Contestability in transmission - International and domestic examples

Main report

Australian Energy Regulator
Australian Energy Market Commission

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KPMG.com.au

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Final report

The following final report has been prepared on the basis of our work carried out up to 22 June 2022.

Glossary of Terms

Term	Description
(NG)ESO	(National Grid) Electricity System Operator
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AESO	Alberta Electric System Operator
ANEEL	Agência Nacional de Energia Elétrica (Brazilian electric regulator)
ANOPR	Advance Notice of Proposed Rulemaking
B/C	Benefit-to-cost
CAPEX	Capital Expenditure
CATO	Competitively Appointed Transmission Owner
CBA	Cost-Benefit Analysis
CEI	Call for Expressions of Interest
CEPA	Cambridge Economic Policy Associates
CNN	Certificate of Convenience and Necessity
CREZ	Competitive Renewable Energy Zone
DND	Detailed Network Design Phase
DTSO	Declared Transmission System Operator
EII Act	Electricity Infrastructure Investment Act
ENA	Energy Networks Australia
EPQ	Enhanced Pre-Qualification
ERCOT	Electric Reliability Council of Texas
FERC	Federal Regulatory Energy Commission
FES	Future Energy Scenarios
FTV	Final Transfer Value
IAE	Income Adjusting Event
InTV	Initial Transfer Value
ISO	Independent System Operator
ISO-NE	ISO New England
ITT	Invitation to Tender
ITV	Indicative Transfer Value
kV	Kilovolt
LAC	Local Access Charge

Term	Description
LOTI	Large Onshore Transmission Investments
m	Million
MISO	Midcontinent ISO
MVP	Multi-Value Projects
NAP	Network Access Policy
NEM	National Electricity Market
NER	National Electricity Rules
NETSO	National Electricity Transmission System Operator
NGET	National Grid Electricity Transmission in England and Wales
NITS	Network Integration Transmission Charges
NOA	Network Options Assessment
NYISO	New York ISO
NYPSC	New York Public Service Commission
OATT	Open Access Transmission Tariffs
Ofgem	Office of Gas and Electricity Markets
OFTO	Offshore Transmission Owner
OP	Outline Proposal
PB	Preferred Bidder
PJM	Pennsylvania, New Jersey, and Maryland
PPTN	Public Policy Transmission Need
PPWCA	Preliminary Works Cost Assessment
PSE&G	Public Service Enterprise Group
PUCT	Public Utility Commission of Texas
QTT	Qualification to Tender
RAC	Regional Access Charge
RCV	Regulatory Capital Value
REZ	Renewable Energy Zone
RFP	Request For Proposal
RIT-T	Regulatory Investment Test for Transmission
RM	Rulemaking
RoE	Return on Equity
ROFR	Right Of First Refusal
RTEP	Regional Transmission Expansion Plan
RTO	Regional Transmission Owner

Term	Description
SB	Successful Bidder
SPP	Southwest Power Pool
SPT	Scottish Power Transmission
SPV	Special Purpose Vehicles
SSEN	Scottish and Southern Electricity Networks
TET	Transmission Efficiency Test
TNSP/TSP	Transmission (Network) Service Provider
TO	Transmission Owner
TPIR	Transmission Planning and Investment Review
TR	Tender Round
TRR	Transmission Revenue Requirement
TRS	Tender Revenue Stream
TUoS	Transmission Network Use of System
WACC	Weighted Average Cost of Capital

Executive Summary

Introduction

The Australian Energy Regulator (**AER**) in collaboration with the Australian Energy Market Commission (**AEMC**) has engaged KPMG to assist in identifying the key design aspects of contestability frameworks and the potential implications of the application of competitive models for the planning and delivery of large-scale transmission projects.

Various models for tendering transmission projects have been introduced in a number of jurisdictions, with some differences including:

- the scope of competition in the planning, delivery and operation stages;
- the criteria employed to evaluate bids and select the winning tender;
- the contractual and regulatory terms applicable.

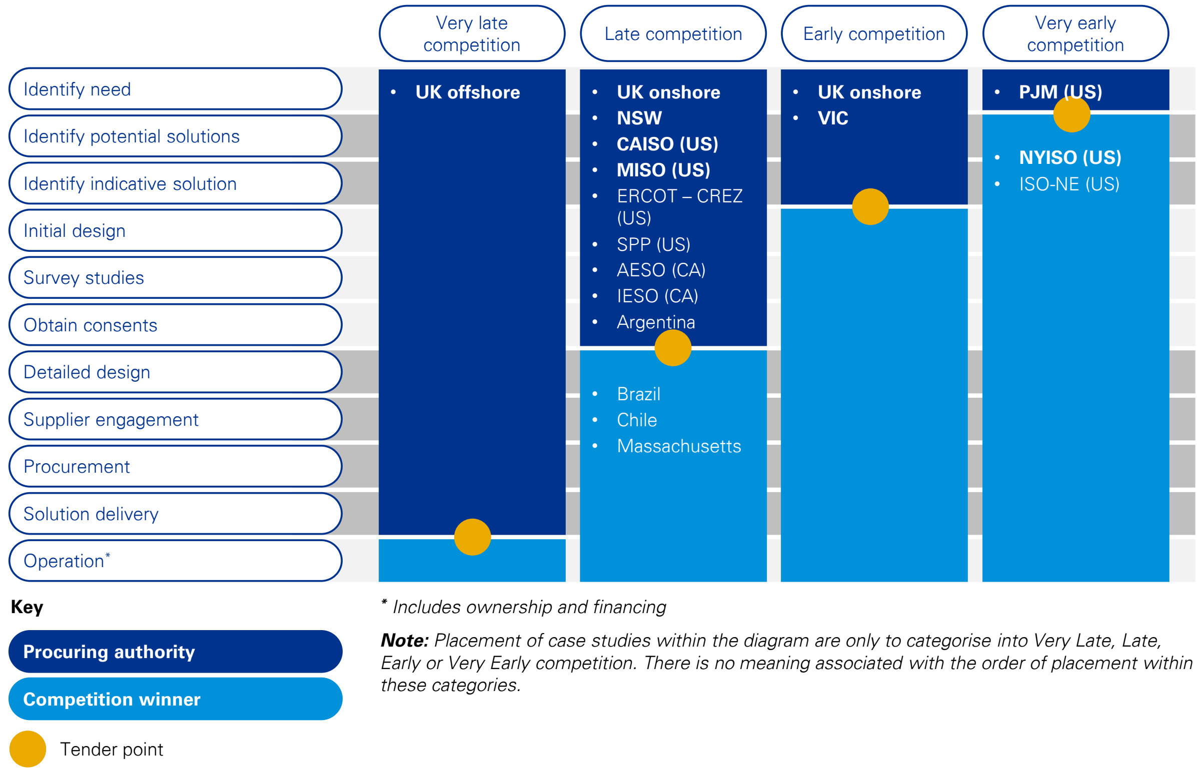
KPMG's analysis has focused on international and domestic experiences of transmission contestability, including:

- the drivers behind the competitive provision of transmission;
- the popularity of the different models of competition;
- successes and challenges;
- the nature and characteristics of projects subject to competition;
- some of the real-world implications of making certain trade-offs when designing and implementing contestability;
- what goes into designing a contestable regime for transmission planning and/or delivery;
- how models have evolved over time; and
- observations relevant for the National Electricity Market (**NEM**).

KPMG has considered a range of jurisdictions outlined in **Figure A** below, categorised according to the timing of competition, highlighting the difference in transmission activities which are open to competition as opposed to those activities performed by the procuring party (i.e., the organisation which enters into the contract with the winning transmission provider). This figure shows that there is a slight bias towards late competition models rather than early competition. This is primarily due to a perception that late competition would be less complex and attract more bidders than an early model would (as bidders will have less risks and uncertainties to manage).

KPMG has collated detailed case studies for the nine bolded jurisdictions and has referred broadly to the remainder to inform our analysis.

Figure A: Competition models for transmission infrastructure delivery



* *Includes ownership and financing*

Note: *Placement of case studies within the diagram are only to categorise into Very Late, Late, Early or Very Early competition. There is no meaning associated with the order of placement within these categories.*

It should be noted that in developing this report KPMG only analysed a sample of jurisdictions and therefore the forgoing analysis is limited to these jurisdictions. Further, most of the models examined are relatively new and therefore caution must be exercised in drawing conclusions in relation to successes and challenges. While (as will be discussed in the report) there is evidence for example of upfront capital cost savings, other longer term impacts may materialise.

Key reasons identified for introducing contestability

Across the jurisdictions analysed, the two main reasons cited for introducing contestability include:

- **To drive lower costs for consumers** (through competitive tension, better risk management and risk allocation, promoting innovation across various aspects of a project, and providing access to a greater pool of financing options; and
- **To support timely renewable energy development**.

A key rationale stated for introducing contestability is to procure lower cost solutions to meet system needs and reduce the cost of delivering these solutions. Since these costs are passed on through electricity tariffs, contestability could lower the costs ultimately borne by consumers. Contestability could potentially also shift the allocation of risk away from consumers thereby creating a further benefit to customers.

A potential benefit of any competitive process is that it requires competing parties to differentiate themselves to win – in this context, contestability gives non-incumbents the ability and opportunity (and also applies pressure) to propose innovative, cost effective design of network and non-network solutions to meet identified network needs. This is particularly important given the rapid pace of evolving technology in the energy sector. While this is a more obvious feature of early competition (whereby bidders are responsible for the initial design of their solution), innovation can also occur in engineering, financing and construction for late competition.

Competition has also been used to drive the timely deployment of transmission infrastructure needed to facilitate Renewable Energy Zones (**REZs**) or achieve specific renewable energy targets. This was the reason for its adoption in Texas and NSW. Multiple tender processes can be conducted simultaneously, allowing necessary transmission infrastructure to be delivered at scale and in a timely manner. Even in the absence of designated REZs, competition is sometimes seen as a means of delivering cost-effective transmission infrastructure needed to support the expansion of renewable generation.

The outcomes of competitive tendering depend on the design of the tendering arrangements. In implementing arrangements for competitive provision in transmission, policy-makers have to consider how best to balance various objectives including:

- addressing the potential for competitive advantages of incumbent transmission providers to promote a 'level playing field' with non-incumbent transmission developers; and
- encouraging innovative solutions to transmission needs and, in their delivery,, to provide lower costs/higher value without resulting in additional risk allocated to customers.

Impacts of introducing contestability

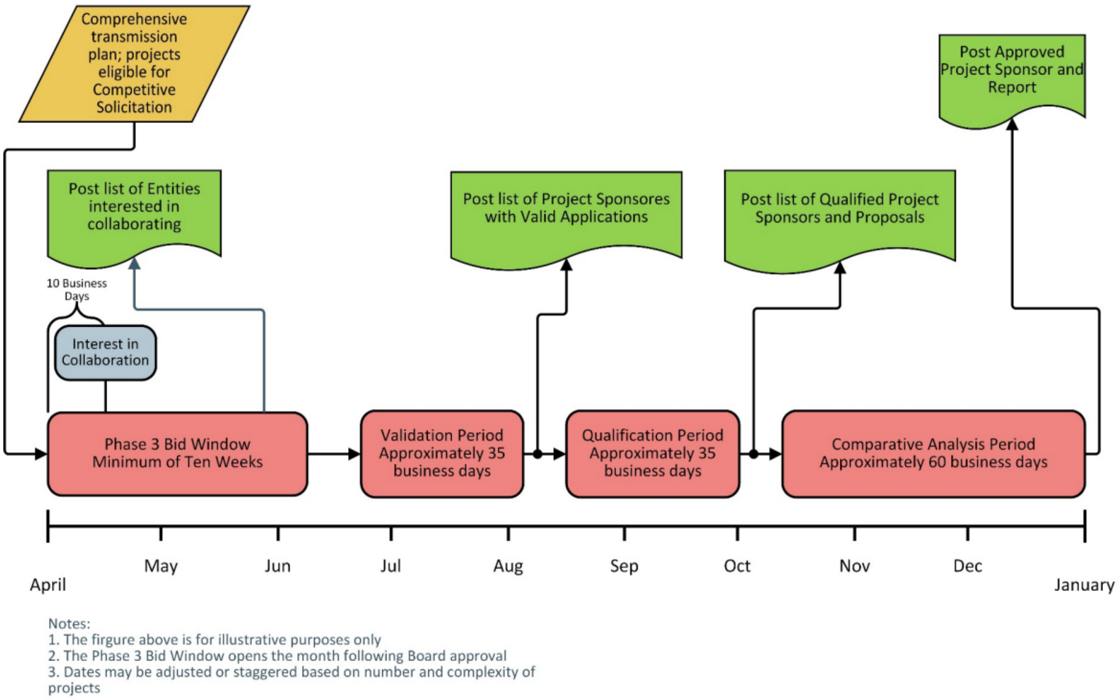
Across the jurisdictions considered, a relatively small number of projects have been procured contestably. However, evidence has pointed to competitive processes delivering cost savings in transmission solutions under both early and late models.

These cost savings have been driven by innovation in solution design and infrastructure delivery and has been measured by the cost differential between incumbent bids (or alternatively pre-tender planning estimates) and the winning bid. For example, the winning solution for the Western New York Public Policy Transmission Project determined by the New York Independent System Operator (**ISO**) was approximately 22% below an estimate of the lowest cost incumbent bid. Further, for the Hartburg-Sabine Junction 500kV project procured by the Midcontinent ISO, the winning proposal had a benefit-to-cost (**B/C**) ratio of 2.2 (compared to a pre-tender planning estimate of 1.35).

Contestability has also resulted in the use of joint ownership arrangements, which can facilitate risk-sharing and the leveraging of different resources, strengths, and expertise. A potential negative impact emerging from models is that contestability may result in interface complexity and split accountabilities between both the contestable and incumbent TNSPs but also between the TNSPs and the procuring party.

However, the cost and time needed to run tenders can be considerable. An example of a typical tender process, outlining the different stages required is outlined below for the California ISO:

Figure B: Competition models for transmission infrastructure delivery



Source: CAISO, Business Practice Manual for Transmission Planning Process

This has resulted in procuring parties in the US requiring bidders to pay for tender implementation and running costs. So far this does not appear to have deterred bidder participation. Further, procuring parties have implemented practical mechanisms to streamline tender processes. This has involved introducing flexibility into various aspects of the tender process to ensure that the length and rigour of the processes are proportionate in light of the particular circumstances.

We note, however, there does not appear to be evidence across the jurisdictions considered that contestability leads to project completion delays. Risks of project delays and/or cost overruns exist under any procurement approach; and the probability of occurrence will depend on the party responsible for the project and level of governance and incentives on the party.

Some stakeholders in the United States (**US**) have raised concerns about competitive processes introducing risks to system reliability and security. These concerns go to issues around interface complexity and/or complexity of implementing arrangements that involve split accountability and the potential implications of this for managing system security/reliability. However, to date these concerns do not appear to have materialised in the contestability frameworks considered in this report.

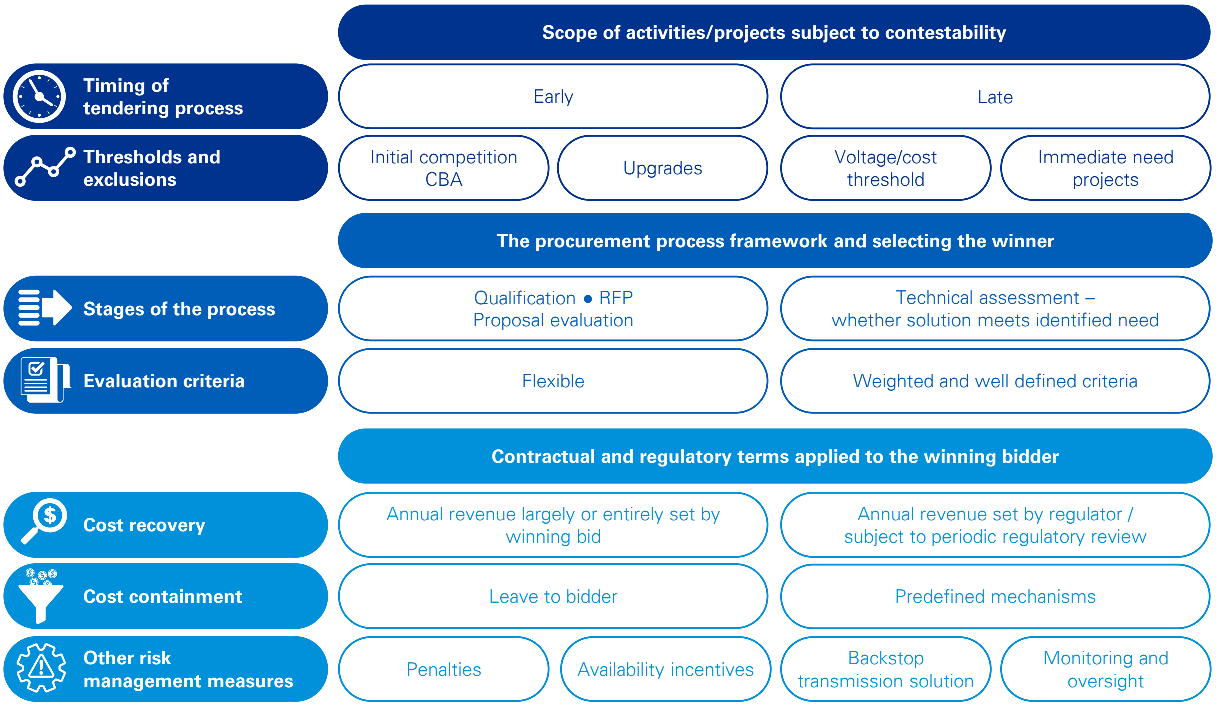
Key learnings from jurisdictions

Learnings from the jurisdictions examined can be distilled according to the decisions that must be considered in designing a contestable process for procuring transmission infrastructure. These design choices can be divided broadly under three main categories:

1. **scope of activities/projects subject to contestability;**
2. **the procurement process framework and criteria for selecting the winner;**
3. **contractual and regulatory terms applied to the winning bidder.**

Under these broad categories, the procuring party will need to consider a range of issues as shown in **Figure C**. Factors affecting these decision choices include the goals of the competitive process and at what point in the development of transmission infrastructure contestability is introduced.

Figure C: Overview of contestability design options



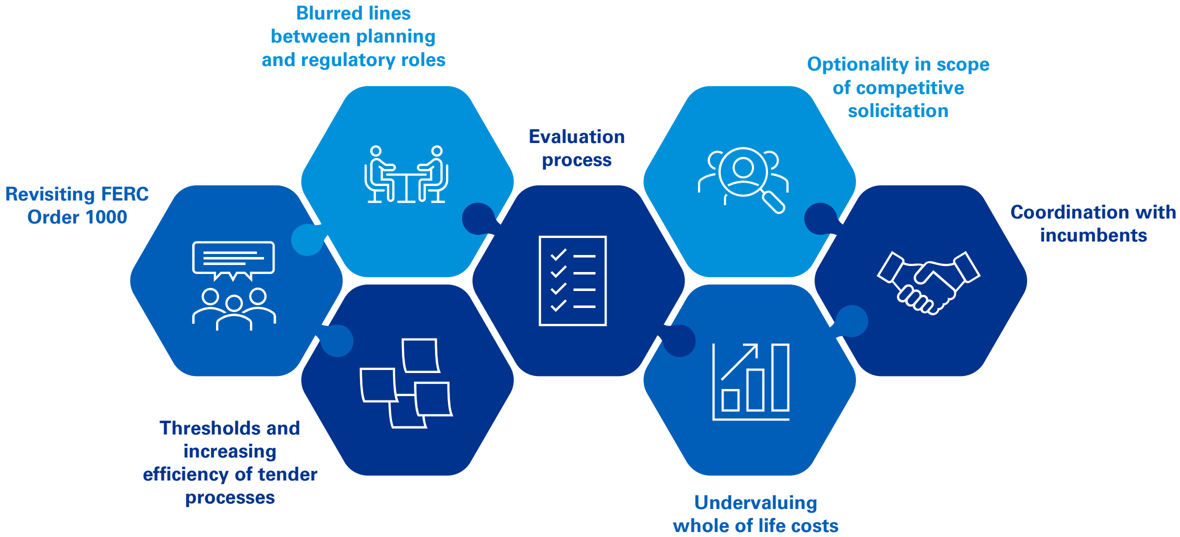
Model evolution and current issues

The competitive models examined have evolved considerably since their commencement, particularly those older schemes that have been able to leverage learnings from their real-world experiences of running their tender processes.

Changes to models in the US have been focused on providing guidance to system operators (the procuring party) to help them interpret and assess regulatory aspects of proposals (including cost containment measures) and increasing the efficiency of tender processes. In the UK, model evolution has focused on attempting to introduce a greater level of optionality in relation to the scope of competitive solicitations, and balancing the need to make the evaluation process more efficient while also ensuring proper consideration of whole-of-project impacts on costs and operational reliability.

Figure D below summarises the main issues being raised and addressed through amendments being made to the contestability frameworks.

Figure D: Overview of model aspects that have changed over time and current issues



Summary of observations

While there have been specific conclusions in each country and region researched, there are also a number of common themes that we can draw out that cut across international boundaries. In considering the potential for expanding contestability for transmission infrastructure across the NEM, the following observations distilled from the international and domestic jurisdictions could be taken into account:

- **Competitive tension is essential**: It is important to investigate and ensure there is sufficient market interest and diversity in transmission developers to warrant running a tender. The UK regulator conducted a regulatory impact assessment prior to implementing the reforms to determine whether competition was likely to deliver value to customers. This included looking at the potential pool of businesses likely to participate in the process, the financing costs and whether there was potential for innovative solutions to be developed. The UK regulator has also done extensive work on developing appropriate counterfactuals, which could be leveraged for policy development in relation to the NEM.
- **Early vs late**: The choice of the timing of the 'tender point' depends on what goals the mechanism primarily aims to achieve and the estimated benefits to be realised, in addition to the nature and complexity of the project.

  In addition the level of legal reliance which can be placed on the development works undertaken by the system operator (**SO**) / procuring party will also be important. The greater the reliance that can be placed by the market on the quality of the preliminary works – for example in relation to geotechnical investigations, land surveys and environmental approvals – the greater the potential there will be for a reduction in due diligence costs and the need for bidders to do their own investigations. This increased level of certainty should allow bidders to reduce risk allowances and reduce overall cost.

  However, reliance on initial works by the procuring party will mean a higher level of retained risk or potential legal challenges if the contractual wording on the nature of reliance is not clear or there were mistakes in the development works. If the procuring party is a not for profit (or a government body), then providing reliance could translate into a risk transfer to customers (or taxpayers) and impact on the merits of late competition models.

  Both early and late models have benefits and disadvantages, and neither model is clearly superior. Early models can drive innovation in solutions, meaning that there is a greater potential for costs reduction relative to late models. However, the tender processes under early models are typically longer and more expensive. In contrast, the assessment of bids is likely to be less complex for late models, and bidders assume less risk which may promote greater tender participation. Hence the nature of the particular project and the associated risks will influence this, especially where bidders considered that they can better manage risks through being involved in the design and development stages as well.

- **Balanced thresholds for and exclusions to contestability**: When designing a contestable framework, it is important to strike an appropriate balance between ensuring that a sufficient range of projects are subject to contestability (to ensure that cost savings are maximised), while including exemptions for upgrades and immediate need projects to facilitate the timely and efficient development of these projects.
- **Staged tender processes are typical**: Although tender processes across the jurisdictions differ, particularly depending on whether an early or late model is used, it appears that most models follow a similar sequence. This involves a qualification stage, a request for proposal (**RFP**) stage, and an assessment stage. The purpose of this staged design is to minimise time and costs for both bidders and the procuring party. It is important to ensure that the tender process is as transparent as possible to promote certainty for bidders while retaining a degree of flexibility.
- **Importance of tailoring the process and allowing for flexibility**: A consistent theme across the jurisdictions is the need to tailor the tender process according to the scale of solutions / projects being procured, the competitive model, and the type of solution that is expected (in the case of early tendering). Adding flexibility into or 'right-sizing' the tender process can ensure that the length and rigor of the process is commensurate with the nature of the solution / project being competitively solicited.
- **Risk assessment is a key part of tender evaluation**: The impact on consumers of a competitive process will depend on the design of the procurement model and the extent of any difference in the contractual terms compared to existing regulated arrangements. How risks are allocated and managed will be a key factor in determining consumer impact. Accordingly, most procuring parties in the jurisdictions examined consider risk management measures as part of their tender evaluation processes. A low cost bid may increase risk of default if that bidder has not adequately priced all risks and does not have means to absorb cost shocks.
- **No common approach to determining revenue allowance**: In some jurisdictions, annual revenue is set by the winning bid and is fixed (subject to specific adjustment mechanisms). In others, the successful bidder's revenue requirement is set by a regulator and/or subject to periodic regulatory review. Notwithstanding these two broad options, some level of regulatory oversight of the tender process and/or costs that can be recovered by the successful bidder is required to avoid both the successful bidder assuming too much risk and inefficient costs being passed onto consumers.
- **Roles and responsibilities of the system operator and regulator need to be clearly delineated**: A regulator may be the procuring party or play an important role in overseeing tender management and key decisions, assessing/reviewing revenue requirements, addressing conflict of interest concerns, and providing regulatory guidance on how to interpret cost containment measures. In overseas models, stakeholders have raised concerns regarding clarity on the respective roles and responsibilities of the system operator and the regulator, in relation to tendering assessment, monitoring and project development.
- **Incumbent participation and coordination**: The jurisdictions considered highlight the important role that incumbents have in competitive processes, and the need for clear frameworks to facilitate coordination between incumbents and the system operator and bidders. Increased interaction and reliance between separate entities on commissioning and operating connected transmission assets will create new risks and these should be monitored and managed. Incumbent participation in the bidding process presents unique challenges and conflict of interest mitigation measures, among others, may be required. There could be conflicting impacts between the competitive tenderer and the regulated TNSP on managing interruptions associated with commissioning of lines, ongoing maintenance etc. The roles and responsibilities of parties will need to be clearly set out including a process for remedies if any shortcomings are raised.

- **Running the tender process and evaluating proposals is costly**: Special skills and resources are needed to prepare, issue, coordinate and evaluate proposals (particularly for early tender processes), which can add to costs of tender processes. This has led to the implementation of proposal fee requirements in the US, which to date have not deterred tender participation.
- **Tender processes can result in inefficiencies, which can be managed**: Inefficiencies can arise in planning and delivery timeframes, coordination of multiple players, and the impact of less clarity of responsibility between the system operator and incumbent, including the potential impact on reliability. Some jurisdictions have sought to address issues by implementing practical mechanisms to streamline the tender process and risk management mechanisms such as cost containment provisions, and monitoring and oversight.

Contents

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1. Introduction

1.1 Background and purpose

Given the pipeline of large transmission projects required to facilitate the transition of the National Electricity Market (**NEM**), it is essential that the regulatory framework is sufficiently flexible to support the timely and efficient delivery of major transmission projects, while ensuring investment in these projects is in the long-term interests of consumers.

In this context, the Australian Energy Market Commission (**AEMC**) commenced its Transmission Planning and Investment Review (**TPIR**) with the objective of making sure that the regulatory framework is striking an appropriate balance between requiring rigorous assessment of major transmission projects — to mitigate the risk of inefficient transmission investment — and the need to facilitate timely investment in these projects to deliver beneficial outcomes to consumers.

As part of the TPIR, the AEMC is examining contestability more broadly, to assess whether it could be a more efficient alternative to the delivery of major transmission projects by monopoly TNSPs under the existing ex-ante incentive based regulatory framework. The Australian Energy Regulator (**AER**) has also been exploring the potential for more competition through sponsor-based competitive tendering to deliver greater productive efficiencies under its regulation of large transmission projects work.

The AER, in collaboration with the AEMC, has engaged KPMG to identify key design aspects of different approaches to contestability across a range of jurisdictions and the potential impacts of the application of competitive models for the planning and delivery of large-scale transmission projects.

This involves analysis of:

- the drivers behind the competitive provision of transmission;
- the popularity of the different models of competition (early vs late competition);
- successes and challenges;
- the nature and characteristics of projects subject to competition;
- some of the real-world implications of making certain trade-offs when designing and implementing contestability;
- from a process point of view, what goes into designing a contestable regime for transmission planning and delivery;
- how models have evolved over time; and
- observations for the NEM.

This analysis of ranging experiences will inform ongoing thinking in this area, including the approach to any cost-benefit assessment that is undertaken for a contestable framework in the NEM.

The report follows the following structure:

- **Section 2: Key reasons identified for introducing contestability**
- **Section 3**: **Impacts of introducing contestability**
- **Section 4: Key learnings from jurisdictions**
- **Section 5: Model evolution and current issues**
- **Section 6: Observations for the NEM**

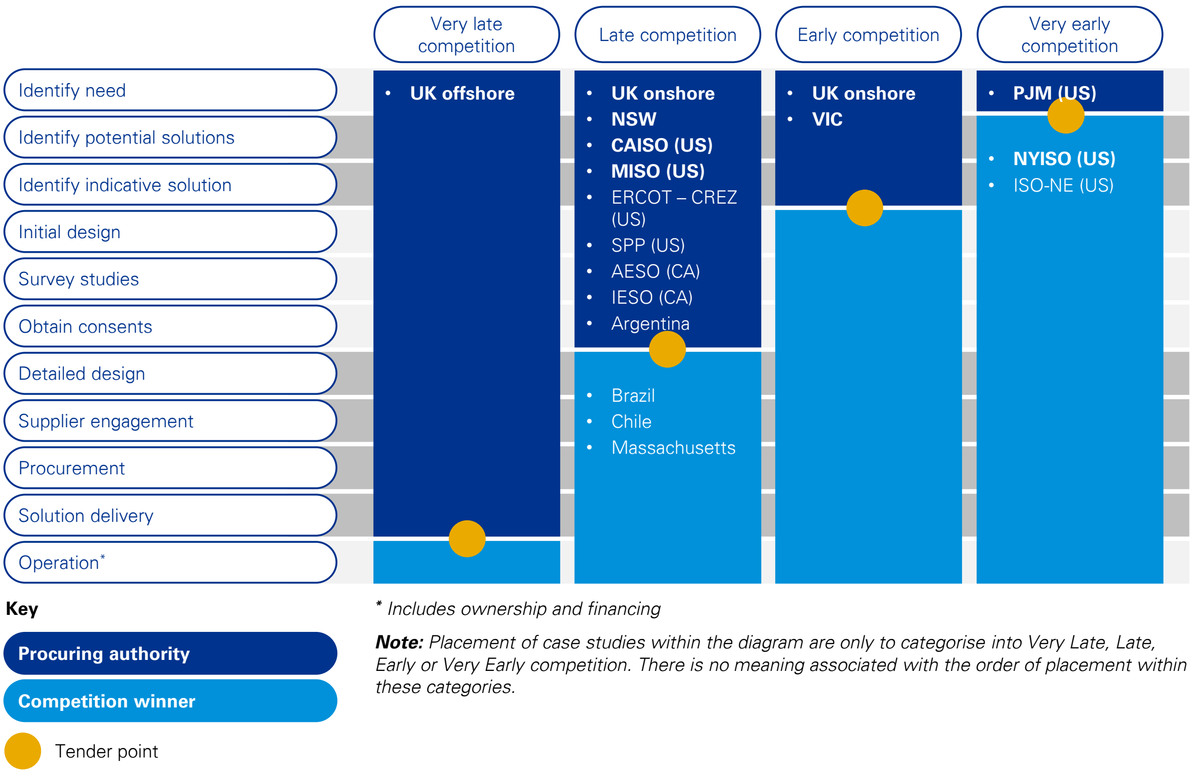
It should be noted that, as discussed in section 1.2 below, that in developing this report KPMG only analysed a sample of jurisdictions and therefore the forgoing analysis is limited to these jurisdictions. Further, most of the models examined are relatively new and therefore caution must be exercised in drawing conclusions in relation to successes and challenges. While (as will be discussed in the report) there is evidence for example of upfront capital cost savings, other longer term impacts may materialise.

1.2 Overview of models and jurisdictions

Different competition models for delivering transmission infrastructure can be categorised according to the stages of infrastructure delivery that are completed by an entity (or entities) selected from a tender process. Accordingly, these competition models (outlined in **Figure 1** below) can be categorised as:[1]

- Very late competition
- Late competition
- Early competition
- Very early competition.

Figure 1: Competition models for transmission infrastructure delivery



** Includes ownership and financing*

Note: *Placement of case studies within the diagram are only to categorise into Very Late, Late, Early or Very Early competition. There is no meaning associated with the order of placement within these categories.*

KPMG has collated detailed case studies for the bolded examples of transmission contestability in **Figure 1**, and has referred broadly to the other examples for our analysis. The bolded examples are discussed in detail in the case studies report that supplements this report. Whether a detailed case study is included in the foregoing sections depends on the availability of information/data to inform analysis in relation to the specific issue. It should be noted that this diagram does not capture the required regulatory approvals and cost/revenue decisions which would occur in parallel to the delivery stages outlined in the above diagram.

[1] National Grid ESO, Early Competition Plan (2011) p 9.

On one end of the spectrum, ‘**very late competition**’ involves the procuring party completing all stages required for delivering the relevant transmission solution[2] (from identifying the need to delivering the solution), except for the operation of the infrastructure, which is done by another party selected from a tender process. On the other end of the spectrum, ‘**very early competition**’ involves the procuring party identifying a transmission need, after which the procuring party initiates a tender process (or tender processes) to complete the remaining stages to deliver the transmission infrastructure, including identifying potential solutions, preliminary works, detailed design and solution delivery.

Between these two extremes there is ‘**late competition**’ and ‘**early competition**’. Late competition broadly involves the procuring party identifying the transmission solution and undertaking preliminary works, and a successful bidder/s completing detailed design, procurement, solution delivery and operation of the transmission asset. Early competition broadly involves the procuring party identifying the transmission solution, going to the market to select another party to complete the remaining stages required to deliver the transmission solution and operate the infrastructure. It should be noted that there may be different iterations of both late and early competition models, depending on the exact point which the procuring party goes to the market.

1.3 Transmission planning in the US

Since many of the case studies we have examined are from the United States (**US**) (see **Figure 1**), it is important to have a broad understanding of how transmission planning works in the US. In the US, the Federal Energy Regulatory Commission (**FERC**) regulates the interstate transmission of electricity. Its jurisdiction does not apply in every part of the US and some states have their own regulatory agency (for example, the Public Utility Commission of Texas (**PUCT**) in Texas). The U.S. has three synchronized AC networks: The Eastern Interconnection covering most of the country east of the Rocky Mountains and most of the Canadian provinces to the north (except Quebec), the Western Interconnection covering most of the transmission systems west of the Rocky Mountains and the Canadian Provinces to the north (British Columbia and Alberta), and the Electric Reliability Council of Texas (**ERCOT**) which covers most of Texas.

The FERC has required the creation of Independent System Operators (**ISOs**) or Regional Transmission Operators (**RTOs**), which are entities that operate the electricity grid in a particular area.

Figure 2: Local transmission owners in PJM interconnection, source: PJM

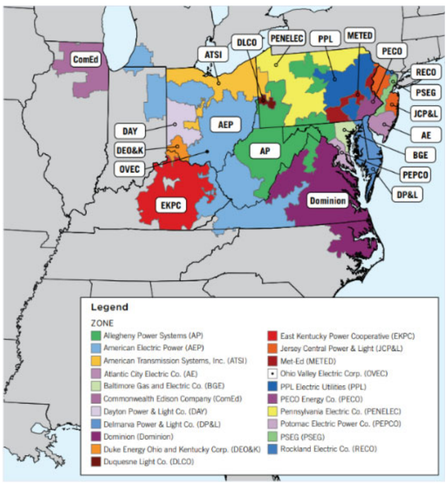
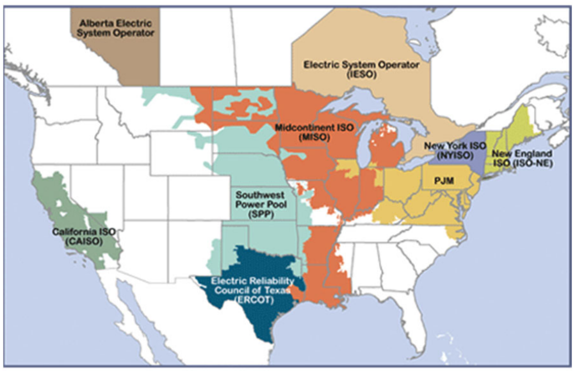


Figure 3: RTOs and ISOs in the US. The ERCOT, Alberta Electric System Operator (AESO) and IESO are not under FERC jurisdiction, source: FERC



[2] References to ‘transmission solution’ throughout this report include both network and non-network solutions.

ISOs and RTOs allow for the coordination of the different local transmission owners in their geographical area.

The FERC is responsible for economic regulation, rather than the ISOs. The FERC determines the rules for compensation transmission owners (**TOs**) for the use of their facilities, or the tariffs that specify how different categories of transmission customers pay for the use of their facilities.

Order No. 1000 made by the FERC (which is discussed below in section 2.1.1) requires ISOs to provide a regional plan to meet the region's transmission needs most cost-effectively. The regional planning process conducted by ISOs specifies transmission expansion needs and designates which transmission developer/owner is responsible for building the facilities.

Regional transmission planning in the US can be described as 'bottom up, top down' planning.[3] Although the relative weight placed on 'bottom up' or 'top down' processes varies by region, all of these existing processes allow at some point for transmission project developers to offer alternative solutions to network needs for evaluation on a comparable basis pursuant to criteria that is set forth in the ISOs/RTOs Open Access Transmission Tariffs (**OATTs**).

Transmission owners are compensated through the FERC regulatory process using fairly traditional rate-of-return/cost-of-service procedures. A transmission owner in an ISO (whether an incumbent or an independent) must file with FERC the information necessary to form a transmission 'revenue requirement'. The precise cost allocation and tariff structures that determine how transmission owners collect their revenue requirement varies according to the ISO, however common principles apply. The total revenue requirement for a transmission owner (**TO**) is generally divided between a revenue for high voltage (regional) facilities and revenue for lower voltage (local) facilities) for cost allocation purposes.

[3] Federal Energy Regulatory Commission, Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities (Order No. 1000) (July 2011), p 202.

2. Key reasons identified for introducing contestability

This section provides an overview of the key reasons for why jurisdictions have introduced contestability for the procurement of transmission infrastructure.

Across the jurisdictions analysed, the two main reasons cited for introducing contestability include:

- lower costs for consumers (through competitive tension, promoting innovation, and providing access to a greater range of financing); and
- support timely renewable energy development.

2.1 Lower costs for consumers

A key rationale for introducing contestability is to procure lower cost solutions to meet system needs, and reduce the cost of delivering these solutions (depending on the model of contestability). Since these costs are passed on to consumers, contestability can lower the costs ultimately borne by consumers. This reason has been clearly cited in relation to the development of FERC Order No. 1000 and competitive models for transmission infrastructure in the UK, which are discussed below. Contestability can also shift the allocation of risk away from consumers.

A potential benefit of any competitive process is that it requires competing parties to differentiate themselves to win – in this context, contestability gives non-incumbents the ability and opportunity (and applies pressure on both non-incumbents and incumbents) to propose the innovative design of network and non-network solutions to meet identified network needs. While this is a more obvious feature of early competition (whereby bidders are responsible for the initial design of their solution), innovation can also occur in engineering, construction, financing, contractual and risk sharing arrangements and in contractor partnerships for late competition.

2.1.1. FERC Order No. 1000

In 2011, the FERC made Order No. 1000, which required FERC-approved tariffs to remove a 'right of first refusal' (**ROFR**) for a transmission project selected in a regional transmission plan, subject to some exceptions (see section 4.1.2) for further detail). The ROFR refers to incumbents' exclusive right to build, own and operate transmission projects. In its reasons for making Order No. 1000, the FERC explained that non-incumbent transmission developers seeking to invest in transmission can be discouraged from doing so due to the ROFR.[4] Where an incumbent has a ROFR, a non-incumbent developer risks losing its investment to develop a transmission project that it proposed in the regional transmission planning process, even if the transmission project that the non-incumbent proposed is in a regional transmission plan. The FERC noted that non-incumbent transmission developers may be less likely to participate in the regional transmission planning process under these circumstances.

A number of state utility commissions and consumer advocates stated that removing the ROFR would provide a level playing field for incumbent and non-incumbent transmission developers. This would promote efficiencies and innovation, which would result in lower cost approaches to meeting system needs.[5] Removing a ROFR would provide an opportunity for a wider variety of technical and financial resources to participate in transmission infrastructure development.[6] Further, contestability could help improve cost controls over time.[7]

A ROFR and similar preferences favouring incumbents may not result in transmission rates that are just and reasonable. In the US, the FERC applies prudent investment and reasonable cost standards to the capital and operating costs presented to it by a transmission owner. Costs that are determined to be imprudent or unreasonable can be disallowed and excluded from the revenue requirement. However, such exclusions are rare. As Joskow noted, "the FERC regulatory process is a model of cost pass-through regulation with little scrutiny of costs."[8] In its reasons for making Order No. 1000, the FERC stated that the existence of ROFR may lead to rates for jurisdictional transmission service that are unjust and unreasonable.

Some respondents to the FERC's proposed Order No. 1000 cited examples to demonstrate the benefits of removing barriers to competition for non-incumbent transmission developers. The Western Independent Transmission Group referred to the Trans-Bay Cable (the first solely privately financed transmission infrastructure in the US, built in five years for $505m),[9] Neptune,[10] and Cross-Sound Cable transmission projects,[11] all of which were developed by non-incumbents. However, the California Independent System Operator (**CAISO**) noted that the Trans-Bay Cable, had significant cost overruns, and that the Neptune and Cross-Sound Cable transmission projects were merchant transmission projects that, as direct current transmission lines (rather than High Voltage AC), involved fewer concerns about system compartmentalisation and fragmentation.

2.1.2. UK offshore and onshore

2.1.2.1 Offshore contestability

In 2009, the UK Office For Gas and Electricity Market (**Ofgem**) introduced the Offshore Transmission Owner (**OFTO**) regime for competitively soliciting 'OFTOs' to operate offshore transmission infrastructure under a 'generator-build' model – a form of 'very late' competition.[12] In relation to the UK offshore model, Ofgem stated that innovation in itself not only can deliver benefits for customers in the form of long-term cost reductions, but also in improved network efficiencies, greater reliability and ease of operation of network assets. From a cost perspective, the pressure of competition and the resulting innovation enables efficient costs to be revealed, resulting in competing parties to be

4 Federal Energy Regulatory Commission, Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities (Order no. 1000) (July 2011), p 174.
5 New Jersey Board of Public Utilities, Comments of the New Jersey Board of Public Utilities to the Federal Energy Regulatory Commission RM10-23-000 (September 2010), pp 2-3; Connecticut Department of Public Utility Control & Rhode Island Public Utilities Commission, Comments of the Connecticut Department of Public Utility Control & Rhode Island Public Utilities Commission to the Federal Energy Regulatory Commission RM10-23-000 (September 2010), p 24.
6 Primary Power LLC, Comments of Primary Power to the Federal Energy Regulatory Commission RM10-23-000 (September 2010), p 16.
7 The New England States Committee on Electricity, Comments of the New England States Committee on Electricity to the Federal Energy Regulatory Commission RM10-23-000 (September 2010), p 25.
8 P.L. Joskow, Competition for Electric Transmission Projects in the US: FERC Order 1000 (MIT Centre for Energy and Environmental Policy Research: 2019), p 13.
9 IJGlobal, Trans-Bay Cable: Bay side story (October 2007), np.
10 Electric Energy Online, Undersea Success – The Neptune Project (2007), np.
11 ABB, Cross Sound Cable Interconnector: Connecticut and Long Island, USA (November 2003).
12 Ofgem, Offshore Electricity Transmission: Final Statement on the Competitive Tender Process (2009), p 8.

more likely to reveal the true costs of construction/operation that are closer to the 'efficiency frontier' than an incumbent operating under a traditional price control (or regulatory) approach.[13] Innovation can also have wider benefits, as new technologies or processes adopted by one party may be useful for the rest of the industry, leading to a proliferation of benefits for system wide costs and consumers.

In 2014, Ofgem introduced the option of the 'OFTO-build' model, thereby introducing competition at an earlier stage. The rationale behind this was to deliver benefits across several key efficiency-promoting areas:[14]

- **Finance** – Opening the market to greater competition would 'attract a wider range of investors'.
- **Services** – Companies would set themselves up to provide 'specialist services' relating to offshore transmission, for example, arranging a range of service providers and considering new commercial arrangements for service provision.
- **Manufacturing** – Manufacturers from other regions both within and outside of Europe would be attracted to establishing operations in the UK to make themselves more competitive with the current European suppliers, thereby reducing the reliance on a small number of manufacturers.
- **Contract management** – The new option would provide opportunity for entry by organisations with a 'competitive advantage' in procurement practice and management of similar large scale construction contracts. This also has the potential to drive prices down further.

2.1.2.2 Onshore contestability

Ofgem is intending to introduce late models of competition for Large Onshore Transmission Infrastructure (**LOTI**) projects to:[15]

- provide value for consumers, protecting them from undue costs and risks;
- deliver transmission infrastructure necessary to address system needs;
- create a strong competitive field by attracting new entrants and new approaches to the design, construction and operation of transmission infrastructure.

Ofgem is also considering introducing an early competition model for onshore transmission infrastructure. The UK Government, for example, acknowledged that the introduction of early competition for onshore transmission could help facilitate the introduction of non-network solutions.[16] Solutions to system needs are no longer constrained to being new network build but can also include other solutions such as 'aggregation or storage.' Early competition requires that the tender evaluation criteria be sector agnostic, i.e. the successful solution to address a constraint on the system could be from either the transmission or distribution sector, or a non-network solution (e.g. storage). For example, a bidder might propose that a number of demand-side response technologies could be applied on the distribution network, to accommodate a generation shortage at the transmission level.

2.2 Timely renewable energy development

Competition has been used to drive the timely deployment of transmission infrastructure needed to facilitate Renewable Energy Zones (**REZs**) or achieve specific renewable energy targets. This is because multiple tender processes can be conducted simultaneously, allowing necessary transmission infrastructure to be delivered at scale and in a timely manner. Even in the absence of designated REZs, competition is seen as a means of delivering cost-effective transmission infrastructure needed to support the expansion of renewable generation. For example, the UK

[13] Ofgem, Draft Impact Assessment on applying late competition to future new, separable and high value projects in electricity distribution networks during the RIIO-2 period (2020), p 17.
[14] UK Department of Energy and Climate Change, Impact Assessment on extension of the enduring offshore transmission regime to include the option of a generator building assets, with a competitive tender transferring assets to OFTO (December 2010), p 10.
[15] Ofgem, Extending Competition in Electricity Transmission: Tender Models and Market Offering (August 2016), p 9.
[16] UK Department for Business, Energy & Industrial Strategy, Competition in Onshore Electricity Networks (August 2021), p 30.

Government considered a form of early competition to be essential for delivering the necessary onshore transmission infrastructure at the required scale and pace to achieve the UK's net zero emissions target.[17]

2.2.1. Renewable Energy Zones

2.2.1.1 ERCOT

The Competitive Renewable Energy Zones (**CREZ**) scheme used by the Electric Reliability Commission of Texas (**ERCOT**) (the system operator in Texas) is possibly the most cited example of the benefits of competition in supporting renewable energy development. It was, for example, cited in submissions supporting the FERC's Order No. 1000.

Similar to REZs in Australia, the CREZ scheme was developed to address the 'chicken and egg' problem concerning the misalignment of renewable generation (wind generation in Texas) and transmission infrastructure.[18] That is, transmission planning typically requires proof of committed generation to warrant construction, yet generation commitment requires existing transmission infrastructure. Under the CREZ scheme, the ERCOT conducted modelling to determine scenarios (different options for transmission infrastructure across the state) as part of a transmission plan (similar to the introduction of the Integrated System Plan for the NEM), and in 2008 the Public Utility Commission of Texas (**PUCT**) (the regulatory authority of Texas) selected the most appropriate scenario. This scenario involved the construction of approximately 3,600 miles of new 345 kV transmission line.[19]

In 2009, the PUCT decided to initiate a tender process for construction of the required infrastructure to distribute responsibility for delivering such a large scale of projects across different transmission providers. There was some controversy in relation to the fact that non-incumbents were involved. However, this incentivised incumbents to propose their best value propositions to win the tender. Further, since all projects were solicited at the same time, all providers had an incentive to deliver their projects at the same time (by the end of 2013). The process was able to move fast because, as is highlighted in a lessons learned webinar,[20] all stakeholders and decision makers in Texas were aligned (including the legislature, PUCT and ERCOT). This is easier in Texas than in other parts of the U.S. because the electric system in Texas encompasses the state only.

2.2.1.2 NSW

In 2020, the NSW Government heightened its ambition for investment in renewable generation, laying out the NSW Electricity Infrastructure Roadmap (**the NSW Roadmap**) with aims to increase renewable capacity by 12GW and incentivise around $32bn in private sector generation and transmission investment by 2030.

To give effect to the NSW Roadmap, the NSW Government passed the *Electricity Infrastructure Investment Act 2020* (**the EII Act**) to declare five REZs in NSW and provide a framework for the delivery of:[21]

- 3 GW of network capacity for the Central West Orana REZ
- 8 GW of network capacity in the New England REZ
- 1 gigawatt of additional capacity.

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17 UK Department for Business, Energy & Industrial Strategy, Competition in Onshore Electricity Networks (August 2021), pp 10-11.

18 Clean Energy Solutions Centre, Webinar: Transmission Planning for a High Renewable Energy Future: Lessons from the Texas Competitive Renewable Energy Zones Process (September 2017), p 5.

19 Clean Energy Solutions Centre, Webinar: Transmission Planning for a High Renewable Energy Future: Lessons from the Texas Competitive Renewable Energy Zones Process (September 2017), p 16.

20 Clean Energy Solutions Centre, Webinar: Transmission Planning for a High Renewable Energy Future: Lessons from the Texas Competitive Renewable Energy Zones Process (September 2017), p 16.

21 NSW Government, *Electricity Infrastructure Investment Act 2020* (NSW)

As part of the need to deliver transmission to these REZs, the EII Act created a role for an 'Infrastructure Planner' (**IP**), with the power to establish a planning function and provide the option of implementing contestability in both ownership and operation of transmission infrastructure projects within these REZs. Under the EII Act, the IP will assess and make recommendations to an entity known as the 'Consumer Trustee' (**CT**) (AEMO Services) about required network projects. After considering the IP's recommendations, the CT may authorise a network operator (that can be selected contestably) to carry out a network infrastructure project. This framework allows for a late model of competition, since selected network operators will be responsible for designing, financing, building and operating the network infrastructure.[22]

2.2.2. Renewable energy targets

In addition to the CREZ scheme in Texas, there are other examples where contestable models have been used to procure transmission infrastructure needed to achieve specific renewable energy generation targets.

For example, in the state of Massachusetts in the US, distributors were subject to a legislative mandate requiring them to solicit proposals and enter into long-term contracts for clean energy generation for an annual amount of 9,450 GWh.[23] Accordingly, in 2017, distributors, in coordination with the state's Department of Energy Resources, issued a request for proposal (**RFP**) for long-term contracts for clean energy projects. One of the project categories eligible for solicitation included proposals to develop transmission projects as part of a packaged bid with clean energy generation. These solicitations took place outside of the ISO New England's (**ISO-NE's**) regional transmission planning process.

Further, the New York ISO (**NYISO**) applies a 'very early' competitive solicitation process for 'public policy' transmission needs. These needs are those driven by regulatory or legislative requirements. In 2021, the New York Public Service Commission (**NYPSC**) (the relevant state regulator) declared that offshore wind goals are driving the need for added transmission facilities to deliver renewable power to and from Long Island to the rest of the state.[24] The New York State currently aims to expand offshore wind to at least 9 GW and achieve a target of a net zero grid emissions by 2040. The State currently has contracts in place with developers for five offshore wind projects totalling 4.3 GW. As these projects continue to be developed, interconnection of underwater cables to existing transmission infrastructure on land will be required. To facilitate this, in August 2021, NYISO commenced a solicitation for transmission proposals to upgrade existing transmission facilities on Long Island and support 3 GW of anticipated offshore wind generation, with the submission of proposals currently being finalised.

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22 NSW Government, Network Infrastructure Projects (Part 5 of the Electricity Infrastructure Investment Act 2020) (October 2021)

23 Massachusetts Department of Energy Resources, Request for Proposals for Long-Term Contracts for Clean Energy Projects (2017), p 1.

24 New York Independent System Operator, Offshore Wind and the Role of New Transmission (June 2021), np.

3. Impacts of introducing contestability

This section explores the various impacts that have resulted from introducing contestability for the procurement of transmission infrastructure.

Although across most of the jurisdictions examined only several projects have been procured contestably (see further in section 4.1), evidence has pointed to competitive processes delivering cost savings for the delivery of transmission infrastructure under both early and late models (section 3.1). These cost savings have been driven by innovation in solution identification, solution design and infrastructure delivery. However, the cost and time needed to run tenders can be considerable (section 3.2), although there will be regulatory/administrative cost savings due to reduced regulatory oversight. Some stakeholders have raised concerns about competitive processes introducing risks to system reliability and security, however to date these concerns do not appear to have materialised (section 3.3).

3.1 The potential for cost savings

3.1.1. Quantifying cost savings

Across the jurisdictions considered, competitive processes appear to have delivered cost savings – even for late models. The drivers of these cost savings will be discussed in section 3.1.2. Cost savings have been quantified in two main ways, by comparing the successful bid with the:

1) **pre-tender planning estimate;** or
2) **lowest cost incumbent bid.**

3.1.1.1 Pre-tender planning estimate

One way to quantify the cost savings associated with competitive processes is to compare the successful bid to a pre-tender planning estimate to quantify the cost savings associated with the competitive process. For example, of Midcontinent ISO (**MISO**)'s only two competitive solicitations issued since Order No. 1000, the winning proposal for the Hartburg-Sabine Junction 500kV project had a benefit-to-cost (**B/C**) ratio of 2.2 (compared to a pre-tender planning estimate of 1.35).[25] The Brattle Group used this approach to quantify cost savings associated with the late competition model used in the California ISO (**CAISO**).[26] It found that the average difference in cost between the

[25] Midcontinent Independent System Operator, Hartburg-Sabine Junction 500 kV Selection Report (2018), p 2.
[26] The Brattle Group, Cost Savings Offered by Competition in Electric Transmission: Experience to Date and the Potential for Additional Customer Value (April 2019).

successful bid and CAISO's lower and upper bound estimates was 10% and 29% respectively between 2013 and 2019.

In Brazil, the regulator Agência Nacional de Energia Elétrica (**ANEEL**) estimates the annual revenue required for each solicitation, which applies as a price cap on bids.[27] Between 2000 and 2015, the average weighted discount for all tenders was 22.8% of ANEEL's estimate of the annual revenue required. Individual line discounts reached 59.2%.

However, Concentric Energy Advisors criticised The Brattle Group's analysis on the basis that it used pre-tender planning estimates.[28] These estimates are made by the ISO/RTO early in the planning process, and are based on conceptual plans or proposals rather than specific projects, rather than detailed design or engineering considerations. Accordingly, pre-tender planning estimates are expected to differ significantly from the final project's costs. For example, the MISO's cost estimate for the Duff-Coleman 345kV project was $64m, the winning bid was $53m, and the estimated cost of the project was $65m – all in $2020.[29] Further, Concentric Energy Advisors argued that the use of the ISO/RTO planning estimate as a reference cost does not reflect the benefits from competition because the winning bidder is not competing with the ISO/RTO planning estimate but with the other bidders. Therefore, it would be more appropriate to compare the winning bid in a given solicitation to the bid of its competitors.

3.1.1.2 Lowest cost incumbent bid

An arguably more accurate way to quantify cost savings from competitive processes is to compare the successful bid with the lowest cost incumbent bid. For example, the winning solution for the Western New York Public Policy Transmission Project was approximately 22% below an estimate of the lowest cost incumbent bid ($181 vs $232m).[30] Since the NYISO (like the CAISO) does not publish a centralised and publicly available transmission project cost tracking database, the NYISO releases project cost estimates produced by an independent consultant based on the projects proposed in the solicitation, which is what the lowest cost incumbent bid in this example was based on.[31] It should be noted, however, according to Concentric Energy Advisors, the estimated cost savings of 22% for the Western New York Public Policy Transmission Project is 'highly speculative' since it is not possible to determine how the cost estimates produced by the third party compared to the actual bids submitted.[32] Further, the solutions proposed by the winning and incumbent bids may have different benefits, meaning that it may not be accurate to just compare solution costs.

Some contestable models use a form of last resort mechanism, to ensure that transmission projects can still be delivered if for some reason the successful bidder cannot successfully do so. In the US, ISOs/RTOs (including ISO-NE and South West Power Pool (**SPP**)) require incumbents to be the 'reserve bidder' (see section 4.3.3.2 for further details). Similar to the approach above, cost savings associated with competitive processes could be quantified by comparing the bid from the reserve incumbent bidder to that of the successful bidder.

3.1.2. Drivers of cost savings

Cost savings experienced across the jurisdictions have been driven by non-incumbents winning the tenders, innovation, and bidders' approaches becoming more sophisticated (particularly in the US and UK) as tendering opportunities increase. The promotion of innovation by contestable models is

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27 International Bank for Reconstruction and Development (The World Bank), Linking Up: Public-Private Partnerships in Power Transmission in Africa (2017), p 76.

28 Concentric Energy Advisors, Building New Transmission: experience to date does not support expanding solicitations (June 2019), pp 18-24.

29 TransmissionHub, MISO: Republic Transmission energized 345-kV Duff to Coleman line on June 11 (June, 2020), np.

30 The Brattle Group, Cost Savings Offered by Competition in Electric Transmission: Experience to Date and the Potential for Additional Customer Value (April 2019), pp 28-29.

31 Concentric Energy Advisors, Building New Transmission: experience to date does not support expanding solicitations (June 2019), p 19.

32 Concentric Energy Advisors, Building New Transmission: experience to date does not support expanding solicitations (June 2019), p 19.

evident not only in the solutions and the design of solution delivery provided by the winning proposal for identified transmission needs, but also in the diversity of competing bids from new sponsors and entrants into the market.

3.1.2.1 Early competition

The potential for cost savings from early models of contestability is readily apparent. These models can result in the procuring party choosing unique cost-effective solutions or solution designs for given transmission needs, that may not have been proposed in the absence of competitive tension.

An example of an early competitive model that has promoted innovation in terms of solutions proposed to meet given transmission needs is that used by PJM Interconnection LLC (**PJM**). In the US, PJM solicits solutions at a 'very early' stage for market efficiency, reliability and public policy needs. Of particular interest is market efficiency solutions, because prior to the introduction of competition in PJM, there were very few market efficiency projects that proceeded to implementation.[33] Although from 2013 to 2019 only four solicitation windows for market efficiency solutions have occurred, [34] the results of these few suggest competitive processes can promote considerable innovation.

For example, in the 2014/2015 long-term proposal window in which PJM solicited proposals for market efficiency needs, PJM received 93 proposals, many of which had significant benefit-to-cost (**B/C** ratios greater than the minimum 1.25 threshold, with ultimately 16 projects approved and moved forward for construction.[35] Further, for the 2020/21 long-term proposal window 1, PJM received 24 proposals from 7 sponsors, 10 of which were greenfield proposals and the remainder being upgrades.[36] These proposals included a range of solutions - from line rebuilds, greenfield lines, battery energy storage systems, new substations, series reactors etc. Solution costs ranged from $11m to $73m. Both tenders highlight the benefits of competition in encouraging the development of a range of unique, benefit-accruing solutions.

Competition can promote innovation, even for reliability needs. The archetypal example of the use of a competitive process for the solicitation of solutions to meet a reliability need is PJM's Artificial Island solicitation to address high voltage issues in 2013. PJM received 26 proposals from 7 sponsors, outlining a range of technologies including new transformation, substations and associated equipment, additional circuit breakers, system reconfiguration, dynamic reactive devices, dynamic series compensation and DC technology. Solution costs ranged from $100m to $1.55b.[37]

3.1.2.2 Late competition

Although less readily apparent, cost savings can also arise from late models of contestability. These cost savings are driven by:

- innovative project technical designs, such as using new technologies for conductors, tower type and materials;
- optimised routing to reduce permitting costs;
- innovative contracting;
- joint ownership arrangements;
- cost-control mechanisms (see section 4.3.2 for further details).

[33] S. Herling, F. Koza & P. McGlynn, The Sponsorship Model: Competitive Construction of Transmission Facilities in PJM Interconnection, IEEE Power and Energy Magazine 14:4 (2016).
[34] PJM Interconnection, Market Efficiency Study Process and RTEP Window Project Evaluation Training (2020), sl 13; PJM Interconnection, Competitive Planning Process for the 2020-2021 window (n.d.), np.
[35] Transmission Expansion Advisory Committee, Recommendations to the PJM Board, (February 2016), p 2.
[36] PJM Interconnection, 2020/21 Long-Term Window 1 Carbon Impact of Selected Market Efficiency Projects (January 2022), p 1.
[37] PJM Interconnection, Artificial Island Project Recommendation White Paper (July 2015), pp 12-13.

Since 2009, the UK's competitive scheme for awarding the ownership and operation of offshore wind network connections (a form of 'very late' competition) has been estimated to have saved consumers more than £800 million.[38] The first three tender rounds of this scheme are estimated to have saved consumers in the region of £700m - £1.3bn to date on an NPV basis over 20 years. Cost savings across all counterfactual scenarios increase with each progressive tender. This was driven by improvements and identification of efficient operating/financing costs, as well as competitive pressures.

An example showing the drivers for cost savings in late models is Alberta's Fort McMurray West 500kV transmission project (the only project that has been competitively solicited by the Alberta Electric System Operator (**AESO**)). The detailed design of this project included 'snow legs' and 'snow platforms' which had never been used in this type of environment or conditions,[39] and the use of fit-for-purpose guyed V towers instead of conventional transmission towers.[40] The project was completed within budget, three months ahead of schedule and is celebrated for its use of innovative engineering designs that reduced construction time, reduced material and construction costs, and improved construction efficiencies. Competition cost savings for Alberta consumers has been conservatively estimated to be over $400m.[41]

For the CAISO, competition is introduced at a 'late stage', with design solutions developed by CAISO to address reliability, public policy and economic needs, after proposals are competitively solicited to finance, construct, own, operate and maintain transmission facilities. According to The Brattle Group,[42] cost savings experienced for the CAISO (see section 3.1.1 above) have been driven by a wide range of innovative approaches to transmission development. For construction, this included using new technologies for conductors, tower type, materials, and foundations. However, beside from cost efficiencies related to construction, interestingly CAISO observed innovation in 'optimized routing to reduce permitting costs; innovative contracting; cost-control mechanisms (such as improved risk sharing with and incentives for the engineering and construction contractors)'. This emphasises the ability of competition to drive innovation, regardless of the point at which competition is introduced across the infrastructure life cycle.

3.1.2.3 Joint ownership arrangements

An interesting trend emerging amongst both early and late models for competition is the use of joint ownership arrangements. As discussed further below in relation to FERC Order No. 1000 in section 5, joint ownership arrangements can allow for risk-sharing between joint-owning parties and different resources, strengths and expertise to be leveraged which can potentially reduce infrastructure costs that are ultimately passed on to consumers.

For example, under the new NSW REZ scheme described above, recently the following tenderers were shortlisted as the network operator for the Central-West Orana REZ:[43,44]

- ACE Energy consortium, comprising Acciona, Cobra and Endeavour Energy;
- Network REZolution consortium, comprising Pacific Partnerships, UGL, CPB Contractors and APA Group; and
- NewGen Networks consortium, comprising Plenary Group, Elecnor, Essential Energy and SecureEnergy.

Although this contestable model is in its early stages, it is clear that the scheme has attracted a diverse range of bidders comprising partnerships of developers (including international developers),

38 CEPA & Ofgem, Evaluation of OFTO Tender Round 2 and 3 Benefits (18 March 2016).
39 AECOM, British Columbia Interior Lower Mainland Transmission Line (n.d.), np.
40 Electricity Canada, Alberta Powerline Builds Canada's Longest 500-kV AC Transmission Line (2019), np.
41 AESO, Fort McMurray West 500kV Transmission Project (n.d.), np.
42 The Brattle Group, Cost Savings Offered by Competition in Electric Transmission: Experience to Date and the Potential for Additional Customer Value (April 2019).
43 NSW Government, Central-West Orana renewable energy zone tender shortlist announced (May 2022), np.
44 EQ International, NSW Sifts 3 Consortia (ACE Energy, Network REZolution, and NewGen Networks) Out Of Applicants For Network Operator Of Central-West Orana REZ (May 2022), np.

distributors and engineering companies. These companies can offer a broad pool of available investment funds for the delivery of transmission infrastructure.

Similarly, the ISO-NE and the CAISO allow for joint proposals.[45] For example, the CAISO allows for bidders to collaborate with another entity before the bid window closes.[46] A number of projects have been awarded to joint ventures or partnerships between a local transmission owner and another company:

- **Fort McMurray, Alberta**:[47] Awarded to Alberta PowerLine Limited Partnership – a partnership between Alberta-based Canadian Utilities Limited (an ATCO company, with ATCO electric being the local transmission owner in Alberta) and US-based Quanta Capital Solutions, Inc.
- **Greater Boston Ready Path, ISO-NE**: [48] The only competitive project in the ISO-NE has been awarded to a joint venture between the local transmission owners Eversource and National Grid. See section 4.1 below for a discussion of the thresholds and exclusions used for contestable frameworks in the US, and how these may have contributed to the limited number of projects subject to competition to date.
- **Duff-Coleman, MISO**:[49] Republic Transmission collaborated with its parents, LS Power and Hoosier Energy (a local transmission owner), as well as Big Rivers Electric Corporation, another local utility.

We note, however, that joint ownership arrangements could potentially result in interface complexity and split accountabilities.

3.2 Costs and time needed to run tenders

3.2.1. Procuring party implementation and bidder costs

The cost and time required to run competitive tenders can be considerable, particularly for early models. Commonly, multiple rounds of tendering and negotiations are required under contestability. This places great responsibility on the procuring party, especially for early competition, where there is substantial cost associated with preparing, issuing, coordinating and evaluating proposals that can be very diverse. One of the concerns raised in relation to the FERC's proposed Order No. 1000 was that it would exacerbate an already complex and arduous process to study, plan and implement regional transmission infrastructure.[50]

For example, in the PJM model the skills necessary to execute the competitive process extend beyond what the traditional independent service operator planning staff would be expected to possess.[51] For the Artificial Island project, PJM was required to conduct 'detailed constructability reviews' that involved assessing the risks associated with obtaining permits from various federal, state and local authorities. It was also required to assess financial metrics across projects, which necessitated a thorough evaluation and skills that the planning staff did not possess. As such, there were costs associated with obtaining those skills from outside the PJM organisation. Other costs incurred by PJM include legal review to evaluate cost containment provisions.[52]

45 ISO Newswire, Competitive transmission solicitation improvements accepted by FERC (March 2022), np.
46 California Independent System Operator, Business Practice Manual for Transmission Planning Process (Version 22) (August 2021), s 5.3.3.1.
47 AESO, Fort McMurray West 500kV Transmission Project (n.d.), np.
48 ISO Newswire, ISO-NE makes selection in first Order 1000 transmission RFP (July 2020), np.
49 Republic Transmission, Learn More About Republic Transmission
50 Federal Energy Regulatory Commission, Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities (Order no. 1000) (July 2011).
51 S. Herling, F. Koza & P. McGlynn, The Sponsorship Model: Competitive Construction of Transmission Facilities in PJM Interconnection, IEEE Power and Energy Magazine 14:4 (2016), pp. 65-71.
52 PJM Interconnection, Cost Containment Status and Next Steps (2019), sl 21.

Figure 4 outlines publicly available costs collated by Concentric Energy Advisors incurred by RTOs/ISOs for a selection of projects.[53]

Figure 4: Summary of ISO/RTO costs incurred to implement solicitations in regional transmission planning processes

Project/Window	ISO/RTO	Cost Incurred
Suncrest	CAISO	$260,572
Delaney to Colorado River	CAISO	$530,359
Estrella	CAISO	$206,104
Harry Allen to Eldorado	CAISO	$434,703
Wheeler Ridge Junction	CAISO	$151,179
Miguel*	CAISO	$15,056
Spring 230 kV Substation	CAISO	$165,912
Duff-Coleman	MISO	$1,331,940
Hartburg-Sabine	MISO	$1,137,240
Walkemeyer	SPP	$522,196
2016 Windows 1-3	PJM	$457,717
2016/17 Long Term Window	PJM	$902,115
2017 Window 1	PJM	$328,287

Notes: The accounting the ISOs/RTOs employed to produce these estimates is somewhat unclear and the ISO/RTO figures may include different cost categories. The Miguel solicitation had only one bidder. PJM costs only refer to proposal evaluation costs. See Appendix C for data sources.

Source: PJM Interconnection, PJM Competitive Planning Process Manual 14F (2022), p 49

Some ISOs in the US have sought to address the costs associated with evaluating bids by requiring bidders to pay for these costs. These mechanisms appear to not have deterred bidder participation. In PJM, all bidders are required to make a $5,000 non-refundable deposit for proposals with cost estimates exceeding $5m, in addition to which bidders must pay for all actual costs incurred by the PJM to evaluate the specific proposal.[54] The NYISO requests a non-refundable application fee of $10,000 and a study deposit of $100,000.[55] MISO, even though it uses a late model of competition, has implemented a similar mechanism. That is, the MISO determines a refundable deposit for bidders to pay (representing a forecast of the proposal evaluation cost). Submitted proposals are then allocated a pro rata portion of the actual expenses incurred by MISO in implementing the competitive developer selection process for the given project. Any shortfall between proposal deposits and MISO's pro rata expenses will be billed to the relevant bidder. Any remaining balance will be refunded with interest on a pro rata basis for each proposal.[56] It should be noted that these evaluation costs could be, to some extent, offset by the potential reduction in administrative costs due to reduced regulatory oversight that is typically associated with contestable frameworks (see section 4.3 below).

3.2.1.1 Bidder costs

In addition to the time and cost borne by the procuring party, bidders must also spend time and resources preparing their proposals. Bidders must collate a significant amount of information to respond effectively to an RFP, including technical and financial information, past development

[53] Concentric Energy Advisors, Building New Transmission: experience to date does not support expanding solicitations (June 2019), p 30.
[54] PJM Interconnection, PJM Competitive Planning Process Manual 14F (2022), p 49.
[55] New York Independent System Operator, Study Deposit for Proposed Regulated Transmission Solutions (2019), s 31.2.6.2.
[56] Midcontinent Independent System Operator, Competitive Developer Selection Process Incurred Costs (2017), p1.

experience, and detailed development and right acquisition plans. For example, in a filing at the PUCT (the relevant state regulator), an incumbent transmission owner stated that preparation of an RFP response would cost at least $750,000.[57]

Some jurisdictions allow the successful bidder's costs to be recovered (e.g., the MISO[58]), while others do not. Most jurisdictions do not allow unsuccessful bidder costs to be recovered.

3.2.2. Length of tender processes

Across the jurisdictions considered, the length of tender processes varies, with early models tending to involve longer timelines than late models. This is evident in **Figure 5**, which provides an outline of solicitation windows in the US between 2013 and 2016. Overall, these timeframes are considerable, particularly for some of the late models.[59] The particularly lengthy timeframes for the examples of early tender processes – PJM's Artificial Island and NYISO's AC Transmission – are due to changes in the RFP which required bidders to re-submit their bids. This demonstrates the potential for timelines (particularly for early models) to increase rapidly. In Australia, in a report for Energy Networks Australia (**ENA**), Farrierswier noted that under the current Victorian contestability arrangements, transmission investments can take 'materially longer' than under the regulated monopoly model that applied for the rest of the NEM.[60]

However, we do note that several of the examples captured in **Figure 5** were tender processes being conducted for the first time. It is likely that the length of tender processes will reduce as more experience is gained, and learnings result in the implementation of practical mechanisms to streamline processes (see section 5 for further detail).

57 Public Utility Commission of Texas, Joint Petition of Southwestern Public Service Company and Southwest Power Pool, Inc. For Declaratory Order (2017), p 11.
58 Midcontinent Independent System Operator, Business Process Manual: Competitive Transmission Process (June 2021), np.
59 Concentric Energy Advisors, Building New Transmission: experience to date does not support expanding solicitations (June 2019), p 30.
60 Farrierswier, Transmission Contestability Principles (August 2021), p iv.

Figure 5: Length of transmission solicitations across a selection of projects in the US

Project	Date Need Identified	Solicitation Window	Date of ISO/RTO Board Approval	Days Between Identification and Board Approval
Imperial Valley	CAISO 2012-2013 Transmission Plan, Mar. 20, 2013	Dec. 20, 2012- Feb. 19, 2013	Jul. 11, 2013	113
Gates-Gregg		Apr. 1- Jun. 3, 2013	Nov. 6, 2013	231
Sycamore-Penasquitos		Apr. 1 - Jun. 3, 2013	Mar. 4, 2014	349
Suncrest	CAISO 2013-2014 Transmission Plan, Jul. 16, 2014	Apr. 16 - Jun. 16, 2014	Jan. 6, 2015	174
Delany Colorado River		Aug. 19 - Nov. 19, 2014	Jul. 10, 2015	359
Estrella		Apr. 16 - Aug. 18, 2014	Mar. 11, 2015	238
Harry Allen to Eldorado		Jan. 30 - Apr. 30, 2015	Jan. 11, 2016	544
Miguel†		Apr. 16 - Jun. 16, 2014	Sep. 9, 2014	55
Spring		Apr. 16 - Aug. 18, 2014	Mar. 11, 2015	238
Wheeler Ridge		Apr. 16 - Aug.18, 2014	Mar. 11, 2015	238
Duff-Coleman	MISO MTEP-15, Dec. 1, 2015,	Jan. 9 - Jul. 6, 2016	Dec. 20, 2016	385
Hartburg-Sabine	MISO MTEP-17, Dec,1, 2017	Feb. 6. - Jul. 20, 2018	Nov. 27, 2018	361
Walkemeyer	SPP 2015 ITP, Jan. 20, 2015	May 5- Nov. 2, 2015	Apr. 12, 2016	448
Artificial Island‡	PJM 2012 RTEP, Feb. 28, 2013	Initial: Apr. 29 - Jun. 28, 2013 Supplemental: Aug. 12- Sep. 19, 2014	Initial: July 29, 2015 Revised: April 6, 2017	1,498
AP South	PJM 2013 RTEP, Feb 28, 2015	Oct. 30, 2014- Feb. 27, 2015	Aug. 9, 2016	893
NY Western Public Policy	NYISO - July 20, 2015 NYPSC Order	Nov. 1, 2015- Jan 1, 2016	Oct. 17, 2017	820
AC Transmission+	NYISO - Dec. 17, 2015 NYPSC Order	Feb. 29, 2016- Apr. 29, 2016	April 8, 2019	1,208

† The Miguel solicitation had a single bidder – San Diego Gas & Electric.
‡PJM staff made an initial selection in the Artificial Island solicitation on Jun. 16, 2014. The PJM Board made an initial selection on Jul. 29, 2015, suspended the project in August 2016 for further consideration, and approved a revised scope in April 2017. See the case study in Subsection 4.2 for more details.
+The NYISO Board revised NYISO staff's recommendation for one segment of the AC Transmission solicitation

Source: PJM Interconnection, PJM Competitive Planning Process Manual 14F (2022), p 49

3.3 Security of supply, reliability, and performance

Competitive processes for the procurement of transmission infrastructure inherently require interactions between the incumbent, bidders and the procuring party / system operator. The importance of coordinating with the incumbent is discussed below in section 5.3. These interactions may create additional risks (including in relation to reliability and security) which could be material if not effectively managed.

For example, some submissions to Order No. 1000 in the US stated that removing the ROFR would have unintended consequences affecting reliability.[61] These commenters generally contend that eliminating federal ROFR could cause, or exacerbate, operational and reliability challenges for transmission system operations and could produce operational issues as each transmission provider will have to coordinate with more entities to address specific reliability issues. Many of these commenters raised considerations that increasing the number of entities involved in transmission ownership and grid operations would make coordination, maintenance, and service restoration more difficult by further fragmenting the transmission system, which they noted has been a concern of the FERC in the past.

61 Federal Energy Regulatory Commission, Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities (Order no. 1000) (July 2011), p 193.

Further, introducing competition could increase the risk of system security issues, due to the lack of a single accountable party in some models and interface complexity (which may vary from model to model), particularly with a large number of competitively appointed TOs. However, this does not appear to have materialised across the competitive models considered, with only Argentina documenting system reliability and quality of supply issues (which can be attributed to other aspects of its transmission planning and investment framework).[62]

[62] Navigant, Competition in Electricity Transmission: An International Study on Customer Instruments and Lessons Learned (December 2015), p 3.

4. Key learnings from jurisdictions

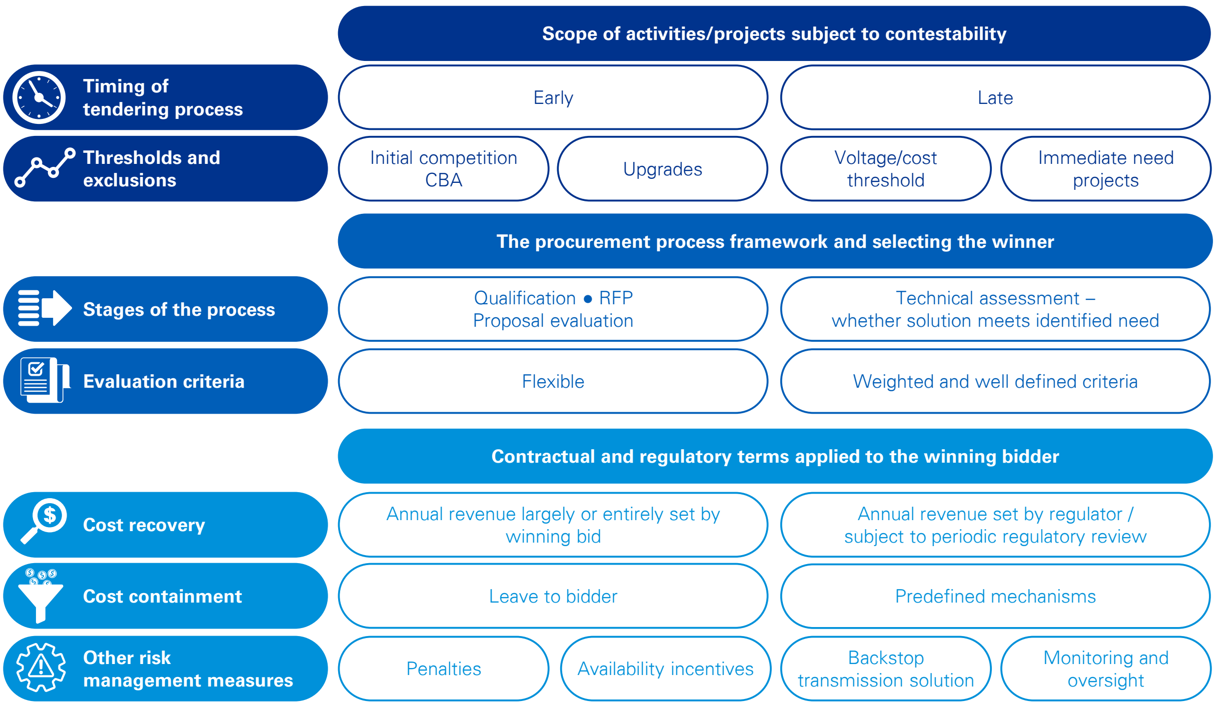
This section outlines the key learnings from the jurisdictions examined, according to the decision choices required for designing a contestable process for procuring transmission infrastructure.

As shown in **Figure 6**, the decisions that must be considered in designing a contestable framework can be divided broadly under three main categories:

1. scope of activities/projects subject to contestability;
2. the procurement process framework and selecting the winner;
3. contractual and regulatory terms applied to the winning bidder.

Under these broad categories, the procuring party will need to consider a range of issues as shown in **Figure 6**. Factors affecting these decision choices are discussed in the following sections, and include the goals of the competitive process and at what point in the development of transmission infrastructure contestability is introduced.

Figure 6: Overview of contestability design options



4.1 Scope of activities and projects subject to contestability

In designing a contestable process, the threshold question to consider is at what point in the transmission infrastructure lifecycle the tender point should be introduced (that is, whether an early or late competition model should be adopted). This threshold decision will influence what thresholds and exclusions (if relevant) are applied to determine what projects should be subject to the competitive process.

4.1.1. Timing of tendering process

Broadly, the procuring party has a choice between implementing contestability early or late in the procurement process. However, it is not a binary choice between 'early' or 'late', but rather a spectrum, such that procuring parties could also choose to implement contestability at a 'very early' or 'very late' stage of the process. The rationale for a region opting for either early or late contestability is highly dependent on the objectives of the network planner, as well as the types of projects expected to be subject to contestability.

4.1.1.1 Early competition

The benefits of early-stage competition include driving innovation in solutions and a greater potential for costs reduction relative to late models. Early-stage contestability does, however, mean longer and more expensive tender processes. We note, however, this may be to some extent offset by time and cost reductions from reduced regulatory involvement/processes. These costs and benefits are discussed in detail below.

Innovative solutions and greater potential for cost reduction

As discussed in section 3 above, early contestability promotes innovative solutions, especially non-network solutions. As the electricity system is rapidly changing and different types of solutions will become available over time, early competition allows for network constraints to be solved by innovative, non-traditional solutions from non-incumbent bidders. Early contestability can incentivise greater innovation and therefore cost savings for consumers, however this may be to some extent offset by the increased exposure of the successful bidder to the risks of development and construction.

The PJM, for example, believed that introducing a 'very early' form of competition – that is, allowing developers to provide alternative solutions – would result in more creative, technically innovative, and cost-effective solutions.[63] The breadth and volume of solutions that can be solicited is evident across PJM's 16 Regional Transmission Expansion Plan (**RTEP**) competitive windows from 2013 to 2017, in which 142 projects were awarded to developers, with a total of 803 proposals submitted. Of these 803 proposals, 45% came from non-incumbents.[64]

For example, in January 2016 when the MISO issued its first RFP for a 345kV transmission line between the Duff and Coleman substations, the cost estimate developed by MISO for the project in the MISO Transmission Expansion Plan for 2015 was $58.9 million and proposals submitted ranged from $34.0 million to $55.7 million. MISO received eleven proposals, of which at least 3 were from non-incumbents.[65] The MISO emphasized that many of the proposals had innovative cost caps and cost containment provisions. The MISO found all the proponents to be highly qualified but noted that

63 S. Herling, F. Koza & P. McGlynn, The Sponsorship Model: Competitive Construction of Transmission Facilities in PJM Interconnection, IEEE Power and Energy Magazine 14:4 (2016), pp. 65-71.

64 P.L. Joskow, Competition for Electric Transmission Projects in the US: FERC Order 1000 (MIT Centre for Energy and Environmental Policy Research: 2019).

65 Midcontinent Independent System Operator, Duff-Coleman EHV 345kv Selection Report (December 2016).

the significant differences in the attributes of the proposals, including wide differences in estimated costs, were a key basis for their decision.

Longer and more expensive tender process

A constraining factor on the uptake of early contestability models is the subsequent longer duration, higher cost, and increased complexity of the tender process. As discussed in section 3.2.2, the tender process for early-stage competition can be extensive (in some cases, over 1000 days), as it requires, in addition to stages typical in late models (section 4.1.1.2 below), comparisons of highly disparate bids and what can be a highly technical assessment of how proposed solutions meet the identified transmission need. For comparison, tender processes using a late contestability model typically run over a 100–400-day period as evidenced in **Figure 5.** However, as mentioned above, contestable frameworks typically have less regulatory oversight which may offset the length of the tender process.

PJM reflected in 2016 that the bidding process can mean that significant effort is allocated to reliability issues for which solutions are 'relatively obvious' and 'can be addressed by the current asset owner without the effort of a competitive process'.[66] Many of PJM's past competitive solicitations for reliability projects were simply awarded to the incumbent owner, which calls into question the design features of competition thresholds and inclusions, as well as whether the decision to introduce competition could be flexible or evaluated at the point when a need is identified – especially when the outcome is going to be obvious.

Although the early contestability model may be more costly than a late contestability model, whether the aggregate cost savings resulting from competition that are passed on to consumers outweighs the cost of undertaking the competitive process needs to be considered.

4.1.1.2 Late competition

As is evident in **Figure 1**, across the jurisdictions considered, late competition models are the most common forms of competition that have been introduced to procure the delivery of transmission infrastructure. This is possibly due to the fact that the tender process and assessment of bids is likely to be less complex and time and resource intensive and is likely to encourage sufficient bidder participation since bidders assume less risk.

Assessment of bids likely to be less complex

In late-stage contestability, tendering occurs after initial solution design has already been undertaken, meaning that all proponents are bidding to deliver the same solution. The tender evaluation and comparison process is therefore relatively straightforward, as the procuring party evaluates a more standardised assortment of bids that all address the same solution.

This is compounded in 'very late' contestability models, as evident in the UK offshore regime, whereby bidders to be the OFTO are only involved after the preliminary works, procurement and construction of the asset have taken place. The OFTO therefore only bids for the operation and ongoing maintenance of the asset.

Lower risk for bidders, encouraging tender participation

In late-stage contestability approaches there is much greater certainty around capital and operating costs, as the solution is already known at the start of the tender process. When bidders seek financing, this reduced uncertainty can attract investors seeking low-risk, low-return investments. Compared to early contestability approaches, there is much lower uncertainty and risk associated with financing projects, which could also promote bidder participation in the tender process. Notwithstanding this, there is a question as to the extent to which the successful bidder can rely on the procuring party to conduct preliminary works.

[66] S. Herling, F. Koza & P. McGlynn, The Sponsorship Model: Competitive Construction of Transmission Facilities in PJM Interconnection, IEEE Power and Energy Magazine 14:4 (2016), pp. 65-71.

4.1.2. Thresholds and exclusions

In addition to considering the timing of contestability, considering what projects should be subject to contestability in designing the framework is essential. Different thresholds and exclusions may be appropriate depending on the preferred timing of contestability (i.e. early or late stage). A unique and interesting outcome that has emerged in the US is the limited number of projects subject to contestability, and the perverse incentives for incumbents to pursue local projects induced by the regulatory framework encouraging competition in the US (see section 4.1.2.3 below).

4.1.2.1 Early competition

In early-stage contestability models, the winning solution proposed by the successful bidder may be considerably different from the indicative solution being considered, limiting the ability to appropriately rule out certain solutions by a fixed criterion. Therefore, unlike for late models, monetary thresholds may not be appropriate (noting, however, Victoria appears to use an early form of contestability with a minimum value threshold of $10m). This is evident in **Table 1**, which shows that across three prominent early competition frameworks, no value threshold has been implemented.

Notably, Ofgem agreed with the UK electricity system operator (**ESO**) that a minimum value threshold (like the £100m threshold for late competition) is not necessary for early-stage contestability models.[67] Ofgem noted that not including a value threshold would lead to uncertainty over what projects could progress. According to Ofgem, an effective project-specific competition cost-benefit analysis (**CBA**) can mitigate the need for a value threshold. It is worth noting that the ESO is still considering how this project-specific CBA approach would work in practice, and that Ofgem has reserved its decision on whether there should be a value threshold to after the completion of the ESO's work on the competition CBA.

Table 1: Thresholds for early-stage contestability frameworks

UK onshore	PJM	NYISO
UK ESO has recommended that no minimum value be imposed for projects subject to early competition. Ofgem's current thinking: • Certainty (indicative solution is needed in at least two 'Future Energy Scenarios' (FES) within the ESO's National Options Assessments (NOA); and • Supported by initial competition CBA (i.e. shows that running an early competition is likely to provide an outcome that is beneficial for consumers).	PJM has no minimum value threshold, and instead imposes a voltage (size) threshold. Facilities are excluded from competition if they are: • Below 200kV • Immediate-need reliability projects (needed in less than 3 years) • Substation work	Only applies to public policy projects (3 competitive projects to date), but apart from that no thresholds.

[67] Ofgem, Consultation on our views on Early Competition in onshore electricity transmission networks (August 2021), p 30.

4.1.2.2 Late competition

For late-stage contestability models, relatively simple criteria can be imposed to avoid delivering small projects through a tender process where the benefits of procuring these projects by competition is unlikely to outweigh the costs.

Common thresholds and exclusions used in the jurisdictions examined are outlined in **Table 2** below, and broadly include:

a) **Projects above a particular value**: Setting a value threshold is intended to ensure that the costs of running a competition are lower than the benefits that would result from the delivery of the winning bid. There is a significant difference between Argentina's threshold of $2m and the UK onshore threshold of $100m. Ontario and Alberta in Canada developed competitive transmission for large scale projects without using a precise value threshold. The low threshold in Argentina can be explained by the absence of the government in the transmission building process, making the introduction of market forces necessary to drive costs down.

b) **Projects above a particular size**: Generally, this is only relevant for US projects, as voltage thresholds are related to cost recovery rules. Typically, a portion of the costs associated with large transmission projects are allocated on a system-wide basis to all transmission customers (postage stamp), while for smaller projects most costs are allocated sub-regionally in one or more designated zones (particularly in RTO regions). Local projects with costs that are not shared regionally (an exclusion unique to RTOs in US) rules out the majority of projects in the US. Interestingly, the MISO reduced its voltage threshold for the competitive solicitation of market efficiency projects from 345 to 230 kV in response to concerns surrounding the minimal use of competitive processes.

c) **Upgrades**: These projects are commonly excluded from contestability on the basis that these projects are not a distinct service and contestability will impact the incumbent's ability to provide service.

d) **Immediate need projects**: Particularly for reliability projects, it may not be economical or practical to make these projects subject to contestability.

Table 2: Common thresholds and exclusions in late-stage contestability frameworks

Jurisdiction	Thresholds	Exclusions	
	Projects above a particular value[a]/size[b]	Immediate need projects[c]	Upgrades[d]
NSW	N/A	N/A	✗
UK onshore (late)	>$100m	✗	✗
CAISO (US)	>200kV and >$50m	✗	✗
MISO (US)	MVPs: >$20m and >100 kV Market efficiency: >$5m and >230 kV	All reliability	✗
ERCOT – CREZ (US)	N/A	✗	✗
SPP (US)	N/A	✗	✗
ISO-NE (US)	>115kV	✗	✗
AESO (CA)	*Developed for one project specifically. Could be applied to other large-scale projects.*		
IESO (CA)	*Developed for one project specifically.*		

Jurisdiction	Thresholds	Exclusions	
	Projects above a particular value[a]/size[b]	Immediate need projects[c]	Upgrades[d]
Brazil	>230kV	✗	N/A
Argentina	>$2m	N/A	N/A
Chile	>220 kV	N/A	✗

4.1.2.3 Impacts of FERC Order No. 1000

A unique impact associated with the introduction of FERC Order No. 1000 in the US is that a limited number of projects have been competitively procured due to the exclusions that apply under Order No. 1000. Due to the nature of transmission planning in the US, these exclusions may have also created a perverse incentive for local projects to be prioritised (as opposed to regional projects that are competitively procured).

Limited number of projects subject to competition

Under FERC Order No. 1000, ISOs/RTOs were required to remove from FERC-approved tariffs and agreements a ROFR for a transmission facility selected in a regional transmission plan for cost allocation purposes. That is, Order No. 1000 requires competitive processes for new transmission projects with region-wide cost sharing.

This does not apply to / affect:[68]

- upgrades;
- local projects for cost allocation purposes (i.e. located solely within an incumbent's retail distribution service territory that are not selected in the regional transmission plan);
- immediate need reliability projects;
- state-granted ROFR.

Due to the exclusions to Order No. 1000 (particularly that in relation to local projects), only a small proportion of projects have been subject to competitive processes. According to The Brattle Group, only 3% of total transmission investments were subject to competitive processes between 2013 and 2017.[49] The 2013-2017 share of competitive projects for individual regions ranged from none in ISO-NE to 5.1% of total transmission investments in PJM, 6.8% in CAISO, and 7.0% in NYISO.[69]

In the ISO-NE, only one project has been competitively solicited since Order No. 1000. This was highlighted in proceedings initiated by an independent transmission developer, who alleged that ISO-NE was violating Order No. 1000 since ISO-NE had exempted from competition 'virtually every … reliability need' project (an argument which was rejected by the Court).[70] Further, for PJM, most projects have been reliability projects, the majority of which have involved upgrades (which automatically go to the incumbent). Between 2013-17 there were 135 upgrade projects (out of a total of 142 projects, 7 of which were greenfield).

Perverse incentives induced by FERC Order No. 1000

As mentioned above in section 1, transmission planning at the regional level in the US can be described as 'bottom up, top down' planning.[71] Although the relative weight placed on 'bottom up' or

68 Federal Energy Regulatory Commission, Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities (Order no. 1000) (July 2011).
69 The Brattle Group, Cost Savings Offered by Competition in Electric Transmission: Experience to Date and the Potential for Additional Customer Value (April 2019), p 5.
70 S&P Global, Court upholds FERC order endorsing ISO-NE's limits on transmission competition (2022), np.
71 Federal Energy Regulatory Commission, Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities (Order No. 1000) (July 2011).

'top down' processes varies by region, all of these existing processes allow at some point for transmission project developers to offer alternative solutions for evaluation on a comparable basis pursuant to criteria that is set forth in the ISOs/RTOs OATTs.

Due to the nature of transmission planning in the US, some stakeholders have stated that Order No. 1000 has resulted in an economically inefficient mix of new projects skewed toward local projects to avoid pursuing regional projects solicitated competitively.[72] For example, the American Council on Renewable Energy stated that MISO had successfully negotiated a collaborative effort among utilities to deliver Multi-Value Projects before Order No. 1000.[73] It noted that the MISO has since failed to assemble a comparable portfolio of large multi-benefit projects. Instead, responding to their incentives, incumbents have primarily pursued local baseline reliability and other projects that are subject to a ROFR. According to The Brattle Group, in some developers' views, subjecting regionally-planned projects to competition has discouraged transmission companies from suggesting potentially valuable regional projects, anticipating that the projects would need to go through competitive processes and thus could be delayed.[74] These issues may explain why annual regionally planned transmission investment is declining, while total annual transmission investment remains relatively robust.[75]

The American Council on Renewable Energy did note however, that competition in some instances has been successful. It pointed to the ERCOT Competitive REZ and contestable models in the UK, where government agencies run the competitive solicitations, and in NYISO and CAISO where utility participation in the ISO is effectively mandatory.

[72] Advanced Energy Economy, Comments of Advanced Energy Economy (2021), np.
Resale Power Group of Iowa, Comments of the Resale Power Group of Iowa
Union of Concerned Scientists, Comments of the Union of Concerned Scientists

[73] American Council on Renewable Energy, Comments of the American Council on Renewable Energy (2021), p 75.

[74] The Brattle Group, Transmission Planning for the 21st Century: Proven Practices that Increase Value and Reduce Costs (October 2021), p 20.

[75] Clean Energy Grid, Planning for the Future: FERC's Opportunity to Spur More Cost-effective Transmission Infrastructure (January 2021), pp 104-105.

4.2 Procurement process framework and selecting a winner

Generally, most tender processes follow a similar process, however early models are typically more complex since they require evaluation of proposed solutions against the identified transmission need. A clear point of difference across the jurisdictions is the extent of flexibility in the evaluation criteria applied for each solicitation and the level of involvement of a regulator.

4.2.1. Stages of the process

Across the jurisdictions considered, most competitive models use a staged or phased evaluation process to save on time and costs. This involves having an initial stage that attempts to minimise the number of bids that are assessed at the more detailed rigorous evaluation stages. Some form of 'qualification' step is therefore important.

The stages common across competitive processes are outlined in **Table 3** below.

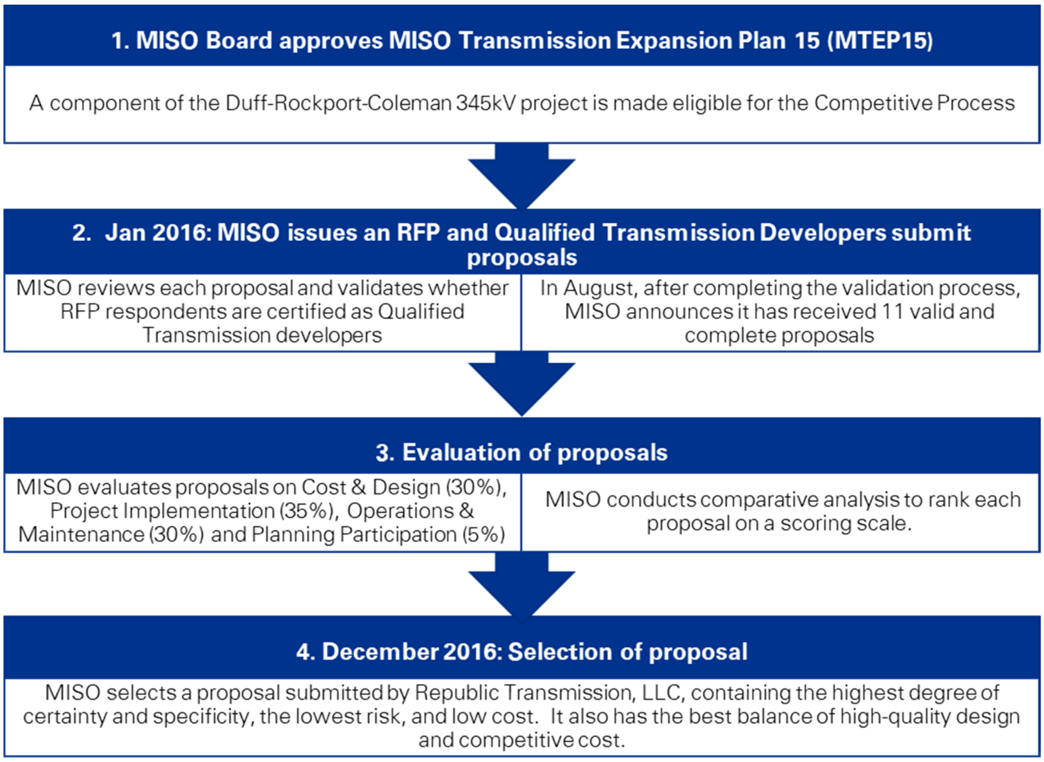
Table 3: Common stages across tender models

Stage	Description
1. Qualification	Bidders will be required to submit information related to their financial standing, technical competence, and capabilities. This would usually include prior experience, evidence in delivery of infrastructure assets and understanding of costs and risks. The purpose of this stage is to limit the number of bidders who can proceed to the RFP and detailed evaluation stages.
2. Request for Proposal (RFP)	The procuring party will invite those who have passed the qualification stage to submit proposals (for early competition, proposals will need to include how they meet the need that has been specified by the procuring body). Proposals can contain a wide range of content, but they will generally contain details such as timelines, project size, type, geographic location, schedules for obtaining permits, cost estimates etc. Proposals will also need to address the pre-specified evaluation criteria published in advance by the procuring party.
3. Proposal evaluation	The procuring body will evaluate each submitted proposal, and assess them against a criterion that typically include cost, design, implementation, operations, and maintenance etc. Varying models will place different weights on each component of the criteria depending on their objectives and the need of the project, however, some jurisdictions also conduct cost comparisons and rankings to evaluate financial metrics. In some cases, the procuring body will conduct an initial screening of proposals to ensure that they are not incomplete or missing components, or they may conduct an initial cost-benefit analysis (CBA) to ensure that the proposal meets a certain BCR threshold before proceeding to detailed evaluation.
4. Successful bidder election	The procuring body selects the proposal that it deems most viable and effective, publishing a notice and awarding the relevant licenses.

Late competition

Typically, late competition models closely follow the above stages. The tender process used by the MISO is an example of a typical late competition tender process, reflected in **Figure 7** below which outlines the process the MISO used for procuring the delivery of the Duff-Coleman 345kV project.

Figure 7: Tender process used by the MISO to competitively procure delivery of Duff-Coleman 345kV project



Source: Created using information from: Selection Report – Duff-Coleman EHV 345 kV Competitive Transmission Project (MISO, 2016)

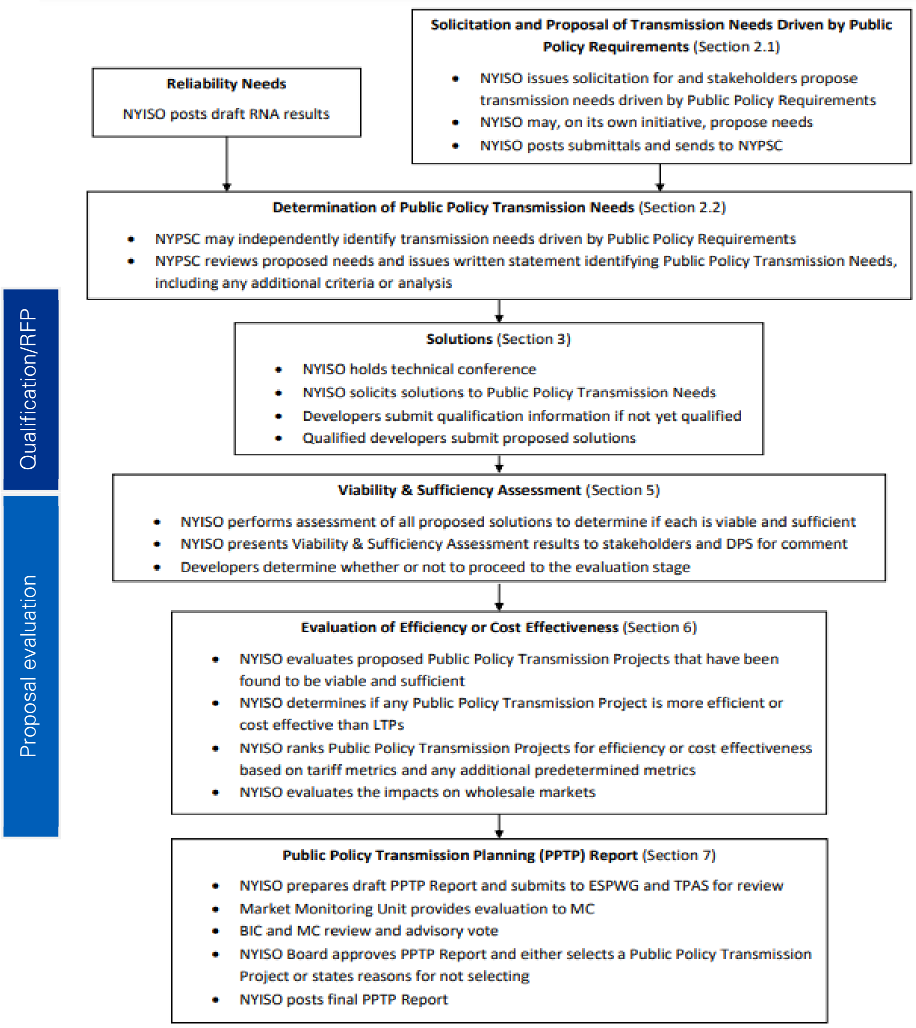
The UK offshore generator-build process follows a similar staged approach to that of the MISO, involving an enhanced pre-qualification stage, an invitation to tender, evaluation, and then selection of a preferred bidder and then a successful bidder licence grant.[76] As the generator-build process uses a very-late contestability model, the evaluation criteria is highly standardised – bidders simply need to meet certain deliverability robustness thresholds, then are evaluated based on their price only.

Early competition

Early-stage tender processes broadly follow the stages outlined in **Table 3** above, however an additional stage is typically required to assess whether the proposed solutions meet the relevant identified transmission need. The process diagram in **Figure 8** details the early competition model used by the NYISO for public policy projects. This tender process has the typical qualification, RFP and proposal evaluation stages, but has an additional stage – 'Viability and Sufficiency Assessment' – to assess whether the proposed solution is sufficient to satisfy the public policy transmission need. This part of the tender process can require extensive technical analysis.

[76] Ofgem, Offshore Transmission: Guidance for Cost Assessment (April 2019), p 8.

Figure 8: NYISO's competitive solicitation process for public policy projects



Source: New York ISO, Manual 36 - Public Policy Transmission Planning Process Manual (June 2020)

This example also demonstrates the potential role of the regulator in providing oversight over the tender process and reviewing key decisions made by the system operator. While the NYISO is the main procuring party for public policy transmission in New York, the New York Public Service Commission (**NYPSC**) (the relevant state regulator) plays a highly active role in throughout the entire planning process. As outlined in **Figure 8** above, the NYPSC issues a statement that sets out the public policy transmission need requirements for which solutions will be solicited by the NYISO. Secondly, the NYPSC is responsible for selecting the project evaluation criteria. Finally, it is open to the NYPSC to determine that there is no longer a transmission need driven by a public policy requirement at any time prior to the selection of a solution by the NYISO.

Another unique feature of tender processes for early models is that it is common to delay the provision of revenue bids until later in the tender process to avoid creating perverse incentives on bidders to submit unrealistic figures or significantly increasing the cost of producing a submission. Further, this avoids bidders competing on their approach to cost contingencies decreasing the risk of business defaults.

4.2.2. Evaluation criteria

Evaluation criteria are typically common across competitive models, with differences mainly arising in relation to the flexibility of criteria. Common criteria used across the jurisdictions examined include experience and resources, design and technical, schedule, cost/cost-effectiveness and cost containment, right of way and land acquisition, regulatory permitting and route evaluation, and environmental and social impacts.

If increasing competition for transmission assets will be based materially on price, it is important to understand whether this might lead to risks involving compromises on visual amenity, community engagement and environmental standards. These risks can be managed at the evaluation criteria stage.

4.2.2.1 Flexible criteria

It is important for early-stage contestability models to have flexible evaluation criteria, tailored according to the particular solution that is being competitively procured. Similar lessons about the importance of flexibility in early-stage models are discussed in section 4.1.2 in relation to thresholds and exclusions.

In some jurisdictions, the evaluation criteria is developed in consultation with stakeholders. For example, in the NYISO public policy planning process, there is a 60-day period in which interested parties or stakeholders can submit transmission needs for which solutions should be solicited.[77] Each submission will also propose a criteria to evaluate transmission solutions to meet that need. Once the NYPSC approves a need, the NYISO will decide upon any additional criteria and type of analysis to be used in its evaluation of transmission solutions based on the transmission need proposal.

Consideration should be given to the degree of flexibility and variability in the evaluation criteria to manage the impact on certainty for bidders making proposals. Any risk of uncertainty caused by changes in the evaluation criteria can be mitigated through publishing and circulating the specification of changes to criteria well in advance of solicitation.

Some late models of competition also use flexible evaluation criteria, as opposed to prescribing fixed and consistent criteria. For example, to determine selection criteria that will apply to each relevant transmission solution subject to competitive solicitation, the CAISO may consider:[78]

- the nature, scope, and urgency of the need for the transmission solution;
- expected severity of siting or permitting challenges;
- the size of the transmission solution, potential financial risk associated with the transmission solution, expected capital cost magnitude, cost overrun likelihood and the ability of the project sponsor to contain costs;
- the degree of permitting, rights-of-way, construction, operation, and maintenance difficulty;
- risks associated with the construction, operation, and maintenance of the transmission solution;
- technical and engineering design difficulty or whether specific expertise in design or construction is required;
- specific facility technologies or materials associated with the transmission solution.

4.2.2.2 Fixed criteria

For other models, particularly late competition models, consistent and relatively fixed criteria are applied at the evaluation stage. As mentioned in section 4.2.1 above, the evaluation criteria applied for the UK offshore scheme is highly standardised. Another example is the evaluation process used by

[77] New York Independent System Operator, Manual 36: Public Policy Transmission Planning Process Manual (June 2020), p 11.

[78] California Independent System Operator, 2018–2019 Transmission Planning Process: Phase 3 – Competitive Solicitation (April 2019), p 14.

the MISO, which scores proposals according to four evaluation criteria: cost and design, project implementation, operation & maintenance, and planning participation, subject to a fixed weighting. These is some degree of flexibility however, since the weighting applied to each evaluation criteria differs according to the type of project (for e.g., transmission line, substation or combination project). An example evaluation scorecard (for transmission line facilities) is outlined in **Figure 9** below.

Figure 9: Example evaluation scorecard for a MISO transmission line project

	Tariff Criteria		Tariff subcriteria	Categorization	Score
Evaluation Principles Applied (Certainty, Risk Mitigation, Cost, & Specificity)	Cost & Design	30%	Estimated Project Cost and Rigor	('Best', 'Better', 'Good', 'Acceptable', or 'Unacceptable')	0-30 pts.
			Estimated ATRR and Rigor		
			Facility Design and Rigor		
	Project Implementation	35%	Project Implementation Schedule	('Best', 'Better', 'Good', 'Acceptable', or 'Unacceptable')	0-35 pts.
			Project Management		
			Route and Site Evaluation		
			Right-of-Way and Land Acquisition		
			Engineering and Surveying		
			Material Procurement		
			Regulatory Permitting		
			Construction		
			Commissioning		
			Previous Experiences		
			Capital Resources and Financing Plan		
	O & M	30%	Local Balancing Authority	('Best', 'Better', 'Good', 'Acceptable', or 'Unacceptable')	0-30 pts.
			Real-Time Operations Mointoring and Control		
			Switching		
			Preventative/Predictive Maintenance		
			Spare Parts, Structures, & Equipment		
			Forced Outage Response		
			Emergency Repair & Testing		
			Major Facility Replacement Capabilities		
Planning Participation		5%	Transmission Solution Idea Submittal Form	Yes or No	0 or 5 pts.
				Total Score:	0-100 pts.

Source: Selection Report: Duff-Coleman EHV 345 kV Competitive Transmission Project (MISO, 2016)

4.2.2.3 Risk management in evaluation

In most jurisdictions, the management of cost escalation and project delay risk are embedded into the evaluation stage. Procuring parties commonly expect bidders to propose cost containment provisions, for example, which is discussed further in section 4.3.2.

For example, PJM considers the risks of cost escalation, delay and project development (such as siting and permitting) during the evaluation stage. PJM evaluates whether proposed containment provisions will provide risk mitigation benefits. Proposals with risk-mitigating cost containment provisions may be given preference in the selection process. In some cases, terms of a cost containment proposal (related to construction cost caps, project total return on equity and/or capital structure) can be binding.[79]

The CAISO considers financial and other risks in the qualification stage of the tender process, assessing whether the project sponsor has demonstrated that: [80]

[79] PJM Interconnection, PJM Manual 14F: Competitive Planning Process (April 2022), s 8.1.1.

[80] California Independent System Operator, Business Practice Manual for Transmission Planning Process (Version 21) (June 2020), s 5.3.3.2.

- it has the necessary resources and skills to deliver the project;
- it can assume liability for major losses resulting from failure of any part of the facilities associated with the transmission solution;
- it can meet its proposed schedule for delivery of the project.

4.3 Contractual and regulatory terms applied to the winning bidder

4.3.1. Cost recovery

Cost recovery relates to how the 'prudent and efficient' projects costs are determined and passed through to customers, and how cost risk over the life of the project is managed. Even though contestability inherently provides a level of cost discipline, most regulators employ additional methods to assess costs. There are differences between the models regarding when allowed costs are finalised during the project development and construction phase.

4.3.1.1 Determining annual revenue

There are two overarching approaches to determining the successful bidder's annual revenue requirements. Annual revenue is either largely or entirely by the winning bid or are set by the regulator. Both bidder-set and regulator-set revenue can be subject to periodic regulatory review.

Set by the winning bidder

The successful bidder's revenue proposal will largely determine the revenue they will receive for delivering the project. This is the most common approach to revenue determination across surveyed jurisdictions, and is used in Brazil, Chile, UK, Canada, US and Victoria (Australia). In some circumstances the successful bidder can apply for the annual revenue requirement to be revised. However, in some jurisdictions bidders do not have *carte blanche* to propose an uncapped annual revenue. In Brazil, for example, the regulator sets a benchmark maximum annual revenue which functions as a price cap and bidders subsequently propose discounts. Although revenue is largely set by the tender process, the relevant regulator can review aspects of the price (e.g. cost of capital, adjustments for efficiency gains etc) during five-year price determinations.[81] This has led to an increased perception of regulatory risk, which, in addition to an insufficient WACC, environmental issues and delays and funding difficulty, contributed to a decline in successful tenders between 2005 and 2015. In the US, the successful bidder files the revenue requirement with the FERC, which can be adjusted annually for changes to, among other things, capital requirements, operating expenditure, or allowed rate of return ('cost-of-service pricing').[82] However, it is likely that system operators in the US would look favourably on bids with fixed-rate pricing, with the option to adjust revenue if needed via a cost-based rate filing with the FERC.

Set by regulator

Determining annual revenue through a regulator-set mechanism usually embeds a periodic regulatory review into the determination. This allows for flexibility to deal with changes in operating expenditure and cost of financing over time, however it could result in greater costs passed on to consumers. For the NSW REZ scheme, the AER determines capital costs that the network operator can recover, and network operators need to submit to the AER proposed revenue adjustments annually. Similarly, in

81 International Bank for Reconstruction and Development (The World Bank), Linking Up: Public-Private Partnerships in Power Transmission in Africa (2017), p 77.

82 P.L. Joskow, Competition for Electric Transmission Projects in the US: FERC Order 1000 (MIT Centre for Energy and Environmental Policy Research: 2019).

Argentina the relevant regulator, ENRE, approves the proposed annual revenue requirement proposed by the successful bidder.[83]

Determining annual revenue through a regulator-set mechanism usually embeds a periodic regulatory review into the determination. This allows for flexibility to deal with changes in operating expenditure and cost of financing over time, however it could result in greater costs passed on to consumers. For the NSW REZ scheme, the Australian Energy Regulator (**AER**) determines capital costs that the network operator can recover, and network operators need to submit to the AER proposed revenue adjustments annually.

4.3.1.2 Cost finalisation for pass through

For models where revenue is largely or entirely determined by the winning bid, it may be prudent for the regulator to at some point in the delivery of the transmission infrastructure reassess the costs that should be passed through to consumers. This additional assessment of costs for pass through to consumers has only been done by Ofgem for the UK offshore scheme. The trigger point for commencing this assessment is when 90–95% of the project costs have been incurred. At this point there is sufficient cost certainty for Ofgem to make a robust assessment of whether such costs are economic and efficient.[84]

4.3.2. Cost containment and adjustment mechanisms

A requirement that bids include cost containment proposals is one of the most important risk management mechanisms for contestable models. Non-incumbents may be less reluctant to offer cost containment measures, since unlike incumbents, they may not be able to rely on extensive experience and other advantages associated with being an incumbent (including experience delivering transmission infrastructure and having necessary easements).[85] These measures may be particularly important in models where there is scope for the regulator to adjust revenue requirements over time, for example, the FERC in the US. Accordingly, many of the US RTOs (PJM,[86] the MISO[87]) expect that bidders will propose cost containment measures. This could include capping costs resulting from a regulatory change in the scope of work, waiving or limiting the right to seek recovery of pre-commercial costs and waiving the right to seek recovery from abandoned plant.

For PJM's Artificial Island project, the successful bidder (LS Power) proposed a construction cost cap including costs associated with obtaining permits, acquiring land, and environmental assessments and mitigations.[88] Exclusions to the cost cap included costs associated with certain types of force majeure-type events: taxes, financing and any incremental costs to the project caused by PJM-directed changes to the project. In the UK onshore scheme that is currently being developed, bidders will be required to commit to margins and overheads on construction and operating costs in their final bids.[89] As shown in **Figure 10**, a range of cost caps were proposed by bidders for MISO's Hartburg-Sabine Junction 500kv project (with proposal 201 ultimately being successful, in part because it provided greater cost certainty than most other proposals by foregoing allowance for funds used during construction and construction work in progress, and limited O&M costs for the first 10 years).

83 Navigant, Competition in Electricity Transmission: An International Study on Customer Instruments and Lessons Learned (December 2015), p 44.
84 Ofgem, Offshore Transmission: Guidance for Cost Assessment (April 2019), p 9.
85 P.L. Joskow, Competition for Electric Transmission Projects in the US: FERC Order 1000 (MIT Centre for Energy and Environmental Policy Research: 2019).
86 PJM Interconnection, PJM Competitive Planning Process Manual 14F (2022), s 8.1.1.
87 Midcontinent Independent System Operator, Competitive Transmission Administration (n.d.), np.
88 PJM Interconnection, Board Letter to TEAC members (July 2014), pp 1-2.
89 Ofgem, Consultation on our views on Early Competition in onshore electricity transmission networks (August 2021), s. 6.5.

Figure 10: Cost caps offered by proposals for Hartburg-Sabine Junction 500kV

	PROPOSAL NUMBER											
OFFERED COST CAPS / CONTAINMENT	201	202	203	204	205	206	207	208	209	210	211	212
Implementation Cost – nominal ($M)	114.8	127.5	152.3 [1]	127.9	135.0 [2]	119.7	118.8	132.9		122.8	✓ [3]	117.1
Forego AFUDC	✓			✓		✓		✓				
Forego CWIP	✓	✓	✓	✓	✓	✓		✓		✓		✓
PUCT Route Change		✓			✓ [4]				✓			✓
ROE and Incentives (%)	9.8 [5]	9.8 [5]	9.8 [5] [6]	9.8 [5]	10.7 [5]	9.8 [5]	9.75	9.8 [5]		9.8 [5]	10	10.35 [7]
Capital Structure (Equity %)	45	45	45 [8]	45	60	45	52.5	45		45	55	40 [7]
Operations and Maintenance	10 yr.			10 yr.	5 yr.	10 yr.		10 yr.		5 yr.	40 yr.	
ATRR	10 yr.			10 yr.		10 yr.		10 yr.	40 yr.			

[1] Also capped the AFUDC rate
[2] Cap increases subject to commodity inflation
[3] Only a portion of construction costs are capped
[4] Project cost cap includes additional 1.5 miles and caps the per mile cost of additional miles
[5] Schedule guarantee
[6] Reliability guarantee
[7] 10 year ROE and capital structure cap
[8] Cap on cost of debt through 2025

***AFUDC** – Allowance for Funds Used During Construction*

***CWIP** – Construction Work in Progress*

***PUCT** – Public Utility Commission of Texas*

***ROE** – Return on Equity*

***ATRR** – Annual Transmission Revenue Requirement*

Source: Selection Report: Hartburg-Sabine Junction 500 kV Competitive Transmission Project (MISO, 2018)

For models where revenue is largely fixed by the winning bid, a limited number of adjustment mechanisms is important to ensure that bidders do not take on risks that are beyond their control which could deter tender participation. Adjustment mechanisms are particularly important for early models, where the tender is run before preliminary works are undertaken by the successful bidder (which can lead to significant changes in the costs needed to deliver the project). These changes could flow from conditions placed on the successful bidder as part of planning consent being granted, or due to site surveys resulting in adjustments to a route corridor. For the UK early onshore model, Ofgem is considering implementing a 'Preliminary Works Cost Assessment' (**PPWCA**) process which would allow the successful bidder's revenue proposal to be adjusted following the preliminary works phase.[90] An overall cap (likely set at a proportion of overall revenue proposed by the bidder) would be set to limit the cumulative cost change resulting from adjusted costs that are allowed. A similar mechanism is used by AESO, where for the only transmission project competitively solicited (Fort McMurray West 500kV transmission line), the revenue was adjusted after routing was finalised (including routing length and tower types).[91]

As referred to above, in the US, successful bidders can apply to the FERC to adjust their revenue requirements via the cost-of-service approval process. Similarly for the ERCOT, which is not governed by the FERC but the Public Utility Commission of Texas, a successful bidder in the Competitive Renewable Energy Zone scheme could seek approval for any increases in costs since the time of the original budget estimate through the PUCT transmission cost-of-service approval process.

4.3.3. Other risk management measures

In addition to cost containment measures, other risk management measures are used by procuring parties to mitigate the risk of default by the selected provider, and the risk of delays/cost overruns.

4.3.3.1 Availability incentives

In the context of transmission infrastructure, 'availability' refers to ensuring the transmission solution is available to the network in line with agreed levels. Availability incentives are common across the contestable models. For example, OFTOs are incentivised to make the asset available through

[90] Ofgem, Consultation on our views on Early Competition in onshore electricity transmission networks (August 2021).
[91] J. Carr, Innovations in Private Sector Financing for Electricity Transmission (IVEY Energy Centre, November 2015).

adjustments to the fixed payment for unavailability.[92] Although revenue is fixed for OFTOs, the OFTO license framework incorporates mechanisms that allow for future adjustments of revenue for certain exceptional events (Income Adjusting Event (**IAE**)). Availability incentives, combined with deliverability thresholds required to be met by developers, have proven to be very successful for the UK offshore regime. Since 2014, average availability for OFTO assets has been 99.19% demonstrating that, overall, OFTOs are well managed and there are few incidents or prolongation of incidents that have occurred that are within their reasonable control. [93]

A similar mechanism exists in Brazil, in the form of a performance bond, where 10% of the estimated cost of a contestable project is repaid in instalments to the successful bidder subject to meeting set milestones and timelines.[94]

4.3.3.2 Reserve bidder and last resort mechanisms

An important risk management mechanism used across many contestable models is having some form of last resort mechanism. This is to ensure that the transmission project can still be delivered if for some reason the successful bidder cannot successfully do so.

In the US, RTOs (including ISO-NE[95] and NYISO[96]) require incumbents to be the 'reserve bidder' i.e. ensure that the project is delivered in the event that the successful bidder is unable to deliver the project on a timely basis. Ofgem uses a similar mechanism for the UK offshore scheme, whereby they appoint a 'reserve bidder' to replace the 'preferred bidder' in the event that the preferred bidder does not progress the transaction expeditiously. In a consultation paper, Ofgem received feedback that use of having a reserve bidder 'prepared and ready to step in' provides 'helpful pressure' on the preferred bidder to progress the transaction to ensure that timelines would be met.[97]

Ofgem also has an 'OFTO of last resort' mechanism in the event that the appointed transmission owner is not performing and once all other mechanisms for ensuring ongoing transmission have been exhausted.[98] Any electricity transmission licensee is eligible to be appointed an OFTO of last resort, and Ofgem can direct a transmission licensee to be an OFTO of last resort for a term of up to five years. Ofgem seeks to retain a competitive process to the OFTO of last resort process to ensure value to consumers, however this may depend on the availability of suitable OFTOs to invite proposals from. A key variable determining the structure and duration of the last resort process is whether the triggering event occurs before or after construction is complete and assets are operational. Under the OFTO build tender exercise where the OFTO would be licensed prior to construction, the OFTO of last resort would be required to complete construction of new or part-built assets. In contrast where transmission assets are already in operation, the process would reflect an acquisition by the OFTO of last resort.

4.3.3.3 Penalties

Penalties are also commonly imposed for missing key project milestones and metrics. For example, AESO imposes penalties for missed reliability metrics.[99] Further, the UK National Grid ESO is proposing to impose late delivery penalties for its early competition model.[100]

92 National Grid ESO, Early Competition Plan: Onshore Electricity Transmission (April 2021), p 29.
93 Ofgem, OFTO Regime Tender Process Decision Document (2021), p 19.
94 International Bank for Reconstruction and Development (The World Bank), Linking Up: Public-Private Partnerships in Power Transmission in Africa (2017).
95 Navigant, Competition in Electricity Transmission: An International Study on Customer Instruments and Lessons Learned (December 2015), p 24.
96 Navigant, Competition in Electricity Transmission: An International Study on Customer Instruments and Lessons Learned (December 2015), p 17.
97 Ofgem, Decision on developments to the tender process within the current OFTO Transmission Owner (OFTO) regime (April 2021), p 24.
98 Ofgem, Guidance on the Offshore Transmission Owner (OFTO) of Last Resort Mechanism (February 2014), p 6.
99 J. Carr, Innovations in Private Sector Financing for Electricity Transmission (IVEY Energy Centre, November 2015).
100 National Grid ESO, Early Competition Plan: Onshore Electricity Transmission (April 2021), p 50.

4.3.3.4 Monitoring and oversight

A degree of monitoring and oversight may be important where the successful bidder can apply to the regulator for costs to be adjusted, as is the case in the US. For example, the PUCT (relevant regulator in ERCOT) imposed reporting requirements on successful bidders in the CREZ scheme.

In that case, project oversight involved delegating authority to an executive director to select, engage and oversee persons with responsibility for oversight of the planning, financing, and construction of all CREZ facilities to ensure timely completion.[101] It was considered reasonable that the relevant transmission operators pay for project oversight and could recover the amount paid within project costs. In addition, new entrants were required to submit plans for operation, maintenance, and ongoing control of assigned CREZ facilities, as required by the Executive Director or project oversight monitor.

The reporting requirements set by the PUCT required that:

- within six months of the PUCT granting the relevant licence (certificate of convenience and necessity, Certificate of Convenience and Necessity (**CNN**)) to allow a CREZ transmission facility to recover its costs, the TO must file cost estimates and schedules based on the latest available information, including right of way and land acquisition, engineering and design, procurement of materials and equipment, and construction of facilities, as well as information regarding the transmission operator's financing methods, costs, and schedules;
- at any time, the TO must report within ten working days of becoming aware of any change in circumstance that will affect the TSP's ability to complete a project, or that would change any of the most current cost estimates provided to the PUCT by more than 15%;
- one year after CCN approval (and updated yearly until service begins), each designated TO must file an updated total cost for each of its transmission facilities.

Another interesting example of monitoring and oversight is the 'Variance Analysis' process developed by the MISO, which aims to ensure the timely delivery of transmission projects.[102] This process is triggered after projects are assigned to developers or TOs, if there are any schedule delays, cost overruns, or an inability to complete. Further analysis will be done by MISO to determine whether the project should be reassigned or cancelled or if a mitigation plan has to be implemented. If the project needs to reassigned, the MISO's policy is to assign it to the incumbent TO.

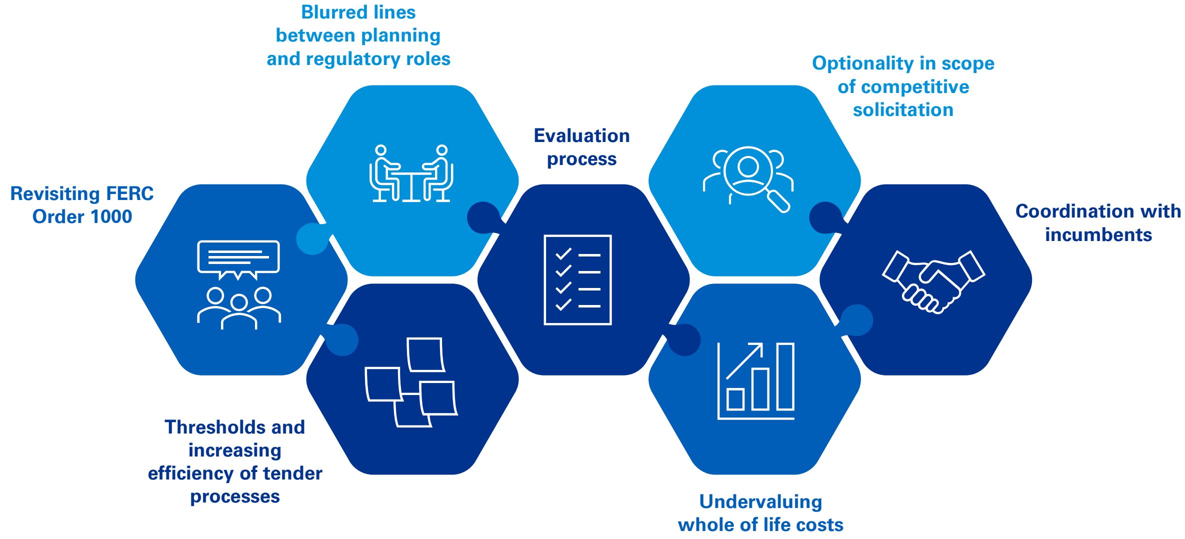
[101] HoustonKemp Economists, Regulatory Treatment of Large, Discrete Electricity Transmission Investment (August 2020), p 120.
[102] Navigant, Competition in Electricity Transmission: An International Study on Customer Instruments and Lessons Learned (December 2015), p 18.

5. Model evolution and current issues

This section provides an overview of how contestability frameworks have evolved over time.

The competitive models examined have evolved considerably since their commencement, particularly those older schemes that have been able to leverage learnings from their real-world experiences of running their tender processes. This section provides an overview of the different areas in relation to which these competitive models have evolved and issues that are currently being grappled with (see **Figure 11** below).

Figure 11: Overview of model aspects that have changed over time and current issues



5.1 Revisiting FERC Order No. 1000

The FERC issued an Advance Notice of Proposed Rulemaking (**ANOPR**) in July 2021 seeking feedback on a set of proposed reforms including reinstating the federal ROFR. [103] Only several parties, including the Electricity Transmission Competition Coalition and the California Public Utilities Commission argued against reinstating the ROFR, stating that competitive processes drive cost savings and should be expanded by removing voltage thresholds. Most submissions to the ANOPR that mentioned the ROFR supported its reinstatement.

Parties supportive of the reinstatement of the ROFR were predominantly RTOs, transmission owners and organisations supporting the development of renewables. Reasons for reinstating the ROFR included:

1. the need to restore cooperation and collaboration that has historically existed between transmission owners;
2. resources, costs and delays associated with competitive processes;
3. undue focus on pursuing local baseline reliability and other transmission projects that are subject to ROFR;
4. ISOs overstepping their planning role and assuming a regulatory role in assessing complex proposals with a significant regulatory component;
5. the need to expedite transmission delivery to achieve renewable energy goals.

The first argument for reinstating ROFR was an issue that was raised when Order No. 1000 was being consulted on.[104] In its submission, the MISO stated that placing regional planners in a role of deciding who should build introduces a level of financial competition to the planning process that is fundamentally at odds with the 'high level of openness and collaboration under the current approach'.

These arguments seem to have persuaded the FERC, since in April 2022 it made a Notice of Proposed Rulemaking outlining its proposal to permit the exercise of federal ROFR for transmission facilities selected in a regional transmission plan, conditioned on the incumbent with the ROFR for such regional transmission facilities establishing joint ownership of the facilities with non-incumbents.[105]

Non-incumbents could include public power agencies, independent power producers, states, and other entities not affiliated with the incumbent. According to the FERC, this could address the potentially misaligned incentives for regional transmission facility development faced by incumbents while still largely ensuring at least some of the potential cost-related benefits of competitive transmission development processes. Joint transmission ownership arrangements can improve coordination by leveraging relationships and knowledge among the joint-owning parties for transmission siting, obtaining approval from state-level retail regulators, easing cost allocation issues by spreading costs among the joint-owning parties, spreading risk more evenly, and likely lessening disputes related to transmission planning and cost allocation that the FERC may otherwise have to adjudicate. The entities might bring different strengths to the process of developing a regional transmission facility, potentially reducing the costs for development or leveraging their expertise to design a more efficient or cost-effective transmission facility than the partners would have designed separately, thus benefiting customers.

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[103] Federal Energy Regulatory Commission, Building for the Future Through Electric Regional Transmission Planning and Cost Allocation and Generator Interconnection RM21-17-00 (July 2021).
[104] Federal Energy Regulatory Commission, Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities (Order no. 1000) (July 2011).
[105] Federal Energy Regulatory Commission, Building for the Future Through Electric Regional Transmission Planning and Cost Allocation and Generator Interconnection RM21-17-00 (July 2021).

5.2 Blurred lines between planning and regulatory roles in the US

As mentioned above in section 5.1, in the US, stakeholders are concerned that system operators are undertaking a regulatory role in reviewing cost recovery formulas and cost containment measures. System operators have had to grapple with regulatory-type issues such as: [106]

- Should cost estimates be accepted on face value?
- Should developer cost estimates be set aside and instead have the RTO conduct its own cost estimate?
- When a cost cap is proposed by some developers and not others, should the cost cap be given a special weight?

In response to this, it was recommended that the FERC provide guidance on consideration of cost commitments in the context of Order 1000 processes. This would involve clarifying the relationship of a cost cap with the ratemaking (revenue) process, and what type of costs could be considered in a cost cap.

Although the FERC did not make any such guidance, system operators have developed their own guidance to streamline the evaluation of proposals that require interpreting cost containment options and cost recovery formulas for determining annual revenue requirements. For example, PJM developed the 'Comparative Cost Framework', which provides guidance on how to assess proposals with and without cost commitment provisions.[107]

5.3 Coordination with incumbents

It is important that there is a coordination framework with the incumbent to ensure alignment between the incumbent and successful bidder across all phases of the project, including connection to the incumbent's assets plus commissioning of the new transmission asset and ongoing operation. The MISO, for example, requires that this coordination is defined in a 'Transmission-Transmission Interconnection Agreement', which is executed between the successful bidder, the incumbent and the MISO.[108]

For late models, incumbents may be involved in completing preliminary works, undertaking tender support activities, and may also decide to bid.[109] In addition to the latter two roles, for early models, incumbents may have a role in assessing the impact of proposed solutions on their network.[110] In Victoria, for example, the incumbent is partly responsible alongside AEMO for specifying output in design, and any risk of inadequacies in output specification by the incumbent that may cause design inadequacies are assumed by the incumbent.[111] Similarly, the NYISO requires the incumbent TO to provide all necessary information to any party wishing to develop a solution.[112]

Some commentators on the proposed Order No. 1000 in the US stated that any lower costs that result from competition to own and construct transmission projects is likely to be more than offset by inefficiencies created in the transmission planning process and a loss of economies of scale and scope. Pacific Gas & Electric stated that competition may have cost impacts to incumbent

106 PJM Interconnection, Competitive Transmission Development Technical Conference (June 2016), p 4.
107 PJM Interconnection, Manual 14F: Competitive Planning Process (Version 9) (April 2022), p 43.
108 Midcontinent Independent System Operator, Business Process Manual: Competitive Transmission Process (June 2021), np.
109 Ofgem, Extending Competition in Electricity Transmission: Decision on Criteria, Pre-tender and Conflict Mitigation Arrangements (November 2016), p 7.
110 Ofgem, Consultation on our views on Early Competition in onshore electricity transmission networks (August 2021), p 51.
111 National Electricity Rules (Version 132), ch 8.
112 FTI Consulting, Case Studies of Early Competition (November 2015), p 15; New York Independent System Operator, Open Access Transmission Tariff (OATT) (as amended, 2022), att. Y.

transmission owners relating to their obligation to maintain or improve reliability and security of the existing transmission system to comply with current and future reliability standards.[113] However, as outlined above in section 3.3 above, there does not appear to be any evidence to date of such concerns materialising in practice.

It is crucial that incumbents are involved in the design and construction of projects that are procured contestably to ensure the security and reliability of the shared network. Engagement with the incumbent is particularly important when undergoing preliminary works (i.e. early competition). For example, in the National Grid ESO's Early Competition Plan, it notes that if the solution requires connecting to, or relying on the transmission system, the successful bidder will need to engage the incumbent TOs (as well as the ESO) in relation to any expected future interfaces.[114] This can include any co-ordinated stakeholder engagement related activities and/or any future system site or system interfaces. The successful bidder will also need to engage with any other relevant parties, such as the relevant distributor (if applicable).

Victoria is a good example of a contestable model that clearly outlines the incumbent's role in the tender process. The tender specification that the Australian Energy Market Operator (**AEMO**) develops must be developed in consultation with the incumbent.[115] The incumbent must:

- provide information and assistance reasonably required by AEMO for the preparation of tender documents, including information about the technical interface; and
- negotiate in good faith with a potential contestable provider about changes to the proposed augmentation connection agreement that are sought or suggested by that potential contestable provider.

Coordinating incumbents seems to be a live issue, given that NYISO has received stakeholder feedback on its contestable process, stating that there is a need to more clearly delineate the responsibilities of the incumbents and bidders, including the treatment of new transmission facilities and upgrades of existing transmission facilities.[116] Further, processes should be implemented to ensure collaboration with the incumbents to disclose the system constraints identified in the baseline assessment before soliciting proposals.

It is also important to have a framework to manage incumbent participation in the tender process (if this is permitted). In developing the UK early onshore model, Ofgem acknowledged that the incumbent will have a role in assessing the impact of the shortlisted technical solutions at invitation to tender (**ITT**) stage 1 and a role in testing the impact of those solutions on their network.[117] However, if incumbent TOs are permitted to participate as bidders, conflict mitigation measures will be required (including ringfencing of TO bidding teams), or possibly connection feasibility assessments may even need to be conducted by another party for e.g. the ESO.

5.4 Optionality in scope of competitive solicitation

There may be a need to introduce a greater level of optionality in relation to the scope of competitive solicitations (i.e. the point in the transmission infrastructure lifecycle the tender point is introduced) to promote risk sharing and ultimately reduce costs for consumers. Ofgem has sought to do this for its offshore scheme, where the first significant change it made was the introduction of the OFTO build

[113] Federal Energy Regulatory Commission, Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities (Order no. 1000) (July 2011), p 190.
[114] National Grid ESO, Early Competition Plan: Onshore Electricity Transmission (April 2021).
[115] AEMC, National Electricity Rules (Version 132), s. 8.11.7.
[116] New York Independent System Operator, Lessons Learned Kick-off: AC Transmission Public Policy Transmission Planning Process (April 2019), p 8.
[117] Ofgem, Consultation on our views on Early Competition in onshore electricity transmission networks (August 2021).

option under the enduring regime. According to Ofgem, this change would deliver the following benefits:[118]

- reduced capital expenditure required from generators for delivering projects
- ensuring time-critical pre-construction works are not delayed
- reduced transmission construction risk for generators, allowing them to focus on the generation aspects of their projects
- a streamlined tender approach to allow timely OFTO appointment by overlapping the consenting, procurement and tendering processes
- significant scope for innovation, including in asset design, procurement, construction, financing of projects and risk management
- enhanced scope to attract new sources of capital
- enhanced scope for new market entrants (for example, amongst bidders and the supply chain).

The first tender under the enduring regime was in 2014 (TR3), however to date, the OFTO build option has yet to be used. Ofgem has identified the following barriers to developers choosing the OFTO build option:[119]

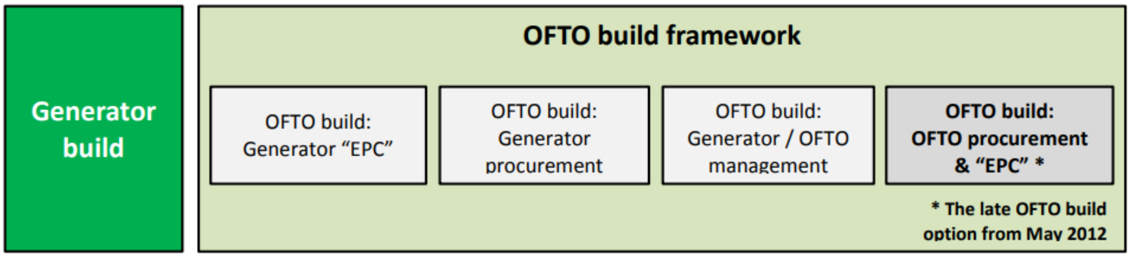
- Delivery risk: in particular, offshore generators' perceived risks of transmission asset delay, construction interface management, supply chain roles and procurement process and transmission asset quality that could impact on their generation revenues.
- Cost: uncertainty around likely Transmission Network Use of Service (**TNUoS**) charges as compared to generator build
- Capability: perceived risk around OFTO capability, particularly in managing interfaces with generation construction and commissioning, and delivering transmission assets on time and to sufficient quality.

Ofgem has sought to mitigate these barriers by introducing additional flexibility of roles and responsibilities for generators and OFTOs under an extended OFTO build framework (in relation to the late OFTO build option).[120] Under the updated framework, generators can work with Ofgem to develop a tender option, which could include:

- OFTO build: Generator 'EPC' - The generator (or affiliated Special Purpose Vehicles (**SPV**)) carries out all supply chain procurement and manages the construction of the transmission assets by entering into an EPC contract with the OFTO as asset owner. The generator (as EPC contractor to the OFTO) receives milestone payments from the OFTO to fund construction. The generator manages construction of the asset under the terms of the EPC contract, providing the OFTO with protection against construction risk.
- OFTO build: Generator procurement – The generator carries out transmission asset supply chain procurement but the OFTO manages construction. The OFTO procures a third party (i.e. not the generator) EPC contractor (or contractors) to manage the sub-contractors procured by the generator and to protect the OFTO against construction risk. The OFTO procures the EPC contractor's services during the OFTO build tender process, signing the EPC contract at Licence Grant.
- OFTO build: Generator/OFTO management - Under this option the generator would split responsibility for the transmission assets into package(s) of assets it prefers more control over during construction; and other package(s) of assets the OFTO manages during construction.

[118] Ofgem, Consultation on Tender Exercises Under the Enduring Regime (December 2011), p vii.
[119] Ofgem, OFTO Build: Providing Additional Flexibility Through an Extended Framework (December 2014), pp 9-10.
[120] Ofgem, OFTO Build: Providing Additional Flexibility Through an Extended Framework (December 2014), pp 9-10.

Figure 12: OFTO Build Framework



Source: Ofgem, OFTO Build: Providing Additional Flexibility Through an Extended Framework (December 2014).

5.5 Increasing efficiency of tender processes

A consistent theme across the jurisdictions considered is the implementation of practical measures to increase the efficiency of tender processes and save on time and costs. This has involved introducing flexibility into various aspects of the tender process to ensure that the length and rigor of processes is proportionate in light of the particular circumstances.

The MISO, for example, determine the length of the proposal window to apply to a particular solicitation according to the characteristics of the project and in general, the proposal window will reflect the complexity of the project and evaluation. As outlined in

Figure 13 below, the MISO will consider characteristics such as the complexity of routing, the number of facilities, project value, etc.

Figure 13: MISO's framework on determining proposal window length

	INDICATIVE PROPOSAL WINDOW		
PROJECT CHARACTERISTICS	90 Calendar Days	120 Calendar Days	165 Calendar Days
Complex Routing/Siting (e.g., river crossings, wetlands, urban areas, etc.).	Low	Moderate	High
States/RTOs Impacted (Quantity)	1	2	2+
In-Service Date (years from MTEP)	3 - 4 years	4 - 5 years	5 years +
Facilities (Quantity)	1 Facility	1 - 2 Facilities	2+ Facilities (Lines and Substations)
Project Value (USD)	\$5M - \$40M	\$40M - \$80M	Over \$80M

Source: Business Practices Manual – Competitive Transmission Process (MISO, 2021)

Another example is the contestable process for procuring REZ network infrastructure in NSW by an entity known as the Infrastructure Planner.[121] Under this scheme, the Infrastructure Planner may, during the process, develop a shortlist of providers to encourage the shortlisted providers to develop more competitive proposals, as well as to reduce administrative costs of running the tender by reducing the need to assess uncompetitive tender proposals.

Other more simple, practical measures that the MISO has implemented include revising its RFP template to reduce time and costs associated with bidders preparing their bids and the MISO

[121] AER, Revenue determination guideline for NSW contestable network projects – Draft (May 2022), p 1.

evaluating proposals.[122] The MISO has also introduced page limits for proposals according to the size of the project.

Following its first ever competitive process, the ISO-NE gathered feedback from those who participated in the process.[123] This resulted in several changes including allowing developers to propose solutions for some or all of the needs identified in an RFP. Individual proposals could then be combined to create a comprehensive solution. The ISO-NE also decided to allow for joint proposals.

In relation to joint proposals, the CAISO decided to require all collaboration to be done prior to submitting a proposal at the close of the bid window.[124] Previously, the CAISO allowed a collaboration period after bids were submitted, however stakeholders raised concerns that this collaboration period extended the solicitation review period and added unnecessary delays to project sponsor selection. In addition, the CAISO now offers an accelerated solicitation process for small facilities.

5.6 Evaluation of process

A clear example of where the evaluation criteria used for a competitive solicitation has evolved is Ofgem's offshore late competition scheme.

In 2018, Ofgem made a change to evaluating ITT submissions from scored robustness to threshold robustness.[125] Previously, bids at the ITT stage were evaluated on, firstly, passing five deliverability thresholds and then bids were scored on price (with a 60% weighting of the overall score) and price deliverability robustness (with a 40% weighting of the overall score). After this change, bid evaluation involves giving the price (TRS) 100% weighting, and incorporating the price deliverability robustness requirements that were previously scored into existing thresholds. This means that the bidder that meets these thresholds and submits the lowest TRS becomes the preferred bidder. This change was implemented with the expectation of the following benefits being delivered:

- Increase the competitiveness of bids – the 100% weighting on price is intended to encourage qualifying bidders to seek the best value pricing solutions that result in a lower TRS, whilst also continuing to meet deliverability robustness thresholds.
- Make evaluating bids more efficient – this change removes the need to score deliverability robustness beyond meeting the threshold (i.e. bids do not need to be scored if they meet the relevant thresholds).
- Maintain robustness and offset the risk of a preferred bidder being appointed without the required skills and capability to be an OFTO – the introduction and raising of the required robustness threshold signals to all bidders that robustness is a pivotal component of each bid. It also addresses developers' wishes of a higher level of importance being placed on the OFTO's ability to operate the asset to a high standard.

While this development to evaluation and the weighting 100% on cost may be effective and feasible for the very-late OFTO regime (where there is significantly less diversity in proposals as bidders only bid for the ownership, operation, and maintenance of assets), this would not be equally applicable to early models. This is because early solutions can be differentiated from each other on components outside of cost, and thus a scoring system across different aspects of design, deliverability etc. is more appropriate.

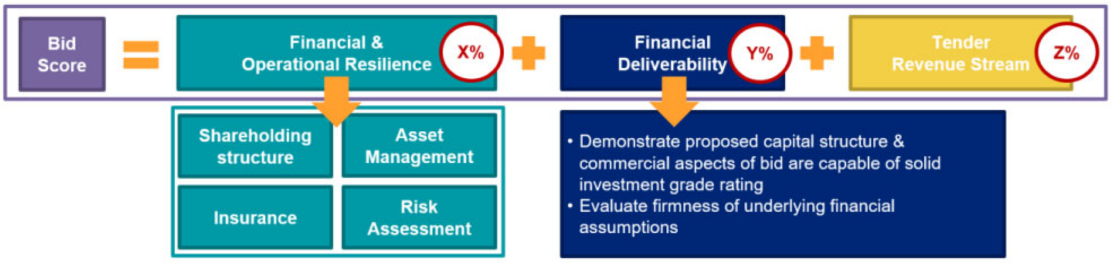
[122] Midcontinent Independent System Operator, Competitive Transmission Process Continuous Improvement (July 2019), Workshop II.
[123] ISO Newswire, Competitive transmission solicitation improvements accepted by FERC (March 2022), np.
[124] California Independent System Operator, Competitive Solicitation Process Enhancements: Draft Final Proposal (October 2015), s 3.
[125] Ofgem, Decision: OFTO Tender Process Changes for Future Tender Rounds Implemented for Tender Round 6 Onwards (November 2018), p 8.

5.7 Undervaluing whole of life costs

Tendering may be biased to an evaluation of upfront construction costs without proper consideration of whole of life costs of the assets and operational reliability.[126] International experience points to the importance of considering whole of life and net present cost elements to provide best protection for customers and long-term system integrity. As acknowledged in a Farrierswier report for Energy Networks Australia (**ENA**), contestability may result in poorer outcomes for customers if contestable providers focus on reducing short term costs rather than longer term asset performance and resilience.[127]

This issue has been raised in the context of the UK offshore scheme, where some stakeholders have suggested that the current approach may be undervaluing certain elements of long-term asset management strategies and that there could potentially be more done to drive the right behaviours to ensure long-term asset health to the end of the regulated revenue term and beyond.[128] In consultation, Ofgem asked stakeholders about the value of a qualitative assessment where each aspect of a bid is individually scored and combined to create an overall score which would determine the Preferred Bidder (in contrast to the current evaluation approach involving threshold robustness – see section 5.6), and whether this would address concerns about the primacy of a low Tender Revenue Stream at the expense of long-term robustness.

Figure 14: Potential evaluation approach



Source: Decision on developments to the tender process within the current OFTO Transmission Owner (OFTO) regime (Ofgem, 2021)

Most stakeholders felt that a qualitative assessment of all aspects of a bid could lead to better outcomes for consumers. Feedback from respondents suggests that there may be environmental and consumer benefits to be achieved by applying scoring each section of a bid. Ofgem will explore this further with stakeholders.

[126] Navigant, Competition in Electricity Transmission: An International Study on Customer Instruments and Lessons Learned (December 2015).
[127] Farrierswier, Transmission Contestability Principles (August 2021), p 11.
[128] Ofgem, Decision on developments to the tender process within the current OFTO Transmission Owner (OFTO) regime (April 2021), p 18.

6. Summary of observations

This section provides an overview of key observations distilled from the above international and domestic jurisdictions, which could be taken into account in considering the potential for expanding contestability for transmission infrastructure across the NEM.

6.1 Introducing competition and designing the tender process

6.1.1. Introducing competition

6.1.1.1 The need for competitive tension

From the range of jurisdictions examined, it is clear that competitive tension amongst bidders (driven by a considerable number of bidders) is key to the success of any competitive process for the delivery of transmission infrastructure.

In addition to the examples discussed in section 3, the Public Contest competitive process in Argentina has been considered a success due to considerable bidder participation (median of 3 bidders).[129] As of 2008, in over two thirds of the cases the winning bid was below the specified maximum, the incumbent won less than one fifth of the tenders, and at least nine independent competitors emerged and won tenders. Further, for relevant projects in NSW (Australia), the AER is responsible for reviewing the procurement strategy for required REZ network infrastructure proposed by the Infrastructure Planner (the relevant procuring party) under the *Electricity Infrastructure Investment Act 2020*.[130] In doing so, the AER will assess whether a sufficient level of competitive tension exists, such that a competitive outcome will likely be achieved.

It is therefore important to investigate and ensure there is sufficient market interest and diversity in transmission developers to warrant running a tender.

6.1.1.2 Early vs late

The choice of the timing of the 'tender point' depends on what goals the mechanism primarily aims to achieve, in addition to the complexity of the project and level of reliance which can be placed on the SO / procuring party development works.

Both early and late models have benefits and disadvantages, and neither model is clearly superior. An early form of competition can promote innovation in solutions, and accordingly there is a

129 Navigant, Competition in Electricity Transmission: An International Study on Customer Instruments and Lessons Learned (December 2015).
130 AER, Revenue determination guideline for NSW contestable network projects – Draft (May 2022).

greater potential for cost savings relative to late models. On the other hand, the tender process can be longer and more expensive. A late model may be preferable given that the assessment of bids is likely to be less complex, potentially attracting a greater number of bidders since it carries less risk for bidders who can access lower-cost financing.

6.1.1.3 Balanced thresholds for and exclusions to contestability

When designing a contestable framework, it is important to strike an appropriate balance between ensuring that a sufficient range of projects are subject to contestability (to ensure that cost savings are maximised), while including exemptions for upgrades and immediate need projects to facilitate the timely and efficient development of these projects. This may also promote competitive participation as potential bidders would have more opportunities to diversify their bidding risk and operating costs.

For late models, it may be prudent to consider imposing a value threshold for contestability, to ensure that the benefits of subjecting a project to contestability outweigh the costs and increased time associated with the tender process. In contrast, for early models, a value threshold may not be appropriate, since the winning solution may be considerably different from the indicative solution being considered, making it less clear why certain solutions should be automatically ruled out by a value threshold.

It is also clear from the jurisdictions examined that any thresholds or exclusions determined in the initial design of the competitive process can be changed over time to reflect learnings.

6.1.2. Tender process and evaluation design

6.1.2.1 Staged tender processes are typical

Although tender processes across the jurisdictions differ, particularly depending on whether an early or late model is used, it is clear that all follow a similar sequence. This involves some kind of qualification stage, RFP stage, and at least one assessment stage. The purpose of this staged design is to save on time and costs in evaluating bids, by limiting the number of bids that are subject to the more detailed evaluation stages.

Tender processes for early models are inherently more complex, requiring at least an additional stage to evaluate the extent to which the proposed solution meets the transmission need identified by the procuring party.

6.1.2.2 Importance of tailoring the process and allowing for flexibility

A consistent theme across the jurisdictions is the need to tailor the tender process according to scale of solutions / projects being procured, the competitive model, and the type of solution (in the case of early tendering). Adding flexibility into or 'right-sizing' the tender process can ensure that the length and rigor of the process is commensurate with the nature of the solution / project being competitively solicited.

The MISO, for example, applies different evaluation weightings depending on the type of project, and has flexible proposal window timelines according to project characteristics. Similarly, the CAISO offers an accelerated solicitation process for small facilities and determines evaluation criteria for each competitive solicitation. For early models (for e.g. those used by the NYSIO and the proposed UK onshore scheme), costs are typically assessed later in the process.

It is important to ensure that the tender process is as transparent as possible to promote investor certainty while retaining a degree of flexibility.

6.2 Cost recovery, risk management and coordinating key players

6.2.1. Cost recovery and risk management

6.2.1.1 Risk management is a key part of tender evaluation

The impact on consumers of a competitive process will depend on the design of the procurement model and the extent of any difference in the contractual terms compared to existing regulated arrangements. How risks are managed will be a key factor in determining consumer impact.

Accordingly, all procuring parties in the jurisdictions examined consider risk management measures as part of their tender evaluation processes. Critical among these are cost containment measures, and the evolution of some tender processes (particularly those in the US, including the PJM and NYISO) has been centred on facilitating cost containment measures in proposals.

Other risk management measures used by procuring parties to mitigate the risk of default by the selected provider and the risk of delays/cost overruns include availability incentives, reserve bidder mechanisms, penalties and monitoring and oversight.

6.2.1.2 No common approach to determining revenue allowance

Typically, annual revenue is set by the winning bid and is fixed. This provides regulatory certainty for bidders and also prevents cost overruns for customers. However, adjustment mechanisms are important particularly to account for cost changes or to account for performance following preliminary works.

In some jurisdictions, the successful bidder's revenue requirement is set by a regulator and/or subject to periodic regulatory review. This allows for flexibility to deal with changes in opex and cost of financing over time, however it could result in greater costs passed on to consumers.

It is clear that some level of regulatory oversight of the costs that can be recovered by the successful bidder is required to avoid both the successful bidder assuming too much risk and inefficient costs being passed onto consumers.

6.2.2. Involvement and collaboration between regulator and system operator

6.2.2.1 Roles and responsibilities of the system operator and regulator need to be clearly delineated

As evident from the jurisdictions examined, a regulator may be the procuring party (as is the case for the CREZ in Texas) or play an important role in overseeing tender management and key decisions (for example the role of the NYPSC in NYISO's public policy competitive solicitations), assessing/reviewing revenue requirements, addressing conflict of interest concerns, and providing regulatory guidance on how to interpret cost containment measures. The examples in the US in particular highlight the importance of ensuring that the roles and responsibilities of the system operator and the regulator are clearly delineated. In the US, stakeholders have expressed concern that the system operator in some instances has overstepped their planning role in dealing with regulatory components of bidder proposals.

6.2.2.2 Incumbent participation and coordination

The jurisdictions considered highlight the important role that incumbents have in competitive processes, and the need for clear frameworks to facilitate coordination between incumbents, the system operator and bidders. Increased interaction and reliance between separate entities on commissioning and operation of connected transmission assets may create new risks, but the jurisdictions demonstrate that these can be monitored and managed.

Global experience highlights the criticality of having a back-up plan and reserve bidders or providers of last resort should the chosen transmission provider fail to deliver. **Incumbent participation in the bidding process presents unique challenges and conflict of interest mitigation measures, among others, are generally required**. Risks of cross-subsidies within the incumbent regulation and contestable businesses may need to be monitored and assessed, however we note to date most tenders have been lost by the incumbent.

6.3 Complexity of running tenders

6.3.1. Running the tender process and evaluating proposals is costly

Special skills and resources are needed to prepare, issue, coordinate and evaluate proposals (particularly for early tender processes), which can add to costs of tender process. This has led to proposal fee requirements (commonly applied by the US RTOs), which have not deterred tender participation.

Bidders must also spend significant time and resources preparing their proposals. Some jurisdictions allow the successful bidder's costs to be recovered, yet most jurisdictions do not allow unsuccessful bidder costs to be recovered.

6.3.2. Tender processes can result in inefficiencies, which can be managed

Inefficiencies can arise in planning and delivery timeframes, coordination of multiple players, and the impact of less clarity of responsibility between SO and TO, including the potential impact on reliability. These inefficiencies are likely to be significant, but difficult to quantify.

Some jurisdictions have sought to maximise the efficiency of tender processes by implementing practical mechanisms to save on time and costs, including adjusting the length of particular tender stages according to the nature and complexity of projects, streamlining RFP templates, and allowing for joint proposals. Risk management mechanisms such as cost containment provisions, and monitoring and oversight can also mitigate these inefficiencies.

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