



Commission for Energy Regulation

An Coimisiún um Rialáil Fuinnimh

2017 TSO and TAO Allowed Revenue and TUoS Tariffs 2016/2017

DOCUMENT TYPE:	Information Note
REFERENCE:	CER/16248
DATE PUBLISHED:	26 August 2016
QUERIES TO:	aparkerhedderman@cer.ie

*The Commission for Energy Regulation,
The Exchange,
Belgard Square North,
Tallaght,
Dublin 24.*

www.cer.ie

Abstract:

This Information Note outlines the revenues that EirGrid and ESB Networks will be allowed to recover from the Transmission Use of System (TUoS) customer over the calendar year 2017. These revenues are to cover the costs of EirGrid and ESB Networks as electricity Transmission System Operator (TSO) and Transmission Asset Owner (TAO), respectively.

In 2015, the Commission for Energy Regulation (CER) outlined its decision (CER/15/296) on the current electricity transmission price review, known as Price Review 4 (PR4) and covering the period 2016 to 2020. During the PR4 period, yearly updates are to be completed as per the structures outlined in section 13 of CER/15/296. The following Information Note outlines the results of implementing the yearly update for the 2017 revenues and the resulting Transmission Use of System tariffs for the period 1st October 2016 to 30th September 2017.

Target Audience:

This Information Note is for the attention of members of the public, the energy industry, customers and all interested parties.

Related Documents:

[CER/15/296](#) Decision on TSO and TAO transmission revenue for 2016 to 2020

[CER/15/187](#) Consultation on TSO and TAO transmission revenue for 2016 to 2020

[CER/15/216](#) TUoS Demand Tariffs 2015/2016

[CER/14/427](#) Information Note on 2015 TSO and TAO Revenue

[CER/13/189](#) Information Note on 2014 TSO and TAO Revenue

[CER/12/150](#) Information Note on 2013 TSO and TAO Revenue

[CER/11/167](#) Information Note on 2012 TSO and TAO Revenue

[CER/11/128](#) Decision on 2011/2012 Transmission Incentives

[CER/10/206](#) Decision on TSO and TAO transmission revenue for 2011 to 2015

Executive Summary

Last year the CER published its decision on transmission network revenues for each year from 2016 to 2020. That decision (CER/15/296) was the fourth such revenue decision spanning 5 years. It is referred to as Price Review 4 (PR4).

PR4 set transmission network revenues to deliver value for money for the customer while providing for continued investment in the network. That continued investment is vital to ensure that the network delivers reliable supply for the customer and assists in Ireland's economic growth and meeting renewable generation targets.

Transmission revenues are collected through Transmission Use of System (TUoS) tariffs. TUoS tariffs are charged to energy suppliers, who may choose to pass them on to their customers. At present TUoS tariffs make up approximately 8% of a customer's bill.

These tariffs are designed to recoup the approved transmission revenues. They are updated each year, with effect from 1st October. When setting these charges, the allowed revenues are reviewed. This is to ensure the most up to date information is used. This year the review pertains to revenues for the calendar year 2017. This paper sets out the results of that review and the resultant TUoS tariffs that will come into effect on 1st October 2016.

PR4 had provided for € 359.07m (2015 monies). The CER's review has resulted in an updated figure of €354.84. This is approximately 1 % less than anticipated. This results in an average tariff¹ of 1.34c/kWh; to be charged from 1st October 2016 to 30th September 2017. This is 1.44% higher than currently.

The CER's current expectation is that this 1.44% increase will result in approximately a 0.1% rise in overall electricity customer prices in October 2016. However, the actual outcome for customer prices depends, among other factors, on international fuel and related generation costs, which are currently circa 50% of the overall cost of electricity to customers, and we note that these costs have fallen over the last year or so.

The revenue update is now discussed in more detail.

2017 TSO and TAO revenue

The 2016 allowed revenue as per the PR4 decision is €360.17 million (2015 monies). The updated allowed transmission revenue for 2017 is €354.84 million

¹ This is called the average unit price and is calculated by simply dividing revenues for the period in question by demand. It is an approximation of the change in TUoS tariffs, which have standing and unit charge components.

(2015 monies). This updated allowed revenue equates to a 1.48% decrease. The transmission revenues for the TSO and TAO for 2017 are detailed in Table 1.

Table 1 revenues for the TSO and TAO for 2017

€ Millions	PR4 Allowed Revenue (2015 monies)	CER Adjusted Revenue (2015 monies)	CER Adjusted Revenue Estimated 2017 monies ²
2017 TSO Revenue	€148.50	€146.06	€149.59
2017 TAO Revenue	€210.57	€208.78	€213.60
2017 Total Transmission Revenue	€359.07	€354.84	€363.19

Transmission AUP for 2016/2017 tariff period

Allowed revenues are set on a calendar year basis. However TUoS tariffs are set for periods that span two calendar years (from 1 October in one year to 30th September the following year). Within this paper the relevant portion of 2016 calendar year revenue³ and the relevant portion of 2017 revenue, have been allocated for recovery through TUoS within the 1 October 2016 to 30 September 2017 tariff period.⁴

The update of revenues outlined previously lead to a €356.83 million revenue figure (2017 monies, i.e. nominal) for the TUoS tariff period from 1 October 2016 to 30 September 2017. This is slightly lower than had been anticipated in the PR4 decision due to the reduced 2017 revenues as detailed in the previous section.

Based on the above revenue figure and the estimated tariff period consumption of 26,700GWh, the transmission average unit price (AUP) for the period from 1 October 2016 to 30 September 2017, is estimated to be approximately 1.34c/kWh in 2017 monies. This is an increase of 1.44% on the 2015/2016 tariff period transmission AUP (approximately 0.11% increase in end user tariff).

Key drivers

This rise in the transmission AUP can be attributed mostly to the following factors:

- The increase in overall revenue to be collected in 2017, as per the PR4 determination;

² 2017 monies inflated based on actual/forecast Irish HICP rates of 0.3% in 2014, 0.0% in 2015, 0.6% in 2016, and 1.7% in 2017. Please refer to [Central Bank Q2 2016 Quarterly Bulletin](#).

³ The 2016 calendar revenue referred to here is that which was approved in advance of the PR4 decision to facilitate the implementation of 2015/16 tariffs, (i.e. a 2016 nominal revenue figure of €339.64 million).

⁴ 27% of 2016 calendar year revenue and 73% of 2017 calendar year revenue, based on the demand weighted average.

- Deferred capital expenditure from PR3 in addition to forecast new connections;
- An increase to asset management costs (opex) due to successful planning applications for new line builds; and
- An increase to repairs and maintenance costs driven by a reduction in lone working and implementation of health and safety processes.

Table of Contents

Executive Summary	3
Table of Contents	6
1. Introduction.....	7
1.1 The Commission for Energy Regulation	7
1.2 Purpose of this paper	7
1.3 Structure of this paper	7
2. Background Information	8
2.1 PR4 Transmission Revenue Control.....	8
2.2 Determination of TSO and TAO revenue for each calendar year.....	9
2.3 Determination of TUoS tariffs for each tariff period	9
3. TSO and TAO revenue for the 2017 calendar year.....	10
3.1 Introduction	10
3.2 TSO revenue for the 2017 calendar year	10
3.3 Revenue control formula	10
3.4 2015 TSO outturn and k-factor to apply to 2017 TSO revenue	11
3.5 2015 TSO Incentives outturn	12
3.6 2017 TSO revenue and explanation of 2017 adjustments	15
3.7 TAO revenue for the 2017 calendar year	20
3.8 Revenue control formula	20
3.9 2015 TAO outturn and k-factors to apply to 2017 TAO revenue	21
3.10 2015 TAO Incentives outturn	23
3.11 2017 TAO revenue and explanation of 2017 adjustments	23
3.12 Interest Provision for 2015 TSO and TAO Over/Under-Recovery.....	25
3.13 The inflation rate	25
3.14 Comparison with revenue for 2016 calendar year.....	26
4. TUoS tariffs for 1 Oct 2016 to 30 Sept 2017.....	27
5. Summary	28
Appendix A - Transmission Tariffs 2014/2015	29

1. Introduction

1.1 The Commission for Energy Regulation

The CER is the independent body responsible for overseeing the regulation of Ireland's electricity and gas sectors. The CER was initially established and granted regulatory powers over the electricity market under the Electricity Regulation Act, 1999. The enactment of the Gas (Interim) (Regulation) Act, 2002 expanded the CER's jurisdiction to include regulation of the natural gas market, while the Energy (Miscellaneous Provisions) Act 2006 granted the CER additional powers in relation to gas and electricity safety.

The Electricity Regulation Amendment (SEM) Act 2007 outlined the CER's functions in relation to the Single Electricity Market (SEM) for the island of Ireland. This market is regulated by the CER and the Northern Ireland Authority for Utility Regulation (NIAUR). The CER is working to ensure that consumers benefit from regulation and the introduction of competition in the energy sector.

1.2 Purpose of this paper

This Information note outlines the level of transmission revenue that EirGrid (the Transmission System Operator, TSO) and ESB Networks (the Transmission Asset Owner, TAO) will be allowed to recover from the TUoS customer in the 2017 calendar year. This revenue will allow the TSO and TAO to finance their activities as the monopoly electricity system operator and system owner in Ireland.

1.3 Structure of this paper

This paper is structured in the following manner:

- **Section 1** provides an introduction to the purpose of this Information Note;
- **Section 2** provides background information on this note. It outlines, at a high level, the decisions made as part of the PR4 Transmission Price Review published in December 2015⁵;
- **Section 3** provides detail on the transmission revenue that has been approved for the 2017 calendar year;
- **Section 4** discusses the TUoS tariffs applicable to the upcoming tariff period; and
- **Section 5** provides a summary.
- **Appendix A** outlines the approved 2016/2017 TUoS Demand Schedule of tariffs for the period 1 October 2016 to 30 September 2017. Please note that the full 2016/2017 Statement of Charges will be published by EirGrid, as TSO, in accordance with Section 36 of the Electricity Regulation Act 1999 before commencement of the new tariff period.

⁵ Please refer to the CER decision paper CER/15/296.

2. Background Information

2.1 PR4 Transmission Revenue Control

In December 2015, the CER published a decision paper⁶ on the revenue that EirGrid (as TSO) and ESB Networks (as TAO) would be allowed to recover from the TUoS customer over the period 2016 to 2020. This period is known as PR4.

The five years from 2016 to 2020 will require continued investment in the transmission system and delivering ongoing infrastructure projects. The PR3 period was characterised by the initiation of a large scale infrastructure delivery programme in order to meet 2020 renewable generation targets. Given the nature of electricity infrastructure, the capital projects span more than the five year review period; with large scale projects often taking up to 10 years to complete. The transmission network also needs ongoing investment to ensure that it operates securely and effectively.

This necessary investment will mean that the overall revenues to be recovered by the TSO and TAO over the period of the review will rise from the CER's allowed outturn levels for the last price control (PR3, 2011 to 2015). As a result TUoS charges, levied to consumers, will rise somewhat. However, it should be noted that TUoS represents a relatively small overall amount of a residential bill (approximately 8%).

The CER adopts an incentive based model to separately determine the TSO's and TAO's allowed revenues. Both utilities internal operating costs are fixed for a five year period. If either utility spends more than it is allowed, it bears the cost. On the other hand if the utility spends below what it is allowed, a five-year rolling retention mechanism applies. This means that benefits achieved through costs lower than target levels can be retained by the TSO and TAO for five years so that they remain neutral as to when in the regulatory cycle those efficiencies are gained. This encourages them to drive efficiencies throughout the price review period and not in specific years, (for example at the start of the price review period). Of course this is provided that such savings have not been made at the expense of performance/inefficiency and quality of service or as a result of poor forecasting. The utilities cannot simply make apparent savings through the avoidance of expenditure, which could be to the detriment of the transmission system.

The allowed revenue set for each calendar year, 2016 to 2020, for the TSO and TAO, as per the PR4 determination is detailed in Table 2.⁷

⁶ CER/15/296

⁷ Please refer to CER/15/296 for the breakdown of these revenues.

Table 2 PR4 determination of TSO and TAO allowed revenues for 2016 to 2020

(2014 monies, €m's)	2016	2017	2018	2019	2020	Total
TSO Allowed Revenue	151.13	154.98	155.04	155.07	155.50	771.72
TAO Allowed Revenue	209.04	210.57	233.83	259.61	288.98	1,202.04
Total Allowed Revenue	360.17	365.56	388.86	414.68	444.49	1,973.76

Note: Figures are rounded

2.2 Determination of TSO and TAO revenue for each calendar year

The CER's PR4 paper '*Decision on TSO and TAO Transmission Revenue for 2016 to 2020*⁸ details how the allowed revenues are to be updated each year for both the TSO and TAO throughout the PR4 period.⁹ Accordingly, this is the first year that such an update will take place – for calendar year 2017.

2.3 Determination of TUoS tariffs for each tariff period

For 2006 (and previous years), TUoS tariffs were set on a calendar year basis using estimated Gigawatt hour (GWh) figures and the allowed transmission revenue for that calendar year.

In 2007, it was decided that annual TUoS demand tariffs were to be set on a 1st October start date. The reasons behind the decision to change the tariff period to a non-calendar-year term are documented in the SEM decision document AIP/SEM/07/93.¹⁰ Following that decision, TUoS tariffs are now set on a tariff year basis, i.e. 1 October to 30 September.

⁸ CER/15/296

⁹ Section 13 of CER/15/296 discusses how the TSO and TAO revenue will be updated for each calendar year.

¹⁰ The decision paper on PES retails tariff period alignment in both regulatory jurisdictions (AIP/SEM/07/93) is available [here](#).

3. TSO and TAO revenue for the 2017 calendar year

3.1 Introduction

As detailed in Section 2.1, in December 2015, the CER published its PR4 decision paper detailing the level of TSO and TAO allowed revenue for the period 2016 to 2020. That decision paper also detailed how the allowed revenue would be updated each year.

The TSO and TAO revenue for the 2017 calendar year have been separately updated according to the PR4 decision paper. This has resulted in a TSO revenue of €146.06 million and a TAO revenue of €208.78 million for the 2017 calendar year. This is based on a revenue submission provided by the TSO and TAO. The calculations behind these figures are now explained.

3.2 TSO revenue for the 2017 calendar year

The 2016 allowed revenue as per the PR4 decision is €151.13 million (2015 monies). The updated allowed TSO revenue for 2017 is €146.06 million (2015 monies). This updated allowed revenue equates to a decrease of 3.35%. This figure has been derived from the following:

- Allowed 2017 TSO revenue of €154.98 million (2015 monies) as per PR4;
- Outturn results for 2015 TSO External costs (e.g. Ancillary Services);
- Outturn results for 2015 TSO System Performance Incentives;
- Adjustment for actual 2015 inflation¹¹; and
- Adjustment for differential in TUoS energy volume recovery against the assumed energy throughput forecast in 2015, known as the 2015 K-Factor.

Inflating the resulting TSO revenue of €146.06 million to nominal 2017 monies¹² results in a TSO allowed amount of €149.59 million.

3.3 Revenue control formula

The revenue control formula, which is used to keep the TSO's revenue in line with allowed costs, is set out in detail in Section 13 of CER/15/296. This has been slightly modified to take account of the TSO Incentive outturn in year t-2 (in this case calendar year 2015). Very simply, the revenue control formula takes the 'base' allowed revenue (in 2014 monies, as detailed in Table 1 above), inflates that revenue into nominal figures, and adjusts it for specific revenue parameters. The following formula is used:

¹¹ For the current price control PR4 (2016-2020) Irish HICP will be used as the inflation factor. Please refer section 13 of CER/15/296.

¹² 2017 monies based on inflation of the 2015 monies by actual/forecast Irish HICP rates of 0.6% in 2016, 1.7% in 2017. Please refer to [Central Bank Q2 2016 Quarterly Bulletin](#).

$$R_t = \prod_{2015}^t \left[\frac{1 + Inf_t - X}{100} \right] * B_t + INCENT_t + KINCENT_{t-1} \Delta P_t + \Delta U_t + K_{t-1} + K_{t-2}$$

Equation 1: Price control formula from CER/15/296

$$R_t = \prod_{2015}^t \left[\frac{1 + Inf_t - X}{100} \right] * B_t + INCENT_{t-2} + \Delta P_t + \Delta U_t + K_{t-1} + K_{t-2}$$

Equation 1: Price control formula from CER/15/296

The terms within Equation 2 are fully explained within CER/15/296, apart from $INCENT_{t-2}$ which is defined below. For the 2017 calendar year:

- R_t , the maximum level of TSO revenue allowed in 2017, is €149.59 million (2017 monies);
- Inf_t , when inflating from 2014 to 2017 values, the relevant figures are inflated based on actual/forecast Irish HICP rates of 0.0% in 2015, 0.6% in 2016, and 1.7% in 2017;
- X , the efficiency factor, is set at zero;
- B_t , the level of allowed revenue for the 2017 calendar year in 2014 monies is €154.98 million.
- $INCENT_{t-2}$, is the difference in value of incentives/penalties in year t-2 in € millions. The value of the TSO incentive payment for 2015 is €1.40million (2015 monies);
- ΔP_t , the change in 2017 in TSO external costs (e.g. Inter TSO Compensation and Ancillary Services) from those assumed in the PR4 determination. This is €1.09million (2015 monies);
- ΔU_t , the change in 2017 uncertain costs from those assumed in the PR4 determination. This is €2.31million (2015 monies);
- K_{t-1} , this is the correction factor, which ensures that prices in year t are adjusted by an amount equal to the over or under recovery in 2016. For the purposes of calculating the 2017 TSO revenue this is €0; and
- K_{t-2} , this is the correction factor, which ensures that prices in year t are adjusted by an amount equal to the over or under recovery in 2015. This is minus €6.28million (2015 monies).

3.4 2015 TSO outturn and k-factor to apply to 2017 TSO revenue

The k factor for 2015, which feeds into 2017 revenues is discussed in this section. This section outlines the TSO's revenue for 2015 allowed under the 2015 transmission revenue determination (CER/14/427) and the changes now made, on an *ex-post* basis. This is then compared with the actual revenue received from market participants to calculate the total allowed transmission over-recovery of revenue in 2015, known as the 'k-factor'. This k-factor will feed into the 2017 TSO revenue.

Table 3 TSO outturn revenue for 2015 and associated k-factor

2015 monies € millions	CER <i>ex-ante</i> allowed 2015¹³	CER Outturn allowed 2015	Difference (Outturn minus <i>ex-ante</i>)
<i>Total Internal Costs</i>	55.36	55.28	-0.08
<i>External Costs</i>			
EWIC TUoS Entitlement	33.39	33.90	.051
CER Levy	1.03	.87	-0.16
DUoS costs	1.37	1.26	-0.11
Interconnector Services	1.44	0.28	-1.16
Inter TSO Compensation	1.10	0.58	-0.52
Ancillary Services	48.95	47.17	-1.78
<i>Total External Costs</i>	89.47	86.25	-3.22
2015 TAO Charge cost	199.83	202.23	2.40
2015 Incentive allowance		1.40	1.40
<i>Total TSO Costs + Incentives</i>	<i>341.41</i>	<i>341.99</i>	<i>(a) 0.58</i>
<i>Total TSO Income</i>	<i>341.41</i>	<i>348.29¹⁴</i>	<i>(b) -6.88</i>
Total K-Factor adjustment (pre-interest)			(a)+(b) -6.30

The adjustments in the above table are now discussed.

3.5 2015 TSO Incentives outturn

An incentive value of €1.40m (rounded) is included in the above table. This includes system performance incentives values for System Minutes Lost (SML) and System Frequency¹⁵. Also included are transmission delivery incentives values for “TSO project milestone” targets and separately, imperfections costs¹⁶.

The TSO target levels for 2015 and the outturn results and applicable TSO payment/penalties are detailed in Table 4. The CER has undertaken an *ex-post*

¹³ Figures adjusted for actual 2010 – 2015 inflation of -1.6% in 2010, 1.1% in 2011, 2% in 2012, 0.5% in 2013, 0.3% in 2014, and 0.0% in 2015.

¹⁴ EirGrid submission made to CER in April 2016 on EirGrid’s actual 2015 income.

¹⁵ Please refer to the Annual Transmission System Performance reports published by EirGrid.

¹⁶ [SEM-16-031](#)

review of the TSO's performance against 2015 targets. The incentives are discussed below.

Table 4 TSO incentive targets and outturn results for 2015

Incentive	Target(s)			Outturn	Payment/Penalty in 2015 monies € millions
System Minutes Lost	1.0	1.5 – 3.0	3.5	0.05	+0.33
System Frequency in range 50Hz +/- 0.1Hz	94%	96%	98%	99.4%	+0.33
TSO Project Milestones	32	40	48	44	+0.27
Delivery of Enhanced Network Capacity	Demonstrable through Cost-Benefit Analysis			-	0
Imperfections Costs Incentive (DBC Incentive)	€145.9m			€128.7	+0.47 ¹⁷
Total					1.40

(a) System Minutes Lost

The System Minutes Lost (SML) is an index that measures the severity of each system disturbance relative to the size of the transmission system. It is determined by calculating the ratio of unsupplied energy during an outage to the energy that would be supplied during one minute, if the supplied energy was at its peak value.

The outturn of 0.049 SML equates to full achievement of the target and therefore results in a full reward to the TSO of €330k.

(b) System Frequency

The National Control Centre (NCC) in the TSO office aims to maintain the frequency of the transmission system within a target operating range of 50 +/-0.1 Hz. The frequency, however, may deviate outside the normal operating range under fault or abnormal operating conditions.

¹⁷ The outturn Imperfections Costs Incentive payment/penalty is recovered on a split 75:25 (ROI:NI) basis in accordance with SEM-12-033

The outturn of system frequency being kept in the range 50Hz +/- 0.1Hz for 99.4% of the year equates to full achievement of the target. This results in a full reward to the TSO of €330k.

(c) TSO Project Milestones

This is a joint incentive with the TAO. In CER/11/128 the CER introduced an incentive on stages of project initiation to project completion, i.e. lodgement of planning permission right through to energisation. It was called the “Project Milestones” incentive. An *ex-post* adjustment is a correct step to take within this incentive considering the level of degree of influence each party has under its control, something which the CER acknowledged in CER/11/128.

However, just as important is the nature of that adjustment. The CER has reviewed the TSO/TAO submission and each of the individual proposed adjustments. The CER believes that the TUoS customer should be rewarding the transmission utilities (collectively) for delivery of the transmission network and not just on making sure one party fulfils their own project milestones. Therefore, the CER considers that lack of achievement in this incentive should be shared equally between the TSO and TAO. The central target of the TSO “project milestones” for 2015 was 40, with the outturn being 44. The TSO and TAO have jointly submitted a total of 13 adjustments to the incentive targets, which the CER considers to be valid.

As a result, the CER has decided that a total “Project Milestones” incentive payment of €0.27 million should be paid to the TSO and TAO. This equates to plus €0.27 million to the TSO and €0 to the TAO.

Targets for 2016 have been submitted to the CER and are currently being reviewed. However, as referred to in CER/15/296, the CER intends to put in place a more robust monitoring and reporting framework throughout PR4 (2016 to 2020) tied to an incentive framework. The CER will be consulting separately on proposals for the incentives that the TSO and TAO would be subject to over that period.

(d) Delivery of Enhanced Network Capacity

In CER/11/128, the CER placed an incentive on the TSO to investigate measures which would make more efficient use of the network, such that additional network capacity is released to allow non-firm generation to connect.

Measures include adoption/more progressive interpretation of network planning standards, operating security standards and the use of active network management techniques and tools such as dynamic line ratings and advanced protection/control schemes. These issues may particularly come into focus as levels of intermittent generation on the system increase in the coming years. There is no lower bound or reduction in TSO revenues linked to this incentive. Full achievement of the target,

which is determined by the CER through a review of a TSO economic cost benefit analysis, would result in a reward of €420k.

It is the view of the TSO that this incentive requires re-design in order to better support the objectives of innovative development of the grid and grid infrastructure. The TSO notes that while it has sought and continues to seek to advance innovative solutions for not only enhanced network capacity but also system operation, system co-ordination and grid delivery, it is not seeking any return under this incentive for calendar year 2015. Therefore, no payment will be processed through the 2017 revenue.

As noted in the CER's PR4 determination, the CER will carry out a review of the incentive mechanism that currently applies to the TSO and TAO in relation to service delivery and targets. Within this review the CER will put in place strategic incentives separately to incentives that are focused on operational and service level targets. It is the CER's intention to consult on the objectives against which the incentives would be assessed and the details of the mechanism itself.

3.6 2017 TSO revenue and explanation of 2017 adjustments

Table 5 provides a summary of the PR4 allowed TSO revenue for 2017¹⁸, compared with the CER's annual adjustment of allowed TSO revenue for 2017¹⁹. It can be seen that the revenue figure of €148.50 million (2015 monies) is adjusted downwards by the 2015 TSO k-factor of minus €6.30 million, a lower than forecast EWIC charge, the pass-through costs and uncertain items, to yield the total value of €146.06 million (2015 monies) for TSO revenue for the 2017 calendar year. The adjustments are discussed after the table.

¹⁸ As determined in CER/15/296

¹⁹ As per the CER's determination of allowed revenue for 2017, which follows a thorough review of the TSO's 2017 revenue submission.

Table 5 Updated TSO Revenue for 2017

2015 monies € millions	CER <i>ex-ante</i> allowed 2017	Final CER allowed 2017	Difference
<i>Total Internal Costs</i>	47.81	47.81	0
<i>External Costs</i>			
CER Levy	1.00	.98	-0.02
DUoS costs	1.30	1.94	0.64
Interconnector services	1.00	0.22	-0.78
Inter TSO Compensation	1.30	1.25	-0.05
Ancillary Services	49.20	6.49 ²⁰	-42.71
RoCoF Implementation	-	5.50	5.50
DS3 System Services	-	54.75	54.75
Stage 1 Working Capital	2.74	1.96	-0.78
CORESO subscription	1.00	.43	-0.57
EWIC Charge	33.46	17.80	-15.66
<i>Total External Costs</i>	88.26	89.35	1.09
Depreciation/Return	9.14	9.14	0
Working Capital	3.99	3.76	-0.23
2017 Adjustments ²¹	-0.69	2.31	3.00
2015 K-Factor from Table 3		-6.30	-6.30
Total Allowed Revenue	148.50	146.06	-2.44

External costs adjustments - ΔP_t

The CER allows a total external costs adjustment of €1.09 million to the 2017 Revenue. The primary adjustments to the external costs are detailed below. These costs will be subject to an *ex-post* review.

DUoS costs (€0.64 million)

The DUoS costs are different to the forecast included in the PR4 decision as a result of a number of new customers energising in the fourth quarter of 2015 additional customer energisations in the third quarter of 2017. The CER allows a sum of €0.64 million for an adjustment to DUoS costs.

²⁰ See section on adjustments

²¹ Relates directly to 2015 and is included within Equation 2 under the terms ΔP_t and ΔU_t .

East-West Interconnector Allowance (-€15.66 million)

This cost item was introduced in the PR3 period. The EWIC charge is not a TSO related cost, but recoverable under TUoS in accordance with the interconnector licence. The EWIC charge is treated in the exact same fashion as all the external TSO cost items listed above, i.e. this charge will be allowed as pass through in PR4. However, the CER will undertake an annual *ex-post* adjustment to take account of actual outturn costs and revenues earned by the EWIC.²²

The CER included a forecast annual cost of €33.46 million in the PR4 decision to be included in the TUoS tariffs based on the estimated cost for the infrastructure and the financing arrangements. However, up to date forecasts from those used in the PR4 submission are submitted annually. The calculation of these up to date forecasts include an adjustment for auction receipts, ancillary services receipts and hosting income. Based on the CER's review of these updates, the CER allows a downward adjustment of minus €15.66 million to the 2017 revenue.

Rate-of-Change-of-Frequency (€5.50 million)

In April and May 2014, the CER and UR respectively decided in principle to introduce a Rate-of-Change-of-Frequency (RoCoF) Grid Code standard of 1 Hz/s for Ireland and 2 Hz/s for Northern Ireland (calculated over 500ms). The CER and UR directed that industry implementation projects be established in each jurisdiction to implement a new Grid Code standard. In respect of such implementation projects, the forecast spend for the TSO in Ireland in 2017 is €5.50 million. The CER allows an adjustment of €5.50 million to the 2017 revenue.

Ancillary Services (-€42.5 million)

Provision for Ancillary Services in PR4 was on the basis of existing Ancillary Services requirements in 2015. Ancillary services have been phased into DS3 System Services and with that the PR4 forecast figure for ancillary services has been revised downwards by €42.5 million to a total of €6.66 million for 2017. Costs associated with DS3 System Services will be detailed as a separate cost item, see section below. The CER allows a downward adjustment of minus €42.5 million to the 2017 revenue.

DS3 System Services (€54.75 million)

In December 2014, the SEM Committee published a decision paper on the high-level design for the procurement of DS3 System Services (SEM-14-108). In the decision paper, the SEM Committee directed that transitional Interim Arrangements be established for the tariff year beginning 1 October 2016.

²² Please refer the CER Information Note on the EWIC revenue requirement (CER/12/149) which can be found [here](#).

The DS3 system services costs capture system services that were not considered as part of PR4 and also services that had been previously captured under ancillary services (see reduction of -€42.5m previously outlined). The estimated all-island spend on DS3 System Services for the year beginning 1 October 2016 is €73 million. Based on an allocation consistent with the specified proportions 75:25 (EirGrid:SONI), the provision required under TUoS is expected to be €54.75m. The CER allows an adjustment of €54.75 million to the 2017 revenue.

Uncertain costs adjustments - ΔU_t

The CER allows a total uncertain costs adjustment of €2.31 million to the 2017 Revenue. The primary adjustments to the uncertain costs are detailed below. These costs will be subject to an *ex-post* review.

Guarantees of Origin (€0.32 million)

In CER's decision paper CER/11/824 entitled 'Supervisory Framework for Administration of Guarantees of Origin', it was set out that the operational costs and costs involved in setting up a charging infrastructure for Guarantees of Origin (GoOs), would be recovered through EirGrid's network charges.

The TSO has submitted a request for €0.32 million to conduct the work associated with GoOs. The figure comprises the cost of resource allowance, development of an automated system for the management of GoOs, membership to the Association of Issuing Bodies and associated licensing costs. The CER allows an adjustment of €0.32 million to the 2017 revenue.

Constraints Arrangement Fees (€0.45 million)

The arrangement in place since 2001 relates to the ongoing provision of working capital for the TSO business to manage cash flow differentials which result from the operation of its business.

This constraint arrangement fees line item is separate to the general working capital arrangements contained in the allowed TSO revenue and it covers funding arrangements associated with the all-island Imperfections charge. The TSO has submitted for costs of €0.45 million. The CER allows this cost of €0.45 million for 2017.

Strategic Projects (€0.26 million)

In 2014 the CER approved the framework (CER/14/427) for the recovery of phase 1 (feasibility) of the Ireland France Interconnector project. In June 2015, the CER approved EirGrid's costs for this phase of the project. The TSO has submitted a forecast cost of €0.26 million for 2017. The CER allows an adjustment of €0.26 million to the 2017 revenue.

PR3 Adjustments (-€0.69 million)

The CER as part of its PR4 decision disallowed €2.75 million against the North South Interconnector project.²³ The disallowance is to be spread out over the period 2017 to 2020 inclusive. As part of the 2017 revenue allowance, this results in an adjustment of minus €0.69 million.

²³ Section 8 of CER/15/296

3.7 TAO revenue for the 2017 calendar year

The 2016 allowed revenue as per the PR4 decision is €209.04 million (2015 monies). The updated allowed TAO revenue for 2017 is €208.78 million (2015 monies). This updated allowed revenue equates to a decrease of 0.12%. This figure has been derived from the following:

- Allowed 2017 TAO revenue of €210.57m (2015 monies) as per PR4;
- Outturn adjustments of minus €1.80 million (2015 monies) (detailed below); and
- Adjustment for actual 2015 inflation²⁴.

Inflating the resulting TAO revenue of €208.78 million to a nominal 2017 price level²⁵ results in a TAO allowed amount of €213.60 million.

3.8 Revenue control formula

The revenue control formula, which is used to keep the TAO's revenue in line with allowed costs, is also set out in detail in Section 13 of CER/15/296. As with the TSO this has been slightly modified to take account of the TAO Incentive outturn in year t-2. The revenue control formula for the TAO takes the 'base' allowed revenue (in 2014 monies, as detailed in Table 1), inflates that revenue into nominal figures, and adjusts it for specific revenue parameters. The following formula is used:

$$R_t = \prod_{2015}^t \left[\frac{1 + Inf_t - X}{100} \right] * B_t + INCENT_t + KINCENT_{t-1} \Delta P_t + \Delta U_t + K_{t-1} + K_{t-2}$$

Equation 3: Price control formula from CER/15/296

$$R_t = \prod_t \left[\frac{1 + Inf_t - X}{100} \right] * B_t + INCENT_{t-2} + \Delta P_t + \Delta U_t + K_{t-1} + K_{t-2}$$

Equation 4: Updated formula for application in revenue year 2017

The terms within Equation 4 are fully explained within CER/15/296, apart from $INCENT_{t-2}$ which is defined below. For the 2017 calendar year:

- R_t , the maximum level of TAO revenue allowed in 2017, is €208.78 million;
- Inf_t , when inflating from 2014 to 2017 values, the relevant figures are inflated based on actual/forecast Irish HICP rates of 0.0% in 2015, 0.6% in 2016, and 1.7% in 2017;
- X , the efficiency factor, is set at zero;
- B_t , the level of allowed revenue for the 2017 calendar year in 2014 monies is €210.57 million;

²⁴ HICP of 0%, 0.6% and 1.7% for each of the years from 2015 to 2017.

²⁵ 2017 monies based on inflation of the 2015 monies by actual/forecast Irish HICP rates of 0.6% in 2016, 1.7% in 2017. Please refer to [Central Bank Q2 2016 Quarterly Bulletin](#).

- $INCENT_{t-2}$, is the value of incentive penalties in year t-2 in € millions in respect of the penalties or payments. The value of TAO incentive payments for 2017 is -€3 million (2015 monies). This includes a penalty of €1 million and a clawback of the €2 million placeholder resulting in a k-factor of €3 million;
- ΔP_t , the change in 2017 in TAO external costs (e.g. Local Authority Rates) from those assumed in the determination paper CER/15/296, is zero;
- ΔU_t , the change in 2017 uncertain costs from those assumed in the determination paper CER/15/296 is also zero;
- K_{t-1} , this is the correction factor, which ensures that prices in year t are adjusted by an amount equal to the over or under recovery in the previous calendar year. For the purposes of calculating the 2017 TAO revenue this figure is €0; and
- K_{t-2} , this is the correction factor, which ensures that prices in year t are adjusted by an amount equal to the over or under recovery in 2015. This is minus €1.80 million (2015 monies). Note that this is a net k-factor figure which includes the incentive adjustment outlined above.

3.9 2015 TAO outturn and k-factors to apply to 2017 TAO revenue

The k factor for 2015, which feeds into 2017 revenues is discussed in this section. This section outlines the TAO's allowed revenue for 2015 and the changes now made, on an *ex-post* basis. This is then compared with the actual revenue received to calculate the total allowed transmission over-recovery of revenue in 2015, known as the k-factor. This k-factor will feed into the 2017 TAO revenue.

The CER allows a total k-factor adjustment of minus €1.80 million to the 2017 Revenue. The individual k-factor adjustments are described below with the respective figures detailed in Table 6.

K-factor adjustments - K_{t-2}

Local authority network (-€1.88 million)

Rates are levied annually by county, city and certain town councils around the country on the TAO. Due to an annual *ex-post* review an adjustment of minus €1.88 million is made to 2015 allowed Network Rates costs.

Regulatory levy (€0.33 million)

Rates are levied annually by CER on the TAO. Due to an annual *ex-post* review an adjustment of minus €0.33 million is made to 2015 allowed CER Levy.

Additional use of system (€0.13 million)

There was a variance of €0.13 million between the AUoS allowed for 2015 and the actual outturn. This has resulted in an increase of €0.13m to the TAO's 2017 allowed revenue.

PR3 operational expenditure (€4.71 million)

There was a variance of €4.71 million between the operational expenditure allowed for 2015 and the actual outturn. The CER has decided the variance in the allowed revenue for 2017 with the full amount (or clawback) subject to further review. This has resulted in an increase of €4.71 million to the TAO's 2017 allowed revenue.

PR3 recovery inflation (-€1.07 million)

The 2015 outturn revenue is the only outturn revenue amount that was inputted to the PR3 over/under spend calculation that was based on a forecast. Adjustments to capture actual outturn of minus €1.07 million is allowed by CER.

Net Present Value (€0.06 million)

The Net Present Value (NPV) of the allowed revenue and the collected revenue over a price review must balance. After adjusting the PR3 allowed revenue for actual 2015 outturns an adjustment is required to ensure the NPV of the allowed and collected revenue for PR3 balances. The correction of this balancing results in an increase of €0.06 million in the 2017 revenue requirement.

PR3 capex (-€0.43 million)

An underspend €11.97 million results a reduction of €0.43 million to the 2017 revenue. The €0.43 million reduction pertains to depreciation and return on the €11.97 million underspend.

Table 6 TAO outturn revenue for 2015 and associated k-factor

2015 monies € millions	CER <i>ex-ante</i> allowed 2015	CER Outturn allowed 2015	Difference (Outturn minus <i>ex- ante</i>)
<i>Pass Through Costs</i>			
Local Authority Rates	22.23	20.35	-1.88
CER Regulatory Levy	1.20	0.87	-0.33
<i>Incentives</i>			
2015 Incentive allowance	2.00	-1.00	-3.00
<i>Uncertain Costs – Non Capitalised</i>			
AUoS	-0.50	-0.37	0.13
PR3 Opex	29.04	33.75	4.71
PR3 Recovery Inflation	0	-1.07	-1.07
PR3 Recovery NPV	0	0.06	0.06
<i>Uncertain Costs – Capitalised</i>			
PR3 Capex	0	-11.97	-
Deprecation	0	- 0.12	-0.12
Return	0	-0.31	-0.31
Total k-factor adjustment (pre- interest)			-1.80

3.10 2015 TAO Incentives outturn

An incentive value of minus €3 million is detailed in Table 6. The CER included a placeholder value of €2 million in its PR3 decision for 2015 incentives. The TAO did not submit its incentive outturn report in sufficient time to be considered.

Consequently, the CER has clawed back the €2 million placeholder value that was included in revenues and has imposed a further reduction of €1 million. This €1 million is approximately half of the maximum penalty that can be applied for not meeting incentive targets. The CER has now received the incentive report and will review it in due course. Any necessary amendments will be made in the form of a k-factor where appropriate and discussed in a future revenue paper.

3.11 2017 TAO revenue and explanation of 2017 adjustments

Table 7 provides a summary of the PR4 allowed TAO revenue for 2017²⁶, compared with the CER's annual adjustment of allowed TAO revenue for 2017²⁷. It can be seen that the revenue figure of €210.57 million (2015 monies) is adjusted downwards by the 2015 TAO k-factor of minus €1.80 million, to yield the total value of €208.78 million for TAO revenue for the 2017 calendar year.

Table 7 Updated TAO Revenue for 2017

2015 monies € millions	CER ex-ante allowed 2017	Final CER allowed 2017	Difference
Total Internal Costs	31.50	31.50	0
Total External Costs	27.50	27.50	0
AUoS	-0.50	-0.50	0
Incentives	2.25	2.25	0
Depreciation	59.67	59.67	0
Return on Capital	90.16	90.16	0
2015 K-Factor from Table 6		-1.80	-1.80
Total Allowed Revenue	210.57	208.78	-1.80

²⁶ As determined in CER/15/296

²⁷ As per the CER's determination of allowed revenue for 2017, which follows a thorough review of the TAO's 2017 revenue submission.

3.12 Interest Provision for 2015 TSO and TAO Over/Under-Recovery

As stated in CER/15/296, the mechanism for inter-year adjustments for under or over-recovery is to apply interest at the three month average Euribor rate. The interest rate (I) that is applied to under and over-recoveries of transmission revenue for year t-2 is as follows:

It-2 is the mean of the twelve monthly average three month Euribor rate between April and March of the year t-2 (i.e. April of year t-3 to March year t-2) multiplied by the mean of the twelve monthly average three month Euribor rate between April and March of the year t-1 (i.e. April of year t-2 to March year t-1).

Applying an interest rate of minus 0.02% in 2015 and minus 0.28% in 2016 to the 2015 TSO k-factor of minus €6.30 million, results in a net TSO k-factor of minus €6.28 million (rounded) in 2017 nominal monies.

Again, applying an interest rate of minus 0.02% in 2015 and minus 0.28% in 2016 to the 2015 TAO k-factor of €1.80 million, results in a net TAO k-factor of €1.79 million (rounded) in 2017 nominal monies.

The net k-factor, interest adjusted, is minus €4.48 million.

3.13 The inflation rate

The TSO's and TAO's allowed revenue is indexed to take account of price inflation. The index used should be the best reflection of the increases in prices faced by the transmission utilities, such as wage inflation or materials inflation. Also the index needs to be practical to implement, robust and transparent.

In PR3 (2011-2015) the CER used the Harmonised Index of Consumer Prices (HICP) as the index to inflate revenue. The rationale being that the HICP is likely to be less volatile than the CPI, leading to more stable revenues which would be of benefit to both the final customer and transmission utilities. The CER will continue to use the Irish HICP as the inflation index for PR4 period.

Therefore, Irish HICP is being used to inflate from 2014 actual monies to 2017 nominal monies.

3.14 Comparison with revenue for 2016 calendar year

- The allowed TSO revenue for the 2017 calendar year is €146.06 million (2015 monies), a decrease of approximately 3.35% relative to the €151.13 million (2015 monies) revenue approved for the 2016 calendar year in the PR4 determination.
- The allowed TAO revenue for the 2017 calendar year is €208.78 million (2015 monies), a decrease of approximately 0.12% relative to the €209.04 million (2015 monies) revenue approved for the 2016 calendar year in the PR4 determination.
- The combined allowed 2017 transmission revenue is €354.84 million (2015 monies), a decrease of 1.48% relative to the €360.17 million (2015 monies) that was allowed for the 2016 calendar year in the PR4 determination.

However, it is important to note that tariffs are not set on a calendar year basis. Consequently, interested parties may find it more useful to compare the transmission AUP between tariff periods as discussed within Section 4 of this paper.

4. TUoS tariffs for 1 Oct 2016 to 30 Sept 2017

Allowed revenues are set on a calendar year basis. However TUoS tariffs are set for periods that span two calendar years (from 1 October in one year to 30th September the following year). Within this paper the relevant portion of 2016 calendar year revenue and the relevant portion of 2017 revenue, have been allocated for recovery through TUoS within the 1 October 2016 to 30 September 2017 tariff period.²⁸

The update of revenues detailed in the previous sections lead to a €356.83 million revenue figure (2017 nominal monies) for the TUoS tariff period from 1 October 2016 to 30 September 2017. This is slightly lower than anticipated due to the reduced 2017 revenues as detailed in the previous section.

Based on the above revenues figure and the estimated tariff period consumption of 26,700GWh, the transmission average unit price (AUP) for the period from 1 October 2016 to 30 September 2017, is estimated to be approximately 1.34c/kWh in 2017 nominal monies. This is an increase of 1.44% on the 2015/2016 tariff period transmission AUP (approximately 0.11% increase in end user tariff). Table 2 provides the resultant demand tariffs. This rise in AUP can be attributed mostly to the following factors:

- The increase in overall revenue to be collected in 2017 as per the PR4 determination;;
- A key element driving the increase is deferred capital expenditure from PR3 in addition to forecast new connections;
- An increase to asset management costs (opex) due to successful planning applications for new line builds; and
- An increase to repairs and maintenance costs driven by a reduction in lone working and implementation of health and safety processes.

²⁸ 27% of 2016 calendar year revenue and 73% of 2017 calendar year revenue, based on the demand weighted average.

5. Summary

This Information Note outlines the application of the first PR4 annual update (2017) to the PR4 transmission revenue. This revenue is to be collected during calendar year 2017 and will cover the costs of the TSO and TAO.

The paper outlines:

- The TSO allowed revenue approved for the 2017 calendar year;
- The TAO allowed revenue approved for the 2017 calendar year; and
- The Demand TUoS tariffs approved for implementation during the tariff period from 1 October 2016 to 30 September 2017.²⁹

The total transmission allowed revenue for the 2017 calendar year as per the annual update is €354.84million (2015 monies). This is a decrease of 1.48% relative to the €360.17 million (2015 monies) that was allowed for the 2016 calendar year in the PR4 determination.

The total transmission allowed revenue for the TUoS tariff period from 1 October 2016 to 30 September 2017 is €356.83 million (2017 monies). This is a nominal revenue increase of 4.6% relative to the equivalent revenue (€341.23 million) for the period 1 October 2015 to 30 September 2016.

The transmission AUP for the 2016/2017 period is estimated to be €1.34c/kWh in 2017 monies. This is an increase of 1.44% on the 2015/2016 tariff period transmission AUP.

The Demand TUoS tariffs that have been approved for implementation during the period from 1 October 2016 to 30 September 2017 are contained in Appendix A of this paper.

²⁹ The full Statement of Charges will be published by EirGrid under Section 36 of the Electricity Regulation Act 1999 before the commencement of the upcoming tariff period.

Appendix A - Transmission Tariffs 2014/2015

1.A Demand TUoS Tariffs for the Republic of Ireland

In calculating the TUoS Demand Tariffs, which cover the twelve month period from 1st October 2016 to 30th September 2017, EirGrid has applied an energy based weighting to the tariffs derived from the transmission revenue for the full calendar year of 2016³⁰ and the full calendar year 2017. The TUoS Demand Tariffs are detailed in the table below.

The following should be noted when reviewing the table:

- Large Energy Users (LEUs) are defined as Users in the DUoS tariff group DG7, DG8, or DG9; users connected to the 110kV network; or users connected directly to the transmission system.³¹
- Non-Large Energy Users (Non-LEUs) are defined as Users in the DUoS tariff group DG1, DG2, DG3, DG4, DG5, DG5a, DG5b, DG6, DG6a or DG6b.³²
- DTS-T customers are those directly connected to the transmission system. DTS-T customers are classed as LEUs.³³
- DTS-D1 customers are those indirectly connected to the transmission system via the distribution system and have a maximum import capacity (MIC) of greater than or equal to 0.5MWs. DTS-D2 customers have the potential to be classed as either LEUs or non-LEUs.³⁴
- DTS-D2 customers are those indirectly connected to the transmission system via the distribution system and have a MIC of less than 0.5MWs. DTS-D2 customers have the potential to be classed as either LEUs or non-LEUs.³⁵

³⁰ Please refer to 2016 transmission revenue decision paper – CER/15/216

³¹ Definition/ Interpretation as per EirGrid's Statement of Charges 2015/2016

³² Ibid

³³ Ibid

³⁴ Definition/ Interpretation as per EirGrid's Statement of Charges 2015/2016

³⁵ Ibid

Schedule of 2016/2017 TUoS Demand Tariffs

Schedule	TUoS Charge	Charges	% Variance	Charges	% Variance
		2016/2017 non-LEUs	Change from 15/16 non-LEU tariffs	2016/2017 LEUs	Change from 15/16 LEU tariffs
DTS-T	Network Capacity Charge	€ 1,770.4821/MW ³⁶	2.86%	€ 1,305.9947/MW	5.58%
	Network Transfer Charge	€ 2.8623/MWh ³⁷	-0.22%	€ 2.1114/MW	2.42%
	System Services Charge	€ 3.8242/MWh ³⁸	5.85%	€ 2.8210/MW	8.65%
	DSM* Charge	€ 0.0003/MWh ³⁹	-93.90%	€ 0.0003/MW	-93.90%
DTS-D1	Network Capacity Charge	€ 1,482.1834/MW	3.52%	€ 1,093.3314/MW	6.25%
	Network Transfer Charge	€ 2.8623/MW	-0.22%	€ 2.1114/MW	2.42%
	System Services Charge	€ 3.8242/MW	5.85%	€ 2.8210/MW	8.65%
	DSM* Charge	€ 0.0003/MW	-93.90%	€ 0.0003/MW	-93.90%
DTS-D2	Network Capacity Charge	€ 6.0246/MWh	-0.71%	€ 4.4440/MWh	1.92%
	Network Transfer Charge	€ 2.8623/MWh	-0.22%	€ 2.1114/MWh	2.42%
	System Services Charge	€ 3.8242/MWh	5.85%	€ 2.8210/MWh	8.65%
	DSM* Charge	€ 0.0003/MWh	-93.90%	€ 0.0003/MWh	-93.90%

*Demand Side Management (DSM)

The full set of Demand tariffs and application of these tariffs will be set out in EirGrid's Statement of Charges to be approved by the CER and published by EirGrid under Section 36 of the Electricity Regulation Act 1999, before the commencement of the upcoming tariff period.

1.B All-island Generator TUoS Tariffs

The All-Island Generator Tariffs for the period 1st October 2016 to 30th September 2017 will be published on EirGrid's website.⁴⁰

³⁶ All DTS-T connected customers are LEUs, therefore this charge is not applicable.

³⁷ Ibid

³⁸ Ibid

³⁹ Ibid

⁴⁰ [EirGrid TUoS webpage](#)