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PUBLIC-PRIVATE PARTNERSHIP

PROJECTS:
"220 KV REQUE -
NUEVA CARHUAQUERO
CONNECTION, EXPANSIONS
AND ASSOCIATED
SUBSTATIONS"
AND
"220/60 KV - 75 MVA NUEVA
TUMBES SUBSTATION
AND 60 KV NUEVA TUMBES -
TUMBES TRANSMISSION LINE"



PERÚ

Ministerio
de Economía y Finanzas



ProInversión

Private Investment Promotion Agency - Peru



BICENTENARIO
PERÚ 2021

The projects seek to meet the following objectives:

I. 220 kV Reque - Nueva Carhuaquero Connection, Expansions and Associated Substations:

- Expand the transmission capacity between Chiclayo and Cajamarca by an additional 300 MVA to 150 MVA existing, through a new connection, in addition to the 220 kV Carhuaquero - West Chiclayo T.L. (L-2240), the only one currently in operation.
- Meet the electricity demand in the northern area (in particular in the provinces of Chiclayo and Lambayeque) and an adequate Peru - Ecuador interconnection, increasing the flow in the direction from south to north to 600 MW so that the bidirectional transfer is symmetrical.

II. 220/60 kV - 75 MVA Nueva Tumbes S.S. and 60 kV Nueva Tumbes - Tumbes T.L.:

- Increase by 58% the transformation capacity to supply the electrical system of Tumbes from the 220 kV system, through the installation of an additional supply point (220/60 kV- 75 MVA Nueva Tumbes S.S.) to the only existing one (220/60 kV - 130 MVA Zorritos S.S.).
- The project will avoid overloading in Zorritos S.S. as of the year 2022 and will make it possible to cover the growth in electricity demand projected for the next 15 years.

The Project of "220 KV Reque - Nueva Carhuaquero Connection, Expansions and Associated Substations"

Has an estimated investment of US \$ 29.8 million and will be located in the cities of Reque and Carhuaquero (district of Llama) in the North of Peru, passing through the department of Lambayeque (province of Chiclayo) and the department of Cajamarca (province of Chota).



220 KV REQUE - NUEVA CARHUAQUERO, CONNECTION, EXPANSIONS AND ASSOCIATED SUBSTATIONS



Scope

With this project, there will be an impact on the 220 kV transmission system in the northern area of the country, reinforcing the transmission capacity between the transmission system that converges the department of Cajamarca and the 220 kV transmission system from the north coast of the country in Chiclayo area, department of Lambayeque.



Area of Influence (Northern Area of the country)

Cities located between Reque (province of Chiclayo, department of Lambayeque) and Carhuaquero (district of Llama, province of Chota, department of Cajamarca).



Awarding Entity

Ministry of Energy and Mines - MINEM



PPP Eligibility

According to the evaluation made through the Eligibility Criteria of the Ministry of Economy and Finance (value for money), it was verified that the Project meets the necessary conditions to be developed under the PPP modality.



Components

The project is divided into four main components:

- **Component 1:** includes the 220 kV Transmission Line that will be built to connect Reque and Nueva Carhuaquero substations.
- **Component 2:** includes the 220kV Variant of Transmission Line (220 kV Nueva Carhuaquero -North Cajamarca Variant of T.L., 220 kV Nueva Carhuaquero – West Chiclayo Variant of T.L. and 220 kV Nueva Carhuaquero - Carhuaquero Variant of T.L.).
- **Component 3:** includes the future 220 kV Nueva Carhuaquero Substation, to be implemented with the project.
- **Component 4:** includes the existing 220kV Reque Substation owned by the Concessionaire Red de Energía del Perú.



Project Features

- **220 kV Reque - Nueva Carhuaquero Transmission Line**

- Approximate length: 79.1 km
- Triad number: 1
- Voltage: 220 kV
- Maximum system voltage: 245 kV
- Phase disposition: Triangular type
- Support type: Galvanized steel self-supporting lattice
- Phase conductor: AAAC 500 mm²
- Conductors number per phase: 1
- Guard cable: OPGW type, with a minimum of 24 (fibers), 116 mm² as a reference section.
- Altitude: minimum of 70 mamsl and maximum of 1220 mamsl
- Substation that connects: Reque S.S. and Nueva Carhuaquero S.S.

- **Variants of Transmission Lines in 220 kV**

- Variant single triad line of 450 MVA and 3 Km for connection change 220 kV North Cajamarca Carhuaquero T.L. (L-2190) to Nueva Carhuaquero S.S.
- Variant single triad line of 300 MVA and 2 km in length for connection to Nueva Carhuaquero S.S. by sectioning the 220 kV Carhuaquero - West Chiclayo T.L. (L-2240) in the direction of the West Chiclayo S.S.



Project Features

- Variant of single triad line, 150 MVA and 2 km in length for connection to Nueva Carhuaquero S.S. by sectioning the 220 kV Carhuaquero - West Chiclayo T.L.(L-2240) towards the existing Carhuaquero S.S.
- **Expansion of the 220 kV Reque Substation**
 - On the 220 kV side: Double bus bar configuration with transfer switch; with the addition of one (1) output cell to the 220 kV transmission line to the Nueva Carhuaquero substation.
 - Complementary systems: systems for protection, control, measurement, communications, grounding, auxiliary services, gantry towers and bars, civil works, etc.
- **220 kV Nueva Carhuaquero substation**

On the 220 kV side: Double bus bar configuration with transfer switch; with one (1) bar coupling cell and four (4) output cells of line transmission from 220 kV to the substations:

 - West Chiclayo, Carhuaquero Existing, North Cajamarca and Reque.
 - Complementary systems: systems for protection, control, measurement, communications, grounding, auxiliary services, gantry towers and bars, civil works, etc.



Term

- Construction period: 18 months, once the financial closure and approval of the project design by the State have been obtained, among other requirements.
- Implementation period / Commercial Commissioning (POC): 40 months.
- Concession period: 30 years from the POC



Method of Payment

As it is a self-financed project, no payment commitment will be required that uses public resources or disbursement by any public entity or state company since it will be financed with the transmission toll that is included in the electricity rates that are paid by users.



Lands

The Concessionaire is responsible for the management and negotiation for the constitution of the easement and the corresponding payments for the use of the lands of the communities intervened during the execution of the Projects, in accordance with the Applicable Laws.



Benefits

Improve the quality of life of 1.1 million inhabitants of the areas of influence and contribute to the improvement of productivity and employment related to commerce, agriculture, manufacturing and construction, which require a quality electricity service, together representing 45% of the economic activity of the department of Lambayeque.



Capital Contributions

The Concessionaire can freely define the financing structure at any time, that is, the amount and terms of the debt.

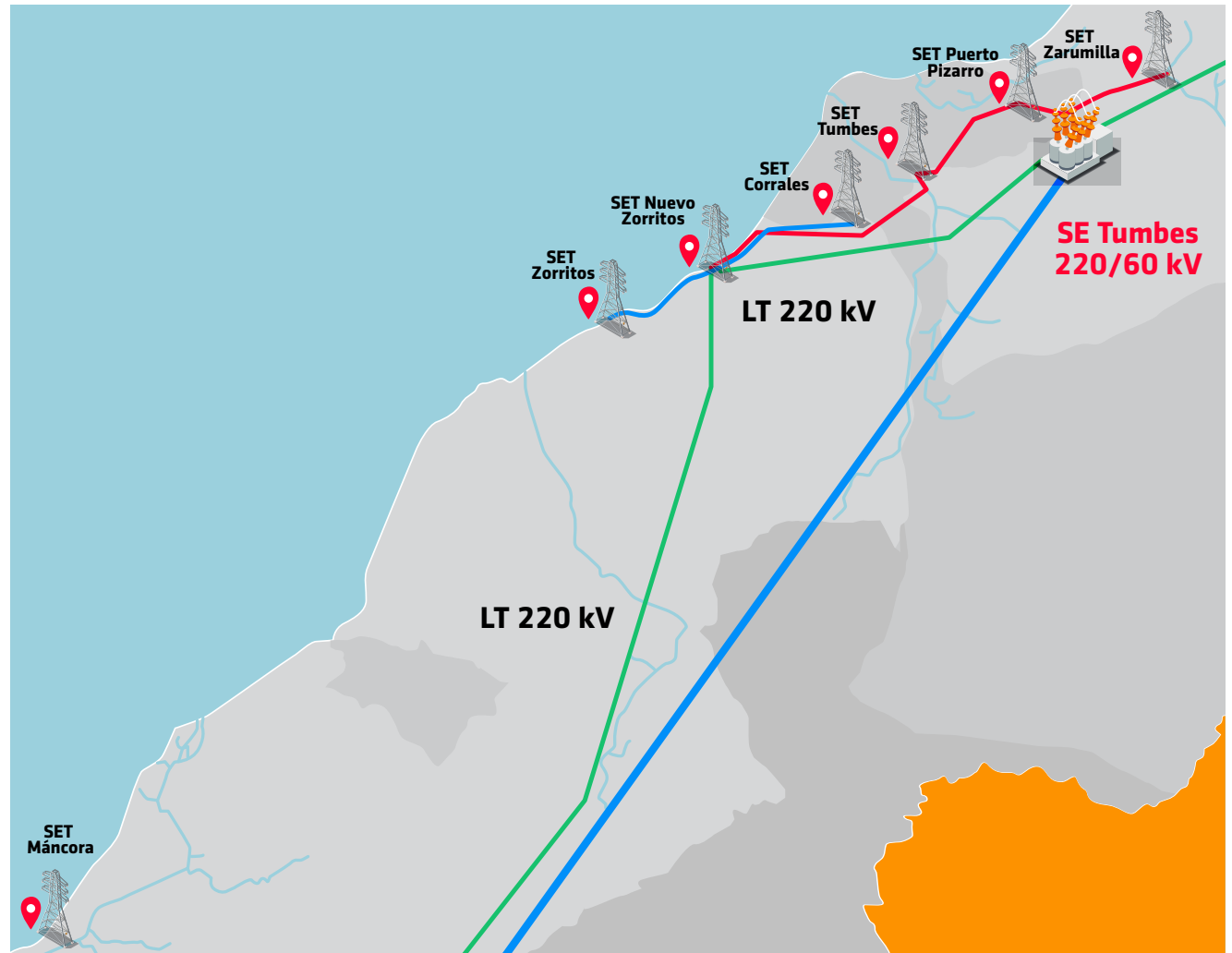


Estimated Investment

The total investment amount of the Project is estimated at 29.8 million US dollars (without VAT).

The Project of "220/60 kV - 75 MVA Nueva Tumbes S.S. 60 kV Nueva Tumbes -Tumbes T.L."

Has an estimated investment of US \$ 7.9 million and includes the cities of Zarumilla, Puerto Pizarro, Tumbes, Zorritos and Mancora, which are served from the sub-transmission system in 60 kV from the distribution company Electronoreste S.A. (ENOSA).



220/60 kV - 75 MVA NUEVA TUMBES S.S. 60 KV

NUEVA TUMBES – TUMBES T.L.



Scope

With this project, the problem of voltage drop in the electrical system in the Tumbes area will be addressed. Likewise, the capacity of

Likewise, the 220/60 kV transformation capacity will be increased by an additional 75 MVA to meet the electricity demand and will provide another supply point from the 220 kV system to the Tumbes area to improve the service reliability.



Area of Influence (Northern Area of the country)

The project is located in the department of Tumbes, province of Tumbes and has as its area of influence the cities of Zarumilla, Puerto Pizarro, Tumbes, Zorritos and Mancora.



Awarding Entity

Ministry of Energy and Mines - MINEM



PPP eligibility

According to the evaluation made through the Eligibility Criteria of the Ministry of Economy and Finance (value for money), it was verified that the Project meets the necessary conditions to be developed under the PPP modality.



Components

The project is divided into three main components:

- **Component 1:** includes the expansion of the 220 kV Nueva Tumbes Substation.
- **Component 2:** includes the implementation of the 220/60 kV - 75 MVA Nueva Tumbes Substation, comprising the 220 kV side and the 60 kV side.
- **Component 3:** includes the 60 kV transmission line, double triad 45 MVA per triad, and 2 km in length from Nueva Tumbes S.S. to the sectioning point of the 60 kV Puerto Pizarro – Zarumilla Transmission Line, for connection to Puerto Pizarro and Zarumilla substations.



Project Features

220/60 kV - 75 MVA Nueva Tumbes S.S.

- **220 kV side:**

- Connection to double bus bar system with transfer switch; Power transformer connection cell.
- One (01) 220/60 / 22.9 kV - 75/75/25 MVA (ONAF) power transformer. Space for the future expansion of the second and third 220/60 kV transformer.
- Protection, measurement, communications, and control systems, auxiliary services and others.

- **60 kV side:**

- One (01) transformation cell and two (02) 60 kV output cells. Space for future expansion of double bar and eleven (11) line cells.
- Protection, measurement, communications, and control systems, auxiliary services and others.

Connection links in 60 kV

- Design power: 45 MVA per triad
- Approximate length: 2 km
- Triad number: 2
- Rated operational voltage: 60 kV
- Maximum system voltage: 72.5 kV
- Phase disposition: Horizontal
- Support type: Assembled on wooden poles (Bipole)
- Conductor type: AAAC 250mm²
- Number of conductors per phase: 1
- Optical fiber cable: ADSS (24 fibers) one per triad



Project Features

60 kV Transmission Lines

- Rated operating voltage: 60 kV
- Maximum operating voltage: 72.5 kV
- Sustaining voltage at lightning impulse: 325 kVpeak
- Sustaining voltage at industrial frequency (60 Hz): 140 kV

(*) The values are referred to sea level, to be corrected according to the altitude of the facilities as appropriate.



Term

- Construction period: 18 months, once the financial closure and approval of the project design by the State have been obtained, among other requirements.
- Implementation period / Commercial Commissioning (POC): 40 months.
- Concession period: 30 years from the POC



Method of Payment

As it is a self-financed project, no payment commitment will be required that uses public resources or disbursement by any public entity or state company since it will be financed with the transmission toll that is included in the electricity rates that are paid by users.



Lands

The Concessionaire is responsible for the management and negotiation for the constitution of the easement and the corresponding payments for the use of the lands of the communities intervened during the execution of the Projects, in accordance with the Applicable Laws.



Benefits

- Improve the quality of life of 246 thousand inhabitants of the areas of influence and reduce poverty through an improvement in education (access to distance education), health (more access to medicines and vaccines, and improvement in services) and communication.
- Contribute to the improvement of productivity and employment related to commerce, manufacturing, construction, agriculture and fishing, activities that require a quality electrical service, together representing 52% of the economic activity of the department of Tumbes.



Capital Contributions

The Concessionaire can freely define the financing structure at any time, that is, the amount and terms of the debt.



Estimated investment amount

The total investment amount of the Project is estimated at 7.9 million US dollars (without VAT).



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PROINVERSIÓN Perú

RENZO ROJAS JIMÉNEZ

rrojas@proinversion.gob.pe

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