

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

NICARAGUA

NATIONAL SUSTAINABLE ELECTRIFICATION AND RENEWABLE ENERGY PROGRAM (PNESER) - II

(NI- L1050)

LOAN PROPOSAL

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ELECTRONIC LINKS	
REQUIRED	
1. Annual work plan	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36173400
2. Monitoring and evaluation arrangements	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36173406
3. Full procurement plan – Updated	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36173711
4. Environmental and social management report	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36173407
OPTIONAL	
1. Risk assessment matrix	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36243052
2. National Sustainable Electrification and Renewable Energy Program (PNESER) – first loan, document PR-3556 of 17 June 2010	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35219846
3. Memorandum of understanding on the National Sustainable Electrification and Renewable Energy Program for Nicaragua, signed on 31 January 2011	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35820165
4. Primary document of the PNESER	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35078748
5. Program technical and economic assessment	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35062497
6. Framework cooperation agreement of the MEM with DISNORTE and DISSUR: Component 1, Extension of networks	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35526111
7. Framework cooperation agreement of the MEM with DISNORTE and DISSUR: Component 2, Normalization of electricity service in settlements	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35526091
8. PNESER Operating Regulations	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35924583
9. Fiduciary contributions during the identification and design of project NI-L1050	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35990124
10. Technical and project preparation support files	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35076761

ABBREVIATIONS

AECID	Agencia Española de Cooperación Internacional para el Desarrollo [Spanish Agency for International Development Cooperation]
AWP	Annual work plan
CABEI	Central American Bank for Economic Integration
DISNORTE	Distribuidora de Electricidad del Norte S.A.
DISSUR	Distribuidora de Electricidad del Sur S.A.
EE	Energy efficiency
EIB	European Investment Bank
EIRR	Economic internal rate of return
ENATREL	Empresa Nacional de Transmisión Eléctrica
ENEL	Empresa Nicaragüense de Electricidad
ENPV	Economic net present value
GoN	Government of Nicaragua
ICFA	International cooperation and finance agency
IFC	International Finance Corporation
KEXIM	Korean Eximbank
LAIF	Latin America Investment Facility
MEM	Ministry of Energy and Mines
MHCP	Ministry of Finance
NDF	Nordic Development Fund
OFID	OPEC Fund for International Development
PEU-MEM	Program Execution Unit
PNESER	Programa Nacional de Electrificación Sostenible y Energía Renovable [National Sustainable Electrification and Renewable Energy Program]
RE	Renewable energy
SIEPAC	Sistema de Interconexión Eléctrica para América Central [Central American Electric Interconnection System]
WB	World Bank

PROJECT SUMMARY

NICARAGUA NATIONAL SUSTAINABLE ELECTRIFICATION AND RENEWABLE ENERGY PROGRAM (PNESER) SECOND LOAN (NI-L1050)

Financial Terms and Conditions of the Second Loan					
Borrower: Republic of Nicaragua Executing agencies: Ministry of Energy and Mines (MEM), Empresa Nacional de Transmisión Eléctrica (ENATREL), and Empresa Nicaragüense de Electricidad (ENEL)				OC	FSO
			Amortization period:	30 years	40 years
			Grace period:	5.5 years	40 years
			Disbursement period:	4 years	4 years
			Interest rate:	SCF Fixed	0.25%
IDB II – NI-L1050	US\$22 million	100%	Inspection and supervision fee:	*	N/A
(OC)	US\$11 million	50%	Credit fee:	*	N/A
(FSO)	US\$11 million	50%	Currency:	US\$ SCF	US\$
PNESER Program Structure and Financing					
This document presents the proposal for a second loan from the Inter-American Development Bank (IDB) for the National Sustainable Electrification and Renewable Energy Program (PNESER, or “the program”). The first loan for the program was approved on 7 July 2010 (Resolutions 60/10 and 61/10, document PR-3556). The PNESER is financed through operations to be submitted independently for approval by the Board of Executive Directors, with investments that are justified and viable autonomously but enable the targets in the Results Framework to be met gradually and cumulatively. The design is based on the availability of concessional resources, and serves to leverage resources from other donors, while maintaining the concessionality agreed upon by the Government of Nicaragua with the international community as part of the country’s debt reduction arrangements.					
Second Loan at a Glance					
The objective of the PNESER is to support the efforts of the Nicaraguan government to reduce poverty by promoting access by a significant portion of the population to efficient, sustainable electricity service, while supporting creation of the conditions to move forward on a change to the energy mix that contributes to better conditions for mitigation and adaptation to climate change.					
The PNESER has seven components: (i) rural electrification by network extension; (ii) normalization of service in settlements; (iii) expansion in isolated areas with renewable energy; (iv) preinvestment and studies for generation projects with renewable energy; (v) energy efficiency programs; (vi) strengthening the transmission system; and (vii) sustainability of ENEL isolated systems.					
Conditions precedent to the first disbursement: The IDB has received the legal reports on the validity of the obligations assumed by the borrower in relation to this second financing (see paragraph 3.1).					
Conditions precedent to the first disbursement of each subprogram: (i) the resource transfer and execution agreements with each coexecuting agency have been updated to reflect the additional resources for the respective subprogram (see paragraph 3.1); and (ii) an annual work plan for the first year, corresponding to the updated PNESER, has been delivered (see paragraph 3.3).					
Special execution conditions: The special execution conditions of the first loan (2342/BL-NI) remain in effect (see paragraph 3.1).					
Exceptions to Bank policies: None.					
Project consistent with country strategy: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					
Project qualifies as: SEQ <input checked="" type="checkbox"/> PTI <input type="checkbox"/> Sector <input type="checkbox"/> Geographic <input type="checkbox"/> Headcount <input type="checkbox"/>					
Procurement: See updated Procurement Plan.					

* The credit fee and inspection and supervision fee will be established periodically by the Board of Executive Directors as part of its review of the Bank’s lending charges, in accordance with the applicable provisions of the Bank’s policy on lending rate methodology for Ordinary Capital loans. In no case will the credit fee exceed 0.75% or the inspection and supervision fee exceed, in a given six-month period, the amount that would result from applying 1% to the loan amount divided by the number of six-month periods included in the original disbursement period.

SCF = Single Currency Facility.

I. DESCRIPTION AND RESULTS MONITORING

A. Background and rationale

- 1.1 In July 2010, the Inter-American Development Bank approved the first loan (2342/BL-NI)¹ for the National Sustainable Electrification and Renewable Energy Program (PNESER) in the amount of US\$30.5 million, pursuant to Resolutions DE-060/10 and DE-061/10. The PNESER is a multiyear program that will have a transformational effect on electricity coverage at the national level by significantly increasing the coverage rate of electricity service, scaling up the use of renewable energies, and promoting energy efficiency in Nicaragua.
- 1.2 The objectives of the PNESER are: (i) to support the efforts of the Nicaraguan government to reduce poverty by promoting the population's access to efficient, sustainable electricity service; and (ii) to create the conditions to move forward on a change to the energy mix that contributes to better conditions for climate change adaptation and mitigation. The program supports seven components: (i) rural electrification by network extension; (ii) normalization of service in settlements; (iii) expansion in isolated areas with renewable energy; (iv) preinvestment and studies for generation projects with renewable energy; (v) energy efficiency programs; (vi) strengthening the transmission system in rural areas; and (vii) sustainability of ENEL isolated systems.
- 1.3 The program structure allows IDB resources to be contributed in a modular fashion based on the availability of concessional resources, and serves to leverage resources from other donors, while maintaining the concessionality agreed upon by the Government of Nicaragua with the international community as part of the country's debt reduction arrangements.
- 1.4 The objective of this document is to submit the second loan from the IDB (NI-L1050) in support of the PNESER to the Board of Executive Directors for consideration. It includes a progress report on the program and the first loan (2342/BL-NI), as well as on actions agreed upon with the borrower and executing agencies.
- 1.5 **Problems and challenges in the sector.** Nicaragua, the country with the second-lowest income in Latin America and the Caribbean, has one of the lowest rates of electricity service coverage in the region, representing a significant barrier to socioeconomic development. While electrification has increased gradually from coverage of 30% in 1971 to 67% in 2010 (with 30% coverage in rural areas), it remains far from the target agreed by the Central American countries of achieving 90% coverage in all countries by 2020. Of the 390,000 dwellings not listed as electricity customers, it is estimated that at least 340,000 (1.8 million people) lack electricity service, and the remainder are customers illegally connected to the grid who live in informal settlements and have low-quality, nonstandard service that is unsafe and unreliable. This problem affects not only those connected illegally, but

¹ See document [PR-3556](#) of 17 June 2010.

- legal customers. In all, there are an estimated 164,000 dwellings (legal and illegal customers) in these settlements.
- 1.6 To increase electricity coverage in the country, in addition to legalizing the illegal users by normalizing service in these settlements, network extension projects and electrification projects in isolated areas are needed, such as those currently financed by the first loan (2342/BL-NI). To connect new users by expanding the grid, the Government of Nicaragua will use proven subsidy methods already authorized in the legal framework. Considering that many areas have distribution circuits of considerable length, and would not have the capacity to supply new loads at the rated voltage levels, it is necessary to strengthen the system's transmission grid. The connection of new users in isolated areas has been impacted in the past by: (i) problems facing the Empresa Nicaragüense de Electricidad (ENEL) at the 31 agencies that serve isolated systems, due to management problems, the high cost of operation due to the use of fossil fuel plants, and the nature of small, hard-to-access markets and scattered communities; and (ii) the lack of a national policy and strategy to serve these markets.
- 1.7 The absence of timely investments has made the country highly dependent on electricity produced by hydrocarbons, the proportion of which has increased to 69%² of power generated in 2009, despite the country's endowment of significant unexploited renewable energy (RE) resources (geothermal, wind, and hydroelectric energy). The high initial investment costs, especially for the development of RE and particularly for geothermal energy projects, pose a barrier to the scaled-up use of RE and for private sector involvement in this segment. Lastly, as international experience has shown, the country should seek not only to increase generation using RE sources, but to reduce its energy intensity index (3.00), which is more than twice the average for the Latin American region (1.46)³ because Nicaragua's energy consumption is based on the use of biomass, a relatively inefficient way to use its energy.
- 1.8 **The country's sector strategy.** The strategy pursued by the Nicaraguan government in the electricity sector includes: (i) the reduction of dependence on fossil fuels for electric power generation; (ii) the expansion of private sector investments in hydroelectric, geothermal, and biomass generation;⁴ (iii) the expansion of electricity coverage; (iv) the promotion of energy efficiency (EE) programs; (v) loss reduction; and (vi) maximization of opportunities arising with the Central American Electric Interconnection System (SIEPAC).
- 1.9 **The Bank's country strategy.** One of the primary objectives of the Bank's country strategy with Nicaragua (document GN-2499) is to improve the quantity, quality, and reliability of energy supply to make it efficient, sustainable, and compatible

² In 2009, 1,066 GWh (or 31% of the 3,409 GWh generated) came from renewable sources.

³ Energy Statistics Report 2010. Latin American Energy Organization.

⁴ Concessions have been granted and are in operation for hydroelectric, geothermal, and wind power projects with private investments of nearly US\$2 billion, including Tumarín (hydroelectric); Momotombo, San Jacinto, El Hoyo, Chiltepe, Caldera de Apoyo, Casitas, and others (geothermal), Amayo, Eolo, and Blue Energy (wind).

with promoting private investment, which is consistent with and supports the Nicaraguan government's strategy in the sector. This program is part of the support that the IDB has been providing the sector through the three phases of the Electricity Sector Support Program, which finances activities related to RE generation, transmission, and normalization of service in settlements through pilot projects. The PNESER is also consistent with the lending targets of the Ninth General Capital Increase (GCI-9), which include increasing support to small and vulnerable countries, financing the development of RE and climate change adaptation and mitigation programs, and intensifying poverty reduction and equity enhancement activities.

- 1.10 **Consistency with IDB policies and initiatives.** The PNESER's activities will contribute significantly to the IDB strategy of promoting RE and EE, contained in the climate change strategy, which seeks to support the region's countries in finding economically and environmentally viable ways to generate energy, preferably through the use of RE sources and implementing EE measures.
- 1.11 The PNESER is consistent with the objectives of the Public Utilities Policy (OP-708), as well as with the Energy Policy (OP-733), the Electric Energy Policy (OP-733-1), and other sector-related IDB initiatives. One of the objectives of OP-733 is "to efficiently meet the energy requirements of its member countries derived by the process of socioeconomic development." Specifically, OP-733-1 promotes the financing of projects to help make the energy supply more available and reliable. The PNESER is aligned with both objectives, as it is aimed at increasing electrical power transmission capacity and the efficiency and reliability of the transmission and distribution system, as well as increasing the RE supply.
- 1.12 Nicaragua's electricity sector meets the "basic conditions" of OP-708: (i) the roles of policy formulator, regulator, and entrepreneur are separate; (ii) its business structure fosters efficiency by separating natural monopoly activities from potentially competitive activities; (iii) an institutional vehicle appropriate to the specific conditions of the country and sector has been adopted through an effective regulatory body; (iv) effective modes of governance have been adopted, with both public- and private-sector entities operating under entrepreneurial systems; and (v) the authorities remain committed to the objectives of OP-708.
- 1.13 Regarding the regulatory framework, which is a basic condition of OP-708, the difficulties experienced by the electricity sector in the middle part of the past decade not only hindered its ability to set prices for end users, but had an even more significant impact on its institutional landscape and regulatory framework. The sector faced unprecedented hardships in its effort to perform its functions. As explained in the document, "Electricity Sector Support Program" (document [PR-3215-2](#)), these circumstances were fully overcome when the enterprises and the government reached an agreement on payment of accrued debt, and the system for transferring costs to rates was normalized. According to the regulatory agency's records as of 2010, arrears have been reduced, and legal requirements are generally being met. Existing subsidies (for rural electrification and for low-income

consumers) are in compliance with OP-708, are aimed at meeting broader national social-equity objectives, are explicit and transparent, and are adequately funded.

- 1.14 **IDB involvement in the sector.** IDB has extensive knowledge of Nicaragua's electricity sector. It has been supporting the sector since 1973, when it first approved an RE program. In 1998, through loan [1017/SF-NI](#), the IDB was involved in the amendments to the Electricity Act which transformed the sector. Through the Electricity Sector Support Program, loans [I](#), [II](#), and [III](#), activities have been supported in the areas of RE generation, transmission, and a pilot program was started on normalizing service in settlements.⁵ Meanwhile, loan [1877/BL-NI](#), "National Transmission Investments for Integration with the SIEPAC Project," is financing works to strengthen Nicaragua's electricity transmission network and help adapt it for integration with the Central American electricity network and market under the SIEPAC project. Technical assistance is also being provided to support other areas, including energy efficiency (Energy Efficiency Development in Nicaragua, [ATN/JF-9884-NI](#)), renewable energy (Wind Power Park Feasibility Study on Corn Island, [ATN/SU-9576-NI](#); and Development of Wind Power Generation in Isolated Systems, [ATN/SF-9634-NI](#)), and Support for the Sustainable Electrification and Renewable Energy Program ([ATN/OC-11766-NI](#)). Confidence in the sector's institutional framework is having a positive impact by attracting private investment in electric power generation,⁶ the reserve margin is increasing, and energy rationing has been reduced considerably.⁷ Relations between the Nicaraguan government and the predominantly private operators in the sector have improved, and major agreements have been ratified by the National Assembly to address debts falling due and improve the electricity sector's financial position in general.
- 1.15 In this context, the Nicaraguan government has requested support from the international financial community to execute the PNESER, which supports and supplements efforts to significantly transform the electricity sector by substantially increasing national electricity coverage, contributing to the reversal of dependency on hydrocarbons in the energy mix through the use of RE sources, and implementing EE measures.

B. Report on the PNESER and first loan

- 1.16 **PNESER cost and financing.** Table 1 presents the updated total cost and financing of the PNESER, estimated at US\$404.3 million. The IDB will contribute US\$77.5 million of that amount in three loans: the first was approved in 2010 (2342/BL-NI), the second is the subject of this document (NI-L1050), and the third will be submitted to the Board of Executive Directors for approval in 2012

⁵ Informe de gestión de normalización del servicio eléctrico a usuarios en el Barrio Mariana Sansón [Management report on normalizing electricity service for users in the Mariana Sansón Neighborhood], 13 August 2009. <http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35078304>

⁶ Nearly 700 megawatts are being developed in private generation projects such as Hidro-Pantasma, Larreynaga, El Salto-Y-Y, Tumarín, wind projects including Amayo, Eolo, and BluePower, and geothermal concessions in various parts of the country.

⁷ The rationing in the country in 2007 was discontinued in 2008. Today the country has a reserve of nearly 40%.

- (NI-L1063). Another US\$276.4 will come from various cofinancers, such as the Latin American Investment Facility (LAIF), the European Investment Bank (EIB), the Central American Bank for Economic Integration (CABEI), the Nordic Development Fund (NDF), and the OPEC Fund for International Development (OFID), which have already approved their contributions. The remaining US\$50.4 million will be a counterpart contribution from the budgets of the Ministry of Energy and Mines (MEM), Empresa Nacional de Transmisión Eléctrica (ENATREL), and Empresa Nicaragüense de Electricidad (ENEL) for payment of administrative and financial expenses not financed by the source of financing.
- 1.17 After the first loan (2342/BL-NI) was approved, the PNESER's cost increased from US\$381 million, as stated in document PR-3556, to US\$404.3 million. This increase is the result of technical analyses, performed by ENATREL with IDB support, which determined that it was necessary to include all financing for the minimum required transmission strengthening for the Tumarín Hydroelectric Plant to send its power to the network. This will cost an estimated US\$54 million, and since the PNESER's initial budget had included only US\$34 million for Phase I, an additional US\$20 million had to be added.
- 1.18 The loan contract for the PNESER's first loan (2342/BL-NI) between the Nicaraguan government and IDB was signed on 12 August 2010, and entered into force on 29 September 2010 following approval by Nicaragua's Legislative Assembly. This loan has already fulfilled the conditions precedent to the first disbursement, and was declared eligible for disbursements on 26 April 2011, in compliance with the annual work plan (AWP).
- 1.19 The CABEI, the EIB, the NDF, and the LAIF have approved their support for a total of US\$160.75 million. The combined sum of this amount and the IDB's first and second loans represents 53% of the financing required for the PNESER. The memorandum of understanding for execution of the PNESER has been signed by the Republic of Nicaragua and the organizations that have approved their contributions (IDB, the CABEI, the EIB, the LAIF, and the NDF).

Table 1. Cost and Financing Table for the PNESER
(US\$ millions)

INVESTMENT CATEGORY	TOTAL 2011-2015													
	IDB	WB	IFC	OFID	KEXIM	AECID	LAIF	EIB	CABEI	NDF	tbd	Third parties	GoN	Total
MEM SUBPROGRAM: 1-5	65.0	20.0	5.0	20.0	-	-	-	-	65.3	5.4	0.0	25.6	16.8	223.0
1. Engineering, supervision, and administration	1.8	0.5	0.1	0.4	-	-	-	-	1.9	-	0.0	-	9.3	14.0
2. Direct costs	60.9	19.4	4.9	19.6	-	-	-	-	63.4	5.4	-	25.6	0.0	199.1
2.1 Network extension	35.4	12.1	3.5	-	-	-	-	-	38.6	-	-	17.3	0.0	106.9
2.2 Settlement normalization	14.7	4.8	1.4	-	-	-	-	-	14.7	-	-	6.8	0.0	42.5
2.3 Isolated areas with REs	1.6	2.5	-	10.4	-	-	-	-	-	-	-	1.4	-	15.9
2.4 Preinvestment in REs	4.3	-	-	9.2	-	-	-	-	-	5.4	-	-	-	18.9
2.5 Energy efficiency	4.9	-	-	-	-	-	-	-	10.1	-	-	-	-	15.0
3. Financial expenses	2.3	-	-	-	-	-	-	-	-	-	-	-	7.5	9.8
ENATREL SUBPROGRAM: 6	2.6	-	-	-	27.2	25.5	9.6	70.0	9.8	-	18.7	-	8.0	171.4
1. Engineering, supervision, and administration	0.5	-	-	-	2.8	-	-	-	4.4	-	-	-	-	7.8
2. Direct costs	2.0	-	-	-	24.4	25.5	9.6	70.0	5.3	-	18.7	-	-	155.6
2.6 Strengthening transmission	2.0	-	-	-	24.4	25.5	9.6	70.0	5.3	-	18.7	-	-	155.6
3. Financial expenses	0.1	-	-	-	-	-	-	-	-	-	-	-	8.0	8.0
ENEL SUBPROGRAM: 7	9.9	-	-	-	-	-	-	-	-	-	-	-	0.0	9.9
1. Engineering, supervision, and administration	0.5	-	-	-	-	-	-	-	-	-	-	-	-	0.5
2. Direct costs	9.0	-	-	-	-	-	-	-	-	-	-	-	-	9.0
2.7 Strengthening isolated systems	9.0	-	-	-	-	-	-	-	-	-	-	-	-	9.0
3. Financial expenses	0.4	-	-	-	-	-	-	-	-	-	-	-	0.0	0.4
SUBTOTAL	77.5	20.0	5.0	20.0	27.2	25.5	9.6	70.0	75.0	5.4	18.8	25.6	24.8	404.3

* Included under "GoN" are contributions from the MEM, ENATREL, and ENEL to cover expenses of the Project Execution Unit and financial expenses.

** Included under "third parties" are contributions from enterprises, municipios, and other executing entities receiving contributions/subsidies.

- 1.20 The Nicaraguan government has made progress in implementing the PNESER's components in accordance with the Implementation and Management Plan. This progress includes the first disbursement under the program, establishment of the Project Execution Unit (PEU-MEM) within the MEM to serve as coordinator of the PNESER, designation of the Program Director, and establishment of the PNESER Monitoring Committee.
- 1.21 Execution agreements were entered into between the Ministry of Finance (MHCP) and the MEM, as were the resource transfer agreements between the MHCP and ENATREL and between MHCP and ENEL.
- 1.22 **PNESER objective and components.** The objective of the PNESER is to support the efforts of the Nicaraguan government to reduce poverty by promoting access by a significant portion of the population to efficient, sustainable electricity service, while supporting creation of the conditions to move forward on a change to the energy mix that contributes to better conditions for mitigation and adaptation to climate change. The PNESER has seven components: (i) rural electrification by

network extension; (ii) normalization of service in settlements; (iii) expansion in isolated areas with renewable energy; (iv) preinvestment and studies for generation projects with renewable energy; (v) energy efficiency programs; (vi) strengthening the transmission system in rural areas; and (vii) sustainability of ENEL isolated systems. For execution purposes, these components have been divided into three subprograms. The investments to be financed by the second loan, which will be used to cover direct costs, are as follows:

**1. Subprogram I. Executed by the Ministry of Energy and Mines
(components 1 to 5)**

- 1.23 **Component 1. Rural electrification by network extension (PNESER: US\$106.9 million, including US\$15.4 million for NI-L1040, US\$5.3 million for NI-L1050, and US\$14.6 million for NI-L1063).** The objective of this component is to provide access to electric power to rural populations that currently have no service, through the extension of distribution networks in concessioned and nonconcessioned areas. The PNESER target is to provide access to electricity service to 117,390 dwellings, in 3,666 communities in rural areas. This second loan will be used to connect 6,762 of these dwellings to the network. Since the first financing was approved, predesigns have been completed for 11,316 dwellings in 420 communities, or 10% of the total program target. Predesigns are being evaluated for 20,000 dwellings in approximately 800 communities. As with the first loan, the resources of this component will be used to cover the connection cost of the new dwellings connected to the grid, calculated using the same methodology described for the program.
- 1.24 **Component 2. Normalization of service in settlements (PNESER: US\$42.5 million, including US\$6.8 million for NI-L1040, US\$2 million for NI-L1050, and US\$5.8 million for NI-L1063).** The objective of this component is to adapt the power distribution system's networks and implement legalization and technical adaptation measures for the consumption of electricity in spontaneous settlements, thereby allowing for the normalization of 164,000 dwellings located in 648 settlements through improved distribution networks, service connections, provision of meters, and minimal internal installations. This second loan will finance the normalization of 20 such settlements, which will help normalize 4,200 existing dwellings and connect 2,000 new dwellings to the grid. Thus far, all the settlements in Managua have been identified, and the environmental technical audit is being commissioned for components 1 and 2.
- 1.25 For components 1 and 2, execution agreements have been signed with the two distribution companies that have a concession from the State: Distribuidora de Electricidad del Norte S.A. and Distribuidora de Electricidad del Sur S.A. These agreements set forth the obligations of the parties, including project eligibility requirements, the methodology for calculating the subsidy, and method of payment. Meanwhile, with support under IDB technical cooperation operation NI-T1094, an initial predesign phase has been carried out for network extension projects. Practical

data on normalization of settlements is being collected in pilot projects financed by operations NI-L1021 and NI-L1022.

- 1.26 **Component 3. Expansion in isolated areas with renewable energy (PNESER: US\$15.9 million, including US\$0.5 million for NI-L1040, no financing of this component for NI-L1050, and US\$1.1 million for NI-L1063).** This component supports the identification and implementation of electricity supply solutions for rural areas not connected to the National Interconnected System, promoting the use of RE inside and outside areas granted under concessions to private distributors. This component includes the development of micro and/or small hydroelectric projects, wind power plants, or other RE sources such as photovoltaic solar power, aimed at promoting sustainable development of the electricity supply to 5,820 dwellings. The strategy to address and develop these areas is currently being designed.
- 1.27 **Component 4. Preinvestment and studies for generation projects with renewable energy (PNESER: US\$18.9 million, including US\$0.4 million for NI-L1040, US\$3.2 million for NI-L1050, and US\$0.7 million for NI-L1063).** This component seeks to provide and improve the conditions, information, and strategies for planning and expanding power generation, necessary to promote the development of RE generation projects. The terms of reference for commissioning the following prefeasibility studies have been developed: (i) geothermal projects for the Cosigüina Volcano project; (ii) wind power generation; (iii) system expansion plan; and (iv) Master Plan for the Río Grande de Matagalpa Basin and Upper Río Coco Basin. These studies will be financed with resources from the NDF⁸ and from this second loan. Resources from the first loan will be used to finance the revision of the Generation and Transmission Expansion Plan, which will help prioritize other preinvestment studies and demonstration projects to allow for the increased use of RE sources, chiefly hydroelectric, geothermal, biomass, wind, and solar power. Implementation of this component will yield RE feasibility studies for a capacity of 358 MW, and will help create the conditions to change the energy mix, currently highly dependent on petroleum.
- 1.28 **Component 5. Energy efficiency programs (PNESER: US\$15 million, including US\$1.9 million for NI-L1040, US\$1.8 million for NI-L1050, and US\$1.3 million for NI-L1063).** This component supports the implementation of EE programs aimed at reducing the demand for power and current energy consumption in Nicaragua, chiefly cooling and lighting in various consumer sectors. An agreement is being negotiated with the distribution companies to implement the Efficient Public Lighting Program, which entails the replacement of lights; the first phase of this program will be financed with proceeds of the first loan, and the second phase, with proceeds of the second loan. Also, terms of reference are being prepared for EE studies to determine energy consumption

⁸ A financing agreement for 4.5 million euros was signed on 7 April 2011 between the Republic of Nicaragua and the Nordic Development Fund.

sectors, prepare EE standards, and develop policies, a national program, and a bill on EE. These studies will be commissioned using resources from the first loan.

2. Subprogram II. Executed by ENATREL (component 6)

- 1.29 **Component 6. Strengthening the transmission system (PNESER: US\$155.6 million, including US\$2.1 million for NI-L1040, US\$0.5 million for NI-L1050, and no financing of this component for NI-L0163).** This component includes the substations and transmission lines required to improve the EE of the electricity transmission system, provide a reliable supply to the new users to be connected to the grid as well as those currently with service in the program areas, and incorporate new RE sources into the Nicaraguan system. Substations will be remodeled or expanded to add 255 MW to the system, and some 1,034 km of transmission lines will be built. The first loan is financing the procurement of operation and maintenance equipment to strengthen ENATREL's operating capacity, and this second loan, NI-L1050, will finance activities for the institutional strengthening of ENATREL. Thus far, environmental and social studies have been commissioned for the construction of substations and transmission lines under this component, which are expected to be completed by the end of the second quarter of 2011. Construction of these substations and transmission lines is expected to be financed by the program's other cofinancers.

3. Subprogram III. Executed by ENEL (component 7)

- 1.30 **Component 7. Sustainability of ENEL isolated systems (PNESER: US\$9 million, including US\$1.2 million for NI-L1040, US\$7.8 million for NI-L1050, and no financing of this component for NI-L0163).** Resources from the second loan will be used to finance actions under this component to improve the sustainability of the isolated systems operated by ENEL, by replacing fossil fuel generation with renewable energy at a capacity of 982 kW and improving the institutional and operating capacity of the systems under ENEL's responsibility. Resources from the first loan will be used to finance the first phase of the program to strengthen isolated system agencies, and the second loan will be used to finance the second phase of the same program, as well as to build small hydroelectric plants and conduct studies of renewable sources to meet the needs of isolated communities.
- 1.31 Regarding investments related to engineering, supervision, and administration (PNESER: US\$22.5 million, including US\$1.1 million for NI-L1040, US\$1 million for NI-L1050, and US\$0.7 million for NI-L1063), the MEM, ENATREL, and ENEL met on 2 March 2011 and agreed to commission a single firm to conduct the financial audit of the entire PNESER. In addition, as agreed in the memorandum of understanding, progress has been made in preparing the terms of reference for commissioning the PNESER supervisor/advisor firm.

C. Results Matrix

- 1.32 The Results Matrix presented in the first loan proposal for the PNESER has been modified to specify some of the outcome indicators, reflect the status of intermediate targets, and break down targets for each of the three IDB loan operations (see Annex II). The two main outcomes of the PNESER will be: (i) to contribute to the country achieving a rate of electricity coverage of approximately 85.5% by the end of the program, as part of the Nicaraguan government's effort to reach the 90% target by 2020; and (ii) to support the authorities in generating new RE projects, by contributing to a transformational change in the energy mix in order to reach 86% generation from renewable energy sources by program end, and a 2020 target of 90% generation from renewable energy sources. Other expected outcomes of the PNESER related to service efficiency and sustainability are detailed in the Results Framework and include: (i) reduction of power losses as a result of normalization of settlements; (ii) reduction of electricity consumption due to energy efficiency programs; and (iii) increased reliability of the transmission system as a result of the strengthening of the transmission system.

II. FINANCING STRUCTURE AND MAIN RISKS

A. Financing instruments

- 2.1 The proposed operation is the IDB's second loan for the National Sustainable Electrification and Renewable Energy Program (PNESER). The program structure allows IDB resources to be contributed in 2010, 2011, and 2012 through operations approved independently by the Board of Executive Directors, with investments that are justified and viable autonomously but enable the targets in the Results Framework to be met gradually and cumulatively. This is an investment loan. Table 2 presents the cost and financing for the first and second loans, and Table 3 shows the disbursement schedule for the entire PNESER. A contract amending loan contract 2342/BL-NI will be signed to formalize the IDB's second loan for the PNESER.
- 2.2 As noted in paragraph 1.19, IDB, the CABEL, the EIB, the NDF, the LAIF, and the Nicaraguan government authorities have signed a memorandum of understanding for the PNESER, which serves to coordinate the support of the international cooperation and finance agencies (ICFAs) that are signatories to the PNESER. These ICFAs are abiding by the terms of the memorandum of understanding as they approve financing for the PNESER.

B. Environmental and social safeguard risks and mitigation measures

- 2.3 The PNESER has a positive net balance of environmental and social impacts, improving the living conditions of low-income populations, increasing the productivity of rural communities, and providing reliable electricity service to facilitate education and health services. Because the baseline conditions under which the PNESER was designed remain in place, the environmental and social

management arrangements identified in the environmental and social management report for the IDB's first loan remain in full effect and unchanged for this second loan. In view of the ESRNet evaluation, this program is classified as category "B" under the IDB's Environment and Safeguards Compliance Policy (OP-703).

Table 2. Cost and Financing Table for First and Second Loans (US\$000)

INVESTMENT CATEGORY	TOTAL 2011-2015			
	NI-L1040	NI-L1050	GoN*	Total
MEM SUBPROGRAM – components 1–5	26,951	13,065	64	40,080
1. Engineering, supervision, and administration	787	397	-	1,184
2. Direct costs	25,000	12,263	-	37,263
2.1 Rural electrification by network extension	16,200	4,470	-	20,670
2.2 Normalization of service in settlements	6,100	2,751	-	8,851
2.3 Expansion in isolated areas with renewable energy	500	-	-	500
2.4 Preinvestment and studies for generation projects with renewable energy	350	3,212	-	3,562
2.5 Energy efficiency programs	1,850	1,830	-	3,680
3. Financial expenses	1,164	405	64	1,633
ENATREL SUBPROGRAM – component 6	2,049	564	3	2,616
1. Engineering, supervision, and administration	-	538	-	538
2. Direct costs	2,000	-	-	2,000
2.6 Strengthening the transmission system in rural areas	2,000	-	-	2,000
3. Financial expenses	49	26	3	78
ENEL SUBPROGRAM – component 7	1,500	8,370	14	9,884
1. Engineering, supervision, and administration	224	288	-	512
2. Direct costs	1,211	7,766	-	8,977
2.7 Sustainability of ENEL isolated systems	1,211	7,766	-	8,977
3. Financial expenses	65	316	14	395
SUBTOTAL	30,500	22,000	81	52,581

* The borrower will pay the credit fee for the program.

Table 3. Disbursement Schedule of the PNESER (US\$ millions)

INVESTMENT CATEGORY	TOTAL 2010-2015					
	2011	2012	2013	2014	2015	Total
International cooperation and financing	10.9	56.5	115.8	105.7	65.1	354.0
IDB I (NI-L1040) (2010)	10.0	15.0	5.5	-	-	30.5
IDB II (NI-L1050) (2011)	-	6.1	10.8	5.0	0.1	22.0
IDB III (NI-L1063) (2012A)	-	-	3.3	11.3	10.4	25.0
Other ICFAs	0.9	35.3	96.3	89.5	54.5	276.4
Third-party contributions	-	0.2	4.7	7.7	12.9	25.6
Local counterpart	0.5	3.0	5.7	8.3	7.1	24.8
SUBTOTAL	11.4	59.8	126.2	121.7	85.2	404.3

C. Fiduciary risk

- 2.4 The IDB's fiduciary obligation to ensure the appropriate, efficient use of funds is fulfilled in this operation by means of compliance with IDB financial and procurement policies and procedures, as indicated in the fiduciary report developed in preparation for the first loan, which establishes the provisions applicable to the execution of all procurement processes for the PNESER.
- 2.5 The update of the fiduciary capacity assessment, done in preparation of this operation, found that the risk level of the three executing agencies has decreased and that execution quality continued to show improvement (see [Fiduciary contributions during the identification and design of project NI-L1050](#)).
- 2.6 **Procurement.** As noted for the first operation (NI-L1040), most of the resources for PNESER components 1, 2, 3, and 5 will be used to finance the subsidies and/or reimbursable contributions of the State for the development of rural electrification (both through network connections and in isolated systems), normalization of settlements, or promotion of EE. For the remainder of the financing, procurements will be conducted: (i) in accordance with the specific rules of each donor, for procurements involving financing from a single donor; and (ii) in accordance with procurement procedures of one of the ICFAs determined by common agreement among the financing ICFAs, for procurements involving financing from more than one ICFA. Procurements to be financed by the IDB will be conducted in accordance with IDB policies (documents GN-2349-9 and GN-2350-9). Common procurement procedures have been used in executing the first loan, and Bank resources are not expected to be combined with those of any other financing entity. This document's electronic links include the updated procurement plan for the PNESER.

D. Execution risks

- 2.7 The main risks to program implementation were identified during preparation, including risks related to public management and governance. The mitigation

measures for these risks were identified in the [risk assessment](#). The analysis conducted in the program structuring phase remains in effect for this second financing.

E. Other key issues and risks

- 2.8 **Institutional and financial viability.** The program will be executed by the MEM, ENATREL, and ENEL, which are currently executing agencies for the Electricity Sector Support Program (loans NI-L1021, NI-L1022, and NI-L1036) and the first loan of the PNESER (2342/BL-NI). They possess extensive experience and teams of high-level technical staff, which will receive technical support when needed. In accordance with the memorandum of understanding signed in January 2011, a temporary organizational structure was formed under the MEM's senior management body, with a full-time program director responsible for direct administration of the PNESER. Moreover, the allocation for program engineering, supervision, and administration expenses includes resources to support the MEM with program accounting, financial control and management, record-keeping and reporting, and other program administration and strengthening activities. In accordance with paragraph 2.14 of document [PR-3556](#), ENATREL is in compliance with the financial sustainability conditions for 2010; the ENEL Act was approved by the Legislative Assembly; and the action plan is being implemented as planned and on schedule.
- 2.9 **Technical and economic viability.** A technical and economic evaluation of the program⁹ was completed in preparation for the first loan, and confirmed its viability. The evaluation focused on the sample projects for components 1, 2, and 6, representing the bulk of the investment activities. For component 3, selection standards will be followed that ensure the viability and sustainability of the projects, and the strategy being developed will set criteria for their prioritization. For component 5, the program prepared with technical cooperation operation NI-T1034 included the technical and economic evaluation criteria.¹⁰
- 2.10 For component 1, the average total cost per customer for projects eligible for subsidies is US\$1,244, of which US\$1,064 corresponds to networks, US\$106 to service connections and metering, and US\$59 to internal installations. The remaining US\$15 corresponds to service connections and metering for nonresidential customers. The average subsidy for the investment in networks is US\$809, so the average recoverable cost is US\$255, representing 24% of the average cost for investment in networks. As the model requires, all individual projects eligible for subsidies have an economic internal rate of return (EIRR) above 12%. The economic net present value (ENPV) per dwelling supplied with electricity service, discounted at 12% as of January 2009, is US\$574.

⁹ See [Program technical and economic assessment](#).

¹⁰ See report: "[Propuestas de préstamos para el financiamiento de proyectos de eficiencia energética](#)" [Proposed loans to finance energy efficiency projects].

- 2.11 For component 2, economic viability was determined in light of the information obtained from four pilot projects: two in León, which are up and running, and two in Managua, which are under construction. The EIRRs of the four projects are between 13% and 27%. On average, the total cost of normalizing a customer in the sample, excluding the cost of the service connection and meters, is US\$240, yielding an ENPV of US\$274. The normalization of 130,000 dwellings would produce an ENPV of US\$36 million.
- 2.12 The execution of the initial portfolio for component 5 on EE presents a simple three-year term for recovery of the investment, and will have a positive impact on the environment with the reduction of 220 GWh in electricity consumption and 156,000 tons of carbon dioxide per year.
- 2.13 For component 6, two independent projects were evaluated. The first entails the construction, remodeling, or expansion of the Estelí, San Ramón, Terrabona, Ocotol, El Sauce, and Yalí substations, including their transmission lines and other associated works. This project has an ENPV indicator of US\$141 million at border prices, and an EIRR of 55%. The second project involves the construction of the La Dalia substation, replacing the old El Tuma substation and the El Cuá substation, and has an ENPV of US\$15 million and an EIRR of 22%.

III. IMPLEMENTATION AND MANAGEMENT PLAN

A. Summary of implementation arrangements

- 3.1 **Special conditions precedent to the first disbursement:** As a condition precedent to the first disbursement of the loan proceeds, the IDB will have received the legal reports on the validity of the obligations assumed by the borrower with regard to this second financing. Moreover, as conditions precedent to the first disbursement of resources for each subprogram: (i) the resource transfer and execution agreements with each coexecuting agency will have been updated to reflect the additional resources for the respective subprogram; and (ii) an annual work plan (AWP) for the first year, corresponding to the updated PNESER, will have been delivered (see paragraph 3.3). The special execution conditions established in loan contract 2342/BL-NI remain in effect (see document [PR-3556](#)).
- 3.2 **Organization.** As part of program execution, the Program Execution Unit (PEU-MEM) for the PNESER was established with a program director and the specialized support of a financial coordinator and five technical coordinators responsible for each of the components, who have already been appointed. The PEU-MEM coordinates the entire PNESER in relation to the international cooperation and finance agencies (ICFAs). The PNESER Monitoring Committee has also been formed.
- 3.3 **Execution mechanism.** The program Operating Regulations provide general and specific procedures for execution of the PNESER, and have been agreed upon by

the signatory ICFA's, in accordance with the memorandum of understanding. The program is executed on the basis of AWP's, which identify the specific activities to be financed, the uses and sources of the resources, the planned targets, and expected outcomes for each. The executing agencies, supported by the organizational structure described above, will prepare the detailed AWP's and submit them to the PNESER Monitoring Committee. The activities in the AWP will take into account the interconnectedness of the components and subcomponents, and the time frames for their execution, to ensure achievement of the program's objectives.

B. Summary of arrangements for monitoring results

- 3.4 The Results Matrix will be the basic instrument for monitoring outcomes of the PNESER. Two PNESER Monitoring Committee meetings will be held each year. The annual review meeting (April) will review performance for the prior year (progress on actions and targets met as planned in the AWP using the agreed indicators). This meeting will identify the support projections for the following year. The annual planning meeting (August) will discuss the general progress for the first half of the year (for the AWP for the year underway) and the proposed AWP for the following year.
- 3.5 Pursuant to the commitments made in the memorandum of understanding described in paragraph 1.19, a midterm evaluation and a final evaluation of the PNESER will be conducted. The terms of reference for the consultants to perform these evaluations will be approved by the PNESER Monitoring Committee, and the evaluation reports shared with all the signatory ICFA's.

Development Effectiveness Matrix			
Summary			
I. Strategic Alignment			
1. IDB Strategic Development Objectives	Aligned		
Lending Program	Lending to small and vulnerable countries; Lending to support climate chance initiatives, renewable energy and environmental sustainability.		
Regional Development Goals	Infrastructure for competitiveness and social welfare.		
Bank Output Contribution (as defined in Results Framework of IDB-9)	Km of electricity transmission and distribution lines installed or upgraded; Percentage of power generation capacity from low-carbon sources over total generation capacity funded by IDB; Climate change pilot projects in agriculture, energy, health, water and sanitation, transport, and housing.		
2. Country Strategy Development Objectives	Aligned		
Country Strategy Results Matrix	GN-2499	To improve the quantity, quality, and reliability of the power supply, making it efficient, sustainable, and compatible with the promotion of private investments.	
Country Program Results Matrix	GN-2576	This project is included in the 2011 Country Program Document.	
Relevance of this project to country development challenges (If not aligned to country strategy or country program)			
II. Development Outcomes - Evaluability	Evaluable	Weight	Maximum Score
	6.97		10
3. Evidence-based Assessment & Solution	7.8	25%	10
4. Ex ante Economic Analysis	8.5	25%	10
5. Monitoring and Evaluation	4.1	25%	10
6. Risks & Mitigation Monitoring Matrix	7.5	25%	10
Overall risks rate = magnitude of risks*likelihood	Medium		
Environmental & social risk classification	B		
III. IDB's Role - Additionality			
The project relies on the use of country systems (VPC/PDP criteria)			
The project uses another country system different from the ones above for implementing the program			
The IDB's involvement promotes improvements of the intended beneficiaries and/or public sector entity in the following dimensions:			
Gender Equality			
Labor			
Environment	yes	The project takes measures to improve the environment of the beneficiaries.	
Additional (to project preparation) technical assistance was provided to the public sector entity prior to approval to increase the likelihood of success of the project	yes	Technical cooperation NI-T1094, developed a first phase of the pre-designs that will used to develop the network extension for components 1 and 2 . 1550 efficient light bulbs were acquired through TC NI-T1034 to support component 5.	
The ex-post impact evaluation of the project will produce evidence to close knowledge gaps in the sector that were identified in the project document and/or in the evaluation plan.			

This is the second of three operations to finance the National Program for Sustainable Electrification and Renewable Energy (PNESER or the Program). The first loan was approved in July 7, 2010.

The proposed interventions for this operation and the Program as a whole are linked to the problems identified in the diagnosis of the electricity sector and include: low coverage, homes with illegal electrical connections that receive a low quality service, high dependency on electricity generated from hydrocarbons, and a high level of Energy Intensity. The POD presents a diagnostic that is backed by empirical evidence. The problems are clearly identified as is the magnitude of these problems and the factors that contribute to them.

The results matrix has vertical logic and the project's impacts, outcomes and outputs are clearly stated. The Program's impact does not include indicators. All the outcome and output indicators have baselines and targets. Only the outcome indicators include sources of information. Some of the outcome and output indicators are not SMART. In the case of the outcomes, this is due to the fact not all benefits included in the cost-benefit analysis are included as indicators. This could generate problems when the ex post cost benefit analysis of the Program is undertaken. Not all output indicators are SMART given that they are not sufficiently specific to be measurable. The project was analyzed using a cost-benefit analysis whose assumptions were presented and its costs and benefits were adequately quantified.

The operation has a monitoring and evaluation plan, however this plan does not spell out whom, how and when the information to undertake the ex post cost benefit analysis will be gathered. Only the evaluation activities present a budget. The program will be evaluated using a reflexive methodology and an ex post cost benefit analysis. The risks have been identified and classified for impact and likelihood. Mitigation measures are described but no indicators are presented to monitor the implementation of these measures.

NICARAGUA NATIONAL SUSTAINABLE ELECTRIFICATION AND RENEWABLE ENERGY PROGRAM (PNESER) NI-L1040, NI-L1050, AND NI-L1063 RESULTS FRAMEWORK / MATRIX OF INDICATORS (UPDATED 31 MARCH 2011)										
Program objective	The objective of the National Sustainable Electrification and Renewable Energy Program (PNESER) is to support the efforts of the Nicaraguan government to reduce poverty by promoting access by a significant portion of the population to efficient, sustainable electricity service, and to create the conditions to move forward on a change to the energy mix that contributes to better conditions for mitigation and adaptation to climate change.									
Results indicator	Baseline 2009	2010	2011	2012	Target		2015	Final	2020*	Means of verification
Increase in electricity service coverage in the country	64.6%	68.5%	73.1%	77.9%	82.4%	85.5%	85.5%	85.5%	90.0%	MEM statistics
Proportion of electricity generation from renewable sources	27.9%	34.7%	37.0%	44.7%	55.9%	56.4%	84.4%	84.4%	90.0%	MEM statistics
Total generation (GWh)	3,110	3,321	3,455	3,605	3,772	3,959	4,163	4,163		MEM statistics
Renewable generation (GWh)	869	1,153	1,278	1,613	2,110	2,232	3,515	3,515		MEM statistics
Reduction in consumption due to energy efficiency programs (initial projects)	0 GWh/year	0 GWh/year	0 GWh/year	130 GWh/year	160 GWh/year	190 GWh/year	221 GWh/year	221 GWh/year		MEM ex post evaluations
Reduction of nontechnical power losses in settlements	4.56%	4.56%	4.06%	3.31%	2.31%	1.31%	0.31%	0.31%		MEM ex post evaluations
Increase in service reliability as a result of the transmission system strengthening (failure rate = number failures/year/100 km)	6.42	6.42	6.38	6.33	6.30	6.10	6.10	6.10		ENATREL statistics

* Between 2010 and 2015, the PNESER will contribute to meeting the Nicaraguan government's targets for 2020.

NICARAGUA							
NATIONAL SUSTAINABLE ELECTRIFICATION AND RENEWABLE ENERGY PROGRAM (PNESER) – NI-L1040, NI-L1050, AND NI-L1063							
Outputs	Baseline 2010	Targets					
		2011	2012	2013	2014	2015	Final
Component 1: Rural electrification by network extension							
Dwellings connected (total PNESER)	0	11,797	13,313	32,425	30,526	29,329	117,390
Dwellings connected (NI-L1040)	0	11,797	3,408	1,746	0	0	16,951
Dwellings connected (NI-L1050)	0	0	863	3,971	932	0	5,766
Dwellings connected (NI-L1063)	0	0	0	1,553	7,499	7,064	16,116
Dwellings connected (cofinancers)	0	0	9,042	25,155	22,095	22,265	78,557
Component 2: Normalization¹ of service in settlements							
Settlements with normalized electricity service (total PNESER)	0	30	65	235	158	160	648
Settlements with normalized electricity service (NI-L1040)	0	30	45	0	0	0	75
Settlements with normalized electricity service (NI-L1050)	0	0	20	0	0	0	20
Settlements with normalized electricity service (NI-L1063)	0	0	0	115	0	0	115
Settlements with normalized electricity service (cofinancers)	0	0	0	120	158	160	438
Normalized dwellings of existing customers (total PNESER)	0	8,822	15,200	29,930	29,818	29,706	113,476
Normalized dwellings of existing customers (NI-L1040)	0	8,822	7,668	1,735	0	0	18,225
Normalized dwellings of existing customers (NI-L1050)	0	0	657	3,651	1,112	0	5,419
Normalized dwellings of existing customers (NI-L1063)	0	0	0	1,421	6,983	7,280	15,685
Normalized dwellings of existing customers (cofinancers)	0	0	6,875	23,123	21,723	22,426	74,147
Normalized dwellings of new customers (total PNESER)	0	2,708	7,997	13,338	13,288	13,239	50,570
Normalized dwellings of new customers (NI-L1040)	0	2,708	4,640	773	0	0	8,122
Normalized dwellings of new customers (NI-L1050)	0	0	293	1,627	496	0	2,415
Normalized dwellings of new customers (NI-L1063)	0	0	0	633	3,112	3,244	6,990
Normalized dwellings of new customers (cofinancers)	0	0	3,064	10,305	9,680	9,995	33,043
Component 3: Expansion in isolated areas with renewable energy							
Strategy for serving isolated areas (NI-T1094)	0	0	0	1	0	0	1

NICARAGUA							
NATIONAL SUSTAINABLE ELECTRIFICATION AND RENEWABLE ENERGY PROGRAM (PNESER) – NI-L1040, NI-L1050, AND NI-L1063							
Outputs	Baseline 2010	Targets					
		2011	2012	2013	2014	2015	Final
Plans implemented for management training, accounting and invoicing systems, and microbasin protection and management at enterprises in isolated areas (NI-L1040 [34%]; NI-L1063 [66%])	0	0	0	0	2	2	4
Monitoring and evaluation plan for projects in isolated areas completed (NI-L1040)	0	0	0	1	0	0	1
Baseline study and project impact evaluation studies for four small hydroelectric plants in isolated areas completed (NI-L1040 and NI-L1063)	0	0	0	0	2	2	4
Users connected to renewable energy systems (cofinancers)	0	0	879	1,532	2,161	1,248	5,820
Component 4: Preinvestment and studies for generation projects with renewable energy							
National power generation planning and expansion strategy approved (NI-L1040)	0	0	0	1	0	0	1
Master Plan for the Río Grande de Matagalpa Basin and Upper Río Coco Basin developed (cofinancer NDF)	0	0	1	0	0	0	1
MW of renewable energy with feasibility studies completed (cofinancer OFID)	0	0	0	100	100	158	358
Study completed – Wind power prospecting and evaluation and feasibility study for wind power generation systems on six sites for interconnection to the SIN (cofinancer NDF)	0	0	1	0	0	0	1
Study completed – Feasibility study for the implementation of distributed power generation in Nicaragua (NI-L1050)	0	1	0	0	0	0	1
Study completed – Geological map and prefeasibility study for Cosigüina Volcano project (NI-L1050 [75%] and NDF [25%])	0	0	0	1	0	0	1
Component 5: Energy efficiency							
Lights installed – Public lighting savings plan (total PNESER)	0	0	7,600	10,700	7,304	0	25,604
Lights installed – Public lighting savings plan (NI-L1040)	0	0	7,600	1,854	0	0	9,454
Lights installed – Public lighting savings plan (NI-L1050)	0	0	0	8,846	0	0	8,846
Lights installed – Public lighting savings plan (cofinancers)	0	0	0	0	7,304	0	7,304

NICARAGUA							
NATIONAL SUSTAINABLE ELECTRIFICATION AND RENEWABLE ENERGY PROGRAM (PNESER) – NI-L1040, NI-L1050, AND NI-L1063							
Outputs	Baseline 2010	Targets					
		2011	2012	2013	2014	2015	Final
Lights installed – Replacement of incandescent bulbs with compact fluorescent bulbs in the residential sector (phase II) (cofinancers)	0	0	1,750,000	250,000	0	0	2,000,000
Lights installed – Replacement of magnetic fluorescent lamps with electronic lamps in the government sector (cofinancers)	0	0	10,000	10,000	0	0	20,000
Heating systems installed – Demonstration project for the installation of solar heating systems in Nicaragua (phases I and II) (cofinancers)	0	0	0	13	0	0	13
Systems installed – Engineering and development of solar cooling and climate control (total PNESER)	0	0	100	100	50	0	250
Systems installed – Engineering and development of solar cooling and climate control (NI-L1063)	0	0	0	100	25	0	125
Systems installed – Engineering and development of solar cooling and climate control (cofinancers)	0	0	100	0	25	0	125
Systems installed – Photovoltaic systems for the implementation of productive systems in rural areas in Nicaragua (total PNESER)	0	0	0	350	400	0	750
Systems installed – Photovoltaic systems for the implementation of productive systems in rural areas in Nicaragua (NI-L1063)	0	0	0	175	200	0	375
Systems installed – Photovoltaic systems for the implementation of productive systems in rural areas in Nicaragua (cofinancers)	0	0	0	175	200		375
Study completed – Development of procedure for approval of energy efficiency regulations (NI-L1040)	0	0	0	1	0	0	1
Study completed – Development of policy, national program, and bill on energy efficiency (NI-L1040)	0	0	1	0	0	0	1
Study completed – Definition of energy efficiency indicators for energy consumption sectors in Nicaragua (NI-L1050)	0	0	1	0	0	0	1
Training sessions held – Institutional strengthening in energy efficiency in electricity, heating, compressed air, industrial processes (NI-L1040)	0	0	4	0	0	0	4

NICARAGUA							
NATIONAL SUSTAINABLE ELECTRIFICATION AND RENEWABLE ENERGY PROGRAM (PNESER) – NI-L1040, NI-L1050, AND NI-L1063							
Outputs	Baseline 2010	Targets					
		2011	2012	2013	2014	2015	Final
Component 6: Strengthening the transmission system in rural areas							
Lot of maintenance and operation equipment procured and commissioned (NI-L1040)	0	0	1	0	0	0	1
Additional MW installed in remodeling or expanding substations (cofinancers)	0	0	0	285	147.5	0	432.5
Km of transmission lines installed (cofinancers)	0	0	0	50 double three-phase 336 single three-phase	185 double three-phase 50 single three-phase	0	235 double three-phase 386 single three-phase
Component 7: Sustainability of ENEL isolated systems							
ENEL agencies connected to the new business management system (total PNESER)	0	0	0	14	14	0	28
ENEL agencies connected to the new business management system (NI-L1040)	0	0	0	14	0	0	14
ENEL agencies connected to the new business management system (NI-L1050)	0	0	0	0	14	0	14
kW of renewable energy evaluated (NI-L1050)	0	0	1,460	5,600	0	0	7,060
Number of isolated communities with renewable energy potential studies completed (NI-L1050)	0	0	0	0	20	0	20
kW of renewable energy installed (NI-L1050)	0	0	0	609	373	0	982

¹ Normalization includes works for distribution, metering, and internal installations so customers can have a safe, reliable supply, appropriate commercial monitoring, and accurate electricity service metering. The target involves both existing customers, since they appear on the distributors' records, and illegal customers who will be incorporated as new customers. In addition to the total number of customers normalized, the indicator also shows new customers taken into account for the coverage indicator.

Summary Procurement Plan
NICARAGUA
National Sustainable Electrification and Renewable Energy Program (PNESER) – Second Loan
Project number NI-L1050 and loan contract number _____
Period covered by this procurement plan: __/__/__ to __/__/__

Ref. no. ¹	Category and description of procurement contract	Estimated cost of procurement (US\$000)	Procurement method ²	Review (ex ante or ex post)	Source of financing and percentage		Prequalification ³ (Yes/No)	Estimated dates		Status ⁴ (pending, in process, awarded, canceled)	Comments
					IDB %	Local/ Other %		Publication of specific procurement notice	Completion of contract		
1	GOODS										
1.1	Supply of goods to strengthen the executing agency (C6)	384	NCB	Ex post	100		No	2 Sem/12	1 Sem/13	Pending	Multiple contracts
1.2	Modernization of commercial system and computer and communications equipment for ENEL (C7)	340	ICB	Ex ante	100		No	1 Sem/12	1 Sem/13	Pending	NI-L1040 and NI-L1050
2	WORKS										
2.1	Construction of five small hydroelectric plants (C7)	4,293	ICB	Ex ante	100		No	2 Sem/12	2 Sem/14	Pending	NI-L1050
2.2	Civil works at agencies of isolated systems (C7)	1,050	NCB	Ex post	100		No	1 Sem/11	1 Sem/14	Pending	NI-L1050
2.3	Construction of Wamblán hydroelectric plant (C7)	700	NCB	Ex post	100		No	2 Sem/12	2 Sem/14	Pending	NI-L1050
3	NONCONSULTING SERVICES										
3.1	Training ENEL distribution management (C7)	134	PC	Ex post	100		No	2 Sem/11	2 Sem/12	Pending	Multiple contracts; NI-L1040 and NI-L1050.
4	CONSULTING SERVICES										
4.1	Execution supervision and support for the MEM subprogram (C1, C2)	2,551	QCBS	Ex ante	23	77	No	2 Sem/11	2 Sem/15	Pending	NI-L1040, NI-L1050, and other PNESER cofinancing entities

4.2	Execution supervision and support for the MEM subprogram (C5)	525	QCBS	Ex ante	33	67	No	1 Sem/12	2 Sem/15	Pending	Idem
4.3	Audit of program and MEM (C 1 to 5), ENATREL (C6), and ENEL (C7) subprograms	479	QCBS	Ex ante	55	45	No	2 Sem/11	2 Sem/15	Pending	Idem
4.4	Study of distributed generation (C4)	80	QCBS	Ex ante	100		No	2 Sem/11	2 Sem/13	Pending	NI-L1050
4.5	Prefeasibility study for the Cosigüina Geothermal Project (C4)	3,750	QCBS	Ex ante	7	25	No	2 Sem/11	2 Sem/13	Pending	NI-L1050, NDF
4.6	Six energy efficiency studies (C5)	300	QCBS	Ex ante	100		No	1 Sem/12	2 Sem/13	Pending	NI-L1040 and NI-L1050
4.7	Renewable energy potential studies (C6)	400	QCBS	Ex ante	100		No	1 Sem/12	1 Sem/14	Pending	NI-L1050
4.8	Feasibility studies, final design, and bidding data sheets for the small hydroelectric plants Plan de Grama, Corn Island hybrid system, and Sahasa (C7)	533.5	QCBS	Ex ante	100		No	2 Sem/11	1 Sem/13	Pending	Multiple contracts; NI-L1050
4.9	Optimization study for Ayote hydroelectric plant (C7)	400.5	QCBS	Ex ante	100		No	2 Sem/11	1 Sem/13	Pending	NI-L1050
4.10	Detailed design and bidding data sheets for construction of five small hydroelectric plants (C7)	350	QCBS	Ex ante	100		No	2 Sem/11	2 Sem/12	Pending	Two contracts; NI-L1050.
	TOTAL	16,270									

¹ If there are a number of similar individual contracts to be executed in different places or at different times, these can be grouped together under a single heading, with an explanation in the comments column indicating the average individual amount and the period during which the contracts would be executed. For example: an education project that includes school construction might include an item “school construction”, for a total value of US\$20 million, and an explanation in the comments column such as: “This encompasses some 200 contracts for school construction averaging US\$100,000 each to be awarded individually by the participating municipal governments over a three-year period between January 2006 and December 2008.”

² **Goods and works:** **ICB:** international competitive bidding; **LIB:** limited international bidding; **NCB:** national competitive bidding; **PC:** price comparison; **DC:** direct contracting; **FA:** force account; **PSA:** procurement through specialized agencies; **PAs:** procurement agents; **IA:** inspection agents; **PLFI:** procurement in loans to financial intermediaries; **BOO/BOT/BOOT:** build, own, operate/build, operate, transfer/build, own, operate, transfer; **PBP:** performance-based procurement; **PLGB:** procurement under loans guaranteed by the Bank; **PCP:** community participation procurement. **Consulting firms:** **QCBS:** quality- and cost-based selection; **QBS:** quality-based selection; **FBS:** selection under a fixed budget; **LCS:** least-cost selection; **CQS:** selection based on the consultants’ qualifications; **SSS:** single-source selection.

Individual consultants: **NICQ:** selection based on a comparison of national individual consultants’ qualifications; **IICQ:** selection based on a comparison of international individual consultants’ qualifications.

³ Applicable for new policies only for goods and works. For old policies, it applies to goods, works, and consulting services.

⁴ The “status” column will be used for retroactive procurement and updates of the procurement plan.