

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PANAMA

UNIVERSAL ENERGY ACCESS PROGRAM

(PN-L1155)

LOAN PROPOSAL

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<p>REQUIRED</p> <ol style="list-style-type: none"> 1. Multiyear execution plan and annual work plan (AWP) 2. Monitoring and evaluation plan 3. Environmental and social management report (ESMR) 4. Procurement plan <p>OPTIONAL</p> <ol style="list-style-type: none"> 1. Economic analysis of the program 2. Program rationale under the Public Utilities Policy (document GN-2716-6) 3. Gender perspective 4. Technical viability report 5. Environmental and social management framework (ESMF) 6. Environmental and social management plan (ESMP) 7. Program operations manual 8. Projects included in the representative sample of the program 9. Overall analysis of the regulatory framework for non-interconnected zones (NIZ) in Panama 10. Analysis of rural electrification in Panama 11. Safeguard Policy Filter (SPF) and Safeguard Screening Form for Classification of Projects (SSF)

ABBREVIATIONS

ASEP	National Public Utilities Authority
CBA	Cost-benefit analysis
CO ₂	Carbon dioxide
DAF	Bureau of Administration and Finance of the Office of the President
EDECHI	Empresa de Distribución Eléctrica Chiriquí S.A.
EDEMET	Empresa de Distribución Eléctrica Metro-Oeste S.A.
EIRR	Economic internal rate of return
ENSA	Elektra Noreste, S.A.
ESMF	Environmental and social management framework
ESMR	Environmental and social management report
FFF	Flexible Financing Facility
FONPRODE	Fund for Promotion and Development
LAIF	Latin American Investment Facility
MEF	Ministry of Economy and Finance
NCRE	Nonconventional renewable energy
OER	Rural Electrification Office
PATG	Pay-as-you-go
PCU	Program coordination unit
PEG	Strategic Government Plan
PUP	Public Utilities Policy
SNE	National Energy Department
SPF	Safeguard Policy Filter
SSF	Safeguard Screening Form for Classification of Projects
US\$	United States dollars

PROJECT SUMMARY

PANAMA UNIVERSAL ENERGY ACCESS PROGRAM (PN-L1155)

Financial Terms and Conditions					
Borrower:			Flexible Financing Facility (FFF)^(a)		
Republic of Panama			Regular Ordinary Capital (FFF)		
Executing agency:			Amortization period:	24 years	
Ministry of the Office of the President, through the Rural Electrification Office (OER)			Disbursement period:	6 years	
			Grace period:	6.5 years ^(b)	
Source	Amount (US\$)	%	Interest rate:	Based on LIBOR	
IDB (Ordinary Capital):	90,000,000	75.0	Credit fee:	^(c)	
Local counterpart:	10,000,000	8.3	Inspection and supervision fee:	^(c)	
FONPRODE cofinancing:^(d)	20,000,000	16.7	Weighted average life (WAL):	15.25 years	
Total:	120,000,000	100	Approval currency:	U.S. dollars	
LAIF nonreimbursable parallel financing:^(e)	11,260,350	-			
Grand total:	131,260,350	-			
Project at a Glance					
Project objective/description: The general objective is to support the socioeconomic development of Panama's rural population through a program for universal access to rural electricity services that is technically, economically, environmentally, and socially sustainable. The specific objectives are to: (i) expand access to sustainable energy; and (ii) strengthen the OER's planning and management capacities for structuring, reviewing, executing, and supervising rural electrification projects.					
Special contractual conditions precedent to the first loan disbursement: (i) key staff will be designated in the OER, specifically: a project coordinator, and fiduciary, planning, procurement, environmental, engineering, and social specialists; and (ii) the program Operations Manual will be approved, according to the terms and conditions previously agreed upon with the Bank (paragraph 3.2).					
Special contractual execution conditions: (i) Prior to the start of the distribution grid extension works to be executed, a contract will be signed between the OER and the distribution company or contractor, where appropriate, according to the terms previously agreed upon by the OER and the Bank (paragraph 3.3); and (ii) see conditions in Annex B of the Environmental and Social Management Report (ESMR) .					
Exceptions to Bank policies: None.					
Strategic Alignment					
Challenges^(f):	SI	<input checked="" type="checkbox"/>	PI	<input checked="" type="checkbox"/>	EI <input type="checkbox"/>
Crosscutting themes^(g):	GD	<input checked="" type="checkbox"/>	CC	<input checked="" type="checkbox"/>	IC <input checked="" type="checkbox"/>

^(a) Under the terms of the Flexible Financing Facility (document FN-655-1), the borrower has the option of requesting changes to the amortization schedule, as well as currency, interest rate, and commodity conversions. The Bank will take operational and risk management considerations into account when reviewing such requests.

^(b) Under the flexible repayment options of the Flexible Financing Facility, changes to the grace period are permitted provided that they do not entail any extension of the original weighted average life of the loan or the last payment date as documented in the loan contract.

^(c) 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 applicable policies.

^(d) The Fund for the Promotion of Development (FONPRODE) is one of the financial instruments of the Spanish Agency for International Development Cooperation (AECID) and is regulated by Law 36/2010 and Royal Decree 597/2015 of Spain, which approved FONPRODE's regulations. The cofinancing framework agreement between the Bank and the Kingdom of Spain was signed on 1 April 2017. Under this agreement, the Bank will charge a service fee for project preparation costs, which will be distributed across the Bank departments that have supported project preparation, execution, and monitoring. This cofinancing will supplement Bank resources and is expected to be considered for approval by FONPRODE's Executive Committee in May 2019. Spain will then directly give this financing to Panama for it to manage and use.

^(e) AECID has requested a nonreimbursable contribution from the European Union's Latin America Investment Facility (LAIF) in the amount of €10,000,000 (US\$11,260,350 based on the exchange rate of 8 April 2019). AECID has already presented the action fiche to the European Commission with an ex ante evaluation of satisfactory (paragraph 2.1).

^(f) SI (Social Inclusion and Equality); PI (Productivity and Innovation); and EI (Economic Integration).

^(g) GD (Gender Equality and Diversity); CC (Climate Change and Environmental Sustainability); and IC (Institutional Capacity and Rule of Law).

I. DESCRIPTION AND RESULTS MONITORING

A. Background, problem addressed, and rationale

- 1.1 Since 2009, Panama has connected 36,136 new users to electricity services. Electricity coverage went from 86.9% to 94.5% between 2010 and 2017, with an average annual increase of 0.95%. During this period, coverage in rural areas increased from 61.7% to 78.5% (estimate for 2017). The province with the highest energy coverage is Panamá (96.4%), and those with the lowest coverage are the indigenous territories of Emberá (34.8%), Guna Yala (19%), and Ngäbe-Buglé (4%). These provinces also have the country's highest rates of poverty and extreme poverty (see Table 1), which can be partly attributed to the lack of electricity coverage (paragraph 1.9).

Table 1. Electricity Coverage in Panama's Provinces (2017)*

Province	Total Energy Coverage (%)	Energy Coverage in Rural Areas (%)	Poverty Rate (2015)	Extreme Poverty Rate (2015)
Bocas de Toro	67.7%	65.2%	48.1%	23.1%
Coclé	91.5%	88.2%	31.6%	12.3%
Colón	91.9%	88.7%	15.2%	4.4%
Chiriquí	87.5%	84.4%	24.0%	8.8%
Darién	60.6%	58.5%	47.6%	20.7%
Herrera	65.6%	63.3%	18.1%	4.2%
Los Santos	91.7%	88.5%	13.8%	2.5%
Panamá ¹	96.4%	93.0%	n/a	n/a
Veraguas	73.6%	71.0%	37.9%	17.9%
Guna Yala	19.0%	19.0%	78.5%	59.4%
Emberá	34.8%	35.0%	68.5%	38.7%
Ngäbe-Buglé	4.0%	4.0%	86.9%	67.8%

* Report to the Nation 2009 – 2014 OER Ministry of the Office of the President – OER Management Report 2015 - OER Management Report 2016 – Current Situation and Forecast 2016 – 2019 OER – Ministry of the Office of the President. PanamaCompra Bids Mapping Data National Institute for Statistics and Census (INEC) – 2017 Concessionaires.

- 1.2 Panama has one of the highest levels of electricity coverage in Central America and the Caribbean (94.5%), though it is below the near universal coverage achieved by Mexico (98.6%) and Costa Rica (99.4%) (see Table 2). According to a recent study² by the Rural Electrification Office (OER) and the National Energy Department (SNE) in Panama, there are still 94,000 families, 565 schools, and 103 health centers that do not have access to electricity. These users are primarily located in the five indigenous territories and the provinces of Darién, Herrera, Bocas del Toro, and Veraguas. Users in the indigenous territories are located in remote areas, making travel times, the scant offering of services, and the high cost of transportation, as well as the lack of electricity service key factors for their lack

¹ The extreme poverty rate for the provinces of Panamá and Panamá Oeste are 3.2% and 2.7%, respectively.

² César Mercado. [Consultoría para El Plan Maestro para la Universalización del Servicio Eléctrico de Panamá. IBD-OER.](#)

of access to education and health services. This has a direct influence on the high rates of maternal and infant mortality and poverty.

- 1.3 Based on interviews carried out during program preparation, households without electricity use 38 candles (US\$0.15/candle), 11 batteries (US\$0.40/battery), and 2.1 gallons of kerosene (US\$4.50/gallon) per month on average, for an approximate monthly cost of US\$19.55 to meet their lighting needs.³

Table 2. Levels of Electricity Coverage in Central America*

Country	Electricity Coverage (%)
Belize	91.3
Costa Rica	99.4
El Salvador	96.7
Guatemala	92.3
Honduras	73.9
Mexico	98.6
Panama	94.5

* Energy Statistics Yearbook 2018; Latin American Energy Organization (OLADE).

- 1.4 **Regulatory framework and structure of the energy sector.** In Panama, the National Public Utilities Authority (ASEP) is in charge of regulation, oversight, and rules governing electricity service. The SNE, which is attached to the Panama's Office of the President, is in charge of national energy policy, ensuring a sustainable, high-quality electricity supply. The SNE also participates in the OER's monitoring committee. Distribution concessions have been granted to the three distribution companies:⁴ Elektra Noreste S.A. (ENSA), Empresa de Distribución Eléctrica Metro-Oeste S.A. (EDEMET), and Empresa de Distribución Eléctrica Chiriquí S.A. (EDECHI). These distributors are required to provide electricity in order to meet, on an exclusive basis, the projected demand of customers in their concession areas, and they also have the first option to serve customers within their zone of influence. In 2013, concession contracts were awarded to the distribution companies for a period of 15 years, with the requirement that they expand coverage by a radius of one kilometer around existing electrical grids of any voltage. The contracts established a dynamic mechanism for expanding electricity coverage, whereby: (i) during the first two years, the area was defined as being one kilometer from the outermost electrical asset of the concession; and (ii) starting in year three, the concession area would expand geographically by one kilometer every two years, until it reaches five kilometers from the outermost asset that existed at the beginning of the concession.
- 1.5 The OER is responsible for promoting electrification in rural areas that are unserved, unprofitable, and not covered by concessions. The OER plans projects and receives annual resource allocations from the overall national budget in order to achieve its objective. The OER aims to reach electricity markets that are outside

³ Considering an emissions factor of 10.15 kg of CO₂ per gallon of kerosene, each unconnected user emits 0.255 tons of CO₂ per year, which could be eliminated by replacing kerosene with alternative sources like solar energy.

⁴ The distribution companies receive operating income and have committed to transport energy over the grid; to deliver and sell it to end users; and to administer, operate, and maintain the off-grid system.

of the concession area. However, the office has limited technical capacity for carrying out its planning, monitoring, and supervision duties, given the geographic, logistical, and management requirements of rural electrification projects. The OER has a team of electrical engineers distributed across its six locations (the main office and five regional offices), and they carry out technical surveys and oversee progress of the OER's investment projects. Project monitoring records are manually entered into the off-grid systems, meaning that technical information on rural electrification projects is: (i) stored in databases with isolated records; (ii) submitted in different formats to the main office, or not submitted at all; and (iii) outdated. This makes it difficult to design, execute, and supervise rural electrification projects, as well as generate indicators that effectively evaluate OER management.

- 1.6 **Rationale.** Panama has significantly increased investments in rural electrification projects in recent years (US\$25 million per year on average). However, at this rate, universal access will not be achieved until 2039, since further investments of around \$350 million are needed to cover the country's electricity access gaps and achieve universal access. Based on map overlays of the concession scenarios (a five-kilometer zone of influence measured from the last point of the grid identified in 2013) and the projection for 2028, a sample of 3,948 communities or towns was obtained (46,259 rural households) that will not be able to access electricity services under the current concession plans. These communities need cost-effective solutions, such as grid extension, technologies that supply and store electricity, and hybrid systems that use nonconventional renewable energy (NCRE) sources.
- 1.7 The main reasons why sustained progress was previously not made in increasing electricity access in Panama are as follows: (i) little to no investment in rural electrification before 2008, as there were no regulatory incentives for distribution companies to invest in rural electrification, especially in remote areas; and (ii) legal and institutional barriers related to: (a) difficulty in obtaining easements; (b) the low level of property ownership; (c) institutional and staff limitations in the OER for meeting electrification demands; (d) long and unsuccessful bidding processes for awarding construction of projects;⁵ and (e) little coordination between entities responsible for providing service. Thanks to initial financing from the Inter-American Development Bank (IDB) for the Rural Electrification Program (loan 1790/OC-PN), approved in 2006 for US\$30 million, institutions were established that laid the groundwork for channeling new investments, which helped expand electricity coverage in the country.

⁵ Contracts could take as long as four years from the start of the bidding process to the time that the works began. During the last program, two of the 13 bidding processes were declared unsuccessful.

Table 3. Analysis of the Evolution of Households without Access to Energy from 1990 to 2017 *

Year	Total occupied households	Rural households	Rural households without electricity	Energy Coverage	Rural energy coverage
1990	524,284	180,113	142,608	77.55%	22.45%
2000	793,732	294,887	156,437	81.40%	46.95%
2010	1,015,670	340,235	130,310	86.85%	61.70%
2017	1,043,202	317,743	93,589	94.5%	78.95%

* César Mercado. [Consultoría para El Plan Maestro para la Universalización del Servicio Eléctrico de Panamá. IDB-OER](#). [Consulting Project on the Master Plan for Universal Electricity Service in Panama].

- 1.8 Over the past nine years, electricity access in Panama has steadily increased. However, if no specific actions are taken to accelerate the rate of expansion, universal access will not be achieved by 2030. For that reason, a structural proposal to achieve universal access needs to be developed. This proposal must address the technologies needed to identify the universe of users, as well as the regulatory elements needed to ensure service delivery and sustainable investments. It must also clearly define the necessary economic investments. The program described herein is a key part of the proposal for universal access.
- 1.9 **Effectiveness of the proposed intervention.** The link between poverty, well-being, and access to electricity has been widely recognized.⁶ Various studies have shown that reliable access to electricity is a structural condition that supports development and specifically benefits the poorest families, women, and small businesses.⁷ Access to electricity leads to better education outcomes, entailing more and better human capital accumulation, which increases the supply of labor, as well as household income. For women in particular, access to electricity improves the following: (i) participation in economic activities that free them from tasks like collecting biomass and allow them to use their time more efficiently; and (ii) small-scale self-employment. Additionally, electricity access projects with individual solar power systems have shown that children in beneficiary households spend more time on their schoolwork. This is an education advantage that translates into education gains in primary school and higher levels of enrollment in secondary school.⁸

⁶ Energy Division, IDB (2018). Energy Sector Framework Document. Document GN-2830-8. Section II.

⁷ Jimenez, R. (2017). Development Effects of Rural Electrification. IDB Policy Brief IDB-PB-26.

⁸ Arraiz, I. Calero C. (2015). From Candles to Light: The Impact of Rural Electrification. IDB Working Paper Series IDB-WP-599.

- 1.10 The results of the first ex ante impact evaluation of a national electrification program in Latin America and the Caribbean⁹ show that increased electricity coverage and improved service quality have significant effects on electricity consumption, patterns in household usage of time, perception of security, and income levels. The results also show that interventions can incentivize households to adopt energy efficient practices.
- 1.11 **Innovations in electricity access programs.** The program's design used available technological tools that had not been previously used in the country, such as: (i) collecting information on users who do not have access to energy using online geographic information systems for 100% of the communities without access, which facilitates investment planning, as well as monitoring and supervision of projects during execution; (ii) including smart meters in the grid extension component, which enables remote metering in hard-to-access areas, facilitates the user's ability to manage consumption, and makes it possible to optimize system maintenance, improving sustainability and efficiency; (iii) including new business models, such as "pay-as-you-go" and/or service delivery models for remote schools and hospitals, that ensure universal access to electricity service for these facilities; and (iv) replacing batteries at the end of their useful life in individual solar-powered off-grid systems in order to ensure that these systems continue to function.
- 1.12 In terms of access solutions for users benefiting from the program, specifically mini-grid systems, this program's innovations will focus on implementing new business models, available technologies, and telemetry and remote management features that allow users to have greater control over and access to their electricity consumption. In turn, this will help companies deliver services more efficiently.
- 1.13 For off-grid systems, lowering the cost of their main components (solar cells, light sources, and batteries) has made their widespread use possible in populations lacking electricity service. For example, a solar lamp cost around US\$45 in 2009, but today a high-efficiency lamp with light-emitting diode technology can be purchased in developing countries for less than US\$10.¹⁰
- 1.14 Currently, the most successful business model for off-grid systems is pay-as-you-go, which provides sustainable access to electricity by offering costs that are slightly lower than or equal to the costs of lower-quality alternatives like kerosene, candles, or batteries for lighting or electricity service. In the first financing option offered by this model, the user does not make the initial investment and therefore does not own the system. The system operator recovers its investment by charging a constant rate over an open-ended period of time in order to ensure the system's availability. Once the user stops paying this rate, service is disconnected remotely,¹¹ which is why there are incentives on both the supply side (service provider) and the demand side (consumer) to maintain

⁹ Energy Division, IDB (2018). Informe de Evaluación de Impacto, Programa de Electrificación Rural y Marginal de Ecuador (FERUM II).

¹⁰ State of Electricity Access Report, 2017. Energy Sector Management Assistance Program (ESMAP). The World Bank.

¹¹ For this option, prepaid cards are also common. These cards activate devices that generate electricity, or release electricity stored in batteries, for a period of time proportional to the value of the card. They can also be used to make mobile phone payments and to obtain codes that unlock off-grid systems.

availability. In the second option offered by the model, the user can become the owner of the off-grid system over time by making regular payments on a daily, weekly, or monthly basis. This plan is the one most typically used in microfinancing. For both options, payments cover service operation and maintenance, as well as battery replacement. Implementation of this type of solution will be widely promoted, and efforts will be made to ensure that the cost for users will not be higher than current alternatives.

- 1.15 **Gender considerations.** Gender and diversity are crosscutting considerations of any electrification project and have been taken into account in this project. In the case of women,¹² and indigenous women in particular, they are the ones who benefit the most from electricity for managing their households and families: the impact of electricity improves their quality of life. In many of the indigenous communities that will benefit from this project, women work alongside their husbands in agricultural activities like harvesting coffee. In addition, women handle household responsibilities, like washing, cooking, and helping their children with homework, which takes up more than half the day. This work takes longer when there is no light, leaving women with little time for pursuing economic opportunities and additional income-generating activities, or participating in training programs. Of the women interviewed during the [gender perspective study](#) that the IDB carried out in rural and indigenous communities, the vast majority does not know how to read or write. They have not completed basic education, and most do not have bank accounts. Many of these communities also experience serious issues with basic service coverage and quality of water and transportation infrastructure,¹³ impacting their living conditions, especially for women.¹⁴ Electricity facilitates productive activities in communities and helps expand information and communication infrastructure. It also helps generate additional income from food production and processing, and from developing tourism services or general services¹⁵ like restaurants, Internet cafes,¹⁶ tailoring, laundry, etc. Furthermore, it

¹² In 2016, Panama was the tenth most unequal country in the world (World Bank, 2016). Inequality has increased because of marked discrimination against indigenous and Afro-descendant populations (ECLAC, 2018b). The Gender Inequality Index for Panama is currently 0.462, where 1 stands for absolute inequality and 0 stands for perfect equality, putting Panama in 109th place out of 188 countries (UNDP, 2018).

¹³ In 2018, the IDB approved the project "Support for the Development of Territorial Connectivity in Panama's Central and Western Regions" (loan 4561/OC-PN). Efforts will therefore be made to work in coordination with that project in order to maximize the benefits that the highways and roads will bring, particularly to the Ngäbe-Buglé territory.

¹⁴ For example, according to the strategic plan of the Ngäbe-Buglé territory (2008), women are the most vulnerable population group in terms of inequality and inequity, due to the differentiated opportunities that they have in society, as well as the distribution of key factors like education and control over income, physical property, and productive resources.

¹⁵ According to the INEC 2018, the economic sector of the labor force with the highest participation of women is retail (16.7%), followed by agriculture and livestock (8.8%), and hotel and restaurant services (8.7%).

¹⁶ According to the 2010 population census, mobile phone coverage was 89% that year: it was 91% in the capital province (the highest coverage) and 27% in the Ngäbe-Buglé territory (the lowest). The same occurred with computer availability in homes: while average coverage was 27%, it was 37% in the capital and barely 0.4% in Ngäbe-Buglé. As would be expected, similar rates also held true for Internet access: 20% on average, 29% in the capital, and 0% in Ngäbe-Buglé. This shows that there is a tremendous gap in opportunity, which leads to greater inequality.

improves mobile phone communication because phones can be recharged, and it improves health by reducing the use of diesel, gasoline, or other fuel for burners (see [Gender perspective](#)).

- 1.16 **Beneficiaries.** This program will benefit rural populations that do not have access to electricity in all of Panama's provinces and indigenous territories. Based on the population identified in the project sample, the costs of the solutions, and the geographic range of the communities, this program is expected to serve over 26,000 beneficiaries approximately, including households, schools, and health centers. It is estimated that these beneficiaries will include 279 schools, over 50 students, and 95 health centers. It is also estimated that 60% of new users will receive service from the grid extension; 20% from mini-grids; and 20% from sustainable off-grid solutions.
- 1.17 **Country sector strategy.** The Government of Panama aims to make electricity coverage universal by 2030 and is in the process of geographically identifying communities that do not have access to energy in rural areas and that would require unprofitable investments from current concessionaires. Given current estimated coverage, the serious lack of access to electricity in certain rural areas, and expected population growth, it is estimated that Panama will need US\$350 million to achieve universal access by 2030.
- 1.18 Panama's Strategic Government Plan (PEG) 2015-2019 aims to "improve competitiveness and promote social inclusion within the framework of a sustainable, inclusive development model." Its objectives are to improve the population's living conditions, promote inclusion, and reduce territorial asymmetries by increasing coverage and quality of basic social services, including universal access to electricity services by 2030.
- 1.19 In order to achieve the objectives of the PEG and in line with United Nations Sustainable Development Goal 7 on sustainable access to universal, clean electricity services by 2030, a universal rural electrification program needs to be developed, agreed to, and formalized by the public and private entities involved in service delivery. The program should also include technical, economic, regulatory, environmental, and social considerations, as well as institutional strengthening of the OER.
- 1.20 **Bank knowledge of the sector and lessons learned.** The Bank has extensive experience in Panama's electricity sector through loans and technical cooperation operations for generation, transmission, rural electrification, institutional capacity building, and supporting improvements in corporate governance of state-owned transmission companies. Recently, the Bank has supported: (i) sustainable rural electrification; (ii) regional energy integration through the Central American Electrical Interconnection System and support for the Colombia-Panama interconnection; (iii) strengthening institutions and planning in the sector; and (iv) identifying and designing actions for energy efficiency and development of the natural gas and liquefied natural gas industries.
- 1.21 The Bank helped expand national electricity coverage through its support of US\$30 million for the Rural Electrification Program (loan 1790/OC-PN) in 2006, and US\$20 million for the Sustainable Rural Electrification Program (loans 3165/OC-PN and 3166/CH-PN) in 2014, both executed by the OER. The latter

program is completing execution and aims to expand access to sustainable electricity in rural areas through efficient use of public resources for rural electrification. The main outcomes include electrification of 4,109 homes, 60 schools, and 7 health centers. The main lessons learned during program execution are the need to: (i) improve the OER's institutional and operational capacity; (ii) strengthen coordination between the OER and the distribution companies; (iii) strengthen design, control, and monitoring of projects in the field; (iv) coordinate with the distribution companies to develop sustainable plans for operating off-grid systems; and (v) incorporate new technologies and improve coordination among sector operators to provide electricity for social infrastructure investments in the areas of intervention. Additionally, the program design considered other lessons from similar IDB-funded rural electrification projects, such as loan 3059/OC-SU, grant GRT/NV-14258-BO, and loan 3087/OC-EC, particularly those related to: (i) the need to technically strengthen the executing agency; (ii) actively incorporating existing distribution companies into project design, execution, and operation; and (iii) inclusion of gender activities. These lessons will be considered in the program design, while also allowing for the possibility for new investments in off-grid systems to be made through agreements with the distribution companies. To that end, a component was defined for institutional and operational strengthening of the OER, so that it can design, control, and monitor projects under the program and coordinate activities with the distribution companies and contractors. The financing will be a multiple works loan in order to meet the electrification needs that are identified in the country, starting with [the sample of analyzed projects](#).

- 1.22 For program preparation, in coordination with the OER, the SNE, ASEP, and the Ministry of the Interior implemented a strategy for communication, information collection, and direct dialogue with communities lacking access to energy. Consultants went out into the field to lead these activities. The strategy made it possible to make progress in formulating the Master Plan for Universal Energy Access, which created the conditions and trust necessary to develop universal access plans for provinces and indigenous territories in a socioculturally appropriate way and in accordance with applicable IDB operational policies.
- 1.23 **The Bank's country strategy.** This operation is aligned with the Bank's Country Strategy with Panama 2015-2019 (document GN-2838) under the strategic objective of improving the delivery of basic services to population segments living in poverty, providing continuity for the work done under the loan operation now in execution (loans 3165/OC-PN and 3166/CH-PN).
- 1.24 **Strategic alignment.** This program is aligned with the Update to the Institutional Strategy 2010-2020 (document AB-3008), specifically with the development challenges: (i) social inclusion and equality, by improving provision of infrastructure for supplying electricity to low-income rural and marginalized urban populations; and (ii) productivity and innovation, by promoting the use of electricity in productive activities. It is also aligned with the crosscutting areas of: (i) gender equality and diversity, by increasing access to quality infrastructure services and public services for indigenous communities, and empowering women through training for productive activities (paragraph 1.15); (ii) climate change and environmental sustainability, by helping to mitigate climate change and supporting penetration of renewable energies; and (iii) institutional capacity and the rule of law, through

institutional strengthening of the OER. The program is also aligned with the IDB Infrastructure Strategy: Sustainable Infrastructure for Competitiveness and Inclusive Growth (document GN-2710-5) through the following priority action areas: (i) support for construction and maintenance of socially and environmentally sustainable infrastructure to help improve quality of life; and (ii) promoting continuous improvements in infrastructure governance in order to increase efficiency of infrastructure service delivery. The program is consistent with the Energy Sector Framework Document (document GN-2830-8) on energy access, sustainability, and energy security. It is also consistent with the Climate Change Sector Framework Document (document GN-2835-8), as it helps leverage renewable energy with low carbon dioxide (CO₂) emissions, thereby helping to mitigate climate change. It is estimated that “24.14% of the operation’s resources will be invested in climate change mitigation activities, based on the joint methodology used by multilateral development banks for estimating climate finance. These resources will contribute to the IDB Group’s target of increasing financing for climate change projects to 30% of all operation approvals by the end of 2020.”

- 1.25 The program will coordinate its interventions with the Bank’s social infrastructure programs in Panama: (i) Innovation in School Infrastructure (loan 2734/OC-PN); (ii) Integrated Health Service Networks Strengthening Program (loan 3615/OC-PN); (iii) Support for the Development of Territorial Connectivity in Panama’s Central and Western Regions (loan 4561/OC-PN); and (iv) the Social Inclusion and Development Program (loan 3512/OC-PN). These programs are financing the construction of roads, schools, health centers, and comprehensive early childhood care centers such that the projects carried out in the program’s beneficiary communities will be provided with access to electricity. For targeted schools and health centers that are not included in the social infrastructure programs, the following steps will be taken: (i) analysis of current and future energy demand, in order to increase the use of information and knowledge technologies, as well as telemedicine, and ensure that water pumping equipment and other facilities are working properly; and (ii) improvement of internal facilities to provide them with the new service connection and ensure operation under optimal safety conditions.
- 1.26 **Compliance with the Public Utilities Policy (document GN-2716-6).** The program is consistent with the general considerations of the Public Utilities Policy and fulfills the condition of “financial sustainability,” as investments in the sector must meet efficiency criteria, and the costs of operation and maintenance are ensured by the energy rate charged by the distributors. The energy rate subsidies give priority to the most vulnerable and lowest-income groups so they can pay for the levels of consumption that cover their basic needs. They are financed by the OER. The program also meets the “economic evaluation” condition, as selection of the portfolio of projects to be financed is subject to a rigorous analysis of economic-financial and technical viability (see the [annex of the Public Utilities Policy](#)).
- 1.27 **Sustainable infrastructure.** This program includes measures consistent with the Bank’s overall framework for sustainable infrastructure, specifically with regard to the following sustainability principles: (i) economic and financial sustainability for financing works whose operations and maintenance costs are paid for through the

distributors' energy rates and whose beneficiaries receive support from the OER to cover the costs of energy consumption; (ii) environmental sustainability, by promoting investments in electricity infrastructure to replace the use of polluting solutions; (iii) social sustainability, by empowering communities through training on electricity use for productive activities, with emphasis on the program's female beneficiaries; and (iv) institutional sustainability, by contributing to the technical strengthening of the OER.

B. Objectives, components, and cost

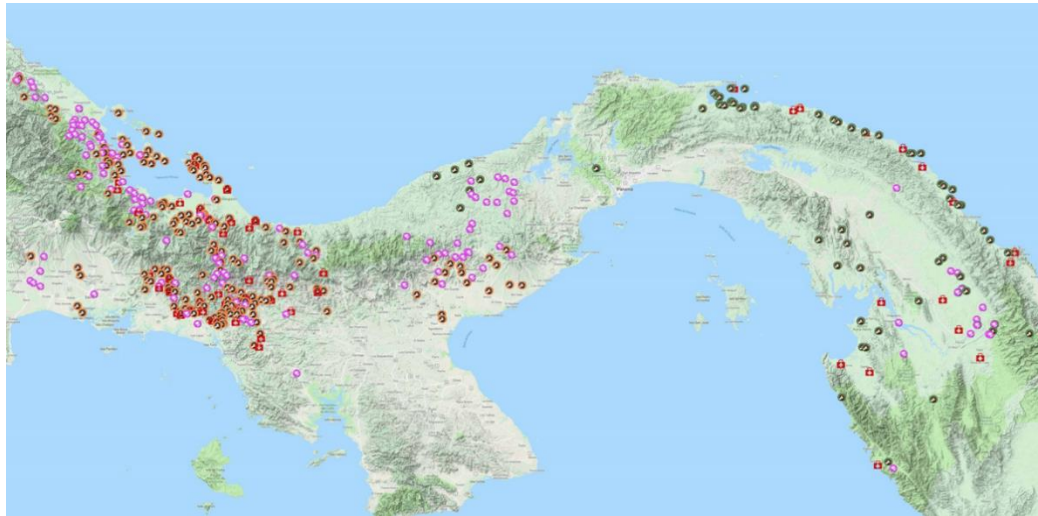
- 1.28 **Objective.** The general objective is to support the socioeconomic development of Panama's rural population through a program for universal access to rural electricity services that is technically, economically, environmentally, and socially sustainable. The specific objectives are to: (i) expand access to sustainable energy; and (ii) strengthen the OER's planning and management capacity for structuring, reviewing, executing, and supervising rural electrification projects. The program's components are as follows:
- 1.29 **Component 1. Sustainable rural electrification projects (IDB: US\$87.2 million, FONPRODE: US\$20 million, and local counterpart: US\$9 million).** This component will finance access to electricity service for approximately 24,000 users, including households, schools, and health centers, in the ten provinces and five indigenous territories of Panama, and will also regularize 2,000 users (for a total of 26,000 beneficiaries). Estimates and prioritization of beneficiaries are based on a study of the universe of the population without coverage and the application of technical, social, environmental, economic, and financial criteria used to analyze and select the project sample to be financed. The following projects will be financed: (i) grid extension: new electrical infrastructure will be constructed and installed, including smart meters and internal installations in rural areas that can be connected to existing power distribution grids. Underwater connections will also be used, when technically and economically viable; (ii) regularizing electrical utility users (grid connections);¹⁷ (iii) repowering off-grid systems by replacing batteries at the end of their useful life in the Guna Yala territory, a process that will be carried out through the distribution companies; and (iv) projects based on nonconventional renewable energy sources, hybrid systems, smart grids, and energy-efficient mini-grids.¹⁸ The distribution companies will install, operate, and maintain the off-grid systems, or the ASEP, OER, and Empresa de Transmisión Eléctrica S.A. [electricity transmission company] (ETESA) will issue requests for bids, based on existing regulations, to award contracts for installing, operating, and maintaining these investments. For mini-grids, the OER, in coordination with the ASEP, and pursuant to existing regulations in Panama, may make the distribution companies responsible for building, operating, managing, and maintaining those assets, or hold bidding processes for that purpose. This component will also include financing for feasibility studies of the projects to be financed.

¹⁷ The users that will be regularized are users located close to the grid who: (i) were unable to or did not wish to connect to the grid during execution of the grid extension projects, or (ii) users who built their homes close to the grid after the extension projects were completed.

¹⁸ It is estimated that approximately 75% of the investments in this component will be used for grid extension projects, and 25% for projects involving nonconventional renewable energysources.

- 1.30 This component will provide training on productive activities and business in order to support economic empowerment of women. The training will highlight the advantages of electricity for productive activities that are adapted to local needs in areas such as services, food production/processing, crafts, and tourism. Focus will be placed on developing skills and networks of contacts to exchange ideas and opportunities. In other words, the training will show how electricity can be leveraged with modern tools and technologies for revenue generation and personal empowerment.

Figure 1. Map of Program Intervention Areas



- 1.31 **Component 2. Institutional strengthening (IDB: US\$2.3 million).** This component will finance institutional strengthening activities for the OER, including its project coordination unit (PCU), in coordination with the SNE, the ASEP, and the Ministry of the Office of the President. It will include the following activities: (i) developing tools for planning/monitoring and adapting to the challenges of universal electricity access by 2030; (ii) providing specialized technical support for monitoring the works that the OER will execute; (iii) offering technical workshops to train OER staff on project management, geographic information systems, and NCRE sources, including mini-grids; (iv) developing an integrated information platform for universal energy access projects facilitating information access through an online database, with standardized electronic forms for recording requests, technical/social/environmental surveys, images, and any other document, all of which can be accessed from any location; and (v) carrying out campaigns to raise awareness of beneficiary communities on the use, benefits, costs, and metering of electricity service.
- 1.32 Another strengthening measure will be to strengthen the PCU in the OER through reinforcement (hiring staff) in the areas of planning and procurement, IT, and social and environmental issues. Training will also be provided on streamlined results-based project management, planning, monitoring and supervision, and managing software programs like Project and AutoCAD, etc.

- 1.33 **Program administration (IDB: US\$500,000 and local counterpart: US\$1 million).** This will finance part of the PCU/OER expenses, including: (i) fees for technical staff in the PCU that support program execution and monitoring (paragraph 3.1) (US\$1,022 million); (ii) costs of external audits (paragraph 3.8) (US\$0.3 million); and (iii) midterm and final program evaluations (paragraph 3.11) (US\$0,178 million).

C. Key results indicators

- 1.34 The program has a [Results Matrix](#) that presents the outputs, outcomes, and impacts associated with its objectives and components. Implementation of this program is expected to reduce CO₂ emissions by approximately 28,876 tons, and increase electricity coverage in Panama's rural areas from 78.95% to 86.06%. The table below presents the expected outcomes from execution of the works to be financed and their indicators:

Table 4. Impact and Outcome Indicators

Impact	Indicator
Rural electricity access	Electricity coverage
Contribute to climate change mitigation	CO ₂ emissions prevented by using electricity
Outcome	Indicator
Households without electricity service that have a new connection to the National Interconnected System (SIN)	Number of households without electricity service that have a new connection to the SIN
Households with regularized electricity service	Number of households with regularized electricity service
Households without electricity service that have a new connection to an off-grid system	Number of households without electricity service that have a new connection to an off-grid system
Households without electricity service that have a new connection to electrical mini-grids	Number of households without electricity service that have a new connection to electrical mini-grids
Schools without electricity service that have a new connection to an off-grid system	Number of schools without electricity service that have a new connection to an off-grid system
Health centers without electricity service that are connected to an off-grid system	Number of health centers without electricity service that have a new connection to an off-grid system
Hours per day of education infrastructure usage	Number of hours per day of education infrastructure usage
Percentage of electrification requests made electronically	%

- 1.35 **Economic analysis.** An analysis was carried out to demonstrate the economic viability of the investments, using a representative sample of the program's infrastructure investment component. The results of the analysis of the entire component are as follows. An economic evaluation was carried out for a sample of grid extension and connections projects (88.4% of the sample), using cost-benefit analysis (CBA) and a 12% discount rate, which yielded the following values for the component: an economic internal rate of return (EIRR) of 69.6%, and an economic net present value (ENPV) of US\$154.7 million. For the remainder of the component, i.e. solutions for remote areas of the grid, a cost-effectiveness analysis (CEA) was used to demonstrate the effectiveness of the proposed investment. A

sensitivity analysis was also performed, varying the main parameters of the CBA by +/-15%, and included: (i) investment cost; (ii) growth of demand; (iii) energy rates; (iv) regulated return; and (v) average consumption. The link to the program's [Economic Evaluation](#) presents the assumptions, scenarios, and results of the evaluation.

II. FINANCING STRUCTURE AND MAIN RISKS

A. Financing instruments

- 2.1 **Cost and financing.** The total cost of the program is US\$120 million. Of this amount, US\$90 million will be financed from the Bank's Ordinary Capital, US\$20 million from FONPRODE, and US\$10 million from local counterpart resources. Additionally, the program will receive nonreimbursable parallel financing from LAIF in the amount of €10 million.¹⁹ LAIF resources will mainly be used for technical assistance in carrying out evaluations, technical studies, project design, and strategic planning initiatives in order to support the program's interventions in indigenous territories. The program is structured as an investment loan for a multiple works program, as the projects are physically similar, but independent from one another.

Table 5. Program Costs (US\$ million)

Components	Financing			
	IDB (Ordinary Capital)	Cofinancing*	Local counterpart	Total
1. Sustainable rural electrification projects	87.2	20.0	9.0	116.2
2. Institutional strengthening	2.3	0	0	2.3
Program administration	0.5	0	1.0	1.5
Total	90.0	20.0	10.0	120.0

* The Government of Spain will provide the cofinancing resources through the Fund for the Promotion of Development (FONPRODE) directly to the Republic of Panama. FONPRODE will be responsible for using and managing the resources in accordance with the terms and conditions established in the loan contract that will be signed by the governments of Spain and Panama. Additionally, in accordance with the cofinancing framework agreement between the IDB and the Kingdom of Spain of April 2017, the IDB and Spain will sign an Individual Cofinancing Agreement in order to formalize the services that the IDB will provide to Spain and define the service fee that Spain will pay to the IDB.

- 2.2 The IDB will charge and deduct a service fee as negotiated with FONPRODE to cover the costs of administration of the cofinancing agreement. The service fee will be distributed to the IDB departments, as applicable, that had an additional work load for the preparation, execution, and monitoring of projects and any other additional work load generated as a result of the administration of the cofinancing agreement.

¹⁹ AECID has requested a nonreimbursable contribution from the European Union's Latin American Investment Facility (LAIF) in the amount of €10,000,000 (US\$11,260,350 based on the exchange rate of 8 April 2019). The AECID has already presented an action fiche to the European Commission with an ex ante evaluation of satisfactory.

- 2.3 The resources will be disbursed over six years, according to the disbursement schedule in Table 6. This schedule takes into account the experiences and lessons learned from previously implemented electrification projects, and includes deadlines for final design completion, bidding processes, contract execution, and contingencies that may arise.

Table 6. Projected disbursement schedule (US\$)

Source	Budget	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
IDB	90,000,000	4,503,405	3,615,758	26,617,133	11,233,867	32,808,422	11,221,415
LOCAL	10,000,000	56,800	170,400	170,400	1,915,920	5,606,960	2,079,520
FONPRODE	20,000,000			11,050,000	8,950,000		
TOTAL	120,000,000	4,560,205	3,786,158	37,837,533	22,099,787	38,415,382	13,300,935
Disbursement %	100	3.8	3.0	31.5	18.4	32.0	11.1

- 2.4 **Coordination with other donors.** During program preparation, the Bank and the other financing entities worked jointly and with the Government of Panama and the executing agency to build consensus on the program's objectives, components, and financing structure. Under the framework agreement signed by FONPRODE and the Bank, the Bank will sign an individual financing agreement with the Kingdom of Spain regarding the mechanisms for collaboration, supervision, information exchange, and assistance to coordinate implementation of their respective loans and distribute the project preparation service fee, in accordance with applicable Bank policies and procedures.
- 2.5 **Sample and eligibility criteria.** The projects in the sample account for 30% of the budget to be funded by the loan proceeds. The projects are representative of the works that will be financed by the program, including grid extension projects, electricity user regularization, and projects involving NCRE sources. The project sample covers populations in eight provinces and one indigenous territory in Panama (Guna Yala), and identifies the location of households, schools, and health centers that will benefit from the program (for further details, see the [representative sample](#)). The projects to be financed will meet the selection criteria detailed in the program Operations Manual, including: (i) the projects are requested by the community and approved by the OER; (ii) the projects do not have approved financing from another available source for rural electrification; (iii) the projects are technically, environmentally, and socioculturally appropriate, economically sustainable, functional, and operational, with a cost limit for each solution; (iv) they do not generate a financial return, but have a positive economic return; and (v) they are not classified as Category "A" projects based on the environmental and social classification. The programs will be prioritized based on their cost, starting with those with lower investment costs compared to the universe of eligible projects to be financed under the program.

B. Environmental and social risks

- 2.6 This multiple works program seeks to improve living conditions for populations in rural areas by providing and/or improving access to sustainable energy. Based on the Environment and Safeguards Compliance Policy (Operational Policy OP-703), this program has been classified as a Category "B" operation, due to the social and environmental impacts of interventions in rural areas with vulnerable populations, including indigenous populations. The interventions also have potential impacts on

protected areas, which means there is a medium risk for negative impact on indigenous people and protected areas. It is important to note that the voltage range for the distribution grid will be medium voltage, and the electric power will be single-phase and two-phase. In this regard, no new roads will be built, and only existing roads will be used for distribution lines, without exception. However, potential impacts on the land have been identified, due to the fact that up to three photovoltaic plants will be installed with a maximum power of 600 kilowatts. Each plant will cover an area of approximately one hectare and will have diesel plants as back-up for hybrid systems that use NCRE sources. The land required for these projects should not entail impacts on the populations such as their physical displacement and/or impacts on their livelihoods. Considering this risk, this is a category of exclusion for the projects to be executed. The program's environmental impacts are mainly those arising during activities such as building and operating distribution lines and power generation systems, related to waste production, pollution, and health and safety risks.

- 2.7 The program has analyzed a significant sample to be executed in 376 towns in ten provinces and the Guna Yala indigenous territory. It has also defined measures to mitigate impacts in the Environmental and Social Management Plan (ESMP). For the execution phase of the projects, an Environmental and Social Management Framework (ESMF) was developed, establishing procedures for mitigating the risks identified in the ESMP. The exclusion criteria are explained in the program Operations Manual. Additionally, during the preparation process, and to comply with Operational Policies OP-765 and OP-703, culturally appropriate consultations regarding the project sample were carried out, whereby a good faith agreement was reached and consent was obtained from the members of the Guna Yala community. The process was also in line with the traditional decision-making process of this territory; documentation on environmental and social safeguards was distributed in a timely manner in accordance with Operational Policy OP-102 (see the [Environmental and social analysis](#)).

C. Fiduciary risks

- 2.8 **Fiduciary risks.** Two medium risks were identified that are related to: (i) insufficient allocation of counterpart and financing resources for program activities. To mitigate this risk, the OER will provide advanced notice to the Ministry of Economy and Finance and the Department of Administration and Finance (DAF) of the Office of the President of progress on execution and future resource needs so they are included in budget planning; and (ii) ex ante control by the Office of the Comptroller General of the Republic (CGR) may make financial execution of the project very slow. To mitigate this risk, three actions will be carried out: (a) a training workshop on the Bank's fiduciary processes will be provided in order to orient staff in the DAF of the Office of the President, the CGR, and the PCU in the OER; (b) a planner will be hired in the PCU to coordinate with the DAF in the Office of the President with regard to financial flows and following a streamlined resource execution process; and (c) help desks will be created with the CGR where engineers and legal advisors can standardize criteria on how to present bidding documents, contracts, and progress reports.

- 2.9 **Procurement risks.** The procurement risk is medium and is related to delays in or inability to carry out procurement. The identified actions for mitigating these risks are: (i) to design and execute a training strategy on Bank procurement policies, streamlined project management, monitoring, and planning. This training will include members of the OER board in order to provide guidance to staff of the DAF, the CGR, and the PCU of the OER; (ii) to publish a general announcement on program procurement so that the OER can establish a bank of potential bidders; and (iii) to hold meetings and establish memorandums of understanding with the OER, the ASEP, and national distribution companies, with the support of the Office of the President, so that they can participate in the bidding process.

D. Other key issues and risks

- 2.10 **Public management and governance.** A medium risk identified for public management and governance is the limited capacity for interagency coordination between the OER and other institutions that execute rural projects to build homes, schools, and health centers. To mitigate this risk, the following measures will be taken: (i) through the OER board, interagency actions will be taken to coordinate and monitor work between public institutions that execute rural programs to build homes, schools, and health centers; and (ii) the OER Committee will be strengthened so that it has provisions and rules that help facilitate technical requirements and improve the quality of the distribution companies.
- 2.11 **Monitoring.** A medium risk has been identified that relates to possible delays in recording and storing project data on surveys, technical criteria, and progress in meeting those criteria in the OER database. To mitigate this risk, the OER will receive support from the IDB, which will provide a technological tool for managing project information, including project eligibility criteria, progress, and project close.
- 2.12 **Sustainability of investments.** In order to ensure that investments are sustainable, specifically those in off-grid systems and electrical mini-grids, the OER will coordinate building, operation, and maintenance of these systems with the distribution companies that are responsible for the corresponding concession area. For mini-grids, the OER will work in coordination with the ASEP, based on existing regulations in Panama, in order to award fifteen-year concession contracts for projects. Communities will be trained on how to use the equipment, and estimated cost of service will be less than or equal to lower-quality lighting options currently being used (kerosene, candles, and batteries).

III. IMPLEMENTATION AND MANAGEMENT PLAN

A. Summary of implementation arrangements

- 3.1 The borrower will be the Republic of Panama and the executing agency will be the Ministry of the Office of the President, through the OER. The OER will be responsible for: (i) complying with the project's contractual conditions; (ii) planning, preparing, organizing, executing, and monitoring the project's work plans and activities; (iii) managing the relationship with the Bank and requesting and substantiating loan disbursements for program execution; (iv) preparing the required reports; and (v) coordinating with ENSA, EDEMET, and EDECHI for the planning and development of plans for coverage expansion to be executed with this financing.

- 3.2 **Special contractual conditions precedent to the first loan disbursement.** Execution of the following activities will be part of the special contractual conditions precedent to the first loan disbursement and require the IDB's no objection: **(i) key staff will be designated within the OER, specifically: a project coordinator, as well as fiduciary, planning, procurement, environmental, engineering, and social specialists; and (ii) the [program Operations Manual](#) will be approved, based on the terms and conditions previously agreed to with the Bank** (paragraph 3.9). These conditions are needed to ensure that the borrower has appointed the minimum staff needed for the OER to operate and has a document that facilitates project execution.
- 3.3 **Special contractual execution conditions:** Prior to beginning the electricity distribution grid extension works, the OER and the distribution company or the contractor will sign a contract, where appropriate, under the terms previously agreed to by the OER and the Bank. This contract is needed in order to define the conditions for individual program contracts to be signed with the distribution companies or contractors.
- 3.4 **Procurement management.** Procurement of works and goods and selection of consulting services will be carried out in accordance with the Policies for the Procurement of Good and Works Financed by the Inter-American Development Bank (document GN-2349-9), and the Policies for the Selection and Contracting of Consultants Financed by the Inter-American Development Bank (document GN-2350-9), both approved in March 2011. The Bank's Board of Executive Directors approved the use of framework agreement subsystems (document GN-2538-11) for up to the threshold established for national competitive bidding, which is US\$250,000. It also approved a mechanism for procurement under US\$50,000, which may vary if the Bank approves higher levels. The [Procurement Plan](#) provides details of the procurement processes to be undertaken during execution.
- 3.5 **Single-source selection.** Since 2013, ENSA has held a concession for electricity distribution that includes the provinces of Colón and Darién, the Guna Yala indigenous territory, the Pacific Islands, and the eastern part of the province of Panama (Panama Este). ENSA is a corporation whose main shareholder is Grupo EPM, which has a 51% stake. The Government of Panama has a 48.3% stake, and current and former employees of the company hold 0.7%. The OER is required to serve electricity markets located outside of the concession area. Recently, as the OER has progressed with the electrification program, these projects have begun to be incorporated into current concessions. There is a close relationship between the OER and ENSA involving incorporation of concession areas where works are carried out, since electricity distribution is a monopolistic activity by nature. Thus far, two works have been successfully executed using this arrangement with ENSA under loan 2734/OC-PN. Due to all of these considerations, single-source selection is required for ENSA to qualify for an exception to execute projects located in its concession areas, pursuant paragraph 3.6.e of document GN-2349-9. The designs will be carried out by the OER, and the benchmark costs used to estimate the contracts will be those issued by the ASEP and adopted by the OER. The total amount of the procurement for design, supply, construction of electrical distribution grids, metering system,

connections, and internal installations for rural households in Panama Este, Guna Yala, and Darién is US\$12,540,000.

- 3.6 **Disbursement.** The loan will be disbursed through advances of funds based on the financial programming for a period of up to 180 days. The Bank may disburse the next advance once 80% of the previously disbursed funds have been justified. Direct payments may also be made to providers, and payments incurred may be reimbursed.
- 3.7 **Retroactive financing.** The Bank may retroactively finance from the loan proceeds up to US\$10,000,000 (8.33% of the proposed loan amount) from Bank resources, and up to US\$1,000,000 from the local contribution, in eligible expenses incurred by the borrower prior to the loan approval date for the procurement of works, goods, services, and consulting services, provided that requirements substantially similar to those in the loan contract have been met. Such expenditures will have been incurred on or after 27 November 2018 (the project profile approval date), but under no circumstances will include expenditures incurred more than 18 months prior to the loan approval date.
- 3.8 **Audits.** Every year, the borrower will present the program's financial statements to the IDB within 120 days following the close of the corresponding fiscal year or date of the last disbursement, as appropriate. The financial statements will have been duly audited by an independent audit firm acceptable to the IDB. The audit will be financed with the loan proceeds.
- 3.9 **Program Operations Manual.** The procedures for the administration and execution of the program will be established in a [program Operations Manual](#) along with the responsibilities, rules, and procedures that will govern execution, such as: (i) procurement and contracting; (ii) management and execution arrangements and tools; (iii) responsibilities and requirements for financial-accounting information and physical monitoring; (iv) criteria for selecting beneficiary projects, including technical viability, costs (investment per customer of less than US\$6,000), economic viability (EIRR>12%); (v) financial, environmental, and social sustainability; (vi) procedures for inclusion of projects outside areas under concession; (vii) technical criteria and specifications required for each type of project; (viii) financial obligations of beneficiaries for managing, operating, and maintaining off-grid systems; (ix) environmental and social considerations; and (x) interagency agreements needed for program execution. As a condition precedent to the first disbursement, the borrower will submit evidence that the program Operations Manual has been taken effect, as previously agreed upon with the Bank. The program Operations Manual is needed to ensure proper program execution.

B. Summary of arrangements for monitoring results

- 3.10 **Monitoring arrangements.** The Bank will perform technical visits to the executing agency every six months to review progress of the works and to make adjustments to execution. Annual fiduciary supervision visits will also be carried out. External audits of accounting and operations are planned in order to validate the use of loan proceeds, as well as internal operational processes and controls. Semiannual progress reports will be sent to the Bank regarding execution, including technical and financial program progress reports, as well as the monitoring and progress report (see the [Monitoring and Evaluation Plan](#)).
- 3.11 **Arrangements for program evaluation.** Program evaluation includes midterm and final evaluations, financed from the loan proceeds. The midterm evaluation will be contracted by the executing agency no later than 36 months after the loan contract takes effect. The final evaluation will be contracted by the executing agency when the last loan disbursement is requested. The final evaluation will determine the degree to which the targets set forth in the Results Matrix were fulfilled, and it will be submitted before the financial close of the operation. The terms of reference for the midterm and final evaluations will have the Bank's no objection. The semiannual and annual reports will be submitted by the executing agency according to the program's Monitoring and Evaluation Plan.

Development Effectiveness Matrix		
Summary		
I. Corporate and Country Priorities		
1. IDB Development Objectives	Yes	
Development Challenges & Cross-cutting Themes	-Social Inclusion and Equality -Productivity and Innovation -Gender Equality and Diversity -Climate Change and Environmental Sustainability -Institutional Capacity and the Rule of Law	
Country Development Results Indicators	-Women beneficiaries of economic empowerment initiatives (#)* -Installed power generation from renewable energy sources (%)* -Households with new or improved access to electricity supply (#)* -Electricity transmission and distribution lines installed or upgraded (km)*	
2. Country Development Objectives	Yes	
Country Strategy Results Matrix	GN-2838	(i) Improve the delivery of basic services to the population living in poverty. (ii) Strengthen the education profile of the population; (iii) Deepen the logistics services, efficiency, and connectivity of the productive infrastructure.
Country Program Results Matrix	GN-2948	The intervention is included in the 2019 Operational Program.
Relevance of this project to country development challenges (If not aligned to country strategy or country program)		
II. Development Outcomes - Evaluability		
		Evaluable
3. Evidence-based Assessment & Solution		7.7
3.1 Program Diagnosis		3.0
3.2 Proposed Interventions or Solutions		1.7
3.3 Results Matrix Quality		3.0
4. Ex ante Economic Analysis		9.0
4.1 Program has an ERR/NPV, or key outcomes identified for CEA		3.0
4.2 Identified and Quantified Benefits and Costs		3.0
4.3 Reasonable Assumptions		0.0
4.4 Sensitivity Analysis		2.0
4.5 Consistency with results matrix		1.0
5. Monitoring and Evaluation		7.9
5.1 Monitoring Mechanisms		2.5
5.2 Evaluation Plan		5.4
III. Risks & Mitigation Monitoring Matrix		
Overall risks rate = magnitude of risks*likelihood		Medium
Identified risks have been rated for magnitude and likelihood		Yes
Mitigation measures have been identified for major risks		Yes
Mitigation measures have indicators for tracking their implementation		Yes
Environmental & social risk classification		B
IV. IDB's Role - Additionality		
The project relies on the use of country systems		
Fiduciary (VPC/FMP Criteria)	Yes	Financial Management: Budget. Procurement: Information System, Price Comparison.
Non-Fiduciary		
The IDB's involvement promotes additional improvements of the intended beneficiaries and/or public sector entity in the following dimensions:		
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		

Note: (*) Indicates contribution to the corresponding CRF's Country Development Results Indicator.

The objective of the project is to support the socioeconomic development of the rural population of Panama through a universalization program of access to rural electric. The program diagnosis appropriately assesses the situation of the energy sector in the country, particularly in the rural sector, which in general backs up the proposed interventions with a few exceptions. Neither the POD nor its annexes present empirical evidence about the effectiveness of this type of programs and their effects on certain outcomes that could be of interest. In general, the results matrix reflects the vertical logic described in the POD, covering the inputs, outcomes and results. The indicators in the results matrix meet the SMART criteria and include the sources and means of verification that will be used to measure them. For the economic analysis, the project proposes a cost-benefit analysis in which the benefits of network extension projects are estimated as the savings in energy expenditure of the users resulting from the reduction in the sources that will be replaced, as well as the incremental energy paid to which you will have access due to the project. Both the benefits and the costs are quantified for the life of the project. Not all the assumptions of the analysis are supported by references or documentary sources. Finally, the program will evaluate the results achieved using the before-after comparison methodology. However, the Monitoring and Evaluation Plan does not specify the exact sources to collect the data.

RESULTS MATRIX

Project objective	The general objective is to support the socioeconomic development of Panama's rural population through a program for universal access to rural electricity services that is technically, economically, environmentally, and socially sustainable. The specific objectives are to: (i) expand access to sustainable energy; and (ii) strengthen the OER's planning and management capacities for structuring, reviewing, executing, and supervising rural electrification projects.
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	Indicator	Unit of measure	Baseline 2017	Final target 2022	Observations/Mean of verification
Rural access to electricity	Electricity coverage	%	78.5	86.06	Final report – OER
Contribution to climate change mitigation	CO ₂ emissions prevented by using electricity	tons of CO ₂	0	29,802	Final report – OER See estimate in Annex C of the economic evaluation

Outcomes											
Indicator	Unit of measure	Base-line	Base-line year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of project	Observations/Mean of verification
Outcome 1. Increased electricity coverage through sustainable rural electrification projects											
1.1. Households without electricity service that have a new connection to the National Interconnected System (SIN)	Number of households without electricity service that have a new connection to the SIN	0	2019	0	2,601	3,200	3,200	2,978	1,500	13,479	OER semiannual reports
1.2. Households with regularized electricity service	Number of households with regularized electricity service	0	2019	0	300	300	700	700	0	2,000	
1.3. Households without electricity service that have a new connection to individual solar-powered off-grid systems	Number of households without electricity service that have a new connection to off-grid systems	0	2019	0	1,450	3,678	900	0	0	6,028	

Outcomes											
Indicator	Unit of measure	Base-line	Base-line year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of project	Observations/Mean of verification
1.4. Households without electricity service that have a new connection to electrical mini-grids	Number of households without electricity service that have a new connection to electrical mini-grids	0	2019	0	0	0	1,500	1,500	1,180	4,180	
1.5. Schools without electricity service that have a new connection to an off-grid system	Number of schools without electricity service that have a new connection to an off-grid system	0	2019	0	0	279	0	0	0	279	
1.6. Health centers without electricity service that are connected to an off-grid system	Number of health centers without electricity service that have a new connection to an off-grid system	0	2019	0	0	95	0	0	0	95	
1.7. Hours per day of education infrastructure use	Number of hours per day of education infrastructure use	5	2019	0	0	8	0	0	0	8	OER semiannual reports, indicator developed based on monthly Ministry of Education (MEDUCA) report
Outcome 2. Improved capacity of OER to manage rural electrification projects											
1.8. Percentage of electrification requests made electronically	%	0	2019	0	20	50	100	100	100	100	OER semiannual reports

Outputs	Unit of measure	Cost (US\$)	Base-line	Base-line year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Final target	Means of verification	Observations
Component 1: Rural electrification projects involving grid extension, mini-grids, repowering, regularization, off-grid systems, and technical supervision													
Output 1. Electrification project in the western area constructed and supervised	Number of projects	31,192,025	0	2019	0	0	1	0	0	0	1	OER semiannual reports	OER semiannual reports
Output 2. Electrification project in the northeastern area constructed and supervised	Number of projects	13,167,300	0	2019	0	0	1	0	0	0	1		
Output 3. Electrification project in the western area phase II constructed and supervised	Number of projects	32,920,335	0	2019	0	0	0	0	0	1	1		
Output 4. Electrification project in northeastern area phase II constructed and supervised	Number of projects	38,720,340	0	2019	0	0	0	0	0	1	1		
Output 5. Women trained for productive activities	Number of women trained	200,000	0	2019	0	40	40	80	40	0	200		List of women participating in training courses and productive projects.
Component 2: Institutional strengthening													
Output 1. Integrated Information Platform for Universal Energy Access Projects (PIPAU) designed and equipped with a hosting service, and employees trained	Number	200,000	0	2019	0	1	0	0	0	0	1	OER semiannual reports	
Output 2. Number of workshops on project planning and management for OER employees	Number of workshops	175,000	0	2019	1	3	3	3	0	0	10		Management tools

Output 3. Number of awareness-raising campaigns on electricity use in beneficiary communities	Number of campaigns	1,000,000	0	2019	0	10	10	20	10	0	50		Includes guides on program benefits in Spanish and the various languages of the beneficiary territories, as well as reports on surveys and technical, social, and environmental supervision in order to verify requests.
Output 4. OER and regional units strengthened and equipped	Number of units	975,000	0	2019	0	6	0	0	0	0	6		Includes vehicles, ¹ software management licenses, and technological equipment.
Output 5. Videos of program outcomes	Number of videos	150,000	0	2019	0	0	0	5	5	5	15		Includes one video for each province and one for each territory in the program.

¹ Vehicles for program supervision and information collection.

FIDUCIARY AGREEMENTS AND REQUIREMENTS

Country: Panama
Project number: PN-L1155
Name: Sustainable Rural Electrification Program
Executing agencies: Oficina de Electrificación Rural [Rural Electrification Office] (OER), Ministry of the Office of the President
Prepared by: David Ochoa and Ezequiel Cambiasso (FMP/CPN)

I. THE EXECUTING AGENCY'S FIDUCIARY CONTEXT

- 1.1 The borrower will be the Republic of Panama and the executing agency will be the Ministry of the Office of the President, through the OER.
- 1.2 The OER is currently executing operation PN-L1095, Sustainable Rural Electrification Program – II, with the Bank. This operation is the second phase of the Rural Electrification Program (loan 1790-OC-PN) executed between 2006 and 2013, also by the OER.
- 1.3 The OER will use the Dirección de Administración y Finanzas [Department of Administration and Finance] (DAF) of the Ministry of the Office of the President to keep budget, accounting, and cash flow records. The DAF will also work with the procurement section of the OER to carry out procurement processes.

II. FIDUCIARY RISK EVALUATION AND MITIGATION ACTIONS

- 2.1 During the program design process, an analysis of the executing agency's institutional capacity was performed that showed an incipient level of capacity. This is mainly due to the OER's management structure and the fact that it is reliant upon the Ministry of the Office of the President to carry out any action.
- 2.2 Based on the risk evaluation, the following financial risks were identified as medium: (i) inadequate allocation of counterpart and financing resources for program activities; and (ii) ex ante control by the Office of the Comptroller General of the Republic (CGR) may make financial execution of the project very slow. To mitigate these risks, three actions will be carried out: (a) a training workshop will be provided on the Bank's fiduciary processes in order to provide guidance to DAF employees in the Office of the President, the CGR, and the program coordination unit (PCU) of the OER; (b) a planner will be hired in the PCU in order to coordinate with the DAF of the Office of the President with regard to financial flows, as well as to follow a streamlined resource execution process; and (c) help desks will be set up with the CGR for engineers and legal advisors to establish criteria for presenting bidding documents, contracts, and progress reports.

- 2.3 The procurement risk is medium and is related to delays in or the inability to complete procurement. The mitigation actions identified here are: (i) to design and execute a training strategy on Bank procurement policies, streamlined project management, monitoring, and planning, including members of the OER Board in order to provide guidance to employees of the DAF, the CGR, and the PCU of the OER; (ii) to publish a general announcement on program procurement so that the OER can set up a bank of possible bidders; and (iii) to hold meetings and draft memorandums of understanding with the OER, ASEP, and distribution companies, with support from the Office of the President, so that they can participate in the bidding process.
- 2.4 The Government of Panama has implemented the GRP ISTMO as its country system. In that regard, efforts will be made for the executing agency to receive the training it needs, and for the system to be configured to manage the budget, commit expenditures, and make payments under the program.

III. CONSIDERATIONS FOR THE SPECIAL PROVISIONS OF THE CONTRACTS

- 3.1 The agreements and requirements that will be considered in the special provisions are included below:
- 3.2 The Financial Management Guidelines for IDB-financed Projects (document OP-273-6) will apply, and in accordance these guidelines: (i) financial statements on the project audited by an independent audit firm acceptable to the Bank will be requested annually, within the 120 days following the close of each fiscal period or date of the last disbursement; (ii) advances will be requested for financing plans of up to 180 days; and (iii) new advances may be requested when 80% of the previous resources have been accounted for.

IV. AGREEMENTS AND REQUIREMENTS FOR PROCUREMENT EXECUTION

- 4.1 The Fiduciary Agreements and Requirements in procurement establish the applicable provisions for the execution of all procurement planned under the project.
- A. Procurement execution**
- 4.2 The Policies for the Procurement of Works (document GN-2349-9) and for the Selection and Contracting of Consultants (document GN-2350-9) will apply.
- 4.3 **Procurement of works, goods, and nonconsulting services.** International competitive bidding (ICB) will be executed using the standard bidding documents (SBDs) issued by the Bank. Bidding subject to national competitive bidding (NCB) and shopping will be conducted using the models defined for this operation by the Bank. The project sector specialist will be responsible for reviewing technical specifications for procurement during preparation of the selection processes.
- 4.4 **Selection and contracting of consultants.** Consulting services contracts arising under the project will be executed using the standard request for proposals issued by the Bank. The project sector specialist will be responsible for reviewing the terms of reference for the contracting of consulting services.

- 4.5 **Selection of individual consultants.** This process will take into account their qualifications for performing the work, based on comparing the qualifications of at least three candidates.
- 4.6 **Use of the country procurement system.** The Bank's Board of Executive Directors approved (in document GN-2538-11) the use of framework agreement subsystems up to the established threshold of US\$250,000 for NCB, as well as the mechanism for smaller purchases up to US\$50,000, which may vary if the Bank approves higher levels of use. The operation's [Procurement Plan](#) and its updates will indicate which contracts will be executed using the approved country procurement systems.
- 4.7 **Retroactive financing.** The Bank may retroactively finance from the loan proceeds up to US\$10,000,000 (8.33% of the proposed loan amount) from Bank resources, and up to US\$1,000,000 from the local contribution, in eligible expenses incurred by the borrower prior to the loan approval date for the procurement of works, goods, services, and consulting services, provided that requirements substantially similar to those in the loan contract have been met. Such expenditures will have been incurred on or after 27 November 2018 (the project profile approval date), but under no circumstances will include expenditures incurred more than 18 months prior to the loan approval date.
- 4.8 **Single-source selection.** Since 2013, ENSA has held a concession for electricity distribution that includes the provinces of Colón and Darién, the Guna Yala territory, the Pacific Islands, and the eastern part of the province of Panama (Panama Este). ENSA is a corporation whose main shareholder is Grupo EPM, which has a 51% stake. The Government of Panama has a 48.3% stake, and current and former employees of the company hold 0.7%. The OER is required to serve electricity markets located outside of the concession area. Recently, as the OER has progressed with the electrification program, these projects have begun to be incorporated into current concessions. There is a close relationship between the OER and ENSA involving incorporation of concession areas where works are carried out, since electricity distribution is a monopolistic activity by nature. Thus far, two works have been successfully executed using this arrangement with ENSA under loan 2734/OC-PN. Due to all of these considerations, single-source selection is required for ENSA to qualify for an exception to execute projects located in its concession areas, pursuant paragraph 3.6.e of document GN-2349-9. The designs will be carried out by the OER, and the benchmark costs used to estimate the contracts will be those issued by the ASEP and adopted by the OER. The total amount of the procurement for design, supply, construction of electrical distribution grids, metering system, connections, and internal installations for rural households in Panama Este, Guna Yala, and Darién is US\$12,540,000.
- 4.9 **National preference.** Not applicable.
- 4.10 **Procurement plan.** The Procurement Plan Execution System (SEPA) or the updated system that succeeds it as an electronic procurement monitoring system will be used.

Table of Thresholds (US\$)

Works			Goods			Consulting services	
International competitive bidding	National competitive bidding/ Shopping	Shopping for complex works	International Competitive Bidding	National competitive bidding/ Shopping	Shopping for complex goods	International	National
US\$3,000,000 or more	Over US\$250,000 and under \$3,000,000	Under US\$250,000	US\$250,000 or more	Over US\$50,000 and under \$250,000	Under US\$50,000	Over US\$200,000	US\$200,000 or less

Main Procurement Items

Activity	Type of process	Estimate amount (US\$)
Works		
Design, supply, construction of electricity distribution networks, metering system, connections, and internal installations for rural households in Bocas del Toro, Coclé, Herrera, Los Santos, Veraguas, Chiriquí, the Ngäbe-Buglé territory, and Panamá Oeste.	ICB	29,690,000
Design, supply, construction of electricity distribution networks, metering system, connections, and internal installations for rural households in Panamá, Guna Yala, and Darién.	Direct contracting	12,540,000
Design, supply, construction of electricity distribution networks, metering system, connections, and internal installations for rural households in provinces and comarcas in the western area, part II.	ICB	31,227,000
Design, supply, construction of electricity distribution networks, metering system, connections, and internal installations for rural households in provinces and territories in the northwestern area, part II.	ICB	36,864,000
Consulting services		
Supervision of extension lines, off-grid systems, schools, and health centers that have electricity, as well as regularization of the provinces of Bocas del Toro, Coclé, Herrera, Los Santos, Veraguas, Chiriquí, the Ngäbe-Buglé territory, and Panamá Oeste.	Quality- and cost-based selection (QCBS)	1,506,650
Supervision of extension lines, off-grid systems, schools, and health centers that have electricity, as well as regularization of the provinces of Panamá, the Guna Yala territory, and Darién.	QCBS	627,000
Supervision of extension lines, off-grid systems, schools, and health centers that have electricity, as well as regularization of the provinces and territories in the western area, part II.	QCBS	1,693,460
Supervision of extension lines, off-grid systems, schools, and health centers that have electricity, as well as regularization of the provinces and territories in the northwestern area, part II.	QCBS	1,855,000

B. Procurement supervision

- 4.11 All ICB and direct contracting of goods, works, and nonconsulting services will be subject to ex ante review. Selection of consulting firms for over US\$200,000 and single-source selection will also be subject to ex ante review. For the remaining contracts, the type of review to be used will be determined on a case-by-case basis in the [Procurement Plan](#).

C. Special provisions

- 4.12 None.

D. Records and files

- 4.13 The executing agency will keep up-to-date records and orderly files that can be reviewed by the Bank according to the following guidelines:
- a. Procurement documentation must be kept in a single file or folder that is completely separate from the processes financed by local contribution resources or by resources other than program resources.
 - b. Documents will be kept and properly organized, labeled, and numbered, such that they can be clearly and quickly located and identified, and available at all times for review by the Bank and for auditing purposes.

V. FINANCIAL MANAGEMENT

A. Programming and budget

- 5.1 The Ministry of Economy and Finance (MEF) is responsible for budget formulation and control. Before 31 July of each year a budget bill must be submitted to the National Assembly, which is responsible for approving the budget as well as for any budget increases. The budget is an annual budget and includes all public sector investments, revenues, and expenditures. The budget bill for fiscal year 2019 will create National Public Investment System (SINIP) codes and guidelines for IDB financing and the local contribution. First, the entire annual budget for the local contribution will be requested, and once the loan is approved, the executing agency will request substitution of the source of financing.

B. Accounting and information systems

- 5.2 The DAF is the office responsible for budgeting, accounting, and cash flow within the Ministry, and as such it covers the institutions attached to the Office of the President. The DAF will make every effort to work with the Dirección Nacional de Contabilidad [National Accounting Department] (DNC) to identify the relevant users of the ISTMO system and train them. Additionally, it will coordinate system configuration in order to manage the budget, commit expenditures, and make payments through the system. The system is currently being evaluated to determine whether it can be used in IDB-financed projects, or whether a parallel system must be used.
- 5.3 Accounting will be governed by the standards issued by the CGR, which are based on the International Public Sector Accounting Standards (IPSAS).

C. Disbursements and cash flow

- 5.4 Panama approved a law establishing the use of the single treasury account (CUT), and its implementation started in the central government. In 2019, an evaluation will be carried out of the CUT and its relationship with the implementation of the ISTMO system to determine whether it can be used in IDB-financed projects.
- 5.5 The IDB will transfer resources to an account at a financial entity that will be opened by the OER and used exclusively for the program. Disbursements will be made through advances for cash-flow needs, based on the respective financial plan of up to 180 days. A new advance may be requested once 80% of the previous resources have been accounted for. Reimbursement of payments incurred or direct payments to providers may also be made.

D. Internal control and internal audit

- 5.6 As a result of the prior control exercised by the CGR, the internal control and internal audit systems of government institutions are weak because they rely on the control work done by the CGR rather than having effective processes and controls. Thus, they are not considered adequate for the control function required in projects.

E. External control and reports

- 5.7 The CGR has focused its efforts on prior control over actions involving government assets since its audit function is weak. In addition to carrying out administrative processes through prior control, the CGR does not have the necessary autonomy to carry out audits, which is why it is not considered to have the capacity to carry out external control of the program.
- 5.8 Financial statements for the project audited by an independent audit firm acceptable to the Bank will be requested annually, within the 120 days following the close of each fiscal period or the date of the last disbursement.

F. Financial supervision plan

- 5.9 Financial supervision will focus on the auditors' reports mentioned in the preceding paragraph, and supporting documentation for disbursements will be reviewed on an ex post basis by the auditors when the audits are conducted or during the financial inspection visits.

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-___/19

Panama. Loan ___/OC-PN to the Republic of Panama
Universal Energy Access Program

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the Republic of Panama, as borrower, for the purpose of granting it a financing to cooperate in the execution of the Universal Energy Access Program. Such financing will be for the amount of up to US\$90,000,000 from the resources of the Bank's Ordinary Capital, and will be subject to the Financial Terms and Conditions and the Special Contractual Conditions of the Project Summary of the Loan Proposal.

(Adopted on __ _____ 2019)