

Chapter 4: Qualification Mechanics

An Example of Qualification

- We present an example of qualification based on a generic unit without being specific as to what type of unit it is.
- This will illustrate the core concepts and processes used in Qualification.
- Later, material is presented on how specific types of units may be treated differently from the generic unit in this example.
- We do not touch on broader topic – like Implementation Plans for New Capacity - as the Qualification Process is more about assessing its completeness and credibility.

Initial Capacity, Existing Capacity & New Capacity

Type of Capacity	Initial Capacity (MW)	
Existing Capacity	25	← <i>Initial Capacity (Existing)</i>
New Capacity	20	
Total Capacity	45	← <i>Initial Capacity (Total)</i>

- Our generic unit is already registered under the current TSC so has **Existing Capacity**.
- **Initial Capacity** is a like name plate, or installed capacity, but:
 - Limited what can be delivered to the network (e.g. the Maximum Export Capacity).
 - If multiple units have capacity that exceeds this limit, then participant has some freedom to allocate the capacity that can be exported between units, though not exceeding what any one unit can deliver.
- There is a plan to increase the **Initial Capacity (Existing)** of 25 MW with 20 MW of **New Capacity** to give an **Initial Capacity (Total)** of 45 MW.

Firm Network Access

Type of Capacity	Initial Capacity (MW)
Existing Capacity	25
New Capacity	20
Total Capacity	45

- A unit can have firm or non-firm network access in Qualification.
- Between Connection Agreements for the existing capacity and Connection Offers for the new capacity, this unit has 35 MW of **Firm Network Access** for the Capacity Year at the time of Qualification.

Firm Network Access (MW)
35

De-Rating Factors

Type of Capacity	Initial Capacity (MW)	De-Rating Factor	Implied De-Rated (MW)
Existing Capacity	25	0.906	$25 \times 0.906 = 22.65$
New Capacity	20		
Total Capacity	45	0.902	$45 \times 0.902 = 40.59$

- **De-Rating Factors** are used to convert raw MW values into de-rated values that are employed in the capacity market. De-rating recognises that given a pool of units, some of them will not be available at any given time. By matching de-rated capacity to the expected system capacity requirement the market effectively secures extra capacity to cover for unavailability of units.
- De-Rating Factors vary with **Technology**. A high availability, high reliability unit will have a de-rating factor near to 1. Less available units will have lower values. The values may decline with unit size as larger units impact reliability more when unavailable.
- Suppose our unit's **Technology** is a Steam Turbine unit, then Table 1 of the Initial Auction Information Pack (SEM-17-042 available on the SEMO website) tells us that de-rating factor for units 25 MW is 0.906, and for 45 MW is 0.902.

Firm Network Access (MW)	De-Rating Factor	Implied De-Rated (MW)
35	0.904	$35 \times 0.904 = 31.64$

Increase and Decrease Tolerances

Type of Capacity	Initial Capacity (MW)	Implied De-Rated (MW)	Lowest Nomination (De-rated MW)	Highest Nomination (De-rated MW)
Existing Capacity	25	22.65	$22.65 \times (1-0.1) = 20.385$	$22.65 \times (1+0) = 22.65$
New Capacity	20			
Total Capacity	45	40.59	$40.59 \times (1-0.1) = 36.531$	$40.59 \times (1+0) = 40.59$

- In Qualification a participant can nominate the quantity of de-rated existing capacity – or **Gross De-Rated Capacity (Existing)** – and the quantity of **Gross De-Rated Capacity (New)** – it is seeking.
- The Initial Auction Information Pack indicates tolerances that may be applied in these nominations, which are set relative to what we show as the Implied De-Rated values.
- Suppose INCTOL (increase tolerance) is 0% and DECTOL (decrease tolerance) is 10% then the table above indicates the low and high range of de-rated capacity that can be nominated.
- Tolerances are not applied to the Firm Network Access value.

Firm Network Access (MW)	Implied De-Rated (MW)
35	31.64

Setting Gross De-Rated Capacity

Type of Capacity	Initial Capacity (MW)	Implied De-Rated (MW)	Lowest Nomination (De-rated MW)	Highest Nomination (De-rated MW)
Existing Capacity	25	22.65	$22.65 \times (1-0.1) = 20.385$	$22.65 \times (1+0) = 22.65$
New Capacity	20			
Total Capacity	45	40.59	$40.59 \times (1-0.1) = 36.531$	$40.59 \times (1+0) = 40.59$

- In Qualification a participant can nominate how much de-rated capacity its unit can provide. This is called Gross De-Rated Capacity as it takes no account of already Awarded Capacity.
- Suppose the participant nominates 22 MW of Gross De-Rated Capacity from existing capacity. This is below the upper limit of 22.65 MW so 22 MW is accepted. If it had exceeded the upper limit of 22.65 then 22.65 MW would be applied.
- Suppose the participant nominates 15 MW of Gross De-Rated Capacity from its new capacity. Its effective total capacity based on nominations would be $22 + 15 = 37$ MW. This is within the allow range of 36.531 MW to 40.590 MW, so the total Gross De-Rated Capacity is 37 MW.
- The Gross De-Rated Capacity of New Capacity is the difference, or 37 - 22 = 15 MW.

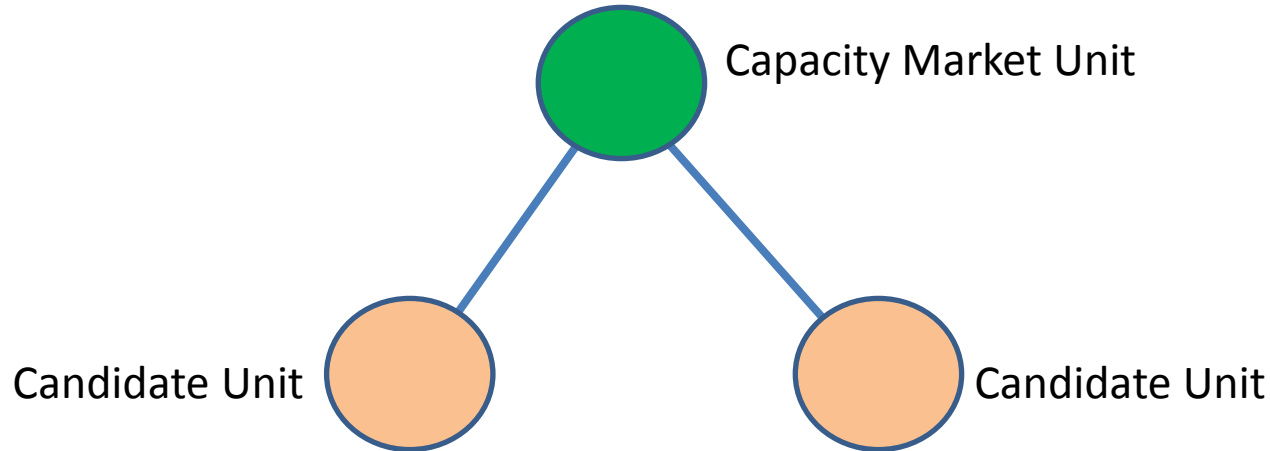
Qualification Results – Candidate Unit

Type of Capacity	Initial Capacity (MW)	Gross De-Rated Capacity (De-rated MW)
Existing Capacity	25	22 ← Gross De-Rated Capacity (Existing)
New Capacity	20	15 ← Gross De-Rated Capacity (New)
Total Capacity	45	37 ← Gross De-Rated Capacity (Total)

Firm Network Access (MW)	Implied De-Rated (MW)
35	31.64

- The above tables summarises the key results for the Candidate Unit.
- The de-rated Firm Network Access needs to be tracked as it is used in the next step.

Qualification and Capacity Market Unit



- The Qualification data for Capacity Market Units (CMUs) reflect accumulated results for the Candidate Units that comprise them, and previously Awarded Capacity.
- Only Variable Generator Units and units with Initial Capacity below the De Minimis Threshold (10 MW) can be combined to form one CMU.
- Normally there is a 1 to 1 relationship between a CMU and a Candidate Unit.
- We assume there is 1 to 1 relationship in our example.

Capacity Market Units and Awarded Capacity

Type of Capacity	Initial Capacity (MW)	Gross De-Rated Capacity (De-rated MW)	Awarded Capacity (De-Rated MW)	Net De-Rated Capacity (De-Rated MW)
Existing Capacity	25	22	18	$\text{Max}(0, 22-18) = 4$
New Capacity	20	15	0	$\text{Max}(0, 15-0) = 15$
Total Capacity	45	37		

- The Gross De-Rated Capacity values of our CMU matches those of the Candidate Unit.
- The CMU was Awarded Capacity in a prior Capacity Auction for the same Capacity Year. This must be netted from the Gross De-Rated Capacity to give the Net De-Rated Capacity above.
- Further, the Awarded Capacity must be netted from the Firm Network Access to give the Firm Offer Requirement.

Firm Network Access (MW)	Implied De-Rated (MW)	Awarded Capacity (De-Rated MW)	Firm Offer Requirement (De-Rated MW)
35	31.64	18	$\text{Max}(0, 31.64-18) = 13.64$

Qualification Results – Capacity Market Unit

Type of Capacity	Initial Capacity (MW)	Gross De-Rated Capacity (De-rated MW)	Net De-Rated Capacity (De-Rated MW)
Exiting Capacity	25	22	4 ← Net De-Rated Capacity (Existing)
New Capacity	20	15	15 ← Net De-Rated Capacity (New)
Total Capacity	45	37	

- These results have implications for how the CMU participates in the Capacity Auction.
- It may offer 4 MW of Existing Capacity and 15 MW of New Capacity into the Auction.
- It must offer the lesser of its Existing Capacity and the Firm Offer Requirement, or $\text{Min}(4, 13.64) = 4 \text{ MW}$.
 - This allows non-firm units to bid lower than their Net De-Rated Capacity if they are not firm up to this level.

Firm Network Access (MW)	Implied De-Rated (MW)	Firm Offer Requirement (De-Rated MW)
35	31.64	13.64

The Default Price Caps

- In Qualification the SOs will set the applicable offer price caps for Capacity Market Units based on default values determined by the RAs. This information can be found in the Initial and Final Auction Information Packs for each Capacity Auction.
- New Capacity and existing demand response from DSUs or Autoproducers can be offered at the higher Auction Price Cap:
 - For the first auction this will be valued at:
 - €123,190.00/MW per year in the Republic of Ireland, and
 - €110,464.47/MW per year in Northern Ireland.
- Other Existing Capacity will be qualified to offer up to the Existing Capacity Price Cap;
 - For the first auction this will be valued at:
 - €41,060.00/MW per year in the Republic of Ireland, and
 - €36,818.50/MW per year in Northern Ireland.

Exception Applications And Price Caps

- Participants can apply to the RAs (via an Exception Application) to have a Unit Specific Price Cap applied to all or part of the capacity of a CMU in Qualification Results.
- A Unit Specific Price Cap can be set on a case by case basis, between the normal Existing Capacity Price Cap and the Auction Price Cap. It is applicable to:
 - Units with unusually high costs that cannot be sufficiently funded within the Existing Capacity Price Cap.
 - Dual Rated Units:
 - These are units which typically have different capacities on different fuels.
 - These must be qualified based on their maximum capacity.
 - They can apply for a Unit Specific Price Cap if they normally operate on a fuel that provides less capacity. This gives scope to recover more revenue to offset risks and costs associated with ever being required to deliver the higher capacity.
- If notified of RA acceptance of a Unit Specific Price Cap for a CMU prior to the release of either Preliminary or Final Qualification Results, the SOs will modify the Qualified price caps accordingly.

Exception Applications And Maximum Capacity Duration

- By default all Qualified capacity will have “Maximum Capacity Duration” of 1 Capacity Year.
- In the auction a participant can specify by offer step for how many Capacity Years it wants capacity to be awarded, with this between 1 and the Maximum Capacity Duration:
 - The standard Maximum Capacity Duration limits this to 1 Capacity Year.
- A participant can submit an Exception Application to the RAs in respect of New Capacity if it believes it cannot adequately recover its investment costs with Awarded Capacity for just 1 year (at a time) but must demonstrate that the cost of the New Capacity will exceed a New Capacity Investment Rate Threshold.
 - For the first auction this will be valued at:
 - €300,000.00/MW per year in the Republic of Ireland, and
 - £269,010.00/MW per year in Northern Ireland.
- If notified of RA acceptance of such an Exception Application for a CMU prior to the release of either Preliminary or Final Qualification Results, the SOs will modify the Maximum Capacity Duration of that CMU to 10 years.

Treatment of Different Units In Qualification

Our example unit is not the same as all units. Here we list some special cases:

- Variable generator units do not need to qualify. If they choose to Qualify they can qualify at any level between 0 and their normal de-rated capacity:
 - This is specified in the CMC.
- For the first auction Demand Side Units and qualified demand response from Autoproducers (i.e. increasing net output by decreasing consumption) have a 100% decrease tolerance so can qualify between 0 and their normal de-rated capacity:
 - The tolerance is specified in the Initial Auction Information Pack.
- The de-rating factors for interconnectors is the product of two factors:
 - One is the normal de-rating factor specific to interconnectors.
 - The other is a External Market De-rating Factor specific to the market to which it is connected (e.g. Great Britain). This recognises what the pattern of flows might be at times of peak requirements in the SEM.

Treatment of Different Units In Qualification

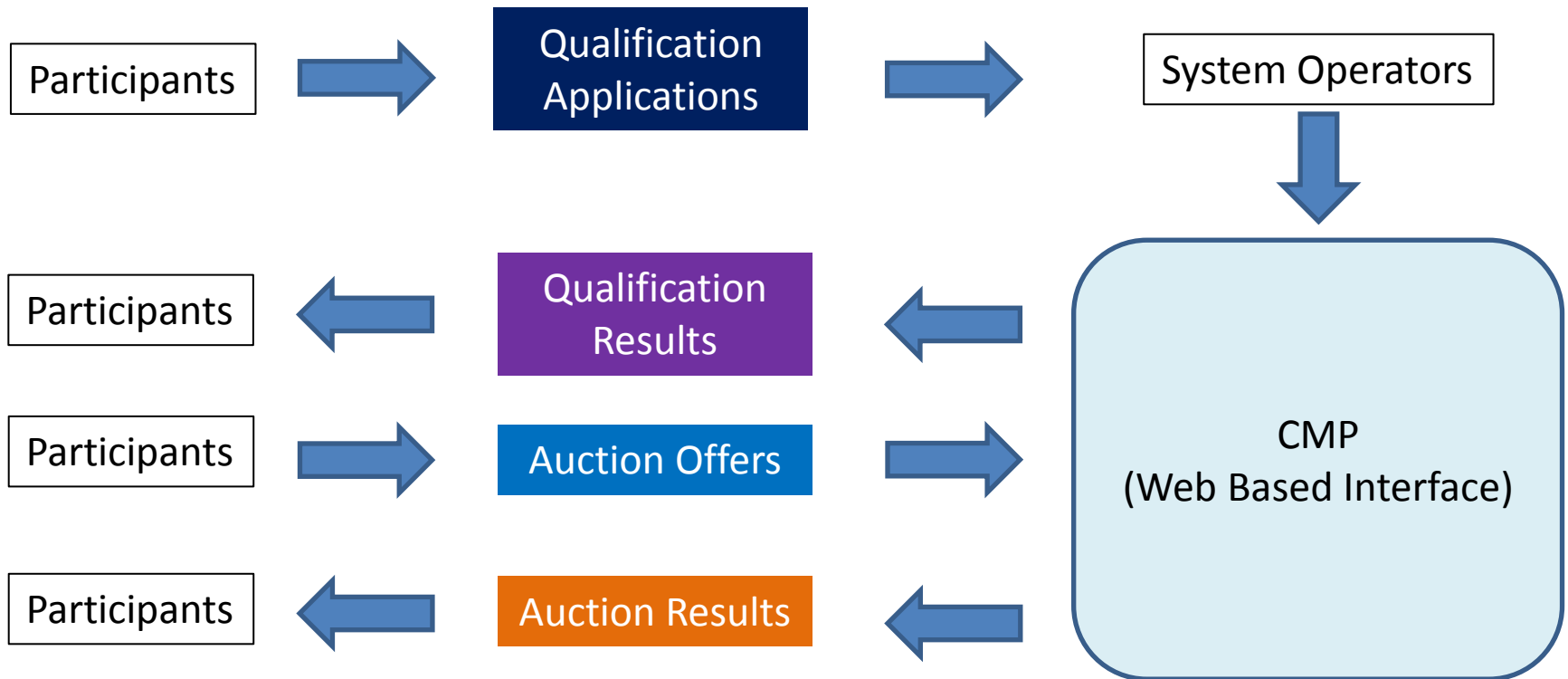
Further:

- Aggregated Generator Units (AGUs) are a single Generating Unit under the TSC and are a single Candidate Unit under the CMC:
 - These are made of a number of unregistered small Generators which provide a service under contract to System Operators.
 - Qualification is applied to the individual Generators that comprise them, and are summed up to give results for the AGU.
- Candidate Units that are Variable Generator Units and Generators that are below the De Minimis Threshold (10 MW) can be aggregated as a single Capacity Market Unit. Due to different settlement equations for different unit types:
 - Demand Side Units can only be aggregated with Demand Side Units.
 - Autoproducers can only be aggregated with Autoproducers.
- The Capacity Auction course discusses Locational Capacity Constraints that are employed in the auction. If a Capacity Market Unit is fully and solely within the region of a Locational Capacity Constraint then it will be associated with the constraint in Qualification results.

Changing DSU on AGU composition during Capacity Year

- The CMC does contemplate that the composition of AGUs and DSUs may change during the Capacity Year.
- The obligation remains to deliver any Awarded Capacity such that:
 - If the capacity of the unit increases above that required to deliver the Awarded Capacity then this is irrelevant to the Capacity Market. It can be reflected in future Qualification.
 - If the capacity of the unit falls below that required to deliver the Awarded Capacity then the unit is failing to meet its obligations and can be exposed to Difference Charges under the TSC.
- If the Awarded Capacity is contributing to a Locational Capacity Constraint then the Capacity Market Unit must continue to deliver Awarded Capacity that satisfies that Locational Capacity Constraint (unless permission is granted by the System Operators in writing).

The Capacity Market Platform



Non CMP Processes

Reviews and Disputes of Qualification Results are via Notices submitted to relevant parties.

Published results are released via the System Operator website.

Procedures allow for alternative processes for offer submission if issues arise with offer submission.