assistance.

C. PROJECT ORIGIN

In the 1970s, the utilities in the English speaking EC region were owned and operated by the Commonwealth Development Corporation (CDC). In 1981, CDC indicated that it would begin to withdraw its financial, administrative, and technical support. This action precipitated a commitment by the utilities to meet to discuss common problems and to explore possible cooperative measures for continued operation of their facilities.

The First Caribbean Electric Utilities Conference was held in Barbados May 27-29, 1981. The Conference was co-sponsored by the Caribbean Development Bank (CDB), with USAID funding under the Regional Alternative Energy Systems Project (RAESP), and the Barbados Light and Power Company Limited (BL&P). The National Rural Electric Cooperative Association (NRECA) from the United States was invited to serve as a resource participant as the conference was to explore the common services concept. Subsequent meetings were held throughout the next 7 years and a study was funded by the

Canadian International Development Agency (CIDA) that supported the idea of a common services organization.

Under BL&P's initiative, NRECA and the Florida Power and Light Company (FP&L) prepared and submitted to the United States Agency for International Development Regional Development Office/Caribbean at Bridgetown (RDO/C) a proposal to assist the EC utilities in establishing a common services organization. In January 1988, RDO/C announced its intention to fund a 5-year, US\$5.0 million program to develop CARILEC.

D. DESIGN FRAMEWORK

Through RUMP, CARILEC would 1) conduct training in functional areas, 2) develop local resources to conduct engineering and management analysis, and 3) facilitate joint procurement of goods and services. The organization was to be controlled by member utilities and be self-supporting through user fees for services and training. Annual dues were expected to cover fixed operating costs. The potential for success was based on four critical assumptions described below:

- the EC member utilities must be committed to the development of regional capabilities and have confidence in the common organization concept and performance;
- member utilities will use the central organization's services and not look to other donor agencies for grant funds which may undermine the viability of the common organization;
- each utility must take responsibility for certain aspects of on-site training and will institute programs for trainee career development and
- government and utility support will be given for the long-term. As personnel and policies may change, governments will not pressure utilities into hiring unnecessary personnel.

E. OTHER DONOR INTERVENTIONS

The Caribbean Development Bank (CDB) established loss-reduction programs with St. Vincent Electricity Services Ltd (VINLEC), St. Lucia Electricity Services Ltd (LUCELEC) and the Dominica Electricity Services Ltd (DOMLEC). This assistance was funded by USAID under RAESP and by CIDA. The CDB also funded a 6-month management training program for a qualified manager assigned to the Montserrat utility. The bank has been a major participant in the Regional Energy Action Plan (REAP), a coordinated effort among donors in the EC region (UNDP, USAID and CIDA).

The Organization of Eastern Caribbean States (OECS) coordinated a 1986 CIDA study of the feasibility of establishing a common services organization. The OECS also coordinated the meeting of EC utility training officers which took place in St. Lucia in April 1987. The World Bank has financed a large technical assistance effort in St. Vincent which included considerable technical, engineering, and management training. Several programs were conducted between 1987 and 1990. In addition, the United Nations Development Program (UNDP) funded a Powerplant Engineer for the Anguilla utility under a long-term assignment in June 1988.

SECTION TWO

ASSESSMENT OF PROJECT PERFORMANCE

INTRODUCTION

Section II represents the major focus of this evaluation. It consists of three subsections: A. Implementation Arrangements; B. Phase I: Initial Implementation; and C. Phase II: Institutional Development. The subsections on Phase I and Phase II contain descriptions of activities evaluated, the purpose of each activity, critical assumptions, expected accomplishments, implementation arrangements and major findings.

Major Findings form the nucleus of the evaluators' investigations. These observations are presented under both Phase I and II. Phase I was completed between July 1988 and December 1989. Findings on this Phase therefore provide a retrospective view of the strengths and weaknesses of initial project design and implementation. More importantly, these observations served to establish the institutional setting at the beginning of Phase II, and provided the basis for assessment of the rationale and approach adopted by USAID and the Caribbean utilities for the institutional development of CARILEC.

Phase I Findings represent assessments of CARILEC's formation, the introduction of training programs and delivery of technical assistance to GRENLEC and APUA.

Phase II Findings focus on the effectiveness of CARILEC's Management, the appropriateness and delivery of its Training programs and progress to date on Joint Services.

The evaluators noted that CARILEC had only recently explored the potential for Joint Services. Consequently there was less scope for an in-depth evaluation of the delivery or impact of these activities under Section II. Nonetheless, the evaluation team appraised the Corporation's approach to delivering joint services and investigated operational as well as organizational constraints to developing this Project component. In the process we have identified emerging opportunities for new services and outlined essential prerequisites for a strategic plan to institute the operational framework for their subsequent introduction.

Conclusions about Project effectiveness and impact and principal recommendations about future implementation are contained in Section III, Major Conclusions and Recommendations.

IMPLEMENTATION ARRANGEMENTS

1. DESCRIPTION

a. Purpose and Rationale

The Regional Utilities Maintenance Project (RUMP) was authorized on July 31, 1988 when USAID committed \$5 million to protect and enhance investment in Eastern Caribbean power systems. The purpose of the project is to develop a central organization to source technical services and to coordinate the delivery of joint services on a cost effective and sustainable basis.

The rationale for the Project emerged in the early Eighties as a result of increasing technical deficiencies faced by almost all of the electric companies in the smaller or less developed EC countries. For example Grenada, St. Vincent, Antigua and St. Kitts experienced recurring power failures because of overused or insufficient plant, poor maintenance practices, inadequately trained staff and limited financial planning. Such difficulties were compounded by the high cost or intermittence of local training and the absence of a mechanism to facilitate economies of scale for procuring essential spares, supplies and corporate services. More importantly, unreliable power supply was having an adverse effect on economic development and was becoming a major constraint to improving the region's investment climate.

The purpose of RUMP was to assist eight Eastern Caribbean electric utilities in developing an indigenous common services organization. The organization was supposed to meet training and 15 joint services needs within the first five years of the project. The underlying goal of the Project is to help electric utilities to improve service reliability and to improve operating efficiencies and financial viability in each of the targeted countries. To this end USAID, under two separate Cooperative Agreements, committed technical assistance and grant funds to the regional utilities and for funding start up and operating costs of the Caribbean Electric Utility Services Corporation (CARILEC).

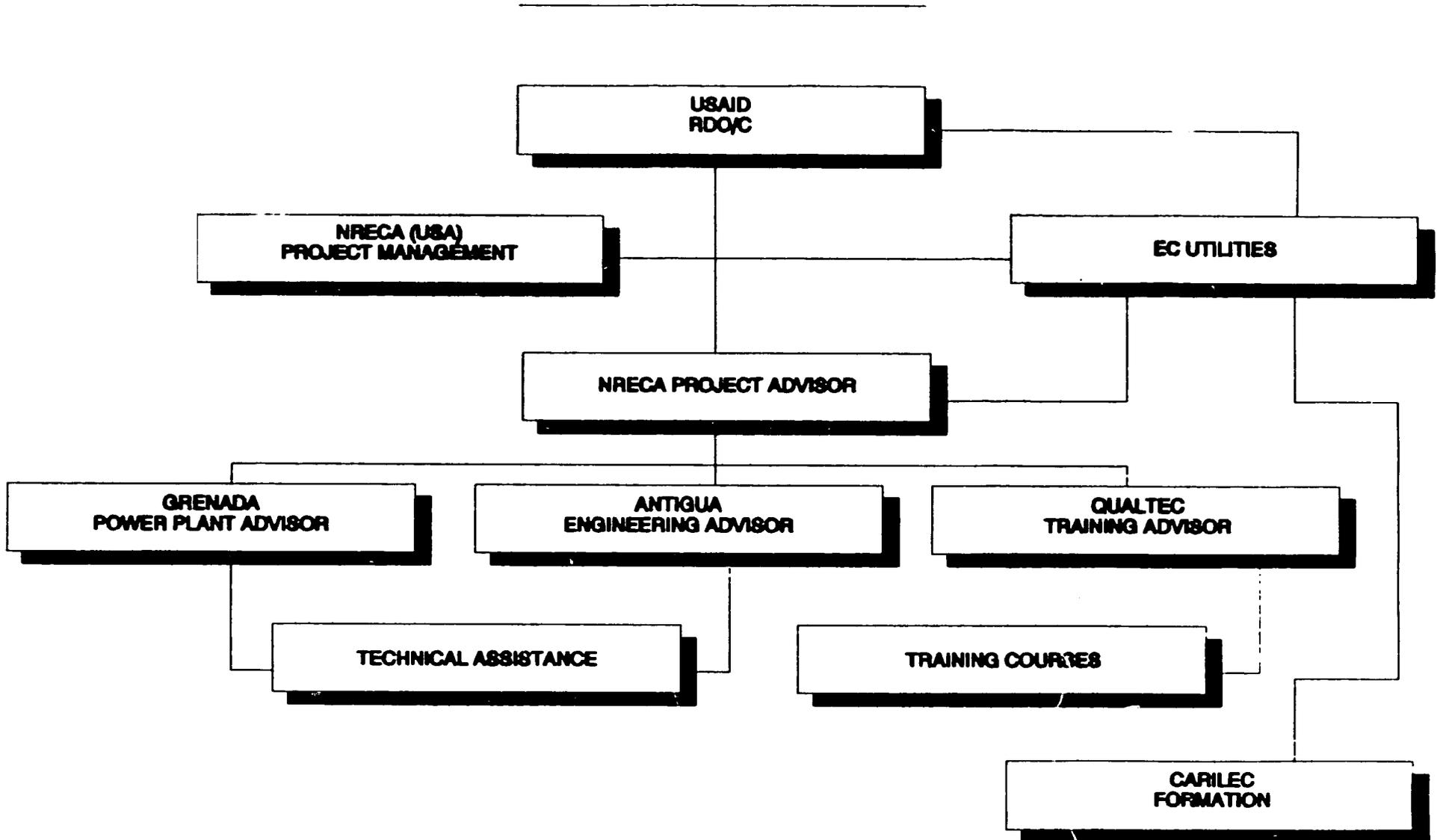
Eight countries were targeted as principal project beneficiaries: Antigua, Anguilla, St. Lucia, St. Vincent, Dominica, Grenada, Montserrat and St. Kitts. Since the Project was intended to be regional in scope non EC members would be encouraged to participate. It was envisaged that other countries like Barbados, The Bahamas, The Virgin Islands, Belize, Haiti, Jamaica, Trinidad and Tobago and Martinique and Guadeloupe would eventually solicit training services as associates and would pay market rates (full cost) for program participation. However countries not earmarked under the Project were not expected to participate in CARILEC's joint services.

2. IMPLEMENTATION ARRANGEMENTS

a. Implementation Strategy

RUMP activities were scheduled in two phases. Phase I would last 12 months and be executed by NRECA and QUALTEC. An illustration of the actual organizational structure and Phase I implementation arrangements is provided in Chart I. Phase II would cover 48 months and would be administered by CARILEC.

CHART I
RUMP ORGANIZATIONAL STRUCTURE
Phase I: Initial Implementation



The targeted utilities wanted the full \$5 million grant to be disbursed to CARILEC. In turn, the Corporation intended to award contracts to NRECA and QUALTEC. However RDO/C was unable to use this option since a designated grantee must exist legally, have stated policies, accounting systems, controls and a record in project management to receive AID grant funding.

For Phase I, USAID entered into a \$1.5 million Cooperative Agreement with NRECA on July 1, 1988 to "assist the electric utilities to establish a common services corporation and initiate training activities intended to increase the efficiency of technical, administrative and managerial personnel." (Attachment 2, Program Description. NRECA/USAID RUMP Cooperative Agreement No. 538 0138.8-A-00-8176.) Emphasis would be placed on training a cadre of local trainers capable of continuing NRECA's work. Programs would include basic courses, job training and safety, technical skills and management and supervision.

NRECA had to provide technical assistance to develop local (utility member) staff capable of performing management consulting, procurement and other specialized services for members of the Corporation. NRECA was also required to provide direct assistance to Grenada by supplying a management advisor and a power plant engineer to the Grenada Electricity Services. To carry out these tasks NRECA negotiated a sub contract with QUALTEC Inc., a non-regulated subsidiary of Florida Power and Light (FP&L) for delivery of training programs and technical assistance to GRENLEC. There was also a need for joint services to improve the operating efficiency and financial soundness of the island utilities by:

- upgrading the technical and professional skills of employees through training programs to improve productivity and realize the useful lives of installed facilities;
- upgrading the effectiveness of utility plant investment through systematic planning;
- making available needed long-term technical assistance services for critical positions where local staff cannot be trained quickly; and
- lowering the operating cost of the participating utilities through joint efforts in purchasing, engineering, and other services that can be provided at a lower cost through a group effort.

The Project design placed a major emphasis on the training of trainers. In the area of vocational basic skills, at least one trainer was to be trained for each utility. For mid-management training, curricula and trainers were to be developed within regional institutions. For the specialized training, a catalogue of well-established, high quality programs, courses, and conferences would be maintained and made available to interested utilities. Annual program assessments were to be conducted to ensure that the utilities' specific training requirements were being appropriately addressed.

For Phase II, USAID would enter into a \$3.5 million Cooperative Agreement with CARILEC to "provide support for a program to assist the Caribbean Electric Utility Services Corporation to improve the operating efficiency and viability of its member electric utilities". (CARILEC/USAID Cooperative Agreement No. 538 0138-A-00-9169-00 Attachment 1. Schedule.) According to the Project Paper, the Corporation would take over implementation from NRECA but would use both NRECA and QUALTEC under separate contracts over the remaining Life of Project (LOP).

PHASE I
INITIAL IMPLEMENTATION

1. INPUTS, TASKS AND PRIORITIES

a. Inputs and Tasks

In August 1989, NRECA had to focus on three principal tasks: i) establish a not-for-profit corporation to take over implementation for Phase II; 2) develop training programs and joint services in accordance with the NRECA/USAID Agreement and 3) deal with critical circumstances affecting the Grenada Electricity Services Limited (GRENLEC).

The RUMP training component would focus initially on member utilities' critical training needs. Training programs for entry-level through senior personnel would be provided in i) Basic Utility Skills, ii) Job Safety, iii) Technical Skills, iv) Professional Skills and v) Utility Management.

The Project Paper indicated that the training component would create a corps of 20 trainers over five years and help to upgrade the skills of over 500 employees in 43 courses pertaining to 12 different areas of specialization. Table I presents the Project Paper's targeted achievement for the training, joint services, and technical assistance components over the Life Of Project.

TABLE I
PROPOSED PROJECT COMPONENTS AND TARGETED ACHIEVEMENTS

Basic Project Elements	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
Basic Training (No. Of Trainers Trained)	8	5				13
Job Training and Safety (No. of Weeks) (No. of Trainers)	15 0	40 2	40 5			95 7
Regional Training (No. of Courses)	3	6	7	7	7	30
Joint Services Program (No. of Programs)	2	3	4	4	2	15
Technical Assistance (Person Months)	25	15	10	5	5	60

Source: USAID Project Paper, July 1988

The Project Paper design provided for joint services in engineering, management, and procurement. To this end the project would assist with the design, training for, and implementation of the following joint services:

<u>Engineering Services</u>	<u>Management Services</u>	<u>Procurement Services</u>
Load Forecasting Studies	Operational and Financial Audits	Insurance
Capacity Expansion Studies	Compensation Studies	Poles, Conductors, and
Distribution System Studies	Management Information Systems	General Stores
Unit Assemblies and	Consumer Relations	Emergency Supplies
Loss of materials	Productive Development Projects	Fuel
Network Mapping	Accounting	Printing
Cost of Service Studies	Collections	
Monitoring Equipment	Co-generation Analysis	
Loss Reduction Evaluation		

A customer satisfaction survey would be made at the beginning, at mid-term, and at the end of the Project. The survey would not provide a measure of cost-effectiveness per se but would measure the public's perception of improved conditions for economic development.

The end of Phase I would be a Project benchmark. By that time, the following accomplishments should have occurred:

- The Corporation will be legally instituted with a charter, by-laws, etc.
- The Corporation's accounting procedures, bookkeeping standards, and cash management practices will be in place and acceptable to A.I.D.
- At least seven of the target countries will be members of the Corporation
- The basic skills training course will be designated and in-country trainers will be trained.
- A detailed analysis of procurement activities will be prepared and agreed to by the member utilities.
- At least three regional consulting services will be developed and ready to offer assistance.
- Key staff will be in place.
- The contracts between the Corporation, NRECA, and QUALTEC will be drafted and acceptable to A.I.D.
- A revised/updated projected financing plan showing progress towards and future requirements necessary to meet the goal of financial self-sufficiency by end of Project.

b. Priorities

NRECA's Phase I priorities were to i) immediately provide direct transfer of technical assistance to the Grenada utility, GRENLEC, which urgently needed operational support, ii) establish the organizational framework for subsequent management and implementation of Project activities by an indigenous service entity and iii) deliver technical training to the targeted utilities.

At the beginning of the Project, nine of the ten utilities functioned without structured training programs. Most training was based on working alongside senior personnel and learning from ad hoc observations. Barbados Light and Power was the single exception, but while involved with the project, BL&P was not an A.I.D.-targeted utility. Therefore NRECA and QUALTEC had almost complete

discretion in designing and executing the initial training programs. To successfully accomplish this task NRECA had to develop a sound understanding of each utility's needs.

Priorities for joint services were to be determined by the common organization's Board of Directors. Training programs and joint services would be reviewed annually by an executive committee composed of Board representatives. These activities would be subject to RDO/C oversight with the organization assuming total responsibility after RUMP funding ended on July 31, 1993.

2. PROJECT IMPLEMENTATION

a. Project Changes

Three major changes occurred during Phase I: 1) two additional countries were invited to become full members of the common services organization; 2) technical assistance, originally scheduled for Grenada only, was also committed to Antigua, and 3) CARILEC moved its offices from Barbados to St. Lucia.

Under the NRECA/USAID Cooperative Agreement, ten countries were targeted for RUMP grant-financed assistance: the eight original beneficiaries plus Barbados and the BVI.

According to the Phase I Agreement, NRECA was to provide a Management Advisor to GRENLEC for a 6 month period; beginning not later than 3 months after execution of the Cooperative Agreement with RDO/C. QUALTEC would supply GRENLEC with a Power Plant Engineer for a period of 12 months, beginning not later than 1 month after Project initiation. GRENLEC decided that it did not need a Management Advisor. About the same time, the Antigua Public Utilities Authority (APUA) asked RDO/C for an Engineering Advisor. RDO/C re-directed RUMP funds for that purpose. QUALTEC assigned a Power Plant Engineer to GRENLEC in September 1988. A Transmission/Distribution engineer was contracted by NRECA to work with APUA in November 1988.

In the Project Paper design, A.I.D. was to fund a Training Advisor for the 5 year Life Of Project. The Advisor would work with a CARILEC Training Coordinator but would be responsible for developing courses and curricula; making logistical arrangements for the training programs; conducting the actual sessions, and evaluating impact. Towards the end of the Project, the CARILEC Training Coordinator would take over these responsibilities. The QUALTEC Advisor, however, was contracted for one year only.

The CARILEC Coordinator was to be hired locally to design, implement, and evaluate training programs. During Phase I, the Coordinator was to receive on-the-job training at utility educational centers in the United States and would be assigned to work with the participating utility Training Officers to update priorities and organize structured programs. This input was never utilized during Phase I because it took about one year, ie. almost the whole of Phase I, before CARILEC was incorporated. The absence of this resource at the start of the Project caused noticeable weaknesses in the implementation of QUALTEC programs and led to a re-establishing of training priorities by CARILEC at the beginning of Phase II.

b. Implementation

i. CARILEC Formation

Phase I was expected to cover the duration of the NRECA/USAID Cooperative Agreement from July 1, 1988 through August 31, 1989. During that time CARILEC would be formed and made fully operational by NRECA and the Corporation's member utilities. Therefore there was to be close collaboration between NRECA and the designated utilities. NRECA would take the lead role in getting the organization incorporated and was to facilitate start-up at the Board of Director's level as well as assist with personnel selection and office management. In turn, the utilities would meet at scheduled intervals to discuss and agree on Corporation by-laws, set up an interim executive structure and appoint essential staff for key long term positions.

In October 1988 NRECA prepared corporate by-laws for consideration by the utilities. The by-laws were presented and revised at an organizational meeting in Grenada in November. The Scope of Work for an Executive Manager was approved and the position advertised regionally in December 1988. The meeting was attended by representatives from seven of the ten targeted utilities: Grenada, Montserrat, St. Lucia, Dominica, Antigua, St. Vincent and Barbados. St. Kitts, Anguilla and the British Virgin Islands (BVI) representatives were unable to attend. In January 1990, St. Kitts declined CARILEC participation because of difficulties with another regional organization which the St. Kitts/Nevis Government was experiencing at the time.

On May 25-26, 1989 the utilities approved the by-laws, selected Mr. Christopher Farrell for the Executive Manager position and reviewed a Project Paper Summary and proposed budget for Phase II funding. Reservations were expressed about several items in the Project Paper, notably procurement, consulting and other joint services, which the utilities did not consider as a top priority. The utility managers and USAID agreed to negotiate activities to be covered by the CARILEC/USAID Cooperative Agreement for Phase II. Another meeting was held in July to follow up on the draft Cooperative Agreement and discuss a proposed NRECA/CARILEC short term technical assistance contract.

CARILEC was legally incorporated as a not-for-profit corporation in July 1989. The Executive Manager was hired under an NRECA contract in September 1989 on the understanding that CARILEC would take over the obligation once funding became available under the Phase II Agreement. On August 15, USAID and CARILEC entered into a Cooperative Agreement for Phase II implementation.

On August 28, 1989 the NRECA Phase I Cooperative Agreement, originally targeted for completion by August 31 1989, was amended to December 31, 1989 to accommodate the project management changeover from NRECA to CARILEC. The NRECA Training Advisor left the project on September 8 and, in view of the limited time remaining under the extension, was not replaced. About the same time, CARILEC informed QUALTEC and NRECA of its decision to modify arrangements for technical services after the expiration of the NRECA/USAID Agreement.

The Corporation's founding members were Grenada, Montserrat, St. Lucia, Dominica, Antigua, St. Vincent and Barbados. The first corporate meeting was held in October 1989. This was followed by a Board Meeting at which the key officers were elected:

CARILEC EXECUTIVE MANAGEMENT

<u>Position</u>	<u>Name</u>	<u>Organization</u>
Chairman	Bernard Theobalds	LUCELEC
Vice-Chairman	Joel Huggins	VINLEC
Secretary	Christopher Farrell	CARILEC

CARILEC began experiencing difficulties with its domicile status in Barbados as early as October 1989. In November, the Corporation advertised for a Training Coordinator. Interviews were conducted in January '90. Also in January, CARILEC entered into a twelve-month contract with NRECA for the Association to provide advisory services in Administration; on CARILEC/USAID contractual issues; and on training and contractual procedures for contractors.

In summary, processing delays resulted in a four-month overlap of Phase I and Phase II implementation. Prior to signing its Cooperative Agreement, CARILEC expressed concern about proposed joint services that were not considered as top priorities to its members. The NRECA/USAID Agreement was extended to December 31, 1989 and then amended to March 15, 1990. The Corporation also entered into a short term contract with NRECA for advisory services for the first full year (1990) of project management. However, at the start of the CARILEC/NRECA contract CARILEC's Training Coordinator was not in place although the QUALTEC Training Advisor had departed post since September 1989.

ii. Training Programs

QUALTEC, through its subcontract with NRECA was to provide a Training Advisor to develop and coordinate the major portion of Phase I training courses. The NRECA/QUALTEC subcontract was negotiated by October 1988. Due to staffing delays a permanent Advisor did not arrive in Barbados until January 1989. The Advisor, Bill Grass, spent his first three months developing a detailed plan based on discussions with utility training officers and a review of their programs and priorities. All QUALTEC programs were carried out over the six month period from March to August 1989 (Table II). QUALTEC's training was completed in the same month that CARILEC entered into its Cooperative Agreement for Phase II but no provision was made to transfer QUALTEC's training systems to the Corporation.

Concurrently with QUALTEC training, NRECA conducted three courses under Phase I. In May 1989, a Consumer Relations course organized in St. Vincent attracted 17 participants from eight utilities; in June, nine employees (one from each utility) were sent to the US for a three week Job Safety and Training course in Louisiana. Thereafter, 3 participants attended a seven week senior management course on Organization, Management and Operations in Texas and Washington D.C.

All Project Benchmarks for Phase I training program were met. Sixteen participants from member utilities were certified as trainers under the "Training-of-Trainers" (TOT) component. Four regional courses were developed. Twenty three training sessions were held for 414 participants. In addition, seminars were organized for Chief Engineers and Financial Controllers, and for power generation and diesel engine performance personnel.

TABLE II
QUALTEC PHASE I TRAINING PROGRAMS
March - August 1989

Date	Course Description	No. Trainees	Cost/Trainee
March 1989	Train The Trainer	16	\$1,129
May-June 1989	OJT Instruction	55	432
May-June 1989	Diesel Mechanics	18	3,046
May-June 1989	Equipment Maintenance	18	620
June 1989	Line Loss Reduction	16	776
Total/Average		385	\$597

Source: NRECA Final Report, Phase I, June 1990

The apparent success of the Phase I Training Program with regard to numbers of courses and participants was not complete, however. The utilities believed that there were significant problems with contractor/utility coordination, relevancy of course content, and course scheduling.

iii. Technical Assistance

The major activities of the GRENLEC Power Plant Advisor over the 12 month period from September 1988 to August 1989 were:

1. Development of specifications for a Maintenance-Hour Reporting System and Inventory Ordering Report.
2. Technical assistance on a 2.04 MW General Motors diesel unit supplied by USAID.
3. Writing of technical specifications for a power station monitoring system (SCADA), including points to monitor, types of sensors, and routing and installation of sensor wells.
4. Providing assistance to GRENLEC in several projects not anticipated in the Project Paper, such as: conducting a seminar on Routine and Preventive Maintenance to the Regional Water Commission personnel, assisting in the design of a sewage lift station, and design of a street lighting circuit around the inlet of St. George's.

A Request For Proposal (RFP) was developed for a Microprocessor-Based Station Monitoring System in January 1989. GRENLEC wanted the system in place by July 1989. The RFP has not been issued because of financing constraints.

The principal activities of the APUA Transmission/Distribution Engineer over the 7 month period from November 1, 1988 to June 8, 1989 consisted of 1) Transmission Assistance, 2) Distribution Assistance, 3) Engineer training, 4) Computer Training, 5) Software applications, 6) Workshops and 7) Other Training.

The Advisors functioned as hands-on engineers at both GRENLEC and APUA. They participated in the day-to-day operation and maintenance of utility plant. The recipient utilities rated the TA as excellent and of great benefit. In the case of APUA, the assistance was essential to utility network operations because of the unexpected resignation of two senior engineers just prior to the Advisor's arrival. Consequently the Advisor was also involved in on-the-job training of a young engineer at APUA.

The TA engineers provided assistance to structure (and in some instances establish) operations and maintenance procedures. Computer training was provided (in some cases in special classes after normal working hours) and a number of useful software design and analysis packages were installed and taught. One interesting outcome of the TA was that the utilities increased their procurement of U.S. equipment and supplies as a result of trainee familiarization with equipment from the United States.

3. MAJOR FINDINGS

a. Adequacy of Development Mechanism

The approach taken by AID to establish CARILEC was implemented with significant efficiency: Essential corporate decisions, such as by-laws approval, legal incorporation, appointment of Officers, Agreement content, and selection of an executive officer were all made within the first 10 months of implementation. The Corporation also opted for its own strategic approach to Phase II, met most of its conditions precedent and secured an advance drawdown of obligated funds within the same time frame. By project implementation norms in the Caribbean, this would rank as one of the more impressive starts to a donor project.

However, despite its relative success, there were two inherent flaws in the approach. First, the utilities had minimal involvement in Project Paper design. The result: the Project Paper identified priority areas for implementation for which NRECA accepted start-up responsibility but which were never perceived as essential activities by the utilities. Second, since training was CARILEC's *raison d'être*, there should have been much closer collaboration than was the case during Phase I. These concerns are discussed below under *Appropriateness of Phase I Training* and *Impact of TA On Service Efficiency*.

b. Achievement of Phase I Benchmarks

NRECA and CARILEC had to achieve ten major benchmarks during Phase I. Of these, four (incorporation, train the trainers, membership and regional courses) were fully accomplished; three (accounting systems, procurement analysis and staffing) were in progress and three (consulting services, financial planning and contract extensions) were deferred by CARILEC. (Table III: Phase I Benchmarks vs. Accomplishments.)

TABLE III
PHASE I BENCHMARKS VS. PROJECT ACHIEVEMENTS
As at September 30, 1991

BENCHMARKS	PROJECT ACCOMPLISHMENTS
1. Corporation legally instituted with a charter, by-laws, etc.	CARILEC Articles of Incorporation signed by 7 member utilities in May 1989.
2. Corporation accounting procedures, bookkeeping standards, cash management practices in place and acceptable to USAID	Accounting system developed by Peat Marwick and revised after discussions with RDO/C between May 1989 and August 1989. Procedures and practices not acceptable to IG auditors in November 1990.
3. At least 7 of the target utilities or countries will be members of the Corporation	7 utilities joined CARILEC in May 1989. Two more members plus one associate member joined by June 1990.
4. Basic skills training course designed and 8 in-country trainers are being trained	16 participants from 9 member utilities received training instruction but none are active trainers in their utilities.
5. Detailed analysis of procurement activities will be prepared and agreed to by member utilities	Preliminary survey conducted by NRECA. Joint procurement not included by USAID and CARILEC in the Phase II Agreement.
6. At least three (joint) consulting services will be developed and made available to CARILEC members	Attempted by NRECA and QUALTEC. CARILEC Board deferred development of these services in favor of training emphasis.
7. At least three regional training courses will be completed	4 regional courses developed between January 1 and June 30, 1989
8. The Director, Training Coordinator, and key staff will be in place	Executive Manager hired on September 17, 1989. Hiring of Training Coordinator and Accountant completed in July and October 1990 respectively.
9. Contracts between the Corporation, NRECA and QUALTEC will be drafted and acceptable to USAID	NRECA Phase I contract extended at no additional cost until December 31, 1989. QUALTEC contract not extended.
10. Revised/updated financial plan to meet the goal of financial self-sufficiency by the end of the Project	Financial planning not initiated during Phase I.

Source: NRECA/USAID Cooperative Agreement and DATEX Team Findings, September 1991.

The developing of consulting capabilities was deferred because it did not form part of CARILEC's immediate agenda. As mentioned earlier, CARILEC decided not to offer long term subcontracts to either NRECA or QUALTEC. No explanation was given to the evaluation team for the absence of a financial plan to meet the goal of self-sufficiency by the end of Project.

c. Appropriateness of Phase I Training

The CARILEC Training Coordinator and member utilities felt that Phase I training activities did not fully meet their needs. They stated that a formal Needs Assessment was not completed and that coordination between the utility Training Officers and the QUALTEC Training Advisor was inadequate. For example, while the "Training-of-Trainers" component was apparently successful, persons trained were not functioning as trainers within their respective utilities. The utilities maintained that this was due to improper selection of trainees as a result of insufficient interchange about course content, objectives, and requirements.

The utilities appreciated QUALTEC's assistance with the early training program. However, they all asserted that too many courses were presented in too short a time for participants to fully absorb and put most of the knowledge imparted into practice. The General Managers praised the quality of the NRECA and QUALTEC courses but pointed out that course content was not completely relevant to their operations.

All of the Training Officers interviewed agreed that such problems could have been avoided if there had been more coordination on the development of the structure and design of programs. They concluded that a CARILEC Training Coordinator should have been hired to work side-by-side with the QUALTEC Training Advisor as suggested in the Project Paper design.

d. Upgrading Plant of Assisted Utilities

In February 1989, GRENLEC was experiencing capacity problems as three of its ten generation units were being overhauled. Also, demand for electricity was 28 percent higher than forecast for 1989 and 1990. The 1990 Annual Report states that GRENLEC experienced a 10.7 percent and 10.6 percent increase in total load demand and maximum demand over 1989.

GRENLEC has 5 different types ranging in size from 620 kilowatts to 2.04 megawatts for a total installed capacity of 13.5 megawatts. This configuration poses a challenge for the maintenance of an accurate store of spare parts. The small unit size is beneficial if one or two units must come off-line for repairs. However, in 1990, with a peak demand of over 10 megawatts, the Power Station had limited reserve capacity because at least one unit was always being repaired. As a result the Station fell behind considerably with scheduled maintenance.

GRENLEC began installing a new 5 MW diesel generator in February 1989. The installation could not be completed in 1989 because of delays in construction of the building to house the unit. The Power Plant Advisor estimated that the unit would be on-line by January or February 1990. When the evaluation team visited the plant in September 1991, the generator was still being installed. Thus, while it was essential to expand capacity because of increased demand, the evaluation team concluded that GRENLEC should have opted for a turnkey package to guarantee more efficient installation of the new unit.

APUA has a generation capacity of over 40 MW with a maximum demand of under 20 MW. This would seem like ample reserve, but they still have generation problems according to the Electricity Manager. APUA has two 9.2 MW steam turbines which were installed in 1989. Both were taken off-line recently because of maintenance errors in oiling the machines. The manufacturer's warranty was void however, because APUA had defaulted on its loan payment. The Authority therefore had to bring the units back on line at full cost.

In summary, there was no evidence to suggest, apart from GRENLEC's purchase of a fiberscope, that technical assistance to GRENLEC or APUA had led to an upgrading of utility plant investment in Grenada or Antigua. The evaluators noticed a growing level of professional confidence at the Grenada power plant which is attributed partly to RUMP technical assistance.

e. Effect of Technical Assistance

The daily operations of the utilities were improved as a result of RUMP TA. The true measure of this support however, is more likely to be reflected in sustainable improvements in policy, operating procedures, and maintenance practices over time. There are clear instances where Advisor guidance has taken hold. For example, APUA is phasing in special connection techniques for aluminum conductors and GRENLEC has instituted monitoring procedures for its diesel generators.

A good indicator of improvement is utility management perceptions about the benefits of RUMP technical assistance. The GRENLEC Manager stated that the greatest benefits were in the areas of knowledge concerning planning, improved maintenance, and the systematic identification of cost effective equipment by the Power Plant Advisor. For example, GRENLEC purchased a US\$13,000 "fiberscope" to inspect the internal parts of its diesel engines. The use of this instrument has reduced maintenance downtime and has increased operational efficiency. However, funding restrictions were preventing some of the Advisor's recommendations from being implemented.

Technical Assistance to APUA was well received and appreciated. The Electricity Manager told the evaluation team that he became "computer literate" because of this. In addition, the engineer who was trained by the Advisor is still with APUA and using much of the knowledge gained under the TA program. APUA now publishes a quarterly newsletter with software that was installed by the Transmission/Distribution Engineering Advisor. The Authority is routinely "staking" lines and using some of the network analysis software. APUA is interested in the "total Scott package" of analysis software but cannot afford to purchase the \$20,000 system at this time. Finally, APUA is beginning to phase in compression connectors as a result of advice provided by the NRECA Engineer.

There were also instances where some of the knowledge gained was being lost. For instance, recommendations to purchase specialized testing or operational equipment were not implemented because of budget constraints at GRENLEC and APUA. Some software reporting/ monitoring and inventory systems were not being used on a daily basis because of a lack of personnel or loss of training skills. A significant amount of "hands on" training occurred in a relatively short period of time. Retention without immediate and repeated use must be expected to decline over time.

Unit operators monitor power plant operations at GRENLEC. They report to a central supervisors' office where system status is tracked on a chalkboard. Because of RUMP technical assistance and CARILEC training, the operators are now more competent at monitoring power plant systems.

GRENLEC transmission and distribution efficiency improved from a 19.8% loss in 1988 to a 14.7% loss in 1990, due mainly to the adoption of Advisor recommendations to replace conductors with larger sizes. The company had been using new line construction techniques learned during CARILEC training for the installation of US\$100,000 of new transmission line. Two 12-member teams were using techniques learned to install a "hurricane-proof" line.

f. Impact of TA on Service Efficiency

It was somewhat difficult to measure the impact of technical assistance on GRENLEC or APUA service efficiency. There were two reasons why this was so. First, CARILEC had not established a database system to monitor impact. The CARILEC Board pointed out that RUMP technical assistance was initiated in Phase I but did not form part of the Phase II Agreement. Therefore they were not assigned responsibility for maintaining a monitoring system for that purpose. Second, although the Project Paper identified potential "measures-of-merit" to quantify improvement, it was difficult to isolate causal relationships between provision of technical assistance and specific areas of improvement in utility operations. For instance, an increase in overall system efficiency could be the result of installation of new, more efficient and reliable generators in conjunction with the introduction of standardized maintenance procedures or computerized system monitoring systems.

Table IV provides Measures of Merit indicators developed by the NRECA in the Project Paper to review utility performance since Project inception. Complete data were only available for five of nine members. The indicators revealed the following:

- VINLEC outperformed all other utilities on reduction in line losses; the company also increased its customer base and increased its consumer to employee ratio.
- GRENLEC showed similar improvements; increasing its customer base, reducing its staff, increasing its consumer to employee ratio and reducing its line losses.
- BL&P and LUCELEC increased their customer base but their consumer to employee ratios also rose because of greater proportional growth in additional workers. LUCELEC's operating costs per consumer declined by 18% while BL&P's increased by about 25%.
- MONLEC increased its consumer base and reduced its operating costs per consumer.
- APUA's performance declined although RUMP technical assistance was beneficial. Number of employees increased by 26%; line losses by 50% and the consumer to employee ratio decreased by 16%.
- The Anguilla Electricity Services Company (ANLEC) increased its customer base but also increased its staff from 38 to 60 employees. This reduced its consumer to employee ratio.

TABLE IV
" MEASURES OF MERIT "
As at September 30, 1991

Utility	Number of Consumers	Number of Employees	Consumers/ Employee	Operating Cost \$ millions	Operating Cost Per Consumer	Percent Line Loss
GRENLEC:						
1988 PP	17,627	237	74.4	4.6	260.9	19.8
1990 Report	19,202	187	102.7	6.8	354.1	14.7
LUCELEC:						
1988 PP	20,257	212	95.6	11.9	587.5	16.1
1990 Report	27,283	225	121.3	13.1	480.2	13.7
BL&P:						
1988 PP	79,318	474	167.3	33.8	426.1	8.2
1990 Report	85,358	460	185.6	45.1	528.4	7.9
APUA:						
1988 PP	17,345	211	82.2	n.a.	n.a.	16.0
1990 Report	18,400	265	69.4	n.a.	n.a.	25.0
ANLEC:						
1988 PP	2,475	38	65.1	1.0	404.0	n.a.
1990 Report	3,174	60	52.9	n.a.	n.a.	29.4
DOMLEC:						
1988 PP	13,383	132	101.4	n.a.	n.a.	14.1
1990 Report	18,388	165	111.4	n.a.	n.a.	14.2
MONLEC:						
1988 PP	4,062	67	60.6	2.0	492.2	13.3
1990 Report	4,305	70	61.5	1.7	394.9	15.4
VINLEC:						
1988 PP	14,657	251	58.4	5.9	402.5	22.0
1990 Report	18,885	281	67.2	8.4	444.8	7.6
BVIC:						
1991 Info *	6,868	139	49.4	n.a.	n.a.	10.2

PP = Project Paper
* = Information Provided By CARILEC
n.a = Information Not Available

Source: RUMP Project Paper and Utility Annual Reports, September 1991

g. Usefulness And Limitations of Data

To obtain a clearer understanding of the relative utility efficiency, Measures Of Merit data should be combined with other utility indicators. Grenada improved its operating performance, probably more because of CARILEC training and RUMP Phase I technical assistance than the other utilities. Operating costs per consumer for St. Lucia and Barbados have increased presumably because of recent costs of installation of new plant and partly because capacity precedes consumption (number of new consumers) in well-run utilities. MONLEC is back on stream after a devastating hurricane in 1989 but its line losses have increased partially as a result of the emergency nature of the rehabilitation work after the hurricane.

Relative standards will be more appropriate than uniform benchmarks. In the case of Anguilla, line losses of 29.4% cannot be compared with St. Vincent's line loss of 7.6%, which is better than the average US utility, because there are finite limits to benefits to be derived from significant reductions in line losses in a small territory like Anguilla (population less than 8,000). Such differences in economies of scale must be taken into account if comparative analysis is to prove meaningful to decision-makers.

To improve the usefulness of utility statistical data, CARILEC will have to classify its members into groups or levels on the basis of operational scale; establish efficiency standards for each group and monitor performance against each set of standards. Despite the absence of such a system, the data in Table IV is still indicative of future trends, especially in utility ownership. For example, the Grenada and St. Vincent utilities now represent the best opportunities for privatization because of steady consumer growth rates, consistent improvements in operating performance and the recent installation of new plant and equipment.

This illustration accentuates the need for CARILEC to maintain an appropriate database of both quantitative and qualitative information on its members. Moreover, database analysis should reveal new service opportunities such as business valuations for privatization and allow CARILEC members to use selective operational and financial statistics to strengthen their negotiating positions with insurance brokers and suppliers.

h. Customer Satisfaction Survey

Customer surveys were to be carried out at the start, mid-term and end of the project to measure consumer perceptions of improvements in quality, reliability and continuity of utility service. The first survey was carried out by NRECA between July 27 and October 20 1989. Consumer perceptions of electricity services were compared with water and telephone services in the countries surveyed. On an overall scale, utility performance was compared using ratings given by consumers in each respondent country. The utilities, however, had mixed reviews on the results. Some members felt that both sets of comparisons were i) inappropriate, because water and telephone utilities in their countries were at different stages of development to the power plants' and ii) distorted, because most of the utilities are also at different stages of operational progress.

There is not enough time left under the existing Life Of Project to justify mid term and/or final surveys. If the Project is extended, USAID and CARILEC should consider executing two additional surveys; one in 1992 and the other about six months prior to the revised end of project, in at least 5 of the nine member countries.

4. CONCLUSIONS

a. Introduction

The evaluation team drew both definitive and tentative conclusions about Phase I design and implementation. Conclusions on AID's approach to project design and NRECA's start-up activities and technical assistance were based on adequate empirical evidence.

The previous RDO/C Chief of the Infrastructure Office, who was also the RUMP Project Officer, departed post and was not replaced for at least 12 months prior to this evaluation. Therefore it was not possible to obtain his response on equally critical issues such as the absence of utility involvement in project design or reasons for the lack of tangible commitments to joint services in the CARILEC/USAID Phase II Agreement. Furthermore, there was no supporting documentation on these issues. For answers to such questions, we have relied on verbal recall of persons who were involved peripherally in project design and initial implementation.

b. Conclusions

- RUMP was conceived to establish a common services organization to meet training and joint services needs of its member utilities. However the absence of utility involvement in Project Paper design led to an emphasis on joint services which was not shared by CARILEC members.
- Insufficient utility involvement resulted in NRECA priorities and benchmarks in Phase I which were unattainable because of the divergence in perception between USAID, NRECA, QUALTEC and the utilities on issues such as the introduction of consulting services.
- CARILEC's formation was carried out more efficiently than many similar donor-funded projects in the Caribbean. It has often taken 18-24 months to make new executing agencies operational. CARILEC became operational nine months after Phase I inception because of exceptional efforts by NRECA and the utilities.
- Technical assistance was the most successful Phase I initiative. TA to GRENLEC and APUA was professionally delivered in "hands on" and practical ways by experienced engineers who were sensitive to clients' needs and deficiencies. The two utilities were especially appreciative of this support.
- Despite its extraordinary success, some TA value was lost for two reasons: 1) Follow through on Technical Assistance was not part of the CARILEC/USAID Agreement and 2) there was no provision, either in terms of short term advice or funding support, under the Phase I Agreement, for follow-up on the engineers' recommendations.
- NRECA and QUALTEC attained all of their contractual targets for Phase I training. These programs were apparently well received by course participants. Senior utility management and their training officers were concerned about the relevancy and speed at which the courses were conducted. More importantly, although CARILEC was to take over these programs there was limited coordination between NRECA and CARILEC on the institutional transfer of Phase I training capability to the Corporation.

PHASE II
INSTITUTIONAL DEVELOPMENT

1. SETTING, RATIONALE AND PRIORITIES

a. Setting and Rationale

The CARILEC/USAID Cooperative Agreement marked the start of Phase II. The Project changed leadership on August 15, 1989 and overlapped the close out of Phase I for the remainder of that year. However, even before the start of Phase II, the CARILEC Board had begun to re-shape Project Paper implementation plans and priorities. In May 1989 CARILEC suggested to USAID that Joint Services was not an immediate corporate concern. While aware of the potential benefits of joint services, the utilities saw improvement of technical skills as their #1 priority.

The Board was also cognizant of CARILEC's fledgling status, limited operational experience and unproven track record. The members decided that the Corporation should concentrate its resources on first developing the competence and capability to efficiently deliver training courses to its members. Other services would evolve after CARILEC had established management systems and practices that would adequately support a comprehensive training structure for its members.

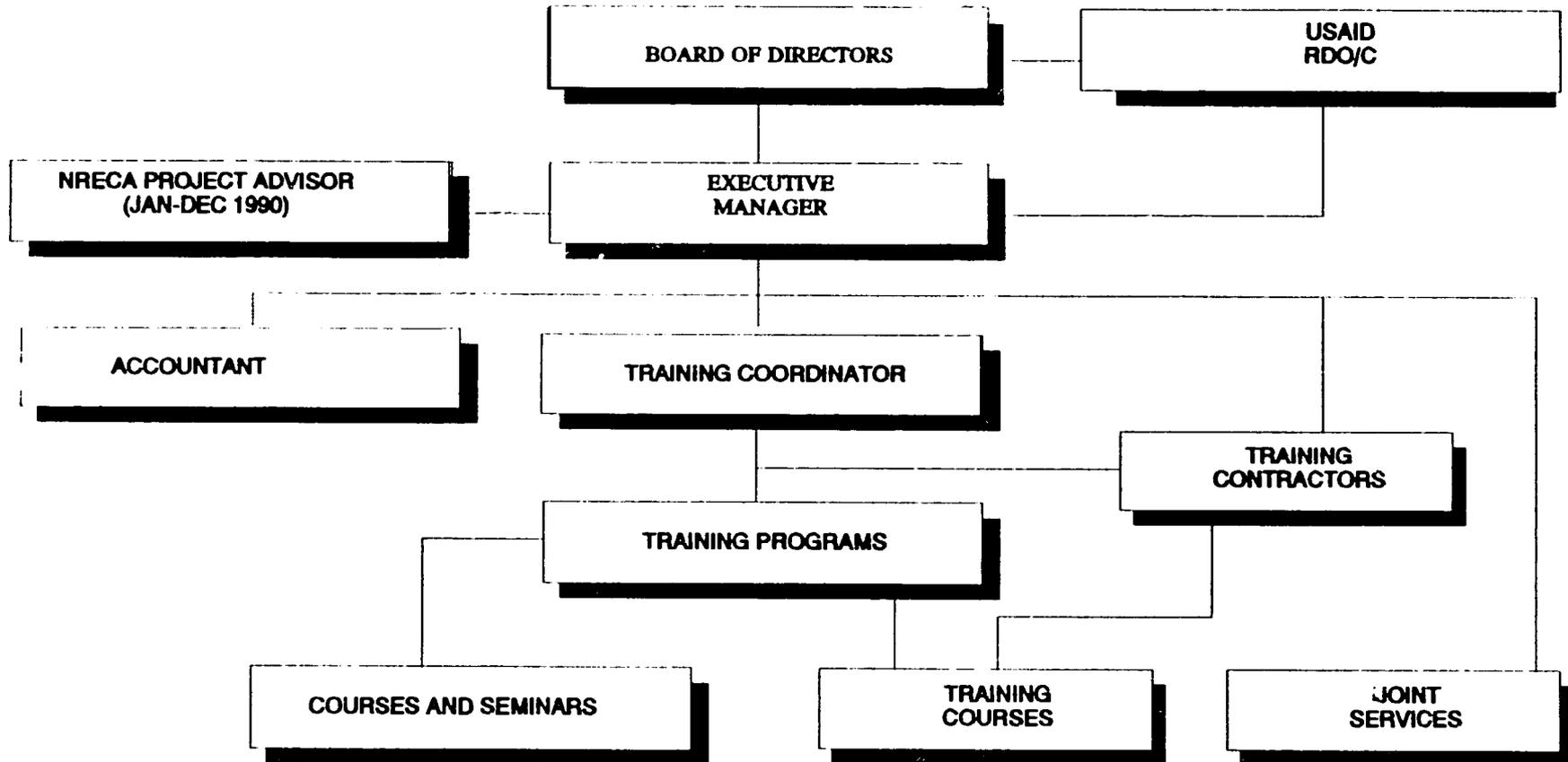
This approach was a cautious but logical strategy for a new organization to adopt. First, as noted under the Phase I assessment, most of the utilities had limited in-house personnel management capabilities or formal administrative policies and procedures. To succeed, CARILEC had to acquire an understanding of each utility's requirements while simultaneously developing its own capabilities. Second, the intensity of Phase I implementation had exposed the need for a systemic approach to training. Phase I training was too fast and did not engender close interaction between the respective utilities and NRECA. Furthermore, at the start of Phase II there was no institutional memory, records, course design standards or practices for CARILEC to work with.

b. Priorities

In September 1989 CARILEC informed both NRECA and QUALTEC of its decision to let their Phase I arrangements expire. This signaled a major departure from original project design expectations. The Directors opted for a short term contract with NRECA for advisory services to help the organization build its training procurement and contractual capability as part of a broader plan for independent corporate administration.

Training and corporate development were therefore the two key issues which CARILEC decided to address during the first year of Phase II implementation. An illustration of Phase II implementation arrangements is provided in Chart II.

CHART I I
CARILEC ORGANIZATIONAL STRUCTURE
Phase II: Institutional Development



Source: Derived from Rump Project Data, Sept. 30, 1991

2. PROJECT CHANGES, INPUTS AND TASKS

a. Project Changes

Three changes permanently altered Project Paper expectations for the rest of the Life of Project: 1) the close out of NRECA and QUALTEC involvement in subsequent implementation; 2) the CARILEC decision to postpone and/or place minimal emphasis on development of joint services and 3) the decision to rethink and establish a more careful and methodical approach to RUMP training.

The Project Paper was never amended to reflect the implications of these changes nor were they alluded to in the Phase II Cooperative Agreement. As a result, Project Paper expectations, particularly about sustainability, the development of joint services, and CARILEC's contributions to operating costs and to total project costs, have remained the same since the beginning of Phase II.

b. Inputs and Tasks

In contrast to Project Paper expectations, CARILEC only assumed responsibility for inputs and tasks which were described in its Cooperative Agreement. Phase II was to be funded in two increments, of which the first would cover the project period August 1, 1990 to October 31, 1991. This period was referred to as Phase IIa. AID committed \$1.5 million of grant funding for the following activities during the first period:

- **Training** in regional programs, basic training, job training and safety, diesel mechanics, management training and advanced distribution engineering and
- **Technical Assistance** through a Project Advisor to provide CARILEC with institutional support services and through a short term Training Advisor to fill in until CARILEC had contracted with a long term employee for this position.

Unlike the NRECA Agreement, the CARILEC Agreement did not contain targets or benchmarks for training activities. The tone of the Agreement implied that CARILEC would set its own pace with regard to training. It was noted that "the Joint Services concept to provide consulting services from one utility to others did not appear viable." (Attachment 2. Program Description. Page 1.) Should the need develop it was expected to be revived. There were distinct organizational tasks to be completed by the two advisors. The Project Advisor was contracted in January under the NRECA/CARILEC contract. The Training Advisor was never contracted. This position was filled for ten months by the Executive Manager who assumed some of the responsibilities described in the Training Advisor's Scope of Work.

The decision to assign responsibility for the restructuring of the training programs to the Executive Manager underscored CARILEC's commitment to the creation a viable training unit. In the opinion of the evaluators, this decision should have been reinforced by a concomitant arrangement to utilize a training specialist as was agreed in the Cooperative Agreement. That option would have led to more a efficient evolution of CARILEC's training capability.

c. Grant Fund Obligations

There were three Amendments to the Phase II Agreement. The first obligated a \$500,000 increment and adjusted the project funding period to March 15, 1991. The second obligated a further \$343,000 and the third, on August 30, 1990, added \$1,147,000 and extended the funding period to July 31, 1993. Thus, by August 31, 1991, \$3.5 million had been obligated to CARILEC. (Table V).

TABLE V
CARILEC/USAID COOPERATIVE AGREEMENT
Budget VS. Expenditure
As at August 31, 1991

Category	USAID Budget	CARILEC Expenditures	Unused Balance
Salaries	\$460,000	\$140,421	\$319,580
Fringe Benefits	126,000	25,511	100,489
Equipment	151,000	85,406	65,594
Communications/Rent	180,000	60,864	119,136
Accounting and Eval.	85,000	13,978	71,022
Travel and Per Diem	335,000	259,105	75,895
Materials, Supplies	555,000	15,751	539,249
Other Direct Costs	208,000	34,213	173,787
TA and Training	1,400,000	931,314	468,606
Total	\$3,500,000	\$1,566,642	\$1,933,358

Source: CARILEC/USAID Financial Data, September 30, 1991

It is important to note that the three increments were obligated on the proviso that the funds be administered in accordance with the terms and conditions of the Program Description of the original Cooperative Agreement for Phase IIa. implementation. However, although AID obligated additional funds, the scope of CARILEC activities essentially remained unchanged. With the exception of on-going training, the other principal activity - namely NRECA technical advisory services under the CARILEC/NRECA contract - was completed by December 1990. Supplementary funds committed in 1990 were, from CARILEC's perspective, expressly obligated for extra training.

3. MAJOR FINDINGS

a. Organization and Management

CARILEC began functioning as a corporate entity when the Executive Manager was appointed and assigned responsibility for day-to-day administration in September 1989. Mr. Farrell was tasked with management of training, establishment of engineering services and administrative systems and dissemination of technical information to members. An Accountant and a Training Coordinator were considered essential staff and were to be hired as soon as possible.

The Corporation functioned without full staff for ten months. The Executive Manager assumed responsibility for i) office administration, ii) marketing and promotion, iii) development of training programs, iv) tendering for training services and v) organizing a variety of training courses prior to appointing support personnel in July 1990. He also worked closely with the Project Advisor to formalize USAID reporting and financial management requirements.

CARILEC's institution development was inhibited by Government of Barbados indecision and delays over confirmation of CARILEC's domicile status. For example the Corporation had to postpone the Training Coordinator's appointment for four months because of uncertainty over a work permit for the selected candidate. The office was moved to St. Lucia in November 1990 after the Government of St. Lucia agreed to offer tax concessions and other offshore benefits to the Corporation.

In summary, CARILEC concentrated on developing management and training systems in its first year of existence. The Corporation operated for almost 12 months without professional support staff partly because of domicile uncertainties and partly because top management needed time to structure the organization's operations. However, although the NRECA training momentum fell off in the first three months the Corporation successfully implemented five courses of 23 interventions involving 499 participants in seven EC countries. This compared favorably with NRECA's and QUALTEC's performance of 23 interventions involving 414 participants in nine countries. Both sets of courses were carried out over six month intervals.

b. Status of CARILEC's Organization and Management

Management Effectiveness

CARILEC's members are satisfied that the organization is effectively providing training services required. There are a number of positive features to the Corporation's existing structure, management style, and practices. The Executive Manager had broad discretionary powers and is directly accountable to the full Board of Directors. CARILEC had an informal yet efficient management culture that accurately reflects the Board's preferred approach to decision-making. With regard to its operations, the Corporation had started to institutionalize its training function by establishing standard procedures for various stages of the course design and delivery process. As a result, the organization is now in a position to respond with reasonable flexibility to members' needs.

Leadership in Joint Services

CARILEC has started to provide leadership in developing mechanisms for delivering common services such as insurance, workman's compensation, retirement and pension plans. The evaluators' assessment of leadership on Common Services was made in the context of the secondary ranking which this activity was accorded by CARILEC's Board and its subsequent exclusion from the Cooperative Agreement. Initiatives on Joint Services emerged in 1991 for at least two reasons. First, there is a growing sense of confidence among the utility general managers about CARILEC management capabilities. Confidence levels are higher now than at the beginning of Phase II because the Corporation has a sound track record in training. As a result, its members are now thinking of other activities where mutual benefits exist.

Second, USAID's increasing concern about the divergence from multiple-purpose project expectations had led to renewed attention on Joint Services. Third, CARILEC has acknowledged that sustainability is an immediate concern and that complimentary activities could contribute revenues to cover recurrent costs. A description of common services under consideration is presented under e. Joint Services. Sustainability is addressed under a subsequent subsection below.

Functions and Staffing Relationships

Staff levels, capabilities, and competence are quite adequate for the current needs of the member utilities. CARILEC employed its Training Coordinator in July 1990 and an Accounts Assistant in October that year. The Coordinator holds an Masters and a B.Sc in Public Administration and has 10 years experience in his specialization; the Accounts Assistant has attained Level III of the ACCA (accounting) examination. The Executive Manager is an electrical engineer with 27 years experience with the Trinidad and Tobago Electricity Company (T&TEC).

Future expansion, particularly into Joint Services, will require CARILEC to strengthen its strategic planning and business marketing capabilities. In contrast to Management, the evaluation team observed that management had little time left over for corporate marketing and promotion. For instance, some utilities pointed out that their Board of Directors had limited information on CARILEC's activities, performance or regional benefits derived from its operations.

The evaluation team strongly suggests that CARILEC encourage its professional staff, because of its high caliber, to become more involved in broader aspects of its operations such as financial planning and database development. Furthermore, the Corporation may want to consider hiring a Joint Services Coordinator to facilitate faster development of such services.

Adequacy Of Contractor Arrangements

The contract between CARILEC and NRECA proved adequate and acceptable for accomplishment of advisory services which were of greatest priority to CARILEC. The NRECA Project Advisor's scope of work included i) preparation of a report and procedures handbook, ii) development of procurement and personnel policy manuals and iii) introduction of an accounting and financial management system acceptable to USAID. Neither progress nor close-out reports on the Project Advisor's assignment were not submitted to CARILEC and were unavailable to the evaluation team. However, the handbook and manuals were not prepared during the Advisor's tour of duty and were pending at the time of this report.

Instead the Advisor helped design a tendering and services procurement system and acted as an interim accountant until that position was filled in October 1990.

Technical assistance for training was not utilized and therefore contractual arrangements were never instituted for this purpose.

For 1990 and 1991 training interventions, CARILEC developed a standard tender document to solicit selective bids for 15 programs. Six firms were invited to tender; three US companies responded: NRECA, International Management Development Institute (IMDI) and American Electric Power Inc., (AEP) with Harza Inc, an engineering consulting firm. NRECA and IMDI were awarded contracts. The AEP/Harza group withdrew its proposal.

Contracts were developed in three parts: 1) Course preparation and development; 2) Course Delivery and 3) Payment provisions for 1) and 2). Standard AID provisions were included in each agreement. CARILEC awarded contracts after reviewing proposed course development tasks and agreeing on essential aspects of course delivery. Payments for services are made after CARILEC has received a close-out report summarizing course impact, participants involvement and recommended improvements for repeat interventions.

The evaluation team reviewed CARILEC's methodology and its contract management practices and has concluded that no major changes are needed since the system is working with a high degree of efficiency.

Performance of CARILEC Board

The CARILEC Board of Directors has carried out its functions with due diligence. This included adherence to Corporation by-laws with respect to membership, entrance fees, appointment of officers and directors, meetings, quorum and voting rights and approval of contracts. Four meetings to organize CARILEC were held between November 1988 and October 1989. Two extraordinary sessions were held in May and September 1990 and four Board meetings kept between March 1990 and April 1991. On average seven of the nine directors attended these meetings.

Decisions on proposed training and other activities were to be approved on the basis of corporate by-law # 10.6, Voting. In practice, the Board, according to the Executive Manager/Secretary, chose a more stringent approach by using consensus decision-making for most options. This worked well for training decisions since there was unanimity on many of these issues.

The Board also agrees to providing special services in cases where a majority decision or consensus could not be reached on condition that such services are priced at full commercial cost. ie. CARILEC would be instructed to facilitate delivery of the service but, unlike training, would not underwrite any part of the cost for the utility requesting the service. This policy was adopted by the Board to ensure that CARILEC retained the majority of its funding for training activities over the remaining Life Of Project. However this approach could eventually have a discouraging effect on utilities who are keen on accessing alternative services.

There are two reasons why this concern needs to be addressed by the Board. First, most of the member utilities are at different stages of organizational and technical development. Consequently some utilities have constraints and priorities that are no longer key issues to others. Second, unlike technical skills, joint business services are entirely new to the utilities. Therefore it is less likely that common services could be successfully developed other than on a pilot basis or by trial and error.

The Board should reconsider its full-cost policy to facilitate introduction of new services. Also, the Board should set deadlines for implementation of future activities. Such a system will be needed to circumvent delays and ensure efficient implementation of approved decisions as the organization expands its operations and range of responsibilities.

Adequacy of Accounting Systems and Controls

Prior to disbursement of AID grant funds, CARILEC was required to furnish to AID satisfactory evidence that it had installed an adequate Accounting System and Financial Controls. Initial disbursements, however, were made without acceptable completion of this task. In July 1991 the Office of the Regional Inspector General (IG) completed its audit report of the IEMS Project. Part of its findings on IEMS were directed at deficiencies in CARILEC'S accounting and financial systems. The IG auditors expressed concern over accountability of Project Funds since they discovered that the Accounting System designed by Peat Marwick was not being used as designed.

Between December 1990 and August 1991 USAID/RDO/C carried out three reviews of the Accounting System and recommended a number of improvements. According to the Executive Manager and Accounts Assistant, most of these recommendations were subsequently adopted.

Two primary tasks were outstanding at the time of this evaluation: 1) revisions to the procedures manual were in progress but incomplete and 2) the Inventory of Fixed Assets was still to be done. All other AID recommendations were being adopted. The revisions will be completed by the end of September 1991 and the manual will be submitted to the Board of Directors for approval in November. An inventory of fixed assets will be maintained and will be verified by CARILEC'S Auditors annually. Apart from these two issues the evaluators found that reasonable progress had been made towards meeting USAID'S Accounting and Financial System requirements. The Corporation also has an adequate system for billing member utilities for services on a full cost or subsidized basis although there have been some delays in the payment of dues and fees.

Development of Baseline Data

CARILEC has not collected accounting or financial data, and only limited baseline data on the individual utilities. This activity was defined in the Project Paper but not included under the Phase II Cooperative Agreement. The outcome: CARILEC did not perceive this as one of the tasks which the organization was supposed to accomplish during the period of AID support. Nevertheless, the Executive Manager has promised to investigate this matter over the next 12-24 months.

Impact on Utility Management

Sixty-nine percent of CARILEC's courses was targeted at junior staff and technical supervisors and skills/crafts personnel. Management training accounted for thirty one percent of all courses (Table VIII). The training program therefore had a reasonable degree of impact on utility management. Moreover, this training resulted in highly motivated personnel who created a cooperative environment conducive to improvements in overall utility administration. Such attitudinal change should lead to benefits that will exceed most measures of impact on the utilities.

The greatest stimulant to improving Utility Management occurred as a result of confidence building through seminars, workshops and meetings of the senior utility management facilitated by CARILEC. This resulted in exchange of ideas and inter-utility camaraderie that should produce sustained efforts in Personnel Management, Financial Management and other aspects of Power Plant operations. This dialogue has led to sharing of information on suppliers and technology to the mutual benefit of decision-makers and staff in these companies.

Effect of MIS on Utility Decision-Making

CARILEC was not aware that it was expected to establish a Management Information System (MIS) and therefore did not put together a program to develop this capability. However, dissemination of technical information was incorporated under the Executive Manager's Scope of Work. Information is provided when requested by the individual utilities.

In view of the Corporation's focus on training and the time needed to investigate joint services, CARILEC should, in the near future, assign responsibility for MIS development to its Accountant or Training Coordinator.

CARILEC Sustainability

CARILEC has not yet generated a plan for self-sustainability. The Corporation has not yet developed a realistic financial plan which shows how it intends to exist as a viable organization after AID grant funds have been completely utilized.

Sustainability is important if the Project is to have a long term beneficial effect on utility efficiency and reliability. Assumptions about project elements and income generating flows were therefore developed as integral parts of the RUMP Project Paper. Detailed assumptions about the scope for common services were developed under Section VII. A. Common Services Analysis. Ten-year financial projections were created in Section VII. B. Financial Analysis.

For purposes of Financial Analysis, AID grant funding was grouped into two categories: 1) Fixed Overhead Costs and 2) Training and Consulting services. Three key sources of revenue were expected to provide adequate cash flows to ensure CARILEC viability: 1) members dues; 2) training fees and 3) consulting fees and income from joint procurement.

A gradual approach was envisaged. During the first three years CARILEC was expected to start i) to generate revenues to cover increasing proportions of its fixed costs and ii) to replace AID funding for training and consulting services with income from various joint services. AID would cover 100% of the Corporation's fixed costs in Project Year 1. The proportion of CARILEC to USAID funding

would rise from 20% in year 2 to 80% in year 4 and reach 100% afterwards. AID would also cover all training and consulting costs from year 1 to year 3. CARILEC was expected to pick up 60% in year 4, 80% in year 5 and 100% in each ensuing year.

Performance

Financial targets were not part of the Phase II Agreement. Therefore there were no benchmarks which the Corporation had agreed to meet. The evaluation team measured CARILEC's performance against project paper projections as an indicative barometer of the Corporation's progress towards sustainability. Table VI contrasts CARILEC's revenue generation to date with Project Paper cash flow projections:

**TABLE VI
CARILEC FIXED COSTS
As at August 31, 1991**

Period	Est. Fixed Costs	Actual Costs Paid by USAID	CARILEC Contribution	CARILEC Revenues	Revenues as % Paid Costs
1988-1989	\$66,500	n/a	-	-	
1989-1990	120,400	117,741	-	\$100,000	85%
1990-1991	95,223	109,051	-	111,000	100% +
Total	\$280,123	226,792	-	211,000	93% ave.

Source: AID Project Paper and CARILEC Accounting Reports, September 1991

To date USAID has funded all CARILEC's fixed costs. CARILEC, on the other hand, has exceeded AID's revenue generation expectations in year 2 and 3. On average the Corporation generated 93% of actual annual fixed costs vs expected contribution levels of 20% in Year 2 and 30% in Year 3. This high level of revenues was reached as a result of an increase in membership dues from \$1,000 to \$10,000 per member within the first year of operations. However CARILEC did not use its resources to pay for the anticipated proportion of fixed overhead costs. The Corporation decided to invest its own cash flow in an interest bearing account in Puerto Rico to pay for future operating costs after AID funding expires.

CARILEC Projections

The July 1991 IG audit report questioned whether the project would be sustainable in the absence of a detailed plan to generate sufficient revenues to finance operating costs on a perpetual basis. In response, CARILEC developed projections of planned revenues and expenditures to illustrate a basic financial plan for the next five years of operations (Table VII).

The evaluation team accepted that these projections were not intended to demonstrate strategic options for funding CARILEC. The principal reason was to strengthen CARILEC's position that AID should continue to support the Project since there are enough funds remaining to sustain basic operations for at least 3 years beyond the July 1993 original completion date. Nevertheless, the data does confirm the IG auditors premise that CARILEC has not yet gone through the process of thoroughly analyzing its long term financial requirements.

**TABLE VII
REVENUES, EXPENDITURES AND CASH FLOW PROJECTIONS
As at August 31, 1991**

Category	1992	1993	1994	1995	1996
Revenues:					
Dues	95	95	95	95	95
Fees	77	70	70	70	70
Total Revenues	172	165	165	165	165
Expenses:					
Admin Expenses	203	144	147	150	153
Joint Services	100	100	100	100	100
Video Library	20	20	20	20	20
Training	360	325	325	325	325
Total Expenses	683	589	592	595	598
Oper. Deficit	(511)	(424)	(427)	(430)	(433)
Grant Balance	1,422	998	571	141	-
Cash Deficit					(292)
CARILEC Savings					285
Residual Deficit					(7)

Source: CARILEC Financial Data and Projections, September 1991

Table VII reveals interesting features about CARILEC's projections:

- CARILEC funding, inclusive of the AID grant, should allow AID and CARILEC to negotiate a no-cost project extension for three additional years after the present LOP.
- Revenues from dues and (training) fees should cover administrative expenses

- Revenues represent about 25% of total expenses. Training and joint services will continue to be subsidized by AID grant or other support funding. Training activities will contract from an average of 45 courses per year in 1991 to about 25-30 thereafter.
- The number of members and their level of dues will remain at current levels ie. 9 members and one associate averaging \$10,000 in dues annually.
- Joint Services will not generate revenues over the remaining Life of Project.

Consensus on an appropriate combination of fees and dues is still to be reached among member utilities. Some members are prepared to contribute up to \$50,000 each in dues to keep the Corporation going. Others have smaller personnel development budgets. They could not confirm maximum subventions to support future operations but would consider contributing up to \$20,000/member. It was emphasized, however, that improved and competitively priced services would be the only acceptable rationale for incurring higher levels of utility funding.

Implications

CARILEC has positive but incongruous positions on sustainability. Plans to reduce the rate of training will be introduced at the time when the utilities are being asked to carry a higher proportion of training costs by paying trainees' per diem allowances. At the same time, the Corporation's financial projections show that it is considering introducing joint services without charging fees for such services. However the Corporation has already agreed that members would pay full cost for services such as financial and/or technical audits. Furthermore, higher dues, which could have a significant effect on future revenues and sustainability, has not yet been discussed by the Board of Directors.

All this suggests that immediate work needs to be done on the development of a strategic plan for CARILEC sustainability. CARILEC's approach should be as comprehensive as possible. Issues to consider include i) goal setting ii) selection of revenue generating activities, iii) management and marketing programs to support a strategy for sustainability, iv) appropriate levels of fees and dues, v) additional staffing requirements, vi) options for delivery of joint services, vii) the rate and delivery of new services and viii) [associate] membership policy and marketing.

This approach would ensure that a combination of alternatives are examined and evaluated and that strategic options are chosen that would give the organization optimum financial and operational flexibility for the future. For example, a decision to cover all operating costs by increasing dues to \$30,000 or \$60,000 per member would solve CARILEC's cash flow requirements. However, that option would virtually eliminate the likelihood of attracting new members. This would confine CARILEC's target market to its existing members. It would also compromise the development of new services, since the utilities, on top of high dues, would have to incur additional costs to obtain such services.

Technical Assistance

USAID should either provide technical assistance to help CARILEC develop a strategic plan as part of its support under the Project or authorize the use of existing resources for that purpose. This assistance would help CARILEC review its financial alternatives, identify income generating services for assessment, and develop work plans for further investigation of specific services. Technical assistance should also be used to provide business development advisory services to CARILEC. The objective of

this second intervention would be to induce stronger commercial practices on the part of the Corporation in line with its goals, tasks and members' expectations about their future involvement in CARILEC.

The utilities should take a long term commercial view of viable opportunities which could be pursued through CARILEC. For example, the evaluators found that, of all the potential joint services, CARILEC members were extremely keen on technical audits and mapping. Nevertheless, from a pure business viewpoint these services will not generate material revenues for the Corporation.

In comparison, there are two key services which, because of the revenue generating potential, should be promptly investigated: 1) Joint Procurement and 2) Joint Insurance. The nine utilities together procure over \$8 million annually in supplies. In total they also spend about \$900,000 on insurance coverage each year. An annual cost saving of 10% on insurance would lead to \$90,000 in new revenues for CARILEC each year. An annual cost savings of approximately 10% on half of the total procurement would generate \$400,000 in new revenues annually.

This illustration again highlights CARILEC's *raison d'être*; its nascent management culture; the stage of corporate development of the utilities, and their overriding emphasis on continuing to improve technical competence. More importantly it accentuates the need for business assistance to help CARILEC graduate to a more advanced level of corporate management.

c. Training Programs

CARILEC's procurement of long term training services took longer than expected although the Corporation recognized weaknesses in NRECA's Phase I training. Because of the emphasis on training a Coordinator should have been promptly hired to start work on CARILEC's programs. Soon after entering Phase II, CARILEC decided to employ a Training Coordinator. The position was advertised in November 1989, candidates interviewed in January 1990 and a professional selected in March of that year. However because of work permit difficulties, the Coordinator did not take up his assignment until July 1990. Ten months had elapsed between the QUALTEC Training Advisor's departure in September 1989 and the employment of the CARILEC Coordinator.

The Corporation is offering 46 courses in 1991. They are also offering three seminars (for Distribution and Power Generation Engineers and Financial Controllers), three workshops (on diesel Engine Performance, Distribution System Computer Analysis, and Personnel Management), and a Power Plant Symposium.

d. Status of CARILEC's Training Programs

The Training Coordinator put together a program that was somewhat different from activities proposed in the Project Paper. Thus, to draw a direct link between Phase I and Phase II would require some regrouping of course titles to fit into the "Basic Project Elements" of the Project Paper.

CARILEC has four course categories: 1) Management and Supervision, 2) Crafts Training, 3) Distribution Engineering and 4) Generation Engineering. Project Paper courses of Basic Utility Training and Job Training/Safety have been assimilated in the course content in each of CARILEC's training components. For example, linesman training is offered at three levels of technical skills. Safety issues are covered as a part of each linesman course. Similarly, Professional Skills Training in the Project

Paper is dealt with under CARILEC's Management and Administrative programs and Technical Skills in the Project Paper is covered under CARILEC's Crafts Training category.

**TABLE VIII
SUMMARY OF CARILEC TRAINING PROGRAMS
As At August 31, 1991**

Course Category	Number Of Courses	Distribution Of Courses	Number Of Trainees	Distribution Of Trainees
Management & Supervision	28	31%	433	29%
Customer Relations *	23	25%	401	27%
Crafts Training	25	27%	460	31%
Distribution Engineering	9	10%	125	8%
Generation Engineering	6	7%	76	5%
Total	91	100%	1495	100%

* = Classified under Management and Supervision

Source: CARILEC Quarterly Report, June 1 - August 31, 1991

Summary assessments of the Corporation's training activities are provided below:

"Training of Trainers" Concept

During Phase I, sixteen persons received training under the "Train the Trainers" program. The program was designed to institutionalize the capability for teaching basic skills within each utility using local trainers. The NRECA Phase I Final Report states that the minimum agreement requirements for this Project component were exceeded to a considerable degree.

When CARILEC took over in late 1989, it discovered that none of these personnel were currently functioning as instructors. Moreover, CARILEC was unclear whether they would be called upon to perform this role in the future. Because documentation was not passed on by NRECA to CARILEC, it was not possible to determine the criteria and methods used to identify participants who were selected to be local instructors.

CARILEC felt that the program needed more long-term planning and restructuring. The Corporation has begun to identify specific individuals from course participation who appear to possess the qualities needed to serve as regional or in-house instructors. The Training Coordinator and the Training Officers at the respective utilities now determine the extent to which course participants have the aptitude and desire to become instructors. Some of these individuals will then be used as part-time

instructors for specific training activities. The CARILEC program recommends that potential instructors complete a phased program of intensive training before serving as co-trainers and then as independent instructors.

To date, eight individuals have been identified as potential instructors. Their interest and the concurrence of their utilities to allow them to become trainers will be determined. One of these individuals has been used as an independent instructor for the Secretarial Skills courses held in 1989, 1990 and 1991. Development of the Trainers' program would be structured in four systematic phases between 1991 and 1993:

<u>PHASE</u>	<u>TIMING</u>	<u>ACTIVITY</u>
I	1991/On-going	Identify functional areas where utility employees will be used a part-time instructors. Identify persons with the interest and aptitude to serve as instructors.
II	1991/On-going	Determine the advanced training needed for them to function effectively as instructors. Standardize arrangements for their release and use from member utilities on an as-needed basis.
III	1992	Arrange for potential instructors to undergo intensive advanced technical training. Conduct "Training of Trainers" courses for the selected personnel.
IV	1992/Onward	Integrate these instructors into the training program course offerings. Evaluate the performance of each instructor and agree on strategies for improvement.

The evaluators concluded that CARILEC's approach to creating a local training capability was well thought out and more appropriate than attempts by QUALTEC under Phase I.

Regional Training Program

Another feature of the "Train the Trainers" component was to encourage regional training and thereby reduce the overall cost of intermediate programs. A number of leading US-based institutions are still being used under contract to supply training services. However, CARILEC has made a concerted effort to utilize regional institutions to prepare modules and provide training in management, administrative, technical and craft areas. As a result, the training contribution of regional institutions increased from 8% in 1990 to 45% in 1991. Some of the institutions involved are the Barbados Institute of Management and Productivity (BIMAP), Hayden Workman Electrical, Inspection Services Company, Plantrac, the University of the West Indies (UWI), and Sir Arthur Lewis Community College (SALCC).

CARILEC maintains a register of regional and extra-regional programs in most areas of utility training. New programs are evaluated and rated for inclusion on this list. CARILEC is coordinating the participation of utility personnel in a number of US-based training programs sponsored by A.I.D. through the Institute of International Education (IIE) in Washington, D.C. However, there was significant concern about the relevance of US Utility Management Programs from participants who felt that much of the

course content was obviously devised exclusively for US utility managers. These courses were expensive but had marginal impact on improving EC utility management skills. The evaluation team agrees with CARILEC that such programs would be more cost effective and relevant if developed with regional institutions like the UWI's Management Development Center.

Training Needs Assessment

Formal needs assessments are scheduled to be conducted bi-annually. The CARILEC Coordinator maintains close contact with member utility Training Officers and solicits comments on course content, instructor performance and inputs to the next year's curricula. A catalogue is published annually in advance of course schedules. The catalogue lists entry level requirements and contains descriptions of course content and presentation methods.

Training Facilities

Only three of CARILEC's ten member-utilities have suitable facilities for on-site training: BL&P, LUCELEC, and VINLEC. Consequently, most training is conducted in rented hotel conference rooms at expensive daily rates. BL&P facilities and staff have been used for some training but not as extensively as anticipated in the Project Paper. When regional institutions are used, scheduling is difficult because of time conflicts with the institutions' on-going programs. The Project Paper recommended that a regional "Training Center" should be established for specialized training. QUALTEC's Phase I Final Report recommends that CARILEC consider a permanent Linesman/ Meter-man Training Center on one island. The Corporation is pursuing the concept for such a facility on St. Lucia, most likely to be co-located with the its administrative offices. While there could be a number of cost advantages to such a facility this is a long-term objective for the program.

The CARILEC Training Mission

CARILEC's commitment to training is reflected in its Mission Statement in the Course Catalogue:

- Support the human resource development strategies of utilities in the Caribbean by sponsoring a series of specialized short courses and programmes which respond to present and future training needs and seek to upgrade technical, professional, administrative, and managerial capabilities.
- Create the environment to facilitate continuous exchange of ideas, sharing of knowledge and experiences, learning about each other's operations, and seeking solutions to common problems.
- Encourage the career prospects and mobility chances of employees of participating electric utilities by providing them with opportunities to acquire practical and theoretical knowledge and skills for personnel growth and development, and by instituting a regionally recognized accredited system of progressive certification.
- Contribute towards the creation of an organized climate conducive to high individual performance and provision of top quality service by assisting utilities with the implementation of reform measures aimed at improving effectiveness, efficiency, accountability, responsiveness, and customer satisfaction.

- Develop a cadre of part-time instructors capable of assessing training needs and delivering training in-house and regionally, as well as evaluating the overall impact and outcome of these programmes.

Without exception, the member utilities are supportive of the CARILEC program and believe that it is satisfying their needs. Most utilities stated that CARILEC's coordination role has allowed their Training Officers to discuss similar personnel and training problems with each other. The majority believed that the system gives them ample opportunities to choose courses for their personnel and to provide inputs to course changes and/or additions for upcoming periods.

In summary, CARILEC has developed and managed its training programs with a high level of utility involvement. The Corporation has been exceedingly successful in this area and is now capable of delivering high calibre basic, intermediate and technical courses to existing and new members. Within two years CARILEC's training programs have been executed with as much efficiency as other donor projects with comparable resources and target markets in the region. Table IX provides a comparison of CARILEC's performance against the Small Enterprise Assistance Project (SEAP) and the Canadian Training Awards Project (CTAP) for 1990.

e. Joint Services

The Project Paper outlined a Joint Services Program which NRECA felt would help the utilities obtain specific engineering, management, and procurement services on a regional basis. Basically, the approach proposed was for CARILEC to:

1. Confirm a priority list with the Board of Directors for program implementation.
2. Identify and assign a local person to provide an interface between the utilities and the outside consultant. This person would eventually become the resident expert in the particular service to be offered.
3. Assign expert consultants to develop the program specifications tailored to the regional and operational needs of the member utilities, including the optimum approach and the cost of implementation.
4. Recommend to the Board of Directors the scope and approach of the program; the implementation schedule, manpower requirements, and the total cost of the program.
5. Implement the program with the approval of the Board of Directors.

**TABLE IX
PROJECT COMPARISON TABLE**

PROJECT INDICATORS	RUMP	SEAP	CTAP
Start Date	August 1988	March 1985	January 1981
Years in Existence	3	5	11
Sustainability Objectives	Yes	Yes	Yes
Funding Source	USAID	USAID	CIDA
Total Funding	\$5 million	\$11 million	\$9 million
Average Annual funding	\$1 million	\$2 million	\$1.5 million
No. of Target Countries	9	8	9
Project Focus	Utilities	SME Sector	Public and Private Sector
Major Project Activities: 1. Services 2. Technical Assistance 3. Training	No Completed Yes	Yes Yes Yes	No Yes Yes
Number of Interventions/Yr: 1. Technical Assistance 2. Training	2 45	90 25	Unknown 123
Professional Staff.	5	8	8
No. of Island Reps.	9	8	10
Level of Local Support	Limited	Significant	Significant
Ave. Course Duration	One Week	One Week	One Week
Degree of Subsidization: 1. Technical Assistance 2. Training	100 percent 85 Percent	100 Percent 70 percent	100 percent 100 Percent
Sustainability Strategy	Revenue Generation	To make NDFs Fina. Viable	Institutionalization

SEAP = Small Enterprise Assistance Project
CTAP = Canadian Training Awards Project

Source: USAID Project Files and CTAP Information, September 1991

The Project was to purchase required equipment and pay for utility personnel to travel and attend specific training programs in the U.S. The Project would also purchase any software/ hardware required for trainees to conduct relevant studies within their country systems or with other utilities in the region. RUMP was to fund backup technical assistance for trainees during the first year of assignments.

In another RUMP-funded adjunct to the joint services program, an Engineering Advisor was provided to the Antigua Public Utility Authority (APUA) by NRECA on a 7-month assignment. In June 1989, he completed a survey of CARILEC member utilities to assess the potential for joint services in engineering consultancy, management consulting and procurement.

The recommendations were that CARILEC should:

- purchase some materials on a joint procurement basis. The materials suggested were poles, conductors, crossarms, cables, insulation, and transformers.
- sponsor a seminar on Load-Flow Analysis software. The seminar should teach both Load-Flow theory and the use of a specific software package.
- consider purchase of Scott & Scott Distribution Primary Analysis (DPA) software for centralized use by the member utilities.
- sponsor an EC Utility Engineering Group and host annual meetings for exchange of technical information and experiences.
- consider purchase of computerized mapping software for distribution and transmission network analysis.
- develop an Interruption Reporting System using dBase III+ to establish a uniform method of determining interruption hours.
- serve as a "Better Business Bureau" for its members in the region.
- maintain a suppliers list of qualified equipment and service suppliers.
- maintain and publish an "Annual Statistical Survey" of member utility equipment and operating data.

As noted in an earlier section of this report, in October 1989, the CARILEC Board of Directors delayed initiation of the joint services component. The intent was to ensure that a re-structured and stable training program was in place before CARILEC expanded its activities. CARILEC's training program is now well established and the Board has reopened this issue. At recent Board meetings, joint services was discussed as a cost-savings measure for the utilities. A number of ideas and options have been put forth for CARILEC to investigate and report on.

At present, CARILEC sees its role in joint services as the sponsor of forums for discussion of ideas and presentation of options but not as a proactive organization that directs joint service operations. Some meetings have been held where presentations were made by suppliers of services and/or equipment. For example a presentation was made by two suppliers of Electronic Data Processing (EDP) Systems.

However, no recommendations were made and the utilities were free to take joint or unilateral action as best suited them.

f. Status of CARILEC's Joint Services

CARILEC has only recently developed a list of projects to investigate in the 1991-1992 period as part of a "Joint Services Programme." Information is being collected on qualified local companies that could offer equipment and/or services to members. CARILEC is also beginning to maintain a list of utility equipment and operating data as a part of its Hurricane Assistance Plan.

Hurricane Plan

In January-April 1991, CARILEC developed a Hurricane Assistance Plan. Copies have been sent for comment to its member utilities as well as to Jamaica, Martinique, Bermuda, and Trinidad. Phase II of this plan has two parts: (1) by the end of 1991, to establish an arrangement with a contractor who will be kept on stand-by so that assistance can be quickly mobilized to provide equipment, manpower, and materials; and (2) in the first quarter of 1992, to investigate hurricane damage mitigation. CARILEC intends to join with the Organization of American States (OAS) to contract with a consultant who will visit the EC utilities and develop a manual giving recommendations for design and construction practices. The Office For Disaster Assistance (OFDA), a part of USAID/Washington, is holding discussions with CARILEC on this initiative.

Joint Insurance

Members utilities have asked CARILEC to obtain advice on the insurance requirements of electric utilities; to examine the existing insurance policies of member utilities; to investigate the placement of the required insurance on U.S. and European markets, and to quantify the benefits that may be derived by joint coverage (St. Lucia, St. Vincent, Montserrat, and Dominica already have joint hurricane insurance). CARILEC has sent a proposal to the Board of Directors for approval to proceed. Hopefully this initiative will begin in the next month or so.

Pension Plan

GRENLEC asked for a survey of utility pension plans in the EC region. CARILEC completed the survey in March-April 1991. Only a few utilities have pension plans; most have what are called "Providence Funds." One utility responded to the survey but cautioned against rushing into an alternative program. The effort is being kept low-key. CARILEC will have its insurance broker investigate the potential for a regional pension plan. Future plans for this initiative are to lay out the costs and benefits for consideration by the Board.

Joint Purchasing

CARILEC believes that there is little likelihood that member utilities will agree to joint purchase in the near future. All members have arrangements for purchasing and credit agreements particularly with the U.K., continental Europe and, increasingly, with U.S. firms.

Technical and Financial Audits

The utilities have agreed to this initiative in principle. CARILEC has asked for nominations of utility personnel to serve as auditors. There has been no response to date. Board members believe that technical audits should be completed, but that financial audits should be avoided for two reasons. First, they are concerned about the duplication of effort since external audits are carried out annually. Second, they question the extent to which internal auditors will maintain a high degree of independence and objectivity in their investigations. Utility controllers are keen on financial audits, but the general managers were reluctant to agree to them.

Mapping and System Analysis

Few of the member utilities have comprehensive maps of their transmission and distribution systems. CARILEC hopes to encourage automatic mapping which will eventually allow the utilities to introduce computerized system analysis. The Corporation would like to buy the necessary computer software to encourage the member utilities to initiate mapping of their systems.

Seminars

CARILEC hosts three seminars annually for senior utility officers. At the seminars, common problems are discussed and guest speakers are invited to make pertinent presentations. The 1991 Training Course Catalogue lists seminars for Distribution and Power Generation Engineers, and Financial Controllers.

Administrative Manual

The CARILEC Training Coordinator took the initiative to encourage GRENLEC to develop an Administrative Manual. When the manual is completed in 1992, it will be sent to all member utilities as a model for their consideration.

In summary, CARILEC has started to investigate a number of Joint Services for its members. The decision to start work on Joint Services was made at the point when the Board of Directors felt that the organization had successfully completed the development of a long term training capability.

The initial approach to Joint Services, however, has not been as methodical or as systemic as CARILEC's approach to training for various reasons. First, joint services are viewed as additional group benefits which, unlike training, do not strike at the heart of the utilities ultimate priority - uninterrupted power supply and service reliability. Thus the utilities' response to joint services had not been as prompt as for training. Second, utility training officers can interact with the CARILEC Training Coordinator on issues such as scheduling and course content and take on the responsibility for local course coordination. A similar framework has not yet been created for Joint Services.

The implementation of joint services will only be as successful as training if CARILEC develops an analogous operational framework for the introduction and development of these services. This may require hiring a Joint Services Coordinator and assigning reciprocal responsibility to senior management personnel in each of the utilities.

4. CONCLUSIONS

- In Phase II, Training became CARILEC's top priority. The CARILEC Board and its management team focussed almost exclusively on developing an organizational system to build an in-house capability to meet members training needs.
- CARILEC has developed and managed its training programs with a high level of utility involvement. The Corporation has been exceedingly successful in this area and is now quite capable of delivering high calibre basic, intermediate and technical courses to existing and new members. Within two years CARILEC's training programs have been delivered with as much efficiency as other donor projects with comparable resources and target markets in the region.
- The Corporation functioned for almost 12 months without professional support staff partly because of domicile uncertainties and partly because top management needed time to structure the organization's operations. Consequently CARILEC's training momentum fell off in the first three months. Nevertheless the Corporation successfully implemented five courses of 23 interventions involving 499 participants in seven EC countries. This compared favorably with NRECA's and QUALTEC's performance of 23 interventions involving 414 participants in nine countries. (Both sets of courses were carried out over six month intervals.)
- Staff levels, capabilities, and competence are quite adequate for the current needs of the member utilities. The evaluation team strongly suggests that CARILEC encourage its professional staff, because of its high caliber, to become more involved in broader aspects of its operations such as financial planning, database and MIS development.
- The Board should reconsider its full-cost policy to facilitate introduction of new services. Also, the Board should consider setting deadlines for implementation of future activities. Such a system is needed to circumvent delays and ensure efficient implementation of approved decisions as the organization expands its operations and range of responsibilities.
- The evaluators found that reasonable progress had been made towards meeting USAID's Accounting and Financial System requirements. The Corporation also has an adequate system for billing member utilities for services on a full cost or subsidized basis although there have been some delays in the payment of dues and fees.
- The CARILEC Board of Directors and its management team have displayed due diligence, strong enthusiasm and are distinctly committed to the organization's long term survival. However strategic options for self-sustainability have not yet been identified or analyzed by the Corporation and current plans do not reflect a financial program that addresses this concern.
- USAID should either provide technical assistance to help CARILEC develop a strategic plan as part of its support under the Project or authorize use of existing grant funds for this purpose. This would allow CARILEC to review its financial alternatives, identify income generating services for assessment, and develop work plans for further investigation of specific services.
- Key Project Paper expectations were not included in the CARILEC/USAID Cooperative Agreement. This weakened previous USAID attempts to persuade CARILEC to adopt a multi-disciplinary approach to both implementation and sustainability

- **Joint Services were shelved temporarily during the first 12-18 months of Phase II because it was not considered to be an immediate priority. CARILEC is now interested in a number of common services. However, the development of joint services is inhibited by a lack of coordination between the utilities and CARILEC management. More importantly, there is no operational framework for the systematic development of Joint Services.**
- **The implementation of joint services will only be as successful as training if CARILEC develops an analogous operational framework for the introduction and development of these services. This may require hiring a Joint Services Coordinator and assigning reciprocal responsibility to senior management personnel in each of the utilities.**

SECTION THREE

MAJOR CONCLUSIONS AND RECOMMENDATIONS

INTRODUCTION

Section III provides USAID/RDO/C and CARILEC with major mid-term conclusions about RUMP and principal recommendations for the next phase of implementation.

Our Conclusions and Recommendations are based on Scope of Work requirements in the evaluation contract and are classified under the following headings:

MAJOR CONCLUSIONS

- A. VALIDITY OF DESIGN ASSUMPTIONS**
- B. PROJECT PERFORMANCE**
- C. PROJECT IMPACT**

PRINCIPAL RECOMMENDATIONS

- D. STRATEGY FOR SUSTAINABILITY**
- E. ORGANIZATIONAL PRIORITIES**
- F. USAID SUPPORT AND MONITORING**

Major conclusions, particularly about design assumptions and project impact, are focussed mostly on Phase I which was completed in December 1989. Conclusions about project performance cover both Phase I activities, which have been completed and Phase II actions; some of which were completed, and others still in progress.

The three principal recommendations are specifically directed at the next phase of implementation. Strategy for Sustainability suggests options and prerequisites for CARILEC's continued existence after AID funding expires. Organizational Priorities provides suggestions on strengthening corporate capacity and improving policy. Finally, the evaluators have pinpointed essential conditions and modifications that would strengthen RDO/C's Project management. These ideas are presented under subsection F., USAID Support and Monitoring.

MAJOR CONCLUSIONS

A. VALIDITY OF DESIGN ASSUMPTIONS

According to the Project Paper, extensive utilization of CARILEC's services by the targeted utilities would depend on realization of five critical design assumptions:

- Utility commitment to the concept of developing regional capabilities and confidence placed in the Corporation performance.
- Utility commitment to the idea of common services. It was also assumed that other donors would not undermine the Corporation's services with competing grant funds.
- Utility acceptance of responsibility for certain aspects of on-site training and encouragement of technical and professional staff development.
- Enthusiastic interest in CARILEC by the utilities and concomitant support for the Corporation by their governments.
- Absence of government pressure on respective utilities to hire unnecessary personnel. This would allow the utilities to achieve productivity increases, as measured by the number of consumers per employee.

The evaluation team's conclusions on the validity of these assumptions were as follows:

- The utilities are committed to CARILEC and to the concept of regional cooperation. There is unanimous support for training. Each utility has hosted at least one CARILEC course and has assumed responsibility for on-site training. There is general support for joint services but different perspectives on what they should be and how they should be implemented.
- The five-year time frame for achieving all of the Project Paper goals, i.e. i) setting up and making CARILEC operational, ii) training in critical functional areas, iii) development of local resources for engineering and management consulting and iv) joint procurement of goods and services, was too optimistic.
- USAID expected immediate incorporation and simultaneous implementation of technical assistance, training and common services. However, improving technical competence was CARILEC's foremost priority. Furthermore the RUMP concept of common services was new to the member utilities. Consequently, they took a cautious approach toward corporate development.
- The member utilities are committed to CARILEC's self-sustainability. Confidence in CARILEC's management and capabilities is increasing. Members are willing to make

- additional financial commitments to the Corporation to cover recurrent operating costs and to ensure its survival after AID funding expires.
- With the exception of one utility, the governments have not pressured their respective utilities into hiring unnecessary personnel. Over the first three years of implementation, six of the nine CARILEC members (67%) have increased their consumer to employee ratios (Table IV, page 19). Government involvement is limited to decisions by representatives on the Executive Boards of the various companies on utility participation in CARILEC activities.
- Other donors have continued to provide support to some of CARILEC's members in areas such as line loss analysis (the World Bank) and long term training attachments (CETAP). Such efforts have complimented rather than compromised CARILEC's own initiatives.

B. PROJECT PERFORMANCE

Conclusions on project performance were grouped under five categories: 1) Project Management; 2) Technical Assistance; 3) Training; 4) Joint Services and 5) Financial Performance.

Project Management

- CARILEC project management was efficiently developed. Nine utilities have joined the Corporation as full members; another joined as an Associate Member within two years of formation.
- Staffing levels are adequate to carry out current tasks and responsibilities. The high caliber of staff should ensure that the Corporation will meet current and near-future administrative and technical coordination. Accomplishments and cost-effectiveness are equal to similar USAID and other donor agency programs, many of which have been in existence for a longer period of time (Table IX, Project Comparison Table, page 39).
- Members benefit from USAID grant support if the majority are prepared to utilize a particular service. This approach has worked well to date. However, such a policy has inadvertently hampered initiation of joint services in instances where a minority group of member utilities were prepared to try new initiatives together.
- In some instances, there were long intervals between Board directives and corporate implementation. This could be explained by undefined completion dates, lack of prioritization of certain activities and the absence of a systemic framework for efficient introduction of activities other than training.

Technical Assistance

- TA to GRENLEC and APUA was well implemented. Some benefits were lost because USAID had not mandated CARILEC to provide follow-up in the form of short term assistance and/or funding to support the implementation of TA recommendations.

Training

- Phase I numerical goals for the Training of Trainers component were met. However, NRECA and QUALTEC training in Phase I was too rapid. In some cases course content was not relevant to EC utility needs. The Training Of Trainers (TOT) goal of having functioning instructors by the end of Phase I (December 1989) was not achieved.
- In Phase I, there was a lack of coordination between the QUALTEC Training Advisor and member utilities on the identification of suitable candidates; on course objectives and content; and on the transfer of NRECA/QUALTEC training capability to CARILEC. These deficiencies were perpetuated by the absence of a CARILEC counterpart Training Coordinator at the program design and initial implementation stage.
- The Phase II program was well structured and coordinated. The program has increased technical awareness and competence at the utility operations level. It is having a beneficial effect on service efficiency and system reliability. It has also resulted in the organization of training courses on a regional basis.
- One of the major "intangible" benefits has been the increase in interaction between the Personnel Officers/Training Coordinators of the member utilities. This has led to an appreciation of the need to further develop Human Resource and Personnel Management programs within the utilities.

Joint Services

- Of 15 Project Paper joint services, nine were scheduled to be introduced by September 1991. Only two, the Hurricane Assistance Plan and seminars, were initiated. In early 1991, the CARILEC Board of Directors approved preliminary investigations into seven common services: insurance, procurement, pension plans, audits, mapping and system analysis, administrative manuals and seminars.
- Member utilities have commented favorably on the development of the Hurricane Assistance Plan and information acquired from the EDP seminar. Some concern was expressed over the slow pace of development of essential services such as technical audits.

Financial Performance

- As a result of substantial increases in member dues - from US\$1,000 to \$10,000/member CARILEC's cumulative revenues of \$211,000 has already reached total revenues from training and membership fees anticipated for the end of year # 4. However, CARILEC's draft financial plan does not address the Project Paper expectation that the Corporation cover 60% of all costs by the end of year #4.

C. PROJECT IMPACT

RUMP project assistance has undoubtedly led to more efficient utility management and plant operations. There were discernable benefits in training and technical assistance. These are recapitulated below. It is too early to draw major conclusions about the impact of joint services.

Training

- CARILEC has redesigned the Trainers Of Trainers component for implementation under a four phase program beginning in 1992. Although the program had to be rescheduled, CARILEC has increased the involvement of regional institutions from 8% in 1989 to 45% of total training in 1991.
- Of a total utility work force of 1852 employees in 1990, the Corporation has organized 91 training activities for 1495 participants within two full years of operations. Member utilities are now linking employee promotion and performance assessments with participation in CARILEC courses.
- Utility Training Officers are soliciting CARILEC support to upgrade and streamline personnel management policies and practices in their respective companies. Other utilities have heard of the courses and have expressed interest in becoming CARILEC members to benefit in a similar manner.

Technical Assistance

- Technical assistance to GRENLEC and APUA was well delivered and received. Unfortunately, there was no provision for follow-up implementation of key recommendations made by the Advisors. USAID did not provide for additional assistance through CARILEC as part of the Phase II Agreement.
- Baseline data contained in the Project Paper was not maintained or updated by CARILEC. Some comparisons were made by the evaluation team. With the exception of MONLEC, total annual operating costs rose for the utilities as the number of consumers and volume of generating power increased. (Table IV, page 19). Unit costs were higher generally in 1991 than in 1988. Such anomalies occurred because of extraneous factors such as increases in fuel surcharges as a result of changes in domestic fiscal policy. The evaluators' comparisons revealed various positive improvements in operations but the data did not allow the team to quantify the level of impact on utility operating costs.
- Causal relationships between RUMP interventions and utility operating costs could not be isolated. LUCELEC procurement of a new generation plant and transmission network will improve overall efficiency. This change is obviously beneficial but the evaluators could not single out gains which could be directly attributed to CARILEC training and assistance.

PRINCIPAL RECOMMENDATIONS

D. STRATEGY FOR SUSTAINABILITY

The Evaluation Team recommends that the Corporation develop a strategic plan to i) increase the rate of development of Joint Services, ii) sell services at commercial rates to members and iii) broaden its membership base.

CARILEC has used US\$ 1.6 million (43%) of its US\$ 3.5 million AID grant in 24 of its 48 month existence. USAID's funding commitment will expire on July 31, 1993. The Corporation, through cost saving measures and a planned cut-back in training courses, could exist on the remaining \$1.9 million until August 31, 1996. ie. the Corporation can survive for three years beyond the original July 31, 1993 completion date without increases in fees, membership, dues or grant funding.

Projected annual expenditures will average US\$ 600,000 between 1991 and 1996. Without a deliberate strategy for new revenue generation, CARILEC will either a) have to terminate its operations, or b) require a six-fold increase, from US\$ 10,000 to US\$ 60,000 per member, in dues after USAID funding expires.

Strategic Planning

- CARILEC should establish a strategic planning process to improve implementation over the remaining Life Of Project. Through this process, a Strategic Plan should be developed which addresses the following key issues: i) goal setting, ii) selection of revenue generating services, iii) management and marketing programs to support a strategy for sustainability, iv) appropriate levels of fees and dues, v) additional staffing requirements, vi) options for delivery of joint services, vii) rate of development of new services and viii) [associate] membership policy and marketing.
- The Board of Directors should determine priority tasks, set performance targets and closely monitor CARILEC's progress towards attainment of these goals.
- Implementation of the Strategic Plan should begin by July 1, 1992. To meet this target date, the Plan should be commissioned as soon as possible and completed by January 31, 1992. This would give AID and CARILEC two months to negotiate revisions to the Cooperative Agreement based on tasks, schedules and benchmarks in the Plan. (RDO/C will need about three months for internal approval of the Plan, amendment of the Project Paper and Project extension authorization.)

Joint Services

- Training should remain as CARILEC's primary service and income generating activity. The Corporation should assess the level of "commonality" among its members. This will facilitate decisions on grouping of training courses and/or facilities and use of specialized test equipment.

- The "Training of Trainers" program should be maintained and the use of regional institutions increased, especially for intermediate and advanced courses. Since US-structured management courses do not meet the utilities' needs, advanced courses should be developed in association with Caribbean management institutes.
- Technical audits have been requested by all members and should be initiated by CARILEC in early 1992.
- Group (joint) insurance should be investigated in detail in 1992. At an average of EC\$ 270,000 per utility (US\$100,000) this represents US\$ 900,000 in premiums/yr. A 10% cost saving would generate \$90,000 in additional annual revenues for CARILEC.
- Procurement, notwithstanding differences in equipment, specifications, credit terms, and shipping schedules among utilities, represents another viable option for revenue generation. The evaluators estimate that the eight smaller EC utilities together purchase over US\$ 8 million in supplies annually. A 10% saving on 50% of these purchases under a joint procurement mechanism would generate \$400,000 in new revenues each year.

Associate Membership

- CARILEC should increase its membership base from 10 to at least 20 members over the next five years of operations. This would allow the Corporation to sell training and other services to new members. Additional training would generate more revenues and enhance opportunities for grouping training and services at advanced and intermediate levels. Associate membership potential is between 10 to 15 utilities in the Caribbean region. These include larger companies in Jamaica, Martinique and Trinidad and smaller operations in St. Kitts/Nevis and St. Maarten. Associate Membership should be convertible to full membership, hopefully by the expiration of USAID funding.

Revenue Base

- CARILEC's revenues should come from a combination of "shared savings", service fees and membership dues. Shared savings should be based on a percentage of total savings which would accrue to the utilities as a result of joint procurement of goods and services. Additional fees should be generated by increasing training levies and by introducing new services such as technical audits. Dues should be increased by raising rates and increasing membership.

E. ORGANIZATIONAL PRIORITIES

CARILEC should strengthen its strategic capacity, modify its approval policy but carefully control its administrative size.

To expand common services, CARILEC will have to change its full-cost policy on joint services and produce proposals for new services that clearly delineate cost-benefit to members. CARILEC should market new services creatively. One proactive method is to promote its corporate capabilities through presentations to the member utility Boards of Directors. The Corporation should also use short term experts to develop services such as insurance, technical audits, and procurement.

Corporate Capacity

- To strengthen its strategic capacity, CARILEC should use business advisors, in non-voting positions and on an honorary basis, who would provide a broader view of corporate growth prospects. (The Board consists of professionals engineers with technical backgrounds.)

Approval Policy

- CARILEC should agree to underwrite the majority of the development costs for the introduction of new services. CARILEC's share of total costs should be at least equivalent to existing levels for training. Authorization to start new services should be made on a case-by-case basis. Consensus and majority decision-making should be maintained but should allow for the introduction of joint services for as few as two or three members at a time.

Organization Size

- The introduction of new services may require additional staffing. Nevertheless, CARILEC should contain its institutional size. The evaluators concur with the concern expressed by most utilities that CARILEC may lose its flexibility to deliver services under a large centralized management structure. Equilibrium should be maintained between in-house staff capability and the use of external contractors.

F. USAID SUPPORT AND MONITORING

The evaluation team recommends that USAID support RUMP for three years beyond the July 31, 1993 completion date ie. until July 31, 1996. AID Support should be contingent on CARILEC i) establishing a strategic planning process and developing a strategic plan, ii) producing work plans to implement subsequent decisions and iii) attaining financial and operational milestones toward eventual sustainability.

Essential prerequisites to improve AID support and monitoring include technical assistance approvals, revision requirements to grantee work plans, development of benchmarks, and modifications to the Cooperative Agreement and the Program Description.

Methodology

- USAID should help CARILEC develop a scope of work for a Strategic Plan. The Plan should address both USAID and CARILEC implementation issues. After completion, the key elements of the Plan should lead to a revised Program Description and an amendment to the Project Paper. The Cooperative Agreement, its Schedule and Program Descriptions should be subsequently amended.

Technical Assistance

- RDO/C should approve the use of existing CARILEC technical assistance resources for the development of the Strategic Plan. USAID should consider obligating additional grant funds for technical assistance to facilitate feasibility assessment of speciality Joint Services.

Grantee Work Plans

- Tasks, responsibilities and completion dates for attaining performance benchmarks should be clearly defined in CARILEC's quarterly work plans. Activities should be closely linked to the Corporation's strategic objectives and to revised RUMP benchmarks and targets agreed to by USAID and CARILEC.

Benchmarks

- The Project Paper's concept of gradually increasing CARILEC's share of total operating costs should be reinstated under an adjusted Cooperative Agreement. Required levels of CARILEC contributions should be based on current assumptions about detailed activities and milestones from the Corporation's strategic plan.

Revised Program Description

- The Project Paper should be amended to reflect changes in goals, implementation activities and schedules. Revisions should be derived from the CARILEC Strategic Plan and from negotiations between CARILEC and RDO/C on various aspects of the Project. A modified Program Description should be developed. These modifications should form operational parameters within which future project implementation requirements should be established under a revised Cooperative Agreement.

Revised Cooperative Agreement

- The Cooperative Agreement and its Schedule should be revised. The Schedule should be based on CARILEC's strategic plan and the program description amendment to the Project Paper. The Schedule should include the purpose of the revision, period of the extension, an adjusted AID financing plan, reporting requirements and special provisions and/or conditions precedent to further disbursements of AID grant funds.

SECTION FOUR

LESSONS LEARNED AND FUTURE IMPLICATIONS

INTRODUCTION

Section IV provides a summary of Lessons Learned and implications for future design. These perspectives were derived from observations of the strengths and weaknesses of the implementation process and from Findings of the evaluation team.

The evaluators also drew on Lessons Learned from other RDO/C projects with similar technical assistance programs such as the Small Enterprise Assistance Project and the High Impact Agricultural Marketing and Production Project. Lessons from this Project are presented in three categories:

- A. PROJECT DESIGN AND STRATEGY**
- B. PROJECT IMPLEMENTATION**
- C. INSTITUTIONALIZATION AND SUSTAINABILITY**

These subsections offer useful insights for future Project Development within the mission. Conclusions drawn from some of the lessons have been incorporated under Section III., Major Conclusions and Recommendations. Others deficiencies like Baseline Data Development and Measurement of Impact have emerged repeatedly in other evaluations but continue to recur because of similar omissions in newer projects.

STRUCTURE

Each Lesson Learned is highlighted at the beginning of subsection A, B, and C. This is supported by evidence from implementation or general observations based on the evaluators experience with design, management and assessment of other USAID projects.

A. PROJECT DESIGN

- 1. LESSON LEARNED: Where project beneficiaries can be specifically identified and targeted, they should be intimately involved in the design process and in the development of scope of work requirements for contractors as well as benchmarks and performance targets for each proposed stage of implementation.**

Most of the targets and benchmarks in the RUMP Project Paper were never presented to CARILEC's members for deliberation. In some instances members were completely unaware of a number of project activities such as Technical Assistance to the Grenada and Antigua Power Plants, and disowned any responsibility for follow-on support or monitoring. Involvement of CARILEC members would have led to a more pragmatic prioritization of joint services as well as relevant financial projections of revenues and expenses.

- 2. LESSON LEARNED: Unattainable expectations about impact and performance occur when the need for technical assistance is mistaken for demand. Therefore, critical assumptions about potential project activities should be carefully investigated at the design stage.**

The evaluators found that a number of proposed joint services were considered inappropriate or of secondary importance to CARILEC's members. Furthermore, critical assumptions were made with limited analysis of constraints, obstacles, vested interest in maintaining the status quo. Attempts should have been made to develop a clear understanding of the organizational structure, corporate politics and decision making process in each utility so as to realistically determine which joint services were feasible to investigate or develop.

In the case of RUMP Joint Services, there were obvious benefits and savings to be derived from joint procurement, insurance and technical services. However, the design team, in its attempt to justify immediate provision for these services, failed to reconcile its own perceptions of need with actual demand. The outcome: almost all USAID and NRECA efforts to introduce joint services met with resistance or lack of interest on the part of the utilities.

B. PROJECT IMPLEMENTATION

- 3. LESSON LEARNED: Project activities, benchmarks and work plans should be revised to reflect acceptable compromises for subsequent implementation where there are significant differences between donor expectations of project performance and executing agency priorities.**

A major shortcoming of the project was donor inertia over revising the program description in light of an alternative approach which was clearly preferred and articulated by the beneficiary. Failure to make appropriate adjustments resulted in a growing divergence between donor expectations and CARILEC's own operational program.

4. **LESSON LEARNED: Development projects should include budgeted line items for baseline data management, for measurement of impact and for management information systems. Impact assessment activities should be defined in grant agreements and in contractor scopes of work. Measurement should be incorporated into work plans and reviewed continually over the Life Of Project.**

Baseline data development and CARILEC's management information system were two basic but important activities which were never initiated. Perennial failures to improve assessments of project impact occur because donors, other than brief references to grantee and contractor requirements to measure impact, fail to incorporate assessment functions into the implementation and monitoring process. Measurement activities are not laid out in quarterly work plans nor are resources identified as budgeted line items for these particular activities.

Such omissions relegate measurement [of impact] and development of information systems to the bottom of the list of grantee or contractor priorities.

C. **INSTITUTIONALIZATION AND SUSTAINABILITY**

5. **LESSON LEARNED: In order to increase the likelihood of implementing a strategy for sustainability, the donor should provide funding conditionally so that the beneficiary seeks to attain clearly defined financial and institutional milestones over the Life Of Project.**

Sustainability targets were never written into the CARILEC/USAID Cooperative Agreement nor did AID insist on income generation from the development of specific services. Such incongruity reduced RDO/C's influence over the direction and rate of RUMP implementation.

6. **LESSON LEARNED: Initial project implementation can be accelerated by i) creating a temporary executing agency, ii) assigning institutional development targets and iii) immediately implementing key project elements on a trial basis. This can be accomplished through grant agreements or core contracts. However, momentum gained will be often lost if the eventual beneficiary is not involved in developing and refining initial project activities.**

Under RUMP, the use of an offshore contractor to launch common service activities and form an organization that would adopt these functions produced mixed results. CARILEC benefitted from NRECA's efficient and professional approach to institutional development. Nevertheless, the Corporation lost ground because no allowance was made for utility involvement in designing training activities. Thus CARILEC lost time because it had to restructure most of the initial programs delivered by the temporary executing agency, NRECA.

APPENDIX A
CHRONOLOGY OF EVENTS

**REGIONAL UTILITY MAINTENANCE PROJECT
CHRONOLOGICAL SHEET**

<u>Date</u>	<u>Event and Description</u>
1981	Under a CDB initiative, the first Caribbean Electric Utilities Conference was held among EC utilities and donor agencies at which NRECA and FL&P were invited to submit a proposal for the establishment of a joint services organization by the EC utilities.
1982	Study on Caribbean region electricity pricing issues concludes that a common services organization should be considered in light of the withdrawal of CDC from its ownership/management role in utility operation in the EC region.
1983	The need for EC utilities' common services raised in the Regional Energy Action Plan (REAP) formulated in December by the CDC, UNDP, and CARICOM.
1984	LUCELEC hosts management conference for EC utilities. Frank McConney (BL&P Managing Director) summarized the agreement reached among the utilities to study common needs.
1985	EC utilities, RDO/C, NRECA, and FL&P (QUALTEC) meet to review NRECA/QUALTEC common service organization proposal and suggest revisions. US Congress earmarks funds to support an initiative. NRECA begins work on revised project design.
1986-87	CIDA participates in common services organization study. Study recommends that a utility cooperative association be established to share concepts and conduct regional meetings prior to a full common services organization. On March 31, 1987 the EC utility managers reject the concept without better defined benefits and functions. However, they called for a meeting of training officers to consider joint training programs. On April 30, 1987, a conference was held to discuss training needs and priorities and to establish opportunities for cooperation.
1988	
January	RDO/C agrees to fund a 5-year, US\$5.0 million grant program for the development of a Common Services Organization among the EC utilities.
April	EC utility General Managers sign Memoranda of Understanding regarding the framework for a common services project.
August	RDO/C and NRECA sign a 1-year Cooperative Agreement for a training and technical assistance program with QUALTEC as a subcontractor.
September	Ron McCuddy (QUALTEC) goes to Grenada for 1-year as a Power Station Consultant.

**REGIONAL UTILITY MAINTENANCE PROJECT
CHRONOLOGICAL SHEET**

Page 2

<u>Date</u>	<u>Event and Description</u>
October	RUMP offices established at BIMAP on Barbados. Brac Biggers (NRECA) arrives in Barbados as Project Advisor. Charles Overman assigned as NRECA Project Coordinator in Washington, D.C.
November	Jack Hicks (NRECA) arrives on Antigua for a 6-month assignment as an Engineering Advisor. First CARILEC Managers meeting held in Grenada.
1989	
January	Bill Grass assigned by QUALTEC as CARILEC Training Advisor in Barbados for 1-year. Dean Moody becomes RDO/C RUMP Project Officer. St. Kitts and Nevis decline membership in CARILEC.
March	Training program begins. Technical Service activity begins at GRENLEC and APUA. KMPG Peat Marwick placed under contract to develop an accounting system for CARILEC. British Virgin Islands Electricity Corporation (BVIC) joins CARILEC.
May	CARILEC Articles of Incorporation signed by 7 member utilities (Anguilla and BVIC abstain for lack of authority to sign).
July 21	CARILEC officially incorporated in Barbados.
July 24	Bernard Theobalds (LUCLEC) becomes Chairman and Joel Huggins (VINLEC) becomes Vice Chairman of CARILEC.
Aug. 14	USAID/RDO/C signs Cooperative Agreement No. 538-0138-A-00-9619-00 with CARILEC for a US\$1.5 million grant. Phase II of RUMP officially initiated. NRECA/QUALTEC Phase I training program completed. NRECA Phase I contract extended to December 31, 1989.
Sept. 18	Chris Farrell becomes Executive Manager of CARILEC.
Sept. 8	QUALTEC Training Advisor (Bill Grass) leaves RUMP.
Sept. 26	CARILEC expresses desire for Brac Biggers (NRECA) to extend as Project Advisor, but rejects the QUALTEC proposal to continue with a Training Advisor. CARILEC delays initiation of Joint Services component until Executive Manager is in place and the training program is stabilized.

**REGIONAL UTILITY MAINTENANCE PROJECT
CHRONOLOGICAL SHEET**

Page 3

<u>Date</u>	<u>Event and Description</u>
October	First CARILEC Annual General Meeting held in Antigua. Board meeting held at which Theobalds and Huggins are re-elected as Chairman and Vice-Chairman respectively and Farrell is named Secretary for a one year term.
Oct-Nov	NRECA contract budget approved for continued assistance. Accountant candidate declines employment, Peat Marwick to re-advertize position. Post of CARILEC Training Coordinator advertized.
1990	
January	Contract signed between CARILEC and NRECA for continued technical assistance.
February	Peat Marwick retained by CARILEC to make monthly financial Reports. Turks and Caicos apply for membership in CARILEC.
March	RDO/C amends CARILEC Cooperative Agreement by adding US\$500,000 and extending the contract to March 1991.
Apr-May	Ministry of Finance (Barbados) grants duty-free status, but denies CARILEC the terms of the US-Barbados Bi-Lateral Agreement and tax exemption for employee income. CARILEC members considering a move to St. Lucia. PUC-Grand Cayman expresses desire to join CARILEC.
June	CARILEC applies to St. Lucia for tax and duty concessions. Victor Poyotte accepts Training Coordinator position. Dean Moody, USAID Project Officer leaves project, duties pass to Trevor Too-Chung. Turks and Caicos formally admitted as Associate Members of CARILEC.
July	St. Lucia agrees to give duty concessions to CARILEC up to the end of the USAID grant.
September	Peat Marwick contracted to review Accounting System. NRECA contract extended to December 15, 1990.
November	CARILEC closes the Barbados office on November 14 and opens offices in St. Lucia on November 19.
December	Phase II CARILEC/NRECA contract expires on December 15, 1990. Brac Biggers leaves project.

**REGIONAL UTILITY MAINTENANCE PROJECT
CHRONOLOGICAL SHEET**

Page 4

<u>Date</u>	<u>Event and Description</u>
1991	
January	CARILEC contracts with Multi-Amp International and A.B.B. for training services. Meets with OFDA Alejandro James to discuss CARILEC/NRECA Hurricane Preparedness manual.
February	CARILEC host EDP Computer Joint Services Committee meeting to discuss common needs. New dues (US\$10,000 annually) and fee structure effective.
March	QUALTEC holds computer training course for CARILEC employees. CARILEC meets with Paul Bell of OFDA to discuss Hurricane Preparedness Plan.
April	Price Waterhouse begins annual 1989/1990 audit. USAID Financial Analyst Elson Harewood conducts audit of CARILEC.
May	EDP Joint Services meeting held in St. Lucia.
June	CARILEC Hurricane Preparedness Plan completed and circulated to members. QUALTEC's training contracts transferred to ESI Energy, Inc. (another member of Florida Light and Power Group).
August	Price Waterhouse audit completed and circulated to all members. CARILEC formally requests RDO/C to extend the project until September 1994 at no cost. CARILEC prepares summary papers for RDO/C mid-term evaluation scheduled to start in September 1991.

APPENDIX B
METHODOLGY USED

METHODOLOGY FOR THE RUMP MID TERM EVALUATION

Background

From September 1 to October 18, 1991, a two-person team from DATEX Inc, conducted the mid-term evaluation of the Regional Utilities Maintenance Project.

We adopted a multi-disciplinary approach to the evaluation. This consisted of a combination of the following techniques: interviews with project personnel; review of project documents, debriefings with USAID and presentations to the project beneficiaries and senior RDO/C management.

The evaluation was initiated in Washington D.C with a visit to the head office of NRECA to discuss their involvement in the first Phase of Project implementation (August 1988 - December 1989. This meeting allowed us to obtain direct feedback from the lead organization which, apart from initial implementation, was also involved in Project Design and Project Paper development.

Document Review

We reviewed in detail the following Project documents: The Project Paper; The NRECA Final Report; the two Cooperative Agreements and the six corresponding Amendments; and Financial Updates from CARILEC. In the process we compared project assumptions against factual evidence; financial projections against actual revenues and expenditures and project targets and benchmarks with actual accomplishments from quarterly reports and other supporting documentation. In particular, we used the Project Paper to compare expected activities with implementation trends and practices. In this way we were able to establish degrees of completion of each critical task identified in the Project Paper.

Field Trips

We were briefed by USAID's Regional Development Office (RDO/C) on September 6. On an on-going basis, we supplemented our review of Project Files with field trips to six of the nine member-utilities. Our team met with the Barbados Light and Power Company, a CARILEC member Utility and then travelled to St. Lucia, Grenada, Antigua and Montserrat to interview Utility management and assess CARILEC's training programs. We also held an introductory meeting with the CARILEC Board of Directors on our first day of work in Barbados.

In St. Lucia we visited CARILEC's corporate offices, scanned Project files and interviewed technical/professional staff. The DATEX consultants met with the Manager and Training Coordinator in each country and in the case of Antigua, met with the Utility manager from Dominica while in Antigua. Afterwards, we returned to Barbados on September 14th for an interim AID debriefing, then travelled to St. Vincent to interview utility management.

These visits gave us numerous opportunities to obtain confidential viewpoints from the utilities on the project and to obtain explanations for events and decisions for which there was no supporting documentation.

Submissions

The draft report was submitted to the Regional Development Office and CARILEC on October 7th. Field copies of the final report were presented to RDO/C on October 22 and incorporated factual corrections to the draft from USAID.

Presentations

A summary of the evaluation conclusions and recommendations was subsequently prepared, presented to USAID and discussed with CARILEC's Directors on September 25th. The evaluators were debriefed by AID on this meeting during the week of October 1 and presented its findings to the Mission Director and the U.S Ambassador to the Eastern Caribbean on October 11. These special meetings gave us opportunities to clarify key issues and prepare the Mission and the Executing Agency for the content of our final report. The final report contained our findings, conclusions and recommendations for the next Phase of RUMP implementation.

APPENDIX C
SCOPE OF WORK

SCOPE OF WORK
for
EVALUATION OF THE
REGIONAL UTILITIES MAINTENANCE PROJECT NO. 538-0138.08

BACKGROUND

The Regional Utilities Maintenance Project (RUMP) was authorized July 1, 1988 as a sub-project of the Infrastructure Expansion Maintenance System (IEMS) Project. The IEM's purpose is to rehabilitate or construct vitally needed infrastructure while providing jobs and generating increased commercial and private sector activity. IEMS's overall goal is sustained economic growth and improved social well-being.

The goal of the RUMP project is greater efficiency in the management and performance of the utility companies in the Eastern Caribbean. The RUMP project aims at improving the overall efficiency and reliability of the services provided by the utility companies in ten countries in the region, namely, Antigua, Anguilla, Barbados, Dominica, Grenada, Montserrat, St. Lucia, St. Vincent and the Grenadines and the British Virgin Islands. St. Kitts and Nevis opted not to become a member of this group of countries. However, Turks and Caicos applied for associate membership and was admitted to the group in this category in 1990. Although associate members must fully fund all activities they participate in, they do not have voting rights. The project hopes to accomplish the objectives by firstly establishing a regional non-project corporation, above-stated, to enable member utilities to develop indigenous training capabilities and meet other common services on a joint or cooperative basis. Technical assistance, training and related commodities are to be provided under the project.

Achievement of project objectives is viewed as essential for a sustained strengthening of public confidence in the utilities' services, and as a necessary foundation for economic development in these countries. The overall development strategy for most of the Eastern Caribbean countries involves the development of tourism, small industry and private sector commercial enterprises. Such plans, if they are to succeed, require reliable sources of electrical power at a reasonable cost.

The essential elements of project design were based on a proposal originally submitted to AID in 1985 by the National Rural Electric Cooperative Association (NRECA) and Florida Power and Light (FLP). A revised proposal was submitted in 1988.

The underlying rationale is that this Caribbean electric utilities project is required to protect the enormous investment in the existing power systems in the targeted Eastern Caribbean countries; and that the resulting improvements and efficiencies in electric service will in turn help to foster economic development in the region.

The established common services organization (a Corporation) will carry out the following tasks:

- conduct needed training in critical functional areas
- develop local resources to conduct needed engineering and management analysis
- provide a vehicle for joint procurement of goods and services.

The Corporation, Caribbean Electric Services Corporation known as CARILEC was established in July 1989. The project is fully obligated at US\$5.0 million and the PACD is July 31, 1993. A mid term evaluation was scheduled for June 1990. However, RDO/C felt that it was too early for a meaningful evaluation given that CARILEC was only established in July 1989. Consequently the evaluation was postponed a full year.

It was intended that the Corporation would be controlled by the targeted E.C. utilities to insure that all services respond to real utility needs. AID financing will be phased out gradually over the life of the project, at which time, the Corporation is to be self-sustaining through income generated by fees remitted for specific services, and through dues paid annually by the participating utilities.

Two implementation phases were planned; the first lasting twelve months was to be managed by the National Rural Electric Cooperative Association (NRECA) with the objective of establishing the Corporation, hiring the staff, developing curricula and a financial control system, and defining the procurement activities in detail; the second forty-eight (48) month phase was to be managed by the Corporation with NRECA and QUALTEC (A Florida Power and Light Group Company) acting as sub-contractors to the Corporation. CARILEC also has the option of engaging in contracts with other organizations or institutions for training member utilities' personnel.

SCOPE OF WORK

ARTICLE I: OBJECTIVE

This evaluation will assess the degree of accomplishment of the project's objectives of 1) improving the reliability of the electrical service provided by the ten member countries; and 2) improving the efficiency and viability of the electric utilities in the member countries. The evaluation will also identify problem areas or constraints which may inhibit the attainment of project objectives and make recommendations for the solution of problems or the removal of constraints.

ARTICLE II: STATEMENT OF WORK

The contractor shall conduct an evaluation of the RUMP project by examining the status and level of accomplishment of the following elements:

- the effectiveness of CARILEC as a management body and the suitability of its organizational structure and staffing to successfully accomplish its designated tasks i.e. provision of common services for the targeted group of utility companies; conduct of needed training in critical functional areas; development of local resources to conduct needed engineering and management analysis; and provision of a vehicle for joint procurement of goods and services.
- the training program with regard to its effectiveness and overall impact.
- Joint procurement, engineering services and management consulting relative to the effectiveness and impact on individual utility companies' efficiency and reliability.

The questions/issues to be addressed are described in more detail below as follows:

A. Effectiveness of CARILEC

1. Are the member utilities satisfied that CARILEC is managing its functions in such a way as to effectively provide the training and services required?
2. Has CARILEC provided the leadership in seeking out and developing mechanisms for delivering common services in the areas of insurance, workmens compensation, retirement and pension plans, training opportunities, disaster preparedness, disaster relief and control, credit services, etc?
3. Is the CARILEC staff sufficient and of the right mix to adequately discharge its planning, organizing and management functions?
4. Has CARILEC developed a plan for self-sufficiency that realistically projects future revenues and expenses and that will financially permit CARILEC to continue as a viable organization after AID terminates its project funding?

5. Have the agreements between CARILEC and its technical assistance and training sub-contractors proved adequate and suitable for effective accomplishment of training and technical assistance objectives; if not, what modifications have been made to the agreements or should have been made and what alternative approaches are being tried to increase the effectiveness of the training and TA programs?
6. To what extent has the Board of Directors of CARILEC effectively performed its designated functions and duties?
7. Has CARILEC established an adequate accounting system and financial controls as well as an adequate system for billing member utilities utilizing services partially or fully paid by them?
8. Are the accounting, financial and management baseline data developed or collected by CARILEC sufficient to allow potential private sector investors to analyze operating conditions, risks, and quality of staff without a major pre-investment study?
9. Has CARILEC collected sufficient overall baseline data to allow it to become an information clearing house for the member utilities in the region on such matters as regional rates and service reliability - information which could be useful to potential industrial and commercial developers looking to investment in the Eastern Caribbean?

B. Training Program

1. What is the validity of critical assumptions made during project design with regard to the following:
 - a) commitment of the individual utilities to the concept of the corporation and to the idea of common services in critical areas and in general, to the concept of developing regional capabilities.
 - b) long term government support for the project.
 - c) willingness of member utilities to take responsibility for certain aspects of the on-site training which are necessary for the project's training component to be effective.
2. Is the project moving progressively toward institutionalization of electric utility training? To what extent has CARILEC developed indigenous training capabilities?
3. What has been the focus of training during the first two years of project implementation by CARILEC? Does the focus of training need to be adjusted in order to effectively meet the expressed needs of the individual member utilities.

4. What are the major constraints to successful accomplishment of scheduled training targets with respect to a) Basic Utility Training; b) Job training and safety; c) Technical Skills Training; d) Professional Skills Training; and e) Management Training?
5. Has coordination assistance for overseas training been effectively provided and has a regional training capability been developed for more advanced types of training by CARILEC?
6. To what extent has the training of trainers program led to an effective corps of local trainers?
7. What have been the impacts of training offered i.e. powerplant operations, line crew operations, material specifications, equipment handling and purchasing, on improved efficiency, cost effectiveness and reliability of services?
8. Is the training program timely, appropriate and consistent with the development of the utilities' capabilities?

C. Joint Procurement, Engineering Services and Management Consulting

1. What is the level of joint services offered by CARILEC to participating member utilities?
2. Have the joint services offered to date proved to be less expensive or cost effective vis-a-vis normal operating costs of member utilities?
3. What are the constraints to provision of joint services in (a) procurement; (b) engineering; and (c) management consulting?
4. Has a prioritized joint services program been established complete with program specifications; and are the services being offered under the project consistent with this program?
5. What alternative joint services would seem to be appropriate to be offered by CARILEC?
6. Which joint services show evidence of being institutionalized?
7. Have the joint services provided had any impact on upgrading of technical and professional skills; or upgrading the effectiveness of utility plant investment through systematic planning; or making available needed long-term technical assistance services for critical positions where local staff cannot be trained quickly?
8. Has the fee structure for services proved satisfactory for member utilities?

ARTICLE III: METHODS AND PROCEDURES

Due to the time limitations, only Barbados and four of the remaining nine utilities could be realistically visited. It is suggested that these four countries be Grenada, St. Lucia, Montserrat and Antigua. However, the final determination on which four countries should be visited will be made by a consensus of the CARILEC Board members and the decision transmitted to the evaluation team during its meeting with the Board in Week 1. It is planned that persons from other utilities in adjacent islands will be interviewed by the team if this could be arranged by CARILEC during the period of the evaluation.

It is estimated that the evaluation will take approximately thirty-six (36) work days or six (6) working weeks of effort with a team of 2 persons. Six-day weeks are authorized.

The team will travel to Bridgetown, Barbados prior to commencement of the field visits for orientation and discussion with RDO/C staff. The team will then travel to St. Lucia for discussions with CARILEC. The team will visit the Barbados Light and Power Company (BL&P) and four (4) other utilities. During discussions with CARILEC the decision will be made as to which four utilities to visit in addition to the BL&P. The participating electric utilities of CARILEC are located in St. Lucia, St. Vincent, Grenada, Dominica, Barbados, Montserrat, Antigua, Anguilla, British Virgin Islands and the Turks and Caicos Islands.

The evaluation team will consist of a general economist and an electrical engineer and will be expected to carry out interviews with CARILEC staff, utility managers, supervisory personnel, employees of the member utilities and persons trained under the project. The team is expected to submit a draft report of its findings and debrief RDO/C and CARILEC before team members return to their respective places of residence.

The General Economist will serve as the Team Leader and will be responsible for coordinating the contents of the report and for the submission of the final document. The Team Leader will be responsible for developing work plans and making assignments, including data collection and identifying personnel to be interviewed. The RDO/C Project Officer and the CARILEC Executive Manager will facilitate interview appointments.

The Team Leader will be responsible for maintaining good communications with the RDO/C Infrastructure Office while in the field. The RDO/C Project Officer and the Chief of the Infrastructure Office may accompany the team in the field on some of the visits. Staff from CARILEC will be expected to accompany the team on their visits and to serve as resource persons.

ARTICLE IV: EVALUATION SCHEDULE

The team will travel together throughout the period of the field work in order to maximize interaction and optimize team input. The evaluation will take place according to the following schedule.

<u>Week 1:</u> 26 Aug-01 Sep	Review of material in Bridgetown. Briefing by relevant personnel at RDO/C; subsequently meet with Executive Director, Chris Farrell and CARILEC Board members in Barbados.
<u>Week 2:</u> 02 Sep-08 Sep	Meet with CARILEC personnel and decide on 4 utilities to be visited; visit utility #1 and interview relevant persons from utilities #1 and #2 first part of the week; visit utility #3 and interview relevant persons from utilities #3 and #4 last part of the week.
<u>Week 3:</u> 09 Sep-15 Sep	Visit utility #5 and interview relevant persons from utilities #5 and #6 first part of the week; visit utility #7 and interview relevant persons from utilities #7 and #8 last part of the week.
<u>Week 4:</u> 16 Sep-22 Sep	Visit Barbados Light and Power Co. Ltd.; initiate draft report.
<u>Week 5:</u> 23 Sep-29 Sep	Complete draft report. Visit St. Lucia and debrief CARILEC, including Board members if possible. Debrief RDO/C in Barbados.
<u>Week 6/7:</u> 30 Sep-13 Oct	Draft review by RDO/C and CARILEC and submittal of coordinated comments to Team Leader through RDO/C Project Officer.
<u>Week 8/9:</u> 14 Oct-27 Oct	Final report sent to RDO/C no later than two weeks after receipt of comments from RDO/C and CARILEC.

ARTICLE V: COMPOSITION OF THE EVALUATION TEAM

The team will consist of a general economist and an electrical engineer.

General Economist: The economist, who will serve as Team Leader must have a minimum of seven years experience in the evaluation of USAID and other donor funded development projects including infrastructural projects involving institutional development, technical assistance and training development. The economist is expected to be familiar with socio-economic impacts and financial/institutional analyses of these types of projects. The Team Leader should have experience in coordinating and supervising AID evaluations.

Electrical Engineer: The electrical engineer must be a graduate engineer, with a minimum of ten years of experience and be familiar with powerplant design and operations, distribution line operations, switching and paralleling operations, diesel maintenance, materials specifications related to electrical and mechanical equipment, equipment handling and purchasing. Familiarity with Caribbean public sector works programs/projects in general, and electrical utilities in particular would be preferred.

ARTICLE VI: RELATIONSHIPS AND RESPONSIBILITIES

The evaluation team will receive primary direction from the AID Project Officer for the RUMP project. The team will maintain close communication and coordination with the Infrastructure Office of RDO/C and the Executive Director of CARILEC. Prior to leaving the U.S. for the orientation and field trips in the Eastern Caribbean, it is expected that the team will interview and have discussions with NRECA staff, and to the extent required, with staff of Florida Light and Power (QUALTEC) since NRECA was responsible for first year implementation of the project.

The specific responsibilities of the members of the evaluation team are as defined below:

Responsibilities of General Economist/Team Leader

The Team Leader will be responsible for coordination of the travel under the guidance of the Executive Director of CARILEC. The Team Leader will also be responsible for division of the work load between himself/herself and the engineer and for final decisions relating to the logistics of travel to the various territories as well as for production of the draft and final report. To the extent possible during the mid-term evaluation, the team leader will analyze the economic and development impact of the project on participating islands.

More specifically, the general economist/team leader will be responsible for:

- a) Coordinating with NRECA in Washington, D.C. to acquire information relevant to first year project management and implementation prior to arrival at RDO/C, Bridgetown. It is expected that information on the activities of NRECA's sub-contractor, QUALTEC can also be acquired through meetings and discussions in Washington, D.C. with NRECA staff who were/are involved in the project.
- b) Developing a report outline and an evaluation methodology for discussion with the Chief of Infrastructure, the Project Officer and the designated backstop Project Development Officer (PDO) prior to commencing field visits.
- c) Coordinating the work of the electrical engineer and leading discussions of the relevant issues and questions in such a way as to insure full and efficient input by the other team member and resource persons.

- d) Through overview of the various components of the report, insuring that the report is logical, reads easily, covers all the objectives of the evaluation and that the format is consistent with AID standards and guidelines.
- e) Developing work plans in coordination with the electrical engineer and making individual assignments between himself and the engineer for preparing the report.
- f) Performing a qualitative assessment of the impact of project activities on the effectiveness of management and the Board of Directors of the individual utilities.
- g) Performing an assessment of the impact of the joint services activities and of training on the effectiveness, efficiency and viability of the electric utilities' operations.
- h) Performing an assessment of the status of collection of baseline data and the establishment of a Management Information System at CARILEC to facilitate decision making in the member utilities.
- i) Performing an assessment of the sufficiency of the financial management and control systems in place at CARILEC.
- j) Examining CARILEC's fee structure and assessing the sufficiency of CARILEC's plans and on-going activities designed to insure its viability and sustainability when AID terminates project funding.
- k) Assessing the status of the joint services program established to date vis-a-vis the stated objectives of the project.
- l) In coordination with the electrical engineer, assessing the extent to which operating costs of participating utilities have been lowered through joint efforts in purchasing, engineering and other services.
- m) Assessing the validity of assumptions made during project design (see logframe) in the light of problems encountered or constraints identified.
- n) Recommending changes in project strategy or methodology for more successful accomplishment of project goals and objectives.

Responsibilities of Electrical Engineer

The electrical engineer will be responsible for an overall assessment of the adequacy of the technical training and technical assistance provided as well as an assessment of joint procurement activities undertaken in the project. More specifically, the electrical engineer will assess:

- a) The level of accomplishment of the technical assistance provided to the Grenada electricity Utility, GRENLEC, by the Power Plant Advisor and the Management Advisor relevant to the operation of the newly installed diesel units.
- b) The impact of the technical assistance provided to GRENLEC on the efficiency and reliability of the electric services provided.
- c) Upgrading of utility plant investment through systematic planning.
- d) The effectiveness of the technical assistance provided to the member utilities with respect to:
 - materials selection, procurement, testing, and quality control of special items such as poles;
 - engineering construction standards/technical information dissemination;
 - management consulting;
 - Computer software systems and services;
 - Plant equipment maintenance programs;
 - Public/customer relations and productive use programs;
 - Loss reduction evaluation;
 - Load forecasting studies;
 - Capacity expansion studies;
 - Distribution system studies; and
 - Cogeneration analysis.
- e) Review for the status of training programs developed or implemented so far with respect to the following:

Management and Organization

- Utility Systems Organizational Structure
- Monitoring of Utility Performance (Financial & Technical)
- Human Resources Policies and Programs

Utility Operations and Maintenance

- Transmission & Distribution Operations Practices
- Tools, Equipment, Transportation and Communications
- Information and Data Base Management
- Scheduled Maintenance
- Work Planning and Work Ordering Practices
- Hot-line Training
- Scheduled Maintenance Practices

Construction Practices

- Procurement and Supplies Practices
- Project Management Practices
- Performance Monitoring
- Training Programs
- Tools and Equipment Used

Safety and Other Areas

- Crew Performance Evaluation
- General Safety Program Training Practices
- Training Programs for Crews
- Training Programs for Supervisors

- f) Assess the effectiveness of project management and implementation, as well as the overall flexibility of the project in responding effectively to utilities' training needs.
- g) Review the effectiveness of the program in promoting agency concerns related to policy dialogue, utilities' efficiency improvements, institution building, and technology transfer.
- h) Develop recommendations for the improvement of existing training programs.

ARTICLE VII: LEVEL OF EFFORT

It is estimated that a total of seventy-six (76) person days will be needed to perform this evaluation with a two-person team.

It is anticipated that two days of discussions/interviews will be held between the team leader and NRECA staff in Washington prior to the team's departure for RDO/C, Bridgetown. In addition, one week of orientation and documentation review will be necessary in Bridgetown, Barbados followed by two weeks of field visits and interviews before drafting of the report and consultation with CARILEC and RDO/C/Infrastructure (weeks 4 and 5) relative to information gaps, conflicting information or inconsistencies.

After comment preparation and submittal of comments by RDO/C and CARILEC (weeks 6 and 7) final report preparation will take place in week 8. Since six-day work weeks are authorized, the level of effort amounts to seventy-six person days $(4+2(6)(6) = 76$ person days).

ARTICLE VII: REPORTING REQUIREMENTS

1. Draft Report

Five (5) copies of a draft report will be submitted to RDO/C and CARILEC for their preliminary review and comments prior to the departure of the evaluation team from Bridgetown to return to the U.S.

2. Final Report

After RDO/C's and CARILEC's comments have been duly incorporated and the report finalized, twenty (20) copies of the final report will be submitted to RDO/C for internal distribution in RDO/C and for distribution to CARILEC.

The final evaluation report of ten (10) copies, suitably bound in a typewritten/printed form, along with a computer floppy disk of the report in DOS file format, is to be submitted by the team leader to the Chief of Infrastructure no later than 2 weeks after receipt of the comments on the draft report from RDO/C as indicated in the Evaluation Schedule. The Project Officer will be responsible for coordinating comments from CARILEC and RDO/C.

The Final Report will be submitted no later than ten weeks after the initiation of the work. The Final Report must include, but is not limited to, sections on Development Objectives of the Project; Purpose of the Evaluation; Methodologies Utilized; Major Findings including: validity of the design assumptions, project performance, effectiveness of CARILECC, effectiveness and impact of the Training Program, level of accomplishment of the Training of Trainers objective as well as the joint services and procurement objective. The report will also include a section on Lessons Learned with reference to the above; and Conclusions and Recommendations in separate sections of the Report.

a) Conclusions and Recommendations: The Report should end with a full statement of conclusions and recommendations. The recommendations will correspond to the conclusions and will specify the institutions and party/ies who should take the actions recommended.

b) Appendices: Technical reports of each of the team members, Statement of Work of the evaluation, a full description of the methodologies used, a bibliography of the documents consulted, and a list of the interviewees should be included in the appendices.

The Team Leader will provide the Chief, Infrastructure with a Draft Executive Summary, the draft Technical Reports, and the penultimate Draft Report before leaving Barbados. The Executive Summary must stand on its own as a document and include: Purpose of the Evaluation, Development Objectives of the Project, Methodologies Used, Major Findings, Development Impact, Conclusions, Lessons Learned, and Recommendations. The Technical Reports of the team members will be included with the Final Report as Annexes. Five (5) copies of each of these and of the penultimate draft report will be left with the Chief of Infrastructure prior to the Team Leader's departure from Barbados.

APPENDIX D
PERSONS INTERVIEWED

PERSONS INTERVIEWED

National Rural Electric Cooperative Association (NRECA)

Bard Jackson NRECA Manager, International Consultants and
Project Manager, RUMP Phase I

QUALTEC (Subsidiary of the Florida Power & Light Group)

Fred Trice Manager, RUMP Phase I Training Programs

USAID Regional Development Office for the Caribbean (RDO/C)

Mosina Jordan RDO/C Mission Director
Winfield Collins Chief, Infrastructure Office
Brinley Selliah Engineer and RUMP Project Officer

Caribbean Electric Utility Services Corporation (CARILEC)

Christopher Farrell Executive Manager
Victor Poyotte Training Coordinator
Cecilia Phillips Accountant

Barbados Light and Power Company Limited (BL&P)

Frank O. McConney Managing Director

St. Lucia Electricity Services Limited (LUCELEC)

D. A. McNamara Chairman of the Board of LUCELEC
Bernard Theobalds Managing Director and Chairman of CARILEC
Christopher Mitchell Chief Engineer/Project Manager
Timothy Chaderton Personnel and Training Officer

Grenada Electricity Services Limited (GRENLEC)

Gregory Bowen Manager
Bruce Bain Power Plant Supervisor
Chester Palmer Assistant Supervisor for Power Generation
Claudia Alexis Personnel Officer/Training Coordinator

Antigua Public Utility Authority (APUA)

Hon. R. Yearwood Minister of Public Utilities, Aviation, and Communication
Cordell Weston Permanent Secretary to the Minister
Michael Woodroffe General Manager of APUA
Peter O. Benjamin Electricity Manager of APUA
Cora J. Hill APUA Personnel Officer and Training Coordinator

PERSONS INTERVIEWED

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Anguilla Electricity Services Ltd (ANLEC)

Errol Hartley Managing Director

Dominica Electricity Services Limited (DOMLEC)

Rawlins Bruney General Manager

Montserrat Electricity Services Limited (MONLEC)

G. Majella Cassell Permanent Secretary, Ministry of Communication and Works
Lennox Browne Manager
Paulette Cooper Training Coordinator
Doug McCuddy Consultant for Diesel Maintenance Training Course

St. Vincent Electricity Services Limited (VINLEC)

Joel Huggins General Manager
St. Claire Leacock Administration Officer
Ralph Dinnick Chief Engineer

Small Enterprise Assistance Project (SEAP)

Omar Rahaman Project Officer for Small/Medium-Size Enterprises

Canada Training Awards Project (CTAP)

Angela Bryce Project Officer
Jane Belfon Training Officer

Commonwealth Development Corporation (CDC)

Bill Farmer Eastern Caribbean Representative

The Towner Management Group (TMG)

Christopher Towner Managing Director (Offshore Financial Services)

APPENDIX E
DOCUMENTS REVIEWED

DOCUMENTS REVIEWED

International Programs Division, NRECA, *Final Report, Phase I Of The Caribbean Regional Utilities Maintenance Project*, June 1990.

USAID/RDO/C, *Project Paper: Infrastructure Expansion and Maintenance Project, Amendment No. 6*, Barbados July 1, 1988.

Allan Klose and Kathy Schmiten, AHP Systems Market and Opinion Research, *CARILEC Employee Survey Results*, September 15, 1990.

Office Of The Regional Inspector General, *Audit Of The Regional Development Office/CIEMS Project*, July 31, 1991.

International Programs Division, NRECA, *Revised Project Proposal, National Rural Electric Cooperative Association and QUALTEC for USAID/RDO/C, Bridgetown, Barbados*, June 1988.

Caribbean Electric Utilities Services Corporation (CARILEC), *Quarterly Reports*, Fourth Quarter 1988 to Third Quarter 1991.

Barbados Light and Power Company Limited, *Annual Report*. December 31, 1990.

St. Lucia Electricity Services Limited, *Report and Accounts*. December 31, 1989 and December, and December 31, 1990.

Grenada Electricity Services Limited, *Report and Accounts*. December 31, 1989 and December 31, 1990.

Caribbean Electric Utilities Services Corporation. *Course Catalogue. Schedule and Description of Training Courses*. September 1 - November 30, 1990 and January - December 1991.

St. Vincent Electricity Services Limited. *Report and Accounts*. December 31, 1990

Victor Poyette, Training Coordinator, CARILEC. *Comments On The Training Component Of The Project Paper*. July 1991.

NRECA, *Joint Service Project Report On Computerized Engineering Studies For CARILEC Electric Utilities*. June 1989.

Caribbean Electric Utilities Services Corporation, *Draft Corporate By-Laws*, Undated.

CARILEC, *Minutes of Board Meetings*, October 1989 - April 1991.

Montserrat Electricity Services Limited, *Financial Statements*, December 31, 1989

CARILEC, *Hurricane Assistance Plan*, Undated.

APPENDIX F

CARILEC'S RESPONSE TO EVALUATION REPORT



Caribbean Electric Utility Services Corporation

P.O. Box 1048
Castries
St. Lucia, W.I.

Phone: (809) 452-9895/6

Fax: (809) 452-9894

DATE: November 20, 1991

TIME: _____

TO: Winfield Collins

COMPANY: USAID

LOCATION: Barbados

FAX NUMBER: _____

PHONE NUMBER: _____

FROM: Christopher Farrell

Number of pages including this sheet:

COMMENTS: Project Evaluation Report

Please find attached the comments of the CARILEC Board, on the Project Evaluation Report

Best Regards


.....
Christopher Farrell

**COMMENTS OF
CARILEC BOARD ON THE PROJECT EVALUATION REPORT
DATED OCTOBER 21, 1991**

The CARILEC Board at its meeting in Montserrat on November 7, 1991 discussed the mid-term Project Evaluation report dated October 21, 1991 in the presence of Messrs Winfield Collins and Brinley Selliah of the USAID Barbados Office.

The meeting expressed serious concerns at some of the statements made in all sections of the report and the USAID representatives were asked to pay special attention to these specific comments.

It is the Board's decision that only a overview and summary of their comments be written to USAID. It is also the Board's recommendation that these comments be appended to the Evaluation Report.

A summary of the comments follows:-

The Board was of the opinion that the tone of the Executive Summary was negative to CARILEC's many successes and at variance with details stated in the body of the report and in the final recommendations. Examples of these inconsistencies were pointed out to the USAID representatives.

The Board stated that the emphasis of the Executive Summary and Recommendations rested on the income earning capability of Joint Services other than Training and that the Board had clearly demonstrated by the Cooperative Agreement and by its activities that in the first years CARILEC would concentrate on training. Other activities would arise and be identified as an outcome of the training programme.

The Board is confident that this priority and emphasis has proven to be correct.

There is no doubt that if in the initial years services other than training were given priority these services would have failed to attract sufficient support and revenue from the Members. The effect of such a policy would have been to prejudice sustainability rather than enhancing it. It has been CARILEC's policy to select and promote only these joint services in which the majority of Members are interested and thereby not deflect too large an amount of the funds from

training. The contribution of Joint Services to the financial sustainability of the organization has so far been determined by this policy.

In respect of the recommendations made in the Report on income earning services the Board is of the opinion that these were not thoroughly thought out.

The assumption that saving which may be realised through joint action would be go to CARILEC and not to the Utilities is incorrect. It would be more practical for Members to pay a fee to CARILEC for its services in coordinating any joint action.

The Board unreservedly accepts the recommendation that CARILEC should produce a strategic plan which will guide Members and USAID on the path to sustainability. CARILEC will present such a plan as a basis for a revised Cooperative Agreement with USAID.

Although CARILEC will investigate all the recommendations in the Report it is unlikely that some of the proposals recommended will have prominence in the Strategic Plan. CARILEC will nevertheless continue to expand its efforts in Joint Services in both its 1992 programme and in future years.

CONCLUSION

CARILEC recognises that the measure of its performance in the evaluation exercise was the Project Paper.

Using this as the measure was not realistic as the Paper was written in early 1988 and is already out of date. Secondly the assumption that the form and content of the Joint Services listed in the paper were needed by the utilities was not correct.

Further the Board is of the view that to give so much weight to Joint Services in the early years was a misplaced priority and that the Project Paper should have identified Training as the major activity. Having established itself as good training organization CARILEC can now progress to establish itself in other activities on its way to financial sustainability.

It is the opinion of the Members that CARILEC has been a highly successful organization of which USAID and its Members can be justly proud. CARILEC having reached this point in its development can and will prove itself sustainable but not necessarily by the means detailed in the Project Paper or the Evaluation Report.