

## MEMO

TO: SP Energy Networks  
DATE: 2 September 2014  
FROM: NERA (Soren Christian and Richard Druce)  
SUBJECT: Additional Totex Analysis

### 1. Overview

This memo build on our memo dated 12 August 2014, providing additional sensitivities to Ofgem's totex benchmarking work:

1. we have investigated the impact of using MEAV excluding Rising Laterals and Mains (RLM) as a cost driver in Ofgem's econometric models. This applies to both totex regression models, as Ofgem uses MEAV in both the bottom-up and top-down CSV, as well as the CAI regression model. We present details of this analysis in Section 2; and
2. we have also examined the impact of excluding ESQCR costs from the totex regression models, and passing these costs through the models in the same way as, for example, flooding and BT21C costs. In addition to costs categorised as ESQCR, we have also passed through Legal & Safety costs associated with ESQCR. We present details of this analysis in Section 3.

Figure 1.1 shows the impact of each of these sensitivities on DNOs' allowances, along with Ofgem's assessment for comparison. These efficiency gaps correspond to the figures presented in column (a) of Table 2.5 of Ofgem's Draft Determination expenditure assessment annex.<sup>1</sup> Our results suggest that:

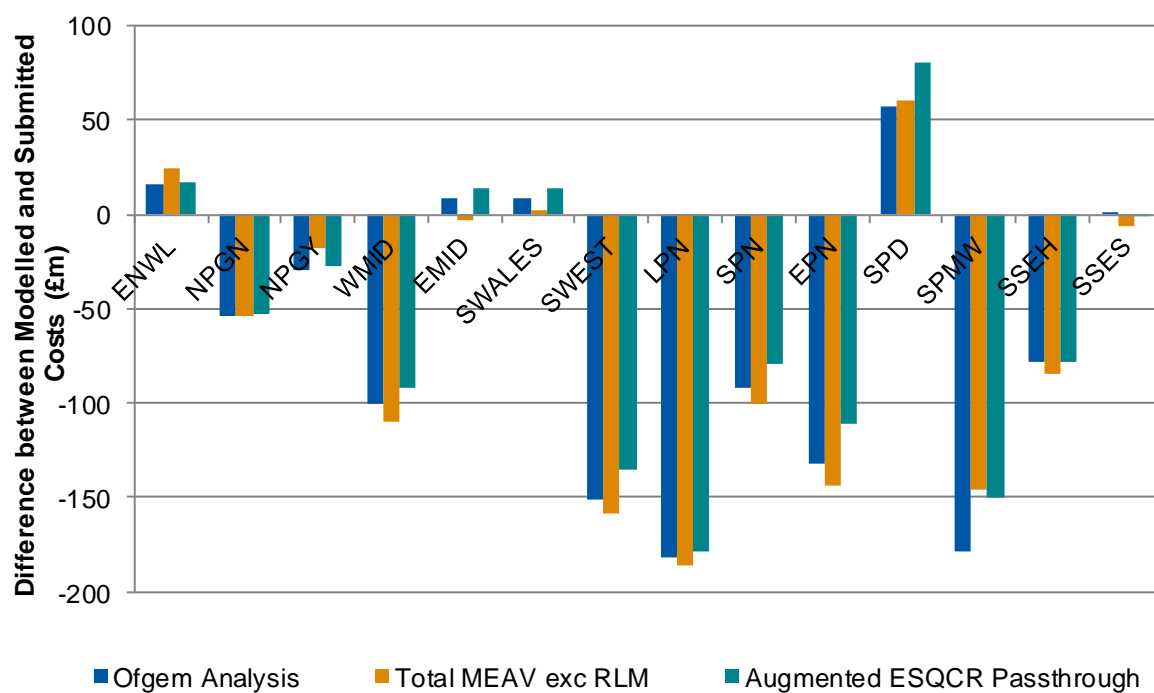
- adopting the definition of Total MEAV (excluding RLM) increases SPD's allowances by around £4 million (before applying adjustments for RPEs, smart grids or the IQI) compared with Ofgem's model, and increases SPMW's allowance by around £32 million; and
- passing augmented ESQCR costs through the totex models increases SPD's allowances by around £23 million (before applying adjustments for RPEs, smart grids or the IQI) compared with Ofgem's model, and increases SPMW's allowance by around £29 million.

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<sup>1</sup> In particular, the bars in the chart show the impact of each analysis on Ofgem's view of efficient costs, based on the weighted average of its two totex models (with 25% weight each) and its disaggregated model (with 50% weight), following its adjustment to the upper quartile, but before applying adjustments for either RPEs or smart grids, or the IQI mechanism.



**Figure 1.1**  
**Impact of Additional Analyses on Allowances**





## 2. Using Total MEAV (excluding RLM) as a Cost Driver

In Ofgem's analysis, it uses a definition of MEAV that excludes certain asset categories from its calculation to ensure "greater consistency in the data between DNOs".<sup>2</sup> In the 12 August memo, we examined the impact of including all asset categories in the definition of MEAV on DNOs' allowances. In this update, we have examined the impact of including all asset categories with the exception of RLM. Making this change affects three of Ofgem's five regression models:

- bottom-up totex, as MEAV is included in the definition of Ofgem's bottom-up CSV, which is the primary cost driver in its bottom-up totex analysis;
- top-down totex, as MEAV is one of the two variables included in Ofgem's top-down CSV, which is the primary cost driver in its top-down totex analysis;<sup>3</sup> and
- CAI, which uses MEAV directly as a cost driver.

Table 2.1 shows the estimated coefficients for each of these three models (1) using Ofgem's definition of MEAV, excluding certain asset categories, and (2) using MEAV excluding only RLM in its place. Compared to the Ofgem models, the statistical performance of the new models is similar, as the Rest test and overall fit of the model is similar.

However, as presented in Figure 1.1 above, the choice of MEAV variable can have a significant impact on DNOs allowances:

- adopting the definition of MEAV—Excluding RLM increases SPD's allowance by around £4 million (before applying adjustments for RPEs, smart grids or the IQI) compared with Ofgem's model, and increases SPMW's allowance by around £32 million;<sup>4</sup> and
- following adjustments for RPEs, smart grids and the IQI, **adopting MEAV—Excluding RLM as a cost driver increases SPEN's final allowance by around £27 million**, from £3205 million to £3232 million.<sup>5</sup>

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<sup>2</sup> Ofgem (2014), "RIIO-ED1: Draft determinations for the slow-track electricity distribution companies – Business plan expenditure assessment", p167 footnote 43.

<sup>3</sup> Ofgem's top-down CSV is a weighted average of MEAV and customer numbers which, in Ofgem's analysis, receive a weight of 87% and 13% respectively, with these weights derived from a preliminary regression. We have updated the weights used in the CSV to reflect our alternative MEAV variable by replicating Ofgem's initial stage regression: in the NERA model using Total MEAV, the weights on MEAV and customer numbers are 78% and 22% respectively.

<sup>4</sup> By comparison, using Total MEAV as a cost driver (as done in the 12 August memo) increases SPD's allowance by around £21 million and increases SPMW's allowance by around £34 million.

<sup>5</sup> Under the Total MEAV specification, SPEN's allowance increases by around £41m, to £3246 million.



**Table 2.1**  
**Comparison of Estimated Coefficients with Different Definitions of MEAV**

	<i>Ofgem Models – MEAV with exclusions</i>			<i>NERA Models – MEAV excluding RLM</i>		
	<i>Bottom-up totex</i>	<i>Top-down totex</i>	<i>CAIs</i>	<i>Bottom-up totex</i>	<i>Top-down totex</i>	<i>CAIs</i>
<b>“Bottom Up” CSV</b>	0.85 (0.00)	-	-	0.85 (0.00)	-	-
<b>“Top Down” CSV</b>	-	0.81 (0.00)	-	-	0.81 (0.00)	-
<b>Time Trend</b>	-0.01 (0.00)	-0.02 (0.00)	-	-0.01 (0.00)	-0.02 (0.00)	-
<b>MEAV</b>	-	-	0.55 (0.00)	-	-	0.53 (0.00)
<b>New Assets Installed</b>	-	-	0.31 (0.04)	-	-	0.33 (0.04)
<b>Constant</b>	28.44 (0.00)	23.93 (0.00)	-6.71 (0.00)	28.39 (0.00)	23.91 (0.00)	-6.44 (0.00)
<b>Adjusted R- Squared</b>	0.89	0.88	0.87	0.89	0.88	0.86
<b>Reset Test</b>	✓ 0.47	✓ 0.51	✓ 0.58	✓ 0.58	✓ 0.66	✓ 0.60
<b>Test for Heteroskedasticity</b>	✗ 0.01	✗ 0.02	✓ 0.06	✗ 0.00	✗ 0.01	✓ 0.09
<b>Test for Normality of Errors</b>	✓ 0.11	✓ 0.08	✗ 0.00	✓ 0.43	✓ 0.43	✗ 0.00



### **3. Passing Additional ESQCR Costs through the Totex Model**

Ofgem's analysis excludes a number of cost areas from totex before its efficiency assessment on the basis that they affect DNOs in different ways.<sup>6</sup> Ofgem deducts costs associated with these categories before its regression analysis, and then adds them back to modelled costs following its analysis. In the 12 August memo, we investigated the impact of treating ESQCR costs in a similar way. In this update, we have also passed through Legal & Safety costs associated with ESQCR.<sup>7</sup>

Table 3.1 shows the estimated coefficients for both totex models (1) including ESQCR costs in the analysis, and (2) excluding augmented ESQCR costs. Compared to the Ofgem models, the statistical performance of the new models is similar, as the Rest test and overall fit of the model is similar.

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<sup>6</sup> These costs include: Flooding, Technical Losses and Environmental, Critical National Infrastructure, Rising Mains and Laterals, Smart Meters, Operational IT and Telecoms, and Non-operational capex.

<sup>7</sup> As determined by Scottish Power's Gerard Boyd



**Table 3.1**  
**Comparison of Estimated Coefficients with Different Treatments of ESQCR Costs**

	<i><b>Ofgem Models – Including ESQCR Costs in Totex</b></i>		<i><b>NERA Models – Excluding Augmented ESQCR Costs from Totex</b></i>	
	<i>Bottom-up totex</i>	<i>Top-down totex</i>	<i>Bottom-up totex</i>	<i>Top-down totex</i>
<b>“Bottom Up” CSV</b>	0.85 (0.00)	-	0.85 (0.00)	-
<b>“Top Down” CSV</b>	-	0.81 (0.00)	-	0.81 (0.00)
<b>Time Trend</b>	-0.01 (0.00)	-0.02 (0.00)	-0.01 (0.00)	-0.01 (0.00)
<b>MEAV</b>	-	-	-	-
<b>New Assets Installed</b>	-	-	-	-
<b>Constant</b>	28.44 (0.00)	23.93 (0.00)	25.57 (0.00)	21.08 (0.00)
<b>Adjusted R-Squared</b>	0.89	0.88	0.89	0.88
<b>Reset Test</b>	✓ 0.47	✓ 0.51	✓ 0.52	✓ 0.64
<b>Test for Heteroskedasticity</b>	✗ 0.01	✗ 0.02	✗ 0.00	✗ 0.01
<b>Test for Normality of Errors</b>	✓ 0.11	✓ 0.08	✓ 0.10	✓ 0.17

As presented in Figure 1.1 above, the treatment of ESQCR costs has a significant impact on DNOs allowances:

- passing augmented ESQCR costs through the totex models increases SPD’s allowance by around £23 million (before applying adjustments for RPEs, smart grids or the IQI) compared with Ofgem’s model, and increases SPMW’s allowance by around £29 million;<sup>8</sup> and
- following adjustments for RPEs, smart grids and the IQI, **passing augmented ESQCR costs through the totex models increases SPEN’s final allowance by around £39 million**, from £3205 million to £3244 million.<sup>9</sup>

<sup>8</sup> By comparison, using the limited ESQCR passthrough (as done in the 12 August memo) increases SPD’s allowance by £24 million and increases SPMW’s allowance by £29 million.

<sup>9</sup> The limited ESQCR passthrough increases SPEN’s final allowance by around £40 million.