

# COMMERCIAL ARRANGEMENTS TO FACILITATE ACTIVE NETWORK MANAGEMENT

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# COMMERCIAL ARRANGEMENTS TO FACILITATE ACTIVE NETWORK MANAGEMENT

- ❑ Principles Of Access (POA) are the commercial rules that govern the operation of an ANM scheme
- ❑ Choice of POA can impact on all stakeholders
- ❑ Assessment criteria identified
- ❑ Initial assessment then further analysis
- ❑ Recommendations



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## STAKEHOLDERS

- ❑ Regulators (e.g. Ofgem in the UK)
- ❑ Transmission System Operators
- ❑ Distribution Network Operators
- ❑ Generator Developers
- ❑ Load Customers
- ❑ Investors



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## ASSESSMENT CRITERIA

- ❑ Contribute to a Safe, Secure and Reliable Power Network
- ❑ Be Equitable and Transparent
- ❑ Support Efficient Network Operation
- ❑ Be Sustainable and Future Proof
- ❑ Not Impact On Existing Connection Agreements
- ❑ Apply to all Network Operating States
- ❑ Comply with Relevant Laws, Standards and Codes



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## PRINCIPLES OF ACCESS

- Last In First Out
  - Curtails the last generator added to the ANM scheme first
- Generator Size
  - Curtails the largest generator that is contributing to a constraint first
- Greatest Carbon Benefit
  - Aims to minimise the carbon emissions
- Shared Percentage
  - Divides the required curtailment equally between all generators contributing to the constraint



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## PRINCIPLES OF ACCESS

- Market Based
  - Generators with interruptible contracts could pay for access
- Technical Best
  - Curtail the generators in order of contribution to the constraint
- Most Convenient
  - System operators curtail the most convenient to according network constraints



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## INITIAL ASSESSMENT

	Last In First Out	Generator Size	Greatest Carbon Benefit	Market Based	Shared Percentage	Technical Best	Most Convenient
Be Equitable and Transparent	PASS	FAIL	FAIL	PASS	PASS	FAIL	FAIL
Be Sustainable and Future Proof	PASS	FAIL	PASS	PASS	FAIL	FAIL	FAIL
Contribute to a Safe, Secure and Reliable Power Network	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Support Efficient Network Operation	FAIL	FAIL	FAIL	FAIL	FAIL	PASS	PASS
Impact On Existing Connection Agreements	PASS	FAIL	FAIL	PASS	FAIL	FAIL	FAIL
Apply to all Network Operating States	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Comply with Relevant Laws, Standards and Codes	PASS	PASS	PASS	PASS	PASS	PASS	PASS/FAIL
<b>PASS Count</b>	<b>6</b>	<b>4</b>	<b>4</b>	<b>6</b>	<b>4</b>	<b>4</b>	<b>4</b>
<b>FAIL Count</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>3</b>

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## Last In First Out

- ❑ Transparent to all stakeholders
- ❑ Achieves consistency for both existing generation units and new generation
- ❑ The impact of curtailment can be modelled
- ❑ No regulation or legal compliance issues
- ❑ Does not differentiate between low carbon sources
- ❑ Limits the technical utilisation of the distribution network





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## Shared Percentage

- ❑ Does not require regulatory change
- ❑ Ensures fair access to available network capacity for multiple generators
- ❑ It is difficult for investors to assess the long-term impact of the interruptible contract
- ❑ The generator that is the first unit to connect would experience increasing curtailment as additional interruptible generator units connect



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## Market Based

- ❑ Does not impact on existing connections and is sustainable and future proof providing a suitable market can be established
- ❑ Market can be extended to incumbent generators satisfying the fairness and competition goals of regulators
- ❑ Significant effort would be required to deploy, including the implementation of a market clearing and settlement system



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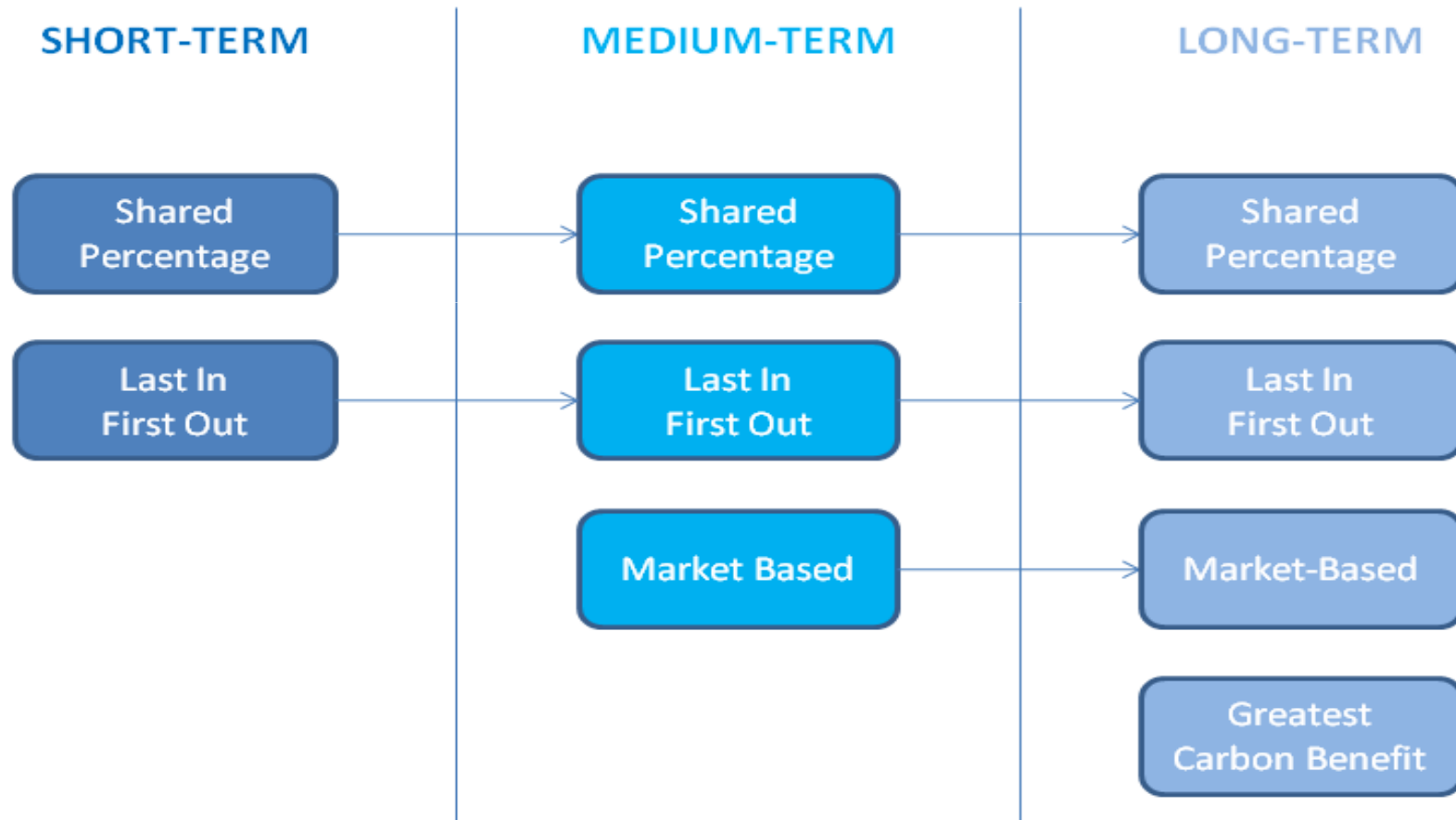
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## Greatest Carbon Benefit

- ❑ Not expected to be complex to implement from a technical perspective
- ❑ Implementation of a CO<sub>2</sub>/MWh priority stack for individual generator units (as in Last In First Out)
- ❑ Determining the real carbon footprint of each generation technology in a clear, open and fair manner is not a simple task
- ❑ A simple approach could involve banding of generator types, similar to the approach adopted in the Renewables Obligation in the UK
- ❑ Regulatory intervention would be required to implement



# RECOMMENDATIONS





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## CONCLUSIONS

- ❑ Last In First Out and Shared Percentage
  - Implementable today and does not require new technology or changes to the existing regulatory environment
- ❑ Market Based
  - Suitable for transmission system constraints where a larger number of customers can participate
- ❑ Greatest Carbon Benefit
  - Complex, impacting all across the supply chain and at different levels in the electricity networks, requires changes to the existing regulatory environment



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The logo for Smarter Grid Solutions, featuring the word "smarter" in white, "grid" in light blue, and "solutions" in white, all in a lowercase, sans-serif font, set against a dark blue rounded rectangular background.

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# Thank you for your attention

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