



# Transforming India's Power Landscape: National Open Access Registry: Setting up the enabling infrastructure for dynamic electricity trading in India

*India has charted a new path for energy sector reforms. Fueled by a resolute focus on clean, green power, the country is heavily investing in its renewable energy (RE) capacity. Adding a large quantum of RE generation to the power grid will enable India to transition its energy sector to low-carbon intensity and increase its overall energy security. However, large-scale integration of RE, which is variable and unpredictable by nature, also poses challenges for grid stability and management of demand-supply imbalances. The power grid's capacity to variable RE needs to be bolstered by implementing market-based power procurement mechanisms.*

## **CRITICAL NEED FOR FUTURISTIC MARKET MECHANISMS**

Real-time management of demand-supply variation is a key focus area for India. The June 2020 launch of the country's real-time market (RTM) platform was a landmark move in this direction. Building on that success, India's Ministry of Power (MoP) through POSOCO has initiated development of a National Open Access Registry (NOAR) to ease power trading. NOAR will be a centralized electronic platform to automate short-term open access approval processes and enable the intra-day market to operate more flexibly.

The need for such a platform is clear: RE variability leads to scenarios where states/control areas are left with demand-supply imbalances to manage. Imbalances on an intra-day basis due to fluctuations in RE generation have so far largely been managed within state control areas. Not only is there no effective system for inter-state sharing of surplus power/reserves, but there also is limited scope and incentive for state reserves to participate in the intra-day market due to technical constraints and an ineffective market model. The absence of an information technology (IT)-based system to render faster short-term open access approvals has been a major hurdle, impeding the market's ability to contract and deliver power more rapidly than the current turnaround time of around three hours. NOAR aims to plug these gaps.

## **NOAR: A ONE-STOP SOLUTION FOR REAL-TIME ELECTRICITY TRADING**

The Central Electricity Regulatory Commission (CERC), India's central regulator, looks upon NOAR as the pivotal enabling infrastructure needed to support smooth, dynamic real-time electricity market administration in India. CERC envisions the IT-based NOAR platform as a centralized, integrated system that will be accessible to all stakeholders, with functionalities for maintaining a centralized repository of information related to open access, inter-state corridor availability, interim approvals, and no-objection certificates. The NOAR platform will be a one-stop solution, wherein applicants can apply for a transaction based on corridor availability and the system can grant automatic recommendation for approval. NOAR will substantially reduce the response time for open access approvals and bring down the lead-time (gate-closure) in intra-day timescales to as little as half an hour.

NOAR will also include provision for a payment portal linked to alternative modes of settlement (including linkages to clearing house-based settlements). The system will include provisions to allow for future and proposed changes, such as transmission capacity allocation through e-bidding, cross-border transactions, and a payment gateway for open access clearances.

As India's long-standing partner in the reform agenda, USAID supported Government of India in the NOAR activity through its Greening the Grid - Renewable Integration and Sustainable Energy (GTG-RISE) initiative as a pilot – titled 'regional platform for reserves sharing' — on regional coordination and market redesign. The Power System Operation Corporation Limited (POSOCO) and USAID jointly funded a system integrator (SI) to develop, implement, and operationalize a fully functional NOAR. GTG-RISE also provided consistent support and technical assistance to POSOCO toward the NOAR development.

## DEVELOPMENT OF NOAR: A KEY TASK FOR USAID'S GTG-RISE PROJECT

Over the past four years, USAID's GTG-RISE initiative worked in close partnership with POSOCO and CERC to shape the framework guidelines for regional coordination, evaluate market-based mechanisms to address real-time imbalances, and evolve consensus on the way forward. NOAR's initiation is an outcome of this effort.

NOAR's creation and operationalization was an important piece of work for GTG-RISE. The GTG-RISE team started out with extensive discussions with the National Load Despatch Centre (NLDC), where the IT system is to be hosted, and with regional load despatch centres (RLDCs) and state load despatch centres (SLDCs) to obtain inputs on the existing processes for rendering short-term open access approvals to traders, generators, and drawal entities. The team then developed the process maps for these and obtained inputs to design the to-be processes for NOAR. Once the process maps were finalized, GTG-RISE then proceeded to assess the existing IT systems and draft the functional requirement specifications (FRS). The finalized processes were an input for CERC's issuance of NOAR regulations (fifth amendment of open access regulations).

The GTG-RISE team also conducted an IT systems assessment to understand the as-is technology landscape at NLDC, the RLDCs, and the SLDCs and to determine the appropriate technology alternative needed for NOAR implementation, based on which the to-be architecture was then designed. The learning from the IT systems study and technology alternatives went into preparing an RfA (request for application), covering the functional, system, technical, budget, monitoring, and training aspects, among others, for selecting the implementing agency. USAID, as part of its GTG-RISE project, supported POSOCO in design and issuance of the RfA document. The tender document covered procurement

of the necessary hardware and license components, software implementation in 12 months, and operations and maintenance of the NOAR system for 7 years post its go-live. Following a competitive vendor selection process, PWC (along with its two consortium partners, CtrlS and Wizertech) was selected as the system integrator (SI) for NOAR implementation. POSOCO and GTG-RISE set up a robust project governance framework and formed the National Open Access Registry - Implementation Monitoring Committee (NOAR-IMC) to lead and co-ordinate the project.

The NOAR development kicked off with a virtual contract signing ceremony, on July 31, 2020, between POSOCO, USAID and the selected SI. The platform's development by the SI is currently underway, with the NOAR go-live planned for September 2021. GTG-RISE is consistently providing the team program management support, including review of progress, evaluation of design architecture, and validation (acceptance) of test results.

## THE WAY AHEAD

The NOAR will grant short-term open access approvals for inter-state transactions, marking a huge departure from the current practice of each state using its own procedures for granting approvals for intra-state transactions. While a few SLDCs, such as those in Gujarat and Haryana, have already developed an in-house software to grant open access approvals, most states still employ manual processes for open access approvals for intra-state transactions. Once the centralized IT-based NOAR is implemented, the state-specific open access approval processes will need to be integrated with NOAR to arrive at a unified, integrated system for short-term open access approvals. It is expected that after the piloted NOAR application goes live, there will be a further requirement of integrating with NOAR the existing open access approval systems available at each SLDC. With 33 SLDCs across the country covering all the states and union territories, this represents an immense opportunity for the pilot to be scaled up across all states.



**NOAR is a huge step in India's ongoing journey of power market reforms. It will improve ease of doing business and most importantly will bring transparency in the system. Expedient development and implementation of NOAR in what is one of the world's largest synchronous power grids will be a moment of great pride for all stakeholders. I wish POSOCO the best and thank USAID for their support in all aspects of power market reforms**

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