ESB NETWORKS

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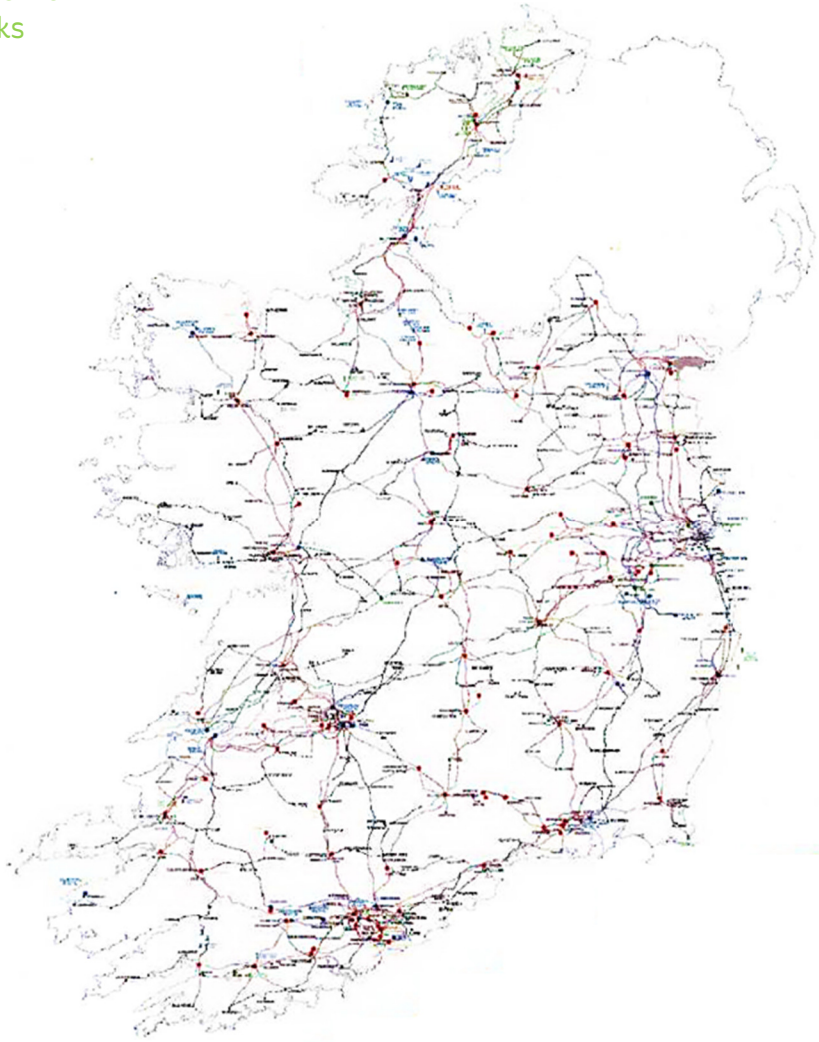
38kV & 110kV Station Special Load Readings

Confidential Information:

2016/2017

Smart Distribution Demand Customer Connections
Asset Management
ESB Networks



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38kV & 110kV Station Special Load Readings

2016/2017

Smart Distribution Demand Customer Connections
Asset Management
ESB Networks

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Next Review: 2018

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Network Asset Manager	1
Network T&D Programme Manager	1
Manager, Strategy and Regulation	1
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Manager, Distribution & Customer Services	1
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1. Notes on Special Load Readings

1.1. Special Load Readings

Special Load readings (SLR) are a coincident set of measurements of simultaneous load for all distribution substations. The reading are recorded for 4 times annually as follows;

- Winter : Measured at 12.30 and 18.00 hours on the second Thursday in December. If the second Thursday in December is the 8th, then the measurements are taken on the following Tuesday, December 13th.
- Summer Peak: Measured at 12.30 hours on the fourth Thursday in June.
- Summer Valley: Measured at 06.00 hours on the Sunday preceding the early August Monday Public Holiday.

1.2. Data Sources

Most readings are acquired via Scada and where Scada is not installed or is not working (full or in part) station visits are requested to make manual measurements. Bulk supply metering is used where it is available, which us usually 110kV stations. In addition customer meter records are used to provide exporting embedded generation and HV connected customer measurements.

An extensive collation and reconciliation process is completed to prepare the final report. All values are cross checked where possible e.g.

- Sum of feeders with corresponding source transformers
- Sum of 38kV station trafo with supplying 38kV feeders.
- Feeders dedicated to export generators are checked against billing metered values.

1.3. Data Assumptions

Results are presented as MW and MVAr however certain assumptions have been made in the preparation process.

- Values recorded in Amps are converted assuming 0.95pf and nominal voltages.
- Balanced 3ph loads are assumed.
- MW and MVAr values, where available, are used as a superior measure to Amps
- Bulk supply point measured values are taken as better accuracy than Scada
- Customer revenue metering values are taken as better accuracy than equivalent Scada points.

1.4. Results

The reported values represent net demand load with any exporting embedded generation netted off. Adjustments are also applied for any abnormal load transfer on the respective days. Winter values have a peak correction factor applied.

1.5. New Presentation

From 2017 the main section of the report has been redesigned as follows:

- All stations are listed in alphabetical order regardless of voltage level.
- Each station header title is colour coded according to transformer voltage ratio, see legend below.
- Stations which have more than one secondary voltage are given a separate listing for each voltage.
- Transformers that are operated single or in parallel are listed and grouped accordingly.
- Customers with export potential >25kVA are listed along with the connecting feeder. This for convenience in associating generators with feeders and has no impact on the load values presented.
- Stations exclusively used for export are excluded from the main report.

1.6. Colour Legend

38/MV station	
110/MV station	
110/38kV station	
6.6/MV Station	
Transformer	
Suspect Accuracy	

Interpreting SLR Reports.

- Peak Correction Factor (PCF) has been applied to all of the reports in this book except the customer stations report and the overall reconciliation at the back.
- The reconciliations (e.g. sum of outlets vs. sum of transformers) are to within a tolerance of +/-5% or 0.5MW.
- In cases where an MV outlet is operating at 20kV via an interface transformer, the voltage in the report may show 10kV; this is because the SCADA readings are at the 10kV busbar before the interface transformer.

1.7. 2016/17 Specific

1.8.1. SLR Day

Special Load Readings in 38kV and 110kV Stations involve the simultaneous reading of station loads in all 38kV and 110kV stations for a pre-selected day during the winter peak period each year. For the peak period of 2016, the selected day was Thursday December 13th.

1.8.2. System Peak / SLR Day Loading.

The overall system peak occurred on Thursday December 1st. The system demand on SLR day was 3814 MW at 12:30 and 4515 MW at 18:00. A Peak Correction Factor of 1.05 and 1.04 has been applied respectively to the readings taken at 12:30 and 18:00 on SLR day. Peak demand was 4718.04 MW at 17:39 on December 1st (01/12/16)

1.8.3. Summer Peak and Valley Readings

Summer Peak and Valley Readings are listed. Summer Peak Load was on Thursday June 23th 2016 and Summer Valley Readings were taken on Sunday July 31st 2016.