

# Orkney Active Network Management system

## Session 2 Commercial

The contractual interface

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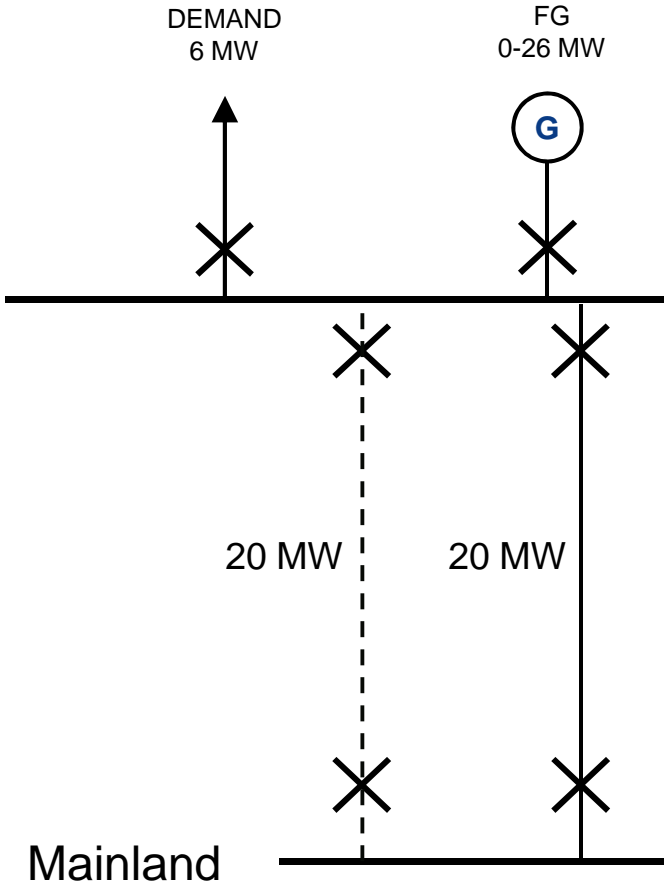
# Learning Outcomes

- Understand the rationale of the application process
- Understand the principles of access

# Lesson Content

- **The Orkney Network**
- **The Challenge**
- **Application Process**
- **Principles of Access / Interactive Session**
- **The Results**
- **Lessons Learnt**

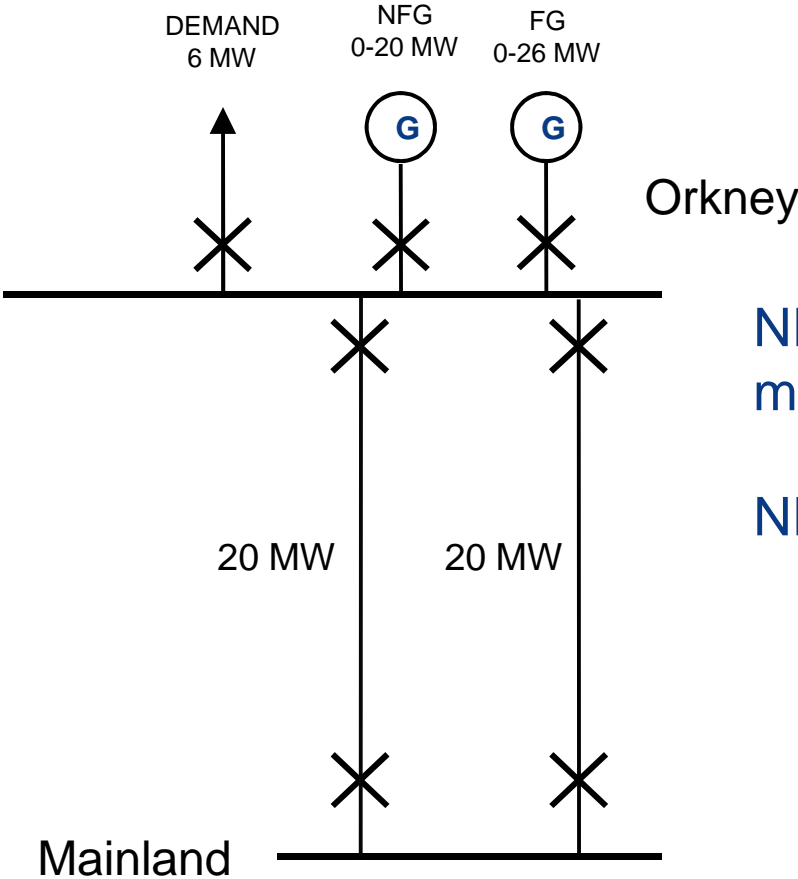
# Existing generator capacity on Orkney - Firm Generation



$FG = (N-1 \text{ circuit capacity}) + (\text{local minimum demand})$

$FG = 20 + 6 = 26 \text{ MW}$

# Post-fault inter-trip - Non Firm Generation

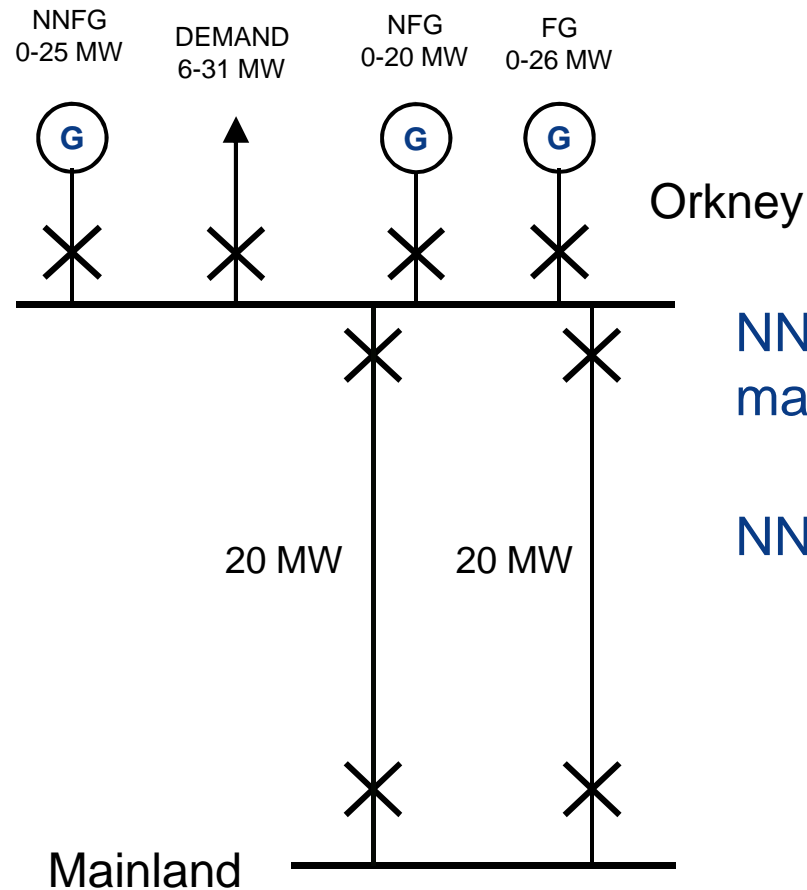


NFG = Capacity of both circuits + local minimum demand - FG

$$\text{NFG} = 20 + 20 + 6 - 26 = 20 \text{ MW}$$

Inter-trip NFG for N-1 contingency

# Active Network Management – New Non Firm Generation



NNFG = Capacity of both circuits + local maximum demand - FG - NFG

$$\text{NNFG} = 20 + 20 + 31 - 26 - 20 = 25 \text{ MW}$$

NNFG enabled  
by new ANM  
scheme

# The Challenge

1. Need to avoid speculative applications and the sterilisation of capacity
2. Allocation of capacity needs to be fair and equitable
3. From a generators perspective it must be commercially viable
4. Technically feasible to implement without creating hardware/software “monster”

- **Application Process**
- **First come first served**
- **Principles of Access (PoA)**



# Application Process

- **2 stage application process**
  1. Feasibility study and constraint analysis
  2. Post consent, a formal connection offer
    - First come first served

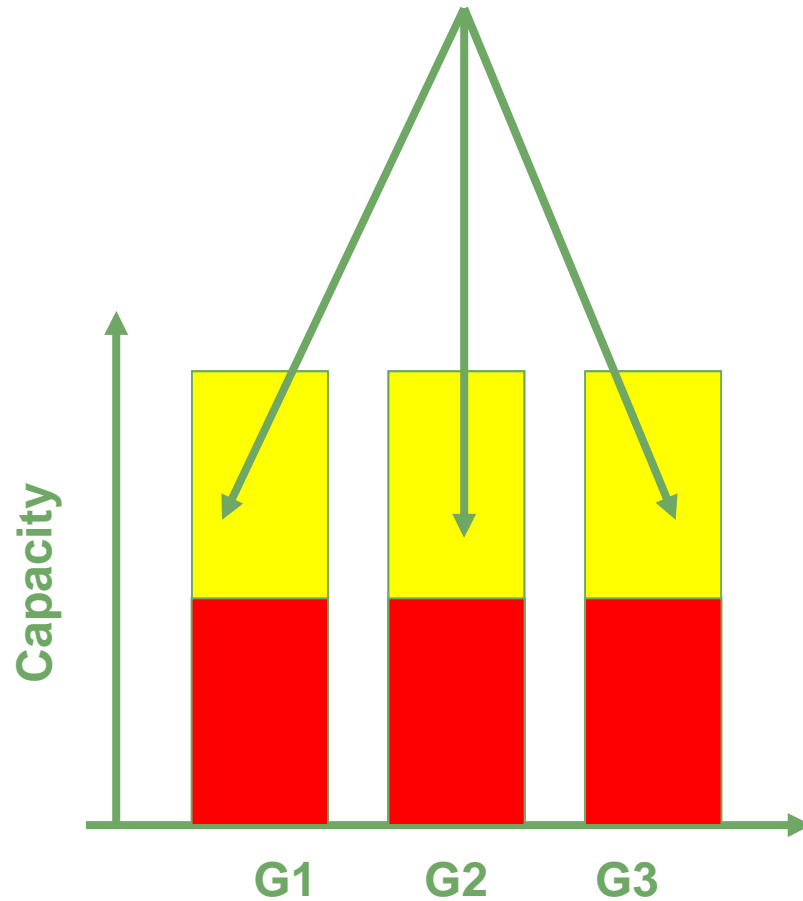


# Principles of Access

- **What are the available options?**
- **We are going to explore 3 broad options then evaluate them**
  - **Option 1: Pro-rata**
  - **Option 2: Last In First Off (LIFO)**
  - **Option 3: “X” Factor - cheapest, greenest, most efficient etc**

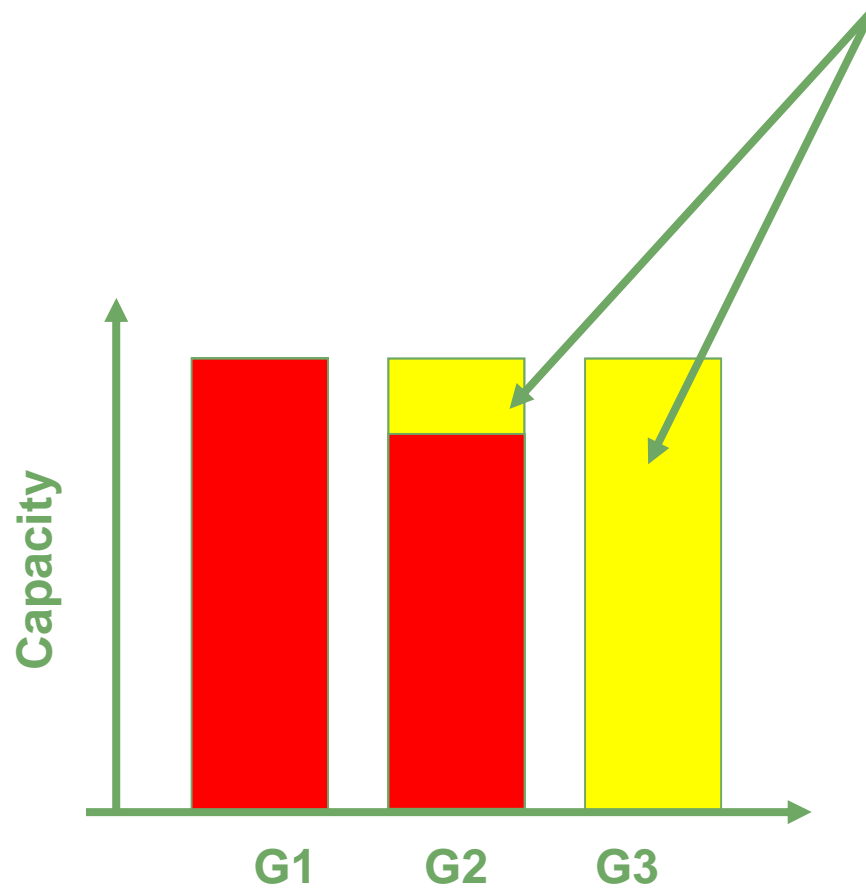
# Option 1: Pro-rata

- Network constraint = all constrained



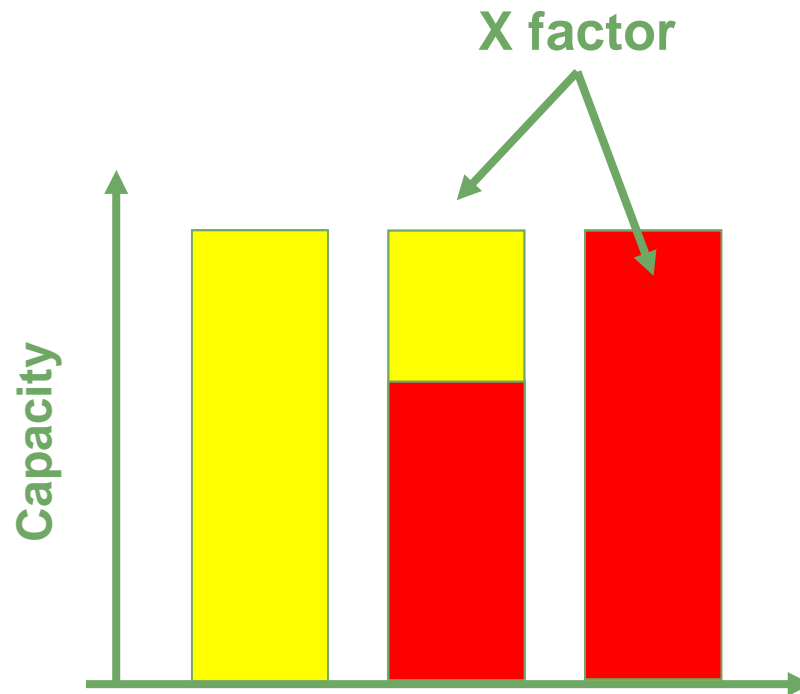
## Option 2: Last In First Off (LIFO)

- Network constraint = Curtail G3 then part G2



## Option 3: “X” Factor

- Network constraint = X factor then X-1 factor

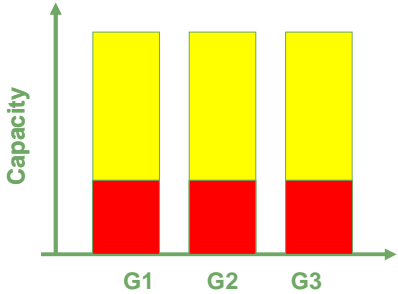


# Interactive Session

- Evaluate the 3 connection options under the objectives
- Options
  - Option 1: Pro-rata
  - Option 2: Last In First Off (LIFO)
  - Option 3: “X” Factor - cheapest, greenest, most efficient etc
- Objectives
  - Ensure a safe, secure and reliable source
  - Ensure efficient network performance & maintenance
  - Need to manage entry to market
  - Needs to be fair & transparent
  - Compliance with relevant codes, standards & laws
  - Commercially viable (“Bankable”)

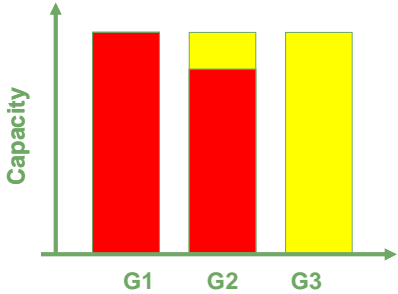
# The Results (1)

Delegates' comments: from group worksheets completed at Knowledge Sharing Event 18 May 2012

Option	Pros	Cons
<p><b>Option 1 (%)</b></p>  <p>The chart displays three stacked bars labeled G1, G2, and G3. The vertical axis is labeled 'Capacity'. Each bar consists of a red bottom portion and a yellow top portion. The total height of each bar is identical, indicating an equal total capacity constraint for all three groups. The red portion represents a smaller percentage hit across the board, while the yellow portion represents the remaining capacity.</p>	<p>Easy to code; Smaller percentage hit across the board; Fairer in terms of equal constraint impact; Could pro-rata be also linked with LIFO – subsets?; Ok if all apply at same time; Could potentially include micro generation; Good trigger for reinforcement; Simple; Perhaps simpler technically</p>	<p>Unfair to early investors; Uncertainty – constraint and financial; Un-bankable; Could sterilise grid?; Not as simple as it looks; Is it efficient, taking account of zones?; Technically can they back off?; Cash flow challenge for small projects; Not as bankable</p>

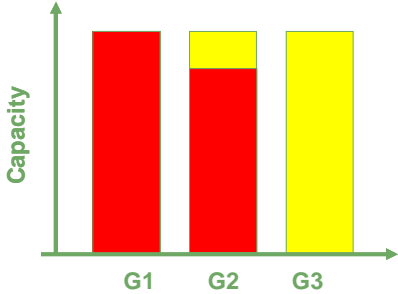
# The Results (2)

Delegates' comments: from group worksheets completed at Knowledge Sharing Event 18 May 2012

Option	Pros	Cons
<p><b>Option 2 (LIFO)</b></p>  <p>The chart illustrates the capacity allocation for three generators (G1, G2, G3) under Option 2 (LIFO). The y-axis represents Capacity. G1 has a red bar. G2 has a red bar with a yellow top section. G3 has a yellow bar. The total capacity for G2 and G3 is equal to the capacity of G1.</p>	<p>Investor certainty; risk known up front;            Predictable and fixed constraint level specific to RPZ scheme;            Certainty/feasible to model;            Closer to existing process and planning process;            Auditable;            Certainty of investment;            Chilling effect on further generation;            Bankable;            Incentive to get new capacity</p>	<p>Discourages late entrants/creates a race;            Disadvantage to new generators – high constraint levels;            Higher stop start events – impact on energy output efficiency and also maintenance requirements;            -            Not greenest or economically best overall;            Could encourage wrong behaviour            Some machines exercised more than others</p>

# The Results (3)

Delegates' comments: from group worksheets completed at Knowledge Sharing Event 18 May 2012

Option	Pros	Cons
<p><b>Option 3 (X factor)</b></p> 	<p>Generators can trade and balance themselves;</p> <p>Maximising green, efficient generator market approach – onus is on generator to implement;</p> <p>-</p> <p>Could tune to be economically best or greenest;</p> <p>-</p>	<p>Market system complex;</p> <p>Hard to predict future trends;</p> <p>Subjective choice of factor;</p> <p>Uncertainty in terms in constraint;</p> <p>Ofgem regulation – equal approach to all;</p> <p>Limit diversity of supply potentially if focussed on greenest/most efficient;</p> <p>Increased complexity and admin costs;</p> <p>Is it fair?; Would you be allowed?;</p> <p>Unpredictability; Difficult to explain;</p> <p>Who decides on factor?;</p> <p>Not transparent</p>



# Lessons learnt

- **Keep it simple!**
- **Stakeholder Engagement was critical (again!)**
- **Required a 'different' approach, a new way of thinking (e.g. contractual / access framework)**



# The End Lesson 2