This study aimed to assess the performance of National Grid Corporation of the Philippines (NGCP) Laoag Substation with interconnection of Northwind as to Power Quality Standards, Reliability Standards, System Loss Standards and Safety Standards.

Primary data used in the assessment of Power Quality was downloaded through the Dranetz BMI - Encore Series 61000 data monitoring and operational event recorder installed inside the Control Room of Laoag Substation. Data used in the assessment of Reliability and System Loss was gathered through the substation’s Monthly Interruption Report and Monthly Operational Report respectively. Data for the Safety Standard assessment was the easiest part in this research knowing initially that NGCP-Laoag targeted the zero accident goals for the past 2 years.

The researcher utilized a descriptive method of research as a framework of the study.

Purposive sampling technique was used to select specific dates applicable to the change in the flow of power entering and leaving NGCP Laoag substation relative to the interconnection of Northwind.

The minimum, maximum, average, frequency and percentage were utilized to tabulate the operational events in the network. Graphical presentation was used to determine the compliance of NGCP Laoag to the corporate target inclined with grid user's compliance to the Philippine Grid Code. Numerical and descriptive ratings were used to measure indicators and other variables in the study.

Result of the study showed that some variables under Power Quality such as overvoltage, voltage unbalance, harmonic distortion and transient
Voltage variations were found to be the current issues that need to be addressed by the management of NGCP and Northwind.

Under Reliability, the result showed that INEC-Burgos needs to be supplied by an independent transmission line directly connected to NGCP Laoag in order to increase the reliability of the system.

System loss standard is undetermined for 2011 and at present due to allegedly erratic statistical meter gauges.

The researcher comes up with a development framework to address the identified weaknesses of NGCP Laoag with interconnection of Northwind.