Proposed Value for the Flattening Power Factor for the Year 2018

Proposal Paper

30 August 2017

EIRGRID GROUP

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Abbreviations

CPEALFh- Capacity Payments Eligible Availability Loss adjustment Factor per MWh.

CPEGSPc- Capacity Payment Ex-Post Generation Scaling Price.

CPESc- Capacity Payment Ex-Post Sum.

CPFGSPc- Capacity Period Fixed Generation Scaling Price.

CPFSc- Capacity Payment Fixed Sum.

CPGPFh- Capacity Period Generation Price Factor per MWh.

CPM- Capacity Payment Mechanism.

CPVGSPc- Capacity Period Variable Generation Scaling Price.

CPVSc- Capacity Payment Variable Sum.

EA- Eligible Availability.

ECGP- Ex-Post Capacity Generation Price.

ECPWFh- Ex-Post Capacity Weighting Factor per MWh.

FCGPh- Fixed Capacity Generation Price per MWh.

FCPWFh- Fixed Capacity Weighting Factor per MWh.

FPFy-Flattening power factor for year y.

FUA- Forecast Unit Availability.

IE- Ireland.

ISEM- Integrated Single Electricity Market.

LOLP- Loss of Load Probability.

LOLPT- Loss of Load Probability Table.

NI- Northern Ireland.

OLOLP- Output LOLP.

RA- Regulatory Authority.

SEMO-Single Electricity Market Operator.

SO- System Operator.

T&SC- Trading and settlement code.

VCGPh- Variable Capacity Generation Price per MWh.

VCPWF- Variable Capacity Weighting Factor.

Executive Summary

This report sets out the System Operators (SOs), proposal for the 2018 Flattening Power Factor (FPF) value. The Trading and Settlement Code (T&SC) requires the TSOs to submit this value to be approved by the RAs. The FPF value reduces the volatility in the payments made to generators through the Capacity Payments Mechanism (CPM). In particular the Ex-post and Variable payments are influenced by the system margin, which is the difference between eligible availability and demand in any one period and is a measure of security of supply.

The annual sum of the CPM is set by the Regulatory Authorities (RAs) and will be in the order of €500 million for 2018[1]. After carrying out an assessment of the 2016 capacity payments and the impact of different Flattening Power Factors (FPFs) on the Ex-Post and Variable payments by generation type **the SOs have concluded that a value of 0.35 should be retained for the FPF for 2018.**

The key findings of our analysis, which resulted in the above recommendation, are set out below.

Impact of different FPFs

Higher values of FPF result in payments being more closely correlated with the margin, i.e. when the margin is low the payments are high and when high the payments are low. With higher FPFs the difference between payments between high and low margins is quite significant. Having lower values of FPF softens the impact of the margin on the payments, hence periods with high margins and low margins receive similar payments.

By taking the payments made last year and varying the FPF the following conclusions were drawn (N.B. this assumes no behaviour change on the part of the generators):

Ex-Post Pot[2]

- Higher FPFs tend to increase payments to energy limited units – this is easily explained as the availability of these units is calculated to maximise their availability at times of low margin. Payments increase by a total of 45% from a low FPF to a high FPF for Hydro and Pumped Storage.
- Higher FPFs tend to reduce payments wind units – this is because at times when the wind output is highest the margin is also higher and consequently the payments would be lower. The availability of these units tends to coincide with periods of high margin. Payments to wind units decreased by 66% for the high FPF compared to payments for the low FPF.

- Payments to thermal plants are largely indifferent for different values of FPF. Payments changed by only 3% between low and high FPF.

[1] To be applied until May 2018, when the new market (ISEM) is due to go live.
[2] Note the Margin calculation is based on actual outturn availability.

Variable Pot[3]

- Higher FPFs tend to increase payments to energy limited plant e.g. Hydro/Pump. The difference in payment is not as significant in the variable pot as it is for the Ex-Post pot as this payment is based on forecast rather than actual margin. Total Payments for hydro and pumped storage units increase by 21% going from a low FPF to a high FPF.
- Payments to wind units in this study are increased by the increasing FPF. However, this by no means outweighs the reduction in the Ex-Post payment. This is due to the fact that for the Variable Pot the margin is forecast up to 6 weeks beforehand and, as there are no wind forecasts available at that time, the wind availability is assumed to be a constant figure which could be significantly different from the actual wind output. Payments change by 14% from a low FPF to a high FPF.
- The ex-ante component of payments to thermal plants does not change significantly due to different values of FPF. Payments change by 2% from a low FPF to a high FPF.

[3] Note the Margin calculation is based on a forecast that can be produced up to 6 weeks before the period in question.

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1 Introduction

1.1 Purpose

The Trading and Settlement Code (T&SC), requires the Transmission System Operators (TSOs), EirGrid and SONI, to propose a value of Flattening Power Factor (FPF) for 2018[4]. This is approved by the SEM Committee.

The introduction of the FPF into the Loss of Load Probability Table (LOLPT) calculation has the objective of reducing the volatility in the Capacity Payments Mechanism (CPM). Choosing an appropriate value for the FPF is a matter of striking a balance between retaining sufficient volatility to signal the need for availability in times of low margin and avoiding excessive volatility that would render the mechanism highly unpredictable.

In this report the TSOs set out their recommended value for the FPF for 2018, along with the supporting analysis. Subject to approval, this factor will be published by the Market Operator and applied to the trading periods in 2018 that are settled under Section A of the TSC.

This document sets out the principles by which the FPF will be chosen for 2018. It further details analysis carried out by the SOs in assessing the appropriateness of the current FPF for 2017 for 2018. Please note that the new market (ISEM) is due to go live from May 2018 and FPF will not be used in determining ISEM capacity payments.

1.2 Document Structure

Following this introduction, the remainder of this document is structured as follows:

- **Section 2 – Rationale:** outlines the guiding principles for choosing the FPF for 2018;
- **Section 3 – Review:** briefly sets out the components of the capacity payment relevant to the choice of the FPF;
- **Section 4 – Analysis:** analyses the historical market outcomes for 2016; and
- **Section 5 – Conclusion:** sets out the proposed value for the FPF for 2018 and other recommendations.

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[4] "With respect to the Loss of Load Probability Table, the System Operators shall make a report to the Regulatory Authorities at least four months before the start of the Year proposing a value for the Flattening Power Factor (FPFy) for Year y which shall be in the range 0 < FPFy ≤ 1. The Market Operator shall publish the approved value of this parameter within 5 Working Days of receipt of the Regulatory Authorities' determination or two months prior to the first Capacity Period of the Year, whichever is the later. The System Operators may propose revisions to the value of the FPFy during the Year and, subject to the approval of the Regulatory Authorities, the Market Operator shall publish such revised value not less than thirty 30 days prior to the first Capacity Period for which such revised value is to be applied".

2 Rationale

EirGrid and SONI in their role as TSOs[5] in Ireland (IE) and Northern Ireland (NI) respectively ensure the safe, secure, reliable, economic and efficient development, maintenance and operation of the high voltage transmission systems in Ireland and Northern Ireland respectively. These objectives will be at the core of this paper.

The aim of the T&SC is to facilitate the achievement of the following objectives:

- the efficient discharge by the Market Operator of the obligations imposed upon it by its Market Operator Licences;
- the efficient, economic and coordinated operation, administration and development of the Single Electricity Market in a financially secure manner;
- the participation of electricity undertakings engaged in the generation, supply or sale of electricity in the trading arrangements under the Single Electricity Market;
- to promote competition in the single electricity wholesale market on the island of Ireland;
- to provide transparency in the operation of the Single Electricity Market;
- to ensure no undue discrimination between persons who are parties to the Code; and
- to promote the short-term and long-term interests of consumers of electricity on the island of Ireland with respect to price, quality, reliability, and security of supply of electricity.

These objectives will also be considered as part of this report. Specifically, the CPM should strike a balance between the following objectives:

1. Capacity adequacy and system reliability: (i.e. incentivising availability when the margin is tightest, and provide highest capacity prices at periods of Highest Loss of Load Probability)
2. Price stability: remove some of the volatility from the energy market
3. Simplicity/Fairness
4. Prevention of gaming
5. Efficient signals for investment (Providing a stable set of investment signals, improving investor confidence in the market)

Each of these objectives will be reviewed before recommending a value for the FPF for 2018 to ensure that all aspects and impacts of the choice of FPF are considered.

[5] EirGrid and SONI are also the market operator through the joint venture, SEMO.

3 Review

Prior to the analysis of historical CPM outcomes, it may be useful to briefly discuss the structure of the capacity payment.

3.1 Overview of CPM

The annual sum available for capacity payments is set by the Regulatory Authority and is fixed prior to the commencement of the year in question. The amount available for 2018 will be in the order of €500M. As this is a significant amount, it is imperative that the mechanism through which it is distributed is efficient and achieves the objectives set out in its design (see Section 2).

This annual amount is recovered from supplier units in the pool on a per MWh basis. The annual pot is further split into 12 monthly demand-weighted pots. These monthly pots are in turn split into three components - a Fixed, a Variable and an Ex-Post payment, at a ratio of 30:40:30.

Each of these 12 pots corresponding to each month in the year accounts for a capacity period and the fixed component is known as the Capacity Payment Fixed Sum (CPFSc) which is known a year in advance. After the month has passed, during settlement this is converted into the Capacity Period Fixed Generation Scaling Price (CPFGSPc). This is done by dividing the CPFSc by the sum of all units Capacity Payments Eligible Availability Loss adjustment Factor (CPEALFh) multiplied by the Fixed Capacity Weighting Factor (FCPWFh) and multiplied by the units' capacity period generation price factor CPGPFh for each trading period over all trading periods within the capacity period in question according to the equation below.

$$CPFGSPc = \frac{CPFSc}{\sum_{u,h\,in\,c}(CPEALFuh \times FCPWFh \times CPGPFuh)}$$

The FCPWFh for each trading period is also known a year in advance and it is calculated based on the annual demand forecast sent in at the start of the year. It is calculated by subtracting the minimum demand forecast within the capacity period from the demand forecast for the trading period in question and dividing by the sum of all such calculations throughout the capacity period according to the equation below.

$$FCPWFh = \frac{FD_h - MinFD_c}{\sum_{h\,in\,c}(FD_h - MinFD_c)}$$

The Capacity Payments Generation Price Factor (CPGPFh) for each unit is not known until after the capacity period has passed. It is a small scaling factor applied to each unit's capacity payments to reduce its payment relative to the running time of the unit in question. This value is close to 1 and has only a minor effect on the payment.

The Fixed Capacity Generation Price (FCGPh) (€/MWh) for each trading period within the capacity period in question is determined by multiplying the capacity period's CPFGSPc by the particular trading period's FCPWFh.

Variable and Ex-post capacity payments, on the other hand, are linked to the margin via a LOLP curve. The margin is the difference between eligible availability and demand in any one period and is a measure of security of supply. The LOLP curve, though not a true calculation of LOLP, is used as a relationship between the margin and the security of the system and is used to weight capacity payments in each trading period. It is calculated annually[6].

Fig. 3.1 shows how the LOLP curve[7] is used to calculate an Output LOLP (OLOLP) value based on an input margin. The FPF, the parameter being considered in this paper, is used to 'flatten' the LOLP curve by raising every value on the LOLP Curve to the power of the FPF (0 < FPF ≤ 1). This has the effect of lowering the volatility of capacity payments.

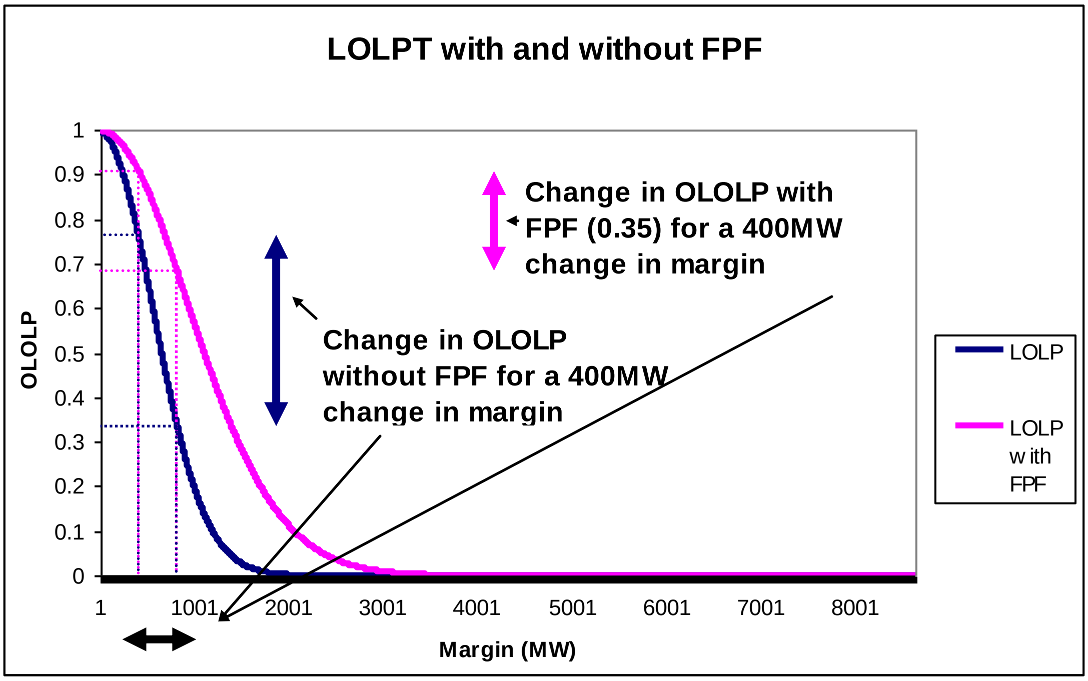

Figure 3.1 – LOLP Curve with and without FPF

The variable component of each of the 12 capacity pots is known as the Capacity Payment Variable Sum (CPVSc) which is known a year in advance. After the month has passed, during settlement this is converted into the Capacity Period Variable Generation Scaling Price (CPVGSPc). This is done by dividing the CPVSc by the sum of all units loss adjusted capacity payments eligible availability CPEALFh multiplied by the Variable Capacity Weighting Factor (VCPWFh) and multiplied by the units' Capacity Period

[6] Unless a unit of >50MW connects or disconnects to the system whereby it is recalculated within a year.
[7] The LOLP curve is, in fact, a discrete lookup table and is not a continuous function as the word 'curve' implies. However, the use of the word 'curve' allows various adjectives, such as 'flat' and 'steep' to be used.

Generation Price Factor (CPGPFh) for each trading period over all trading periods within the capacity period in question according to the equation below.

$$CPVGSPc = \frac{CPVSc}{\sum_{u,h\ in\ c}(CPEALFuh \times VCPWFh \times CPGPFuh)}$$

The VCPWFh for each trading period is known a month in advance and it is calculated based on the month ahead Ex-Ante LOLP run. It is calculated by dividing the output LOLP value for the particular trading period (based on forecasted margin) by the sum of all output LOLP values within the capacity period according to the equation below.

$$VCPWFh = \frac{\lambda_h}{\sum_{h\ in\ c}\lambda_h},$$

The Variable Capacity Generation Price (VCGPh) (€/MWh) for each trading period within the capacity period in question is determined by multiplying the capacity period's CPVGSPc by the particular trading period's VCPWFh.

The Ex-Post component of each of the 12 capacity pots is known as the Capacity Payment Ex-Post Sum CPESc which is known a year in advance. After the month has past, during settlement this is converted into the capacity period Ex-Post Generation Scaling Price (CPEGSPc). This is done by dividing the CPESc by the sum of all units loss adjusted Capacity Payments Eligible Availability CPEALFh multiplied by the Ex-Post capacity weighting factor ECPWFh and multiplied by the units' capacity period generation price factor CPGPFh for each trading period over all trading periods within the capacity period in question according to the equation below.

$$CPEGSPc = \frac{CPESc}{\sum_{u,h\ in\ c}(CPEALFuh \times ECPWFh \times CPGPFuh)}$$

The ECPWFh for each trading period is not known until after the time has passed and it is calculated based on the Ex-Post LOLP run. It is calculated by dividing the Ex-Post output LOLP value for the particular trading period (based on actual margin) by the sum of all Ex-post output LOLP values within the capacity period according to the equation below.

$$ECPWFh = \frac{\phi_h}{\sum_{h\ in\ c}\phi_h}$$

The Ex-Post capacity generation price ECGPh (€/MWh) for each trading period within the capacity period in question is determined by multiplying the capacity period's CPEGSPc by the particular trading period's ECPWFh. Fig. 3.2 below provides an outline of how the prices are calculated from the CPM sum.

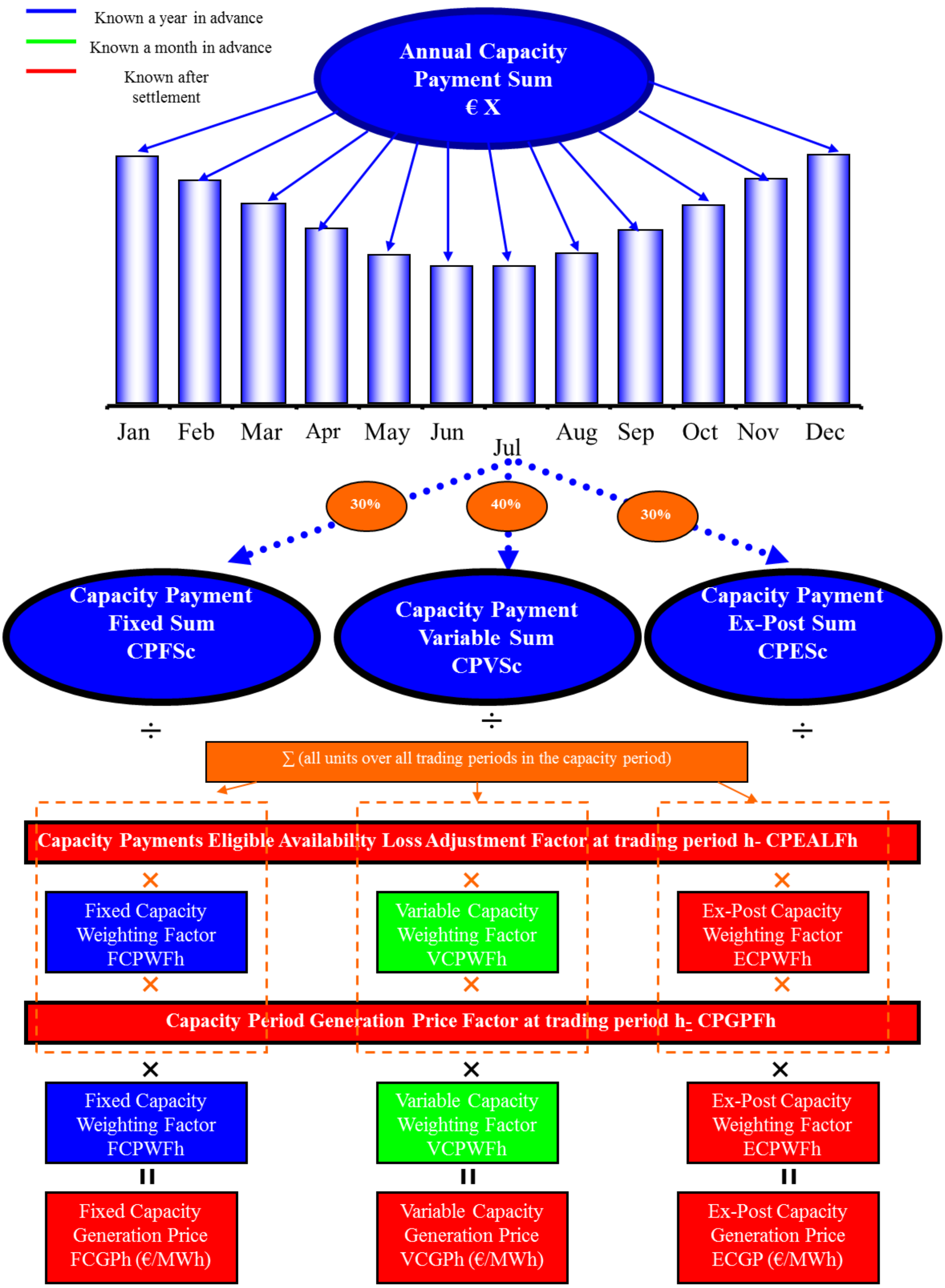

Figure 3.2 – Capacity Payment Mechanism Outline Diagram

3.2 Difference between Variable and Ex-post payments

What distinguishes the Variable payment from the Ex-post payment (besides the fact that the Variable pot is ~33% larger) is that the relative portion of the monthly Variable pot available in each trading period is based on a forecast of the margin, which is calculated prior to the capacity period. Therefore, the relative amount of payment in each trading period is known in advance[8]. On the other hand, the Ex-post weightings are not known until after the capacity period. This foreknowledge of the Variable payments coupled with the relative size of the monthly Variable pot make the Variable payment a more certain revenue stream than the Ex-Post payment.

However, the forecast of the margin on which the Variable payments are based has a sizeable inherent error due to the variable nature of wind and demand and the unpredictability of discrete forced outage events a month in advance. An important consideration in the choice of an appropriate value for FPF is this inherent error in the forecast. Too volatile a payment may encourage greater availability at times when there is no real need for greater availability and may place little incentive in trading periods where, on the day, there is a real need for greater availability.

On the other hand, the Ex-post component of the payment is based on the actual margin. As the level of wind, demand and the occurrences of discrete forced outage events are not known until after the capacity period, it is more difficult for a generator unit to act to maximize their revenue from the Ex-post payment as the level of payment in each trading period is uncertain[9].

The Ex-post margin in a particular trading period is a better reflection of the security of the system in that trading period than the forecast margin used for the Variable payment. Units are rewarded for being available at times when the system actually most required their capacity. An important consideration in the choice of an appropriate value for FPF is ensuring that periods of relatively low Ex-Post margin are better rewarded. This requires the retention of sufficient risk and volatility to incentivise greater availability and to value capacity in periods of real system need appropriately.

[8] This is not strictly true as there are other components to the calculation which are not known in advance viz. Capacity Payments Generation Price Factor and Capacity Payment Price Factor. However, these factors have a relatively minor effect on the level of payment.
[9] A generator can use available wind and demand forecasts and scheduled outage programs in the form of an Ex-Post signal to estimate when the periods of lowest margin will be.

4 Analysis

The analysis to determine an appropriate FPF for 2018 is based on historical CPM data from 01/01/2016 to 31/12/2016. The FPF is chosen primarily based on the desire to keep some volatility in the payments to signal the need for availability during periods of system stress, but at the same time provide a predictable stream of payments over the course of the month. To achieve this objective for 2018, following analysis of the effect of the FPF on the distribution of both Variable and Ex-Post payments, the SOs recommends that the value 0.35 be adopted for 2018.

4.1 Capacity Adequacy and System Reliability

Fig. 4.1 and Fig. 4.2 following scatter graphs are of the Variable Capacity Payments Generation Price (VCPGP) and the Ex-Post Capacity Payments Generation Price (ECGP) in every trading period from 1st Jan 2016 to 31st Dec 2016 as a function of the total Eligible Availability (EA) less the total Forecast Unit Availability (FUA) of conventional units (i.e. not wind, energy limited, pumped storage or interconnector units). This aims to illustrate whether the high capacity prices lead to changes in availability of conventional units.

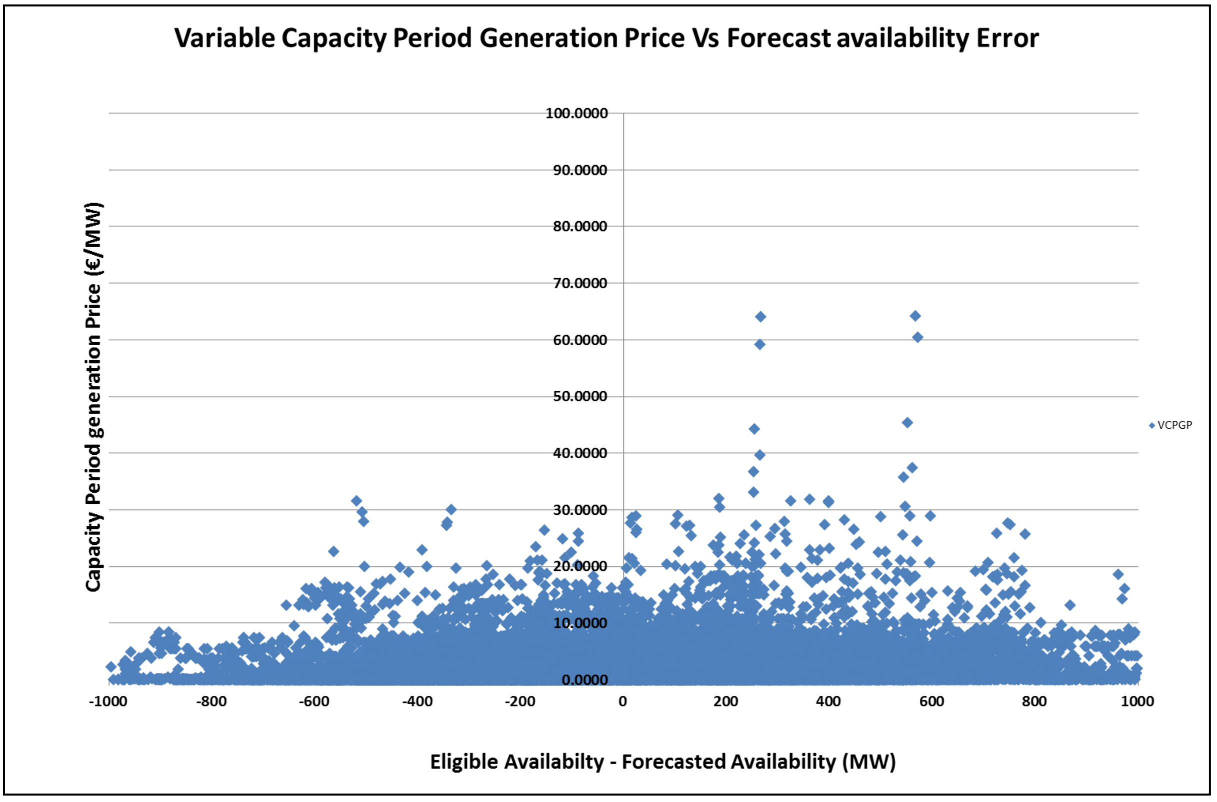

Figure 4.1 – Scatter Graph of VCPGP as a function of (EA-FUA)

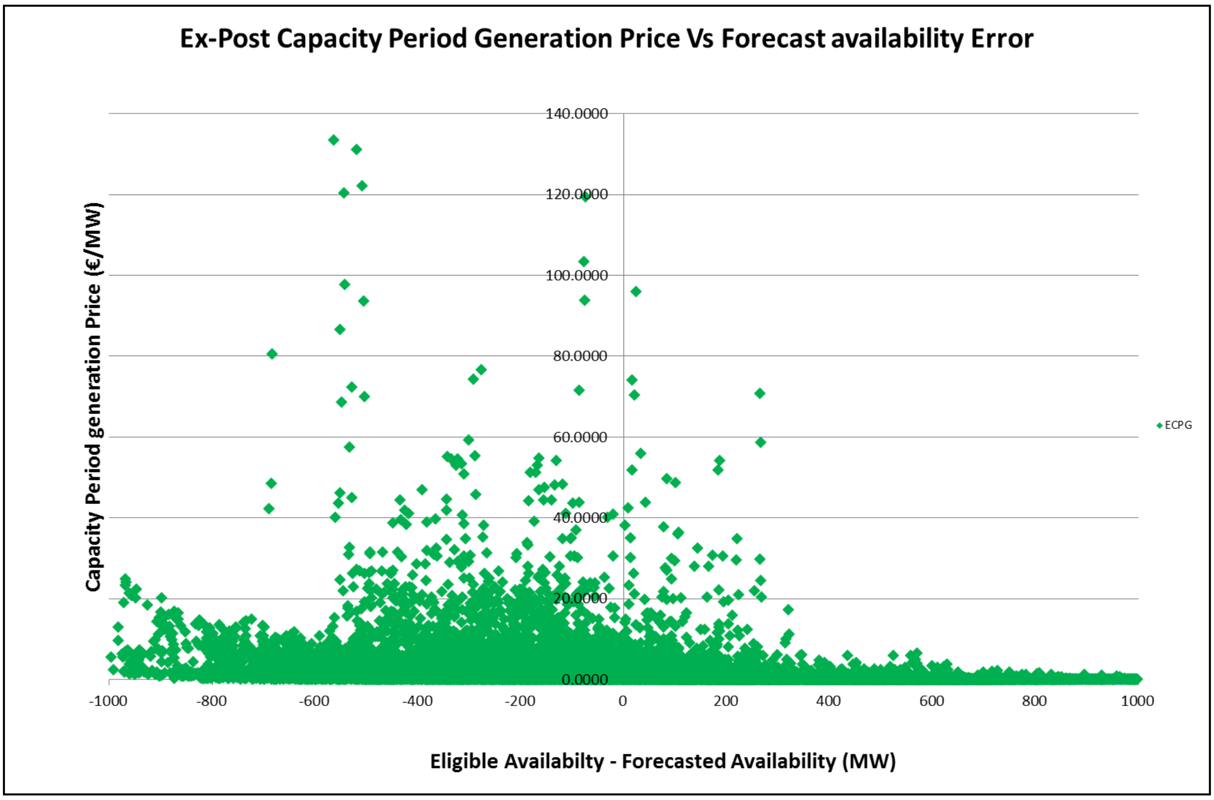

Figure 4.2 – Scatter Graph of ECGP as a function of (EA-FUA)

The results indicate that trading periods with high VCPGP, whose main factor, the Variable Capacity Payment Weighting Factor (VCPWF), is known during the capacity period, coincide with periods where generator availability is close to if not slightly greater to what was forecasted. This implies that in times with large payments available in some periods known to generator units in advance, the availability in these trading periods' remains as expected and react, to a small extent to the Ex-Ante signal.

In addition, trading periods with high ECGP, whose main factor, the Ex-post Capacity Payments Weighting Factor (ECPWF), is not known with certainty during the capacity period, coincide with periods where generator availability is lower than forecasted.

These trends appear slightly negative from a system operation perspective, as they imply that units are responding to the Ex-Ante signal more so than that of the Ex-Post signal. However, due to the complex interrelationships between the many components of the capacity payment, it is difficult to isolate individual aspects of the mechanism or behavioural responses to them and in general generator units tend to aim for high availability at all times as opposed to reacting to capacity payment signals.

It is the view of the System Operators that on one hand the link to the Ex-Post margin is being overly damped and that there is insufficient incentive for generators to invest appropriately to improve their availability.

On the other hand, high Variable payments (based on a forecast with a large inherent error) are being paid to generators in trading periods where there is no appreciable scarcity. Fig. 4.3 and 4.4 illustrate the lack of correlation between the top ten Variable and Ex-Post capacity payment prices between Jan and Dec 2016.

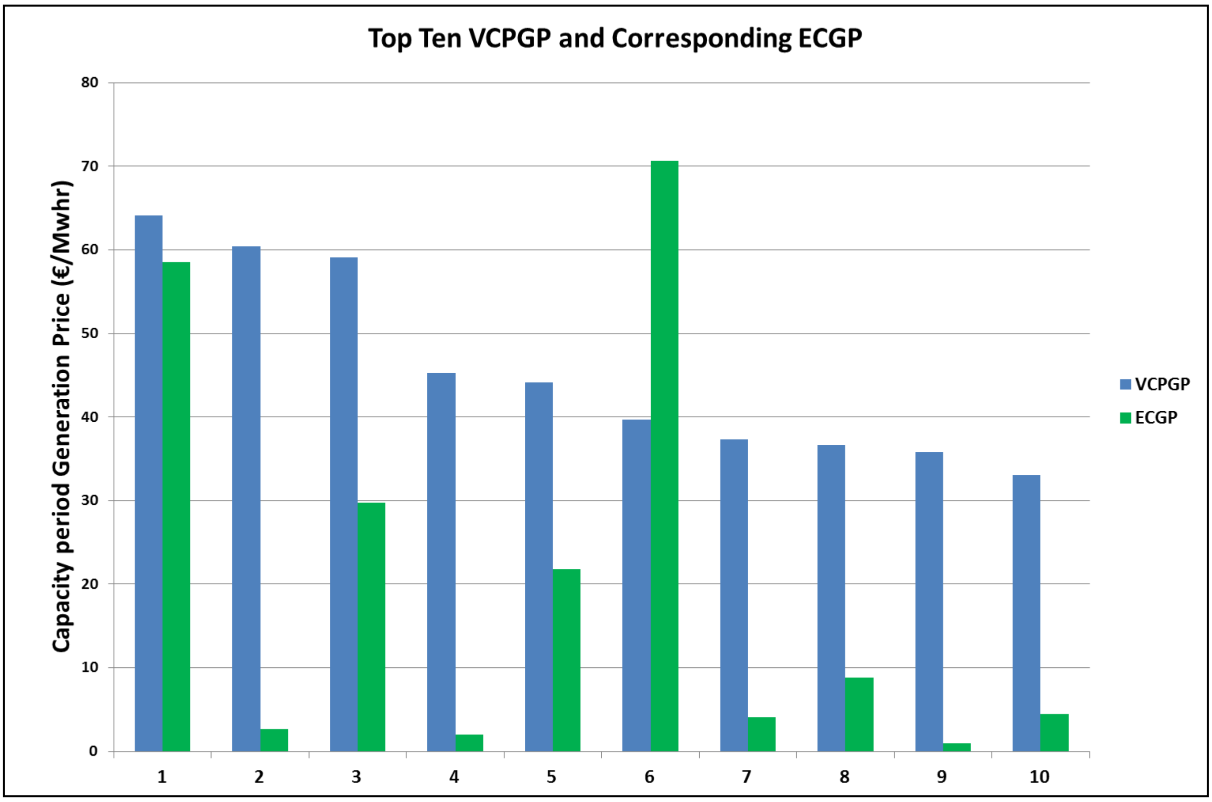

Figure 4.3 – Top Ten VCPGP and the corresponding ECGP

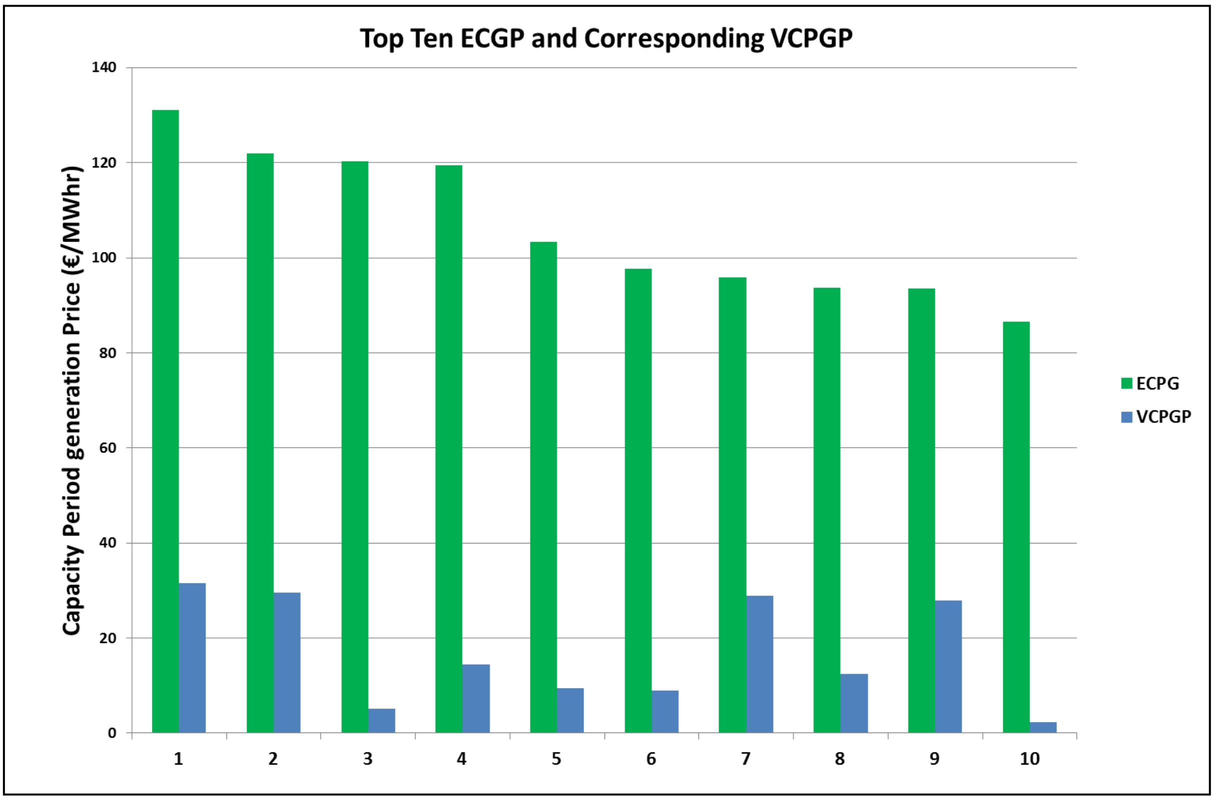

Figure 4.4 – Top Ten ECGP and the corresponding VCPGP

4.2 Price stability

An important characteristic of the CPM is price stability. The Annual Capacity Sum governs what is paid out through the CPM. Monthly values are fixed and it is guaranteed that these amounts will be paid out.

The only consideration of relevance when determining the FPF is the volatility of payments. The volatility of the payments should be such that sufficient risk is retained to incentivise better availability. However, overly unpredictable payments would damage the signal that SEM is a stable investment environment.

Fig. 4.5 and 4.6 are Price Duration Curves of the VCPGP and the ECGP. It can be easily seen that both distributions are relatively smooth and the frequency of high prices is low, which indicates low volatility.

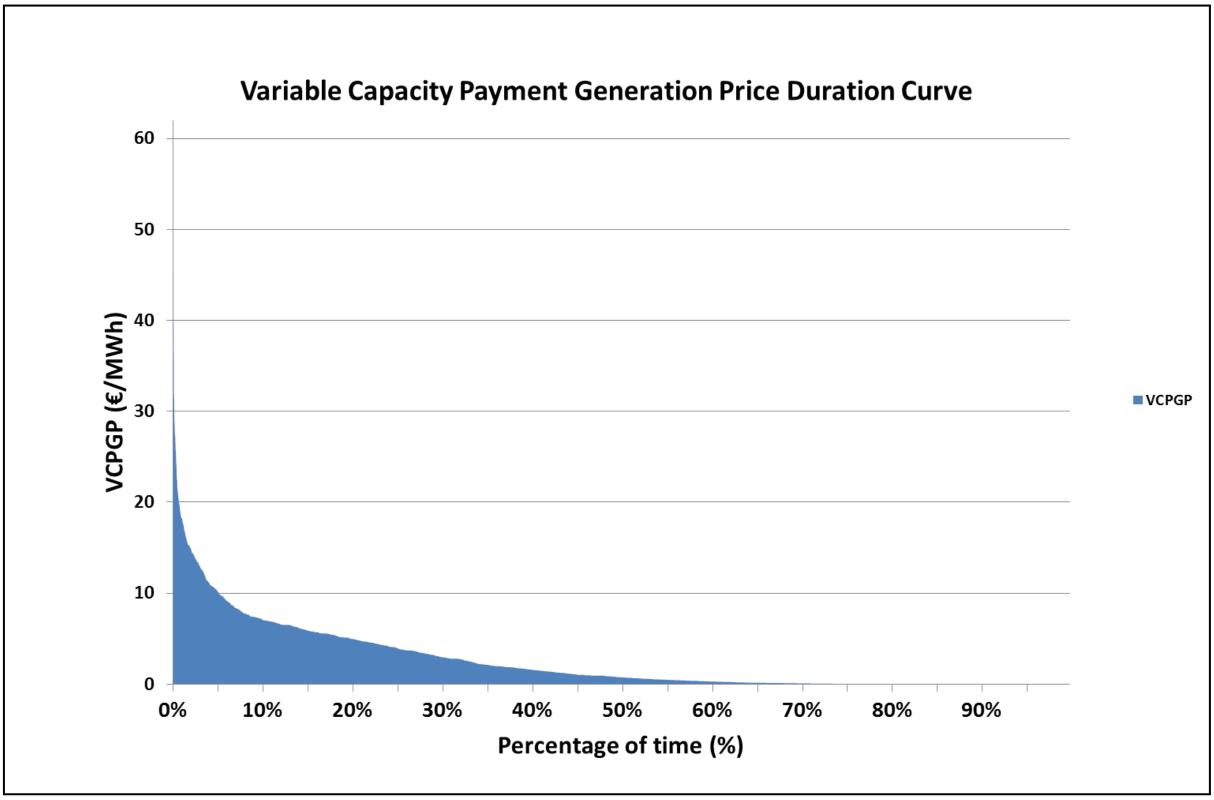

Figure 4.5 – Price Duration Curve of Variable Capacity Payments Generation Price

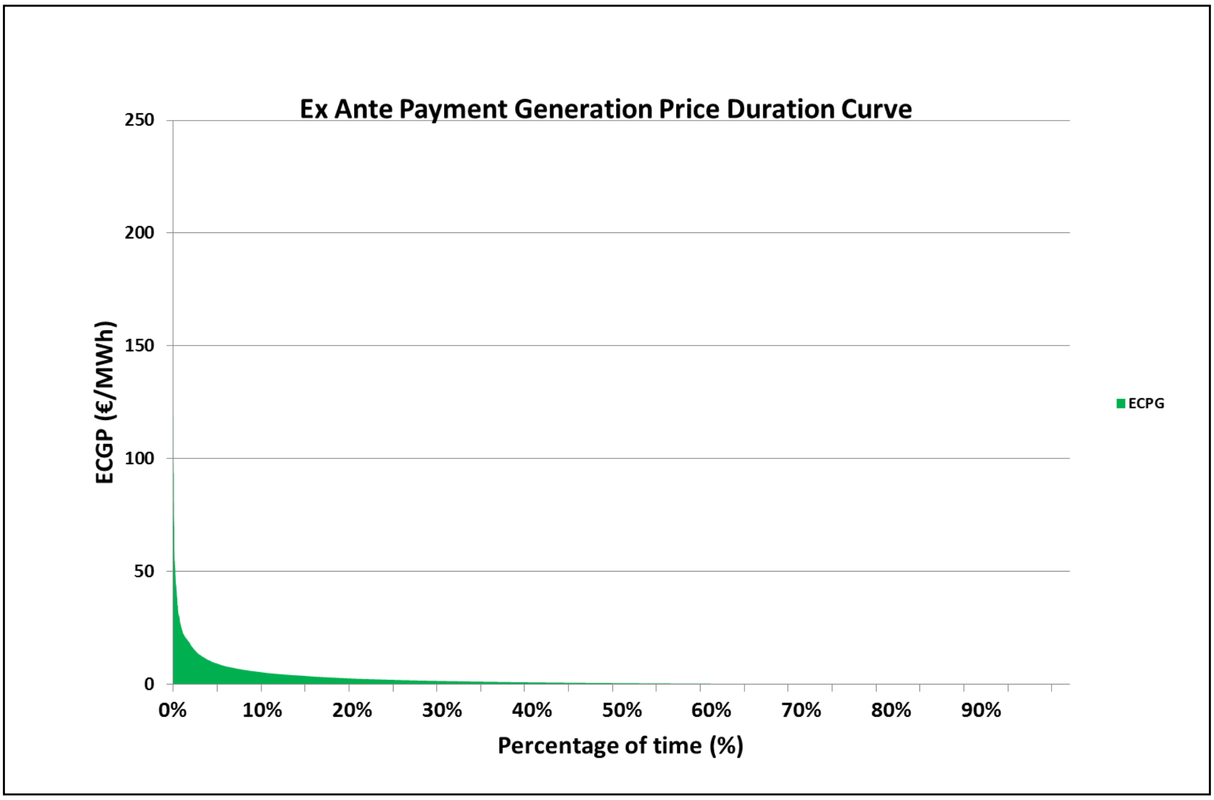

Figure 4.6 – Price Duration Curve of Ex-Post Capacity Payments Generation Price

4.3 Simplicity/Fairness

A well-chosen FPF does not overly complicate the CPM.

In terms of fairness, it could be argued that certain values of FPF benefit some types of unit more than others. This will be dealt with in the "Efficient Signals for Investment" section below.

4.4 Prevention of gaming

Trying to manipulate capacity payments by withdrawing available generation with the intention of artificially creating a capacity shortage has been illustrated previously to be a redundant strategy[10]. Efforts to withdraw enough plant to elevate the ECPG by an amount such that a participant sees a net capacity payment revenue gain from the remaining available portfolio has been shown to lead, in almost every case, to a net loss of revenue. This study referred to was carried out prior to the application of an FPF. It is assumed here that any FPF<1 would make even more remote the possibility of profitably gaming the CPM. Therefore, we may conclude that the choice of FPF has no appreciable effect on a participant's ability to game the CPM.

4.5 Efficient signals for investment

From an investor's perspective the CPM is a very important component of revenue from SEM. While units may earn revenue above their Variable costs through infra-marginal

[10] AIP-SEM-231-06

rent, ancillary services payments and carbon allowances, a large proportion of a unit's capital and fixed costs are recovered through the CPM.

Intra-year revenue stability is more likely to be of more concern to investors i.e. the level of expected revenue from the CPM over the lifetime of the investment. This is discussed in the consultation by the Regulatory Authorities[11] and is not considered further here. However, in terms of intra-year revenue, the choice of FPF will benefit some plant over others and this would be a consideration by any investor.

Based on how different unit types are treated in the CPM, Figures 4.7, 4.8 and 4.9 outline how different levels of intra-year payment volatility would have affected the variable, Ex-Post and combined revenues of these unit types in 2016. The unit types considered are based on their eligible availability profiles. The New Thermal Unit is a large CCGT unit (>300MW) with high availability. The Old Thermal Unit is an older gas or coal unit with a lower availability. The Wind Unit has variable availability. Both the Hydro Unit and Pumped Storage Unit are energy limited but their availability is optimised to maximise revenue from the CPM. The OCGT Unit is a smaller unit with very high availability (>95%).

Relative Benefits of Different FPF's on the Variable Payment in the CMP by Plant Type						
FPF	0.1	0.25	0.35	0.5	0.75	1
New Thermal Unit	0.57%	0.11%	0.00%	-0.05%	0.02%	0.10%
Old Thermal Unit	-1.08%	-0.62%	0.00%	1.00%	2.58%	3.96%
Wind Unit	5.37%	2.10%	0.00%	-2.97%	-6.87%	-9.29%
Hydro Unit	0.48%	0.66%	0.00%	-0.81%	-2.11%	-2.87%
Pumped Unit	-13.36%	-1.94%	0.00%	1.53%	3.75%	5.77%
OCGT Unit	-1.50%	-0.77%	0.00%	1.15%	2.67%	3.74%

Figure 4.7 The Effect of FPF on the Variable Capacity Payment.

Relative Benefits of Different FPF's on the Ex-Post Payment in the CMP by Plant Type						
FPF	0.1	0.25	0.35	0.5	0.75	1
New Thermal Unit	-1.18%	-0.63%	0.00%	1.20%	3.31%	5.02%
Old Thermal Unit	-0.12%	0.05%	0.00%	-0.25%	-0.82%	-1.51%
Wind Unit	75.25%	20.76%	0.00%	-18.73%	-33.78%	-40.86%
Hydro Unit	-19.30%	-6.07%	0.00%	5.41%	8.77%	8.86%
Pumped Unit	-21.99%	-6.35%	0.00%	6.05%	11.18%	13.54%
OCGT Unit	-4.49%	-1.18%	0.00%	1.00%	1.45%	1.16%

Figure 4.8 The Effect of FPF on the Ex-Post Capacity Payment.

[11] SEM-09-105

Relative Benefits of Different FPF's on the combined Payment in the CMP by Plant Type						
FPF	0.1	0.25	0.35	0.5	0.75	1
New Thermal Unit	-0.32%	-0.27%	0.00%	0.59%	1.69%	2.61%
Old Thermal Unit	-0.60%	-0.28%	0.00%	0.37%	0.88%	1.22%
Wind Unit	27.02%	7.89%	0.00%	-7.85%	-15.21%	-19.07%
Hydro Unit	-10.65%	-3.13%	0.00%	2.69%	4.01%	3.73%
Pumped Unit	-17.70%	-4.16%	0.00%	3.80%	7.49%	9.68%
OCGT Unit	-3.05%	-0.98%	0.00%	1.07%	2.04%	2.40%

Figure 4.9 – The Effect of FPF on the combined Variable & Ex-Post Capacity Payment.

A Hydro Unit and a Pumped Storage Unit may benefit more from payments with higher volatility. This is due to the fact that their availability is optimised for times of high capacity payments. Old and New Thermal Units are largely unaffected by the volatility of the CPM. A Wind Unit, while it might benefit less directly for the Higher Volatility Case, may benefit in the long run from the investment in units that have characteristics complementary to the Wind Unit[12]. The opposite is true for the Lower Volatility Case.

5 Conclusion

Choosing an appropriate value for the FPF is a matter of striking a balance between retaining sufficient volatility to signal the need for availability in times of low margin and avoiding excessive volatility that would render the mechanism highly unpredictable.

The System Operators’ view is that generator units do not readily react to the Capacity Payments signal but aim to be available for as much time as possible. This is seen by the fact that there is no absolute trend in the availability to match high capacity payments through our year’s analysis.

To change the value of the FPF would require a decision by the TSO on who should benefit the most from the mechanism. An increase to the FPF would benefit Hydro and Pump Storage units at the cost of wind units, while decreasing it would have the opposite effect. Conventional plant, large thermal plant and small peaking plant would benefit from a higher FPF. There is an added factor to consider as FPF will only remain in place until the new market (ISEM) goes live from May 2018.

The System Operators see no reason to change the FPF from the current value of 0.35. This value is appropriate, as it retains some volatility in the Ex-post payment to signal the need for availability in times of actual low margin and yet avoids excessive volatility in the Variable payment.

[12] "The installation of complementary, i.e. flexibly dispatchable plant must be effectively incentivised so as to maintain adequate levels of system security". (All Island Grid Study , WS4, Conclusions, Jan 2008)