



## **CER/15/284 Review of Connection and Grid Access Policy: Initial Thinking & Proposed Transitional Arrangements - System Operator Assessment of Options for Implementing 10% MEC Increase for Existing Connections as of 17<sup>th</sup> May 2016**

### **Introduction:**

CER published a consultation paper CER/15/284 Review of Connection and Grid Access Policy: Initial Thinking & Proposed Transitional Arrangements on 11th December 2015. Both SOs submitted individual responses to this Consultation. A number of queries have been raised about the implementation of one of the measures to give 10% increase to existing units connected before 30<sup>th</sup> June 2016. The CER and the SOs have engaged in subsequent discussions to examine various options by which this measure could be implemented. CER has requested that the measure would be assessed to take into account the *“quickest and least problematic/costly scenario implementing the 10% MEC increase, and the amount of capacity / number of projects that would fall under this scenario”*.

This paper outlines options that are considered from an implementation perspective only and on the basis that the CER were to direct accordingly. The paper is laid out as follows:

1. **SOs understanding of Objective of “Additional 10%” Transitional Measure**
2. **Points to note**
3. **General Assumptions Used in Analysis**
4. **Potential Options & Analysis**
5. **Option Summary**

**Appendices – Appendix A, B, C and D including supporting data**

These options are not SO recommendations and the SOs acknowledge that it is the CER’s role to consider the related issues with regards to the various options and decide accordingly which may take into account other factors outside of the SOs’ considerations. The SOs’ considerations for this and other measures remain and are outlined in the respective responses to the consultation. This paper should be read in conjunction with the SOs’ respective consultation responses.

## **1. SOs' understanding of the Objective of "Additional 10%" Transitional Measure**

- Connections that can be delivered quickly - existing generators to increase their capacity on the grounds that these units will be able to bring their capacity onto the system considerably faster than a generator that does not have an existing connection
- Focused on making efficient use of existing connections and infrastructure
- Assist the transition from the existing connection policy towards the Enduring Connection Policy by supporting the proposed enduring connection policy objective, principles and approach:
  - End User Impact
  - Equity of Treatment
  - Compliance
  - Security, reliability of supply and competition
  - Efficiency in the use of resources and project development
  - Transparency
  - Practical, and timely implementation
  - Optimal Grid Development
- Balanced against the impact on other generators seeking to connect to the system

## **2. Points to note**

- All figures presented in this paper are high level assessments compiled within the time available and a more accurate assessment could be completed once a final ruleset is confirmed and applications made. The analysis presented herein however should be appropriate for a representative assessment by CER of the various options available.
- This assessment is current as of the 10<sup>th</sup> May 2016. Further applications and modifications may be received prior to CER making its decision which may change the basis for the analysis carried out by the SOs. It may be necessary to seek case by case instructions from CER for cases not envisaged/covered by this analysis.
- There are a considerable number of non-GPA applications being processed by the SOs at present at many nodes (approx. 85) across the system. Non-GPAs are processed on a sequential basis per CER/09/099. Therefore depending on the number of non-GPA applications at a node, and the order in which they are processed, could have a very significant influence on the speed of being able to offer additional 10% MEC.
- Depending on the option chosen the actual availability of 10% additional MEC may be limited if all capacity has been assigned to non-GPA projects.
- If there are a large number of non-GPAs at a node, and the 10% additional capacity is to be processed sequentially, it may not be possible to process some 10% additional MEC requests within the transitional timeframe and may fall within the enduring policy timeframe.
- The assessment carried out by the SOs has not taken into account where capacity would not be available to applicants due to additional works required. This would require detailed case by case assessment which is outside the scope of the request. It is therefore expected that the total number of applications and MW potentially eligible would be less in practice.

### 3. General Assumptions Used in Analysis

General Assumptions Used in Analysis	Explanatory Note
10% calculated on Contracted MEC	This a specific set value used in all connection contracts so considered to be most appropriate from an ease of implementation perspective
Connected Applicants or those due to be connected by 30 <sup>th</sup> June 2016	This is in accordance with CER Consultation
Directed Contracts not excluded from these figures	Further clarity from CER would be needed to confirm what this category entails so SOs have not removed them for now
Transmission non-firm offers that become firm at a future date	Carrying out the necessary assessment to provide offers that are firm from a transmission perspective would be impractical in the short to medium term
Relocations prohibited after the deadline date for applications for additional 10%	This is to reduce further complications at nodes that have applicants seeking to increase by 10% and also non-GPA applications
Non-GPAs currently being processed or with live offers would be completed first	There are a large number of non-GPAs currently being processed or with live offers. It is assumed that they would be completed (i.e. with an executed agreement or lapsed) before the SOs would process a 10% increase application (assuming it is next in the sequence for processing)
Multiple 10% applications at a node	SOs will assume that all applications for 10% increase at a node are considered together. It is also assumed that 10% increases will be deemed to have the same application date e.g. date of CER Direction within a node where non-GPAs exist. Where requests exceed available capacity this will be assigned in accordance with specific CER instruction.
Applications for up to 10%	Applications for up to 10% will be considered however no reduced amount will be offered to applications where their requested increase is not available

**4. Potential Options & Analysis**

The SOs considered 4 main options which consist of 2 sub-options whereby a 10% increase application is processed sequentially with non-GPAs or prioritised within that process. The general assumptions are per section 3 above but additional assumptions are made which determine the number and size of potentially eligible projects. The SOs have not commented on the priority or sequential processing of the applications with regard to non-GPAs as this is discussed in the points to note above.

**1) Option 1**

	<b>Additional Potential MWs</b>	<b>Number of Applicants</b>	<b>Further Breakdown</b>
<b>Option 1</b>	1004	762	Appendix A

**Option 1a**

<b>Additional Assumptions for Option 1a</b>	<b>Explanation of Assumption</b>
<b>Additional Capacity Installed and Not Yet Installed</b>	This would allow all connected generators the option to increase capacity even where it is not already installed
<b>Non-GPA sequential processing approach</b>	Applications for additional 10% would be added to the non-GPA processing sequence at a node and processed in application date order

**Option 1b**

<b>Additional Assumptions for Option 1a</b>	<b>Explanation of Assumption</b>
<b>Additional Capacity Installed and Not Yet Installed</b>	This would allow all connected generators the option to increase capacity even where it is not already installed
<b>Priority within Non-GPA sequential processing approach</b>	Applications for additional 10% would be added to the non-GPA processing sequence at a node and processed at the top of the sequence i.e. the next application to be processed

**SOs' Conclusion**

As practical and timely implementation is a key objective of this measure, it is important that the volume of applications for the transitional measure is manageable and the level of network analysis is limited to ensure offers can issue in a timely manner. There is a significant level of MW that could be requested from a very significant number of applications.

If the eligibility is not limited to applicants who already have the additional capacity installed, the assessment time and processing time would be a time consuming process and is likely to encounter many of the same issues that are being considered as part of the Enduring Future Access Philosophy which could take time to resolve and therefore lose the benefit of introducing this transitional measure at all. Also allowing applicants who do not have the additional capacity already installed will potentially require significant planning permission and construction periods prior to this additional capacity coming onto the system.

## 2) Option 2

	<b>Additional Potential MWs</b>	<b>Number of Applicants</b>	<b>Further Breakdown</b>
<b>Option 2</b>	286	246	Appendix B

### Option 2a

<b>Additional Assumptions for Option 2a</b>	<b>Explanation of Assumption</b>
<b>Additional Capacity Only for Already Installed</b>	Only generation with the capacity installed would be eligible to apply for up to the lesser of 10% of MEC or installed plant.
<b>Non-GPA sequential processing approach</b>	Applications for additional 10% would be added to the non-GPA processing sequence at a node and processed in application date order

### Option 2b

<b>Additional Assumptions for Option 2b</b>	<b>Explanation of Assumption</b>
<b>Additional Capacity Only for Already Installed</b>	Only generation with the capacity installed would be eligible to apply
<b>Priority within Non-GPA sequential processing approach</b>	Applications for additional 10% would be added to the non-GPA processing sequence at a node and processed at the top of the sequence i.e. the next application to be processed

**SOs' Conclusion** - Projects are more likely to be ready to deliver capacity but there may still be a large amount of potential applications to assess slowing up overall process.

3) Option 3

	<b>Additional Potential MWs</b>	<b>Number of Applicants</b>	<b>Further Breakdown</b>
<b>Option 3</b>	268	98	See Appendix C

Option 3a

<b>Additional Assumptions for Option 3a</b>	<b>Explanation of Assumption</b>
<b>Additional Capacity Already Installed</b>	Only generation with the capacity installed would be eligible to apply for up to the lesser of 10% of MEC or installed plant.
<b>Non-GPA sequential processing approach</b>	Applications for additional 10% would be added to the non-GPA processing sequence at a node and processed in application date order
<b>Applications limited to applicants requesting an increase of MEC of 1MW or more</b>	Only applications for 10% additional MEC where the 10% exceeds 1MW would be eligible i.e. projects would have to be at least 10MW MEC in total

Option 3b

<b>Additional Assumptions for Option 3b</b>	<b>Explanation of Assumption</b>
<b>Additional Capacity Already Installed</b>	Only generation with the capacity installed would be eligible to apply for up to the lessor of 10% of MEC or installed plant.
<b>Priority within Non-GPA sequential processing approach</b>	Applications for additional 10% would be added to the non-GPA processing sequence at a node and processed in application date order
<b>Applications limited to applicants requesting an increase of MEC of 1MW or more</b>	Only applications for 10% additional MEC where the 10% exceeds 1MW would be eligible i.e. projects would have to be at least 10MW MEC in total

**SOs' Conclusion** – This would reduce the overall MW available for the 10% increase but should deliver additional MW quicker as there would be fewer applications to consider.

4) Option 4

	<b>Additional Potential MWs</b>	<b>Number of Applicants</b>	<b>Further Breakdown</b>
<b>Option 4</b>	136.89	17	See Appendix D

Option 4a

<b>Additional Assumptions for Option 4a</b>	<b>Explanation of Assumption</b>
<b>Additional Capacity Already Installed</b>	Only generation with the capacity installed would be eligible to apply for up to the lessor of 10% of MEC or installed plant.
<b>Non-GPA sequential processing approach</b>	Applications for additional 10% would be added to the non-GPA processing sequence at a node and processed in application date order
<b>Applications limited to applicants requesting an increase of MEC of 1MW or more</b>	Only applications for 10% additional MEC where the 10% exceeds 1MW would be eligible i.e. projects would have to be at least 10MW MEC in total
<b>Exclude applicants who share Customer funded works</b>	Applicants that drive the reallocation of customer funded assets to other parties through charges and rebates would be excluded

Option 4b

<b>Additional Assumptions for Option 4b</b>	<b>Explanation of Assumption</b>
<b>Additional Capacity Already Installed</b>	Only generation with the capacity installed would be eligible to apply for up to the lessor of 10% of MEC or installed plant.
<b>Applicants Applying for additional 10% prioritised over existing Non-GPA Applicants at a given node</b>	Applications for additional 10% would be added to the non-GPA processing sequence at a node and processed in application date order
<b>Applications limited to applicants requesting an increase of MEC of 1MW or more</b>	Only applications for 10% additional MEC where the 10% exceeds 1MW would be eligible i.e. projects would have to be at least 10MW MEC in total
<b>Exclude applicants who share Customer funded works</b>	Applicants that drive the reallocation of customer funded assets to other parties through charges and rebates would be excluded

**SOs' Conclusion** – This would reduce the overall MW available for the 10% increase but would be quickest/least problematic option from an offer processing perspective.

**5. Option Summary**

Option	Potential Additional MEC				Further Breakdown Available in Appendix:	Compatibility with Non-GPA		Complexity & Speed for Implementation			
	Renewable Additional MW	Non-Renewable Additional MW	Total Additional MW	Number of Projects		Number of nodes with potential multiple 10% Applicants	Number of nodes with existing Non-GPA applicants and potential 10% applicant(s) <sup>1</sup>	Time to Develop Processing Rule Set for CER Direction	Queuing Time (i.e. Considering Non-GPAs)	Time to Process Offers	Speed of Additional Capacity Delivered to System (Cumulative Impact)
1a	281	723	1004	384	A	84	55	CER to Advise	Red	Red	Red
1b											
2a	109	177	286	246	B	23	11		Yellow	Red	Red
2b											
3a	92	176	268	49	C	7	2		Green	Yellow	Yellow
3b											
4a	40	174	214	29	D	3	0		Green	Green	Green
4b											

	Expected to be Considerably Complex & Time intensive
	Expected to be somewhat Complex & Time intensive but will vary on a case by case basis
	Expected to be manageable but will vary on a case by case basis

<sup>1</sup> Does not include projects currently being processed or with a live offer.



**Appendix A – Option 1**

**Breakdown of Total Additional MEC per node and technology type**

<b>Technology Type</b>		<b>Potential Additional MWs</b>
<b>Grand Total</b>		<b>1003.690099</b>
<b>Biogas</b>		<b>0.502499</b>
	Griffinrath	0.028
	Kilkenny	0.018
	Knockearagh	0.3
	Portlaoise	0.1065
	Rathkeale	0.049999
<b>CCGT</b>		<b>130.7</b>
	Glanagow	44.5
	Great Island	43.1
	Longpoint	43.1
<b>CHP</b>		<b>20.1465</b>
	Ardnacrusha	0.0499
	Arklow	0.1
	Aughinish	13
	Bandon	0.27
	Barnahely	0.01
	Barrymore	1.71
	Blackrock	0.0554
	Carrickmines	0.1
	Castleview	0.2
	Charleville	0.4465
	Dallow	0.07
	Drybridge	0.015
	Dunmanway	0.6
	Fassaroe	0
	Finglas	0.31
	Glasmore	0.17
	Inchicore	0.8075
	Kilbarry	0.06
	Mallow	0.4
	Meath Hill	0.131
	Midleton	0.1
	Portlaoise	0.78
	Rathkeale	0.659
	Ringsend	0.0922
	Wexford	0.01
<b>Coal</b>		<b>86.25</b>
	Moneypoint	86.25

<b>Diesel</b>		<b>11.374</b>
	Dundalk	0.15
	Finglas	0.65
	Oughtragh	0.174
	Tawnaghmore	10.4
<b>Distillate</b>		<b>10.36</b>
	Derryiron	10.36
<b>Gas</b>		<b>184.1</b>
	Aghada	25.8
	Corduff	41.2
	Huntstown	35.2
	Irishtown	41.5
	Tynagh	40.4
<b>Gas/DO</b>		<b>92.4</b>
	Aghada	27
	Marina	8.5
	North Wall	10.9
	Shellybanks	46
<b>HFO</b>		<b>58.94</b>
	Tarbert	58.94
<b>Hybrid</b>		<b>1.75</b>
	Cathaleen's Fall	1.75
<b>Hydro</b>		<b>23.8008</b>
	Ardnacrusha	8.64
	Arklow	0.01
	Ballylickey	0.2828
	Bandon	0.0079
	Binbane	0.707
	Cahir	0.022
	Carlow	0.049
	Carrick on Shannon	0.0232
	Carrigadrohid	0.8
	Cathaleen's Fall	4.694
	Cliff	2
	Cloon	0.051
	Dallow	0.04
	Drybridge	0.009
	Dundalk	0.01
	Dungarvan	0.0725
	Galway	0.0019
	Griffinrath	0.4055
	Inchicore	0.0179

	Inniscarra	1.9
	Kilkenny	0.0196
	Knockearagh	0.06
	Limerick	0.0132
	Mullingar	0.0055
	Navan	0.02
	Nenagh	0.0024
	Newbridge	0.002
	Oughtragh	0.12
	Pollaphuca	3.418
	Portlaoise	0.003
	Rathkeale	0.029
	Sligo	0.2708
	Thornsberry	0.0185
	Thurles	0.02
	Trabeg	0.0265
	Trien	0.018
	Waterford	0.0106
<b>Interconnector</b>		<b>50</b>
	Woodland	50
<b>LFG</b>		<b>6.707</b>
	Athlone	0.066
	Ballybeg	0.425
	Blake	0.4999
	Carrickmines	0.19
	Cookstown	0.1
	Drybridge	2.3224
	Finglas	0.5
	Glasmore	0.488
	Kilteel	0.978
	Newbridge	0.5055
	Rathkeale	0.32
	Shankill	0.07
	Trabeg	0.1952
	Trien	0.032
	Wexford	0.015
<b>OCGT</b>		<b>11.6</b>
	Cushaling	11.6
<b>Peat</b>		<b>35.65</b>
	Cushaling	12.15
	Lanesboro	9.4
	Shannonbridge	14.1

<b>Pumped Storage Hydro</b>		<b>29.2</b>
	Turlough Hill	29.2
<b>Solar</b>		<b>0.005</b>
	Cow Cross	0.005
<b>Other</b>		<b>0.1851</b>
	Blake	0.0401
	Castlebar	0.038
	Drybridge	0.03
	Finglas	0.028
	Stratford	0.013
	Thornsberry	0.011
	Tralee	0.025
<b>Wind</b>		<b>250.0192</b>
	Ardnacrusha	0.769
	Ardnacrusha	0.066
	Arigna	1.56
	Arklow	2.52
	Athea	3.435
	Ballylickey	2
	Ballylickey	2.795
	Ballywater	4.2
	Bandon	0.45
	Barnahely	0.45
	Barrymore	3.24
	Bellacorick	0.645
	Binbane	4.118
	Boggeragh	9.5
	Boggeragh	4.77
	Booltiagh	1.2
	Booltiagh	1.945
	Butlerstown	0.17
	Carlow	0.1833
	Carlow	3.304
	Castlebar	1.474
	Castlebar	2.21
	Castledockrell	4.14
	Cathaleen's Fall	0.002
	Cauteen	7.99
	Clahane	3.78
	Cloghboola	4.6
	Coomagearlahy	8.1
	Cordal	0
	Corderry	3.945

	Crane	0.499
	Crory	7.0012
	Cunghill	1.105
	Cunghill	2.375
	Dallow	0.68
	Dallow	0.425
	Dalton	0.255
	Derrybrien	5.95
	Dromada	2.85
	Drybridge	0.085
	Drybridge	0.17
	Dundalk	0.05
	Dungarvan	0.499
	Dunmanway	0.425
	Dunmanway	2.101
	Garrow	7.4215
	Garvagh	4.8
	Glanlee	2.98
	Glasmore	0.05
	Glenlara	5.3
	Glenree	3.415
	Golagh	1.5
	Gortawee	0.3
	Grange	0.025
	Griffinrath	0.0018
	Ikerrin	7.19
	Kilbarry	0.085
	Kill Hill	3.6
	Knockacummer	10.5
	Knockearagh	1.385
	Lanesboro	0.46
	Letterkenny	4.525
	Lisheen	5.9
	Lisheen	3.96
	Macroom	3.275
	Meath Hill	1.2017
	Meath Hill	1.05
	Meentycat	8.496
	Midleton	0.17
	Mountlucas	7.92
	Moy	0.6
	Nenagh	1.399
	Oughtragh	0.9

	Rathkeale	0.499
	Rathkeale	2.75
	Ratrussan	3.062
	Ratrussan	4.8
	Reamore	5.965
	Salthill	0.333
	Salthill	4.09
	Shankill	0.3017
	Sligo	0.6
	Sligo	0.765
	Somerset	0.765
	Sorne Hill	5.5
	Tipperary	0.46
	Tonroe	0.954
	Tralee	0.17
	Tralee	4.586
	Trien	4.225
	Trien	0.91
	Trillick	3.379
	Tullabrack	0.46
	Tullabrack	1.26
	Waterford	1.853
	Wexford	2.025
	Wexford	1.865
	Woodhouse	2

**Number of nodes with potential multiple 10% Applicants**

<b>Node</b>	<b>Number of Potential Additional 10% Applicants at Node</b>
<b>Total Number of Nodes = 84 Nodes</b>	
Aghada	4
Ardnacrusha	9
Arigna	4
Arklow	3
Ballybeg	2
Ballylickey	9
Ballywater	2
Bandon	3
Barnahely	4
Barrymore	3
Binbane	13
Blackrock	2
Blake	2
Boggeragh	4
Booltiagh	3
Cahir	2
Carlow	8
Carrick on Shannon	2
Carrickmines	2
Castlebar	6
Castledockrell	4
Cathaleen's Fall	8
Cauteen	4
Cliff	2
Cloon	2
Coomagearlahy	3
Corderry	8
Crory	8
Cunghill	2
Cushaling	2
Dallow	5
Derryiron	2
Drybridge	10
Dundalk	4
Dungarvan	3
Dunmanway	6
Finglas	6
Garrow	4
Garvagh	2

Glasmore	3
Glenlara	3
Great Island	2
Griffinrath	4
Ikerrin	3
Inchicore	3
Inniscarra	2
Kilbarry	2
Kilkenny	5
Kilteel	4
Knockearagh	4
Lanesboro	2
Letterkenny	7
Lisheen	3
Macroom	2
Meath Hill	6
Meentycat	2
Midleton	2
Moneypoint	3
Nenagh	6
Newbridge	4
Oughtragh	3
Pollaphuca	4
Portlaoise	3
Rathkeale	9
Ratrussan	3
Reamore	3
Salthill	3
Shankill	3
Sligo	5
Sorne Hill	8
Tarbert	4
Thornsberry	3
Tipperary	2
Tonroe	2
Trabeg	2
Tralee	7
Trien	5
Trien	2
Trillick	4
Tullabrack	2
Turlough Hill	4
Waterford	5
Wexford	5



**Appendix B – Option 2**

**Breakdown of Total Additional MEC per node and technology type**

<b>Technology Type</b>		<b>Potential Additional MWs</b>
<b>Grand Total</b>		<b>285.5832</b>
<b>CCGT</b>		<b>78</b>
	Glanagow	13
	Great Island	39
	Longpoint	26
<b>CHP</b>		<b>13.234</b>
	Aughinish	13
	Castleview	0.074
	Finglas	0.16
<b>Distillate</b>		<b>0.4</b>
	Derryiron	0.4
<b>Gas</b>		<b>10</b>
	Corduff	6
	Huntstown	2
	Tynagh	2
<b>Gas/DO</b>		<b>81.5</b>
	Aghada	24
	Marina	8.5
	North Wall	3
	Shellybanks	46
<b>HFO</b>		<b>4.6</b>
	Tarbert	4.6
<b>Hydro</b>		<b>17.5</b>
	Ardnacrusha	8.3
	Carrigadrohid	0.8
	Cathaleen's Fall	4.5
	Cliff	2
	Inniscarra	1.9
<b>OCGT</b>		<b>2</b>
	Cushaling	2
<b>Wind</b>		<b>78.3492</b>
	Ardnacrusha	0.066
	Ballylickey	1.15
	Ballylickey	1.95
	Bandon	0.35
	Barnahely	0.25
	Barrymore	1.8

	Binbane	1.9
	Boggeragh	2
	Booltiagh	0.5
	Booltiagh	0.05
	Butlerstown	0.17
	Carlow	0.0133
	Castlebar	0.11
	Castledockrell	0.9
	Cathaleen's Fall	0.002
	Cauteen	4.5
	Charleville	0.4999
	Clahane	2.2
	Cloghboola	2
	Coomagearlahy	5
	Cordal	18
	Corderry	0.64
	Crane	0.21
	Croy	1
	Cunghill	1.25
	Drybridge	0.085
	Dundalk	0.05
	Dunmanway	0.05
	Garrow	0.575
	Glanlee	2.65
	Glasmore	0.05
	Glenlara	1.05
	Glenree	2.65
	Ikerrin	0.05
	Letterkenny	0.51
	Lisheen	1
	Macroom	1.75
	Meentycat	2.84
	Mountlucas	4.8
	Moy	0.6
	Nenagh	0.5
	Oughtragh	0.2
	Rathkeale	0.42
	Ratrussan	0.88
	Reamore	3.284
	Salthill	0.264
	Salthill	1.9
	Sorne Hill	1.04
	Tipperary	0.16
	Tonroe	0.36

	Tralee	0.18
	Trien	1.85
	Trien	0.05
	Trillick	0.69
	Waterford	0.6
	Wexford	0.75

**Number of nodes with potential multiple 10% Applicants**

<b>Node</b>	<b>Number of Potential Additional 10% Applicants at Node</b>
Ballylickey	3
Binbane	5
Booltiagh	3
Castledockrell	2
Cathaleen's Fall	3
Cauteen	3
Cliff	2
Coomagearlahy	2
Corderry	3
Croy	3
Derryiron	2
Drybridge	2
Garrow	2
Inniscarra	2
Letterkenny	2
Macroom	2
Meentycat	2
Nenagh	2
Ratrussan	2
Sorne Hill	3
Tarbert	2
Trien	3
Trillick	2
<b>Total Number of Nodes = 23 Nodes</b>	

### Appendix C – Option 3

#### Breakdown of Total Additional MEC per node and technology type

Technology	Node	Additional MWs
<b>Grand Total</b>		<b>268.534</b>
<b>CCGT</b>		<b>78</b>
	Glanagow	13
	Great Island	39
	Longpoint	26
<b>CHP</b>		<b>13</b>
	Aughinish	13
<b>Gas</b>		<b>10</b>
	Corduff	6
	Huntstown	2
	Tynagh	2
<b>Gas/DO</b>		<b>81.5</b>
	Aghada	24
	Marina	8.5
	North Wall	3
	Shellybanks	46
<b>HFO</b>		<b>4.6</b>
	Tarbert	4.6
<b>Hydro</b>		<b>16.3</b>
	Ardnacrusha	8.3
	Cathaleen's Fall	4.5
	Cliff	2
	Inniscarra	1.5
<b>OCGT</b>		<b>2</b>
	Cushaling	2
<b>Wind</b>		<b>63.134</b>
	Ballylickey	1.15
	Ballylickey	1.15
	Barrymore	1.8
	Binbane	1.19
	Boggeragh	2
	Cauteen	4.2
	Clahane	2.2
	Cloghboola	2
	Coomagearlahy	5
	Cordal	18

	Cunghill	1.25
	Glanlee	2.65
	Glenlara	1.05
	Glenree	2.65
	Lisheen	1
	Macroom	1.3
	Meentycat	2.84
	Mountlucas	4.8
	Reamore	3.284
	Salthill	1.9
	Trien	1.72

**Number of nodes with potential multiple 10% Applicants**

<b>Node</b>	<b>Number of Potential Additional 10% Applicants at Node</b>
Ballylickey	2
Cathaleen's Fall	2
Cauteen	2
Cliff	2
Coomagearlahy	2
Meentycat	2
Tarbert	2
<b>Total Number of Nodes = 7 Nodes</b>	

**Appendix D – Option 4**

**Breakdown of Total Additional MEC per node and technology type**

<b>Technology</b>	<b>Node</b>	<b>Additional MWs</b>
<b>Grand Total</b>		<b>214.49</b>
<b>CCGT</b>		<b>78</b>
	Glanagow	13
	Great Island	39
	Longpoint	26
<b>CHP</b>		<b>13</b>
	Aughinish	13
<b>Gas</b>		<b>10</b>
	Corduff	6
	Huntstown	2
	Tynagh	2
<b>Gas/DO</b>		<b>81.5</b>
	Aghada	24
	Marina	8.5
	North Wall	3
	Shellybanks	46
<b>HFO</b>		<b>4.6</b>
	Tarbert	4.6
<b>Hydro</b>		<b>16.3</b>
	Ardnacrusha	8.3
	Cathaleen's Fall	4.5
	Cliff	2
	Inniscarra	1.5
<b>Wind</b>		<b>11.09</b>
	Clahane	2.2
	Cunghill	1.25
	Meentycat	2.84
	Mountlucas	4.8

**Number of nodes with potential multiple 10% Applicants**

<b>Node</b>	<b>Number of Potential Additional 10% Applicants at Node</b>
Cathaleen's Fall	<b>2</b>
Meentycat	<b>2</b>
Tarbert	<b>2</b>
<b>Total Number of Nodes = 3 Nodes</b>	