Information and Incentives Project

Review of Proposals for Rebasing of Targets – SEPD

February 2003

British Power International

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Issue and Revision Record

Rev	Date	Originator (Print) (Signature)	Checker (Print) (Signature)	Approver (Print) (Signature)	Description
A	24 Jan 2003	G. Stott	B. Walter	S. Harrison	Draft Issue
B	11 Feb 03	G. Stott	B. Walter	S. Harrison	Final Issue

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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.

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

SEPD has observed a significant increase in the reported number of CI and CHL per LV incident due to the recent introduction of its IIP compliant measurement systems. However, it has not been possible for SEPD to report incidents using both the old and new systems in parallel so the effect of measurement system changes cannot be determined by direct comparison.

SEPD performed an analysis on the reported CI and CHL figures using monthly averages and estimated trends but the Consortium does not consider this approach to be robust. The Consortium has therefore obtained raw data from SEPD and performed a cumulative sum (cusum) analysis to identify step changes in SEPD's reported performance at the LV level. On the basis of this analysis, the Consortium is of the opinion that the increases in CI and CHL due to the introduction of SEPD's IIP-compliant measurement systems at the LV level are 101% and 103% respectively.

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 that there is still uncertainty over the impact of the changes that have been made to the measurement systems of 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 its new measurement systems means that its existing targets are inappropriate. SEPD, the company that holds the electricity distribution licence for operating the distribution network in the 'Southern' area, is one of the companies with this re-opener clause in its licence.

This report provides a review of the submission that SEPD 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 was present at a meeting held on 29 November 2002 when SEPD presented its initial submissions to Ofgem. At that meeting, the company advised that its new IIP-compliant measurement systems had been fully introduced during January 2002. However, SEPD was reluctant to use data beyond March 2002 in the rebasing analysis as this data appeared to indicate a downward trend which SEPD claimed was the result of efficiency improvements in the company operations.

The significant changes that the company was experiencing concerned incidents at the low voltage level, where both the numbers of customers affected by an incident and the duration of incidents were showing an increase on previous years.

It was suggested that SEPD should update its submission with the further experience it had gained using its fully IIP-compliant systems so that a more robust comparison could be made between reported performance before and after the introduction of the IIP compliant systems. An updated version of the supporting charts, showing the period between April 2000 and August 2002, was subsequently provided under cover of SEPD's email of 06 December 2002. SEPD also provided a CD containing the raw data on incidents during the period under consideration. This enabled the Consortium to perform a cusum analysis on the data to determine if any step changes could be identified.

It was also agreed that a follow-up meeting would be held at SEPD's offices to explore and audit the methodology used by the company to gather the evidence that is contained in its submission.

This follow-up meeting was held at SEPD's offices in Portsmouth on 08 January 2003.

The visiting auditors were:

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

The people from SEPD were:

- Mike Green
- Paul Hemsley
- John Blyth

Chris Watts and James Hope from Ofgem's IIP and Quality of Supply Team were present throughout the visit.

3.2 Induction

By way of induction for the visitors, the SEPD team provided a brief tour of the emergency service centre, resource dispatch and high voltage control facilities at Portsmouth.

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, when it was found that "the systems are compliant with the requirements of the RIGs and are capable of delivering the required levels of accuracy". Those findings will not be reproduced here.

3.3 Evidence submitted by SEPD

SEPD has prepared charts to demonstrate the changes it has experienced in the number and duration of interruptions at LV. These charts show the reported number of customers affected by incidents and the number of reported customer hours lost, plotted as monthly averages of the raw incident data on a per incident basis. The curve of monthly averages has been used by SEPD to determine trend-lines for the various phases described below. However, these trend-lines are hand-drawn based on a visual assessment of the graphs rather than a calculated assessment. In SEPD's initial submission, these charts covered the period between 01 April 2000 and 28 February 2002.

SEPD has subsequently provided two updated versions of these charts. The first update covers the period between 01 April 2000 and 31 August 2002. The second update, tabled at the follow-up meeting held at Portsmouth on 08 January 2003, covers the period between 01 April 1999 and 31 October 2002.

In support of the second update SEPD also provided a document that identifies four distinct phases that the company can recognise in the development of its measurement systems:

- Phase I covers the period prior to 01 November 2000 in which the site operatives estimated the number of customers affected and the duration of interruptions to supplies. It was usual practice for the restorations to be combined into one single stage. The site operative was only required to report 'job completion' to the company's emergency service centre. The company states that little or no management or internal audit processes existed to verify any data. The data was entered into the company's NaFIRS reporting system by "one of several depot clerks". During this period SEPD suggests that the number of Customer Interruptions (CI) remained relatively constant but that the duration of interruptions (CHL) shows a steady reduction due to a "basic driver for improving efficiency in supply restoration";

- Phase II covers the period between 01 November 2000 and 31 December 2001. During this period the company states that an "improving managerial focus" was being applied to "gain more accurate information from site" and that this resulted in improved accuracy in the estimates provided by the site operatives, including the numbers of customers affected by incidents at the sub-feeder level. The company states that, "by the summer of 2001, increasing management focus ……. resulted in an increase of approximately 65% in reported CI and CML". SEPD carried-out a retrospective audit of all LV incidents that had occurred during June 2001 in order to gain an understanding of the likely impact of the proposed new measurement system which would include LV connectivity. The company concluded "that the site estimates were still under-reporting customer numbers but the true extent of the issue was not clear";

- Phase III covers the period between 01 January 2002 and 31 March 2002 during which the company's IIP-compliant LV connectivity model was introduced. The company's narrative states that the "improving managerial focus" was continuing and that the "site operative is now made aware of customers on LV feeder in real time". The introduction of the LV connectivity model "completely removed the requirement to estimate customers for whole feeder incidents". The narrative states that the input of the data into NaFIRS was still being completed by "one of several depot clerks". The company states that "any underlying improvement in efficiency would have been hidden by the significant changes in reported performance during Phases 2 and 3";

- Phase IV covers the period from 01 April 2002 onwards. The company states that "considerable managerial focus to gain more accurate and timely information from site" is inherent in its new measurement systems. SEPD's new measurement systems include the centralisation of incident data in real time and an interactive communication link between site and office so that regular updates are entered onto the company's database, enabling better information to be relayed to customers. The company concludes "in this Phase, because the measurement system is now stable, the underlying steady improvement in CHLs per incident seen in Phase I is again revealed".

SEPD states, "With this history in mind, it is not reasonably practicable to determine the comparative baseline of LV CIs to LV CHLs. However, we can be sure that the processes, which were used historically, translated true performance into a statistic that was regarded as the 'norm' and was used to generate company and regulatory targets. Consequently we believe that the step change from the end of Phase I to the end of Phase 3 is the factor that translates the historic target into a revised target up to 2005."

SEPD has requested that Ofgem considers the whole of this information in support of the company's submission under the re-opener clause in its distribution licence.

At the meeting held on 08 January 2003, the company was asked to provide fuller information to better inform the audit process regarding any chronology associated with the introduction of specific changes to its measurement systems and any other supporting evidence, such as management instructions, that would be useful to the Consortium in forming an audit opinion.

Further information was subsequently received under cover of an SEPD email of 16 January 2002 and a subsequent letter of 20 January 2003. This information contains details of three emails that the company issued to its management team on 17 April 2001, 17 August 2001 and 08 February 2002. The information also contains material presented in a series of road shows to SEPD staff in August 2001 and the agenda of an Operational Managers' meeting held in October 2001.

4 Summary of Findings

During the visit on 08 January 2003, the Consortium carried-out dipstick checks on the accuracy of the process that SEPD had used to extract data from its database for use in the production of the charts contained in the company's submission. These tests re-extracted the data and a good correlation was found between these figures and those previously extracted by the company, with minor variations found in recent data which SEPD advised is due to further checking and updating of the NaFIRs database. The data used by SEPD in its analysis is therefore reasonably consistent with the actual NaFIRs data, however the analysis itself is basic and the Consortium considers that the hand-drawn trend lines produced by SEPD cannot be relied upon for the rebasing of SEPD's targets.

The Consortium's cusum analysis on the raw incident data provided by SEPD indicates two clear step changes in the average CI and CHL per incident over the period in question with otherwise stable periods. The results indicated by the cusum analysis are presented in Table 1 and Figures 1 and 2.

Table 4-1 – Results of Cusum Analysis on CI and CHL per Incident

Period	Average CI per Incident	Average CHL per Incident
Base period 1/4/99 to 1/6/01	9.62	34.84
1/6/99 to 1/12/01	12.41	49.95
1/12/01 to 30/9/02	19.32	70.79
Overall Increase	101%	103%

Comparing the step changes identified in the raw incident data with the chronology provided by SEPD it is apparent that the step changes do not match exactly with the various phases of measurement system change described by SEPD. However, in the chronology SEPD asserts that while Phase II started in November 2000 it was in the summer of 2001 that the company noticed the dramatic increase in CI and CML, which is consistent with the first step change identified by the cusum analysis. The second step change appears to occur around 1 December 2001 in the cusum analysis for both CI and CML and this broadly agrees with the date when SIMS II was implemented. The SEPD chronology does not identify an exact date when the company started using SIMS II but indicates that Phase III started in January 2002.

Regarding SEPD's assertion that average CHL per incident has been steadily decreasing over the period under consideration due to ongoing efficiency improvements made by the company, the Consortium is unable to support this trend with any confidence. Whilst the documentary evidence submitted by SEPD demonstrates an increasing emphasis on accuracy of information between site and network management centre and the cusum analysis carried-out by the Consortium shows a slight improvement in CHL in recent months, the company has been unable to provide any robust data on which the Consortium can provide a firm audit opinion as to why the reported performance in CHL is improving at a faster rate than that of CI. Experience within other parts of the industry suggests that the rate of improvement in CI and CHL is generally comparable. The Consortium therefore recommends that the seed values presented in Table 1, representing average values over the periods identified, be used for the rebasing of SEPD's targets without any allowance for downward trends due to efficiency improvements.

Referring to the four Phases that SEPD has identified, the Consortium comments as follows:

- Phase I – historically, the reliance on estimates from site operatives was a common practice within the industry; the prime objective was to restore supplies as quickly as possible and little, or no, emphasis was placed upon accuracy of reporting at the LV level. Furthermore, by the very nature of the way in which the information was provided, many factors affected the accuracy of the information and it is best considered as inaccurate and unreliable.

- Phase II – examination of the documentation provided by SEPD confirms that the company was seeking to improve its management of incidents, particularly at the LV level.

- Phase III – the Consortium agrees that the introduction and use of SEPD's IIP-compliant LV connectivity model would provide more accurate information on the numbers of customers affected by interruptions. Examination of the documentary evidence provided by the company supports its statement that it was improving the communication links and accuracy of information flow between site and its network management centre, thus further improving the accuracy of reporting, especially at the LV level.

- Phase IV – the Consortium is of the opinion that the centralised recording and reporting of incidents would provide the most accurate and reliable method of managing incidents at the LV level.

It is recognised that the setting of periods and seed values for a cusum analysis requires a degree of judgement. However, from the cusum analysis that the Consortium has carried-out on SEPD's raw incident data, two clear step changes are evident and the data is reasonably stable around the seed values in comparison with similar data from other DNOs.

The Consortium therefore recommends that SEPD's IIP targets at the LV level be re-based to allow for an increase in reported CI and CHL of 101% and 103% respectively due to the introduction of IIP-compliant measurement systems.

Figure 1 - Cusum LV CI per Incident

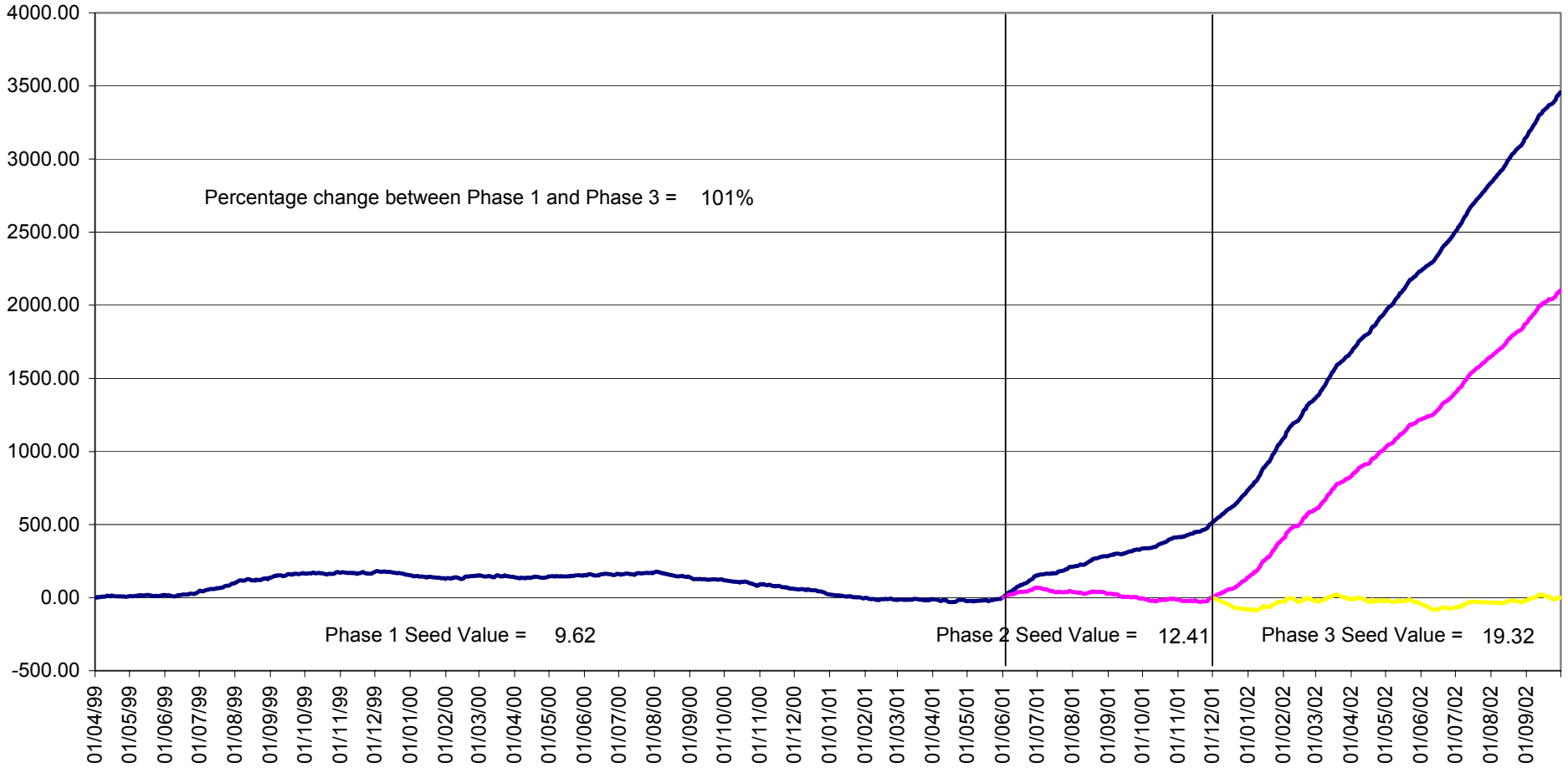

Figure 2 - Cusum LV CHL per Incident