Project Title Consulting Services for Preparation of Specifications for New Substation Automation Systems at the National Power Transmission Corporation of Vietnam Electricity

Contracting Agency National Power Transmission Corporation (NPT) of Vietnam Electricity (EVN) with funding from the World Bank

Project Organization Prime Contractor: Savu C. Savulescu from Energy Consulting International, Inc. as an Independent Consultant, with full responsibility for all the technical and project management aspects of the project

Summary The project encompassed:

- Reviewing the NPT's Current Status Report for SAS applications in Vietnam
- Reviewing the NPT's existing SAS Specifications
- Conducting site visits at major 500 kV and 220 kV substations for technical documentation purposes
- Preparing a report and a presentation about Global Trends in SAS Applications
- Updating the SAS Specifications draft to reflect the Smart Grid-ready technologies of today
- Evaluating the SAS Vendors' demonstrations
- Developing the bid evaluation methodology
- Preparing the Final Report

Background In recent years, in line with the sustained growth of the Vietnamese economy, which is rapidly getting integrated into the World community, EVN has conducted a significant number of substation automation and integration projects aimed at both new and existing substations. The first substation automation systems were installed in 1999 in the Nha Be 220 kV substation in Southern Vietnam, and the Dong Hoa 220 kV and Nam Dinh 220 kV substations in Northern of Vietnam. These early systems have been plagued by limitations, such as: major operational problems in the structure and architecture of the automation devices; inadequate reliability and availability; lack of flexibility to allow the integration of new facilities. The most probable, and quite fundamental, cause of the limitations apparent in these early installations was the lack of technical standards that EVN could apply, and rely on, when commissioning substation automation systems. In order to improve this situation, on October 10, 2003 EVN issued a technical standard: "Technical specification for integrated substation". Subsequently, in October 2005, EVN designated a working group for the purpose of reviewing and surveying the substations that had been equipped with automation systems as directed by the 2003 standard. Although the EVN SAS specifications have been used for 5 years already, NPT identified the need, which is also consistent with the common practice in this field, to update and upgrade the

current version of the SAS specifications so that a revised and improved document revision could be developed and adhered to. Accordingly, NPT has undertaken the project Preparation of Specifications for New Substation Automation Systems (SAS).

Objectives

The primary objective is to develop a modern, state-of-the-art approach to implementing substation automation and integration in a manner that meets the following goals:

- Use Intelligent Electronic Devices (IEDs) to reduce the number of components required to support protection, control, and data acquisition functions in the substation environment
- Develop a SAS design that is: suitable for new substations; incorporates sufficient flexibility to allow the integration of existing substations; constitutes an information system platform on which advanced applications and data storage, retrieval and dissemination capabilities can be implemented; promotes unrestricted interoperability, maintainability, upgradeability and growth, i.e., protects the NPT investment in substation information processing facilities against recurring obsolesce
- Use scalable SAS protocols and equipment for the purpose of accommodating distribution automation functions
- Address cyber and physical substation safety.

Scope of Work

- Task 1: Review EVN's Current Status Report for SAS Applications in Vietnam, including a gap analysis of comparable world-wide utility practices with substation automation and integration for the purpose of suggesting improvements and directions necessary for EVN to align or achieve best practice
- Task 2: Review the EVN's Existing SAS Specifications, with particular emphasis on key business requirements, substation standards and the typical automation applications required in NPT substations
- Task 3: Global Trends in SAS Applications, encompassing the preparation of a presentation of: technologies being currently implemented; future directions for substation automation; issues that NPT should be aware of in developing, maintaining and enhancing automation facilities in substations
- Task 4: Conduct a site inspection at major 220 kV and 500 kV substations where SAS facilities are currently installed
- Task 5: Prepare New Draft SAS Specification for EVN and SAS Vendor Demonstration Plan, the later including the: timetable for demonstration of current Vendor products; outline of the functionality that will have to be demonstrated by the Vendors
- Task 6: SAS Vendor Demonstration and Evaluation Report
- Task 7: Final Report on SAS Applications of EVN and Final SAS Specifications

- Task 8: Preparation of a Bid Evaluation Methodology that will allow NPT to conduct an objective, transparent, fair and balanced evaluation of the bids received from SAS Vendors
- Task 9: Conduct Bid Evaluation Methodology Workshop and Final Presentation of Project Results.

Period of Performance July - December, 2009