
Information and Incentives Project

Review of Proposals for
Rebasing of Targets - NEDL

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1 Summary

Ofgem has appointed the Consortium of Mott MacDonald and British Power International to provide an audit opinion on the re-basing of IIP targets for those electricity distribution companies that have a re-opener clause in their licences.

NEDL is one such electricity distribution company and the present report provides an audit opinion on the submission that NEDL has lodged with Ofgem in support of its claim for the re-basing of its IIP targets at the LV level.

The main cause of the change in reporting being claimed by NEDL is the progressive introduction of its Trouble Management System (TMS) for central reporting, which began in April 1998 and was largely complete by May 1999. It has not been possible for NEDL to report incidents using both the old and new systems in parallel since that time so the effect of the system changes cannot be directly measured. NEDL has therefore based its analysis on trends on a cumulative sum (cusum) analysis.

Recommendations were made by the visiting auditors following visits to the company in September and December 2002. NEDL's final submission incorporates these recommendations and clarifies the detail of the claim that the company is making.

The Consortium is of the opinion that NEDL has adopted a reasonable methodology for identifying step changes in the numbers of reported incidents and number of customers affected by reported incidents at the LV level. Whilst it is recognised that, by its nature, the cusum analysis requires a degree of judgement and may be subject to inaccuracy, discussions with NEDL have reached agreement on the conclusions that can be drawn from this analysis.

The Consortium is of the opinion that the NEDL submission represents a fair and reasonable statement of the effects that changes to definitions and changes to NEDL's measurement systems have had upon the company's reported performance.

2 Introduction

As part of the final proposals for the IIP incentive scheme, Ofgem made a number of revisions to companies' 2004/5 targets for the number and duration of interruptions to supply to take into account the effects of:

- changes to definitions that were introduced in February 2001 to improve the consistency of reporting; and
- changes in measurement systems that companies had made, or were introducing, to improve the accuracy of their reporting.

Ofgem has advised the Consortium of Mott MacDonald and British Power International that there is still uncertainty over the impact of the changes that have been made for measurement systems and definitions for several companies. Ofgem has appointed the Consortium to assess this aspect of these changes within specified companies. The distribution licences of these companies provide for each of the companies re-opening discussions with Ofgem if it considers that the introduction of new measurement systems and definitions mean that its existing targets are inappropriate. NEDL, the company that holds the electricity distribution licence for operating the distribution network in the 'North Eastern' area, is one of the companies with this re-opener clause in its licence.

This report provides a review of the methodology and conclusions contained in the submission that NEDL has made to Ofgem in support of its request for the re-basing of its IIP targets.

3 Audit Process

This section illustrates the audit process.

3.1 Resources

The Consortium has received copies of NEDL's initial, second and final submissions to Ofgem, dated 07 June 2002, 5 September 2002 and 2 January 2003 respectively. These submissions contain details of the company's methodology and conclusions from internal studies into its reported performance.

In the covering letter to the initial submission, the company suggested that a technical meeting be held "to assist discussion and understanding of the issues". This initial technical meeting was held at NEDL's offices in Penshaw on 03 September 2002.

The visiting auditors were:

- Geoff Stott of British Power International
- Blair Walter of Mott MacDonald.

The people from NEDL were:

- Jim Morrell
- Ian Punshon

David Miller of NEDL also joined the end of day discussion.

Following the implementation of recommendations made by the visiting auditors and clarification of information that the company used in support of its claim, a follow-up meeting was held at NEDL's offices in Penshaw on 18 December 2002.

The visiting auditors were:

- Geoff Stott of British Power International
- Blair Walter of Mott MacDonald.

The people from NEDL were:

- Jim Morrell
- Ian Punshon
- Andrew Spencer

James Hope from Ofgem's Quality of Supply Team was present throughout this follow-up meeting.

3.2 Induction

At the initial meeting on 3 September 2002, the NEDL team used an opening presentation to illustrate to the visiting auditors how the new measurement systems operate and how these relate to the reporting of incidents under the requirements of IIP. This included a real-time demonstration of the methods used to capture incidents at the LV and HV levels and the fact that, once captured, a record cannot be deleted from the measurement systems without leaving an audit trail.

A comprehensive introduction to the company systems had already been given to the joint British Power International / Mott Macdonald team during the visit to audit the sample of incidents as part of the wider IIP audit work being undertaken during 2002. It is not intended to reproduce that team's findings here.

3.3 Evidence submitted by NEDL

In order for NEDL to understand the reasons for the changes it had experienced in reported performance the company had undertaken a cusum on the reported numbers of customers per incident and the number of reported incidents per day. The intention of this analysis is to expose trends by identifying a "seed" value for different periods of data and basing data for that period on the seed value. Step changes in data (such as average number of customers per incident) are more readily visible by this analysis than by examination of the raw data. However, it must be recognised that the setting of seed values requires a degree of judgement that could potentially affect the result.

In order to gain confidence in its approach, NEDL began by studying the reporting of incidents at the HV level over a ten-year period. Weather-related faults were removed manually from the data to enable examination of a more stable sample. The associated cusum trend lines highlighted areas where known changes, such as the introduction of new measurement systems, have occurred.

The NEDL study then considered reported incidents at LV. As for the HV study, weather related effects were removed from the sample by examining only underground LV faults, which NEDL advise account for around 75% of all LV incidents reported. The cusum trend lines highlight areas where known changes have occurred. Three main effects were highlighted by NEDL's analysis as follows:

- an increase in the reported number of LV faults per day by the initial introduction of TMS in April 1998
- a further increase in the reported number of LV faults per day by the move from NaFIRs to NEDL's own "IRIS" system in May 1999, removing manual interpretation of records from TMS. This also increased the reported number of customers per fault through the introduction of a system to automatically predict customer numbers using a static connectivity model
- a further increase in reported customer numbers per fault when TMS started to use the full ('live') connectivity model in April 2000.

To provide an element of independent evidence to the company's conclusion that the number of actual faults was not increasing, records of the issue of LV fuses were examined for the three reporting years of 1998/99, 1999/2000 and 2000/01. This showed no significant variance in the numbers of LV fuses issued from stores. The company therefore concludes that the increase in its reported performance at LV is due to the full impact of the introduction of its measurement systems, which were only partially taken into account at the time the IIP targets were set.

NEDL has used the output from these studies as the evidence in support of its submission to Ofgem under the re-opener clause in its distribution licence. At the meeting on 03 September, the company tabled an updated version of this evidence for evaluation of methodology and accuracy by the visiting auditors. The submission was further updated and sent to Ofgem under cover of a letter dated 09 September 2002.

Following requests for clarification of certain aspects of NEDL's submission, a further revision was made to the company's submission and this was tabled at the meeting on 18 December 2002. At that meeting, the visiting auditors were able to agree with the company's assessment of the IIP targets that should apply to its higher voltage systems. Further round-table agreements were also reached on the level of IIP targets that the visiting auditors could recommend for application at the LV level.

NEDL's final submission was made to Ofgem under cover of a letter dated 2 January 2003.

4 Summary of Findings

4.1 Methodology

The visiting auditors reviewed the approach that the company has adopted in analysing its reported incidents by the cusum analysis. The exclusion of weather-related incidents is judged to be sound as this eliminates an unpredictable variable from the analysis. An examination of the cusum trend lines for the incidents at the HV level provides strong corroboration between step changes in incident reporting and known system changes and this gives confidence in the use of this approach. At the LV level, the cusum analysis highlights reasonably clear step changes in reported faults per day and reported customers per fault that would appear to support the three main causes described in the previous section.

Clarification from NEDL on the chronology that it provided for the introduction of new measurement systems has removed initial doubts and has enabled the visiting auditors to agree the consequential changes that introduction of these new measurement systems has had upon the company's reported performance.

During the initial visit, dip-stick tests were carried-out on the supporting data that has been used to produce the ten-year cusum trend lines. NEDL has corrected a small discrepancy in the tabulation of data subjected to audit at the initial visit. This data was re-audited during the follow-up visit and no further discrepancies were found. The Consortium can therefore confirm that the data used by NEDL in support of its claim can be considered accurate for the purposes of the rebasing exercise.

4.2 Comments on the NEDL analysis

Discussions at the follow-up meeting clarified how NEDL has used the results of the cusum analysis to support its claim for the re-basing of its IIP targets and the visiting auditors are satisfied that the company has been conservative in its analysis. Similarly, round-table discussions clarified how NEDL has used the information from the setting of the 'base year' in its analysis. The company confirmed that it is not in any way seeking to re-open discussion on Ofgem's linear trend line or the levels at which the base year figures are set.

NEDL's clarification of its initial submission confirms that the change in measurement systems affected the reporting of the number of customers affected by incidents as well as the number of incidents at LV, thereby giving further confidence in the company's analysis. Discussion at the follow-up meeting clarified how the company's analysis had taken into account the various factors that can affect its reported performance and the visiting auditors are now satisfied that the company's conclusions are reasonable.

Dip-stick tests carried-out during the follow-up visit verified the data on the usage of LV fuses that NEDL had collected in support of its submission. The visiting auditors can therefore support the company's claim that the number of LV faults has not substantially changed over the three-year period 1998/1999 to 2000/2001.

The Consortium is satisfied that the analysis contained within the final submission made by NEDL is sound and that NEDL's conclusions represent a fair and accurate summary of the targets that should be applicable under the terms of the IIP.