

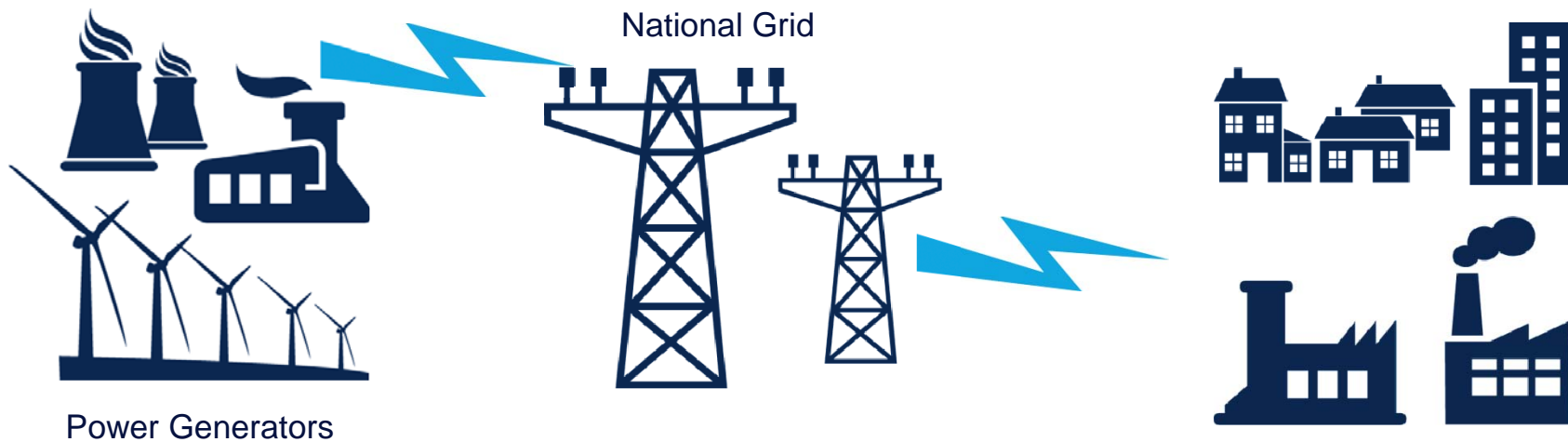


**The Smart Grid
And
Demand Response
FM Ireland
March, 2014**

Activation Energy

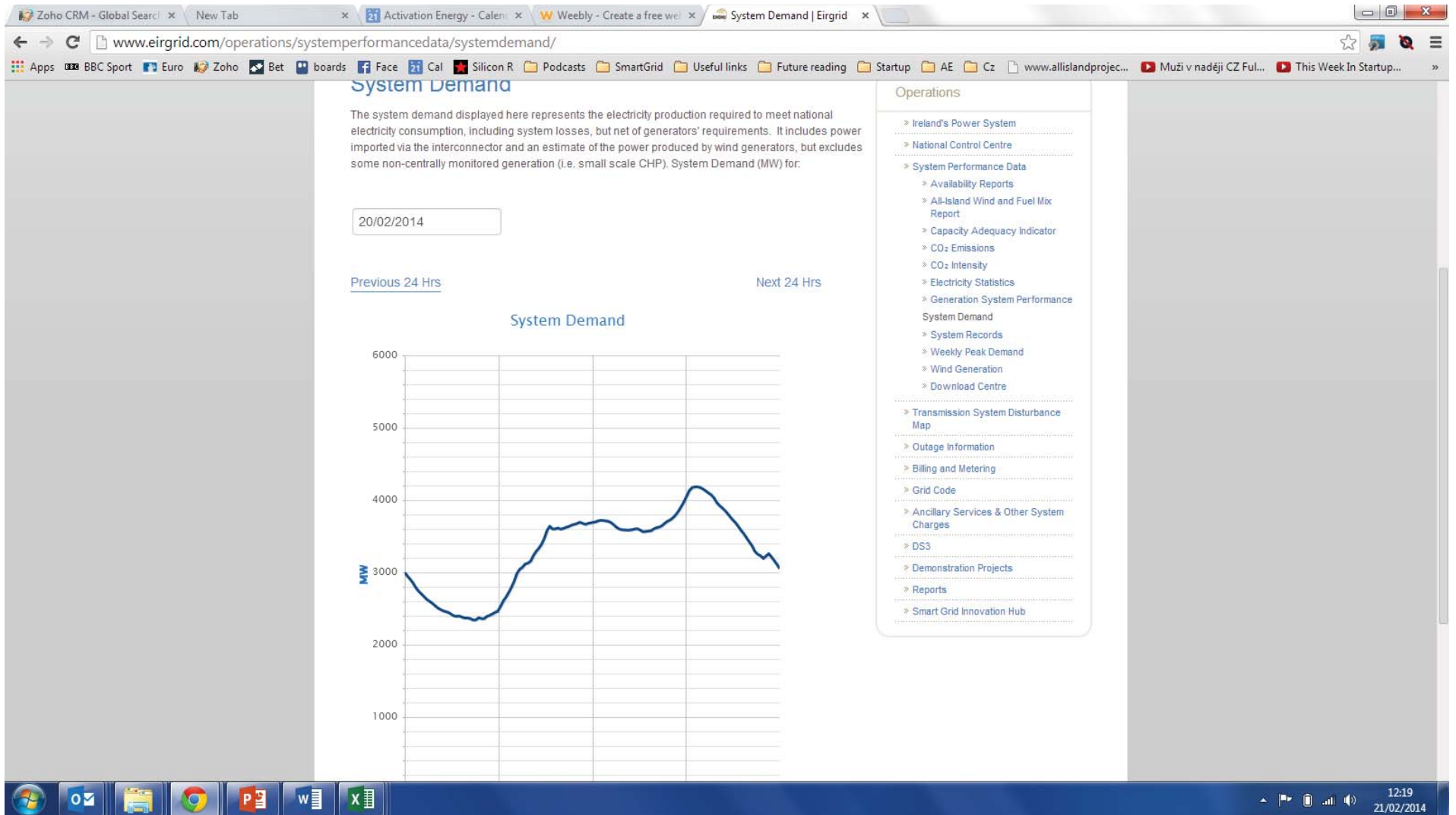
- Established in 2006
- First Demand Side Unit (DSU) in ROI
- Contracted to Eirgrid as DSU
- Electricity Supply Licence from CER
- Recently acquired by Enernoc Inc – NASDAQ €600M

The Role of the National Grid (Eirgrid)



Eirgrid balances Power Supply and Power Demand on a Real-time Basis

www.Eirgrid.com

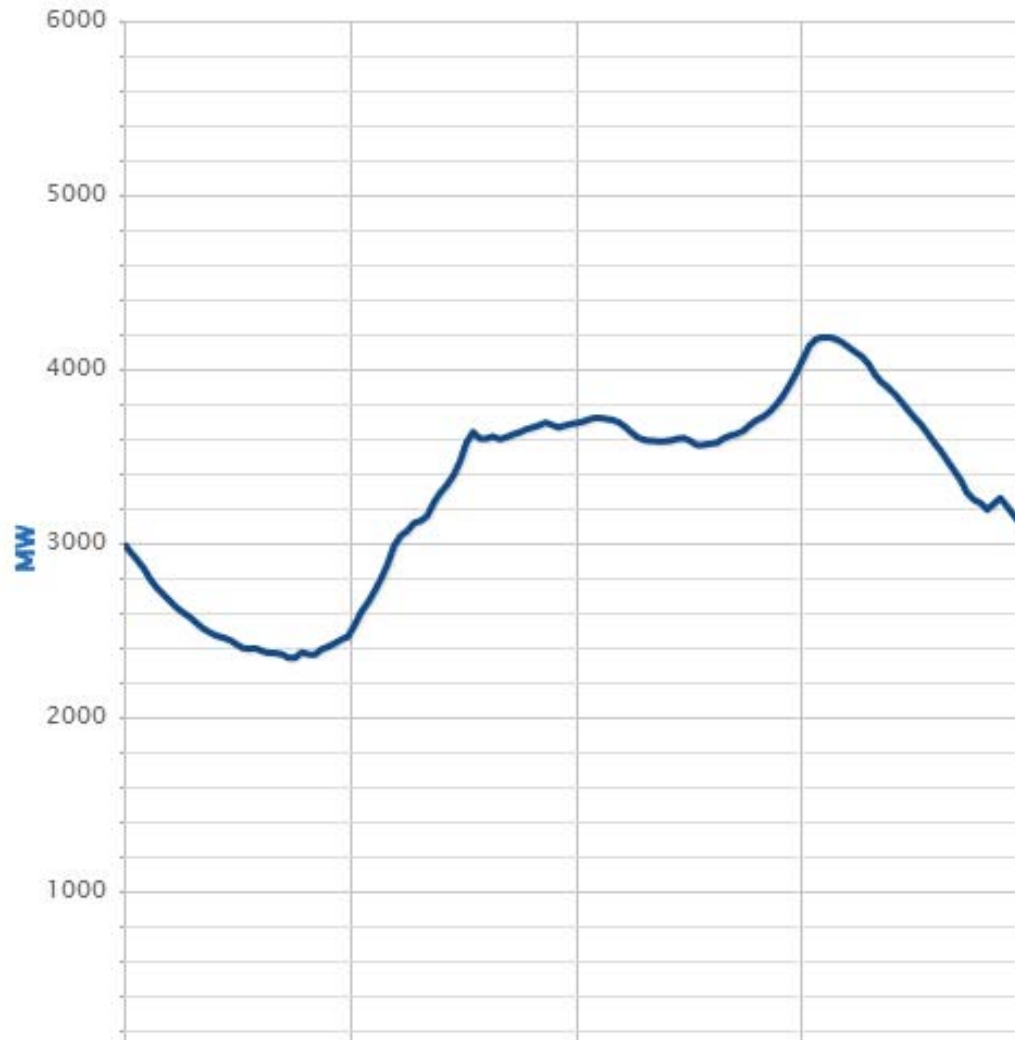


20/02/2014

[Previous 24 Hrs](#)

[Next 24 Hrs](#)

System Demand



Report

- » Capacity Adequacy Indicator
- » CO₂ Emissions
- » CO₂ Intensity
- » Electricity Statistics
- » Generation System Performance
- System Demand
 - » System Records
 - » Weekly Peak Demand
 - » Wind Generation
 - » Download Centre

» Transmission System Disturbance Map

» Outage Information

» Billing and Metering

» Grid Code

» Ancillary Services & Other System Charges

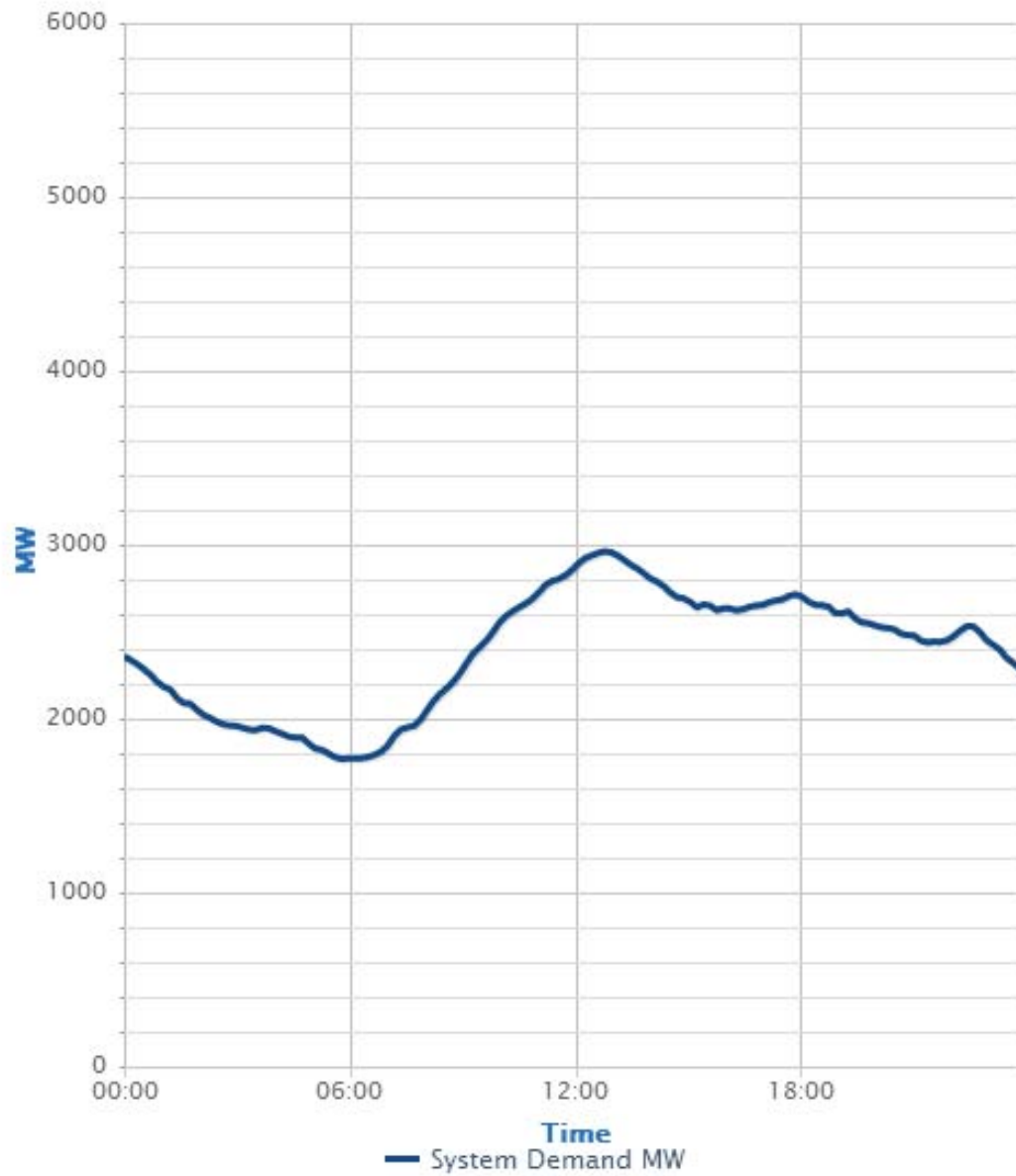
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» Demonstration Projects

» Reports

» Smart Grid Innovation Hub

System Demand



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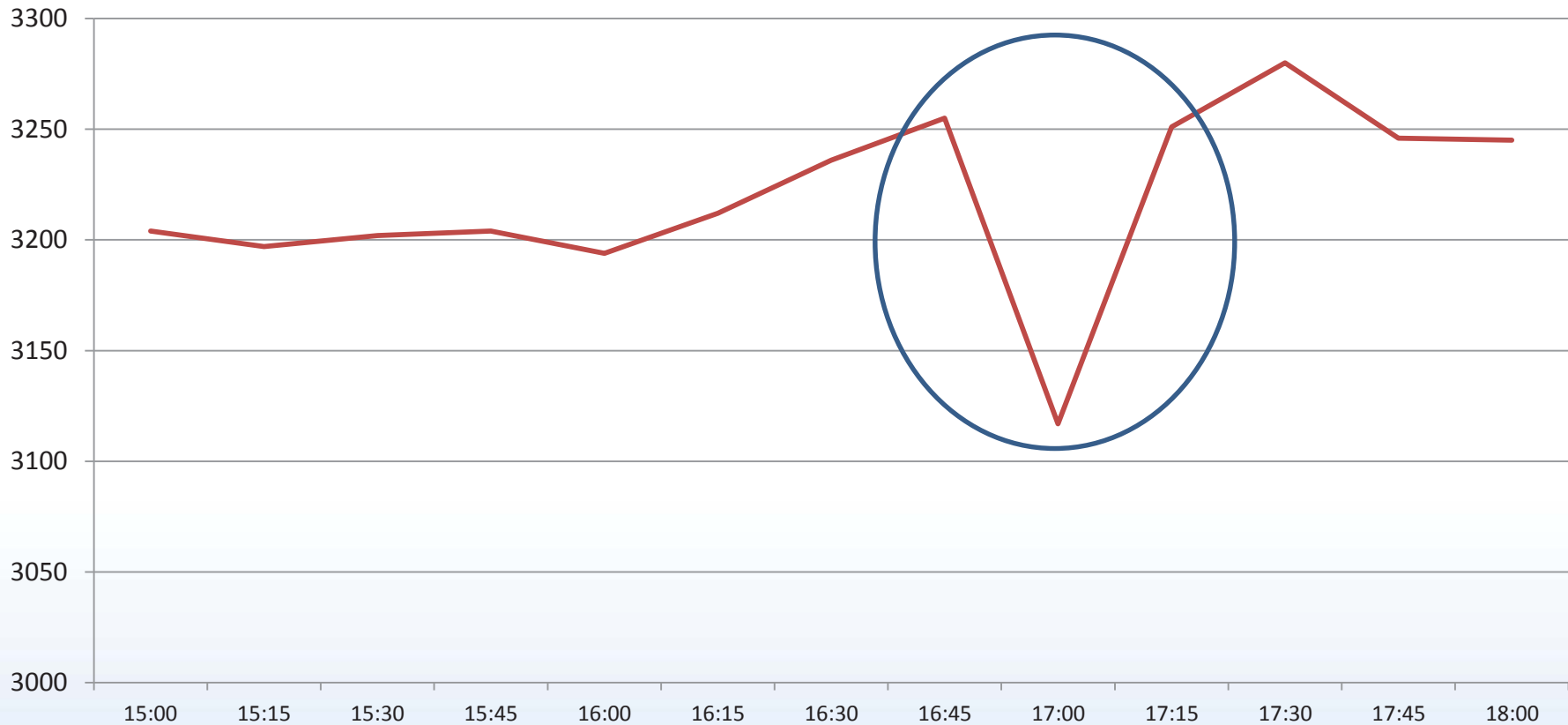
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System Demand Tabular Data

Show / Hide Tabular Data

Grid Profile Changes Caused by Demand

National Electricity Demand Profile (MW) - 9 Aug 2012



205MW Demand Drop – 6% of Grid!

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Previous 24 Hrs

Next 24 Hrs

Wind Generation Forecast Generation



Wind Generation Tabular Data

Availability Reports

» All-Island Wind and Fuel Mix Report

» Capacity Adequacy Indicator

» CO₂ Emissions

» CO₂ Intensity

» Electricity Statistics

» Generation System Performance

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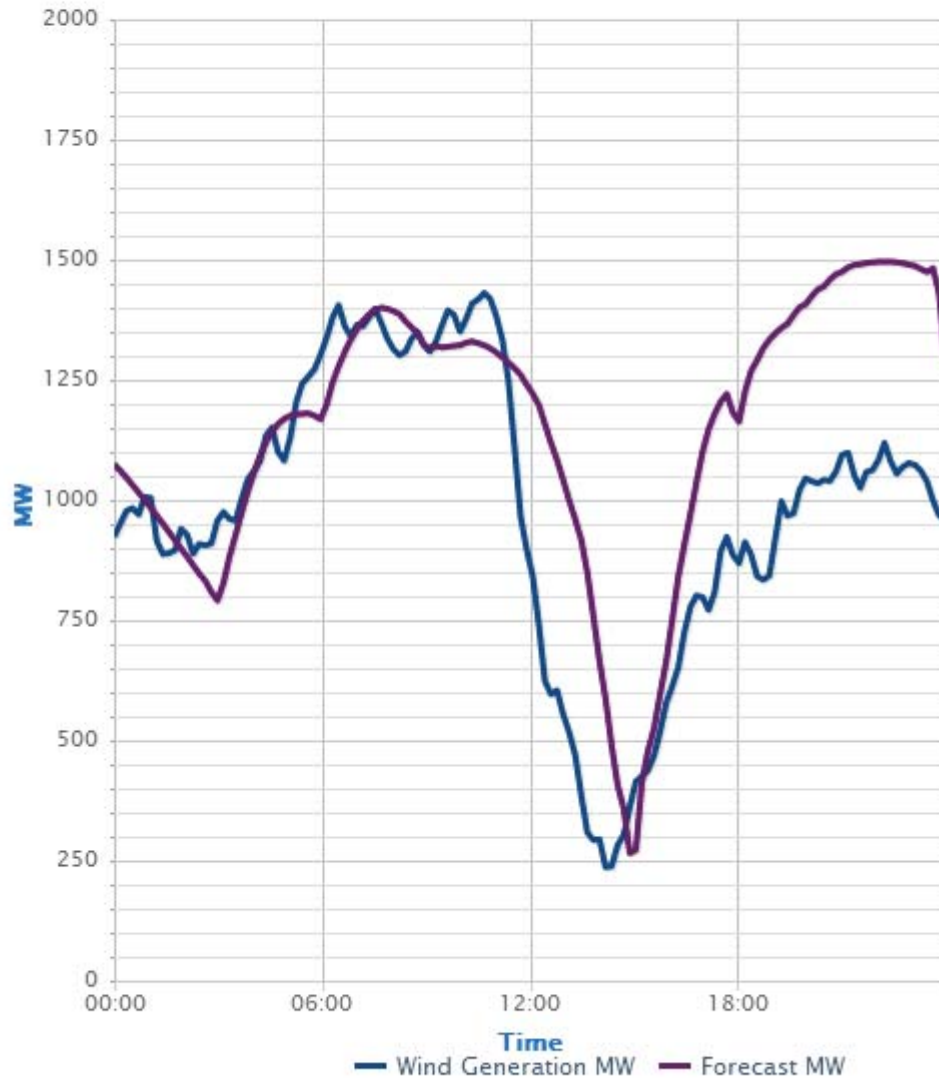
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Previous 24 Hrs

Next 24 Hrs

Wind Generation Forecast Generation



Wind Generation Tabular Data

- » All-Island Wind and Fuel Mix Report
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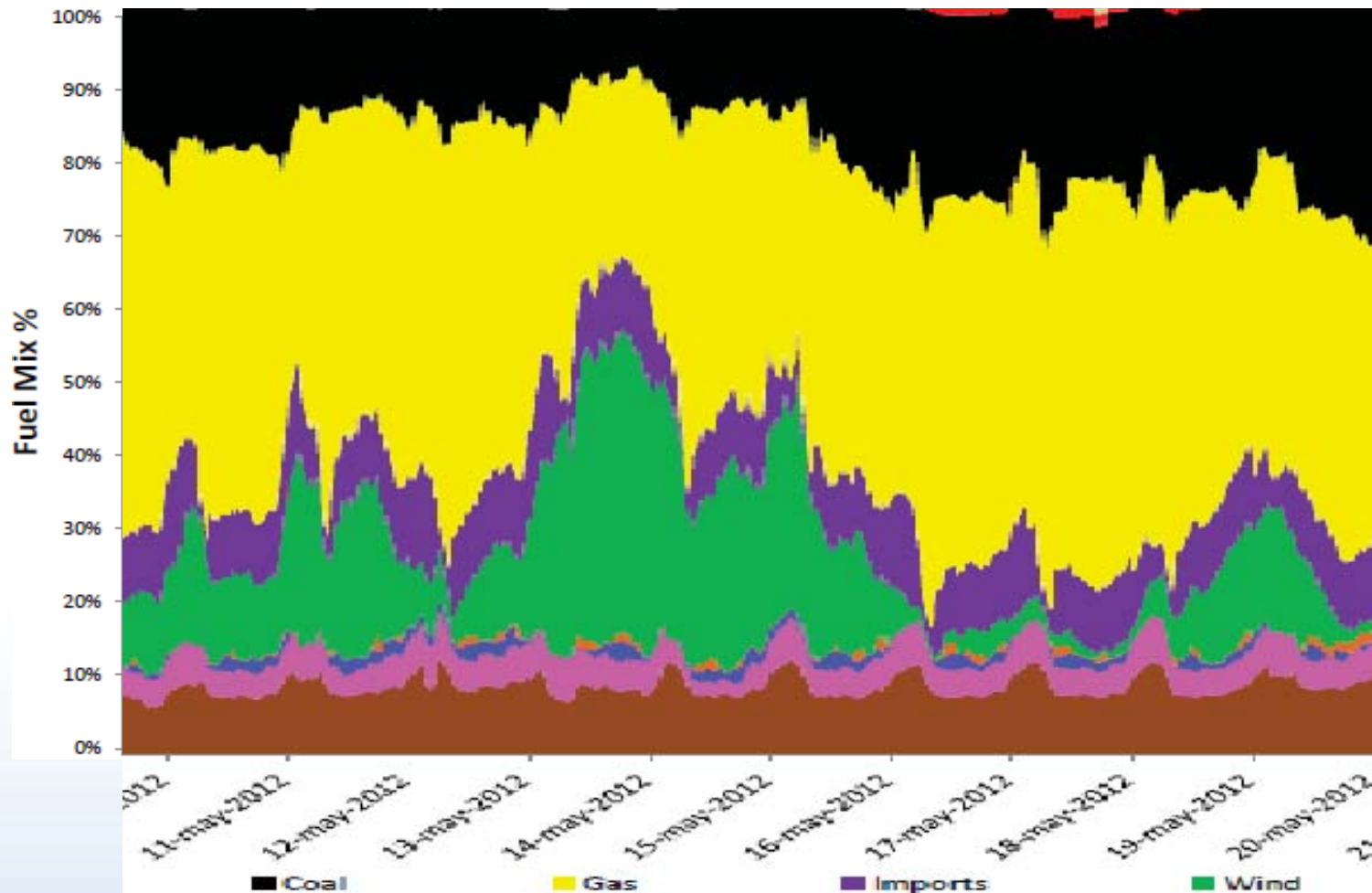
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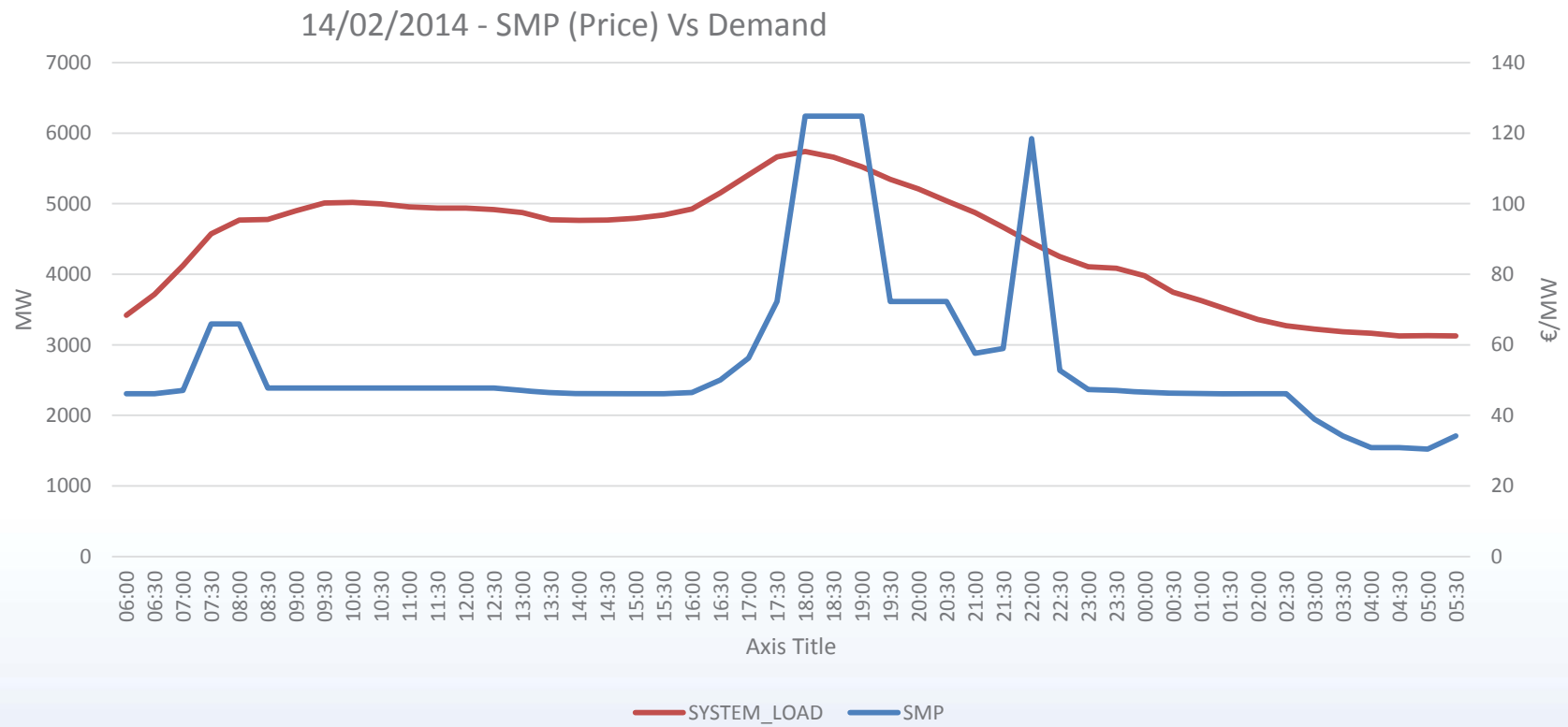
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Example of Generation Mix on National Grid



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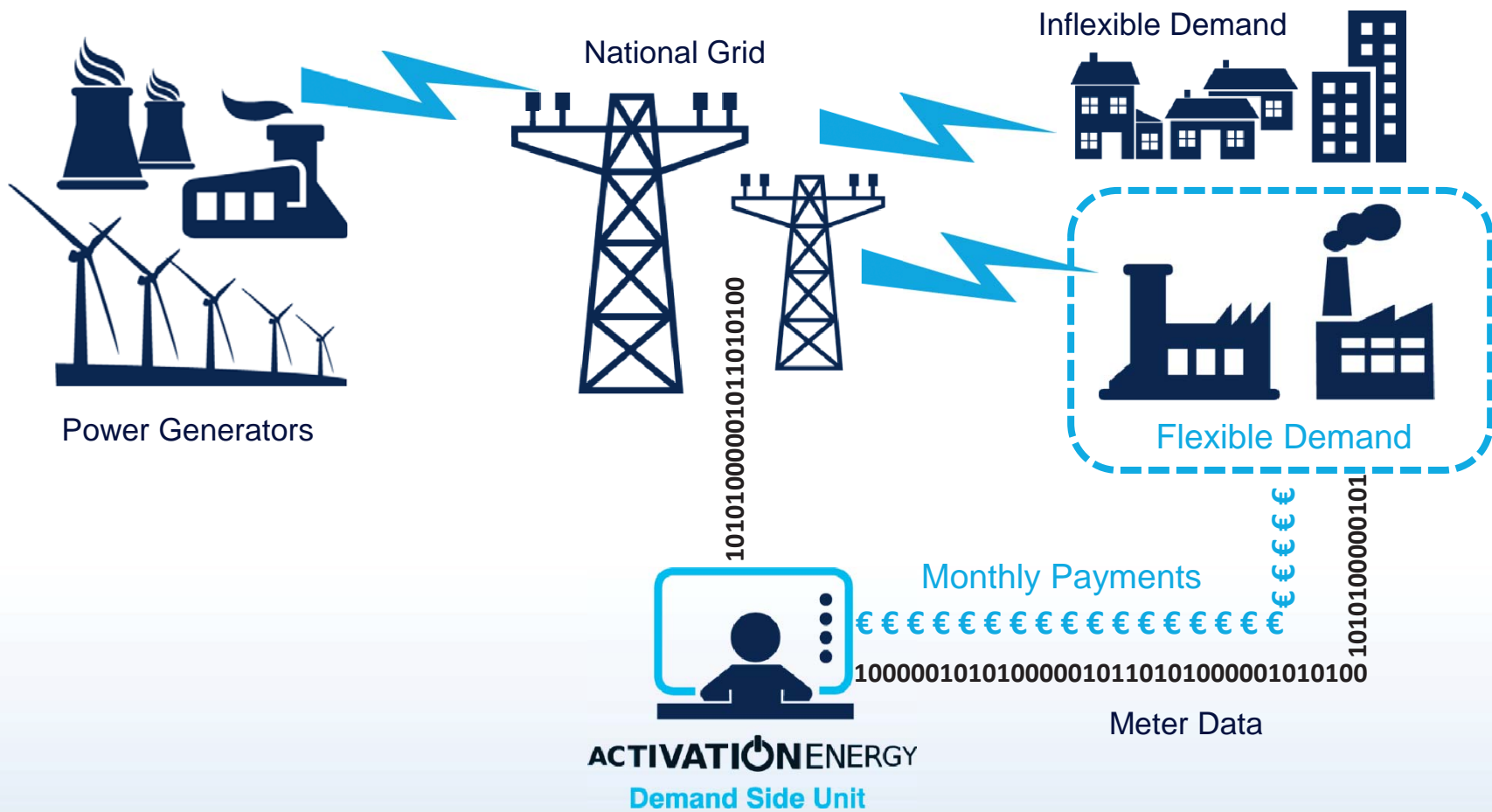
Example of Generation Mix on National Grid



Smart Demand

- Demand Side Management
- Demand Response
- Smart Grid
- Response to Real Time Price of Electricity
- First Step – Demand Side Unit

Demand Side Unit Explained



Demand Response Options at Sites

- **Direct Load Reduction**
 - Chillers/AHU
 - Motors
 - Compressors
 - Pumps
 - Production Plant etc

- **Back-Up Gensets**

Demand Response Scheme Outline

- Reduce within 30 minutes
- **Maximum of 2 hours per event.**
- Monthly payments
- Opt Out for Periods

Site Load Monitoring Requirements

- **LOAD MONITORING REQUIRED BY EIRGRID:**

- 1) Main Incomer

- 2) Generator Output

- **Costs paid up-front by Demand Response Scheme**

Metering Equipment to be installed



- i) DataComs Gateway (s)
- ii) Current Loop Sensors (to collect Main Incomer & Genset Meter outputs)
- iii) GSM – Relays to send SCADA signal and Generator Meters (if reqd)

Examples

- 10 MW Site Available 24 x 7 (Genset Remote Start)

Annual Revenue : € 380,000 + Diesel Refund

- Variable 1 MW Site Available 24 x 7

Annual Revenue Building 1: € 30,000

- Variable 500 kW Site Available 24 x 7

Annual Revenue Building 1: € 10,000

Examples of Demand Response Scheme Sites



PUMPS



MILLS

On-Site Back-Up Power Generators

Chillers



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Thank You...

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