I-SEM Essentials

Energy Cork Breakfast Briefing 02.06.16

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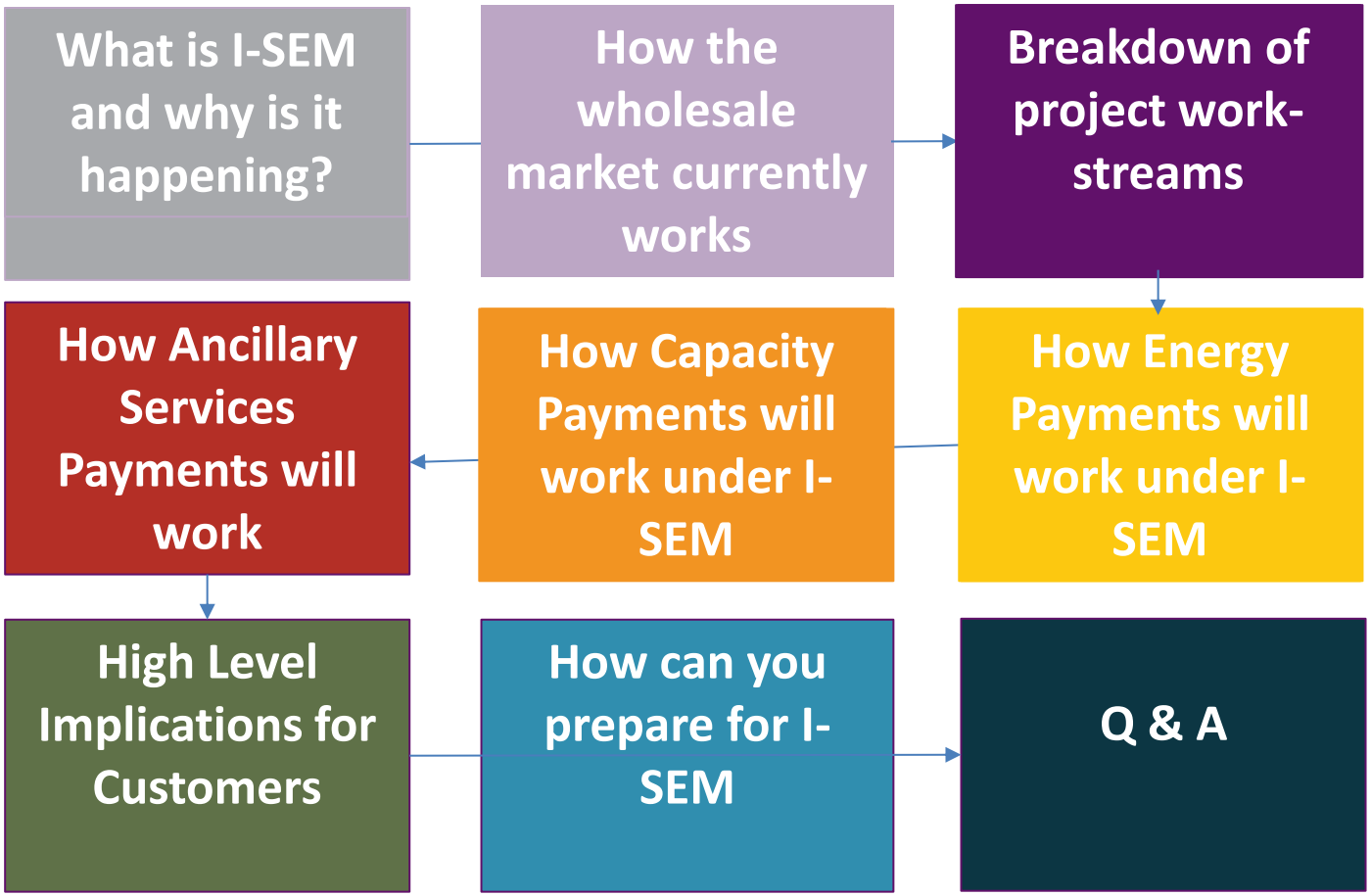
Learning Objectives



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What is I-SEM?

Ireland's wholesale electricity market known as the Single Electricity Market (SEM) will be replaced by **I-SEM** in Q4-2017 (project currently on-track)

I-SEM is the **Integrated Single Electricity Market**

This will mean significant change for Generators, Suppliers and Electricity Customers

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Why is the market changing?

The wholesale market is currently running perfectly well; so why is it changing?

This is a requirement arising from changes to European legislation designed to *harmonise* cross border trading arrangements across all European electricity markets.

Basically, we have to

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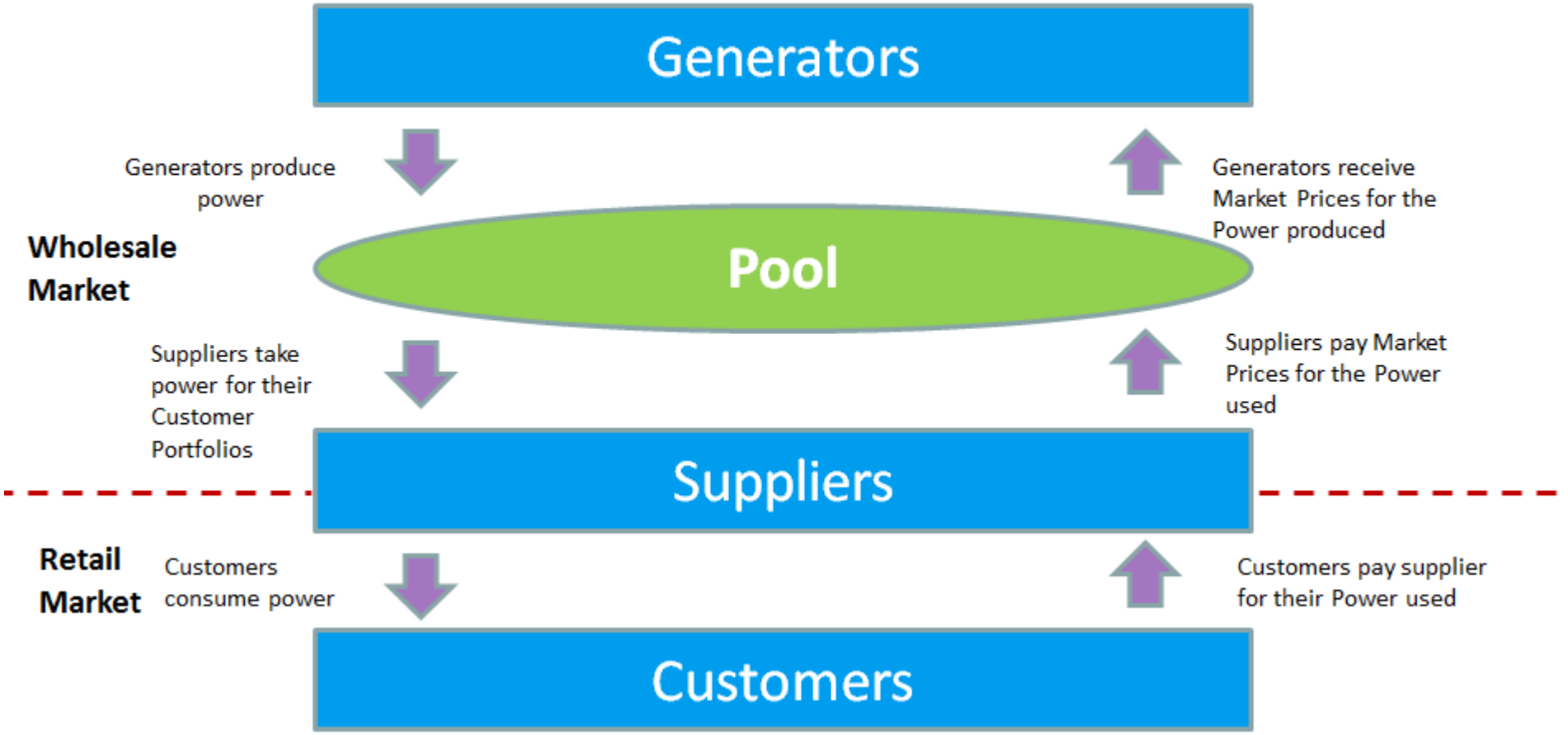
The Design of the SEM



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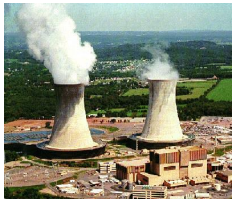
How the wholesale price is currently set

Generation



Level of Demand Needed

Generator D

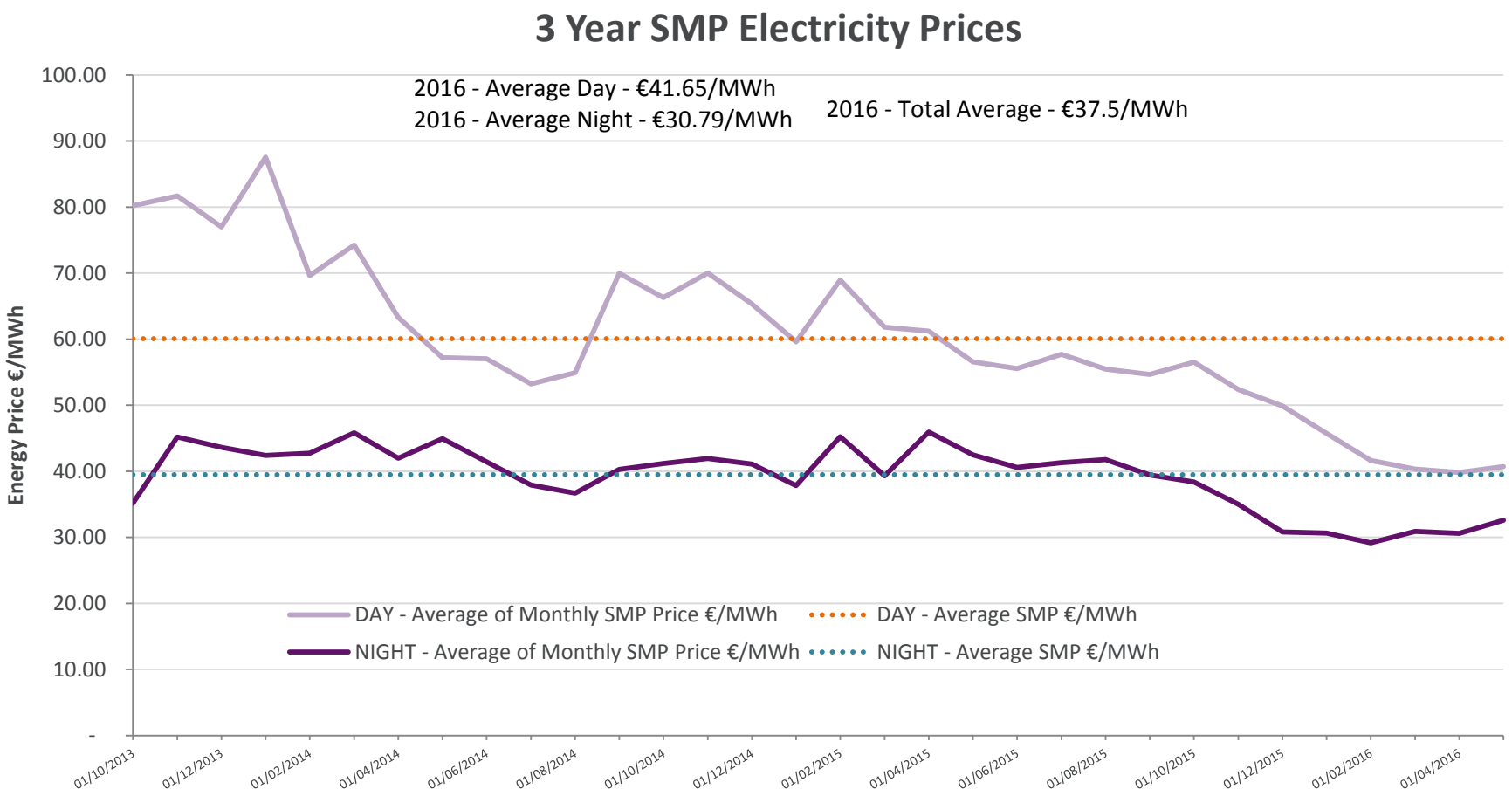
Generator C

Generator B

Generator A

Suppliers and Demand

Historic wholesale electricity price (SMP)



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Project Work-streams

- The SEM Committee (SEMC) is leading on meeting the requirements of the European legislation

- In February 2014, the SEMC launched a consultation on the High Level Design options
  - Details of the preferred design were published in September 2014

  https://www.semcommittee.com/sites/semcommittee.com/files/media-files/SEM-14-085a%20I-SEM%20SEMC%20Decision%20on%20HLD.pdf

- I-SEM project is now in its final phase, Phase 3
  - Detailed Design and Implementation

- The Project is broken down into 9 different ‘work-streams’

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I-SEM Project Update

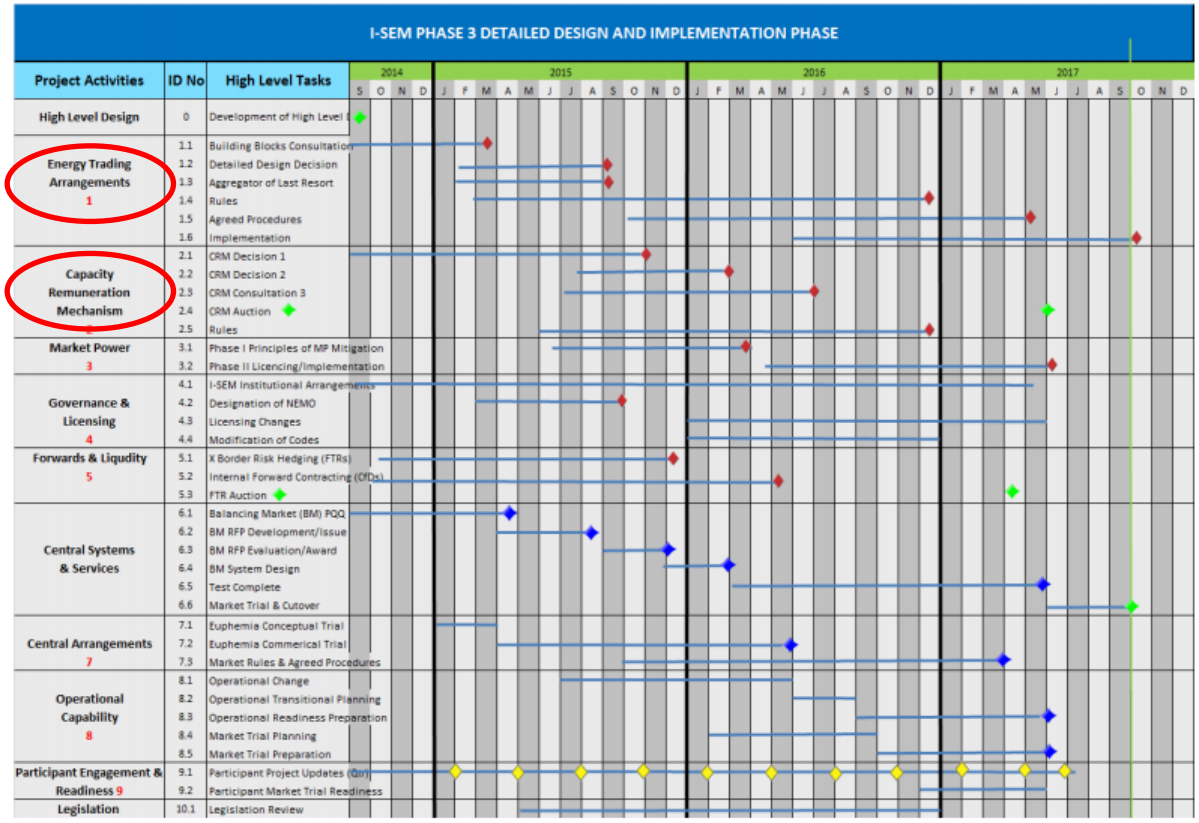

Table 2.1 Phase 3 Detailed Design

https://www.semcommittee.com/publication/sem-16-020-i-sem-project-plan-quarterly-update-april-16

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Project Work-streams

Relates to how electricity will be bought and sold →

Relates to how generators will be compensated for being ready to supply electricity into the grid →

*In parallel to these work-streams there is also the **DS3 programme***

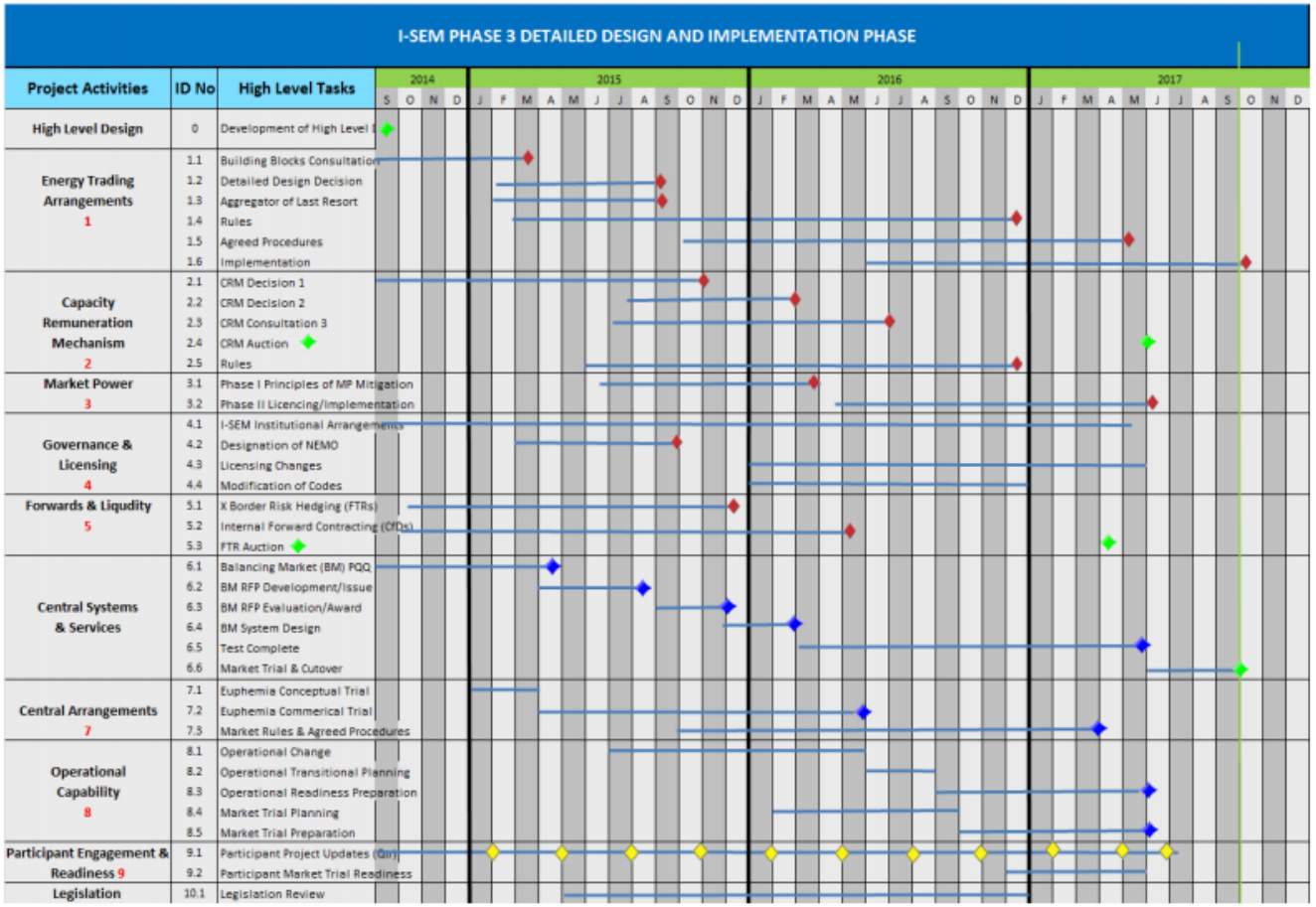

Table 2.1 Phase 3 Detailed Design

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Key Changes Overview

The SEM currently operates as a gross mandatory pool

- I-SEM will be a bi-lateral power market, similar to the BETTA market in GB

Three core areas of change:

- Energy payments
- Capacity payments
- Ancillary Services payment

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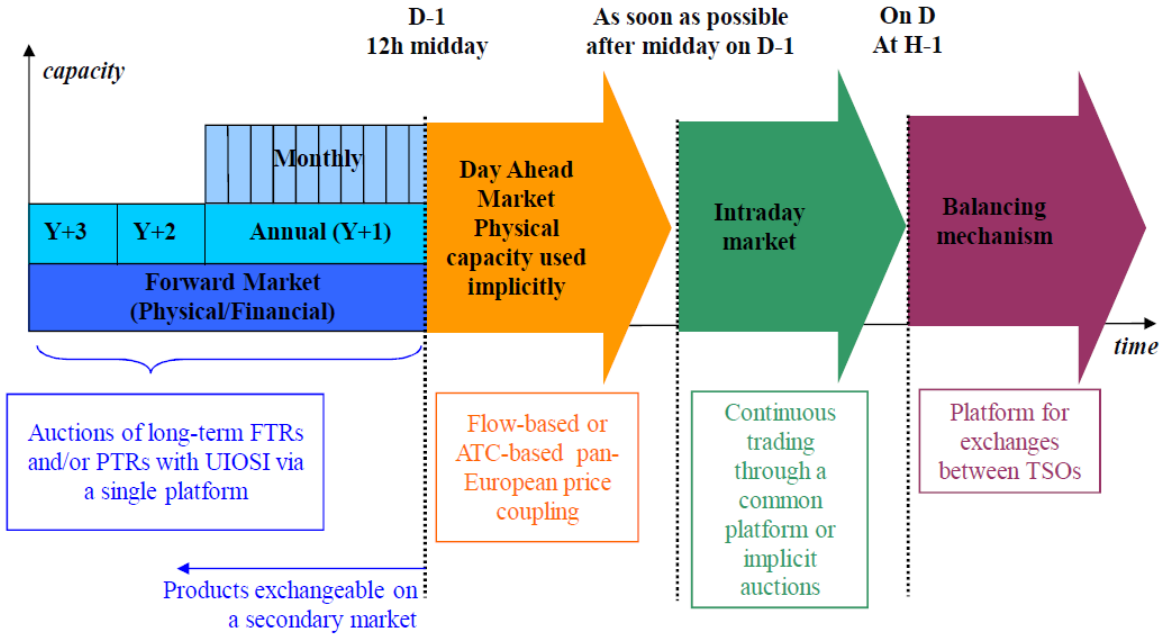
Energy Payments

Under SEM, there is just one market price (SMP or pool price). Under I-SEM, there will be 3 different prices as well as a forward market



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Energy Payments

- On a Day-ahead basis, both suppliers and generators will bid volumes and prices for consumption and production into a Day-ahead auction
- This auction will set the half-hourly set of prices for each day
- **Volume forecasted at Day-ahead will receive the Day-ahead price**
- Any differences between forecast volume and the actual volume consumed will be classified as 'imbalances'

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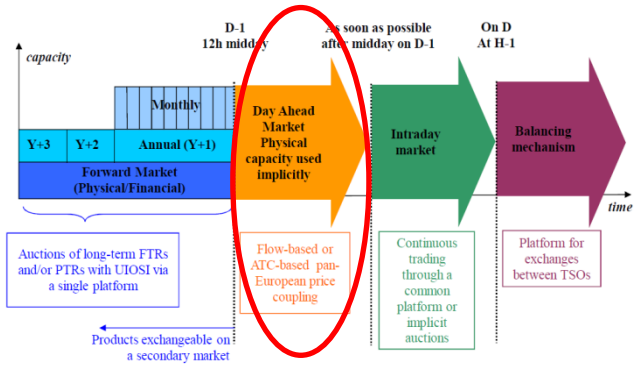
Energy Payments

Day-ahead market



- Will be regulated
- Mandatory participation
- Must forecast at DA to get the DA price
- Will be like a pool market, but only for forecasted volume
- Is expected to be the most stable and least volatile market
- Will take place throughout Europe

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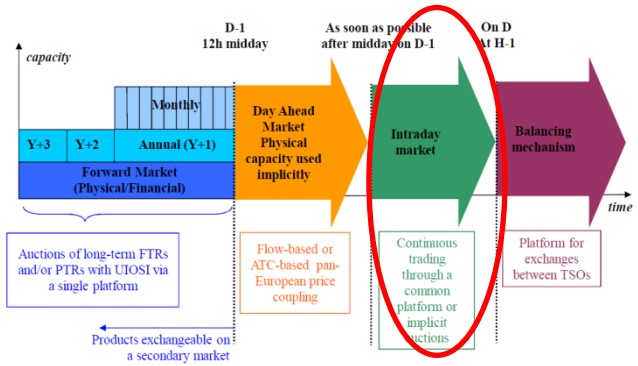
Energy Payments

Intra-day market



- Allows bi-lateral trades
  - Currently unavailable in the SEM
- Will be regulated
- Will not be mandatory
- Likely to be slightly more volatile than the Day-ahead market

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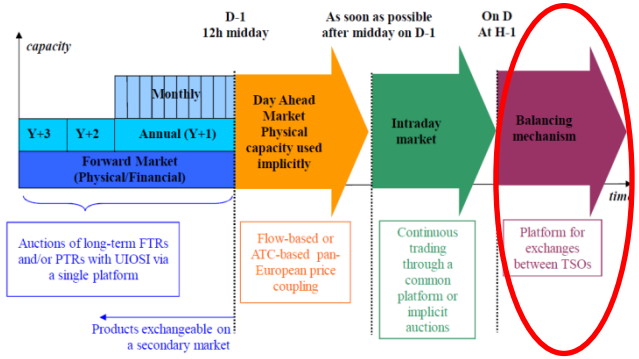
Energy Payments

Imbalance market



- Will be regulated
- Will take effect when other markets close
- System operator has to be able to balance the system in real-time
- Balancing and Imbalance price will most likely come out the same
- This will most likely be the most volatile market
- Generators and suppliers will bid into this market
  - Each supplier will require some element of balancing
- Not necessarily mandatory to bid in to this market but everyone will get ‘cashed out’

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Balancing Mechanism

- The imbalance price is calculated using the **Balancing Mechanism** (BM)
- The System Operator uses a Balancing Mechanism in order to balance the system in real-time
- This means that the imbalance price will be largely uncertain and volatile
- This volatility creates an incentive for suppliers to minimise the differences between forecast and actual demand

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Capacity Payments

- In order to ensure the demand for electricity is always met, generators receive a payment for being ready to generate electricity
- Under the SEM, anyone with electricity generation capacity gets a capacity payment
  - Regardless of whether or not it's needed
  - Payment is called Capacity Payment Mechanism
- In Ireland we currently have a significant amount of unused generation capacity
- Under I-SEM there is an opportunity to reduce capacity related costs

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Capacity Payments

- Under I-SEM a form of capacity payment will continue
  - Will minimise the risk of a shortfall in generation in the market
- However, a more competitive process will be put in place
  - Structure will be known as Capacity Remuneration Mechanism

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Capacity Payments

- Capacity payments in the new market will be **auction based**
- Power stations will 'bid in' and those with the cheapest bids will be successful in the auction and win a capacity contract
  - Only the winners of the auction will be paid the Capacity Remuneration Payment
- There will be **an obligation** on any participating generators to make their capacity available
  - If they're successful in the auction but are unable to provide the committed volume, they will be penalised

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Ancillary Services Payments

- Both Ireland and Northern Ireland have set targets for renewable penetration of 40% of electricity consumed by 2020

- In order to achieve these targets, and due to the intermittent nature of wind generation, wind penetration at times will be significantly in excess of 40%

  - Poses **significant risks** to the secure and reliable operation of the system
  - Programme of work to resolve this challenge is called the DS3 Programme – Delivering a Secure, Sustainable Electricity System

http://www.eirgridgroup.com/how-the-grid-works/ds3-programme/#comp_000056cb5b8e_00000006da_78f0

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Ancillary Services Payments

- **Increased ancillary services** will be required in order to ensure there are no power-outs
  - e.g. Back-up generation when wind drops

- Services will be put in place in order to maintain a stable and reliable system that is able to respond to variations in wind production

- These increased services could mean increased costs for electricity Customers

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High Level Implications for Electricity Customers

Energy Payments (Neutral)

- How energy prices are calculated will completely change
- The Day-ahead market is likely to be similar to the current SMP price
- Increased optionality for Customers
- Will force Suppliers to innovate and develop new products
- Forecasting consumption will be key to achieving a stable price
  - Minimise exposure to imbalance price
- If you can't forecast your consumption you may be exposed to higher and more volatile prices

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High Level Implications for Electricity Customers

Capacity Payments (Decrease)

- Capacity charges are likely to reduce due to auction-based capacity remuneration system

Ancillary Services Payments (Increase)

- Are likely to increase pass-through charges for Customers
- Additional services needed in order for the system to remain stable and reliable

Other

- I-SEM will not be cheap to implement; market operator payments will change
- Suppliers and generators will likely look at how to recover costs involved
- I-SEM will create DSU opportunities for electricity Customers
  - Revenue opportunities

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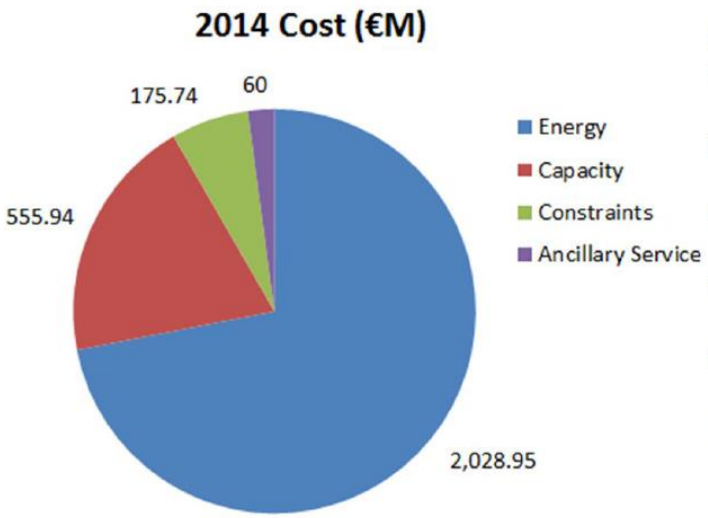
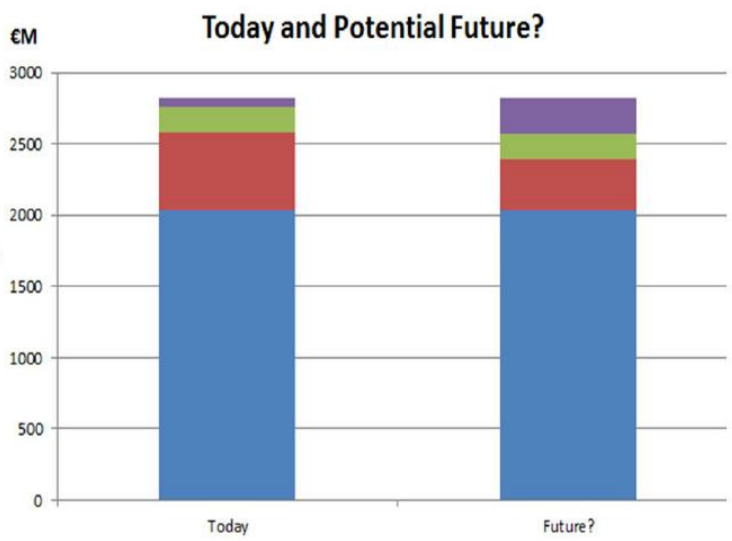
High Level Implications for Electricity Customers





Indicative split of Revenues

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How you can prepare for I-SEM

- Understand the changes that are about to happen
- Demand on-going information from your supplier
- Preparation is key for cost-avoidance
- Ability to forecast electricity consumption will be extremely valuable
  - Need to consider consumption monitoring tools
  - Inability to forecast may lead to more volatile prices
- Ask the question, do you have DSU capability?

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Questions

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Thank you

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