

NEED/OPPORTUNITY STATEMENT (NOS)



Substations-Use of NonConventional ITs

NOS- 000000001578 revision 0.0

Ellipse project no.: P0009365

TRIM file: [TRIM No]

Project reason: Capability - Improved Asset Management

Project category: Prescribed - Network-Other

Approvals

Author	Adam Hoare	Secondary Systems Senior Analyst
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Approved	Lance Wee	M/Asset Strategy
Date submitted for approval	17 November 2016	

Change history

Revision	Date	Amendment
0	20 October 2016	Original Document
1	17 November 2016	Update to format

1. Background

Measurement of voltage and current within the TransGrid network currently follows traditional methodologies comprising conventional High Voltage instrument transformers and direct copper cabling to secondary equipment. These technologies utilise magnetic coupling principals where analogue to digital conversion is performed within an Intelligent Electronic Device (IED).

As new secondary technologies are deployed onto the network, an opportunity exists to investigate the utilisation of Non-Conventional Instrument Transformers (NCITs) for the purpose of measuring voltage and current. NCITs shift the analogue to digital conversion from the IED to the instrument transformer. Within the wider transmission industry, NCITs have gained greater acceptance due to their enhanced performance characteristics, reduced safety risks and perceived seamless integration with emerging IEC-61850 technologies.

2. Need/opportunity

The introduction of NCITs onto the HV network is a key enabler within TransGrid's long term vision of a Smart Network¹. NCIT technology will allow TransGrid to move toward the concept of a fully digital substation and provides an ability to seamlessly integrate with IEC-61850 solutions.

In addition to the above, the rollout of NCITs has several other advantages including:

- > Reduced VT and CT replacement costs;
- > Reduced secondary cabling costs; and
- > Reduced on-going routine maintenance costs.

Based on these potential benefits TransGrid proposes to investigate the testing and pilot deployment of NCITs onto the HV network.

It is estimated that NCITs will provide a 15% overall saving to existing CT and VT replacement strategies. The savings are realised through reduced requirements of footprints, footings, steel structures and secondary cabling. Applying a limitation that this technology will be appropriate to deploy for only 75% of replacements, this will represent a potential cost saving of approximately \$715.5k per annum based on the projected CT and VT replacement programs.

3. Related needs/opportunities

Nil.

4. Recommendation

It is recommended that options be considered to address the identified need/opportunity.

¹ Smart Network Vision, 2016.