

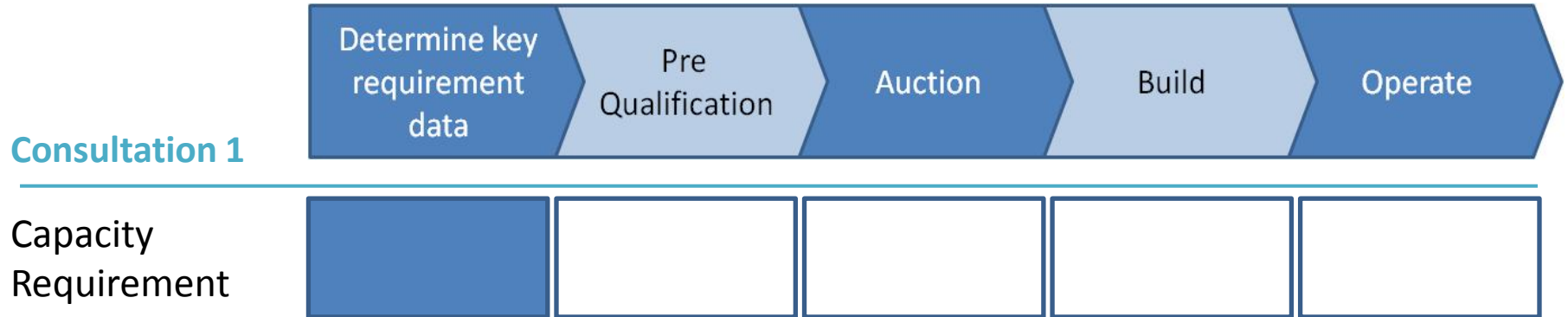
# I-SEM CRM Consultation Paper Workshop

## Capacity Requirement

Dundalk, 31 July 2015



# Determining the Capacity Requirement



The following presentation will focus on the aspects that will inform the determination of what volume of capacity is to be procured in the I-SEM CRM.

# Areas Examined In the Capacity Requirement Section

Topics Covered	Conclusion
1. Security Standard	SEMC minded to position
2. Accounting for Plant Unreliability	Options Provided
3. Accounting for Demand Forecast Uncertainty	Options Provided
4. Adjusting the Capacity Requirement	SEMC minded to position

# Security Standard

## **Key Issue to be determined**

- Should the existing security standard of 8 hours LoLE be retained or should we move to a new security standard of 3 hours or another standard?

# SEM Committee minded to position

- SEM Committee is not minded to change the security standard from its current level of 8 Hours LOLE at this stage, due to the following reasons:
  - Starting point is to take each situation as it is at present and only change it if necessary
  - €14.4 - €19.1 million/year cost
  - Reserve margin needed for a small system is proportionately higher than for a large system resulting in greater cost per customer to maintain given LOLE standard

# Accounting for Plant Unreliability

- All providers of capacity will have an element of unreliability
- Traditionally measured as the Forced Outage Rate (FOR)
- FOR drives the need for a margin of spare capacity to replace that which is unable to perform. The size of this margin will increase with the tightness of the security standard i.e. a 3 hour LoLE would require a greater margin than an 8 hour LoLE

Two options are presented in which respondents views are requested that could deal with this issue:

- **Total Requirement:** This approach would determine the total "nameplate" or "installed" capacity required to meet the specified security standard. May result in a capacity requirement greater than forecast demand, with a margin to cover for the risk of plant outages.
- **De-rated Requirement:** Under a de-rated approach, capacity providers will only be eligible for capacity contracts up to a defined fraction of their nameplate capacity. This will vary by capacity type, reflecting typical reliability and hence impact on the total nameplate for capacity

# Accounting for Demand Forecast Uncertainty

- Quantity of Capacity required for any given year will depend on the level of demand forecasted.
- Demand forecasts are never 100% accurate
- The CRM auctions will procure capacity for a number years in advance, to allow for new capacity to be built.
- How demand is forecasted needs to be decided

# Options to Model Forecasted Demand

## Single average Scenario

- Based on an average set of inputs
- Risks delivering a capacity requirement that is too low

## Worst Case Scenario

- Based on a 1 in 20 “bad” winter
- Risks over procuring capacity in most years

## Optimal Scenario

- Requirement is determined based on a number of scenarios
- Optimal scenario is the one which minimises the regret cost

## Stochastic Modelling

- Employ a method of modelling in which one or more of the inputs within the model are random



# Selecting the Optimal Scenario

Scenario	Forecast Peak Demand (MW)	Capacity Requirement (MW)	VoLL (€/MWh)
1	6,700 MW	7,500 MW	€10k
2	6,850 MW	7,600 MW	€10k
3	7,000 MW	7,700 MW	€10k
4	7,250 MW	7,900 MW	€10k

1

Establish the Scenarios

Regret cost of too much capacity					Increased MWh lost from too little capacity				Regret Cost (at VoLL) of too little capacity			
	"True" Scenario				"True" Scenario				"True" Scenario			
	1	2	3	4	1	2	3	4	1	2	3	4
<b>CONE (€/Mwy)</b>	€50.00k	€50.00k	€50.00k	€50.00k								
<b>Scenario Being Evaluated</b>	1	€0k	€0k	€0k	0	67	670	3350	€0k	€670k	€6,700k	€33,500k
	2	€5,000k	€0k	€0k	0	0	103	685	€0k	€0k	€1,028k	€6,850k
	3	€10,000k	€5,000k	€0k	0	0	0	70	€0k	€0k	€0k	€700k
	4	€20,000k	€15,000k	€10,000k	€0k	0	0	0	€0k	€0k	€0k	€0k

2

Evaluate components of Regret Cost

Combined Regret Costs					
	"True" Scenario				Max Regret
	1	2	3	4	
<b>Scenario Being Evaluated</b>	1	€0k	€670k	€6,700k	€33,500k
	2	€5,000k	€0k	€1,028k	€6,850k
	3	€10,000k	€5,000k	€0k	€700k
	4	€20,000k	€15,000k	€10,000k	€0k

3

- Look at total Regret Cost
- Select Scenario with "least worst" regret cost

Figures are for illustrative purposes only

# Adjusting the Capacity Requirement

## Auction for a single zone

Consistent with current arrangements  
Simplest to implement  
Assumes construction of N-S Interconnector

## Auction for multiple zones

Split the Capacity market in two or more sub markets  
More complicated to implement  
Potentially raises issues around market power

## Locational Price Adjustment

Option can be combined with either above options  
Adjusts the price of bids to reflect cost of choosing one provider over another

# SEM Committee minded to position

- Expect the capacity requirement and CRM auction will be for a single zone
  - TSO Generation Capacity Statement indicates that the North-South interconnector will be in place by 2019
  - The I-SEM is expected to continue to be a single energy zone
  - Other options introduce a level of complexity

# Questions