

Multiple Purpose Network Assets



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Content

- Example: Energy Bridge – a proposal including a multiple purpose network development
 - Initial design imperatives – anchor tenant
 - Design for future roles
- Benefits of an developer led (merchant) approach
- Coordination and other regulatory issues
- Combining merchant & regulated

Energy Bridge

- 5GW wind turbines onshore in Ireland delivering renewable electricity to GB consumers
 - “Onshore wind in Ireland + associated Ireland-GB subsea cable more cost-effective than offshore wind in GB waters”
 - Deliverable in timescales consistent with GB targets

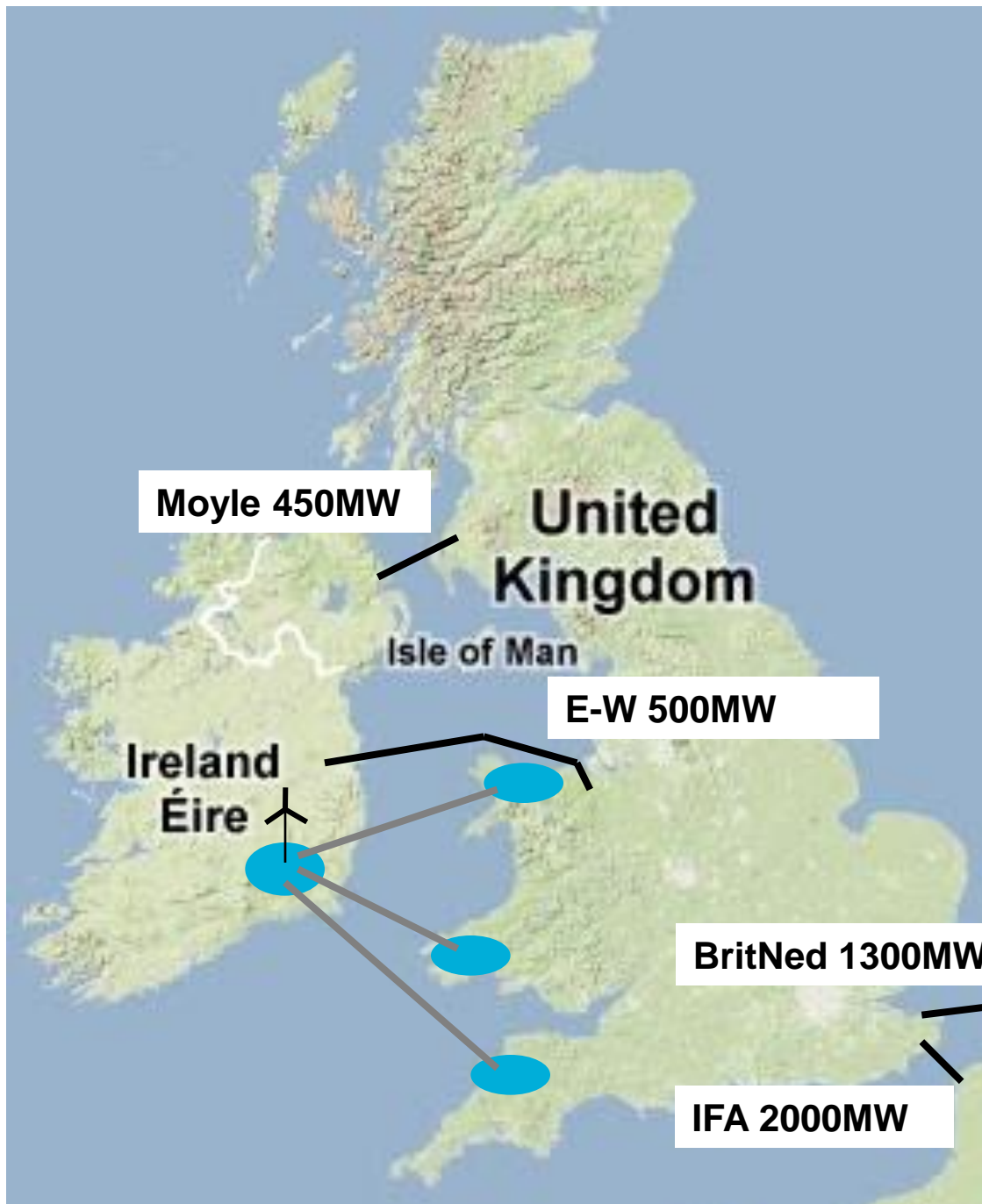
- Consortium:



Energy Bridge:

- Phased generation development to 5GW
- Potential for network services to GB tx (actually a connection condition)
- Potential for GB-SEM interconnection

Other projects making competitive offerings



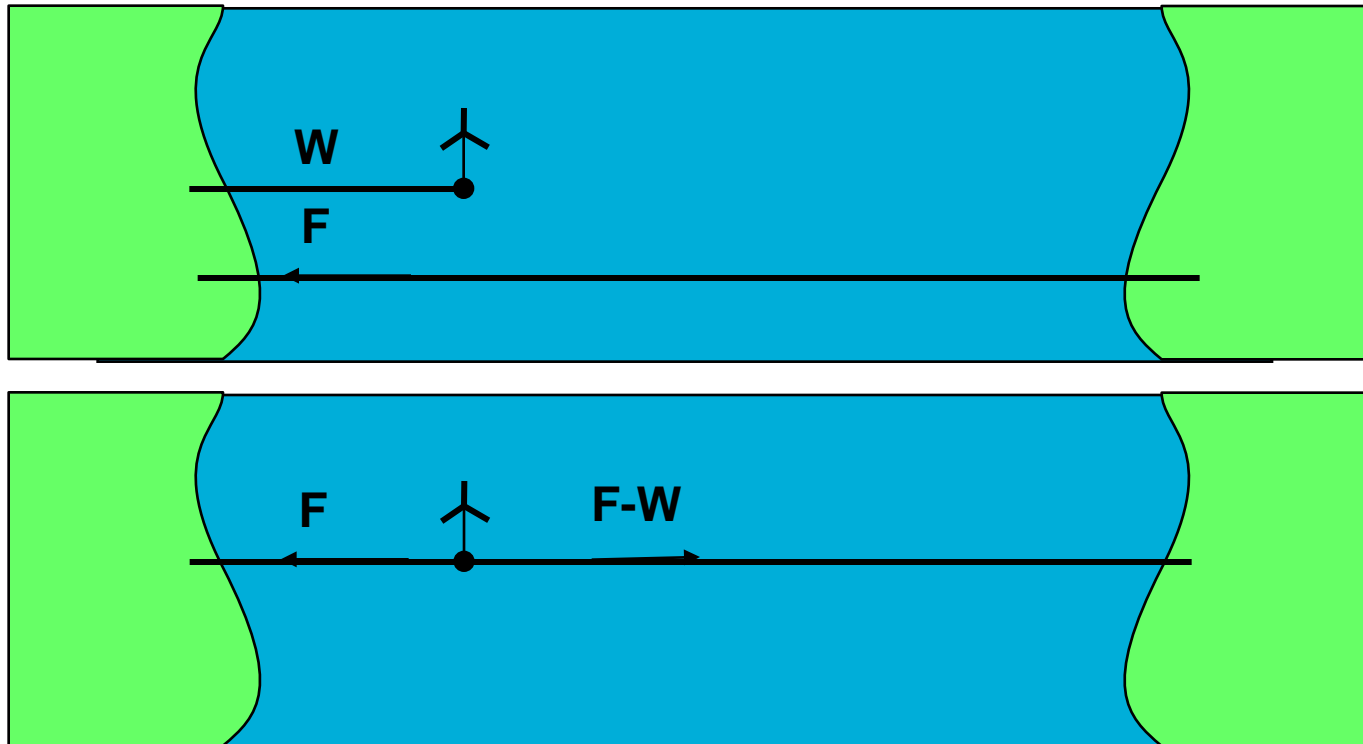
Initial design

- Initial network customer is a renewable generator making a competitive offering to GB government and consumers
 - Speed and certainty of GB access key for this customer
- Design coordination seeks to:
 - Optimise total works (costs and GB consenting time risks)
 - Maximise scope for providing additional services to onshore network
- Consortium relationships address need to unbundle network ownership/operation from generation interests (EU Regulation)
 - Reconciles needs of initial user with prospects for future use

Evolution of network

- Development of network in Ireland can facilitate 2-way interconnection capacity for other market parties
- Technology choice permits additional onshore and offshore connections (e.g. in Irish sea)
- Operational actions facilitate additional north-south capacity in GB and Ireland
- Trade-offs involve:
 - Asset flexibility (technology and capability choices)
 - Extensibility (asset modularity)
 - Operational/commercial arrangements

Interconnector + wind connection synergies



- Combined interconnector wind connections can economise on capacity because wind can counterflow interconnector trades (due to low marginal costs/subsidy)
- Requires coordinated control

Theoretical benefits of merchant approach

- Design decisions not made by consumer's agent (e.g. central design authority, single buyer, etc) so:
 - Design can evolve as needs emerge
 - Cost, performance and stranding risks fall to developer/operator rather than consumers
 - Direct relationship between users and network provider can be maintained
 - Scope for innovation not restricted to pre-specified areas
 - Under-provision can be rectified by other developers if incumbents unwilling
- But market failures (and coordination issues) exist

Need for regulation

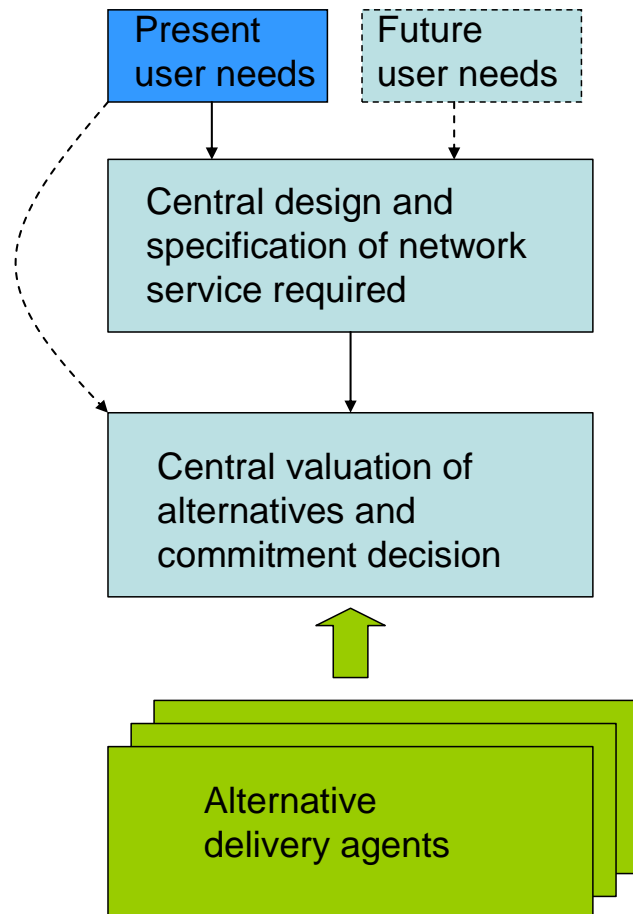
- Ownership of relatively scarce network assets brings opportunities to exercise market power (hence need for regulated third party access)
- Coordination and agreements needed with onshore networks which may confer monopoly rights
- Locational signals for onshore connection points may be missing/incomplete/inaccurate
- Not all network services will be amenable to funding by market determined revenues
 - Perhaps only connections and inter-market capacity may have market discoverable values initially
- Self-selecting development consortia may not have interests fully aligned with interests of present and future consumers
- The benefits to consumers of coordination may exceed the commercial economies visible to developers.

But do market failures justify central control?

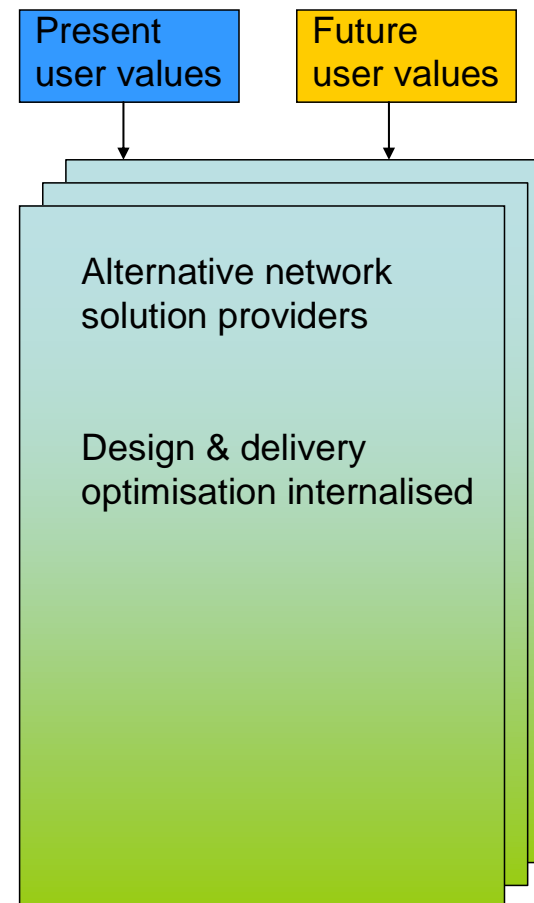
- What are the incentives on a central design authority to achieve efficient designs?
- To what extent can consumers avoid underwriting decisions by central authorities?
- How does a central designer acquire and maintain the required information and expertise?
- Can central designers procure an evolutionary solution?
- What are impacts of monopsony from a single-buyer?

Centralised vs decentralised design

Centralised network design and tendering



Decentralised network solution provision



Centralised vs decentralised design

Aspect	Central design and separate delivery	Integrated design and delivery
Manner in which customer requirements expressed	The central design can respond to customer requirements however expressed (but may also incorporate other aspects not valued by customers).	Providers seek to attract customers by making attractive service/price offerings (e.g. the price for an appropriately tailored offshore connection)
Extent to which customer requirements reflected in detailed service specification	Limited to situations where high-level functional specifications adequate (e.g. repeat orders of standardised services)	Detailed design/delivery trade-offs can be made on a case by case basis.
Extent to which delivery agent responsive to customer	Depends on the extent the tendered specification reflects the full required service or focuses on intermediate outputs (e.g. just the provision of assets)	Depends on contract incentives (but not the division of responsibilities)
Nature of coordination between networks	Specified by central design	Incentivised by revenue restrictions and obligations.

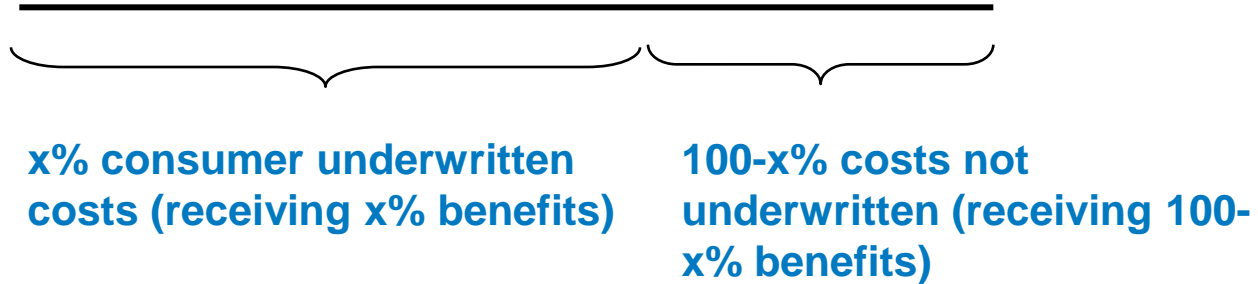
Mixing merchant & regulated Cap & floor operation

Network sales:



- Cap protects consumers against unduly high returns
- Floor reduces developer risk of insufficient revenues
- Symmetrical cap and floor leaves mean revenues (and market test) unchanged
- Over multiple periods, cap and floor address systematic shifts, eg.
 - Cap protects against underdevelopment of inter-market capacity,
 - Floor protects against policy changes (revenue allocation, subsidised parallel links)

Combining merchant & regulated



■ Developer cost of capital = $x\% \cdot \text{Regulated WACC} + (100-X) \cdot \text{Merchant WACC}$

