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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

SUMMARY

OF

ELECTRIC POWER PROJECTS

INCLUDED IN

THE MEXICAN LOAN APPLICATIONS

Washington, D.C.

October 29, 1948.

C O N T E N T S

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N O T E

This report is not final in the sense that, while it contains an appraisal of the electric power projects in Mexico for which Bank financing is proposed, it is not yet possible to include certain data still under discussion with the Mexican Government and the Mexican Light and Power Company.

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MEXICO

SUMMARY OF DEVELOPMENT PROJECTS

PART I

Electric Power in Mexico - General Information

1. The needs of the mining and textile industries for a source of cheap power led to the creation of the electric power industry in Mexico in 1881. The electricity industry grew rapidly, and by 1900 had a total installed generating capacity of 200,000 kw. By the end of 1947 there were 963,000 kw of installed capacity throughout Mexico.

2. Because of the scarcity of a suitable grade of coal and the relatively high cost of petroleum on the one hand, and the low cost of labor and availability of water resources on the other, most of the earlier generating plants were hydroelectric. In July, 1947, approximately 54 per cent of the total installed generating capacity was hydroelectric, 27 per cent steam, and 19 per cent internal combustion. At that date 53 per cent of the installed capacity was in 60-cycle plants, 45 per cent in 50-cycle, and the remainder in frequencies of 42 to 25 cycles. Public utility plants accounted for approximately 75 per cent, plants in private service 18 per cent, and plants in service for both public and private purposes 7 per cent.

3. There has been a fairly constant increase in kwh generation since 1933, although installed capacity shows a

slower growth. Schedule I shows the annual electric power generation throughout Mexico by all types of service, both public and private.

4. There are five principal interconnected electric power systems in Mexico. The following table indicates their location and principal suppliers:

System	Principal Supplier	Location	1947 Generation and Purchase of Power
1. Torreon-Chihuahua	American & Foreign Power Co.	North Central	325,593 mkwh
2. Puebla-Veracruz	"	East Central	230,148
3. Guanajuato	" Total A & F Power Co.	Central	189,271 <u>745,012</u>
4. Mexico City	Mexican Light & Power Co.	Central	1,548,607
5. Chapala	Nueva Cia. Chapala	West Central	163,305

Small isolated systems and plants generated about 1,000,000 mkwh in 1947.

5. Power is supplied to some of these systems by a governmental agency, the Federal Electricity Commission. This agency was created by law (August 14, 1937, published in Diario Oficial on August 24, 1937) for the purpose of organizing and directing a national system, on a nonprofit basis, for the generation, transmission and distribution of electrical energy. The Commission consists of the Minister of National Economy, who acts as

President, and one Executive Director and one Director (who acts as Secretary), both appointed by the Federal Executive. The Commission is empowered, among other things, to plan a national system of electrification; to effect all operations in connection with the establishment of such a system, including acquisition of property and of shares and securities in the electric industry; to organize companies for the generation, transmission and distribution of electricity and for the manufacture of equipment required by the industry; to organize cooperatives of consumers, and to supervise proposed electrification activity of official, semi-official or private enterprises.

6. The Commission's plants are located in the first, second and fourth of the above listed systems. It sells the output to the distributing companies. The principal purchasers are the Mexico City system and the Puebla Veracruz system. Total installed capacity of plants belonging to the Commission amounted to 92,168 kw at the end of February 1948.

7. The following table shows the investments in electric power facilities in Mexico, grouped according to the nationality of the ownership:

(million of pesos)

Company	Investment* July 1947	Percentage of Total	Nationality of Company
Mexican Light & Power Co., Ltd., and subsidiaries	445.0	43.3	Belgian and Canadian
American & Foreign Power Co., Ltd. subsidiaries	294.0	28.5	American
Monterrey Railway, Light & Power Co.	38.0	3.8	Canadian
Nueva Cia. Chapala	47.0	4.6	Mexican
Comision Federal de Electricidad	184.0	17.9	Mexican
Others	20.0	1.9	Mexican and other
	1,028.0	100.0	

* Determined by application of rules of the Mexican Law for the Electric Industry, except for the Federal Comision which represents book value of investments as of September 30, 1947.

Mexican Light and Power Company Limited

8. The Company was originally organized under the laws of Canada in 1902. Its principal wholly-owned subsidiaries are the Mexican Electric Light Company, Ltd., which has water rights on the Monte Alto River in the District of Cuautitlan; The Compania de Luz v. Fuerza de Pachuca, S.A. owning water rights in the district of Zumpango and in the State of Hidalgo; the Compania Mexicana Meridional de Fuerza, S.A. which has water rights on two important rivers in Central Mexico; the Compania de Fuerza del Suroeste de Mexico, S.A. which has water rights in the State

of Michoacan; and the Compania de Lux v. Fuerza Electrica de Toluca, S.A. which has water rights on the Verde, San Simonito and San Pedro Zictepec rivers.

9. The Mexican Light and Power Company and its subsidiaries serve the Federal District (in which Mexico City is located) and parts of the States of Mexico, Hidalgo, Puebla, Morelos, Guerrero and Michoacan. The population served is approximately 2,260,000, or 10 per cent of Mexico's total, and the rate of population growth is about 2.3 times that of the country as a whole. The Federal District accounts for about 35 per cent of the total production of manufacturing industries of Mexico. Moreover, substantial new industrial developments are being undertaken in the State of Mexico. High tension industrial customers take about 47 per cent of the entire output of the Company.

10. The Companies operate 15 hydroelectric plants having a total of 223,650 kw installed capacity, 1 steam plant of 55,000 kw, a total of 278,650 kw. This, together with the interconnected 55,800 kw installed capacity at the Ixtapantongo plant of the Mexican Federal Power Commission, the entire output of which is purchased by the Companies, gives a total available capacity of 334,450 kw. Including 219,759 mkwh purchased from the Federal Electricity Commission, the Company distributed, in 1947, a total of 1,548,607 mkwh. The Company plans further additions to its own generating capacity and its own distribution system,

but in order to meet future demand it also counts upon purchasing at wholesale the output of additional plants to be constructed by the Federal Electricity Commission.

11. The principal generating units of the Company are Necaxa (hydro), Lerma (hydro) and Monoalco (steam). The Necaxa plant is located about 90 miles northeast of Mexico City, the Lerma plant 78 miles northwest and the Monoalco plant in the City itself. Company plants generated approximately 46.5 per cent of all electric power in Mexico and the Company purchased for distribution about 60 per cent of power generated by the Federal Electricity Commission.

American and Foreign Power Company

12. The American and Foreign Power Company controls the activities of 20 subsidiaries which comprise its system in Mexico. Fifteen are operating subsidiaries comprising three major interconnected systems and eight smaller nonconnected systems. The operating subsidiaries supply electric power and light to a population of 2,150,000 in north, central and southern Mexico and on the east and west coasts, representing about 9% of the total.

13. In the Torreon-Chihuahua system, power is supplied to those two cities and in addition to the irrigation district of Laguna and the mining areas in San Francisco del Oro, Santa Barbara and Paral. The other important system of the Company is that of Puebla-Veracruz which includes the industrial cities

of Puebla, Veracruz, Orizaba and Cordoba. The remainder of the Company's operations consist of the interconnected system of Guanajuato and the eight isolated systems in various states.

14. The Company has prepared an expansion program which will increase its generating capacity by approximately 66,000 kw (or 37 per cent over the installed capacity at the end of 1947) to a total of 246,000 kw.

Other Private Utility Companies

15. Other utility companies in Mexico play a much less important role than those above mentioned. A small company, ESPEMSA, owned by American capital, operates seven isolated plants in the northwest of Mexico. This Company plans certain improvements in its distribution system but is dependent upon the Commission's projected generating plants for meeting future demand.

Conclusion

16. The relative importance of the electric power industry in Mexico may be gauged from the following table:

	<u>Years</u>	Installed capacity per capita in watts	Power generation per capita in kw.h.
Mexico	1947	41.5	158
Chile	1947 (est.)	95	505
Brazil	1946	29	109
Argentina	1946	92	200
U.S.A.	1947	367	1,759

17. The economic development of the country in the last few years has substantially increased the demand for power. It could not have been satisfied in spite of new facilities provided by the companies and the Commission. Spare generating capacity has been gradually utilized, so that, at the present time, no interconnected system has sufficient firm capacity to take care of its contracted load. As a result of this, power rationing has had to be introduced in the periods of peak demand.

PART II

Development Projects
of Federal Electricity Commission

and

Mexican Light and Power Company

A. FEDERAL ELECTRICITY COMMISSION

18. The five-year electric power development program submitted by the Federal Electricity Commission to the Bank in 1948, calls for -

- (a) construction of hydro- and thermoelectric plants of an aggregate capacity of 1,018,280 kw;
- (b) construction of transmission lines, distribution and communication systems, rural electrification plants; and
- (c) aid to small private plants.

19. The cost of this program was estimated at \$212,421,000. Of this \$121,929,000 were to be spent over a period of five years for imported equipment and materials. The following table outlines the domestic and foreign financing already disbursed and that still required to carry out the over-all program:

(in thousands of U.S. Dollars)

Type of Expenditure	Total Disbursements or Commitments Required	Disbursed or Committed up to 12/31/47	Future Disbursements 1948-52	Percentage of Program Financed
Foreign	\$ 121,929	\$ 12,579	\$ 109,350	10%
Local	90,492	17,958	72,534	20%
Total, all expenditures	\$ 212,421	\$ 30,537	\$ 181,884	14%

20. The facilities to be constructed are located mostly in developed areas, particularly the industrialized and agricultural central section of the country. The projected forty-one new plants, of a total capacity of 1,018,280 kw, would generate annually a total of 4,343,240 mkwh.

21. The Bank has been asked to finance \$109,350,000, the balance of the foreign cost of construction to be applied as follows:

(in thousands of U.S. Dollars)

Projects	Number	Cost
1. Hydroelectric Plants:		
Of the Commission	17	\$ 29,520
Of the Ministry of Hydraulic Resources	15	9,690
2. Thermolectric Plants	9	21,549
3. Transmission Line Systems	12	21,337
4. Distribution Systems	6	2,304
5. Communication System	1	1,237
6. Rural Electrification Plants	100	8,247
7. Aid to Private Companies		15,466
		\$109,350

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22. Although preliminary market studies have been made, the need for the entire proposed increase in capacity has not yet been fully established. However, the postponement of consideration of any financing until all marketing and engineering studies are completed would result in considerable loss of time to the detriment of urgently needed projects. Consequently, the Bank has notified the Mexican authorities that it would consider, at this time, specific projects of particularly urgent character only.

23. As a result of the Bank's attitude, the Federal Electricity Commission has resubmitted a number of selected specific projects. Discussions by the Bank's Engineering Adviser with the representatives of the Federal Electricity Commission, the Mexican Light and Power Company, the American and Foreign Power Company and Empresa de Servicios Publicos de los Estados Mexicanos, (ESPLISA) resulted in the acceptance of several projects. The foreign expenditure over the four year period of construction involved in these projects amounts to \$23,925,378 and the local cost to the equivalent of \$30,074,000. The Bank's Engineering Adviser is, at this time, making a further check of the projects and of their costs. This final check may result in some revisions of the projects described below.

Selected Projects

(a) Mexico City System

24. The first area in which urgent projects of the Commission are located is the Mexico City system, the economic importance of which has already been described. The original proposal of the Commission was to install 428,100 kw of generating capacity and complementary transmission lines in the Mexico City area at a total foreign exchange

cost of \$22,935,000. In the opinion of experts, the forecast of future demand was not sufficient to justify the entire program at this time.

25. Discussions between the Bank and the Commission led to the selection of four projects, in:

Santa Barbara	63,600 kw
Ixtapantongo	52,000 kw
San Bartolo	20,900
El Durazno	18,400

which would add to the existing system 154,900 kw. The projects also provide for construction of transmission lines. The foreign exchange cost of these projects would be as follows:

Generating stations and substations	\$ 2,978,000
Civil engineering works (imported materials)	3,686,000
Transmission lines	1,863,000
Electric communications	14,430
Total foreign exchange cost	\$ 8,541,430

(b) Torreon-Chihuahua System

26. At the present time, subsidiaries of the American and Foreign Power Company operate in this system in the States of Durango, Chihuahua and Coahuila, one of the most important mining and agricultural areas of Mexico. Large-scale mining and smelting of zinc, lead and copper is carried on by the subsidiaries of American and English mining concerns. Another important demand for power comes from irrigation pumping in the Laguna irrigation district, the largest single irrigated area in Mexico and one in which large quantities of cotton and wheat are grown. Manufacturing is somewhat less important but includes a number of cement and flour mills. The original plans of the Commission contemplated the addition of 80,000 kw of capacity in the Torreon-

Chihuahua district, the estimated foreign exchange costs of which would amount to \$12,156,000.

27. Discussions between the Bank and the Commission have resulted in the selection of two 25,000 kw thermoelectric installations which are urgently needed. Subsidiaries of the American and Foreign Power Company serving this area would distribute the power. The foreign exchange expenditures would be as follows:

Generating plants	\$3,372,000
Civil engineering works (imported materials)	200,000
Total foreign exchange cost	\$3,572,000

(c) Puebla-Veracruz System

28. This system is also served by subsidiaries of the American and Foreign Power Company, and the region contains some of the oldest industrial establishments of Mexico. The city of Puebla is the center of the cotton textile industry, the most important Mexican transforming industry. In addition there are shoe factories, cement mills and breweries. Other principal users of power are Petroleos Mexicanos, operators of an oleoduct between the Gulf Coast and Mexico City, the National Railways, operators of the electrified mountain division on the Mexico City-Veracruz railway line, and the municipal water and transportation systems. Agriculture, while significant, is not presently of major importance. The original program of power plants, transmission lines and substations proposed by the Commission for this area, would add 74,280 kw of installed capacity and would cost \$6,296,000 in foreign exchange.

29. It has been agreed to reduce the program to 35,200 kw, the foreign exchange cost of which, including necessary transmission

lines and substations, would be as follows:

Generating stations and substations	\$534,100
Civil engineering works (imported materials)	431,000
Distribution substations	267,668
Distribution lines	109,169
Transmission lines	268,050
Electric communications	229,920
Total foreign exchange cost	\$1,839,907

The revised program would permit the completion of three hydroelectric plants, with appurtenant substations, and the construction of transmission and distribution lines to link the new plants with the American and Foreign Power Company system. 15,000 kw will be reserved for towns and cities located outside the American and Foreign Power Company's network. One of the plants will operate only during the dry season when water is released from the Valsequillo dam (now under construction) for irrigation purposes.

(d) Sonora Project

30. The expansion of power production in the State of Sonora (including the towns of Guaymas and Ciudad Obregon) is justified by the potential increase in agricultural production. Some of the principal irrigated areas of Mexico are located in the northwest, which is a leading producer of tomatoes, chile and rice for export, and of wheat for domestic consumption. At the end of 1946 there were approximately 288,000 acres of irrigated land under cultivation, some parts of which are not centrally irrigated but supplied with water from wells drilled by owners who use internal combustion engines. In those parts, demand for additional power at reasonable rates comes from those who want to avoid investment in internal combustion engines and from those desiring to have a more reliable supply of power. The yield from the irrigated land in this area is relatively higher than in other parts of Mexico

and the output of the area directly affects the country's volume of imported and exported foods. Industrially the area is not yet important, but already a number of food processing plants, textile mills and cement plants have been established. A relatively rapid growth in population of this area will favor industrial expansion. The fishing industry along the Gulf of Lower California centers about Guaymas and is another source of foreign exchange for the country. The growth of this industry has been appreciable over the last ten years, but has been handicapped by the lack of storage and processing facilities due to shortage of power.

31. The Commission desires to complete steam plants located in the cities of Guaymas and Ciudad Obregon. The power would be distributed by an American-owned company, Empresas de Servicios Publicos de los Estados Mexicanos, S.A. (ESPEMSA). The supply of power to Hermosillo, the State capital, would be assured from the Guaymas plant over an 80-mile transmission line. Originally the Commission requested financing for a 75,000 kw plant at Guaymas and the 15,000 kw plant at Ciudad Obregon, as well as additional transmission lines to link a number of towns and cities now served by isolated plants or not served at all. The total foreign exchange cost of all of these projects would amount to \$13,580,000.

32. As a result of discussions with the Bank, it is proposed to build a 25,000 kw plant in Guaymas and the 15,000 kw

in Ciudad Obregon, deferring the construction of a number of projected transmission lines. The reduced foreign exchange cost is as follows:

Generating stations and substations	\$1,794,480
Transmission lines	650,000
Civil Engineering works (imported materials)	200,000
Electric Communications	20,000
Total foreign exchange cost	\$2,664,480

(e) Ciudad Juarez Project

33. The Commission originally proposed to construct a three-unit, 15,000 kw steam plant at Ciudad Juarez in the State of Chihuahua. This city of approximately 55,000 population is now being supplied with power from El Paso, Texas. The load has reached a point where the construction of a plant in Juarez is justified. A small Mexican company which now distributes power in and around Juarez will also distribute the power from the proposed plant. The Commission forecasts that the entire 15,000 kw of capacity will be contracted for by 1951. The average annual growth in the use of power in Ciudad Juarez over the past ten years has exceeded 10 per cent. A portion of the additional power will be used for irrigation purposes in a fertile valley outside of the city which produces wheat and cotton. The urgency of the project is evidenced by the fact that the Commission has already installed a 1,000 kw mobile generator in the valley to encourage agricultural development. Moreover, there is a need to assure continuity of electric power service. Recently

the power supply of several Mexican border cities was threatened by a possible shut-off of power from the supplying companies in the United States. Though technical and administrative difficulties were overcome, without power interruptions, the possibility of a shut-off in the future still exists. The construction of the plant would also eliminate purchase of power for dollars, estimated at \$173,000 annually.

34. The foreign exchange expenditures for the proposed plant are as follows:

Generating station	\$ 740,480
Temporary substation at Valle Juarez	6,627
Electric communications	10,000
Total foreign exchange cost	\$ 757,107

(f) Bombana Project

35. The Commission proposes to complete a 2,600 kw hydro-electric plant in the State of Chiapas in southwest Mexico, which has been under construction since 1942. In addition, a transmission line 47 miles in length is required. Over half of the total investment has already been made, but due to the lack of funds the plant could not be completed. The area produces tropical agricultural products such as coffee, hardwoods, etc. The population to be served is 27,000, largely in and near the State Capital. In the entire State of Chiapas there is no public utility company and the only electric service now available for distribution is the excess capacity of small privately-owned generators.

36. The foreign exchange required to complete the project is as follows:

Generating plant and substations	\$ 25,000
Distribution substations	5,300
Distribution lines	47,000
Transmission lines	20,000
Total foreign exchange cost	\$ 97,300

(g) Aldama Project

37. The proposed plant at Aldama, Chihuahua, is located 30 miles from the City of Chihuahua, which is served by a subsidiary of the American and Foreign Power Company. In view of the heavy load in the Torreon-Chihuahua system, the American and Foreign Power Company could not undertake to provide power for Aldama. The projected plant, consisting of three 6,000 kw steam generated units, will be located in an agricultural valley which requires irrigation now obtainable only from individually-owned power units.

38. The foreign exchange expenditure would be as follows:

Power plant	\$1,055,160
Temporary substation in Valla Aldama	<u>13,922</u>
Total foreign exchange cost	\$1,069,082

(h) Rural Electrification

39. The Commission is contributing to an extensive rural electrification program involving the installation of 17,858 kw of generating capacity and proposes to build power plants in thirty locations. The State of Vera Cruz would be the principal

beneficiary of this program where fourteen plants with a total installed capacity of 8,500 kw are to be constructed. The remaining sixteen plants with a capacity of 9,358 kw are to be located in six other states. The largest single plant would be 3,000 kw while the average of the remaining twenty-nine would be 512 kw.

40. The foreign exchange cost of this program would be as follows:

Power plants	\$3,030,783
Distribution lines	211,616
Electric communications	14,700
Total foreign exchange cost	\$3,257,099

(i) Miscellaneous Projects

41. The Commission also requested the Bank's assistance in the development of certain minor distribution systems, transmission lines and existing power plants, the foreign exchange expenditure of which would be as follows:

Enlargements to power plants	\$ 407,250
Distribution lines	117,859
Distribution substations	101,864
Total foreign exchange cost	\$ 626,973

(j) Loans to Private Companies

42. The Commission has requested \$1,500,000 to be used to assist small private electric companies in the purchase of machinery and equipment necessary for the maintenance and improvement of their facilities. As a result of this program,

fourteen small companies along the United States border would cover their own power needs, thus reducing import of power from the United States. Details of this program are now being discussed on the technical level.

43. The proposed financing of the Federal Electricity Commission projects can be summarized as follows:

	Foreign Cost to be financed by the Bank
(a) Mexico City System	\$ 8,541,430
(b) Torreon-Chihuahua System	3,572,000
(c) Puebla-Veracruz System	1,839,907
(d) Sonora Project	2,664,480
(e) Ciudad Juarez Project	757,107
(f) Bombana Project	97,300
(g) Aldama Project	1,069,082
(h) Rural Electrification	3,257,099
(i) Miscellaneous Projects	626,973
(j) Assistance to Private Companies	1,500,000

\$23,925,378

The above amount represents 44% of the total cost of the projects to be financed with the aid of a Bank loan.

The estimated local currency commitments for civil engineering works and preparations for the installation of equipment over the period of construction are as follows:

	\$(at rate of 6.85)
1948	5,047,000
1949	9,361,000
1950	7,517,000
1951	5,441,000
1952	2,708,000
Total local cost	30,074,000 (i.e. 206,003,000 pesos)

It is impossible at this stage to give a reliable estimate of the rate of disbursement of the foreign exchange costs of the projects, since this will depend on the time taken to fulfill orders for equipment. Orders to the extent of about \$10 million could be placed as soon as a loan was granted, and the balance would be committed in the course of 1949 for the earliest possible delivery.

44. The foreign financing requested will be used for the following purposes:

1. Generating stations and substations	\$13,937,253
2. Civil engineering works (imported materials)	4,517,000
3. Transmission lines	2,801,050
4. Electric communications	289,050
5. Distribution substations	395,381
6. Distribution lines	485,644
7. Aid to private companies	1,500,000
	\$23,925,378

B. MEXICAN LIGHT AND POWER COMPANY

45. In April, 1948, the Mexican Light and Power Company submitted to the Bank an application for a loan of \$23,689,200 U.S. to finance the purchase of imported equipment involved in a four-year construction program. At the end of July, 1948, the Company advised of price increases of 10 per cent on electrical equipment and consequently the estimated foreign exchange cost of the project has been revised to \$26,058,200. A further check of prices is being made at present by the Bank's Engineering Advisers.

46. Local expenditures were estimated at the time of preparation of the application at 106,037,500 Mexican pesos (or the equivalent of U.S. \$21,843,725 at the old exchange rate of 4.85 pesos to the dollar). The recent depreciation of the peso is expected to increase the cost of Mexican materials and labor over the construction period. An estimate is now being prepared by the Company.

47. The Company's program contemplates the addition of 139,000 kw generating capacity, the construction of a 110-mile transmission line, and the improvement of the existing transmission and distribution system. The foreign exchange cost of the program is as follows:

<u>Item</u>	<u>Imported Materials</u>
1. Necaxa, additional 16,000 kw hydroelectric generator and auxiliary equipment	U.S.\$ 1,062,600
2. Lerma, additional 28,000 kw hydroelectric generator and auxiliary equipment	1,248,000
3. Patla, new 45,000 kw hydroelectric generator and auxiliary equipment	2,928,200
4. Lecheria, new 50,000 kw thermoelectric generating plant	4,569,400
5. Transmission line, Necaxa-Mexico City	5,044,600
6. Other transmission lines, substations, distribution facilities, meters, etc.	11,205,400
Total foreign exchange cost	\$26,058,200

48. The Company now has under construction a diesel electric plant of 30,900 kw at Tacubaya which will come into operation in 1948-1949. Financing for this plant has already been arranged by the Company with the Federal Electricity Commission.

49. The Necaxa and Lerma additional generators are for the purpose of adding peaking capacity to the system. Since all civil works have been completed, relatively small peso investment is required for this project.

50. The new Patla Plant involves the construction of a 45,000 kw hydroelectric station downstream from the existing Necaxa plant. It will be necessary to construct roads, inclined railways, tunnels, penstocks, etc., in addition to installing three 15,000 kw generators. Local costs are relatively heavy, amounting to approximately 70 per cent of total cost. The new plant is expected to operate on a year round basis producing, in an average year, about 250,000 mkwh and 200,000 mkwh in a dry year. This would represent, in an average year, additional power available to the Mexico City system of the Company of about 16 per cent over 1947.

51. The construction of the Patla plant makes the construction of a new transmission line from Necaxa to Mexico City essential. The present line, in operation since 1910, is severely overloaded, which results in heavy power losses. The four existing 85 kv circuits are carrying the combined output of the Necaxa Division generating stations, amounting to approximately 150,000 kw at a peak hour, and it is planned to build two new 187 kv transmission circuits on a partial replacement basis. The loss in energy transmission would by this means be reduced to 4 per cent from the present 15 per cent and the saving would be equivalent to the addition of a 11,500 kw generator to the system at peak load.

52. The Lecheria thermoelectric plant will consist of two 25,000 kw steam turbine generators to be located in the new

industrial area near the Federal District. Particular importance is attached to this plant by the Company because of the present heavy preponderance of hydroelectric power in this area which would be strengthened by the addition of steam generators. In the past, electric power service has been continuously imperilled and often reduced in dry years. At present, the capacity of hydroelectric installations in the Mexico City system is 279,400 kw while thermal power plants account for only 55,000 kw.

53. The remainder of the Company's program covers substations, distribution and transmission lines, power banks, switchgear, transmission line insulators, public lighting transformers, condensers, transformer vaults, metering equipment, hydroelectric spares and contingencies.

Relationship of the Mexican Light and Power Program to that
of the Federal Electricity Commission

54. The expansion program of the Commission will provide additional power for distribution by the Mexican Light and Power Company in the Mexico City area, where the latter operates. As a result of discussions between the Bank and the Federal Electricity Commission, the Commission's construction program in this area will be only of a supplementary nature and will assure an adequate supply of electricity to this market.

55. The following table outlines the estimated future generating capacity of Mexico City's system and the peak load of the year which falls in January. The table takes into account

power which will be available to the Company from the proposed new plants of the Federal Electricity Commission.

<u>Year</u>	Hourly Peak Load	System's Installed Capacity.
1949	368,000	358,000
1950	412,000	412,000
1951	460,000	448,000
1952	510,000	581,000

56. The Bank's investigations have led to the conclusion that the expansion program of the Company is technically and economically feasible. However, the financial condition and the capital structure of the Company are such that any loan made directly to the Company by the Bank in its present condition could not be adequately secured, and would tend to perpetuate existing fundamental financial weakness. The Bank made studies in order to determine whether an urgent and meritorious program of power development in a principal area of Mexico could be financed within required time limits without entailing the risks inherent in the present financial condition of the Company. In June 1948, the Bank informed the Company of its willingness to consider an interim dollar loan. This loan would be made to the Federal Electricity Commission and the Nacional Financiera which would relend the dollars to the Company at a maturity not later than December 31, 1949, to meet current foreign exchange payments on orders for equipment placed before December 31, 1949.

57. The Company was further informed that, in the event of its carrying out a financial reorganization before the end of

1949 along lines satisfactory to the Bank, the Bank would be prepared to consider sympathetically a long term loan in the amount of about \$26,000,000. At prevailing prices this amount would be sufficient to carry out the remainder of the Company's program and to repay the interim loan.

58. The Company has estimated that to finance payments on orders for equipment placed and to be placed before the end of 1949, an amount of \$11,500,000 would be required. This amount would be used as follows:

(In thousands of U.S. Dollars)

<u>Item</u>	(1) Payments in foreign exchange for orders to be placed before December, 1949.	(2) Total foreign exchange cost of project	Per- centage of 2
a. Necaxa generator (hydro) and auxiliary equipment	937.9	1,062.6	88
b. Lerma generator (hydro) and auxiliary equipment	1,216.0	1,248.0	97
c. Patla Plant (hydro)	1,297.2	2,928.2	44
d. Lecheria Plant (steam)	1,014.2	4,569.4	22
e. Necaxa-Mexico City transmission line	1,252.6	5,044.6	25
f. Transmission lines, sub- stations, distribution facilities, meters and contingencies not re- lated directly to items mentioned above	5,629.2	11,205.4	50
Total	\$ 11,347.1	\$ 26,058.2	<u>43</u>

PART III

The Financial Situation
of the
Federal Electricity Commission
and of the
Nacional Financiera

THE FEDERAL ELECTRICITY COMMISSION

59. The Federal Electricity Commission of Mexico has five sources of revenue: (1) borrowings, (2) 10 per cent tax on electricity consumption, (3) sale of its power production, (4) Federal Government budgetary appropriations and (5) miscellaneous sources. In 1947, these amounted to the following:

(equivalent in U.S. Dollars at 4.85 pesos per dollar)

Source	Amount
Borrowings	\$ 20,286,000
Ten per cent tax on electricity consumption	3,256,000
Sale of power	1,782,000
Budget allocation	5,564,000
Miscellaneous	636,000
Total	\$ 31,524,000

60. On the basis of the past growth of revenues from the 10 per cent tax on electricity consumption, and taking into account the proposed additional generating capacity which the Bank has under consideration for financing, the Commission has estimated that in 1952 this tax will produce 24,800,000 pesos, equivalent to about U.S. \$3,620,000 at 6.85 pesos per dollar. This estimate of the Commission apparently does not take into account the increase in electric power rates which, it is expected, will occur and will thus increase the tax pro tanto.

61. The following table illustrates the actual rate of growth of the proceeds of this tax since its imposition in 1939 and the Commission's estimates through 1952:

<u>Year</u>	(in thousands of pesos)	U.S. dollars at 6.85 pesos per dollar	Per cent increase over previous year
1939	4,288	-	-
1940	5,572	-	29.94
1941	6,318	-	13.39
1942	7,127	-	12.65
1943	8,243	-	15.58
1944	8,882	-	8.97
1945	10,901	-	22.73
1946	13,117	-	20.33
1947	15,793	-	20.40
1948 (est.)	16,800	-	6.38
1949 "	18,500	2,701,000	10.12
1950 "	20,300	2,963,000	9.73
1951 "	22,300	3,255,000	9.85
1952 "	24,800	3,620,000	11.21

62. It is estimated that the increased power which would result from the construction financed by the Bank's proposed loans to the Commission and for Mexlight, together with the expansion program of the American and Foreign Power Company, will insure the past rate of growth of consumption tax revenues at least through 1954. The revenues would probably tend to level off after that year unless additional power facilities are constructed with the aid of new financing.

63. Presently, the only lien against the consumption tax revenues is in favor of the U.S. \$20,000,000 loan to the Commission from the Export-Import Bank, which it is estimated will be entirely drawn down by the end of 1949. The table following paragraph 67 shows the estimated service charges on this loan through 1954.

64. The second important and equally stable item of income is the proceeds from the sale of power from the Commission's own plants. These revenues tend to increase as additional generating facilities are completed. The following table illustrates the past growth of gross revenues, before operating charges, derived from the sale of power:

Equivalent in thousands of U.S. dollars
at 4.85 pesos per dollar

<u>Year</u>	<u>Amount</u>
1943	53
1944	312
1945	914
1946	1,259
1947	1,782
1948 (estimate)	2,474 *

* This estimate will be somewhat reduced by virtue of the depreciation of the Mexican peso in July 1948.

65. The Commission estimates that, with the addition of the plants and facilities now under construction and those for which a Bank loan to the Commission is now sought, its net revenues from the sale of power, after operating costs, maintenance, retirements and reserves, will rise from the equivalent (at 6.85 pesos per U.S. dollar) of \$900,000 in 1949 to \$5,036,000 in 1954.

66. The Commission's entire revenues from the sale of power are subject to a lien in favor of the Export-Import Bank loan mentioned in paragraph 63; this lien, in turn, is subject to a lien in favor of the Westinghouse Company on the revenues from the sale of power from the Commission's Ixtapantongo generating plant, securing a 12-year 3 per cent loan by Westinghouse, of which U.S. \$5,010,000 is presently outstanding.

67. On the basis of information obtained from representatives of the Commission and Nacional Financiera, the following table has been compiled to show, for the period 1949 to 1954 inclusive, the estimated over-all interest and amortization charges on the Commission's debt presently outstanding and to be outstanding in 1949 and thereafter until 1954, including the proposed loan of U.S. \$24,000,000 and the proposed loan of U.S. \$11,500,000 for the benefit of Mexican Light and Power Company. Set against these, in each year, are the estimated returns to the Commission from its two principal recurring sources of revenue, namely, the 10 per cent electricity consumption tax, and the sale of power.

Estimated Interest and Sinking Fund
Charges and Principal Revenues of the
Mexican Federal Electricity Commission
(000's of U.S. dollars or equivalent)

	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>
Estimated Interest and Sinking Fund Charges						
1. Eximbank Loan <u>1/</u> 20-Yr., $4\frac{1}{2}\%$, \$20,000,000	1,587	1,749	1,709	1,669	1,629	1,589
2. Westinghouse Company 12-Yr., 3% , \$5,010,000	476	476	476	476	476	476
3. General Electric Int'l. Corp. 5-Yr., 3% , \$2,607,000	600	600	600	600	600	600
4. Aluminum Export Corp. 3-Yr., 3% , \$638,000	216	216	216	-	-	-
5. Electric Industry Bonds <u>2/</u> 10-Yr., 6% , \$30,000,000	576	576	576	576	576	576
6. IBRD <u>3/</u> 25-Yr., $4\frac{1}{2}\%$, \$24,000,000	300	740	1,080	1,728	1,728	1,728
7. IBRD (for Mexlight) <u>4/</u> 1-Yr., $2\frac{1}{2}\%$, \$11,500,000	298	788	788	788	788	788
Total Estimated Interest and Sinking Fund Charges	\$3,053	\$4,145	\$5,445	\$5,837	\$5,797	\$5,757
Estimated Principal Revenues						
8. 10% Electricity Consump- tion Tax (6.85 Pesos = \$1.00)	2,701	2,963	3,255	3,620	4,014 ^{5/}	4,452 ^{5/}
9. Sales of Power (net) (6.85 Pesos = \$1.00)	900	1,410	2,622	3,651	4,786	5,036
Total Estimated Principal Revenues	\$3,601	\$4,373	\$5,877	\$7,271	\$8,800	\$9,488
Times Covered	1.14	1.05	1.08	1.24	1.52	1.64

Source: Based on data submitted by Mr. Cortina of Nacional Financiera
and Mr. Paez of Federal Electricity Commission.

1/ Assuming remaining \$8,000,000 will be fully drawn by end of 1949.

2/ Assuming cumulative sinking fund sufficient to retire issue by maturity.

3/ Assuming the loan will be repayable in 25 years, the sinking fund operation to start in 1952, the rate of interest will be $4\frac{1}{2}\%$ and the proceeds of the loan will be drawn down gradually over 3 years.

4/ Assuming the interim loan will be at $2\frac{1}{2}\%$ and assuming that it will be converted into 25-yr., $4\frac{1}{2}\%$ loan at end of 1949.

5/ Assuming approximately 10% annual increase.

68. As is shown in the preceding table, financial charges of the Commission, on the bases assumed, are just covered in the early years, and coverage increases gradually after 1951. It should be noted that item 7 in the Table assumes no income from the Mexican Light and Power Company on the interim financing in 1949 and also assumes that such interim financing may not be paid back by the Mexican Light and Power Company at the end of 1949, but may have to be extended by the Bank into a 25-year 4-1/2 per cent loan. If the long-term loan to the Mexican Light and Power Company now under consideration is made, and if it is made directly to the Mexican Light and Power Company, it will relieve the Commission from the burden of the debt service shown in item 7 and will, to that extent, increase the estimated debt coverage shown. As has been mentioned in paragraph 60, the estimates of revenues to the Commission from the 10 per cent consumption tax on electricity make no allowance for rate increases in the period under review. Some rate increases have already been accorded to the Mexican Light and Power Company and to other utility companies, and the Mexican Light and Power Company has applied for substantial additional increases. To the extent that increases are granted, the Commission's revenue from the tax will be correspondingly increased.

69. As mentioned in paragraphs 63 and 66, the Commission's revenues are pledged to secure certain previous financing. In view of this, the question of adequate protection for the proposed loans by the Bank will be discussed during the negotiations. The coverage of financial charges shown in the Table following paragraph 67 is based on the assumption that the Bank's loan will rank pari passu with the other debt of the Commission.

NACIONAL FINANCIERA

70. Nacional Financiera was created in April 1934 to finance the development of Mexican industry. In December 1947, by resolution of the Mexican Congress, it was made the sole agency to negotiate loans on behalf of the Mexican Government from foreign, governmental and inter-governmental institutions.

71. According to information submitted, Financiera's capital stock consists of 100,000,000 pesos, fully paid, of which Series A-1, consisting of 500 shares of 100,000 pesos par value, are owned directly and must be retained by the Mexican Government; Series A-2, consisting of 417,244 shares of 100 pesos par value, are presently held by governmental agencies but can be sold to private investors; Series B, consisting of 81,756 shares of 100 pesos par value, are presently owned by private investors. The Board of Directors consists of 7 proprietary directors and 5 alternates. Series A-1 and A-2 shares nominate 3 proprietary directors and 2 alternate directors, whereas Series B shares nominate 4 proprietary directors and 3 alternates. The privately held stock therefore controls the Board of Directors and is dominant in matters of administration and management. Financiera's sole source of income is from investments, as it receives no grants or subsidies from the Federal Government.

72. Financiera appears as co-obligor with the Federal Electricity Commission in loans, guaranteed by the Mexican Government, made for development of the Mexican power industry by the Export-Import Bank, and it is proposed that these agencies be the direct borrowers in the loan to the Commission now under discussion with the

International Bank as well as the interim loan for the benefit of the Mexican Light and Power Company, also to be guaranteed by the Mexican Government. Representatives of Financiera have stated that Financiera's statutes enable it fully to bind the credit of the Mexican Government, on which the IBRD would expect to rely in making such loans. This matter is being studied by the Legal Department of the Bank.

73. Financiera's representatives also state that the Mexican Government is responsible at all times for acts of Financiera, such as the handling of certain types of deposits, the operations carried on by Financiera with foreign, private, governmental or intergovernmental institutions and operations of Financiera bearing the guarantee of the Government. Financiera is thus able to act in a trust capacity in handling deposits of other government agencies and in the receipt and disbursement of revenues, for example, those of the Federal Electricity Commission on which the Export-Import Bank has a lien.

74. Since the proposed loan will be a direct obligation of the Federal Electricity Commission, guaranteed by the Mexican Government, there would be no need, from the credit standpoint, to join Financiera as a co-obligor, particularly as Financiera's financial position cannot be considered liquid by normal commercial standards. However, since Financiera is the sole Government agency charged with the negotiation and administration of foreign loans and since it will be the agency which will guarantee the loans on behalf of the Government and will provide local currency financing for the projects under consideration, its signature to the loan agreement will be of use to the Bank.

PART IV

The Financial Situation of the
Mexican Light and Power Company
and Reorganization Proposals

Financial Situation

75. The present capitalization of the Mexican Light and Power Company, Limited, is shown in Appendix "A." The principal parent company of the Mexlight companies is SOFINA, a large holding corporation of Belgian nationality with utility interests throughout the world. Two of SOFINA's subsidiaries are SIDRO, which is about 60 per cent owned, and SOVALLES, which is between 10 per cent and 15 per cent owned, the balance in each case being publicly owned. Ownership by the SOFINA group of the Mexlight securities shown in Appendix "A" is distributed as follows:

	SOFINA	<u>SIDRO</u>	SOVALLES
First Mortgage Bonds	none	none	none
Second Mortgage Bonds	none	29.0%	13.0%
6% Income Debenture Stock	1.8%	35.6%	none
7% Preference Shares	none	19.4%	1.7%
4% Preference Shares	4.3%	32.3%	.9%
Ordinary Shares	.4%	64.2%	none

76. No preference dividends have been paid since 1931 and arrearages on the 7% shares amount to 119% and on the 4% shares, 68%. No dividends have been paid on the ordinary shares since

1913. Arrearages of interest on the 6% Income Debenture stock total 54-1/2%, and while this stock has a sinking fund, contingent on earnings, no payments have ever been made thereon.

77. The comparative consolidated income account for the years ended December 31, 1943-1947, inclusive, is shown in Appendix "B." No earnings estimates are included for 1948, but data submitted by the Company indicates that, owing to the devaluation of the peso in July 1948 and the necessity of additional provision out of 1948 earnings to cover the increased peso costs of dollar requirements, it will be unable to meet all financial charges for that year and expects to defer interest on the 6% Income Debenture stock under the terms of the 1941 Plan of Arrangement. If the rate increase applied for by the Mexican Light and Power Company on October 9, 1948, as described below, becomes effective by April 1, 1949, the Company expects to meet current financial charges accruing in 1949.

78. The comparative consolidated balance sheets as of December 31, 1943-1947, inclusive, are shown in Appendix "C." It should be explained that the balance sheet item "Deferred Liabilities" represents the Company's pension and retirement funds. The item "Sinking Fund Reserve" shows, for accounting purposes, the discount on bonds purchased from time to time for sinking funds at less than par.

Reorganization Proposals

79. On June 26, 1948, the Loan Director wrote to Mr. Messersmith, Chairman of the Company, a letter, attached as Appendix "D," setting forth the Bank's views as to the necessity of a financial reorganization of the Company before the Bank could consider a loan to the Company.

80. On July 28, 1948, the Board of the Mexican Light and Power Company passed a Resolution authorizing Mr. Messersmith to continue negotiations with the Bank, and expressing the intention of the Company to use its best efforts to bring about a reorganization of the Company's capital structure along the lines of the Loan Director's letter. It is expected that if such a reorganization is acceptable to the holders of the Company's securities, it can be carried out by December 31, 1949. Mr. Messersmith understands that, before a loan can be considered, the reorganization must be carried out on terms satisfactory to the Bank.

81. The First Boston Corporation of New York, retained by the Company to advise it on the reorganization, submitted to the Bank suggestions regarding such reorganization which are now under discussion. It appears that, if carried out along the lines indicated, the reorganization would put the Company in a sound financial condition.



Company's Estimates of Future Earnings

82. During the week ending October 16, 1948, the Mexican authorities granted to the Mexican Light and Power Company an adjustment of rates, to which it was entitled under the Mexican Law for the Electricity Industry, to compensate it for increased wage rates established in May 1948. Such adjustment, as reported by the Company, was equivalent to an average increase in consumer rates of 18.8 per cent, except for power sold to certain large mining companies in Mexico, to which the increase was 69 per cent.

83. The Company also applied on October 9, 1948, for a definitive rate increase which, including the compensatory adjustment mentioned above, would permit a fair return on its capital investment, as provided in the Mexican law. The definitive rates applied for were based, firstly, on discussions just prior to the peso devaluation of July, 1948, during which, according to officers of the Company, the need for an allowable rate of return of 10 per cent on the Company's rate basis had been accepted in principle by the Mexican authorities and, secondly, on the adverse effect of the peso devaluation on the Company's ability to meet its foreign debt and to import

maintenance and replacement equipment. The Company, in its application, sought an allowable return of 14.4 per cent on its rate base, which would give it a net return of 6.4 per cent on its capital investment.

84. The Company has estimated the over-all increase in consumer electricity rates necessary to produce the higher revenues applied for, at 41.2 per cent. The incidence of such a consumer rate increase, however, would vary with the class of consumer. For example, as shown in the following Table submitted by the Company, rates to "metered lighting" consumers would be decreased by 5.5 per cent, whereas rates to government consumers would be increased by 43 per cent, to high-tension power industrial consumers by 37.8 per cent, and to government-owned tramways by 62.5 per cent.

Mexican Light and Power Company, Limited.

	% of Total Sales in 1947	1947	Average Earnings per Kwh-cvcs.		% Increase (3) over (2)
		<u>(1)</u>	Adjusted Rates (2)	Proposed Definitive Rates (3)	
Government	11.3	5.05	6.0	8.56	43.0
Flat rate lighting	1.1	20.5(xx)	24.3	30.6 (xx)	26.0
Metered lighting	0.3	33.6	39.8	37.6	-5.5
Domestic and commercial services	23.5	17.8	21.1	29.0	37.2
L.T. industrial power	6.0	13.8	16.4	18.2	11.0
Corn mills and irrigation	2.0	8.5	10.1	12.6	24.9
H.T. industrial	36.0	5.67	6.72	9.27	37.8
Provisional service	0.1	27.6	32.7	41.4	26.5
Public lighting	-	10.9	12.9	12.0	-7.0
Large mines	11.9	4.5	7.6(x)	7.6	-
Tramways	7.3	2.59	3.06	5.0	62.5
Resale	0.4	5.85	6.93	9.35	34.9
Recovered through inspection	0.1	17.1	20.3 ^{1/}	27.6	36.0

^{1/} Increase 18.8% except for (x) - 69%

(x) Rates in U.S. currency

(xx) 40 W and 80 W in 1947

80 W according to new rates.

SCHEDULE I

ANNUAL ELECTRIC GENERATION
IN THE REPUBLIC OF MEXICO.

Kwh.

	PUBLIC SERV- ICES PLANTS.	PRIVATE PLANTS.	PLANTS BELOW 50 KW.	T O T A L S
1933	1,318,265,834	202,686,678	7,604,762	1,528,557,274
1934	1,575,576,821	249,413,751	9,124,953	1,834,115,525
1935	1,743,839,879	309,890,299	10,268,650	2,063,998,828
1936	1,836,344,644	347,517,075	11,169,308	2,245,031,027
1937	2,082,056,797	385,547,245	12,338,020	2,479,942,062
1938	2,108,935,293	390,400,297	12,496,677	2,511,832,267
1939	2,055,086,565	394,674,908	12,248,807	2,452,010,280
1940	2,125,089,031	391,223,962	12,581,565	2,528,894,558
1941	2,090,975,905	420,689,630	12,558,326	2,524,223,861
1942	2,159,907,102	452,084,043	13,059,955	2,625,051,100
1943	2,248,202,437	476,742,653	13,624,724	2,738,569,814
1944	2,263,223,287	473,439,016	13,683,309	2,750,345,612
1945	2,486,443,522	566,741,687	15,265,923	3,068,451,132
1946	2,696,632,120	604,182,135	16,504,070	3,317,318,325
1947	2,856,851,541	723,735,821	17,902,935	3,598,490,297

Source: Federal Electricity Commission, Mexico.

THE MEXICAN LIGHT & POWER COMPANY, LTD.
AND SUBSIDIARY COMPANIES

C A P I T A L I Z A T I O N

As at December 31, 1947
(In Canadian Dollars)

	Authorized and Issued	Outstanding
Funded Debt. at par of exchange		
The Mexican Light & Power Company, Ltd.		
5% First Mortgage Bonds, due February 1, 1950	\$ 12,000,000	\$ 6,576,000
5% Second Mortgage 50-year sterling Bonds and Debenture Stock, due 1968	14,600,000 (13,000,000)	8,218,363 (11,701,650)
6% Cumulative Income Debenture Stock (a)	\$ 11,850,757	\$ 11,850,600
The Mexican Electric Light Company, Ltd.		
5% First Mortgage Bonds, due February 1, 1950	\$ 6,000,000	\$ 2,888,300
Pachuca Light & Power Company		
5% 50-year First Mortgage Bonds, due 1967 (Authorized \$1,200,000)	\$ 3,893,333 (1,800,000)	\$ 2,080,305 (1,427,460)
Capital Stock		
7% Cumulative Preference Shares, par value \$100, 60,000 Shares	\$ 6,000,000	\$ 6,000,000
4% Redeemable Second Preference Shares, par \$5, 1,140,000 Shares	\$ 5,700,000	\$ 5,700,000
Ordinary Shares, no par value		
Authorized 250,000 Shares		
Issued 179,600 Shares	\$ 17,085,000	\$ 17,085,000
(a) Interest accumulated to December 31, 1947, 60-1/2% or \$7,169,613. 6%, or \$711,036, paid July 1, 1948 leaving arrears unpaid of 54-1/2% or \$6,458,577. A Plan of Arrangement modifying the rights of the holders of the bonds and debenture stock of The Mexican Light & Power Company, Ltd., and The Mexican Electric Light Company, Ltd., was approved at meetings of the bondholders held during 1941 and became effective October 22, 1941. The provisions of the Plan were given effect to in Supplemental Trust Deeds dated November 14, 1941, and included, inter alia, the extension of the maturity of the First Mortgage Bonds of both companies to February 1, 1950, and increased sinking funds for these issues, part of which, as well as the interest and sinking funds on the Second Mortgage and Income issues, and any unpaid accumulations thereof, is payable to the extent of available earnings in accordance with the terms of the Trust Deeds. Payment of interest on the Income Debenture stock is, however, limited, under the Plan of Arrangement, to 6% in any year as long as any of the First Mortgage Bonds of either Company remain outstanding.		

(Source: Companies' Annual Report for 1947.)

THE MEXICAN LIGHT & POWER COMPANY, LTD.

Comparative Consolidated Income Account, years ended Dec. 31 (a)
(In 000's Canadian Dollars)

	<u>1947</u>	<u>1946</u>	<u>1945</u>	<u>1944</u>	<u>1943</u>
Light & Power, government	\$ 1,370	\$ 1,318	\$ 1,149	\$ 944	\$ 890
Light & Power, private & commercial	18,526	16,892	14,447	11,666	11,462
Miscellaneous revenues	28	27	27	18	13
Gross Earnings	19,924	18,237	15,624	12,628	12,365
Operating expense, maintenance, taxes	15,023	13,636	10,176	8,472	7,149
Depreciation	1,844	1,813	1,782	1,616	1,635
Deferred liabilities	(b)	(b)	749	754	560
Administration & general expenses	(b)	(b)	147	153	140
Net Earnings	3,057	2,787	2,770	1,632	2,880
Other income	70	84	69	66	65
Gross Income	3,127	2,872	2,839	1,698	2,945
<u>Interest on Bonds</u>					
Mexican Light & Power, 1st 5's	335	348	359	368	382
Mexican Light & Power, 2nd 5's	342	352	410	410	461
Mexican Electric Light, 1st 5's	148	155	161	166	176
Pachuca, 1st 5's	106	109	117	119	123
Mexican Light & Power, Inc. Deb. 6's	711	711	711	711	711
Sinking funds	605	791	437	1,132	610
Exchange diff. on interest and sinking fund payments	-	10	54	58	61
Miscellaneous profits	-	-	-	37	33
Net Profit	\$ 879	\$ 396	\$ 589	\$ 1,229	\$ 455
				(def.)	
Times Interest and Sinking Funds earned (c)	2.04	1.63	1.84	0.76	1.67
Earned Surplus (deficit)	\$ 5,023	\$ 5,902	\$ 6,297	\$ 6,887	\$ 5,657
	(def.)	(def.)	(def.)	(def.)	(def.)

(a) Additions will not necessarily check due to rounding to nearest thousand.

(b) Not separately reported.

(c) Not including interest on Income Debenture 6's.

(Source: Moody's Utilities and Company's Annual Report for 1947.)

THE MEXICAN LIGHT & POWER COMPANY, LTD.

Comparative Consolidated Balance Sheet, as of December 31 (a)
(Company and Subsidiaries)
(In 000's Canadian Dollars)

	1947	1946	1945	1944	1943
ASSETS					
Properties, Plant, etc.	\$ 88,490	\$ 84,017	\$ 81,296	\$ 79,231	\$ 76,305
Rights, Franchises, Contracts, Goodwill	19,443	19,443	19,443	19,443	19,443
Investments and Advances	47	36	29	18	17
Current Assets					
Cash, etc.	5,028	6,083	7,095	4,909	6,539
Accounts Receivable, net	2,942	2,581	2,444	1,922	1,613
Marketable Securities (b)	3,564	4,520	3,801	3,198	2,899
Materials & Supplies	2,825	2,172	1,790	2,707	3,773
Total Current Assets	14,359	15,356	15,130	12,736	14,824
Due from Mexican Government (c)	4,428	4,456	4,845	4,811	4,644
Deferred Charges, Sundry Deposits	411	366	411	394	812
Sinking Fund, Cash Balances	2	1	55	114	98
TOTALS	\$ 127,180	\$ 123,675	\$ 121,209	\$ 116,747	\$ 116,142
LIABILITIES					
7% Preference Shares (\$100 par)	\$ 6,000	\$ 6,000	\$ 6,000	\$ 6,000	\$ 6,000
4% Preference Shares (\$5 par)	5,700	5,700	5,700	5,700	5,700
179,600 Ordinary Shares (no par)	17,085	17,085	17,085	17,085	17,085
Funded Debt	31,677	32,402	33,371	33,942	35,332
Accumulated Int., Income Deb, 6's	6,459	6,459	6,459	6,459	5,748
Current and Accrued Liabilities					
Accrued Int. on 2nd 5's & Inc. Deb. 6's	1,319	1,339	1,434	737	1,153
Accounts Payable, Accrued Charges and					
Provision for Taxes	3,110	2,825	2,848	2,121	2,229
Total Current Liabilities	4,429	4,164	4,282	2,858	3,382
Sinking Fund Reserve	13,770	13,051	12,133	11,634	10,204 (d)
General Depreciation Reserve	40,852	39,175	37,788	36,327	34,831
Exchange Reserve	-	-	233	323	400
Deferred Liabilities	6,233	5,541	4,456	3,306	3,118
Earned Surplus (deficit)	(def.) 5,023	(def.) 5,902	(def.) 6,297	(def.) 6,887	(def.) 5,657
TOTALS	\$ 127,180	\$ 123,675	\$ 121,209	\$ 116,747	\$ 116,142

(a) Additions will not necessarily check due to rounding to nearest thousand.

(b) At lower of cost or market; market value: 1947, \$3,576,000; 1946, \$4,538,000; 1945, \$3,837,130;
1944, \$3,227,986; 1943, \$2,915,215.

(c) For supply of light and power and sundry indebtedness due by the Mexican Governments, Federal, State, and Municipal.

(d) After writing off \$6,256,674 bond discount, share and bond issue expenses.

(Source: Moody's Utilities and Companies' Annual Report for 1947.)

APPENDIX "D"

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

Washington, D. C.

24 June 1948

Mr. George Messersmith
Chairman of the Board
Mexican Light and Power Company, Ltd.
Metropolitan Club
17th and H Streets, Northwest
Washington, D.C.

Dear Mr. Messersmith:

With reference to the conversations that we have been carrying on with you during the past few days, I now write to give you some particulars of the character of the financial reorganization which we should expect the Mexican Light and Power Company to carry out before we could consider investing Bank funds in the undertaking.

I attach a brief memorandum setting out the lines that any such reorganization should follow. You will, of course, understand that this memorandum purports to do no more than set out in layman's language the steps that the Bank would expect the Company to take in order to afford adequate protection to any loan that the Bank might eventually make, to enable the Company to rid itself of some of the embarrassments and hindrances which stand in the way of its obtaining finance for its programme of expansion, and to facilitate further borrowings by the Company in future.

As both Mr. McCloy and I explained to you, the Bank is not prepared to consider the long-term financing which your present programme of expansion would entail until a financial reorganization on the lines which I have indicated has been carried out. If, however, we have an assurance from the Company that a financial reorganization on these lines would be put in hand forthwith and carried through to completion, say within one year from now, then the Bank, in the light of that assurance, would be prepared to give the most sympathetic consideration to arrangements providing for interim financing of your expansion programme for the year during which your financial reorganization is being carried out. This interim financing would have to carry the guarantee of the Government of Mexico and, in the light of the Company's situation as we see it

at the moment, would have to be in the form of a Bank loan to a Mexican Governmental Agency (probably the Nacional Financiera) who would re-lend to the Company. The amount of the interim financing would, of course, depend on a further examination by the Bank of the probable needs of the Company to meet any foreign exchange commitments approved by the Bank and likely to fall due in respect of expenditure on your expansion programme during the period to which the interim finance would relate.

The provision of funds by the Bank, whether on an interim basis or on a long-term basis, must, of course, depend upon other considerations as well as a financial reorganization by the Company. For example, the Bank will wish to be satisfied: --

- (a) that the Mexican economy is capable of supporting the dollar guarantee in respect of any loan that the Bank might make;
- (b) that the Company has been able to secure from the Mexican authorities the establishment of rates adequate to provide a satisfactory earning basis for the Company;
- (c) that the programme of expansion of the Company will not run ahead of what demand is likely to be, having regard to the probability that substantially higher rates for power are likely to rule in future in Mexico.

These three points are not, of course, exhaustive, and I do not wish you to construe this letter as in any sense a commitment by the Bank to lend either on a long-term or on an interim basis, as the Bank will have to consider all the relevant circumstances existing when the question of making a firm commitment arises.

I feel, however, as does Mr. McCloy, that we should at this stage at least, point out to you how one insuperable obstacle to any loan from the Bank to the Company can be got out of the way.

Sincerely yours,

W.A.B. Iliff
Loan Director

MEXICAN LIGHT AND POWER COMPANY
Scheme of Financial Reorganization

1. The purpose underlying the financial reorganization is threefold:
 - (a) to enable any loan from the International Bank to be adequately secured, vis-a-vis any other funded debt of the company or its subsidiaries;
 - (b) to ensure adequate coverage of the company's fixed charges; and
 - (c) to establish a capital and debt structure which would facilitate the company's access to further financing.

2. In order to achieve the above objectives the reorganization should satisfy the following criteria: --
 - (a) the security and servicing of any International Bank loan should rank not junior to the security and servicing of any other funded debt of the Company or its subsidiaries,
 - (b) the security and servicing of any International Bank loan should rank senior to the security and servicing of any other funded debt of the Company or its subsidiaries, except first mortgage obligations,
 - (c) apart from any International Bank loan and any existing first mortgages of the Company or of its subsidiaries, no other existing obligation of the Company or any of its subsidiaries should be accorded the status of funded debt.

3. The reorganized capital and debt structure of the Company should make provision for the following:

- (a) Any International Bank loan to be secured by a first mortgage on the properties of the Company and its subsidiaries.
- (b) The existing first mortgages on the properties of (i) Mexican Light and Power Company (ii) Mexican Electric Light Company (iii) Pachuca Light and Power Company (iv) Meridional Power Company, to be refunded through the issue of new first mortgage bonds of the Company which would have not more favourable treatment with respect to security, maturity and sinking fund provisions than the corresponding treatment extended to any International Bank loan.
- (c) Fixed charges on the Company's consolidated earnings to consist only of interest and amortization on (i) any International Bank loan and (ii) refunding issues referred to in (b) above.
- (d) After the fixed charges specified in (c) above have been met, a priority charge on earnings to be established which will provide funds for future expansion in such reasonable amounts as may from time to time be determined to be necessary by the Company's Directors.
- (e) The existing second mortgage bonds and debenture stock (due 1968) of the Company to be converted into preferred stock,

- (g) Both of the existing issues of preferred stock of the Company to be converted into common stock.
- (h) All arrears of interest and dividends on the existing cumulative income debenture stock and the existing preferred stocks to be eliminated.
- (i) Service on the newly created preferred stocks to be made contingent on earnings after the fixed charges under (c) above have been met, and after provision of funds for future expansion under (d) above has been made.

4. The reorganization plan should also provide for: --
- (a) The abrogation of the 1941 Agreement, and
 - (b) Consent to the arrangements set out in paragraph 3 above, on the part of (i) all the parties to the 1941 Agreement (ii) the holders of the Pachuca mortgage bonds (iii) the Federal Electricity Commission, in respect of the Meridional mortgage, and (iv) holders of existing preferred and common stocks, as these were not parties to the 1941 Agreement.

5. The Bank would also wish to review the existing contract between Sofina and the Company in order to determine whether any revision of this contract is necessary so as to carry out the above-mentioned objectives of the re-organization.