

Demand Side Unit Workshop

Cork – 7th October 2013

Dublin – 15th October 2013



Agenda



Topic	Speaker	Time
Introduction	Martin McCarthy	11:00 – 11.05
Demand Side Unit Operation	Séamus Power	11:05 – 11.30
Demand Side Unit in the SEM	David Hade	11.30 – 12.15
Q&A	All	12:15



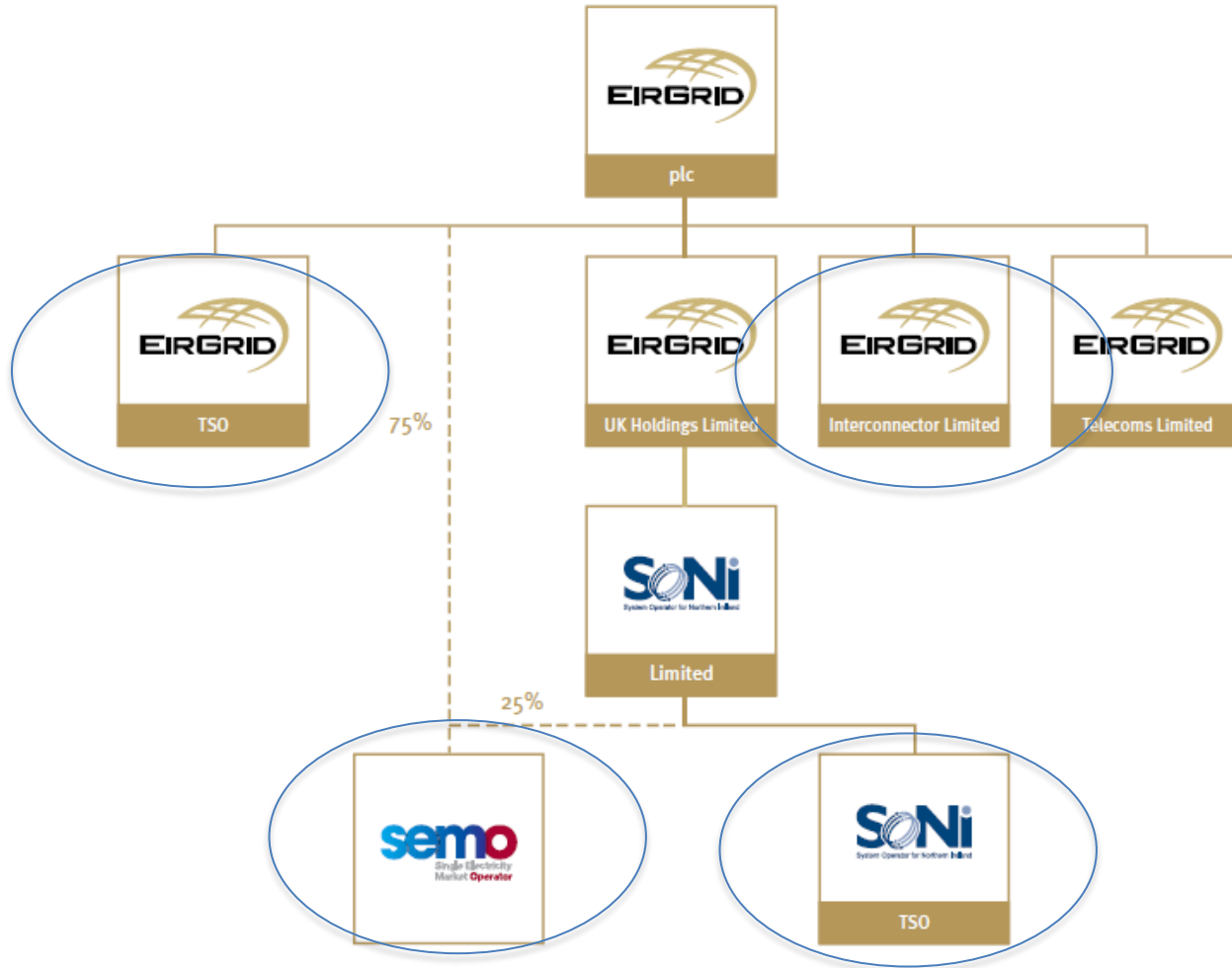
Introduction



- EirGrid plans and operates the Transmission System in Ireland
- SONI operates the Transmission System in Northern Ireland and NIE plans the Transmission network in conjunction with SONI
- Single Electricity Market Operator (SEMO) is a joint-venture between SONI and EirGrid



EirGrid Group Structure

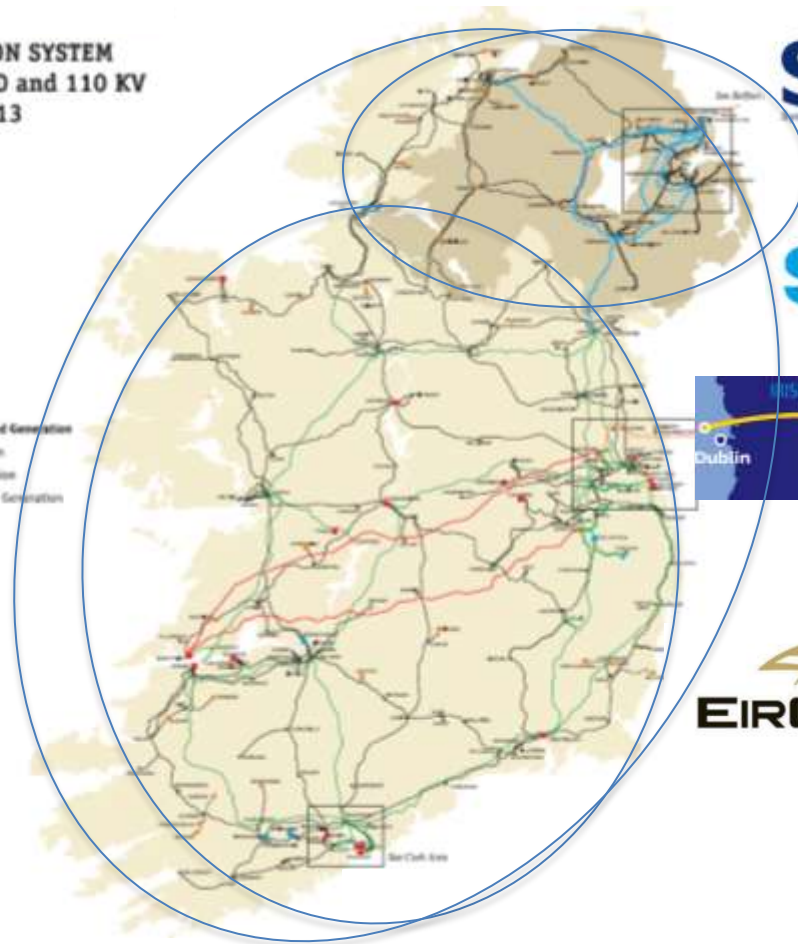


EirGrid – An All-Island Energy Company

TRANSMISSION SYSTEM 400, 275, 220 and 110 KV JANUARY 2013

- 400KV Lines
- 275KV Lines
- 220KV Lines
- 110KV Lines
- 220KV Cables
- 110KV Cables
- HVDC Cables
- 400KV Stations
- 275KV Stations
- 220KV Stations
- 110KV Stations

- Transmission Connected Generation
- Hydro Generation
 - Thermal Generation
 - Pumped Storage Generation
 - Wind Generation



www.eirgrid.com/aboutus

Demand Side Unit Operation



Background



- Provision for DSU in the SEM since 2007
- Demand Side Vision for 2020:
 - “the Regulatory Authorities (RAs) in the Republic of Ireland (RoI) and Northern Ireland recognise the potential which demand side management has to deliver significant economic and environmental benefits to the All-Island market.”
- Demand Side Management Initiative
 - Promote Demand Side participation in the SEM
 - Remove any barriers to market entry



What is a Demand Side Unit?



- A Demand Side Unit (DSU) is one or more demand sites that deliver a demand reduction when requested by the EirGrid or SONI Control Centre
 - Requests for a demand reduction are called ‘Dispatch Instructions’
- It is registered in the Single Electricity Market (SEM) and bids its demand reduction into the pool
- A demand site can become a DSU by itself (Individual Demand Site) or sign up with an aggregator (Aggregated Demand Site)



Distribution System Operator Connections

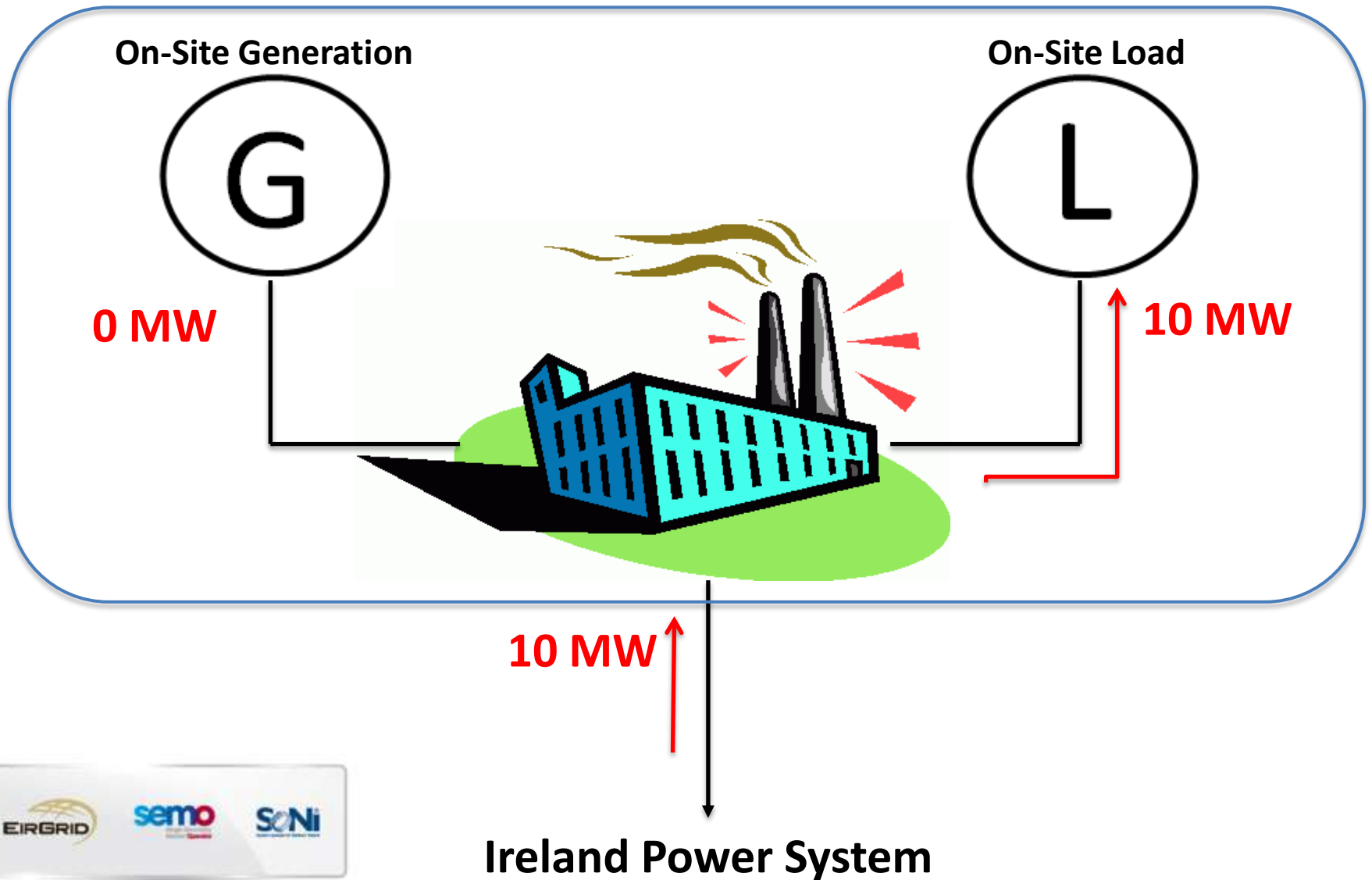


- ESBN and NIE Customers should contact their system operator when considering becoming a DSU
- If the intention is to export electricity to the system, an export capacity/exporting connection agreement is required.



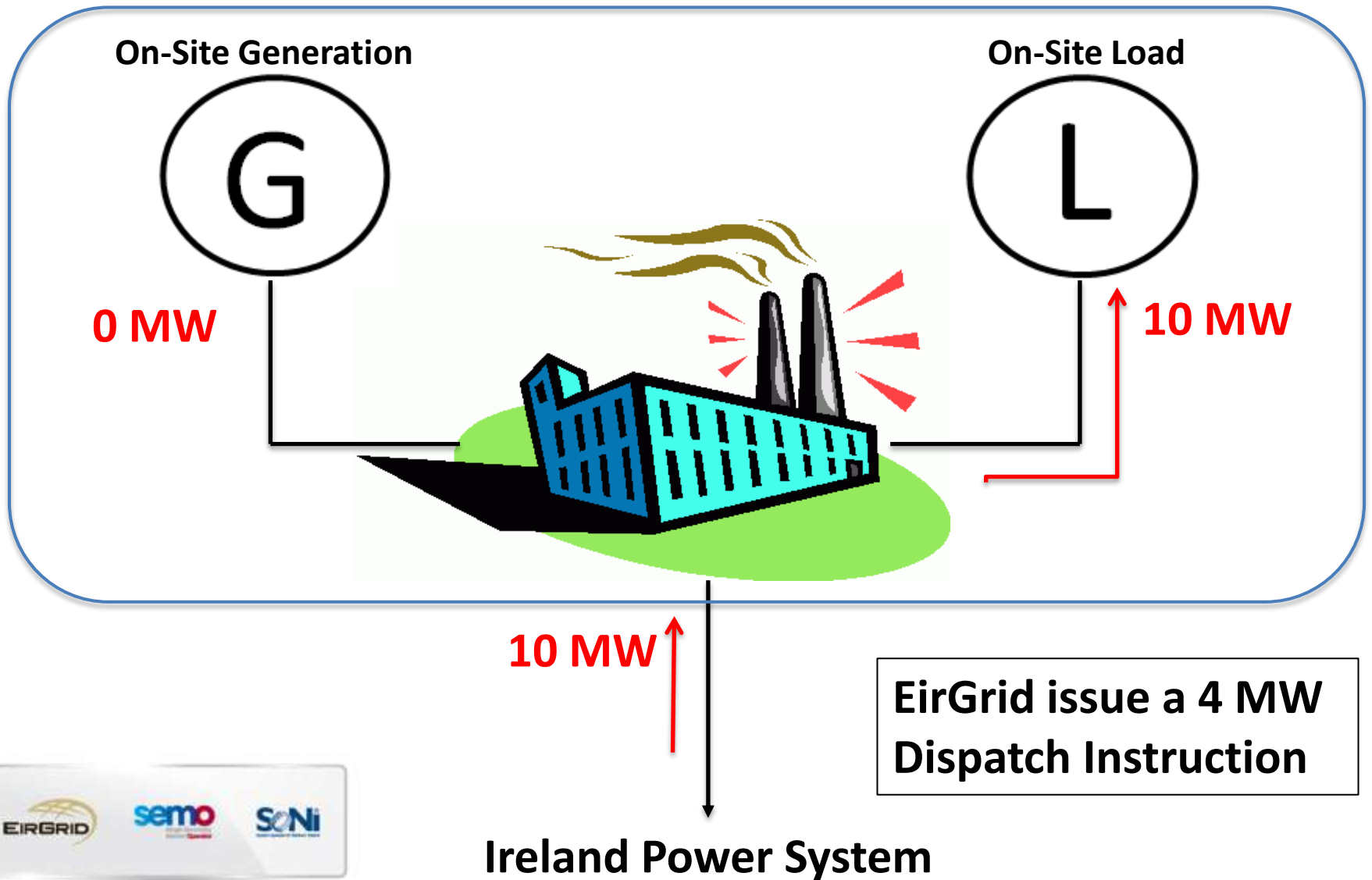
Individual Demand Site

Example 1



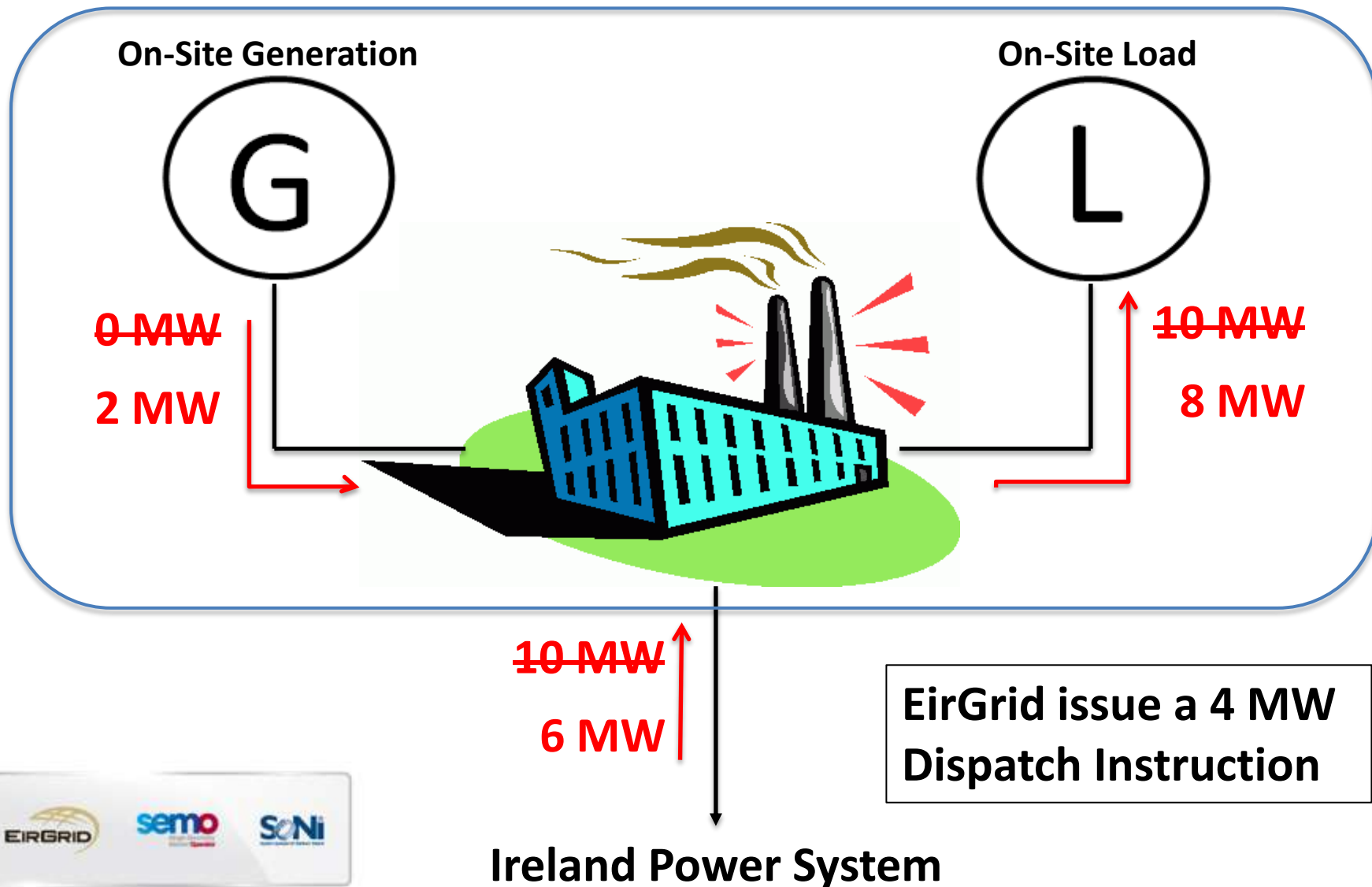
Individual Demand Site

Example 1



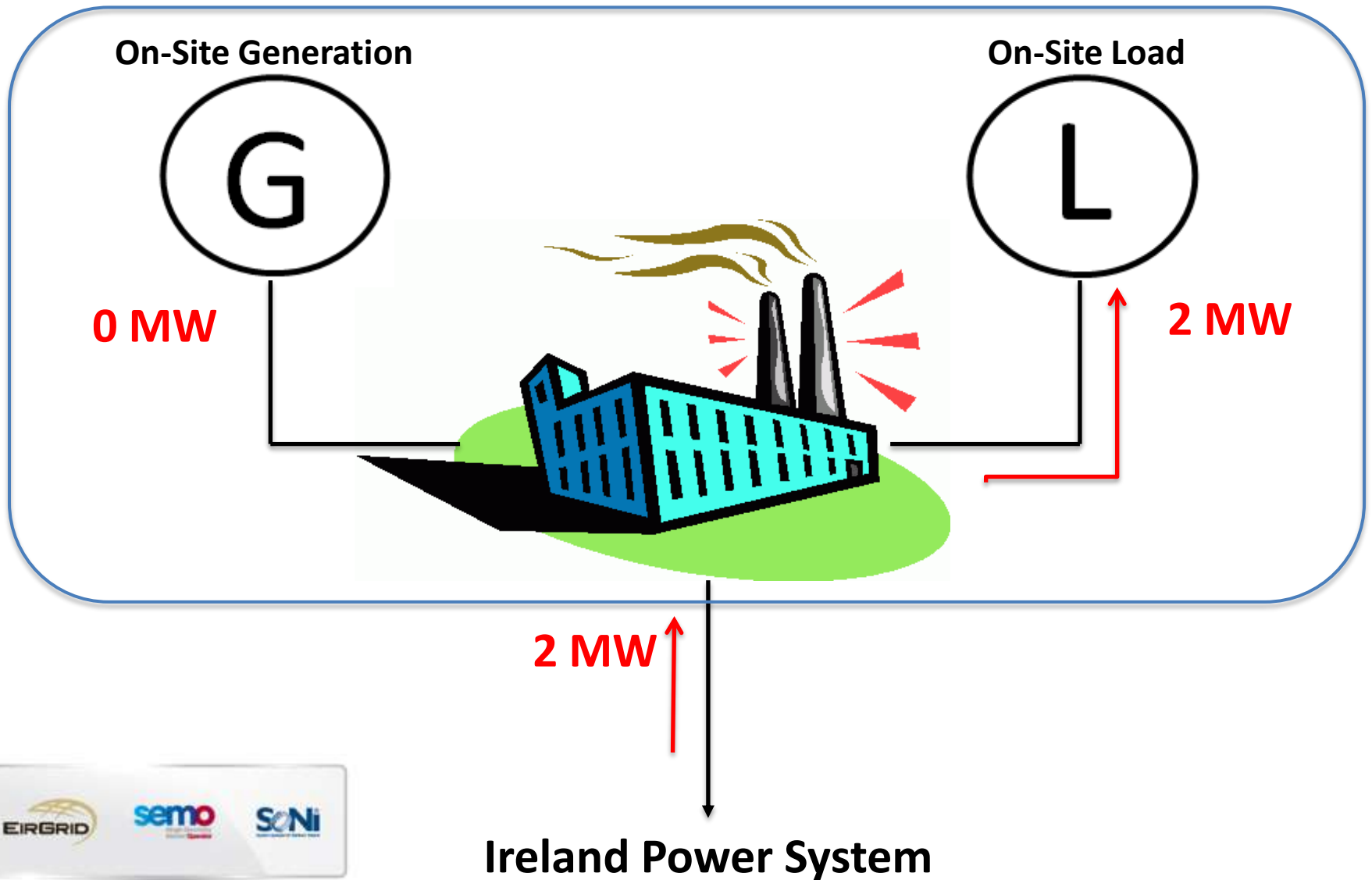
Individual Demand Site

Example 1



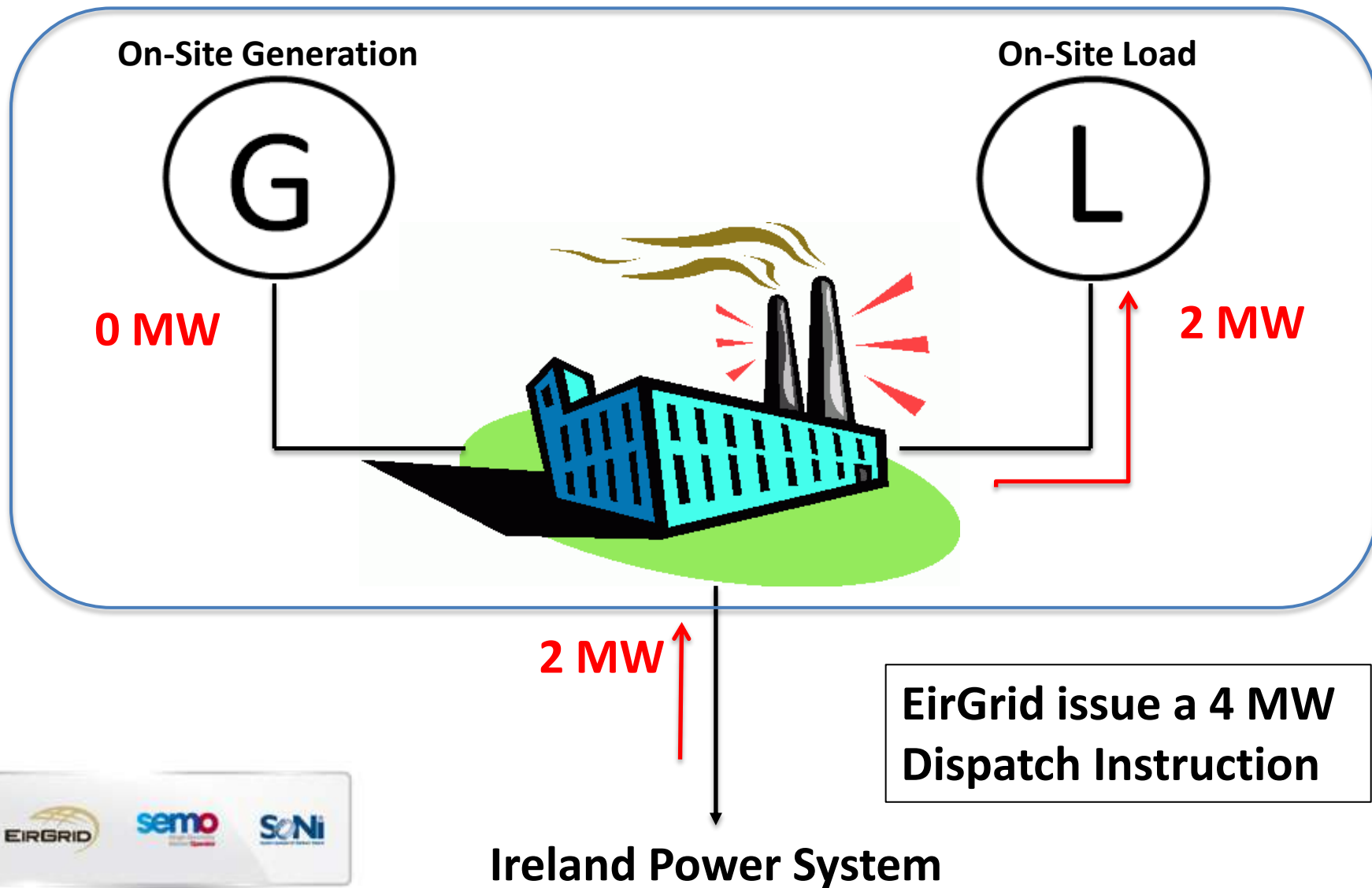
Individual Demand Site

Example 2



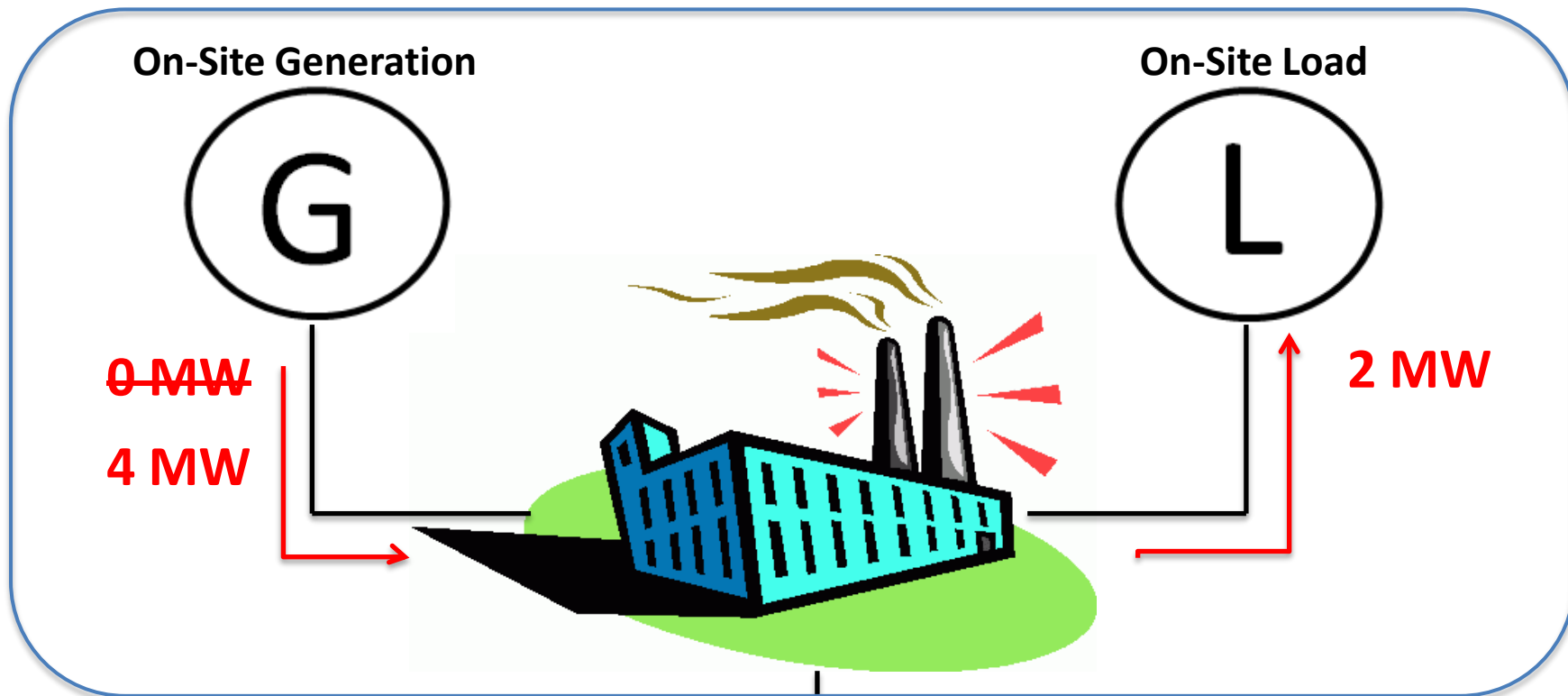
Individual Demand Site

Example 2



Individual Demand Site

Example 2



Site must have an MEC to Export

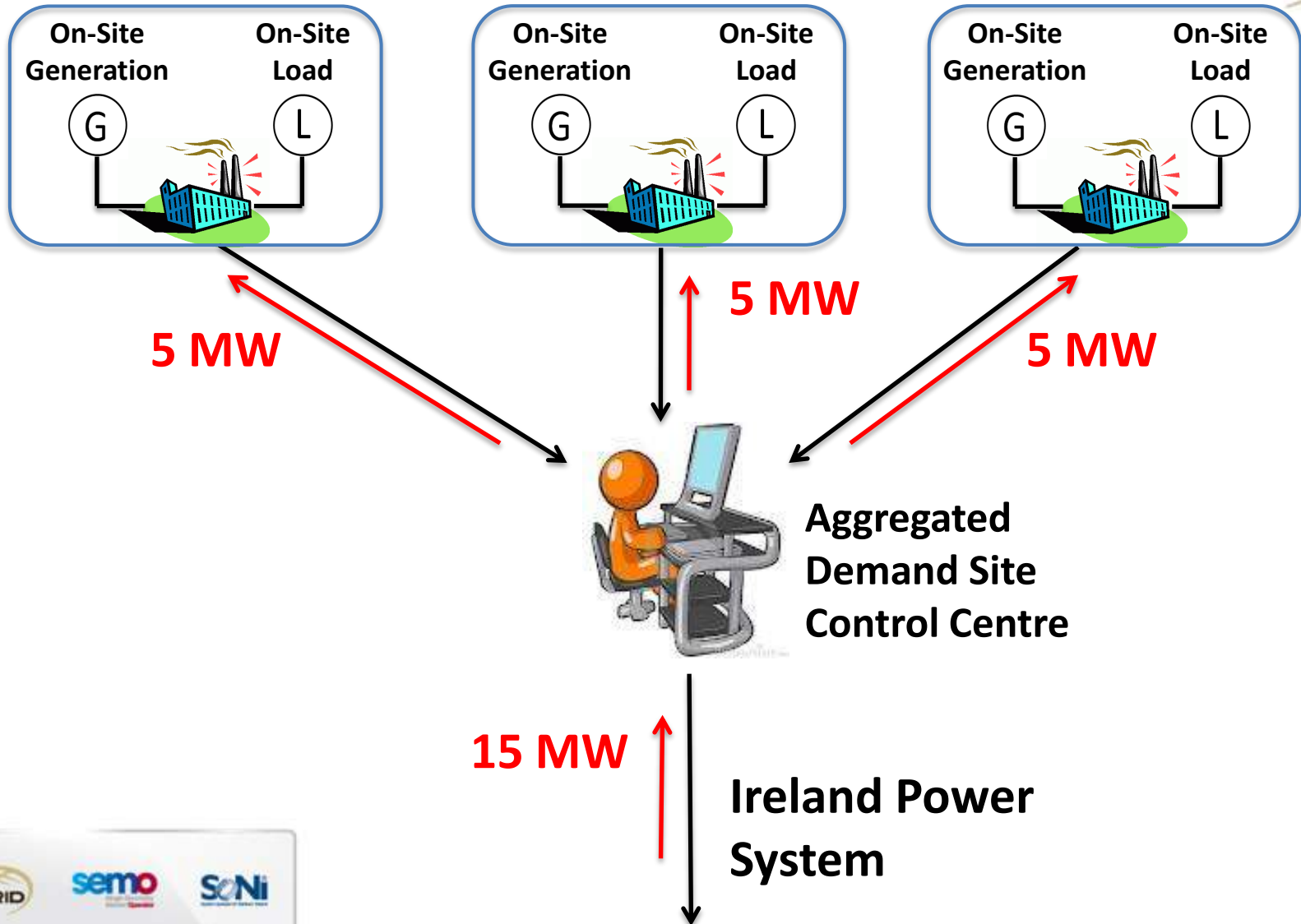
~~2 MW~~
-2 MW

EirGrid issue a 4 MW Dispatch Instruction

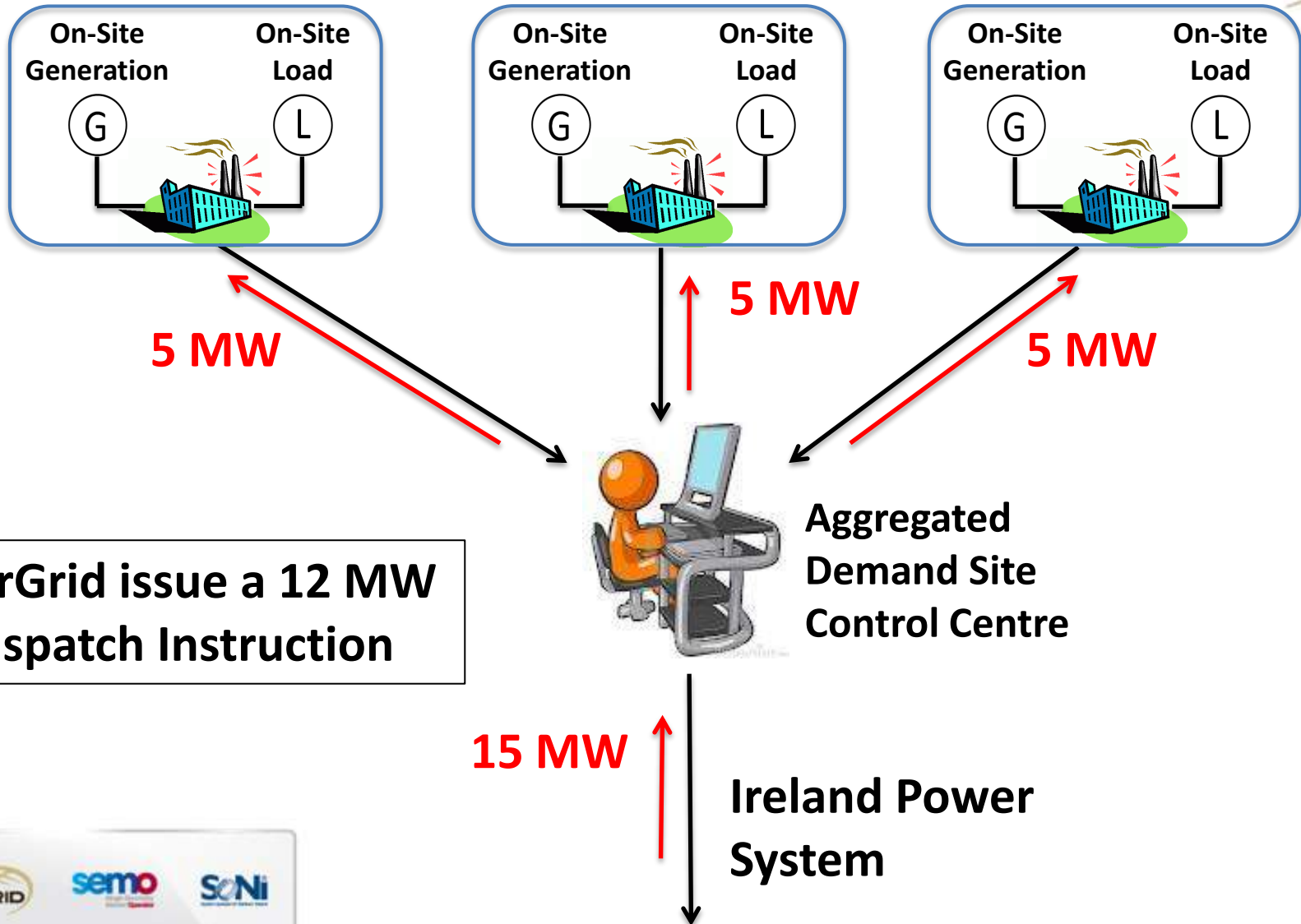
Ireland Power System



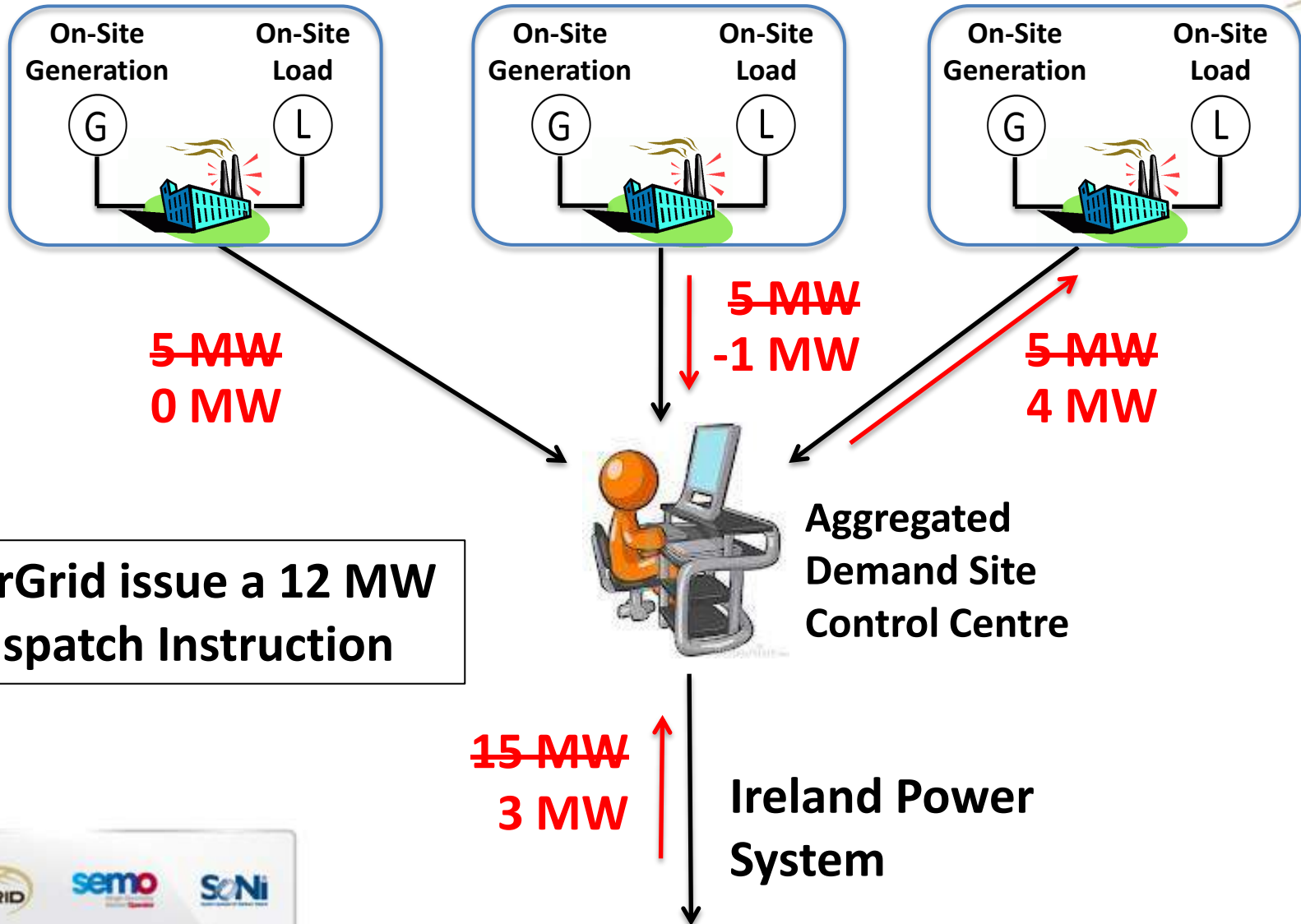
Aggregated Demand Site Example



Aggregated Demand Site Example









Aggregated Demand Site Example



Individual or Aggregated



Individual Demand Side Unit MW Capacity	Individual	Part of an Aggregator
< 4 MW		
≥ 4 MW and < 10 MW		
≥ 10 MW		

An Aggregated Demand Side Unit is not limited to size (all members of the aggregator must be less than 10MW)



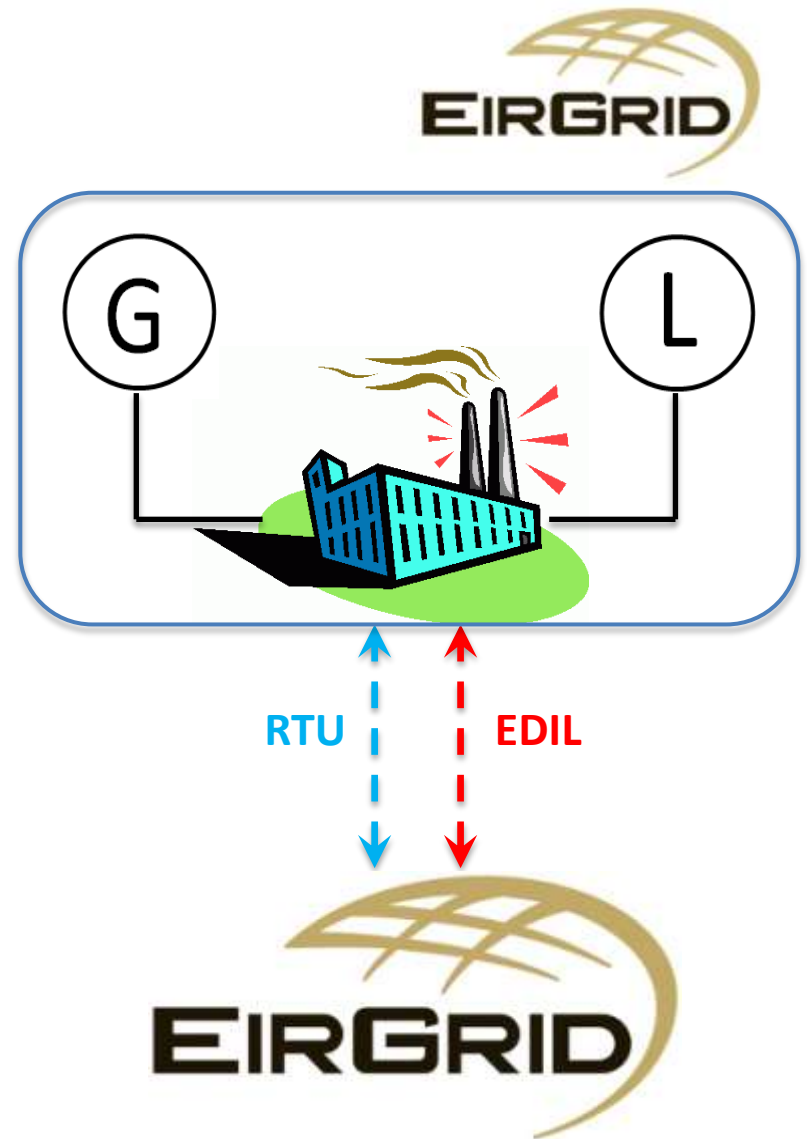
Communications Individual Demand Site

Remote Terminal Unit (RTU)

- 2-way communications link
- DSU will send signals to EirGrid as specified in EirGrid Signals List

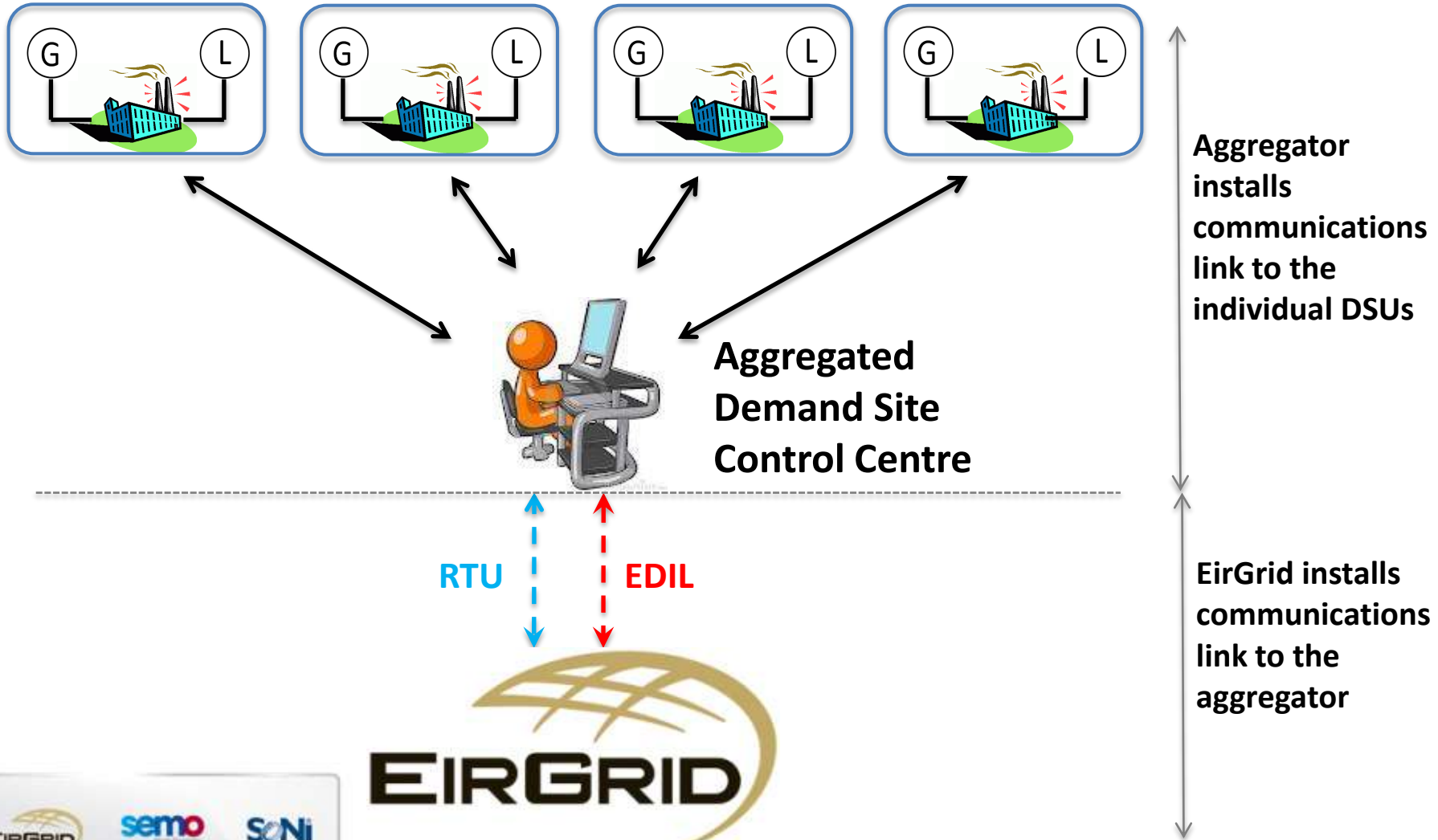
Electronic Dispatch Instruction Logger (EDIL)

- 2-way communications link
- EirGrid send dispatch instructions to DSU via EDIL
- DSU will make declarations to EirGrid via EDIL



Communications

Aggregated Demand Site



DSU Interaction with EirGrid



- Application
- Real-time communication links
- Grid Code Testing
- Demand reduction availability declarations
- Indicative Dispatch schedules
- Dispatch Instruction
- Once the DSU is operational it will be subject to on-going performance monitoring



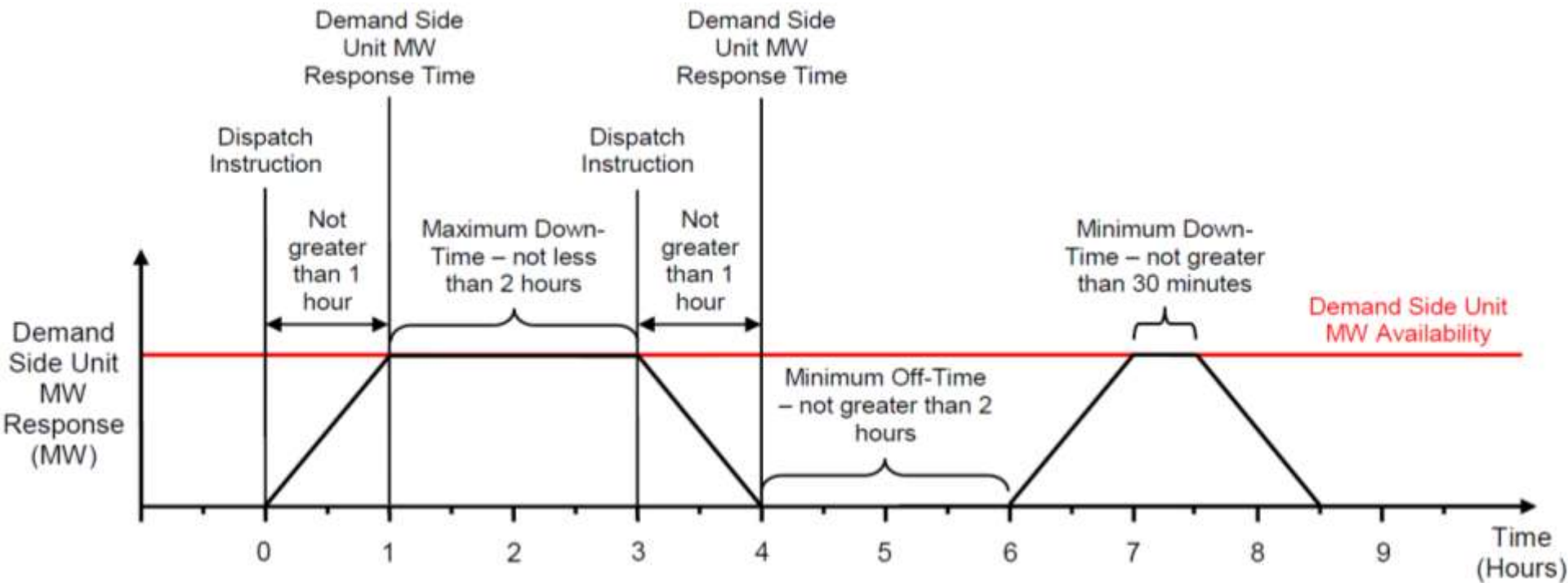
Requirements for a DSU



- Must comply with:
 - Grid Code
 - Trading and Settlement Code
 - Bidding Code of Practice
- 24/7 Manned Control Centre
- Supply License required from the Regulator
- DSO customers should contact ESBN/NIE early when considering becoming a DSU



Grid Code Testing



Performance Monitoring



- Once the DSU is Grid Code Compliant it will be subject to on-going performance monitoring
- Performance monitoring checks will include:
 - Grid Code compliance
 - Availability declarations
 - Ability to provide demand reduction when requested
 - Response time
 - Quality and accuracy of data signals
- Poor performance may result in the DSU being declared at a lower availability



Contact Details



- EirGrid may be contacted on:
 - dsu@eirgrid.com
- SONI may be contacted on:
 - connections@soni.ltd.uk
- SEMO may be contacted on:
 - markethelpdesk@sem-o.com
 - Phone ROI: 1800 778 111 or NI: 0800 0778 111



Demand Side Units in the SEM



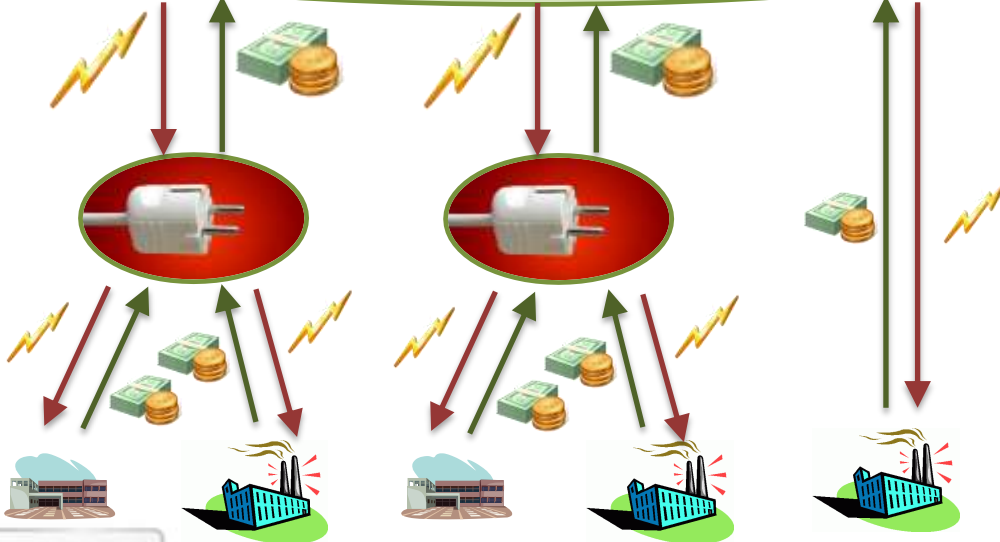
The SEM

DSU

Generators



Supply Companies

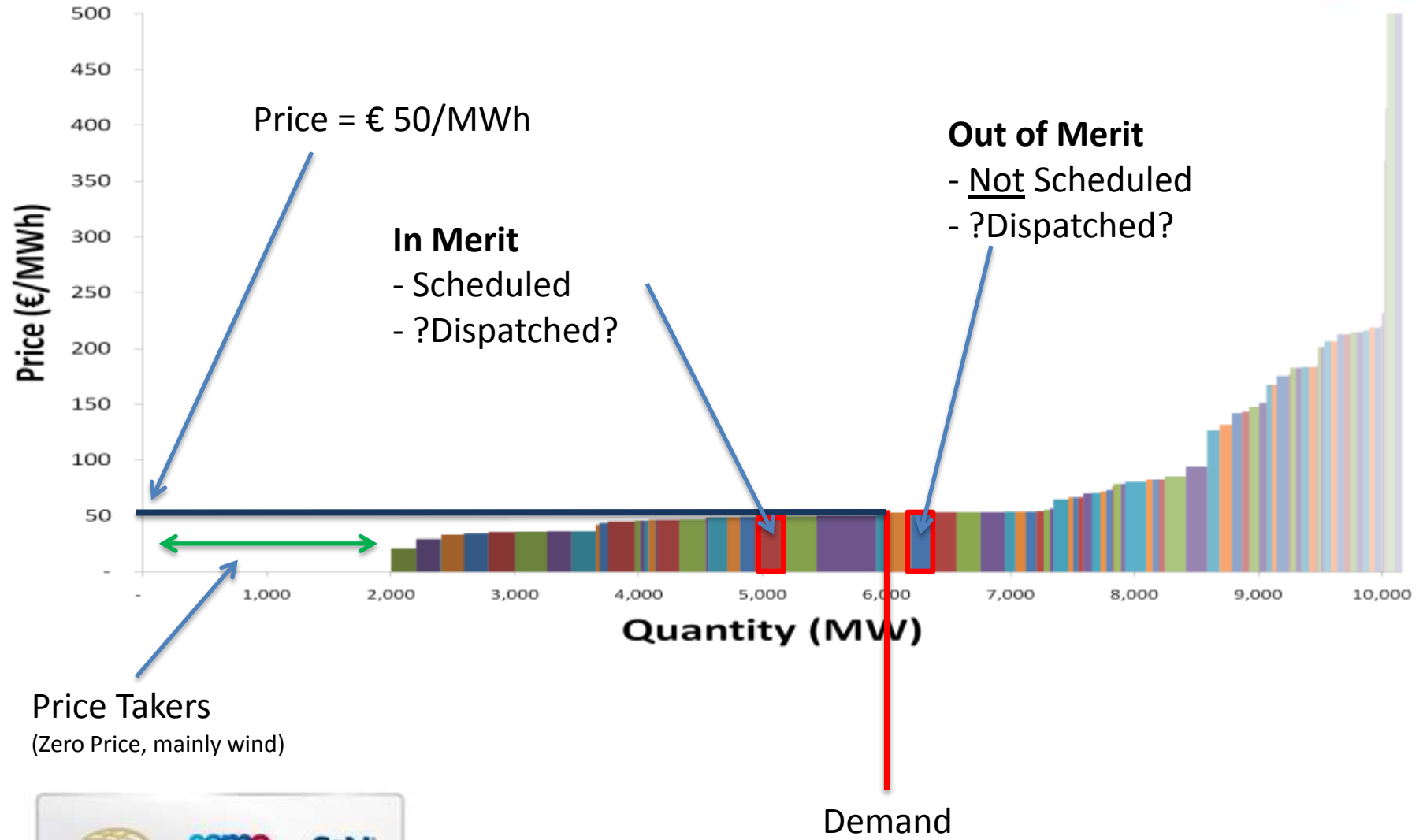


Supply Customers

Independent Demand Site



Determining Market Schedule & Price



Scheduled vs Dispatched

Scheduled

- Relates to Market only
- The most economic dispatch
- No system constraints considered

Dispatched

- Relates to System Operation (SO)
- SO provide a dispatch instruction in real time to the DSU
- Accounts for system constraints and security of supply (reserve, transmission and trips)

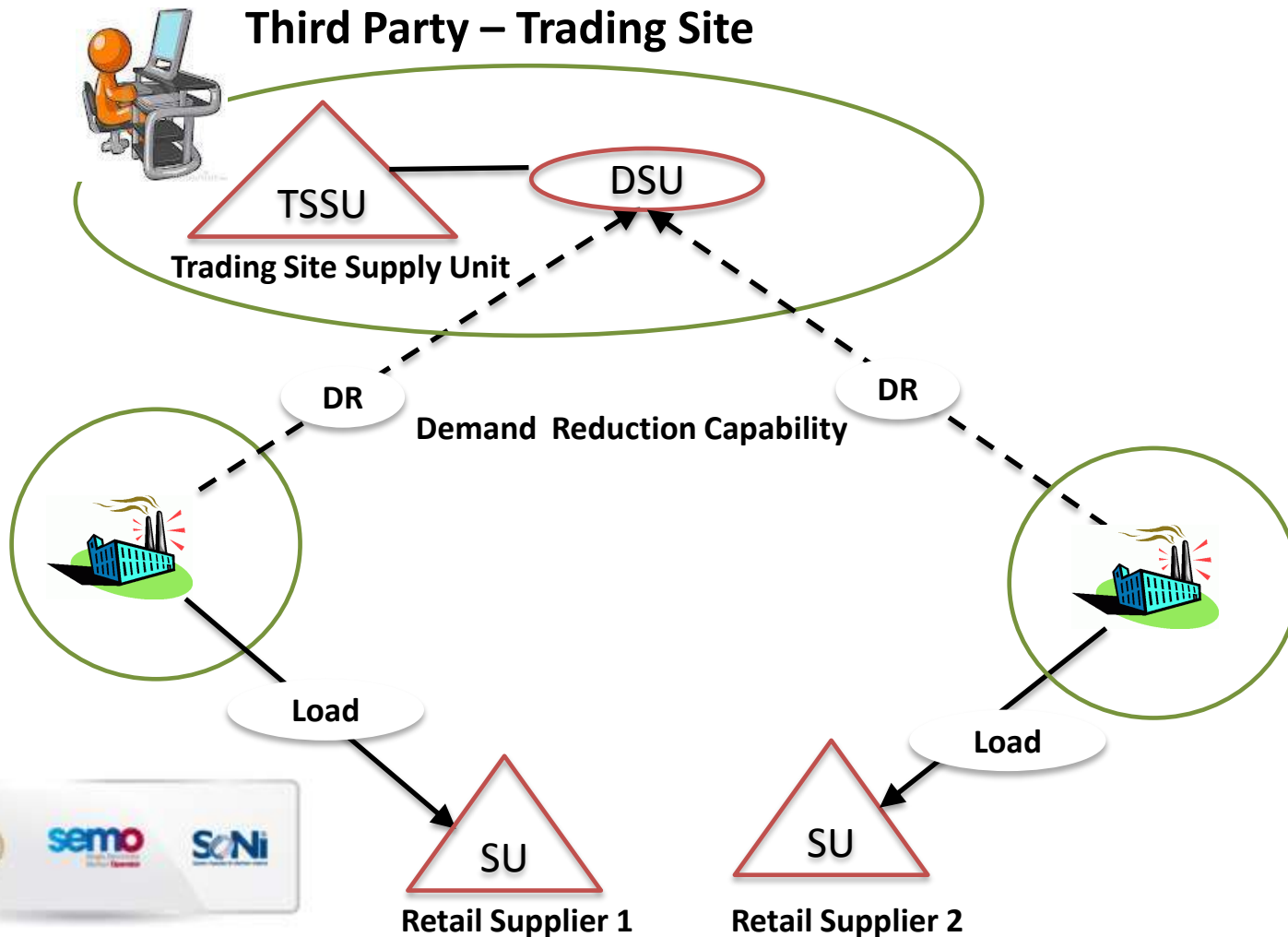
DSUs in the SEM



- Demand Side Units (DSU) must be registered in the Single Electricity Market (SEM)
- The DSU will submit Commercial Offer and Technical Offer data on a daily basis
- Payments for capacity, energy and constraints are processed through the SEM.



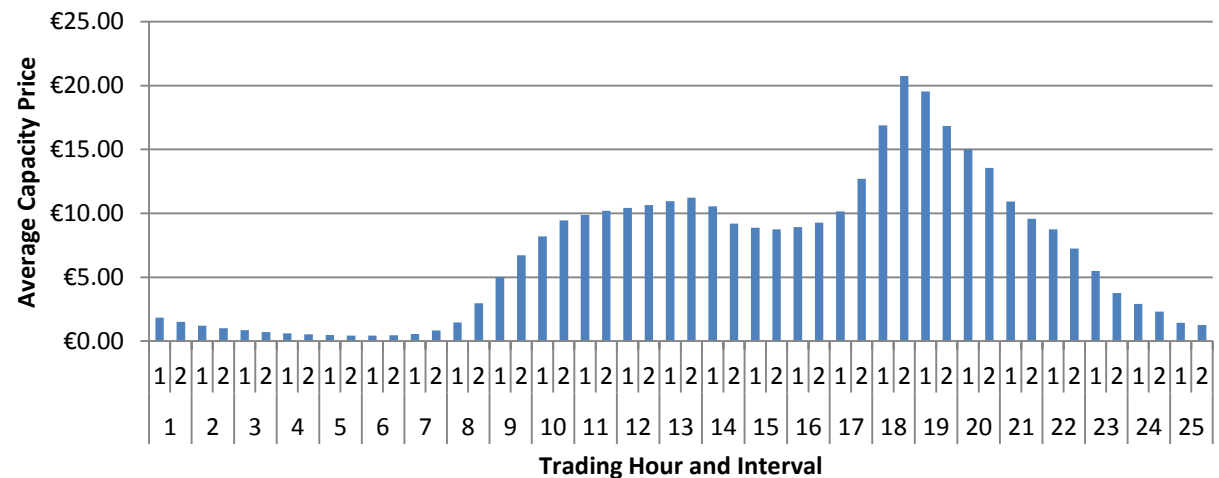
DSU Market Configurations



DSU Incentives in the SEM

- **Capacity Payments**
 - based on demand reduction availability
 - not on whether actually called upon
- Pot of ~ €500 million per year must be paid out
- Payment per trading period varies based on ‘value’ of capacity

Average Capacity Price by Trading Period, 2012



Capacity Payment Example

Availability Period	Demand Reduction Offered	Capacity Payments per Annum ^{#1}
9am to 7pm every day	1 MW	~€42,700
24 hours per day	1 MW	~€62,400

Notes:

#1 – based on 2012 Capacity Payment Generator Price (CPGP) values which are a close approximation to Capacity Payments

DSU Incentives in the SEM



- **Avoided market charges**
 - For Demand Sites associated with the DSU, when demand reduction dispatched
 - Avoids the following charges
 - System Marginal Price (SMP) ~ € 60/MWh #1
 - Capacity Charge ~ € 14.50/MWh #1
 - Imperfections Charge € 4.71/MWh #2
 - Variable MO Charge € 0.698/MWh #2

#1 Illustrative values only, based on approximate averages

#2 Based on 2012/2013 Regulatory Authorities approved tariffs



Constraint Payments

- Ensures DSU is not disadvantaged when either:
 - Scheduled in the market but not dispatched, or
 - Dispatched by the SO, but not scheduled in Market
- Similar mechanism to all other generators in the SEM
- Should not be considered an incentive for participation, just made to ensure DSU is not disadvantaged

Summary of Incentives

- Net Revenues^{#1}

Incentive	9am to 7pm every day	24hr per day
Capacity Payment ^{#2}	~€42,700	~€62,400
Avoided Charges ^{#3}	~€0	~€0
Constraints ^{#4}	~€0	~€0

Notes:

#1 – Net Revenues = Payments less cost of Demand Reduction (ie. Bid price)

#2 – Based on CPGP for 2012

#3 – Assumes not dispatched by SO due to typically higher bid price

#4 – Payments at bid price only

DSU Obligations in the SEM



- **Submission of Commercial and Technical Offer Data**
 - needed daily (bids, shutdown cost, forecast availability, forecast minimum output, forecast, min stable generation, ramp rates and down times)
 - confirm to Bidding Code of Practice
- **Settlement**
 - Check and reconcile settlement with bids, demand reduction and availability
- **Invoice Payment**
 - DSUs invoiced separately
 - Payments due to market for:
 - Fixed Market Operator Charge (€100 per year per MW capacity)
 - Resettlement
 - 3 working day payment terms, otherwise default and possible suspension
- **Credit Cover and Management of Credit Cover**
 - minimum credit cover required ~ € 5000



Payments in the SEM

Scenario	Scheduled in Market	Dispatched by TSO	DSU Revenue	Demand Site Supplier Unit Avoided Charges
A1	✓	✓	✓ Cap#1	✓
A2	✓	✗	✓ Cap	✗
A3	✗	✗	✓ Cap	✗
A4	✗	✓	✓ Cap #1	✓

Most Likely Scenario



Notes:

#1–DSU will not receive capacity payments for Demand Reduction that is netted against TSSU for DSU Trading site

Example A1: One Trading Day - Scheduled and Dispatched



DSU Bid

Bid Price € 600.00 /MWh
 Demand Reduction Offered **1 MW**
 Available between 9am and 7pm

Market Outcome

1 MW demand reduction:-
 Scheduled in market : 5pm to 7pm
 Dispatched by TSO : 5pm to 7pm for

Market Prices*

SMP Averages (excluding 5pm to 7pm) € 59.36 /MWh
 SMP (5pm to 7pm) € 600.00 /MWh
 Capacity Payment Price (Average 9am to 7pm) € 11.67 /MWh

Related Charges*

Capacity Charges Price (Average 5pm to 7pm) ~ € 22.09/MWh
 Other Charges € 5.40 /MWh

*based on 2012 Trading Period averages. See Appendix B for full details

DSU Capacity Payments (Paid by SEM) € 116.72

= Capacity Payment x DSU Reduction x duration

Supplier Avoided Costs € 54.99

= Related Charges x Demand Reduction Offered x duration

Overall Savings (per Day) € 171.70

Assumptions:

DSU Trading Site Supply Unit has no demand, hence, no netting occurs

DSU is marginal unit (ie. Last to be scheduled in merit order as highest cost)

Example A3: One Trading Day - Not Scheduled and Not Dispatched



DSU Bid

Bid Price € 150/MWh
Demand Reduction Offered **1 MW**
Available between 9am and 7pm

Market Outcome

Not Scheduled
Not Dispatched

Market Prices*

SMP Averages (entire day) € 63.19 /MWh
Capacity Payment Price (Average 9am to 7pm) € 11.67 /MWh

Related Charges*

Capacity Charges Price (Average 5pm to 7pm) ~ € 22.09 /MWh
Other Charges € 5.40 /MWh

*based on 2012 Trading Period averages. See Appendix B for full details

DSU Capacity Payments (Paid by SEM) € 116.72

= Capacity Payment x DSU Reduction x duration

Supplier Avoided Costs € 0

= Related Charges x Demand Reduction x duration

Overall Savings (per Day) € 116.72

Assumptions:

DSU Trading Site Supply Unit has no demand, hence, no netting occurs

DSU is marginal unit (ie. Last to be scheduled in merit order as highest cost)

Registering a DSU^{#1} in the SEM

(1 of 3)



- **Two parts:**
 - Party registration; and
 - Unit registration

- **Party Registration requirements include:**
 - Accession Deeds x2
 - Completed Application Form
 - Accession Fee €1284.12

#1 – Details are relevant for registering a DSU in the SEM. Demand reduction being contracted to an Aggregator DSU does not require any interaction with the SEM, only with the Aggregator



Registering a DSU in the SEM

(2 of 3)



- **Unit Registration requirements include:**
 - Registering Party must hold an electricity supply licence
 - Completed Participation Notice
 - Participation Fee €3210.30
 - Evidence of SO agreements
 - Connection Agreement extracts
 - Proof of TUoS
 - Forecast for Credit Cover
 - Bank Account Details
 - Unit Registration Data including Technical Offer Data



Registering a DSU in the SEM



(3 of 3)

- Application must be submitted at least 60 working days in advance of proposed effective date
- Technical testing is required to interface to Market System
- Credit Cover must be in place 5 work days before effective date.
- A final meeting will take place with SEMO, MDP , SO and Participant to make sure all registration requirements are in place and to agree a Final Effective Date.
- Commencement Notice issued only once registration requirements complete

! No Payments for units prior to Commencement Date



Contact Details



- SEMO may be contacted on:
 - markethelpdesk@sem-o.com
 - Phone NI: 0800 0778 111
ROI: 1800 778 111



Document Disclaimer

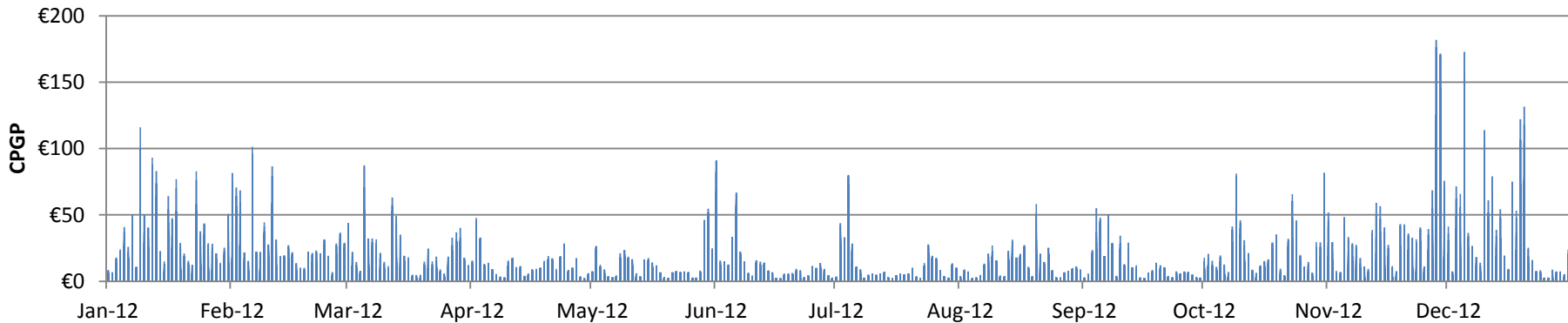


Every care and precaution is taken to ensure the accuracy of the information provided herein but such information is provided without warranties express, implied or otherwise howsoever arising and EirGrid plc and SONI Limited to the fullest extent permitted by law shall not be liable for any inaccuracies, errors, omissions or misleading information contained herein.

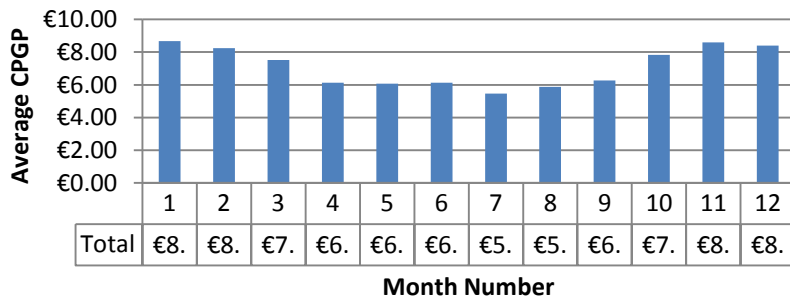


Appendix A – Capacity Prices

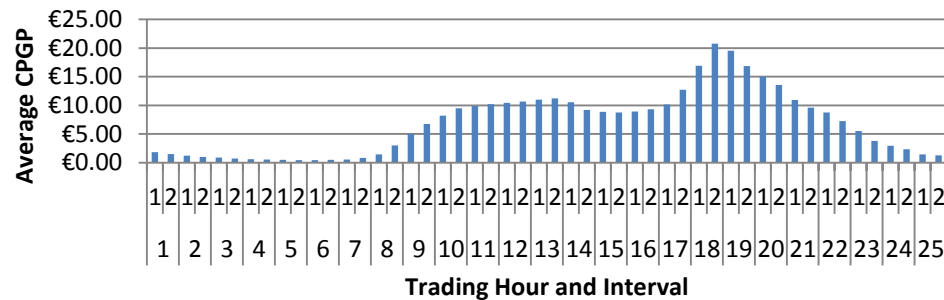
Capacity Prices by Trading Period, 2012



Average Cap Prices by Month, 2012



Average Cap Price by Trading Period, 2012



Appendix B



One Trading Day - Scheduled and Dispatched

DISCLAIMER

EirGrid and SONI have followed accepted practice in carrying out this analysis. While all reasonable care has been taken in the preparation of this analysis, EirGrid and SONI are not responsible for any loss that may be attributed to the use of this information and it is provided without warranties express, implied or otherwise howsoever arising. Prior to taking business decisions, interested parties are advised to seek separate and independent opinion in relation to the matters covered by this analysis and should not rely solely upon data and information contained herein. Information in this document does not amount to a recommendation in respect of any possible investment. Prices used are for illustrative purposes only and are based on historical averages. Calculations shown are simplified for the purposes of example. Full details of calculation provisions are contained in the Trading and Settlement Code.

All interested parties are strongly advised to channel any enquiries through SEMO. For queries relating to this document contact: markethelpdesk@sem-o.com

Assumptions

- DSU Available for 1MW from 9am to 7pm
- Scheduled and Dispatched for 1MW from 5pm to 7pm
- DSU is marginal unit (ie. Last to be schedule in merit order as highest cost)
- Capacity Payment Prices based on 2012 Averages per Trading Period
- Capacity Payment Prices are not the final price paid, but are a close approximation
- Capacity Charge Prices based on 2012 Averages per Trading Period
- SMP based on 2012 Averages per Trading Period (except for 5pm to 7pm period)
- TSSU has no demand. Therefore, no netting occurs. (Aggregator DSU)
- Market Operator and Imperfections Charge assumed to be €5.40/MWh
- Prices used are for example purposes only, prices change significantly due to a number of factors include availability, demand, seasonality, capacity pot size etc.

Example A1: One Trading Day Scheduled and Dispatched

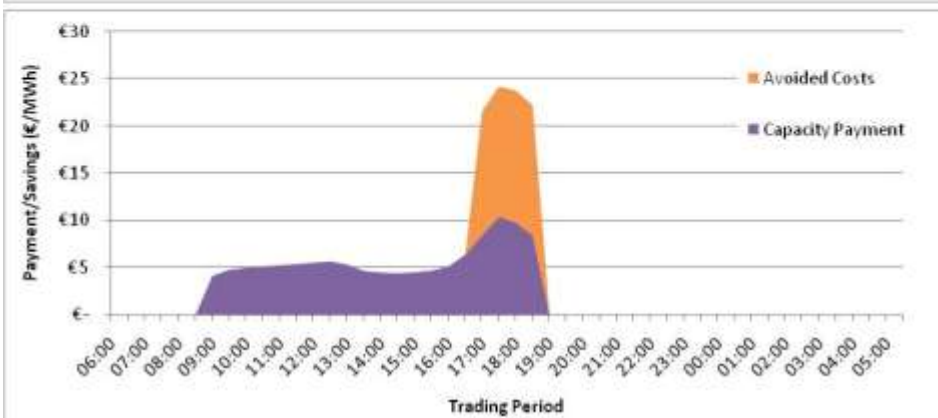
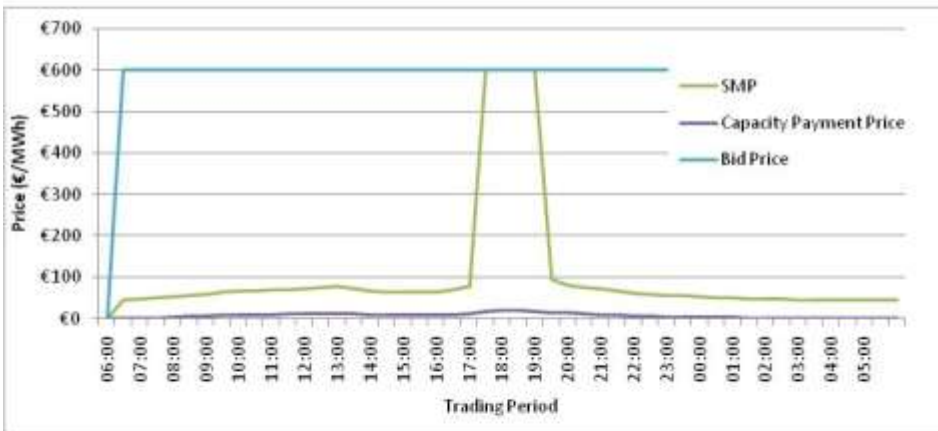
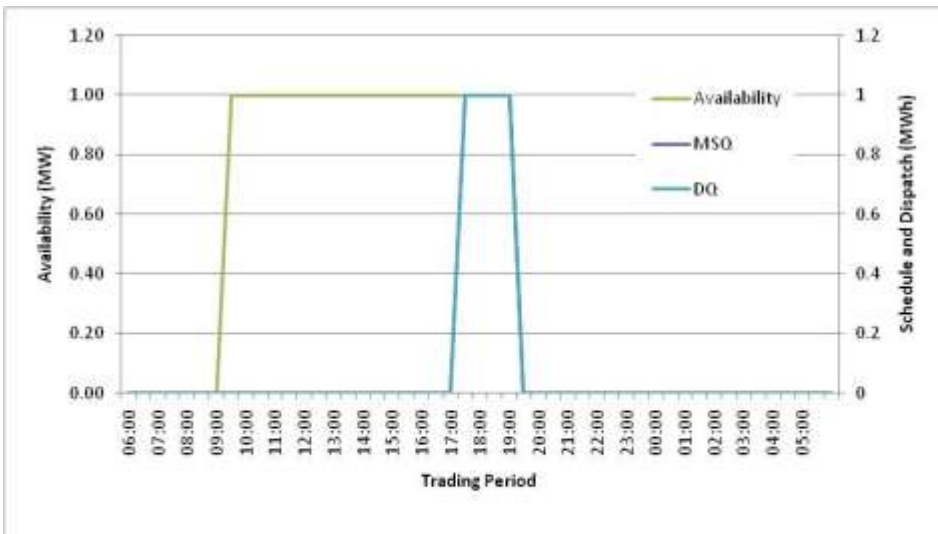
Trading Period	Trading Hour	Trading Interval	Availability		MSQ	DQ	TSSU Metered Demand	SMP	Bid Price	Capacity Payment Price	Capacity Charge	Other Charges	DSU		Demand Site Supplier		
			(MW)	(MW)									Capacity Payment	Constraints (Net of Bid Costs)			
06:00	7	1	0	0	0	0	€ 42.68	€ 600.00	€ 0.56	€ 3.30	€ 5.40	€ -	€ -	€ -	-		
06:30	7	2	0	0	0	0	€ 45.54	€ 600.00	€ 0.83	€ 4.71	€ 5.40	€ -	€ -	€ -	-		
07:00	8	1	0	0	0	0	€ 49.44	€ 600.00	€ 1.46	€ 6.85	€ 5.40	€ -	€ -	€ -	-		
07:30	8	2	0	0	0	0	€ 52.29	€ 600.00	€ 2.97	€ 10.46	€ 5.40	€ -	€ -	€ -	-		
08:00	9	1	0	0	0	0	€ 54.95	€ 600.00	€ 5.01	€ 13.31	€ 5.40	€ -	€ -	€ -	-		
08:30	9	2	0	0	0	0	€ 56.85	€ 600.00	€ 6.73	€ 15.43	€ 5.40	€ -	€ -	€ -	-		
09:00	10	1	1	0	0	0	€ 63.05	€ 600.00	€ 8.19	€ 16.69	€ 5.40	€ 4.09	€ -	€ -	-		
09:30	10	2	1	0	0	0	€ 66.41	€ 600.00	€ 9.45	€ 18.19	€ 5.40	€ 4.73	€ -	€ -	-		
10:00	11	1	1	0	0	0	€ 67.00	€ 600.00	€ 9.89	€ 18.96	€ 5.40	€ 4.94	€ -	€ -	-		
10:30	11	2	1	0	0	0	€ 68.45	€ 600.00	€ 10.20	€ 19.41	€ 5.40	€ 5.10	€ -	€ -	-		
11:00	12	1	1	0	0	0	€ 69.79	€ 600.00	€ 10.42	€ 19.85	€ 5.40	€ 5.21	€ -	€ -	-		
11:30	12	2	1	0	0	0	€ 70.57	€ 600.00	€ 10.65	€ 20.15	€ 5.40	€ 5.33	€ -	€ -	-		
12:00	13	1	1	0	0	0	€ 73.24	€ 600.00	€ 10.96	€ 20.40	€ 5.40	€ 5.48	€ -	€ -	-		
12:30	13	2	1	0	0	0	€ 76.80	€ 600.00	€ 11.23	€ 20.82	€ 5.40	€ 5.61	€ -	€ -	-		
13:00	14	1	1	0	0	0	€ 70.32	€ 600.00	€ 10.54	€ 20.74	€ 5.40	€ 5.27	€ -	€ -	-		
13:30	14	2	1	0	0	0	€ 65.51	€ 600.00	€ 9.21	€ 19.67	€ 5.40	€ 4.60	€ -	€ -	-		
14:00	15	1	1	0	0	0	€ 64.38	€ 600.00	€ 8.86	€ 19.12	€ 5.40	€ 4.43	€ -	€ -	-		
14:30	15	2	1	0	0	0	€ 63.83	€ 600.00	€ 8.74	€ 19.00	€ 5.40	€ 4.37	€ -	€ -	-		
15:00	16	1	1	0	0	0	€ 64.11	€ 600.00	€ 8.92	€ 18.79	€ 5.40	€ 4.46	€ -	€ -	-		
15:30	16	2	1	0	0	0	€ 64.58	€ 600.00	€ 9.28	€ 18.85	€ 5.40	€ 4.64	€ -	€ -	-		
16:00	17	1	1	0	0	0	€ 68.37	€ 600.00	€ 10.16	€ 19.01	€ 5.40	€ 5.08	€ -	€ -	-		
16:30	17	2	1	0	0	0	€ 77.64	€ 600.00	€ 12.71	€ 19.74	€ 5.40	€ 6.35	€ -	€ -	-		
17:00	18	1	1	1	1	0	€ 600.00	€ 600.00	€ 16.89	€ 20.96	€ 5.40	€ 8.44	€ -	€ -	13.18		
17:30	18	2	1	1	1	0	€ 600.00	€ 600.00	€ 20.75	€ 22.35	€ 5.40	€ 10.37	€ -	€ -	13.87		
18:00	19	1	1	1	1	0	€ 600.00	€ 600.00	€ 19.53	€ 22.74	€ 5.40	€ 9.76	€ -	€ -	14.07		
18:30	19	2	1	1	1	0	€ 600.00	€ 600.00	€ 16.85	€ 22.33	€ 5.40	€ 8.42	€ -	€ -	13.86		
19:00	20	1	0	0	0	0	€ 93.74	€ 600.00	€ 15.01	€ 21.87	€ 5.40	€ -	€ -	€ -	-		
19:30	20	2	0	0	0	0	€ 79.98	€ 600.00	€ 13.56	€ 21.58	€ 5.40	€ -	€ -	€ -	-		
20:00	21	1	0	0	0	0	€ 74.24	€ 600.00	€ 10.92	€ 20.68	€ 5.40	€ -	€ -	€ -	-		
20:30	21	2	0	0	0	0	€ 70.39	€ 600.00	€ 9.57	€ 19.95	€ 5.40	€ -	€ -	€ -	-		
21:00	22	1	0	0	0	0	€ 66.83	€ 600.00	€ 8.75	€ 19.53	€ 5.40	€ -	€ -	€ -	-		
21:30	22	2	0	0	0	0	€ 61.93	€ 600.00	€ 7.26	€ 18.61	€ 5.40	€ -	€ -	€ -	-		
22:00	23	1	0	0	0	0	€ 58.87	€ 600.00	€ 5.49	€ 17.34	€ 5.40	€ -	€ -	€ -	-		
22:30	23	2	0	0	0	0	€ 56.06	€ 600.00	€ 3.72	€ 15.06	€ 5.40	€ -	€ -	€ -	-		
23:00	24	1	0	0	0	0	€ 53.74	€ 600.00	€ 2.93	€ 13.60	€ 5.40	€ -	€ -	€ -	-		
23:30	24	2	0	0	0	0	€ 51.22	€ 600.00	€ 2.32	€ 12.05	€ 5.40	€ -	€ -	€ -	-		
00:00	1	1	0	0	0	0	€ 50.04	€ 600.00	€ 1.85	€ 10.42	€ 5.40	€ -	€ -	€ -	-		
00:30	1	2	0	0	0	0	€ 48.75	€ 600.00	€ 1.51	€ 9.06	€ 5.40	€ -	€ -	€ -	-		
01:00	2	1	0	0	0	0	€ 47.61	€ 600.00	€ 1.21	€ 7.51	€ 5.40	€ -	€ -	€ -	-		
01:30	2	2	0	0	0	0	€ 46.37	€ 600.00	€ 1.01	€ 6.37	€ 5.40	€ -	€ -	€ -	-		
02:00	3	1	0	0	0	0	€ 45.50	€ 600.00	€ 0.85	€ 5.42	€ 5.40	€ -	€ -	€ -	-		
02:30	3	2	0	0	0	0	€ 44.71	€ 600.00	€ 0.71	€ 4.53	€ 5.40	€ -	€ -	€ -	-		
03:00	4	1	0	0	0	0	€ 44.30	€ 600.00	€ 0.60	€ 3.86	€ 5.40	€ -	€ -	€ -	-		
03:30	4	2	0	0	0	0	€ 44.15	€ 600.00	€ 0.54	€ 3.41	€ 5.40	€ -	€ -	€ -	-		
04:00	5	1	0	0	0	0	€ 44.05	€ 600.00	€ 0.50	€ 3.17	€ 5.40	€ -	€ -	€ -	-		
04:30	5	2	0	0	0	0	€ 44.11	€ 600.00	€ 0.45	€ 2.82	€ 5.40	€ -	€ -	€ -	-		
05:00	6	1	0	0	0	0	€ 44.90	€ 600.00	€ 0.45	€ 2.80	€ 5.40	€ -	€ -	€ -	-		
05:30	6	2	0	0	0	0	€ 44.64	€ 600.00	€ 0.46	€ 2.84	€ 5.40	€ -	€ -	€ -	-		
								€ 104.41	€	€ 7.10	€ 14.46	€ 5.40	€ 116.72	€	€	€	54.99

Total Savings for Trading Day

€

171.70





Example A1: One Trading Day - Scheduled and Dispatched

Appendix C



One Trading Day - NOT Scheduled and NOT Dispatched

DISCLAIMER

EirGrid and SONI have followed accepted practice in carrying out this analysis. While all reasonable care has been taken in the preparation of this analysis, EirGrid and SONI are not responsible for any loss that may be attributed to the use of this information and it is provided without warranties express, implied or otherwise howsoever arising. Prior to taking business decisions, interested parties are advised to seek separate and independent opinion in relation to the matters covered by this analysis and should not rely solely upon data and information contained herein. Information in this document does not amount to a recommendation in respect of any possible investment. Prices used are for illustrative purposes only and are based on historical averages. Calculations shown are simplified for the purposes of example. Full details of calculation provisions are contained in the Trading and Settlement Code.

All interested parties are strongly advised to channel any enquiries through SEMO. For queries relating to this document contact: markethelpdesk@sem-o.com

Assumptions

- DSU Available for 1MW from 9am to 7pm
- Not Scheduled and Not Dispatched
- Capacity Payment Prices based on 2012 Averages per Trading Period
- Capacity Payment Prices are not the final price paid, but are a close approximation
- Capacity Charge Prices based on 2012 Averages per Trading Period
- SMP based on 2012 Averages per Trading Period (except for 5pm to 7pm period)
- TSSU has no demand. Therefore, no netting occurs. (Aggregator DSU)
- Market Operator and Imperfections Charge assumed to be €5.40/MWh
- Prices used are for example purposes only, prices change significantly due to a number of factors include availability, demand, seasonality, capacity pot size etc.

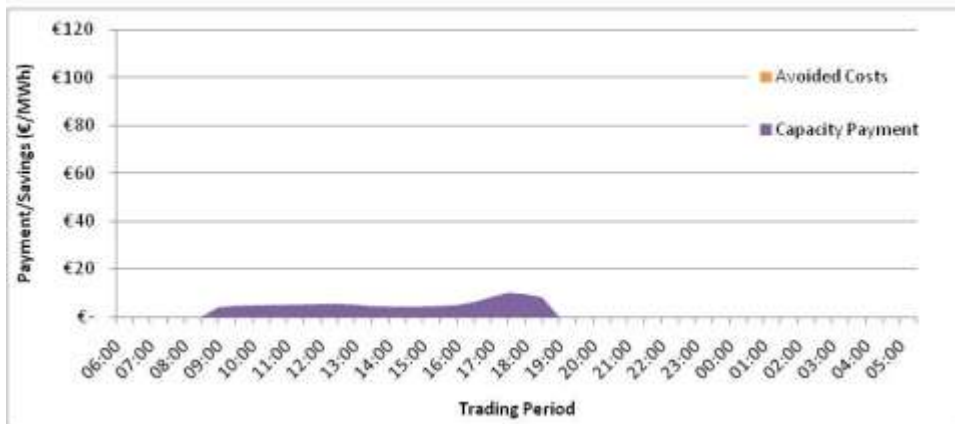
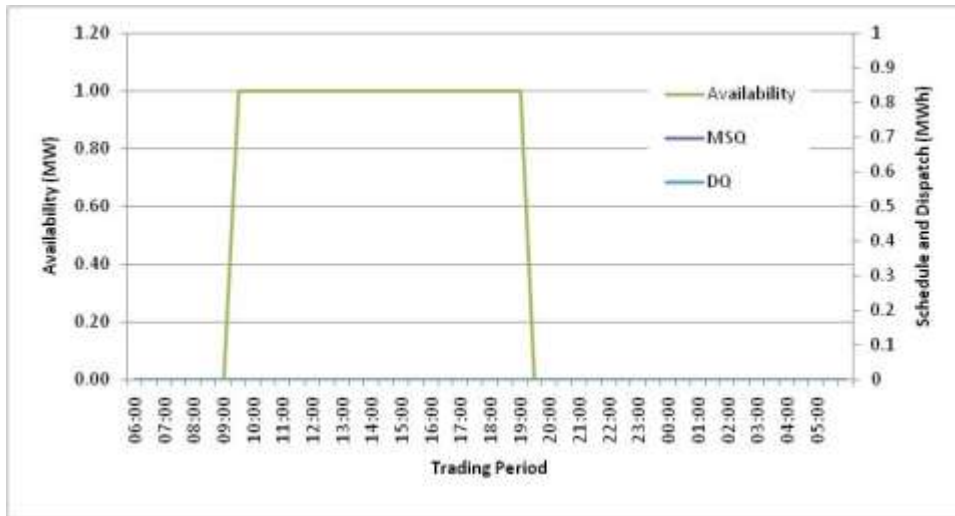
Example A3: One Trading Day Not Scheduled & Not Dispatched

Trading Period	Trading Hour	Trading Interval	Availability	MSQ	DQ	TSSU Demand	SMP	Bid Price	Capacity Payment Price	Capacity Charge	Other Charges	DSU Revenues		Demand Site Supplier
												Capacity Payment	Constraints (Net of Bid Costs)	
06:00	7	1	0	0	0	0	€ 42.68	€ 600.00	€ 0.56	€ 3.30	€ 5.40	-	-	-
06:30	7	2	0	0	0	0	€ 45.54	€ 600.00	€ 0.83	€ 4.71	€ 5.40	-	-	-
07:00	8	1	0	0	0	0	€ 49.44	€ 600.00	€ 1.46	€ 6.85	€ 5.40	-	-	-
07:30	8	2	0	0	0	0	€ 52.29	€ 600.00	€ 2.97	€ 10.46	€ 5.40	-	-	-
08:00	9	1	0	0	0	0	€ 54.95	€ 600.00	€ 5.01	€ 13.31	€ 5.40	-	-	-
08:30	9	2	0	0	0	0	€ 56.85	€ 600.00	€ 6.73	€ 15.43	€ 5.40	-	-	-
09:00	10	1	1	0	0	0	€ 63.05	€ 600.00	€ 8.19	€ 16.69	€ 5.40	€ 4.09	-	-
09:30	10	2	1	0	0	0	€ 66.41	€ 600.00	€ 9.45	€ 18.19	€ 5.40	€ 4.73	-	-
10:00	11	1	1	0	0	0	€ 67.00	€ 600.00	€ 9.89	€ 18.96	€ 5.40	€ 4.94	-	-
10:30	11	2	1	0	0	0	€ 68.45	€ 600.00	€ 10.20	€ 19.41	€ 5.40	€ 5.10	-	-
11:00	12	1	1	0	0	0	€ 69.79	€ 600.00	€ 10.42	€ 19.85	€ 5.40	€ 5.21	-	-
11:30	12	2	1	0	0	0	€ 70.57	€ 600.00	€ 10.65	€ 20.15	€ 5.40	€ 5.33	-	-
12:00	13	1	1	0	0	0	€ 73.24	€ 600.00	€ 10.96	€ 20.40	€ 5.40	€ 5.48	-	-
12:30	13	2	1	0	0	0	€ 76.80	€ 600.00	€ 11.23	€ 20.82	€ 5.40	€ 5.61	-	-
13:00	14	1	1	0	0	0	€ 70.32	€ 600.00	€ 10.54	€ 20.74	€ 5.40	€ 5.27	-	-
13:30	14	2	1	0	0	0	€ 65.51	€ 600.00	€ 9.21	€ 19.67	€ 5.40	€ 4.60	-	-
14:00	15	1	1	0	0	0	€ 64.38	€ 600.00	€ 8.86	€ 19.12	€ 5.40	€ 4.43	-	-
14:30	15	2	1	0	0	0	€ 63.83	€ 600.00	€ 8.74	€ 19.00	€ 5.40	€ 4.37	-	-
15:00	16	1	1	0	0	0	€ 64.11	€ 600.00	€ 8.92	€ 18.79	€ 5.40	€ 4.46	-	-
15:30	16	2	1	0	0	0	€ 64.59	€ 600.00	€ 9.28	€ 18.85	€ 5.40	€ 4.64	-	-
16:00	17	1	1	0	0	0	€ 68.37	€ 600.00	€ 10.16	€ 19.01	€ 5.40	€ 5.08	-	-
16:30	17	2	1	0	0	0	€ 77.64	€ 600.00	€ 12.71	€ 19.74	€ 5.40	€ 6.35	-	-
17:00	18	1	1	0	0	0	€ 101.31	€ 600.00	€ 16.89	€ 20.96	€ 5.40	€ 8.44	-	-
17:30	18	2	1	0	0	0	€ 119.84	€ 600.00	€ 20.75	€ 22.35	€ 5.40	€ 10.37	-	-
18:00	19	1	1	0	0	0	€ 104.55	€ 600.00	€ 19.53	€ 22.74	€ 5.40	€ 9.76	-	-
18:30	19	2	1	0	0	0	€ 95.44	€ 600.00	€ 16.85	€ 22.33	€ 5.40	€ 8.42	-	-
19:00	20	1	0	0	0	0	€ 70.57	€ 600.00	€ 10.65	€ 20.15	€ 5.40	-	-	-
19:30	20	2	0	0	0	0	€ 79.98	€ 600.00	€ 13.56	€ 21.58	€ 5.40	-	-	-
20:00	21	1	0	0	0	0	€ 74.24	€ 600.00	€ 10.92	€ 20.68	€ 5.40	-	-	-
20:30	21	2	0	0	0	0	€ 70.39	€ 600.00	€ 9.57	€ 19.95	€ 5.40	-	-	-
21:00	22	1	0	0	0	0	€ 66.83	€ 600.00	€ 8.75	€ 19.53	€ 5.40	-	-	-
21:30	22	2	0	0	0	0	€ 61.93	€ 600.00	€ 7.26	€ 18.61	€ 5.40	-	-	-
22:00	23	1	0	0	0	0	€ 58.87	€ 600.00	€ 5.49	€ 17.34	€ 5.40	-	-	-
22:30	23	2	0	0	0	0	€ 56.00	€ 600.00	€ 3.77	€ 15.06	€ 5.40	-	-	-
23:00	24	1	0	0	0	0	€ 53.74	€ 600.00	€ 2.93	€ 13.60	€ 5.40	-	-	-
23:30	24	2	0	0	0	0	€ 51.22	€ 600.00	€ 2.32	€ 12.05	€ 5.40	-	-	-
00:00	1	1	0	0	0	0	€ 50.04	€ 600.00	€ 1.85	€ 10.42	€ 5.40	-	-	-
00:30	1	2	0	0	0	0	€ 48.75	€ 600.00	€ 1.51	€ 9.06	€ 5.40	-	-	-
01:00	2	1	0	0	0	0	€ 47.61	€ 600.00	€ 1.21	€ 7.51	€ 5.40	-	-	-
01:30	2	2	0	0	0	0	€ 46.37	€ 600.00	€ 1.01	€ 6.37	€ 5.40	-	-	-
02:00	3	1	0	0	0	0	€ 45.50	€ 600.00	€ 0.85	€ 5.42	€ 5.40	-	-	-
02:30	3	2	0	0	0	0	€ 44.71	€ 600.00	€ 0.71	€ 4.53	€ 5.40	-	-	-
03:00	4	1	0	0	0	0	€ 44.30	€ 600.00	€ 0.60	€ 3.86	€ 5.40	-	-	-
03:30	4	2	0	0	0	0	€ 44.15	€ 600.00	€ 0.54	€ 3.41	€ 5.40	-	-	-
04:00	5	1	0	0	0	0	€ 44.05	€ 600.00	€ 0.50	€ 3.17	€ 5.40	-	-	-
04:30	5	2	0	0	0	0	€ 44.11	€ 600.00	€ 0.45	€ 2.82	€ 5.40	-	-	-
05:00	6	1	0	0	0	0	€ 44.90	€ 600.00	€ 0.45	€ 2.80	€ 5.40	-	-	-
05:30	6	2	0	0	0	0	€ 44.64	€ 600.00	€ 0.46	€ 2.84	€ 5.40	-	-	-
							€ 63.19		€ 7.10	€ 14.46	€ 5.40	€ 116.72	-	-

Total Savings for Trading Day

€ 116.72





Example A3:
One Trading Day -
 Not Scheduled &
 Not Dispatched