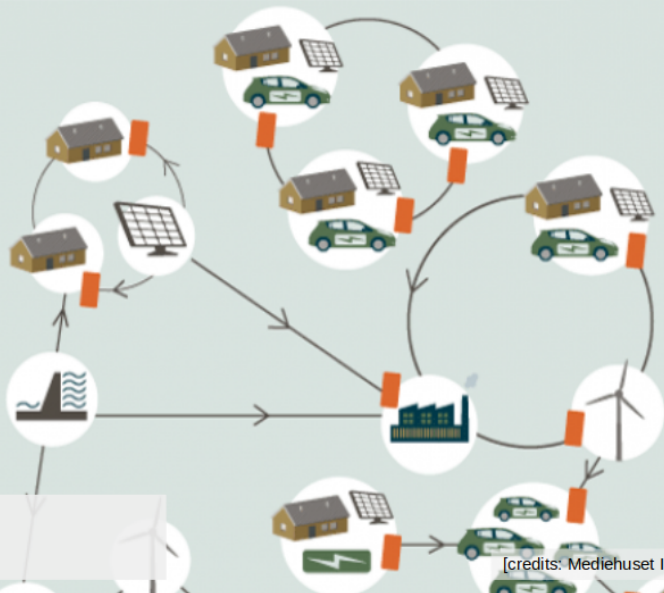


# Module 3 – Intra-day and Balancing Markets

## 3.1 From market outcomes to physical operation



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## Remember our day-ahead market clearing example

- After day-ahead market clearing, the supply and demand schedules are:

Supply id.	Schedule (MWh)	Demand id.	Schedule (MWh)
G <sub>1</sub>	120	D <sub>1</sub>	250
G <sub>2</sub>	50	D <sub>2</sub>	300
G <sub>3</sub>	200	D <sub>3</sub>	120
G <sub>4</sub>	400	D <sub>4</sub>	80
G <sub>5</sub>	60	D <sub>5</sub>	40
G <sub>6</sub>	50	D <sub>6</sub>	70
G <sub>7</sub>	60	D <sub>7</sub>	60
G <sub>8</sub>	55	D <sub>8</sub>	45
G <sub>9</sub> -G <sub>15</sub>	0	D <sub>9</sub>	30
		D <sub>10</sub> -D <sub>12</sub>	0

- The system price is of 37.5 €/MWh, corresponding to the price offer of G<sub>8</sub>

- A **day-ahead market** is a **financial market**!
  - These are only transactions - No one is “forced” to generate or consume...
  - Both *market participants* and *system operator* are informed about market clearing outcomes (price and volumes for each market time unit)
  - In the European set-up, the market participants will then *self-dispatch*, i.e., determine themselves how they will generate or consume depending on volumes and prices

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- The day-ahead market is **cleared a fairly long time before actual operation** (between 12 and 36 hours)
- Convergence towards real-time operation relies on the crucial concepts of
  - **Balance Responsible Parties** (BRP - to be explained in the next slide)
  - **Adjustment market**, i.e., intra-day market mechanism
  - **Balancing market**, i.e., (near) real-time market

- From Energinet's website:

*“Production, consumption and trade activities must be assigned to the balance responsible parties (BRP) who must enter an agreement with Energinet.dk to assume responsibility for the specific activities, ie. production, consumption or trade.*

*Upon entering the agreement on balance responsibility the BRP assumes the **financial responsibility** for the imbalances they may incur.”*

## Balance Responsible Party (BRP)

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A list of Danish BRPs is available at:

<https://en.energinet.dk/Electricity/New-player/Oversigt-over-BA>

- Similar concepts and setups are used in other European countries, e.g., the Netherlands, Belgium, etc., with the respective system operators (e.g., TenneT, Elia, etc.) responsible for
  - assessing deviations, and
  - the eventual settlement

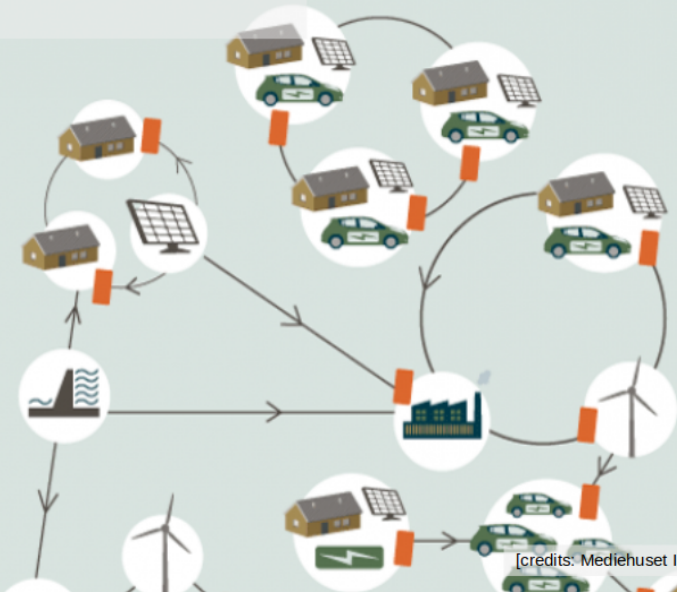
[Official regulation related to BRPs: [Energinet Regulation C1 - Terms of Balance Responsibility](#)]

[See also: [Roles and responsibilities](#)]

- *If a deviation from original schedule was to occur (either as producer or consumer), what could ways to minimize those deviations?*
  - Compensate with other generation/consumption means within their own portfolio
    - **Re-dispatch of own units**
  - Find ways to adjust through agreements with other players between the day-ahead market clearing and actual operations
    - **Intra-day (/adjustment) market**
  - Let the system operator put the system back to balance
    - **Balancing market**



Use the self-assessment quizz to check your understanding!



[credits: Mediehuset Ingeniøren]