



Irish Energy Costs Seminar Portlaoise

The Power System and Demand Side Participation
12th of June, 2014



Outline Agenda

- Introduce EirGrid
- Load Trend
- Evolution of the Power System
- Demand Side Participation
 - Current Opportunities
 - Emerging Opportunities
- Collaboration with Industry



EirGrid – Responsibilities



-
- To develop, maintain and operate a safe, secure, reliable, economical and efficient transmission system in Ireland for the benefit of our customers; to consider opportunities for interconnection and deliver quality transmission services, including impartial access arrangements for customers.....



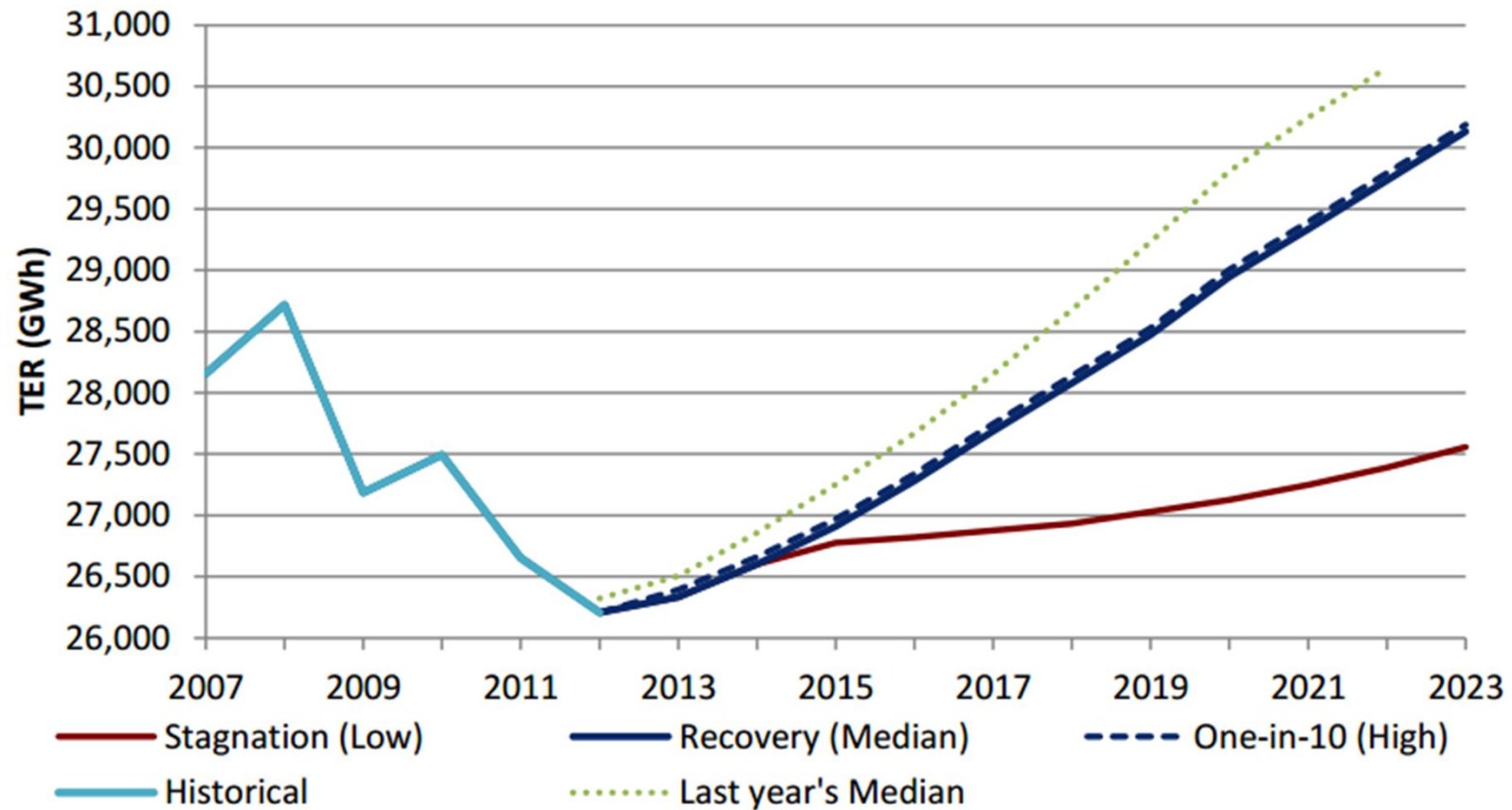
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- To provide and develop reliable and efficient market services on an all island basis.....



Load Trend



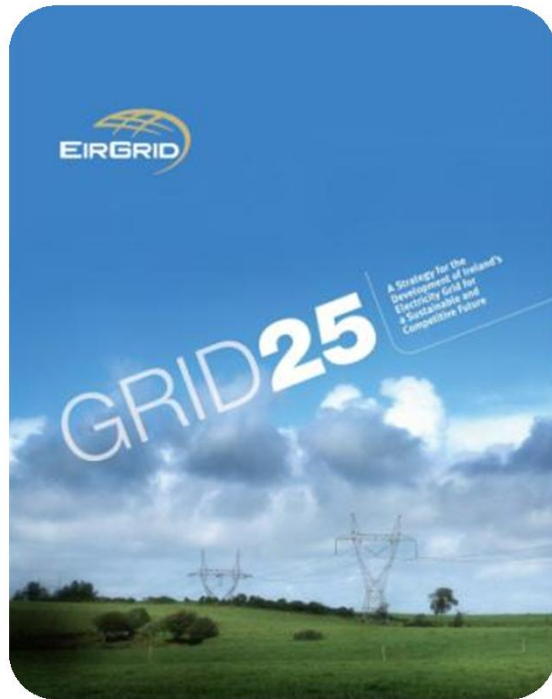
Annual Demand



Evolution of the Power System



GRID25



- Key for Jobs & Growth
- Supports Inward Investment
- Balanced Regional Development
- Competitive Energy Market
- Domestic Renewable Energy



East-West Interconnector

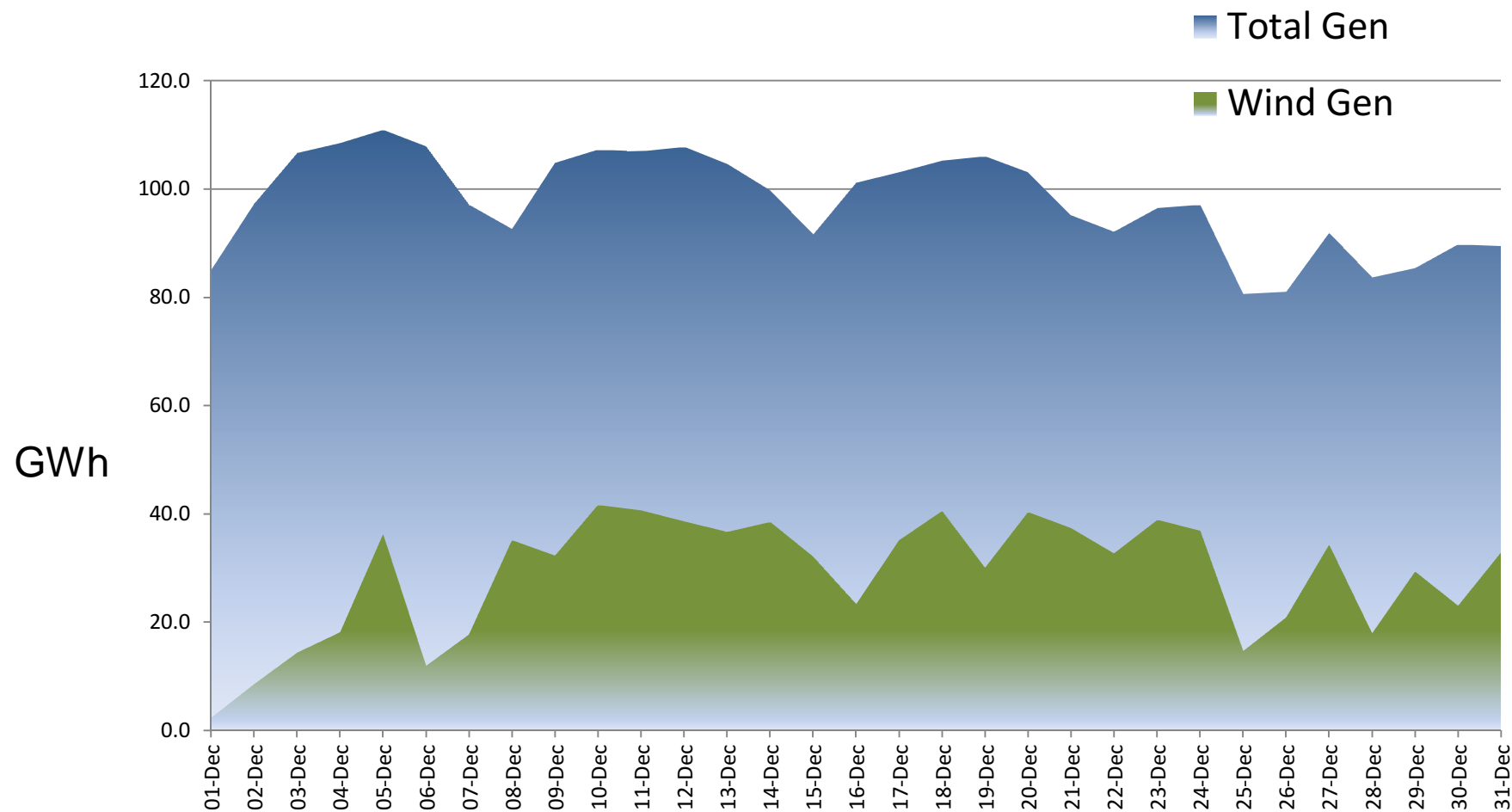


- 260km, 530 MW Capacity
- Increases Energy Security
- Promotes Competition
- Credited with Deflating Prices
 - 9% average daily saving
- Larger Market for Irish Generators



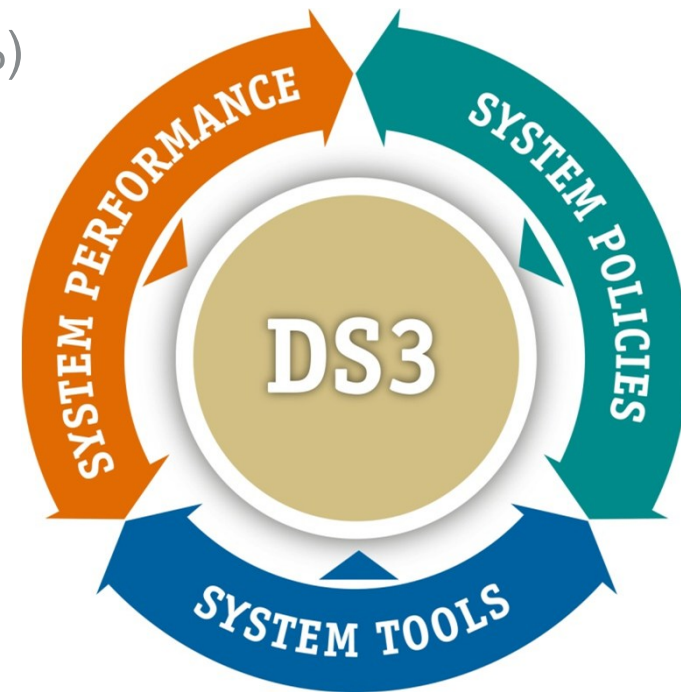
www.eirgrid.com/eastwest/eastwestflowgraph/

December 2013: Wind and Total Generation



Delivering a Secure Sustainable System (DS3)

- Challenge:
 - Meet the 2020 renewable targets (40%) on the electricity power system while maintaining system security levels
- Approach:
 - Grid Code Modification
 - Performance Monitoring
 - System/Ancillary Services Evolution
 - Demand Side Participation
 - Demonstration Projects
 - Smart Grid Innovation Hub



Shaping the power system of the future

Demand Side Participation



Powersave

- Commission for Energy Regulation Scheme
- Pre-Requisites
 - Quarter Hourly Meter
 - 100kW minimum response capability
 - 4 weeks meter data
 - Contact for notifications
- 30 minutes notice target for start/end of event
 - 30 minutes response required
- Payment is via the supplier, based on trend analysis
- Current Rates:
 - Off-Peak 38.12 c/kWh, Peak 95.3 c/kWh



[Further Information](#)

Short Term Active Response (STAR)

- Procured Service
- Automated Response to Frequency – No warning
- Tripped at 49.3 Hz, 2s Response
- Typical Duration: 5-10 minutes
- Specific Load can be Isolated for the Scheme
 - Individual Metering Required
- Re-energisation can be Manually Controlled
- Under-frequency Cabinet Required
- Paid for Availability between 07:00-24:00
 - €8.20 per MWh



[Further Information](#)

Demand Side Unit (DSU)

- Demand Sites that Deliver a Demand Reduction
- Registered in the Single Electricity Market (SEM)
 - Bids its demand reduction into the pool market – price and quantity
- Dispatched by the EirGrid/SONI Control Centre
- Payment Processed through SEM
- Stand-alone or Aggregated Arrangement Option
- 109 MW Currently Participating



[Further Information](#)

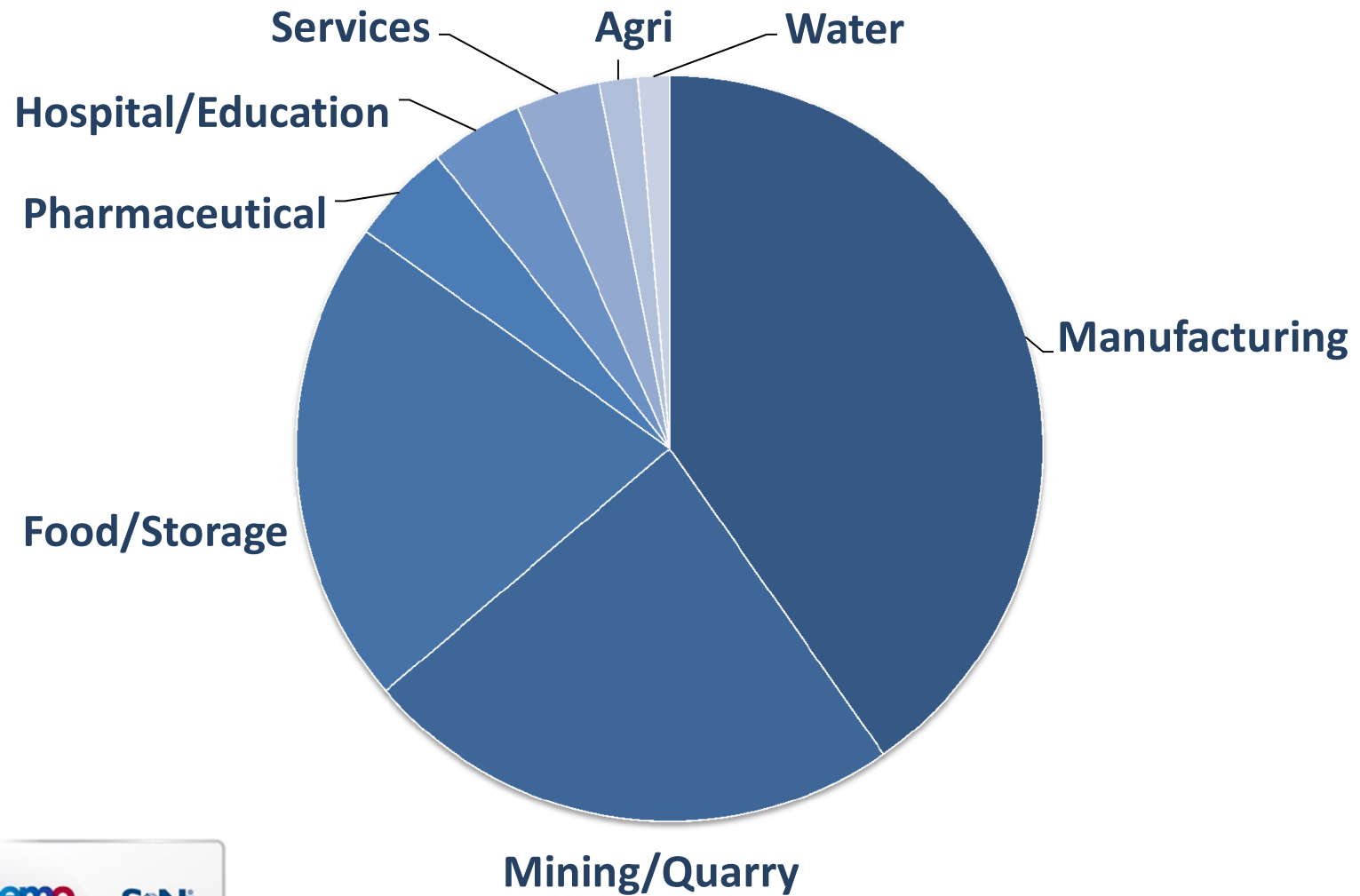
Individual or Aggregated DSU?

Individual Demand Site Capacity	Individual DSU?	Part of an Aggregated DSU?
< 4 MW	No	Yes
> 4 MW and < 10 MW	Yes	Yes
≥ 10 MW	Yes	No



[Further Information](#)

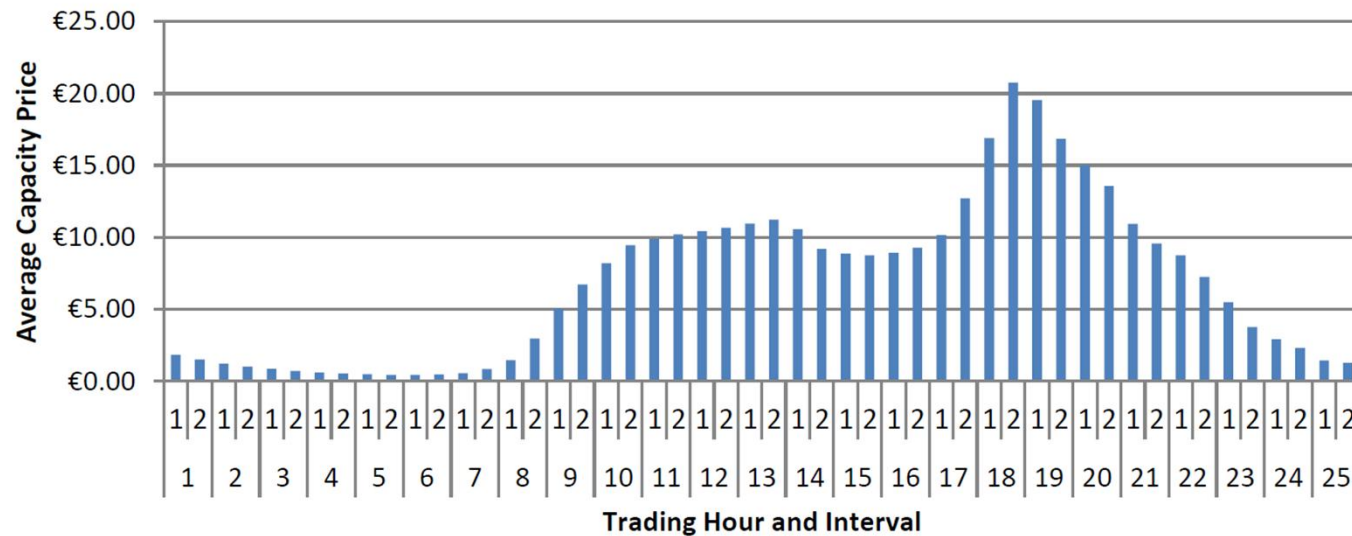
DSU Market Participants (by capacity)



Potential DSU Revenues

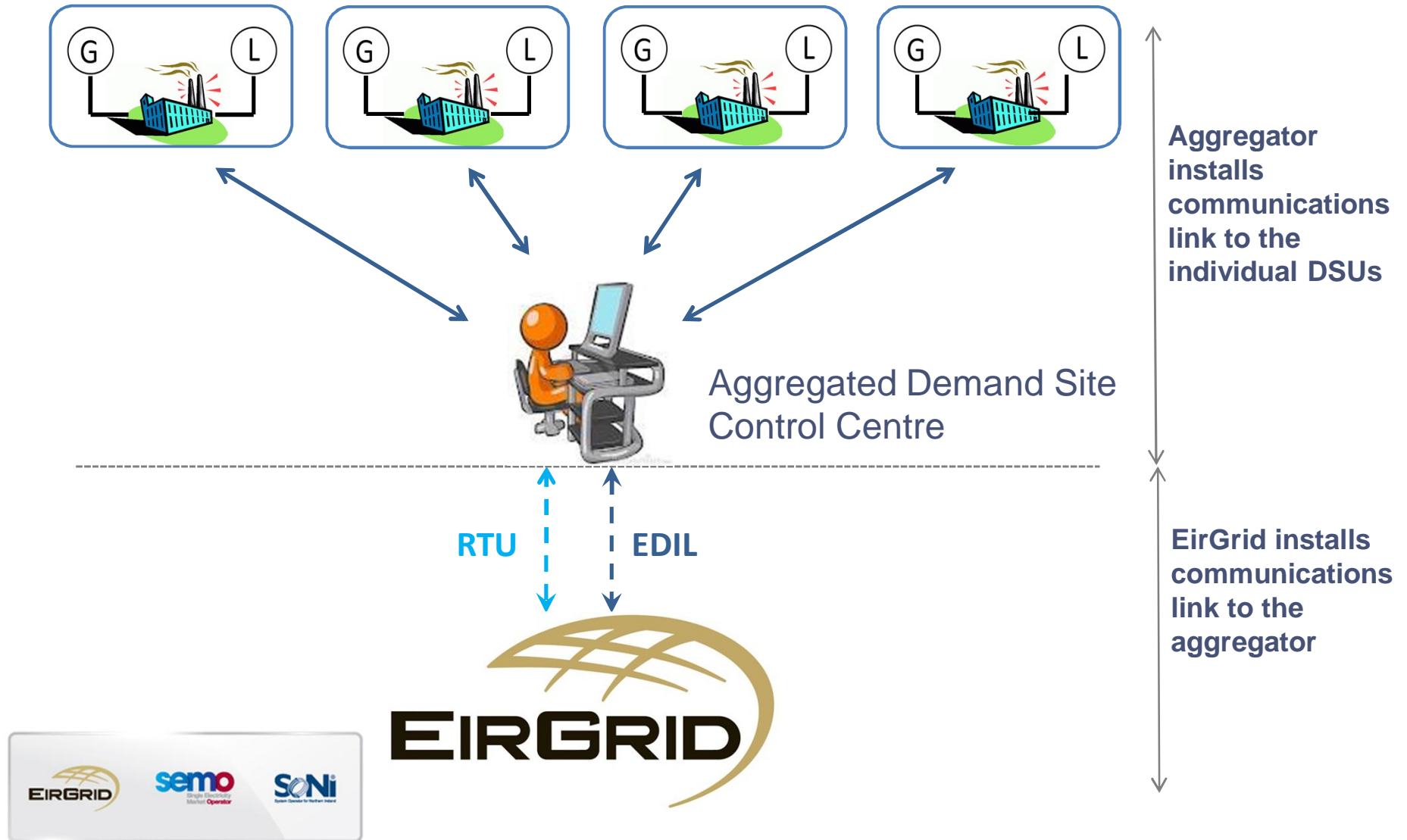
Availability Period	Demand Reduction Offered	Estimated Capacity Payments p.a.
09:00 – 19:00	1 MW	Apprx. €42,000
24/7	1 MW	Apprx. €62,000

Average Capacity Price by Trading Period

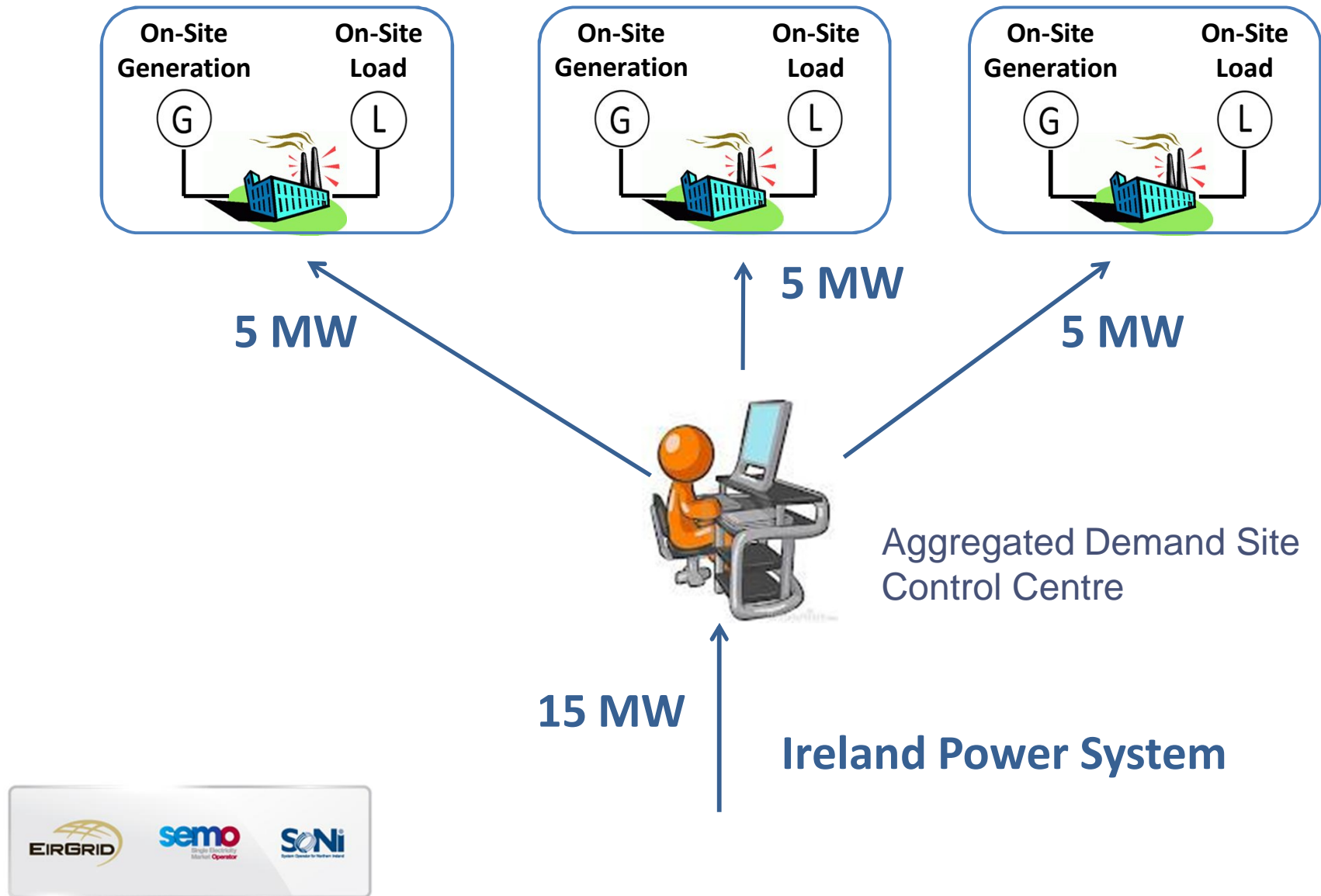


Example: Aggregated Demand Site

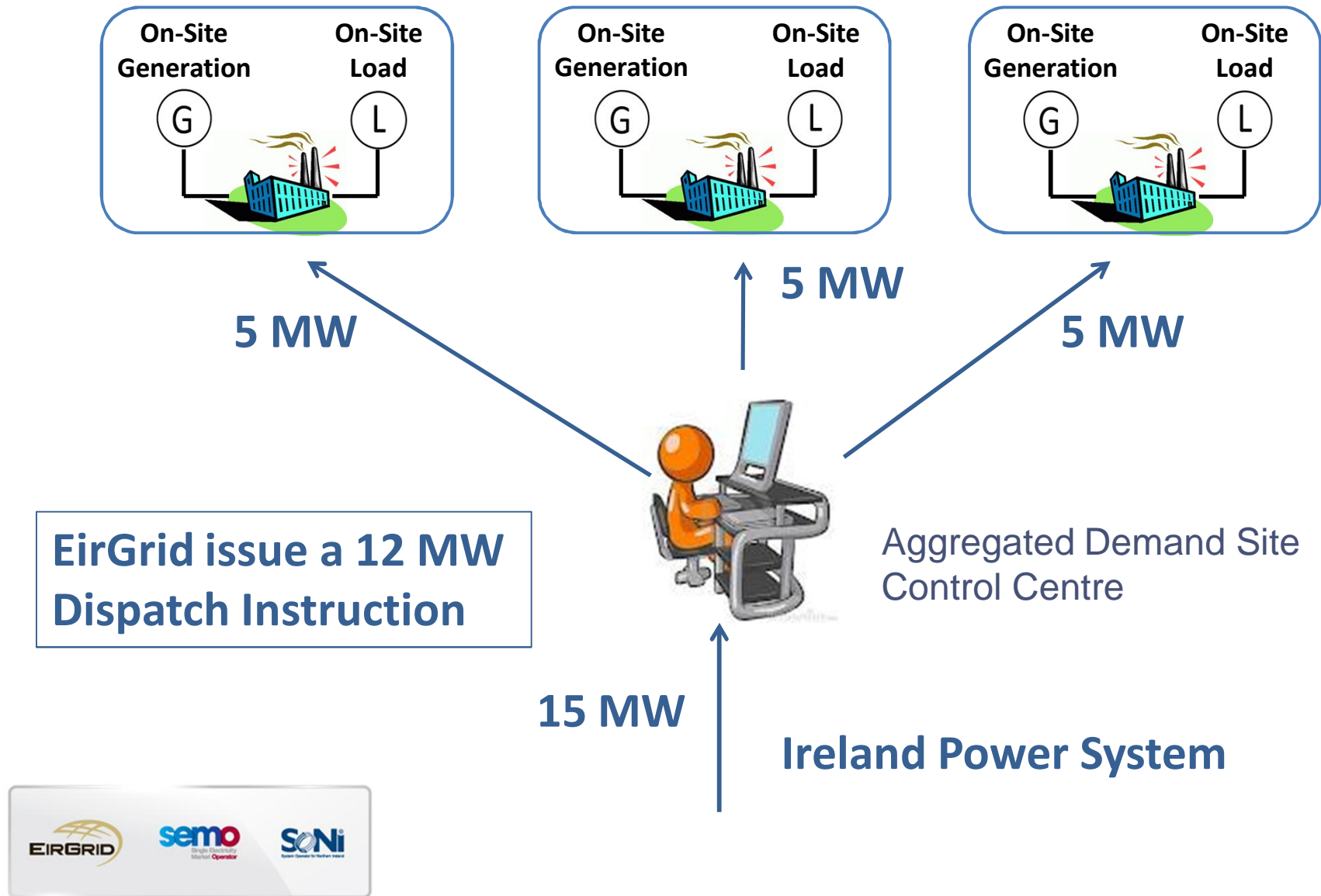
Communications



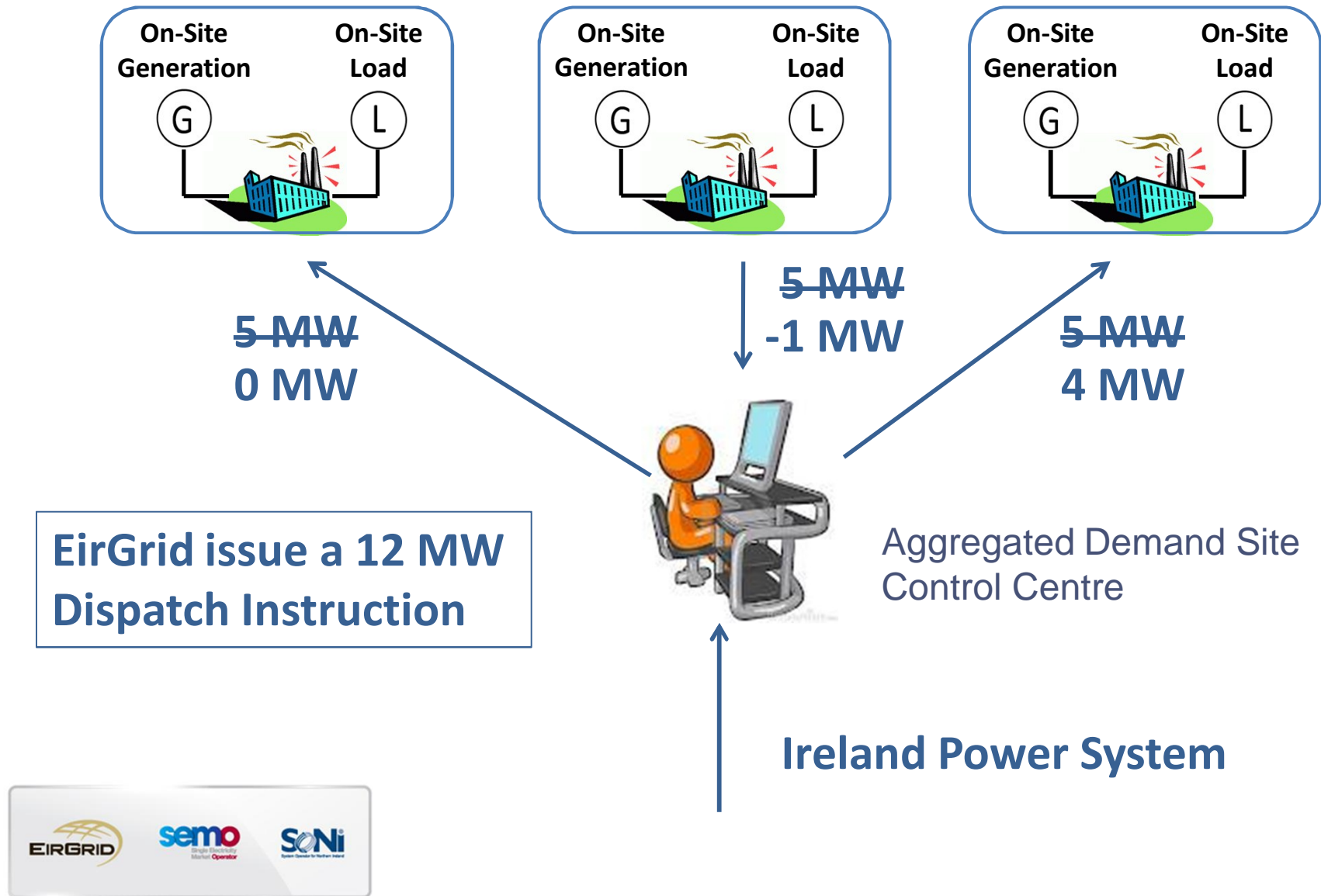
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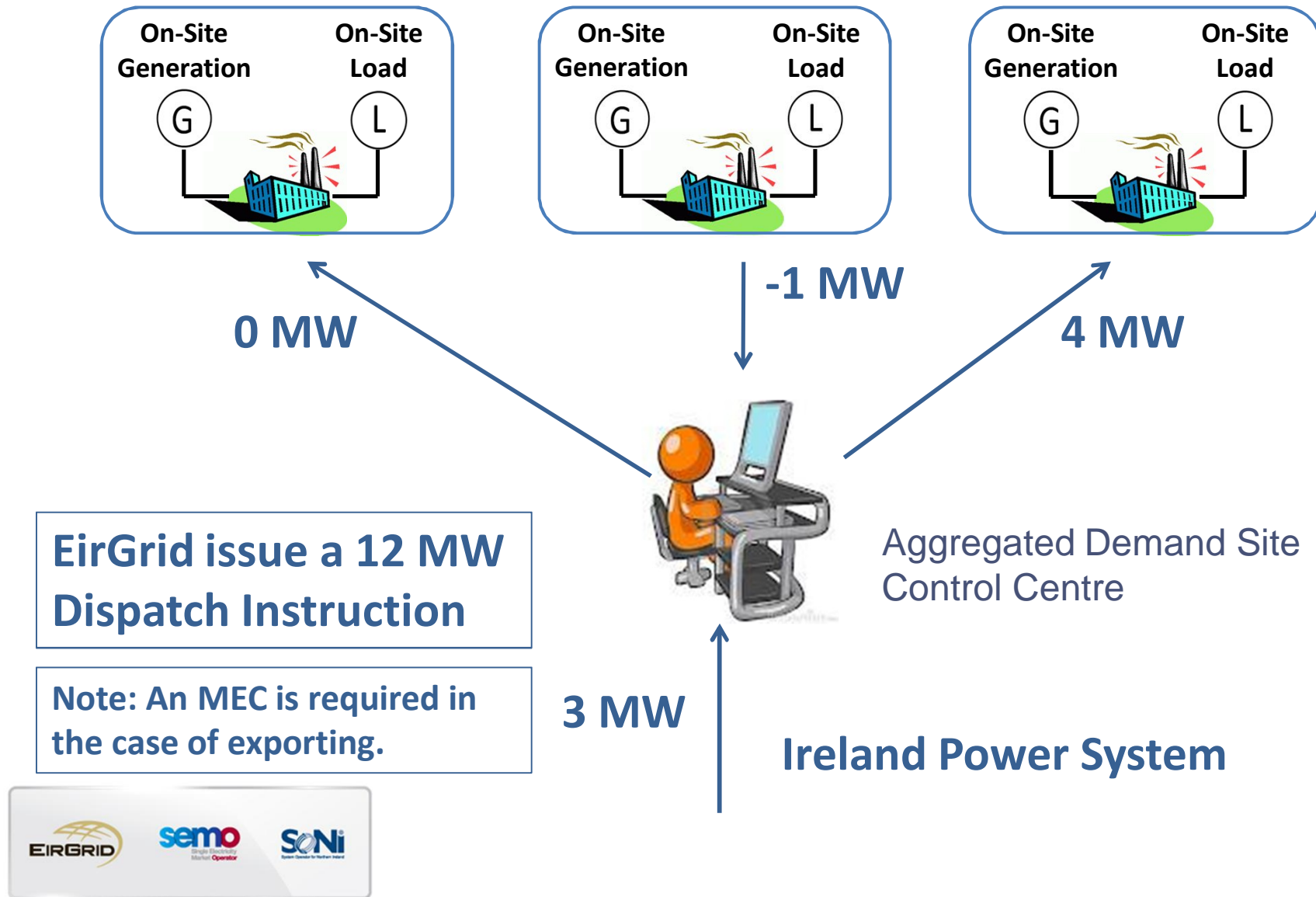
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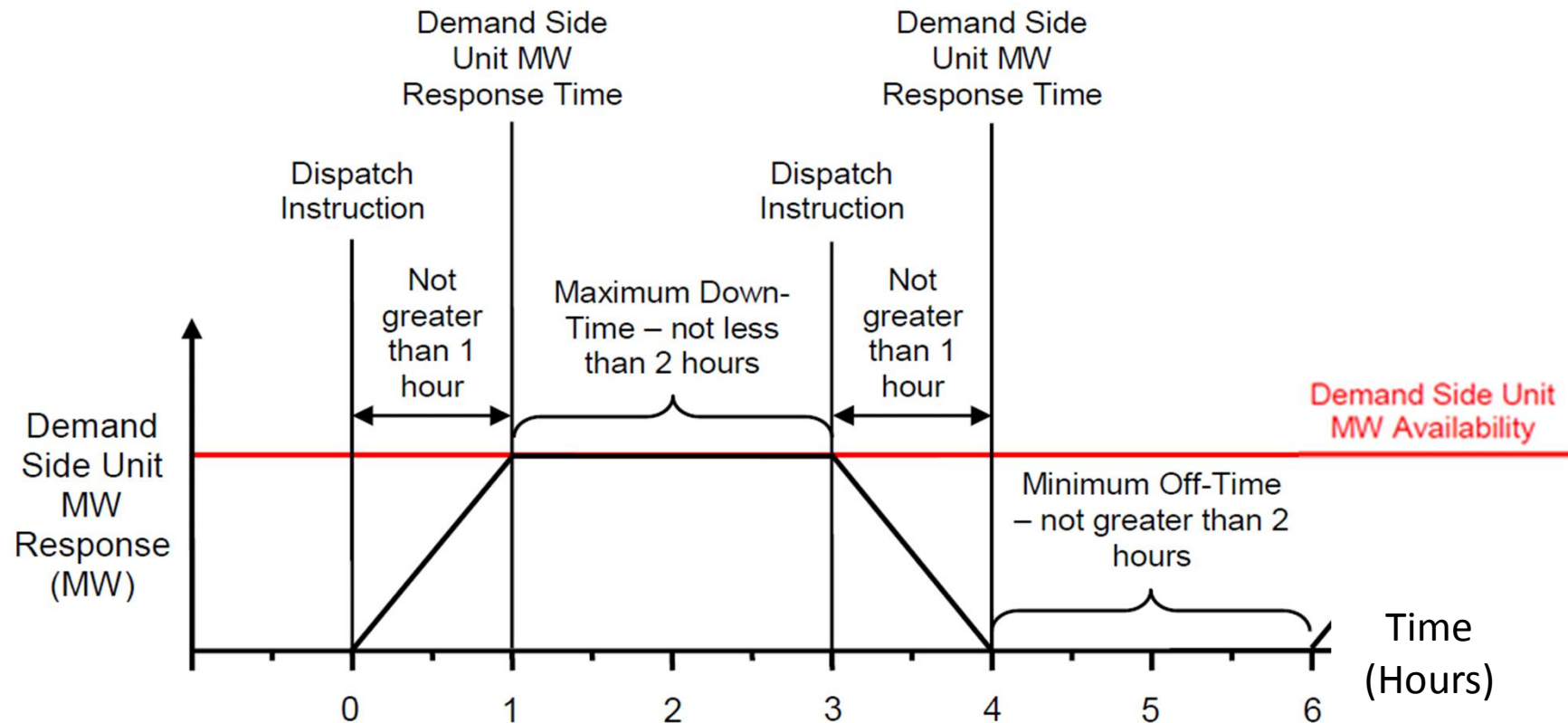
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Testing and Operational Requirements



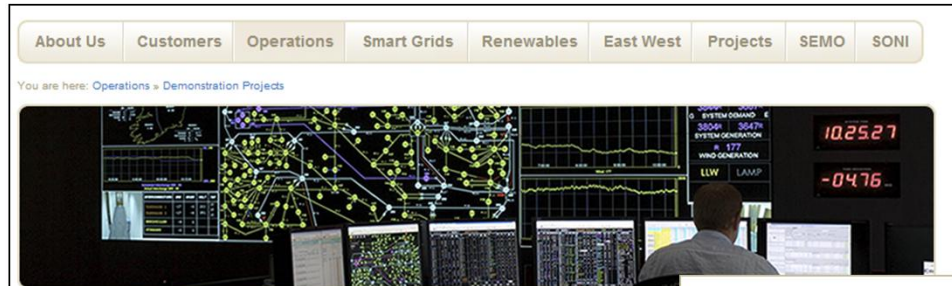
Potential for Further Demand Side Participation

- New System Services to be Implemented
 - Potential for Participation by Demand Side
 - Ramping
 - Frequency Response
 - Reserve
- Advanced Metering & ToU Tariffs
- Collaboration & Demonstration of Technology with Industry



[Further Information](#)

Collaboration with Industry: Ideas Wanted!



Demonstration Projects

The power system of Ireland and Northern Ireland is changing. The combined system will have more wind farms installed and operated as a percentage of the overall annual energy requirement by 2020 than anywhere else in the world. This is driving major changes in not only the need for appropriate infrastructure but also in the behaviour of the power system over a wide range of operational metrics. This requires a fundamental understanding of the needs of the power system, the implementation of appropriate new system operational policies and tools, and the evolution of the necessary complementary conventional portfolio capability and infrastructure.

In the development, trialling and proving of new concepts/solutions and technologies EirGrid and SONI recognise that demonstration projects can play an important role. In that context, a transparent process has been developed for progressing demonstration projects and the system operators are seeking expressions of interest from those who would like to be involved in a demonstration project. EirGrid and SONI also view this as an important mechanism to promote and support innovation in new grid applications across the Smart Grid domain.

Objectives of System Operators

The system operators, having a unique role in the electricity industry in Ireland and Northern Ireland, are interested in offering their experience and knowledge to partner with industry in the development of new ideas and use of new technologies on the power system. The system operators are interested in

ideas and use of new technologies on the power system. The system operators are interested in

Objectives of System Operators

applications across the smart grid and domain.

SONI also view this as an important mechanism to promote and support innovation in new grid expressions of interest from those who would like to be involved in a demonstration project. EirGrid and SONI also view this as an important mechanism to promote and support innovation in new grid expressions of interest from those who would like to be involved in a demonstration project. EirGrid and SONI also view this as an important mechanism to promote and support innovation in new grid expressions of interest from those who would like to be involved in a demonstration project.



Smart Grid Innovation Hub



HOME ABOUT US HOW TO GET INVOLVED COLLABORATIONS PUBLICATIONS LATEST NEWS



The Smart Grid Innovation Hub is a collaborative initiative by EirGrid Group and NDRC (National Digital Research Centre) to promote the development of innovative Smart Grid solutions, with a focus on entrepreneurial initiatives by companies, academics and entrepreneurs in Ireland and Northern Ireland..



Collaborations

We have provided a wide range of supports to a number of companies over the past year. Support is tailored for each specific project or company based on the stage of



Get Involved

We are very excited about the unique opportunity that Ireland has in the Smart Grid area and are 'open for business' for organisations and individuals to come and



Smart Grid Workshop ideas wanted!

We are planning to organise a number of Smart Grid Workshops over the next 6 months and are looking for ideas about

The SmartGrid App....





Peak Demand

