



CERTIFICATION AND FINANCING PROPOSAL

ENGIE AKIN SOLAR PROJECT IN PITIQUITO, SONORA

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EXECUTIVE SUMMARY

ENGIE AKIN SOLAR PROJECT IN PITIQUITO, SONORA

Project:	The proposed project consists of the design, construction and operation of a 100 MW _{AC} solar park located in the municipality of Pitiquito, Sonora (the “Project”). ¹ The electricity generated by the Project will be sold to a private off-taker pursuant to a long-term power purchase agreement (PPA) and in the Mexican Wholesale Power Market (MEM) once the PPA expires.
Objective:	The Project will increase installed capacity of renewable energy resources, which will help reduce future demand on traditional fossil fuel-based energy production and thus help prevent the emission of greenhouse gases and other pollutants from power generation using fossil fuels.
Expected Outcomes:	The estimated environmental and human health outcomes resulting from the installation of 100 MW _{AC} of new renewable energy generation capacity are: <ul style="list-style-type: none">a) Generation of approximately 315.5 gigawatt-hours (GWh) of electricity during the first year of operation.²b) Reduction of approximately 144,843 metric tons/year of carbon dioxide (CO₂), 435 metric tons/year of nitrogen oxides (NO_x), 1,145 metric tons/year of sulfur dioxide (SO₂) and 69 metric tons/year of particulate matter (PM₁₀).³
Population to benefit:	149,954 residents.
Sponsor:	Affiliate(s) within the Engie Group
Borrower:	Akin Solar, S.A. de C.V.
NADB Loan Amount:	Up to US\$100 million.

¹ MW_{AC} stands for megawatts in alternating current.

² Source: Information provided by the Sponsor based on the expected P50 electricity production.

³ CO₂, NO_x, SO₂ and PM₁₀ calculations are based on the potential emissions avoided as a result of reducing future demand on fossil fuel-based electricity through the use of solar energy equivalent to 315.5 GWh/year and the emission factors for the state of Sonora. The emission factors are calculated by NADB based on the power generation portfolio of the state of Sonora and on the factors reported per technology in the 2018 Mexican National Power System Development Program (PRODESEN). The resulting emission factors are: 0.45909 metric tons/megawatt-hour (MWh) for CO₂; 0.00138 metric tons/MWh for NO_x, 0.00363 metric tons/MWh for SO₂ and 0.00022 metric tons/MWh for PM₁₀.

CERTIFICATION AND FINANCING PROPOSAL

ENGIE AKIN SOLAR PROJECT IN PITIQUITO, SONORA

1. PROJECT OBJECTIVE AND EXPECTED OUTCOMES

The proposed project consists of the design, construction and operation of a 100 MW_{AC} solar park located in the municipality of Pitiquito, Sonora (the "Project").⁴ The electricity generated by the Project will be purchased by a private off-taker pursuant to a long-term power purchase agreement and in the Mexican Wholesale Power Market (MEM) once the PPA expires. The purpose of the Project is to increase the installed capacity of renewable energy which will help reduce future demand on traditional fossil fuel-based energy production and thus help prevent the emission of greenhouse gases and other pollutants from power generation using such fuels. The Project is expected to generate approximately 315.5 gigawatt-hours (GWh) of electricity in the first year of operation. As a result, it will help prevent the emission of an estimated 144,843 metric tons/year of carbon dioxide (CO₂), 435 metric tons/year of nitrogen oxides (NO_x), 1,145 metric tons/year of sulfur dioxide (SO₂) and 69 metric tons/year of PM₁₀. The prevented CO₂ emissions are equivalent to the annual CO₂ emissions from 30,752 vehicles.

2. ELIGIBILITY

2.1. Project Type

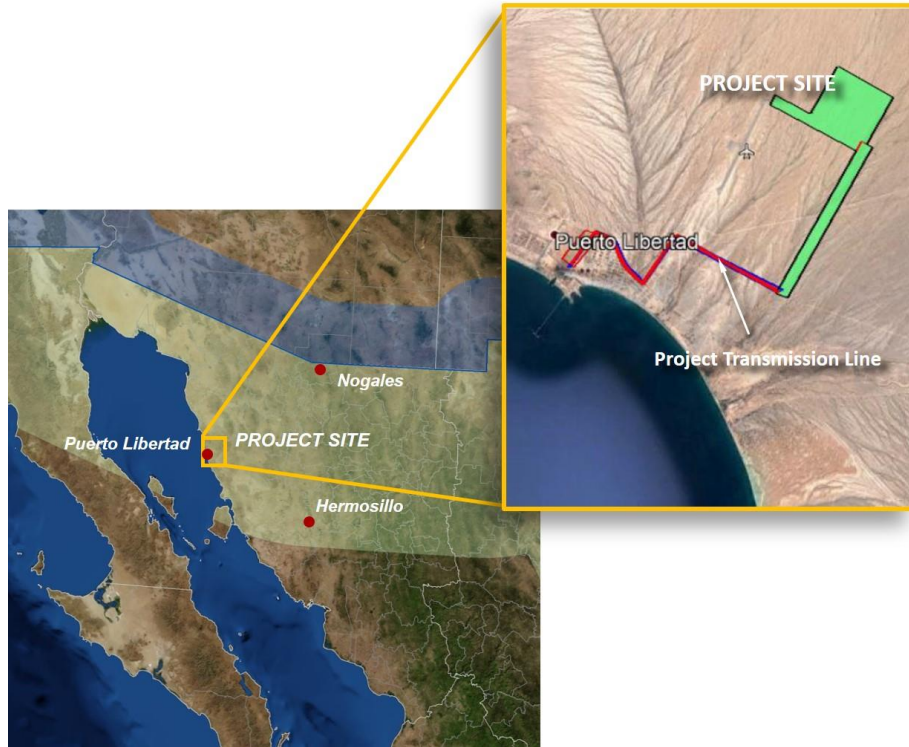
The Project falls into the category of clean and efficient energy.

2.2. Project Location

The Project is being implemented in the western region in the state of Sonora. The site of the solar park is located in the municipality of Pitiquito, approximately 3.8 miles northeast of the community of Puerto Libertad, 156 miles northwest of the city of Hermosillo and approximately 122 miles south of the U.S.-Mexico border, at the following coordinates: latitude: 29°56'20.75"N and longitude: 112°38'13,48"W. Figure 1 illustrates the geographic location of the Project.

⁴ MW_{AC} stands for megawatts in alternating current.

Figure 1
PROJECT LOCATION MAP



2.3. Project Sponsor and Legal Authority

The private-sector project sponsor is an affiliate(s) within the Engie Group (“Engie” or the “Sponsor”).⁵ Engie created a special-purpose company called Akin Solar, S. A. de C.V. to implement the Project and contract the financing (“Akin,” the “Project Company” or the “Borrower”). Akin is a Mexican-based company established on July 12, 2013.

The generation permit for the Project was grandfathered under the new Power Industry Law enacted in Mexico in 2014, as the Sponsor requested and obtained the permit prior to the deadline established in the law for grandfathering projects and notified the Mexican Energy Regulatory Commission (CRE) of its intention to continue with the Project in compliance with the established requirements.⁶ A power generation permit for the Project was issued by CRE in May 2015. Amendments to the power generation permit for the Project were issued by CRE in September 2016 and in September 2017.⁷ An amendment for the generation permit was filed

⁵ Engie is planning to incorporate a strategic partner into the transaction as a co-sponsor prior to financial closing.

⁶ According to the provisions for grandfathering projects, interested parties may establish a grandfathered interconnection agreement for a term of up to 20 years when the generation permit was assigned transmission capacity through an open application period organized by CRE prior to entry into force of the Power Industry Law, and is in compliance with the required fees and guaranties.

⁷ Project developers are required to update power generation permits if the facility has not started operations by the date anticipated and/or the capacity has increased.

with CRE on May 2019 in order to add the off taker under the current PPA; response by CRE is pending.

3. CERTIFICATION CRITERIA

3.1. Technical Criteria

3.1.1. General Community Profile

The Project is expected to benefit border communities near the Project site through the supply of electricity generated by the Project. It is expected that the actual consumption of the renewable energy produced will be the users or communities close to the grid where the interconnection point is located. In this case the nearest communities to this point are the residents of the municipalities of Pitiquito, Puerto Peñasco, Caborca and Hermosillo, which belong to the CFE Northwest Zone. Project benefits include the generation of clean energy equivalent to the annual consumption of 42,844 households (149,954 residents).⁸ Local communities will also benefit from the creation of employment opportunities and additional income generation during the construction and operation of the Project. The Project is expected to generate approximately 700 jobs during construction and ten on-site jobs during operation, plus various administrative positions

According to the 2015 Mexican intercensal survey, the population of Sonora was 2,850,330, which represented 2.4% of the population of Mexico.⁹ Between the years 2010 and 2015, the population of Sonora grew 6.6%.¹⁰ The state of Sonora accounted for 3.5% of the gross domestic product (GDP) in 2016.¹¹ According to the 2014 Economic Census, the main economic activities contributing to the total gross production of the state are: manufacturing (63.2%), mining (11.3%), wholesale trade (6.0%), retail trade (5.5%) and other sectors (14.0%).¹²

The community of Puerto Libertad is in the municipality of Pitiquito, Sonora, on the coast of the Gulf of California. The total population of Pitiquito was 9,514 in 2015,¹³ while the population of Puerto Libertad was 2,782 residents in 2010.¹⁴ The main economic activities in the municipality of

⁸ The estimation is based on 2,103.99 kilowatt-hours of electricity consumption per capita in 2017 according to the Mexican Energy Information System (<http://sie.energia.gob.mx/>) and 3.5 persons per household in the state of Sonora in 2015, as indicated by the Mexican National Institute of Statistics, INEGI (<https://www.inegi.org.mx/temas/hogares/>).

⁹ Source: INEGI, 2015 Intercensal Survey (<http://www.beta.inegi.org.mx/temas/estructura/>).

¹⁰ Source: INEGI, Publicaciones [Publications], (<https://www.inegi.org.mx/app/biblioteca/ficha.html?upc=702825002042>).

¹¹ Source: INEGI, *Mexico en cifras* [Mexico by the Numbers], (<http://cuentame.inegi.org.mx/monografias/informacion/son/economia/pib.aspx?tema=me&e=26>).

¹² Source: INEGI, 2014 Economic Census (<http://www.beta.inegi.org.mx/app/saic/>).

¹³ Source: INEGI (<http://cuentame.inegi.org.mx/monografias/informacion/son/poblacion/>).

¹⁴ Source: INEGI (<http://www.microrregiones.gob.mx/catloc/LocdeMun.aspx?buscar=1&tipo=nombre&campo=loc&valor=PuertoLibertad>).

Pitiquito are manufacturing employing 38.1% of the workforce, followed by commerce (29.4%) and private sector non-financial services (24.4%).¹⁵

Local Energy Profile

In 2014, the legal framework that governs Mexico's National Power System (SEN) underwent a major reform aimed at facilitating investments to consolidate diversification efforts, improve infrastructure and meet the growing demand for electricity. Under the new Power Industry Law, the federal government retained control of planning activities and the transmission and distribution infrastructure through National Center of Energy Control (CENACE), a decentralized federal agency created by the government to operate the SEN. It is now operating the national grid with more than 936,967 kilometers (582,328 miles) of transmission and distribution lines previously operated by the Mexican Federal Electricity Commission (CFE).¹⁶ Under the reform, CFE became a federally-owned for-profit enterprise. CRE, which was created to regulate activities related to private investment in the power and natural gas sector, continues to be responsible for issuing permits to private entities for power generation and the transportation of natural gas.

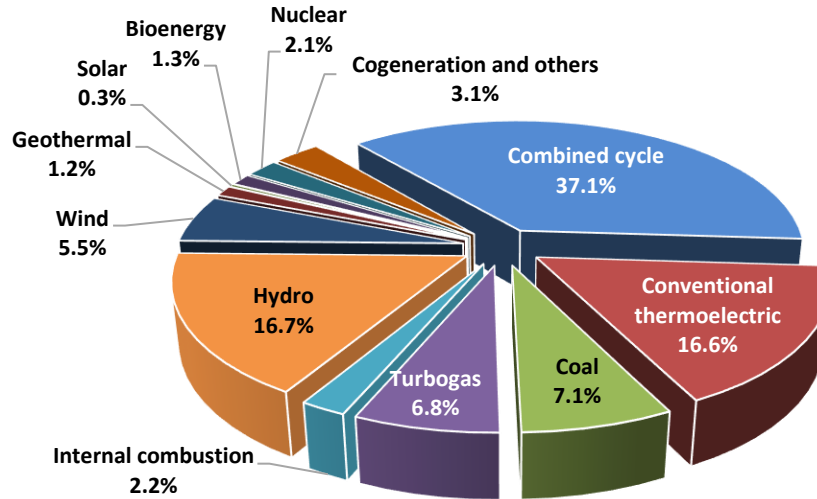
In 2015, Mexico enacted the Energy Transition Law to regulate the sustainable use of energy and obligations regarding clean energy and the reduction of pollution from the power industry, while preserving the competitiveness of the productive sectors. In line with this new law, the General Law of Climate Change was amended in 2015. Both laws specify, among other provisions, that the Mexican Ministry of Energy (SENER), in coordination with CFE and CRE, must increase the use of clean technologies in power generation to at least 35% by 2024.

Since 1994, Mexico has undertaken efforts to increase the use of non-fossil fuel technologies in power generation. Its energy portfolio currently includes combined-cycle, thermoelectric, geothermal, hydroelectric, coal-fired, solar photovoltaic, wind, turbogas, internal combustion, cogeneration and nuclear power plants. As reported in the 2018-2032 National Power System Development Program (PRODESEN), in 2017, there was 75,685 MW of installed capacity in the SEN, which represents an increase of 3.0% compared to 2016 (73,510 MW). Figure 2 shows the breakdown of installed capacity by technology.

¹⁵ Source: Percentages calculated by NADB based on INEGI information (<http://www.beta.inegi.org.mx/app/areasgeograficas/?ag=00>).

¹⁶ Source: SENER, 2018-2032 National Power System Development Program (PRODESEN).

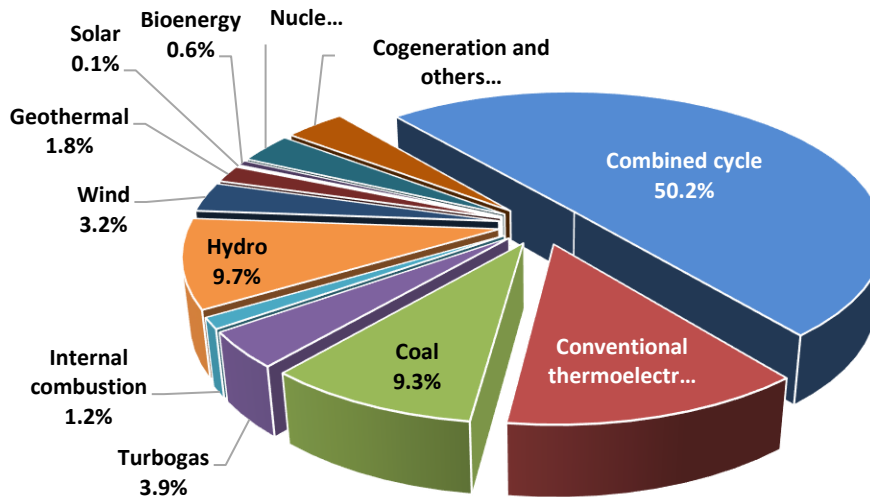
Figure 2
INSTALLED CAPACITY BY TECHNOLOGY IN MEXICO IN 2017
 (75,685 MW TOTAL)



Source: SENER, PRODESEN 2018-2032

During 2017, the National Power System in Mexico generated 329,162 GWh of electricity from all energy sources, which represents an increase of 3.1% compared to the electricity produced in 2016 (319,364 GWh). Figure 3 shows the participation of each technology in Mexican power generation.

Figure 3
NATIONAL POWER GENERATION BY TECHNOLOGY IN 2017
 (319,364 GWh TOTAL)



Source: SENER, PRODESEN 2018-2032

For planning purposes, the Mexican power grid is divided into nine control zones, seven of which are interconnected and form the National Interconnected System (SIN). The remaining two zones are independent supply networks serving the areas of Baja California and Baja California Sur. The Project will be located in the Northwest Zone, which includes the states of Sonora and Sinaloa as illustrated in Figure 4.

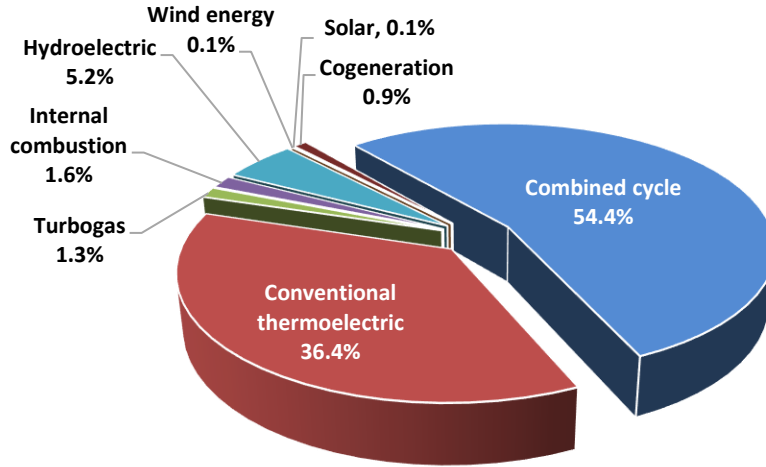
Figure 4
MEXICAN ELECTRIC SYSTEM ZONES



Source: SENER, PRODESEN 2018-2032

According to SENER, installed generation capacity in Sonora was 3,167 MW and produced 17,279 GWh of electricity in 2017. Figure 5 shows the technologies used for electricity generation in the state.

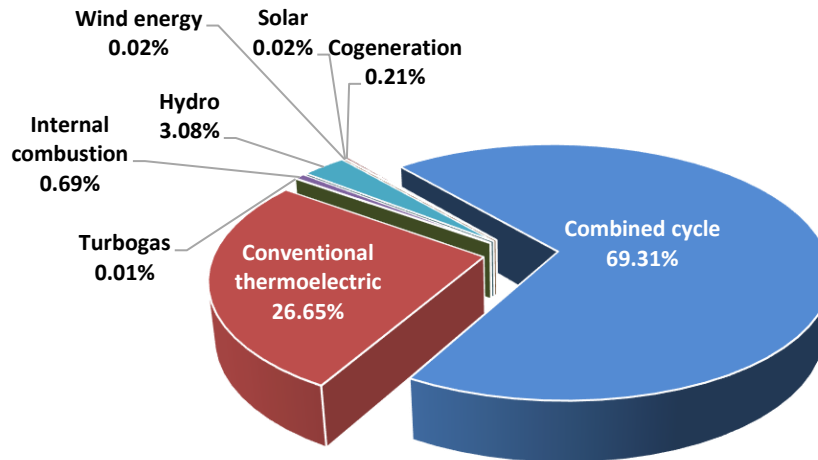
Figure 5
INSTALLED CAPACITY BY TECHNOLOGY IN SONORA IN 2017
 (3,167 MW TOTAL)



Source: Based on PRODESEN 2018-2032

Figure 6 shows the breakdown of power generation by technology in the state of Sonora for public service.

Figure 6
POWER GENERATION BY TECHNOLOGY IN SONORA IN 2017
 (17,279 GWh TOTAL)



Source: Based on PRODESEN 2018-2032

PRODESEN 2018-2032 includes an Expansion and Decommissioning Program, which assumes a net addition of 4,852 MW of capacity to the existing system in Sonora over the next 15 years to

achieve a gross capacity of 6,861 MW by 2032. The proposed Project will contribute 0.14% towards achieving this goal.

At the state level, the 2016-2021 Sonora Development Plan (SDP) contains four objectives for supporting areas of strategic development in the state, including energy and environmental objectives to promote sustainable economic development. The SDP contains strategies to support long-term investments in renewable energy projects (including solar, wind, geothermal, hydroelectric and biomass) in the state to help reduce harmful emissions from the operation of other fossil-fuel based power plants.

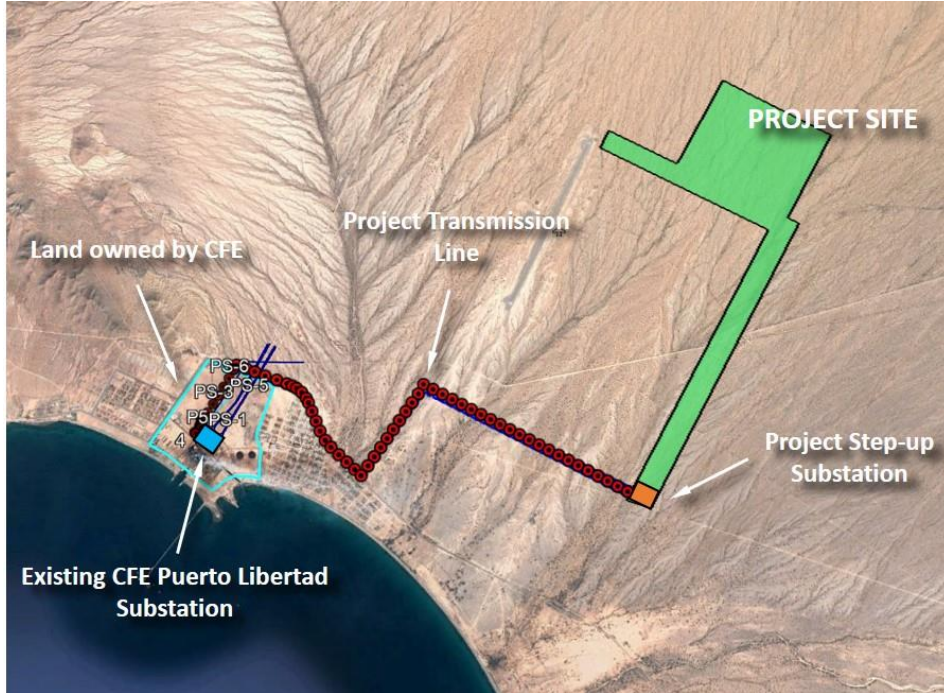
3.1.2. Project Scope

The Project consists of the design, construction and operation of a 100-MW_{AC} solar park and includes the following components:

- Modules: Approximately 390,000 photovoltaic modules with a nominal capacity of 325 to 335 watts will be installed. The panel provider was selected from a short list of top-tier global providers.
- Tracking system: The modules will be mounted on single-axis tracking arrays. The parallel arrays will be spaced apart to minimize inter-row shading by the sun.
- Inverters: A total of 40 inverters will be installed to transform the direct current from the modules into alternating current.
- Interconnection: A network of underground electric cables will be installed to collect the energy from the modules. The inverters will transform the electricity to 34.5 kV. One step-up substation will be constructed to transform the electricity from 34.5 kV to 230 kV. A 6.9-kilometer (4.31-mile) overhead transmission line will be built as part of the Project to deliver the energy generated to the existing CFE substation in Puerto Libertad.
- Monitoring and Control System: A SCADA system will be used to monitor, operate and track the park remotely, as well as document the performance of the PV system relative to its predicted output.
- Roads. A network of access roads will be constructed to allow the transport and delivery of the components, machinery, equipment and materials required for the construction, operation and maintenance of the facilities. The roads will be designed for low-volume traffic.
- Operation and maintenance (O&M) facilities. A permanent O&M facility will be built with administrative space, a meeting room and areas for the monitoring and operation of the plant.

Figure 7 shows the location of the main components within the project area, as well as the location of the transmission line and interconnection substation.

Figure 7
PROJECT SITE



3.1.3. Technical Feasibility

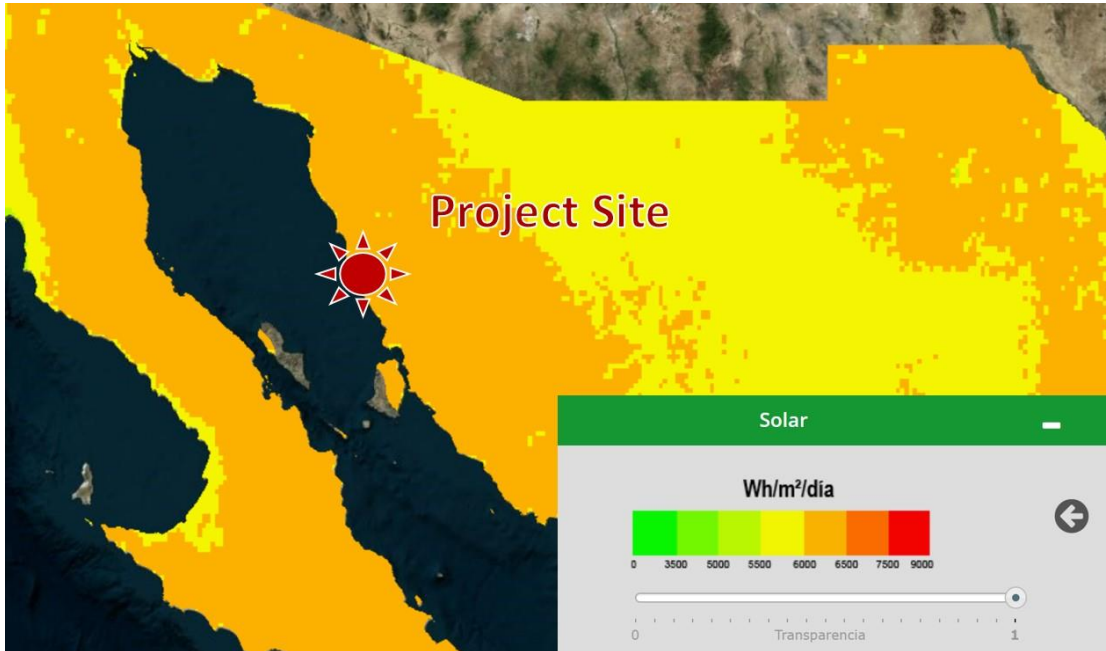
The Sponsor evaluated solar modules from different suppliers in order to select the equipment best suited to the characteristics of the Project site and solar resource. The process for evaluating technology took into consideration elements such as technical performance, commercial offering and warranties. Additionally, the viability of Project was evaluated based on the cost-effectiveness and reliability of the technologies. The independent engineer review required by the NADB will confirm the suitability of the technology selected and its expected performance.

Solar Resource Assessment

The Project is located in the state of Sonora. According to SENER, average annual global horizontal irradiation in the Project area ranges from 6,000 to 6,500 watt-hours per square meter a day (see Figure 8).¹⁷

¹⁷ Source: SENER, National Renewable Energy Inventory, <https://dgel.energia.gob.mx/inel/mapa.html?lang=es>.

Figure 8
SOLAR RESOURCE POTENTIAL



Source: SENER, National Clean Energy Inventory.

To assess available solar resources in the Project area, meteorological information from available and reliable sources was reviewed. The data available for the region, such as global and diffuse solar radiation, temperature, cloud index, etc., was incorporated into a solar resource analysis. Based on the results, it is estimated that the Project will produce an average of 315.5 GWh/year of electricity at P50 generation. The analysis results will be vetted for accuracy and related risks by an independent engineer prior to financial closing.

3.1.4. Land Acquisition and Right-of-Way Requirements

The solar park is currently under construction on two parcels of privately-owned land covering a total of area of 266 hectares (657.3 acres), which have been secured through lease agreements. The land in the region is mainly covered by desert scrub and was classified as undisturbed in the Project area. Federal authorization to change the land use for the solar park and transmission line was required from the Ministry of Environment and Natural Resources (SEMARNAT). In this case, the environmental regulations establish that a fee must be paid to the Mexican Forest Fund as part of the authorization process. The Sponsor submitted the formal request to SEMARNAT for the land use change of the solar park on March 1, 2018 and received the corresponding authorization on December 3, 2018. The application to change the land use of a portion of the transmission line was submitted to SEMARNAT on August 18, 2018, and the corresponding authorization was on April 15, 2019.

The transmission line extends a total of 6.9 kilometers (4.31 miles) and will be constructed in four segments. Two segments are on privately-owned land that was secured through lease agreements. Rights of way were obtained from two different state highways for the other two segments.

Given that the Project is located near an airport, construction approval is required from the General Office of Civil Aviation (DGAC) of the Ministry of Communications and Transportation (SCT). The Sponsor submitted a formal request to DGAC for construction approval of the Project on June 8, 2018 and received the corresponding authorization on August 24, 2018.

A construction permit from the Municipality of Pitiquito was obtained in November 2018 prior to initiating construction.

3.1.5. Project Milestones

Construction of the Project started in December 2018 and the Commercial Operation Date (COD) will be no later than December 2019. Table 1 presents the status of key milestones for Project implementation.

Table 1
PROJECT PERMIT MILESTONES

Permits	Status
Land lease agreements for the solar park and the transmission line	Completed July 2018
Right-of-way agreements for the transmission line	Completed October 2018
CRE authorization for energy generation	Completed May 2015
CRE authorization amendment for energy generation	Completed September 2017
CRE authorization amendment for energy generation	In Process (expected November 2019)
CENACE interconnection agreement	Completed January 2018
Archeological clearance for the solar park and the transmission line from the National Institute of Anthropology and History (INAH)	Completed September 2018
SEMARNAT environmental authorization (MIA resolution) for the solar park	Completed February 2017
SEMARNAT environmental authorization amendments (MIA resolutions) for the solar park	Completed April 2017 and March 2018
SEMARNAT environmental authorization (MIA resolution) for the transmission line	Completed November 2018
Land use change authorization from SEMARNAT for the solar park	Completed December 2018
Land use change authorization from SEMARNAT for the transmission line	Completed April 2019
General Office of Civil Aviation (DGAC) authorization	Completed August 2018
SENER Social Impact Study response	Completed September 2018

NADB procurement policies require that private-sector borrowers use appropriate procurement methods to ensure a sound selection of goods, works and services at fair market prices and that their capital investments are made in a cost-effective manner. As part of its due-diligence process, NADB will review compliance with this policy.

3.1.6. Management and Operation

Engie is a leading energy company with 108.8 GW of power generation capacity worldwide, including more than 5 GW in renewable energy assets. One of its goals is to have 25% of its generation portfolio come from renewables by 2020. In Mexico, Engie has a renewable energy portfolio and development pipeline of 1,137 MW, including this Project. A subsidiary of Engie, Engie Mexico, with an office in Mexico City, will be the asset manager for the Project.

The Sponsor is currently negotiating the contract for Operation and Maintenance (O&M) services for the Project. The agreement is expected to be signed before COD and will include industry standard O&M tasks, preventive and corrective maintenance, remote monitoring, security and surveillance, reporting and recordkeeping. The proposed Project is designed to operate with minimal human intervention. Operation and maintenance tasks will be performed to optimize the operating times of the system, reduce repair costs and extend the life of the equipment.

3.2. Environmental Criteria

3.2.1. Environmental and Health Effects/Impacts

A. Existing Conditions

Historically, Mexico has depended to a great extent on fossil fuels for the generation of energy. This conventional method of energy generation can affect the natural environment due to harmful emissions related to the generation process, including greenhouse gases (GHG) and other pollutants, such as sulfur dioxide (SO₂) and nitrogen oxides (NO_x). Consequently, there is a need for affordable and environmentally beneficial alternatives to conventional hydrocarbon-based energy sources.

In 2015, the largest source of carbon dioxide equivalent (CO₂e) emissions in Mexico was the energy sector, generating 480.8 million metric tons and representing 70.4% of total emissions (683 million metric tons).¹⁸ The main sources of CO₂e emissions in the energy sector include petroleum and gas, power generation, manufacturing, transportation and fugitive emissions. CO₂e emissions grew at an average annual rate of 1.9% between 1990 and 2015. Power generation accounted for approximately 24.1% of CO₂e emissions (164 million metric tons).¹⁹

¹⁸ The energy sector includes fossil-fuel burning activities, such as transportation and power generation.

¹⁹ Source: SEMARNAT, National Institute of Ecology and Climate Change, *Sexta Comunicación Nacional y Segundo Informe Bienal de Actualización ante la Convención Marco de las Naciones Unidas sobre el Cambio Climático*, [Sixth

In order to support its international commitments to combat climate change under the United Nations Framework Convention on Climate Change (UNFCCC), Mexico has developed strategies to reduce GHG and to transition to a low-carbon economy.²⁰ Mexico prepared its Intended Nationally Determined Contribution (INDC) based on its legal climate change framework, which includes the General Law of Climate Change and the National Climate Change Strategy, Vision 10-20-40. Its INDC target is consistent with the goal of reducing GHG emissions by 50%, compared to 2000 levels, by 2050. According to the INDC goals, Mexico is committed to reducing total CO₂e emissions by 211 million metric tons (22% lower than 2000 levels) by 2030 through unconditional measures.²¹ The reduction of emissions from power generation is estimated at 31% (equivalent to 63 million metric tons of CO₂e). In support of these efforts, Mexico has enacted legislation aimed at increasing the use of clean technologies in power generation to at least 35% by 2024 and reducing dependence on fossil-fuel based power plants. This Project will support both of those goals.

B. Project Impacts

Renewable energy projects create an opportunity to generate electricity by using sources that do not produce GHG and criteria pollutants (SO₂, NO_x, etc.) like those released by fossil-fuel-based plants. Sunlight is a source of renewable energy, which means that it can be produced without depleting natural resources. It is a clean form of renewable energy as it does not produce waste byproducts that require disposal, nor gas emissions that contribute to air pollution and, therefore, provides an opportunity to prevent the emission of GHG and other pollutants produced by traditional hydrocarbon-based energy generation, while providing local residents with a safe and reliable energy alternative. Moreover, solar energy production does not consume or pollute water, although minimal amounts may be used for maintenance purposes. Solar energy is currently used in many developed and developing nations to meet their demand for electricity.

The Project will reduce the demand for electricity generated by fossil fuel-based power plants, and since solar-based power generation implies zero emissions, it will displace related harmful emissions. The anticipated environmental outcomes from the installation of 100 MW_{AC} of new renewable energy generation capacity (or approximately 315.5 GWh) include the displacement of an estimated 144,843 metric tons/year of carbon dioxide (CO₂), 435 metric tons/year of nitrogen oxides (NO_x), 1,145 metric tons/year of sulfur dioxide (SO₂) and 69 metric tons/year of PM₁₀.²² The prevented CO₂ emissions are equivalent to the annual CO₂ emissions from 30,752 vehicles.

National Communication and Second Biennial Update to the United Nations Framework Convention on Climate Change], 2018 (<http://cambioclimatico.gob.mx:8080/xmlui/handle/publicaciones/117>).

²⁰ Source: SEMARNAT. National Climate Change Strategy, Vision 10-20-40, 2013.

²¹ INDC includes a set of mitigation measures that Mexico will implement with its own resources (unconditional measures) and/or through international cooperation (conditional measures), (<https://www.gob.mx/inecc/acciones-y-programas/contribuciones-previstas-y-determinadas-a-nivel-nacional-indc-para-mitigacion-80048>).

²² CO₂, NO_x, SO₂ and PM₁₀ calculations are based on the potential emissions avoided as a result of reducing future demand on fossil fuel-based electricity through the use of solar energy equivalent to 315.5 GWh/year and the emission factors for the state of Sonora. The emission factors are calculated by NADB based on the power generation portfolio of the state of Sonora and on the factors reported per technology in the Mexican National Power System

Additionally, the Project will aid in addressing the larger environmental concerns related to greenhouse gases targeted by the Sonora State agenda and will be consistent with the 2016-2021 State Development Plan published on December 12, 2015.

Finally, the operation of the Project will help to avoid the use of 302.12 million liters (79.82 million gallons) of water per year²³ necessary for the operation of other fossil fuel-based power plants such as combined cycle.

C. Transboundary Impacts

No transboundary impacts are anticipated as a result of the development of the Project.

3.2.2. Compliance with Applicable Environmental Laws and Regulations

A. Environmental Clearance

In accordance with the environmental impact regulations established under the General Law of Ecological Equilibrium and Environmental Protection, the Sponsor prepared and submitted the following environmental documents:

- Environmental Impact Assessment (MIA) for the construction of a portion of a solar park with a capacity of 100 MW_{AC}, which was submitted to SEMARNAT on November 18, 2016;
- MIA for the construction of the remaining portion of the solar park and its transmission line extending 6.9 km (4.3 miles), which was submitted to SEMARNAT on April 19, 2018;
- Land use change application for a 100-MW_{AC} solar park, which was submitted to SEMARNAT on March 1, 2018; and
- Land use change application for a 6.9-kilometer transmission line, which was submitted to SEMARNAT on August 18, 2018.

The MIA identifies, describes and evaluates the potential environmental impacts associated with the Project—such as soil erosion and contamination, waste production, removal or loss of vegetation, site hydrology and impacts to wildlife—and includes the proposed mitigation measures to prevent or minimize any negative effect or impacts.

On February 20, 2017, SEMARNAT issued MIA Resolution No. DS-SG-UGA-IA-0120-17, authorizing the construction of a portion of a 100-MW_{AC} solar park and related infrastructure. On October 30, 2018, SEMARNAT issued MIA Resolution No. SGPA/DGIRA.DG.08370, authorizing the construction of the remaining portion of the solar park, transmission line and related infrastructure. In compliance with the MIA resolutions, the Sponsor must implement the mitigation measures proposed in the MIAs, which are described in Section 3.2.2.B, as well as obtain the required forest land use change permits.

Development Program (PRODESEN) 2018. The resulting emission factors are: 0.45909 metric tons/megawatt-hour (MWh) for CO₂; 0.00138 metric tons/MWh for NO_x, 0.00363 metric tons/MWh for SO₂ and 0.00022 metric tons/MWh for PM₁₀.

²³ Based on water consumption per capita of 250 liters (66 gallons)/day and 3.5 persons per household in the state of Sonora, the 302.12 million liters (79.82 million gallons) a year would cover the annual consumption of 946 households.

As part of the MIA for the Project, the Sponsor conducted a monitoring and identification program to analyze the flora and to quantify the number of wildlife species within the Project site and its area of influence. Thirty species of flora were recorded in the different strata (tree, shrub, herbaceous and cacti), two which are listed as a conservation priority or in a protected category in accordance with Mexican Standard NOM-059-SEMARNAT-2010.²⁴ A total of 15 bird species, nine reptile species and 10 species of mammals were detected in the Project site during the study. Two bird species, seis reptile species and dos mammals species are listed as a conservation priority or in a protected category in accordance with Mexican Standard NOM-059-SEMARNAT-2010. Information about the mitigation measures and conditions included in the MIA resolutions are provided in Section 3.2.2.B.

The National Institute of Anthropology and History (INAH) issued Archeological Clearances No. 401.3S.4.2-2018/CIS-781, 401.3S.4.2-2018/CIS-782 and 401.3S.4.2-2018/CIS-783 for the solar park and transmission line on September 28, 2018. No archeological nor historical elements were found within the Project area.

B. Mitigation Measures

Some environmental impacts are anticipated as a result of Project implementation. The Sponsor has proposed mitigation measures that are intended to reduce, mitigate and control the environmental effects resulting from Project activities. To ensure that mitigation measures are implemented properly and in a timely manner, the Sponsor also developed the Environmental Monitoring Program described in the Project MIA. The following mitigation measures included in the MIA and its resolution are being implemented:

- Flora:
 - Prior to clearing activities, flora listed as a conservation priority or a protected species were rescued and relocated. A temporary nursery area was implemented to stabilize rescued species.
 - Rescued flora species were relocated to a designated area for reforestation near the Projects site.
 - The use of fire and/or chemical products is prohibited for the removal of vegetation.
- Fauna:
 - Prior to and during clearing activities, actions were taken to protect and repel wildlife.
 - Activities to identify, rescue and relocate wildlife were carried out.
 - No construction activities are being carried out at night.

²⁴ Mexican Standard NOM-059-SEMARNAT-2010 identifies and lists endangered species or clusters of wildlife in Mexico and establishes the criteria for inclusion, exclusion or change in risk status for different species, based on a method for assessing the risk of extinction.

- Noise:
 - The Sponsor will comply with noise levels in accordance with Mexican Standard NOM-081-SEMARNAT-1994 and NOM-080-SEMARNAT-1994.²⁵
 - To minimize noise, all vehicles and machinery will be properly maintained and receive regular tune-ups.

- Air quality:
 - Construction materials and waste transported by heavy vehicles will be covered to avoid dust emission.
 - Access roads will be watered to reduce dust.
 - To minimize emissions produced by internal combustion motors, all vehicles and machinery will be properly maintained and receive regular tune-ups.

- Water resources:
 - Water required for construction activities will be supplied by water trucks from an authorized source.
 - The use of pesticides and herbicides to remove vegetation cover, which may contaminate ecosystems and water resources, is prohibited.
 - Chemical substances that could affect water tables will not be used for the maintenance of solar panels.

- Hazardous waste: Oils, fuels, and other pollutants will be placed in closed containers in a secure area during all stages of Project construction and operation, and their disposal shall be in accordance with Mexican Standard NOM-052-SEMARNAT-2005.²⁶

- Solid waste:
 - Procedures will be implemented for the separation, storage, collection and use or disposal of the different types of waste generated during the different stages of the Project in accordance with applicable regulations.
 - Solid waste will be handled and transported by an authorized contractor to an authorized final disposal site in accordance with the General Law for Comprehensive Waste Management and Prevention and its regulations.

C. Pending Environmental Tasks and Authorizations

There are no pending environmental authorizations for the Project.

²⁵ Mexican Standard NOM-081-SEMARNAT-1994 and NOM-080-SEMARNAT-1994 establish the maximum levels of noise from stationary sources and from motor vehicles and their respective noise measuring methods.

²⁶ Mexican Standard NOM-052-SEMARNAT-2005 establishes the characteristics, identification procedures and classification of hazardous solid waste, as well as a list of such materials.

3.3. Financial Criteria

The Sponsor will finance the construction of the Project with (i) equity from its own resources and (ii) a senior loan from NADB for up to US\$100.0 million.

The proposed loan payment mechanism is standard for project finance energy transactions. The source of payment will be the revenue generated by (i) the sale of electricity pursuant to a long-term PPA between the Borrower and a private off-taker and (ii) the sale of electricity into the MEM once the PPA has expired. The revenue from the sale of electricity is expected to be sufficient to: a) cover scheduled operation and maintenance expenses; b) pay the debt service on the senior loan; c) fund any debt service and other reserves; and d) comply with debt service coverage requirements.

Taking into consideration the Project's characteristics and based on the financial and risk analyses performed, the proposed Project is considered to be financially feasible and presents an acceptable level of risk. Therefore, NADB proposes to provide Akin Solar, S.A. de C.V., a market-rate loan for up to US\$85.0 million for the construction of the Project.

4. PUBLIC ACCESS TO INFORMATION

4.1. Public Consultation

NADB published the draft certification and financing proposal for a 30-day public comment period beginning on September 11, 2019. The following Project documentation is available upon request:

- Environmental Impact Assessment (MIA) for a portion of the Akin solar park, dated October 2016;
- MIA for the Akin solar park an additional portion and the transmission line;
- MIA Resolution DS-SG-UGA-IA-0120-17 for a portion of the solar park issued by SEMARNAT on February 20, 2017;
- MIA Resolution SGPA/DGIRA.DG.08370 for an additional portion of the solar park and the transmission line issued by SEMARNAT on October 30, 2018; and
- Archeological clearance letters 401.3S.4.2-2018/CIS-781, 401.3S.4.2-2018/CIS-782 and 401.3S.4.2-2018/CIS-783 issued by INAH on September 28, 2018.

4.2. Outreach Activities

Under the Mexican Power Industry Law, anyone interested in obtaining a permit or authorization to develop projects in the energy sector must present a Social Impact Assessment (SIA) to SENER. In accordance with the guidelines and methodologies established by SENER, the study must identify the communities and towns in the area of influence of a project, as well as identify,

characterize, predict and assess its possible consequences for the population, along with mitigation measures and plans for managing the social aspects of the project, including: a Social Management Plan (SMP), Social Investment Plan (SIP), Monitoring and Evaluation Plan, Communication Strategy and Community Involvement Plan, social baseline, and stakeholder analysis. The evaluation also requires that indigenous communities or groups be identified in the area of influence of the project to determine if they need to be consulted.

Grandfathered projects are not required to provide a SIA. On September 22, 2017, the Sponsor formally asked SENER to confirm that a SIA was not required for the Project. On September 7, 2018, SENER issued Official Letter No. 117.-DGISOS.580/2018 confirming that no SIA was required for the Project.

As part of the environmental authorization process, on November 18, 2016 and April 19, 2018, SEMARNAT published the requests for environmental authorization of the solar park and transmission line, respectively, in its weekly publication (*Gaceta Ecológica*), which provides information about the projects under evaluation. The ruling did not report any public comments received. Additionally, on November 23, 2016, and April 18, 2018, the Sponsor published an extract of the MIAs under review by SEMARNAT in the newspaper, *Expreso*.

NADB also conducted a media search to identify potential public opinion about the Project. References to the Project were found on the websites listed below:

- *El Periódico de la Energía* (June 27, 2015) – “México aprobó 443 MW fotovoltaicos en mayo” (Mexico approved 443 MW of photovoltaic projects in May).
(<https://elperiodicodelaenergia.com/tag/akin-solar/>).
- *El Financiero* (September 26, 2018) – “La empresa de energía ENGIE construirá parque solar en Sonora” (Engie to build solar park in Sonora).
(<https://www.elfinanciero.com.mx/empresas/la-empresa-de-energia-engie-construira-parque-solar-en-sonora>).
- *Forbes México* (September 26, 2018) – “Engie invertirá 111 mdd para construir parque solar en Sonora” (Engie to invest US\$111 million to build a solar park in Sonora).
(<https://www.forbes.com.mx/engie-invertira-111-mdd-para-construir-parque-solar-en-sonora/>).
- *Milenio* (August 23, 2019) – “Engie construirá parque fotovoltaico en Sonora” (Engie to build solar park in Sonora).
(<https://www.milenio.com/negocios/engie-construira-parque-fotovoltaico-en-sonora>).

In summary, these publications highlight the plan to develop the Project. Opposition to the Project was not detected from the available media coverage. The Sponsor has followed all public consultation requirements in order to comply with applicable environmental clearance and permitting processes.