Optional Firm Access Model: Technical Seminar

Sydney, 17 September 2012

AUSTRALIAN ENERGY MARKET COMMISSION

Objectives of the Session

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- Interactive discussion
- Clarify the elements and operation of the proposed OFA regime
- Understand the operational and financial implications of the regime
- Identify and resolve [?] possible errors, inconsistencies or omissions in the model
- Explore design issues and options

Not Objectives

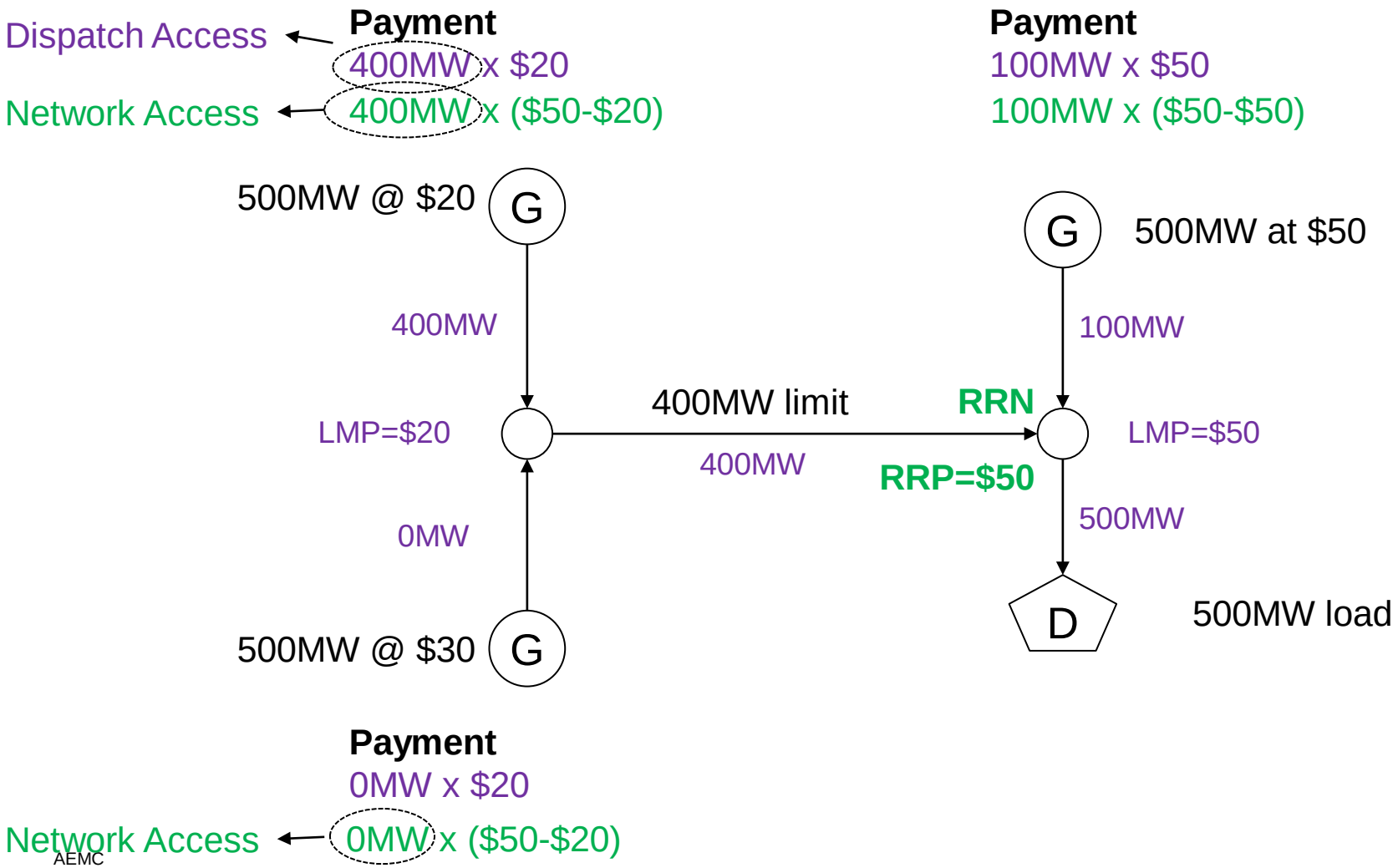
- A 3 hour lecture on how the OFA model works
- A substitute for reading the OFA Technical Report
- A discussion of the merits of the OFA model versus the status quo
- A discussion of alternative access models (except for variations of the OFA model)
- An opportunity to make formal submissions on the OFA model

Area to Cover

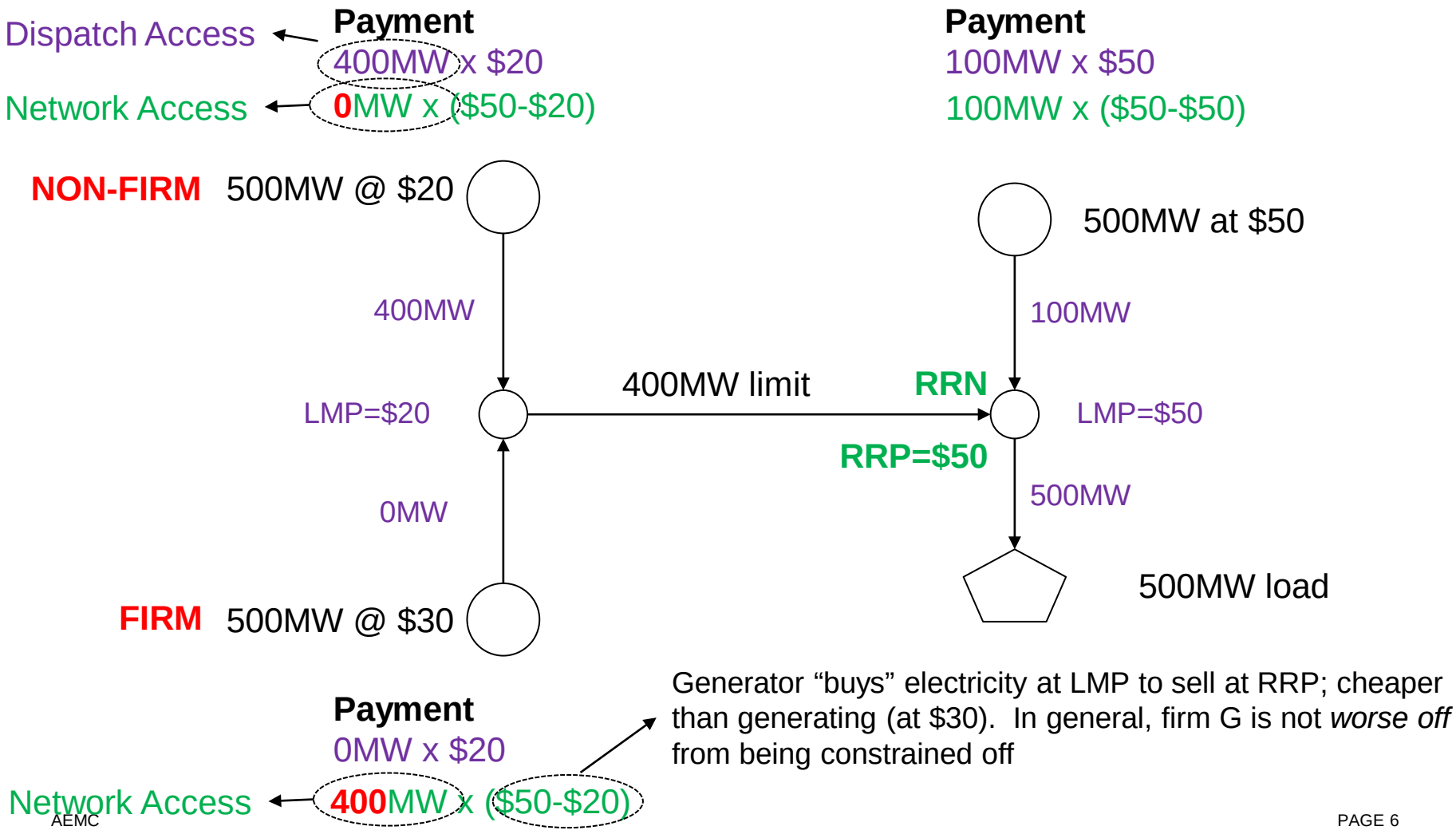
Process Area	Time Estimate
What is Access?	20
Top-down Overview	10
Access Settlement	30
Firm Access Standard	20
Access Pricing	30
Access Procurement	20
Access Regulation	30
Transition	20
Inter-regional Access	30
Overall	**210**

What is Access?

Access: Status Quo



Access: Optional Firm Access Model



Access in the OFA Model

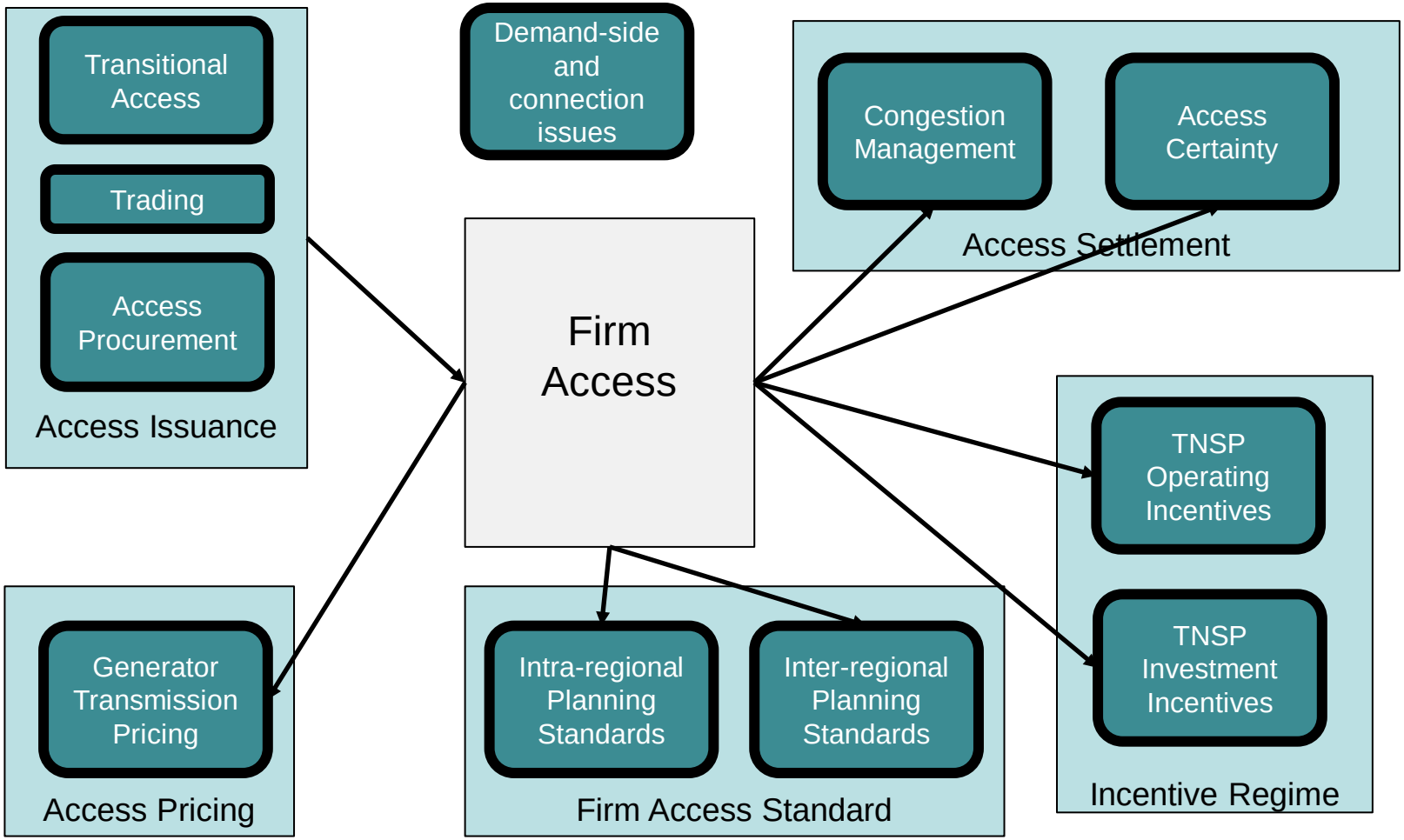
- *Dispatch* and *dispatch access* is unchanged
- *Network access* is *divorced* from dispatch and bidding
- "Access" in the OFA description always means *network access*
- Aggregate total network access must always equal network capacity
- So network access is a service provided by TNSPs through the provision of the transmission network

Fixed, Firm and Firmness

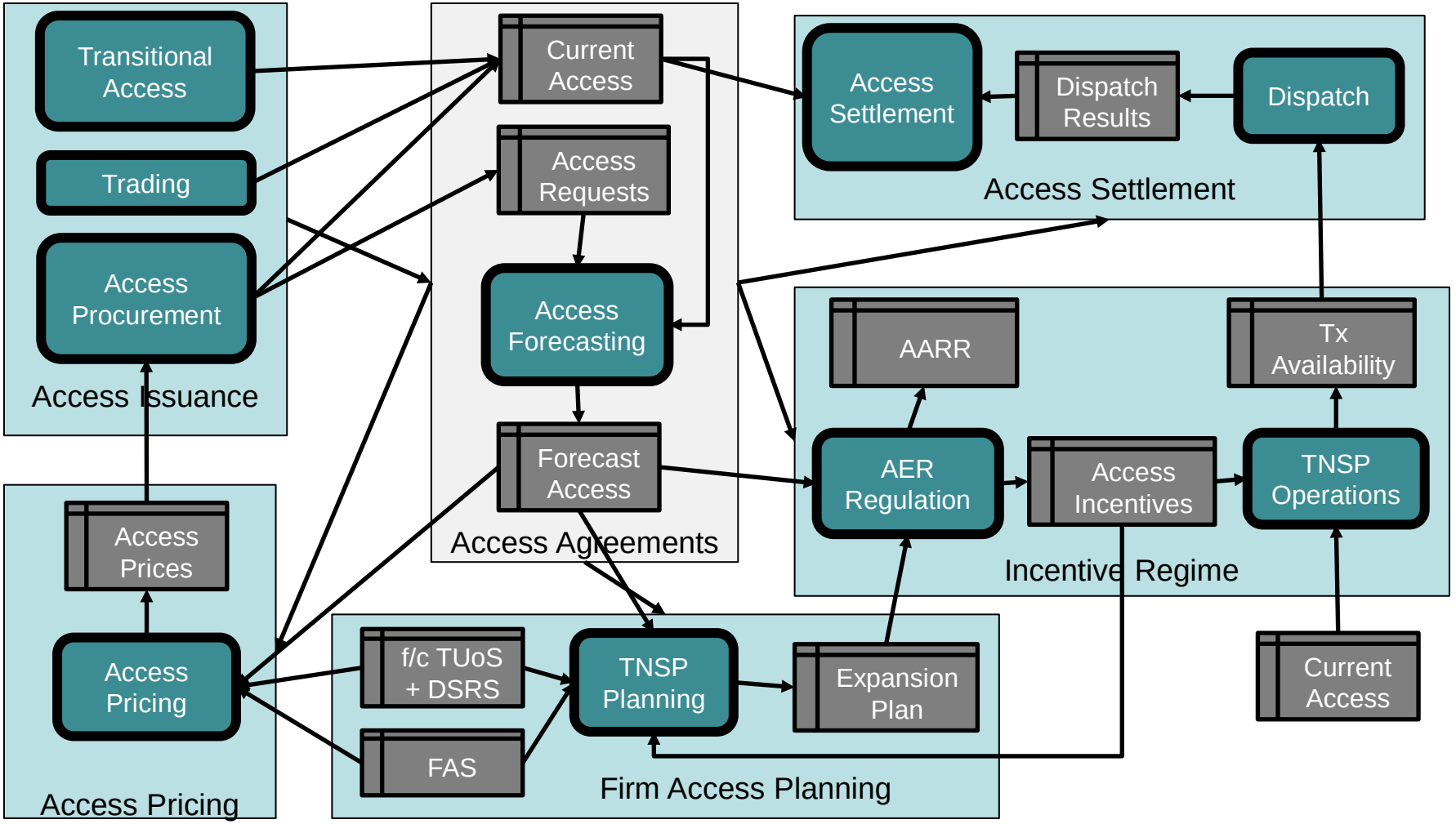
- The level of *firmness* of a service is the reliability with which it is provided
- A *fixed* service has 100% reliability, but in the real world few services are *fixed* and access in the OFA model is no exception
- Under the *firm access service,* a TNSP provides *network access* with a *guaranteed level of firmness*: specified by the *firm access standard*
- *Firm generators* (those that have procured firm access service) get priority allocation of network access

Top-down Description

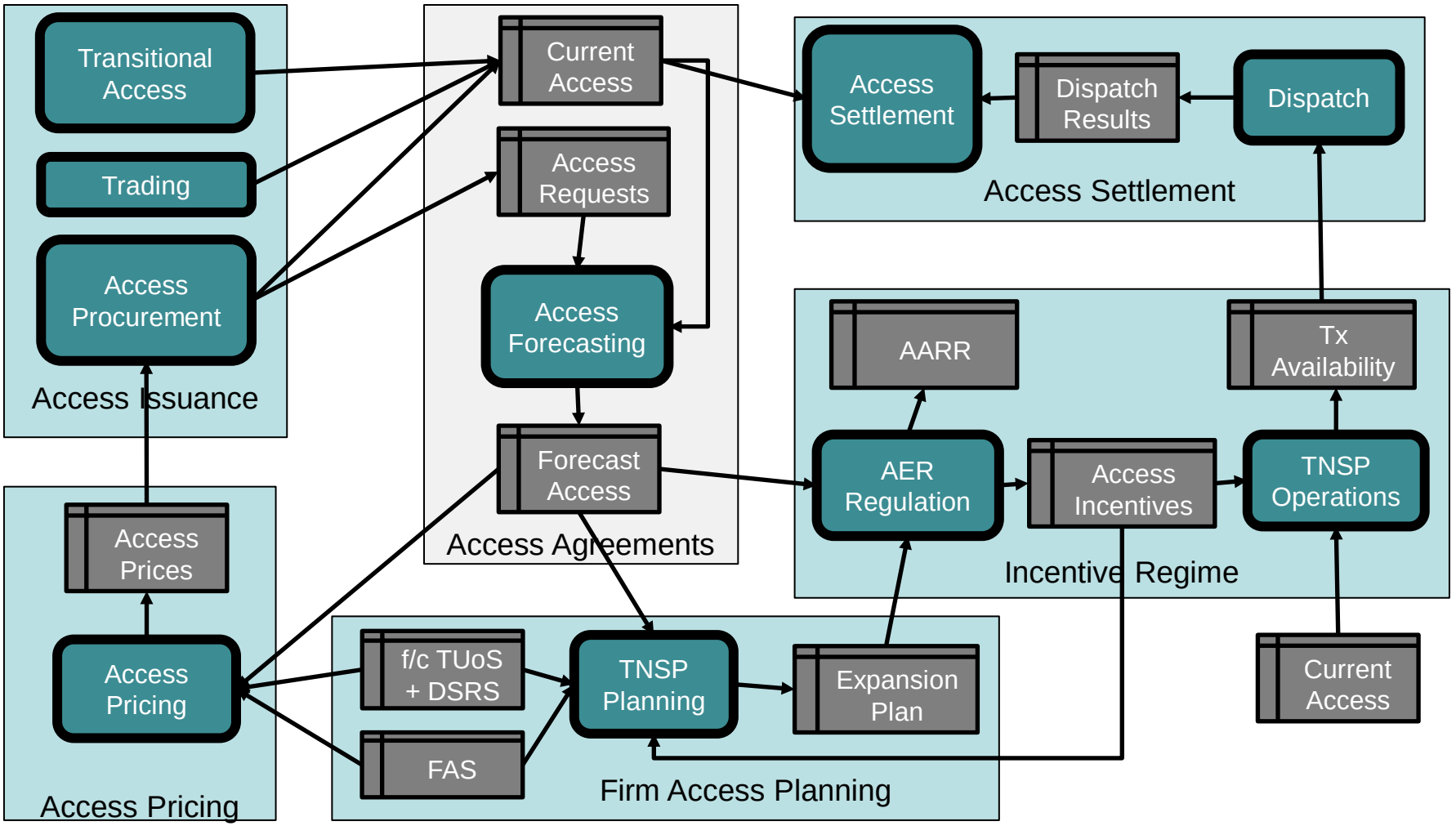
Transmission Framework Review: Key Issues



Processes and Data



Key Processes in the Model Design



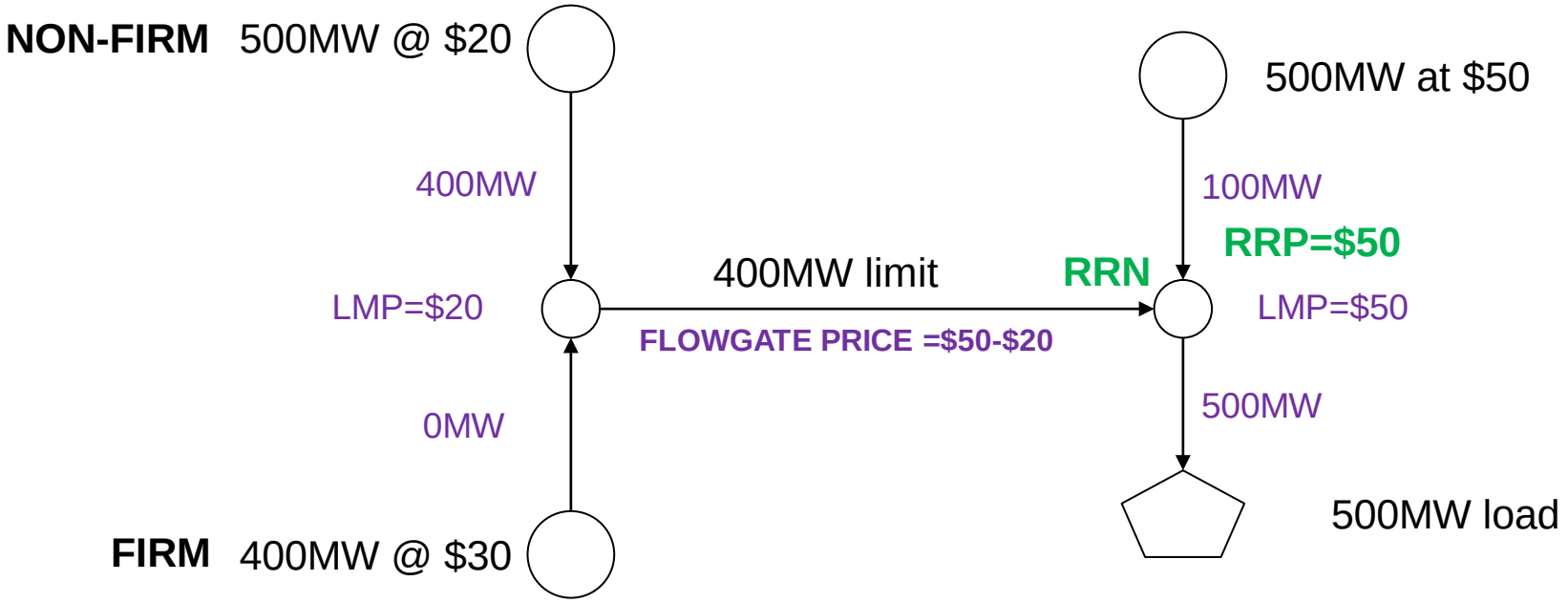
Access Settlement

Access Settlement Approach

- Existing settlement payments unchanged; new *access settlement* payments introduced
- *Flowgates* are the *points* on the network represented by *transmission constraints* in NEMDE
- Access is settled on each *congested* flowgate: $Pay\$ = P * (E-U)$
  - P = flowgate price (shadow price of binding constraint)
  - E = entitlement (based on access level)
  - U = usage (based on dispatch level)
- Entitlements allocated so that $\sum E = \sum U = FGX$
  - *FGX* = flowgate capacity = RHS of NEMDE constraint
  - This ensures that access settlement balances
- Entitlements determine the *effective* access level that Gs receive

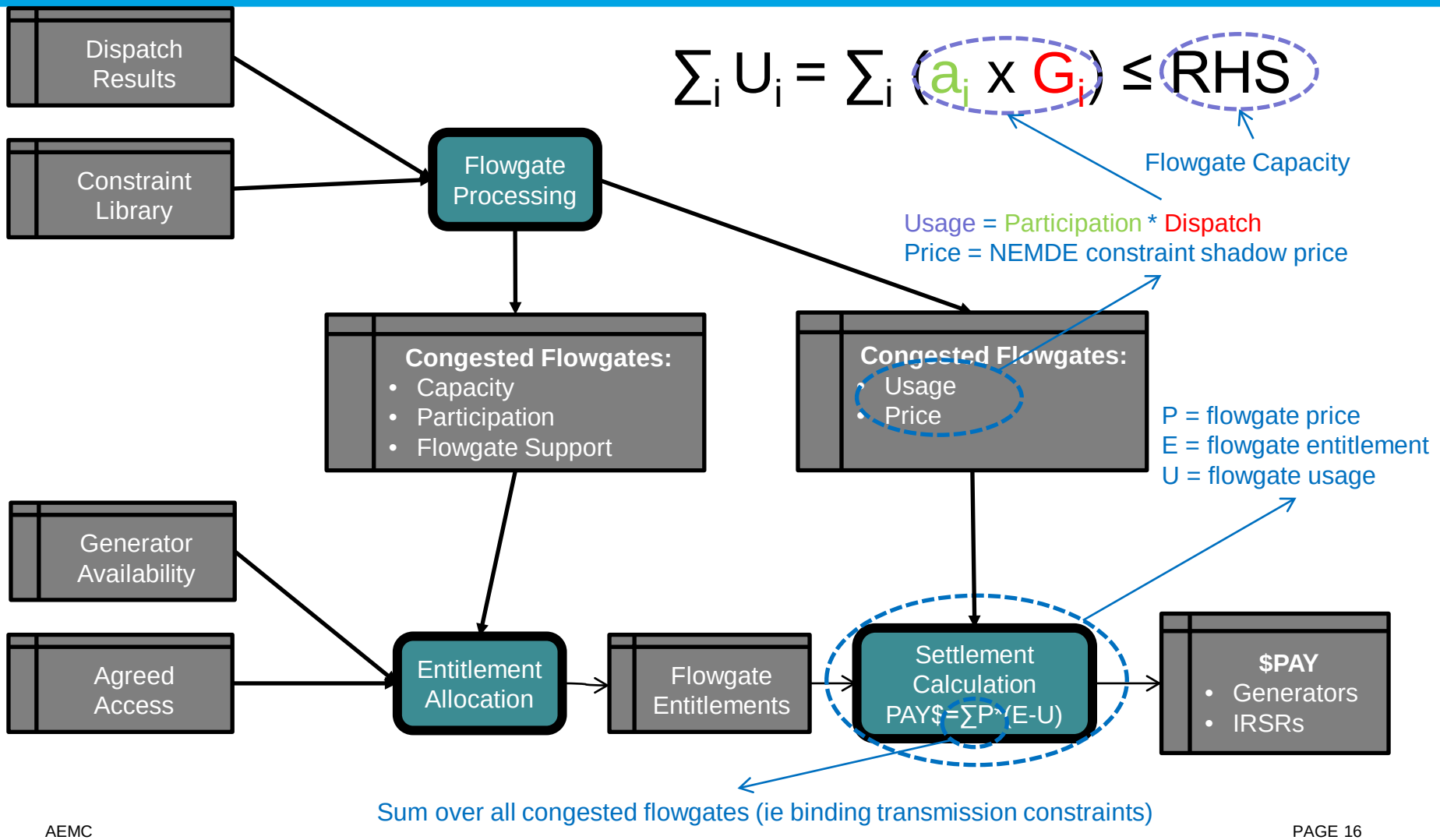
Access Settlement on Earlier Example

Non-Firm, Dispatched Generator Settlement
Region Settlement$ = G x RRP = 400MW x $50
Access Settlement$ = (E-U) x FGP = (0MW - 400MW) x ($50-20)
Net Settlement$ = 400MW x $20

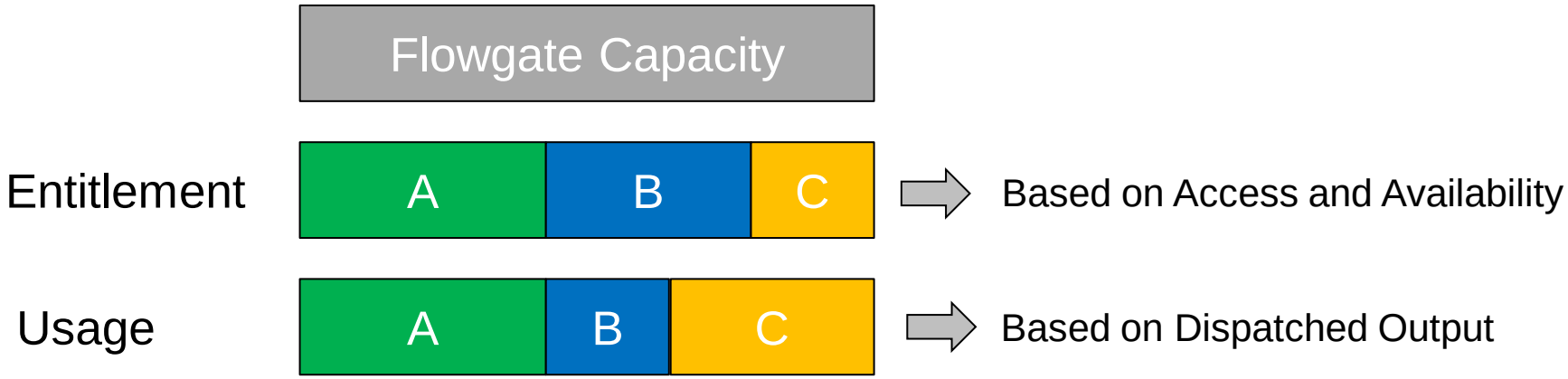


Firm, Constrained-off Generator Settlement
Region Settlement$ = G x RRP = 0MW x $50
Access Settlement$ = (E-U) x FGP = (400MW - 0MW) x ($50-20)
Net Settlement$ = 400MW x ($50-$20)

Access Settlement Processes



Access Settlement on Binding Flowgates



Settle$ = P x (E - U)

P = flowgate price
E = flowgate entitlement
U = flowgate usage

Gen	Status	Description	Settlement	Comment
A	E=U	Dispatched at access level	None	Paid RRP
B	E>U	Access-long (eg constrained-off)	Receipt	Compensation
C	E<U	Access-short (eg non-firm)	Payment	Contribution

Access Settlement: Design Issues

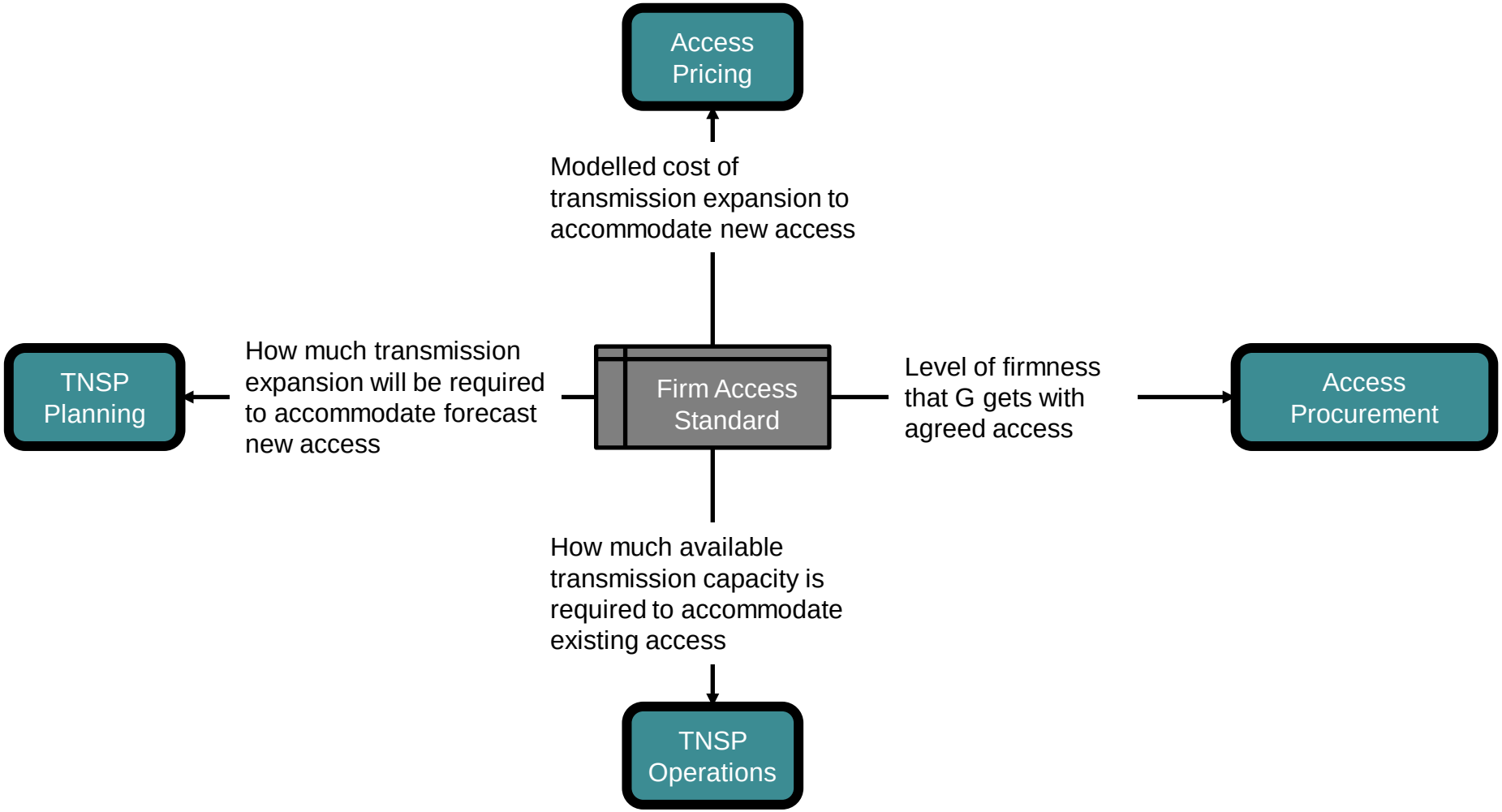
- Based on flowgate prices rather than nodal prices
- Target access based on *availability*, not *preferred output*
- Target access *limited* by availability
- Firm generator liable to pay *into* access settlement
- Unusual constraint formulations
- Grouping benefits for intermittent generators
- Etc…

Firm Access Standard

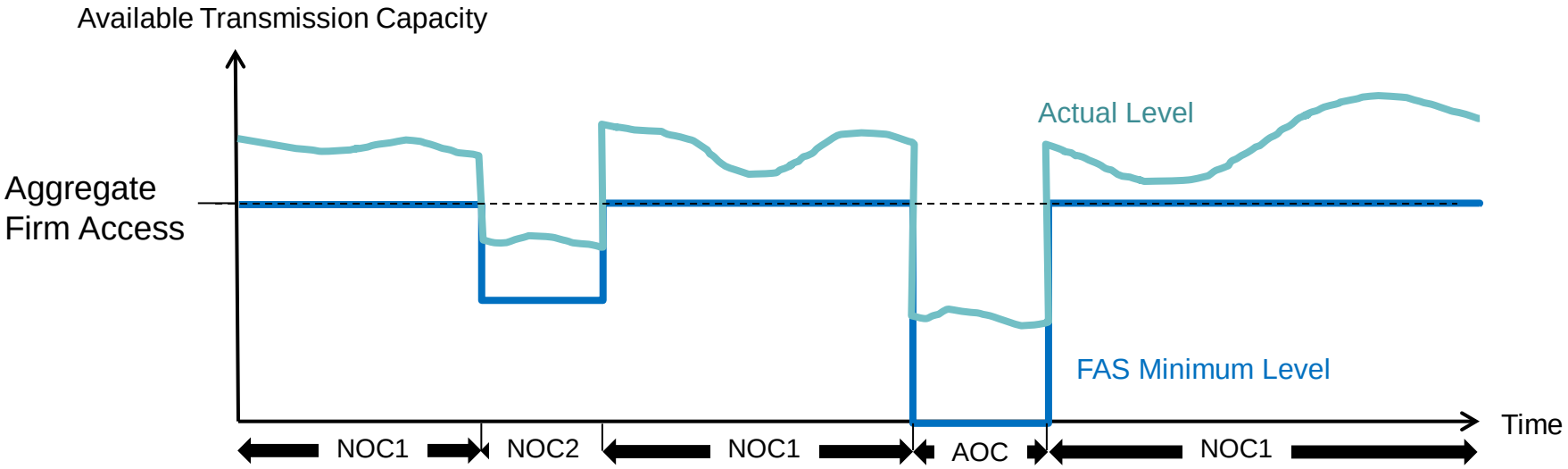
FAS principles

- Generator will be permitted (but not required) to procure a new network service from TNSPs: a *firm access service*
- The FAS specifies the *service standard* for this service
- There is *one network* and so *one standard*: it is not practical for each G to individually negotiate its own firm access service standard
- The standard is predicated on the level of *agreed access* (the quantity of service procured): thus a G can obtain a higher standard by procuring more agreed access;
- The standard is monitored and maintained through a *regulatory*, not a *bilateral* process: so the *aggregate* service level is monitored, not *individual* service levels;
- Access is *firm* but not *fixed*: it is not economic, or expected, for 100% of agreed access to be provided 100% of the time

Role of FAS


Access Pricing
Modelled cost of transmission expansion to accommodate new access
TNSP Planning
How much transmission expansion will be required to accommodate forecast new access
Firm Access Standard
Level of firmness that G gets with agreed access
Access Procurement
How much available transmission capacity is required to accommodate existing access
TNSP Operations

Firmness of FAS



NOC1 = Normal Operating Condition Tier 1
NOC2 = Normal Operating Condition Tier 2
AOC = Abnormal Operating Condition

Firm Access Standard: Design Issues

- FAS *firm* but not *fixed*
- Effective firmness depends on level of agreed access
- FAS *governance*: establishment and change management
- Abnormal operating conditions: *zero* guaranteed access
- FAS cannot be *customised*
- Continuation of existing *demand-side* reliability standards
- Etc…

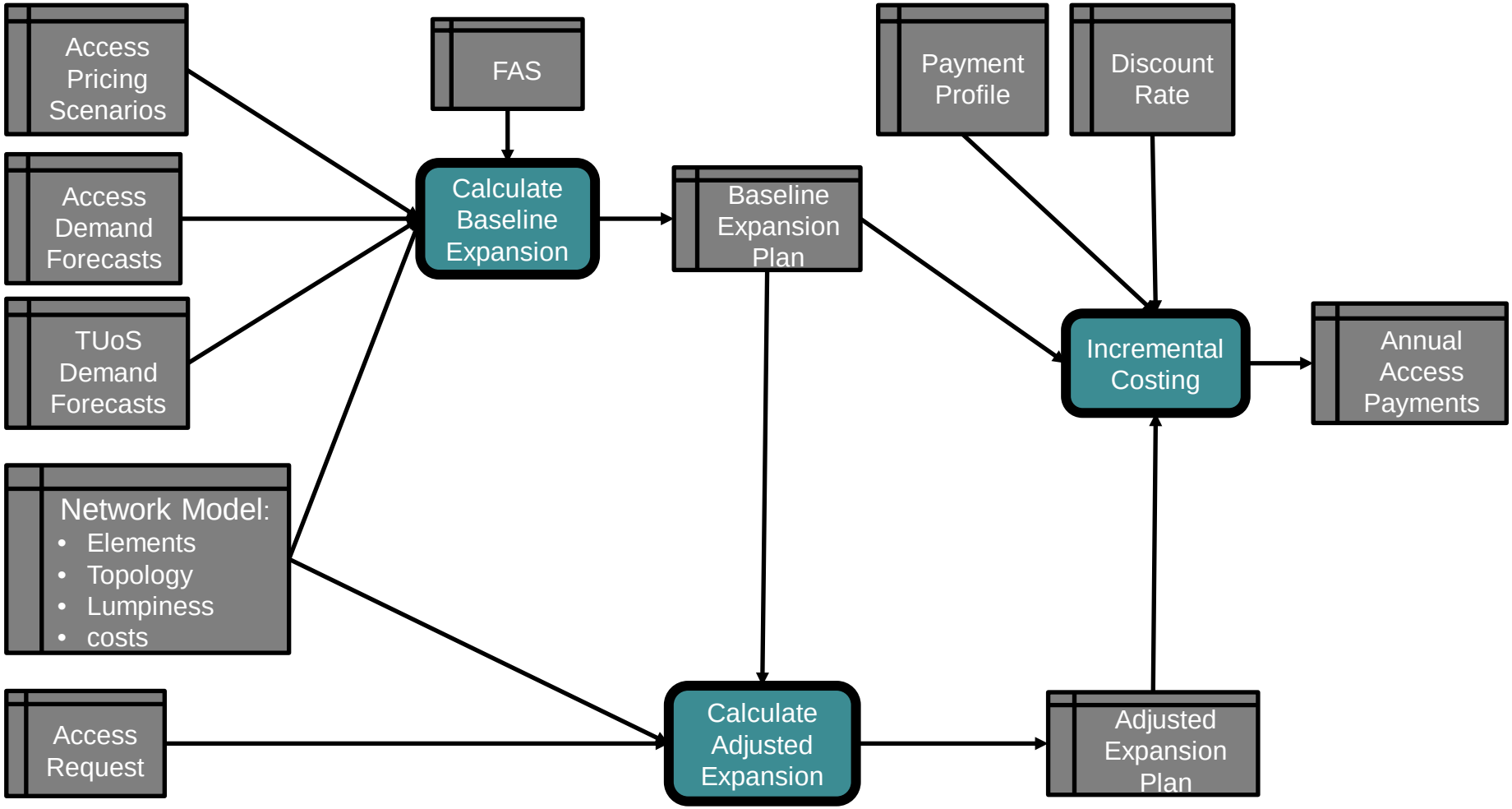
Access Pricing

AEMC

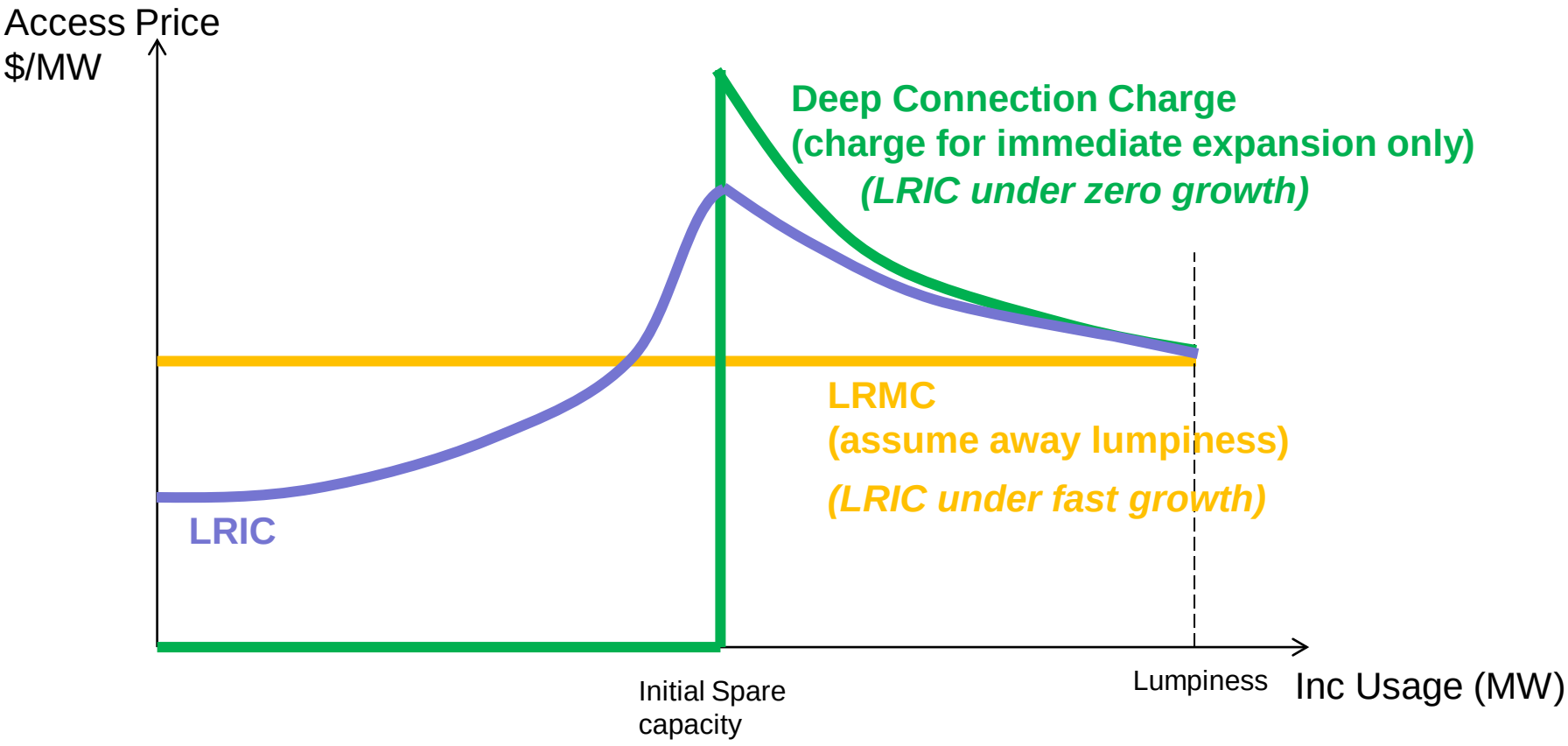
Access Pricing Principles

- Long-run Incremental Cost (LRIC) Method: G pays for the *increase* in immediate *and future* cost (NPV) of providing FAS-compliant shared network
- LRIC estimated by a *stylised* expansion model: *reflects* true LRIC but avoids the quirks, uncertainty and noise of *true* expansion
- Future expansion (and hence LRIC) predicated on *forecast* demand for network services (firm access and TUoS)

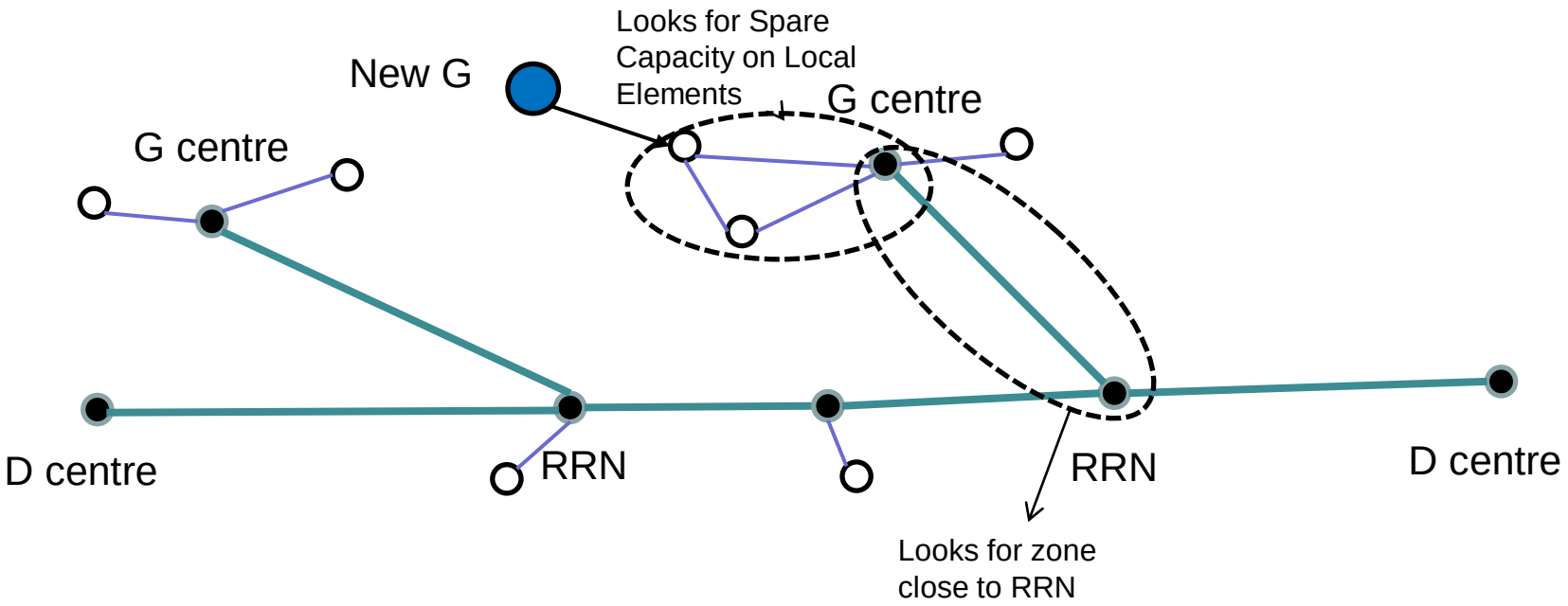
Access Pricing



Access Price vs Inc Usage



Locational Incentives on Core and Local Networks



Access Pricing: Design Issues

- LRIC rather than LRMC or deep connection charge
- Need for objective and transparent forecasting assumptions
- Include pending access requests in baseline scenario?
- Interaction with demand-side reliability standards?
- Who has responsibility for pricing?
- Etc…

Access Procurement

Procurement Principles

- A generator obtains a *firm access* service by contracting with its *local* TNSP;
- Procurement is *optional*: generators without agreed access receive non-firm access
- A firm access agreement contains two provisions:
  - the TNSP will notify AEMO of the agreed access amount for access settlement
  - That the G will pay the access charge
- The procurement process is to:
  - To specify the service parameters (next slide)
  - To agree any customisations of the default service

Firm Access Service Parameters

Term	Description	Restrictions
Amount (MW)	Nominal level of service	Not limited: eg by power station capacity
Power Station(s)	Generating units to which the service applies	Must be connected to the shared network at a common point (node)
Node	Transmission node from which access applies	Must be the point at which the power station(s) connects to the shared transmission network
Term	Service commencement date and expiry date	Not limited
Profile	Variation of the nominal service level with time	Peak and/or off-peak, following forward energy contract convention
Payments	Payment dates, amounts and indexation	Discussed with *Access Pricing*
Custom	Agreed variations from the default service terms	If these can be settled, and do not adversely affect other users

Procurement: Design Issues

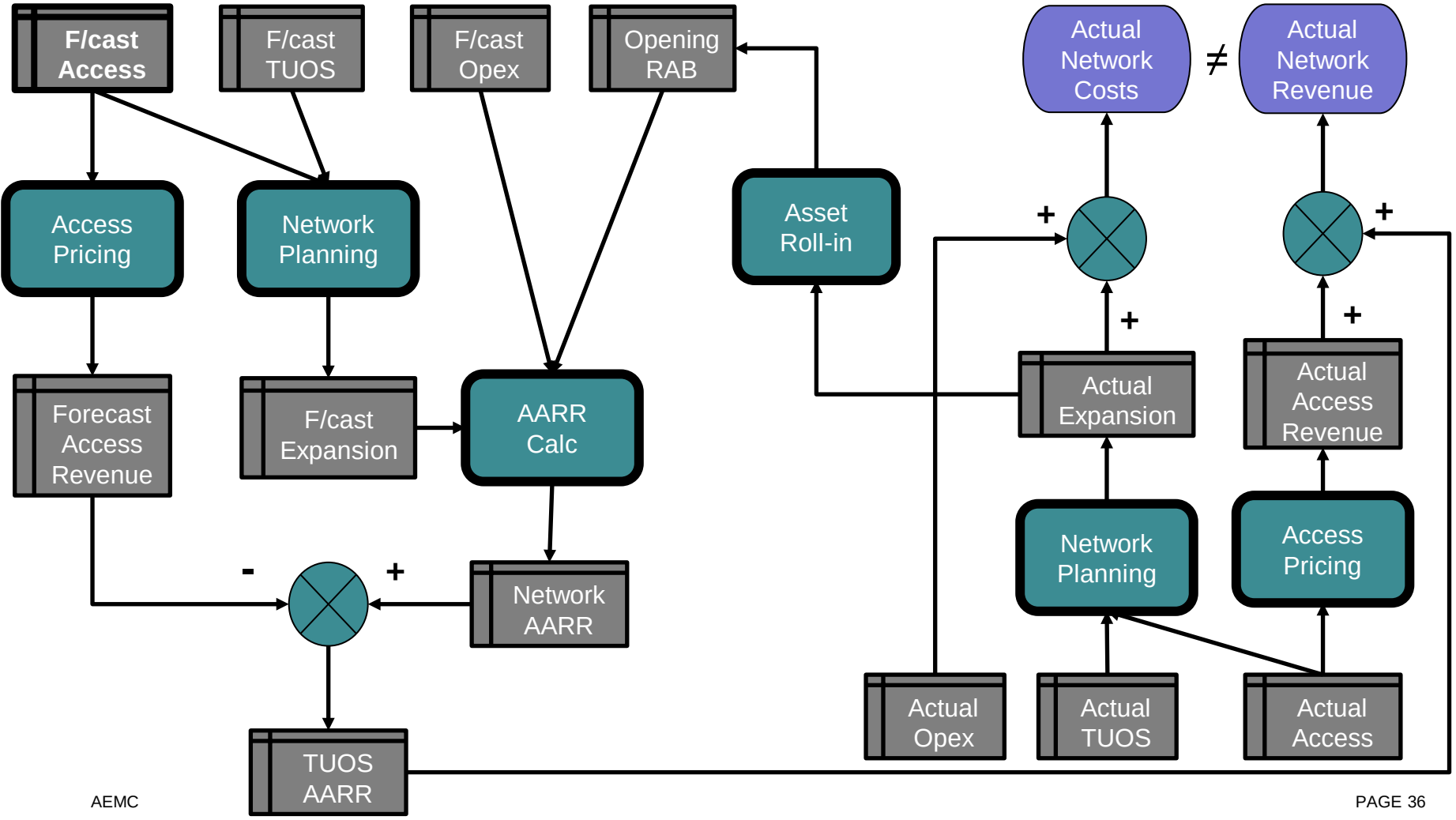
- Agreed access not limited to power station capacity
- Limited customisation permitted
- Lead time for transmission expansion permitted
- Embedded generation
- Access trading and rescindment
- Peak and off-peak definitions
- Etc…

TNSP Regulation

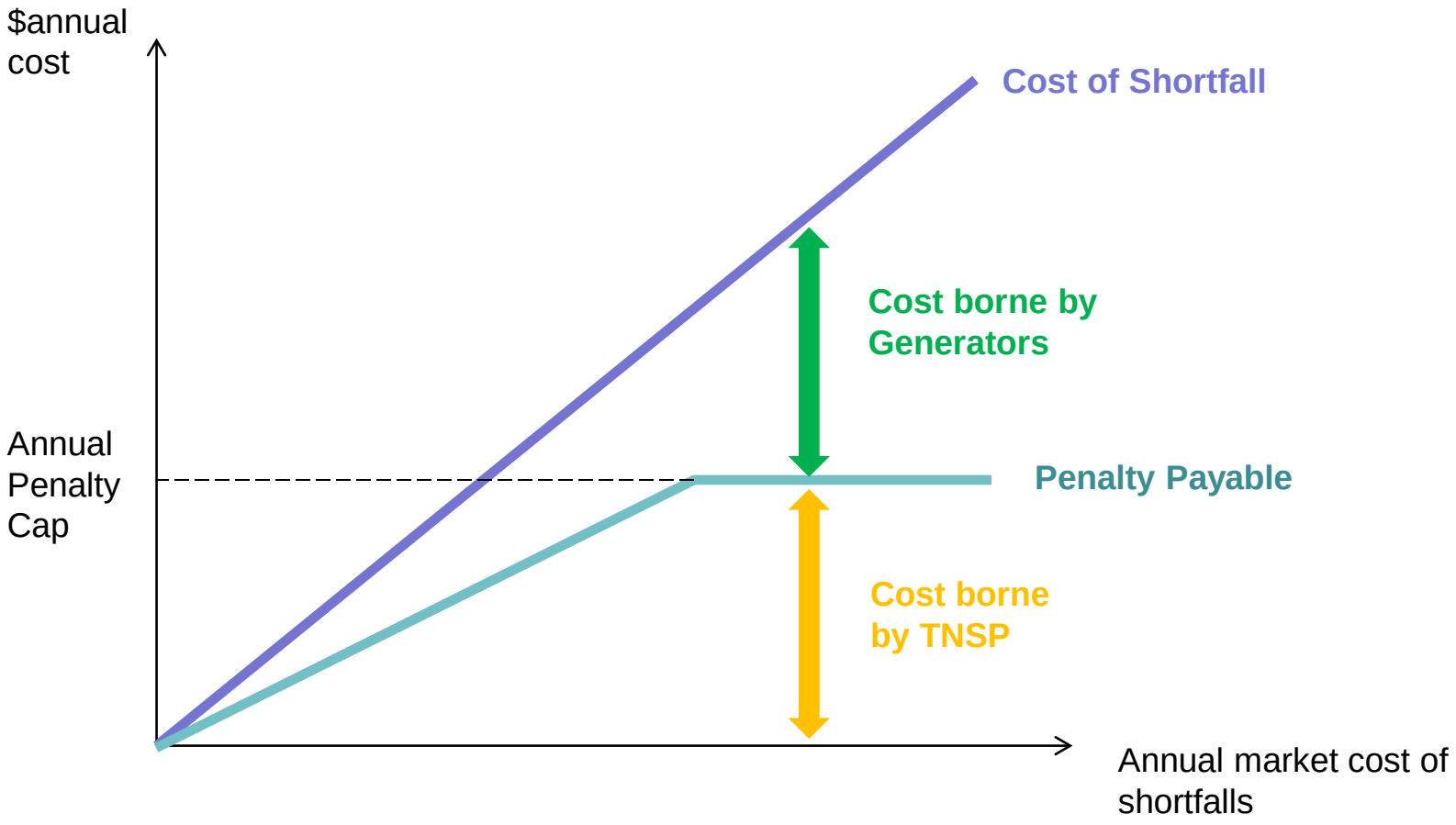
Access Revenue and Quality: Regulation Principles

- Because access service is provided by the *shared network*, it is treated as a *prescribed* transmission service (cf *TUOS* service)
- Because the shared network provides *both* access and TUOS, revenue from these services is regulated in *aggregate*
- As with TUOS, the service standard is specified by planning standards (reliability standards for TUOS, FAPS for access)
- Regulatory Incentives for maintaining service quality at the FAS are provided through:
  - *Transparency*: stakeholders will see whether the standard is maintained
  - *Penalties*: TNSPs must make *payments* into *access settlements* when quality is *below* standard

Shared Network Costs and Regulated Revenue



Incentive Regime



TNSP Regulation: Design Issues

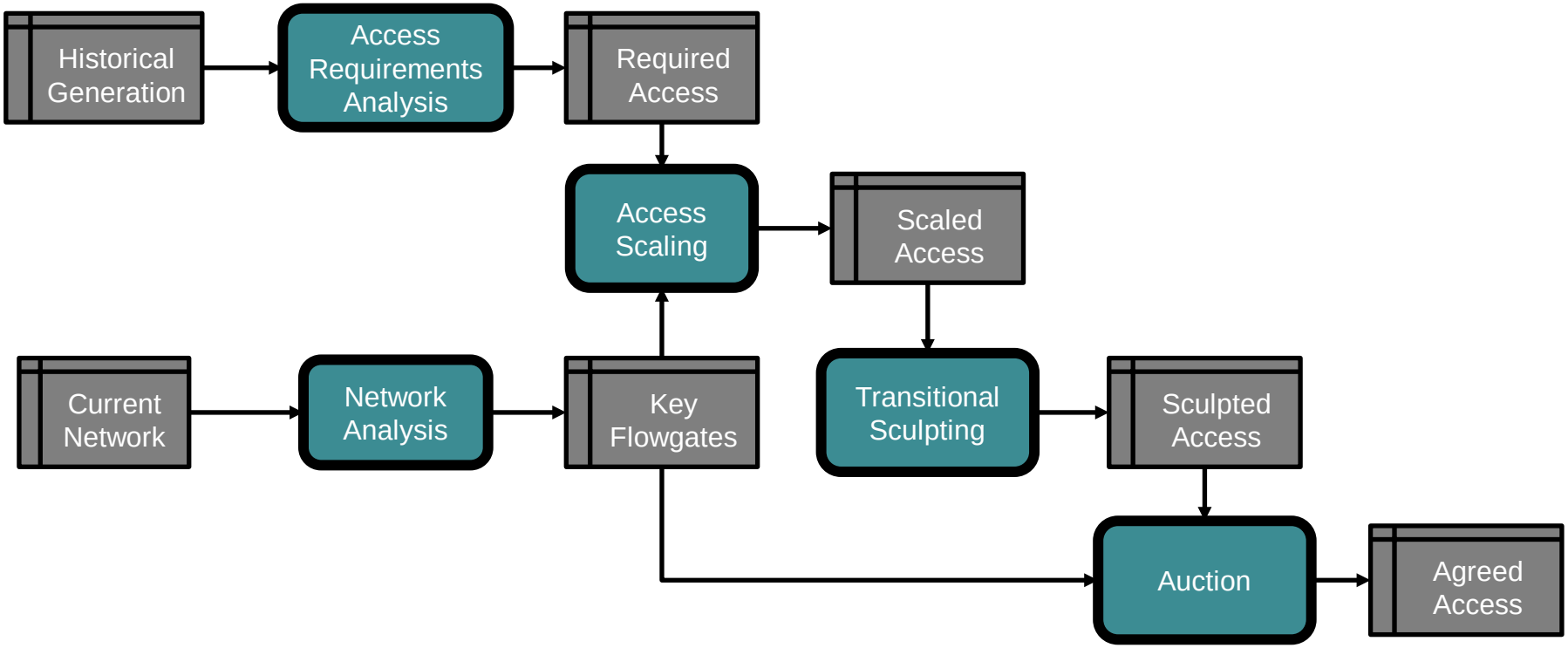
- Access is a prescribed service
- Mitigating TNSP risks from lumpy expansion costs
- Sharing of congestion risks
- Upside reward for TNSPs oversupplying transmission capacity?
- Market benefits in the RIT-T
- Etc…

Transitional Access

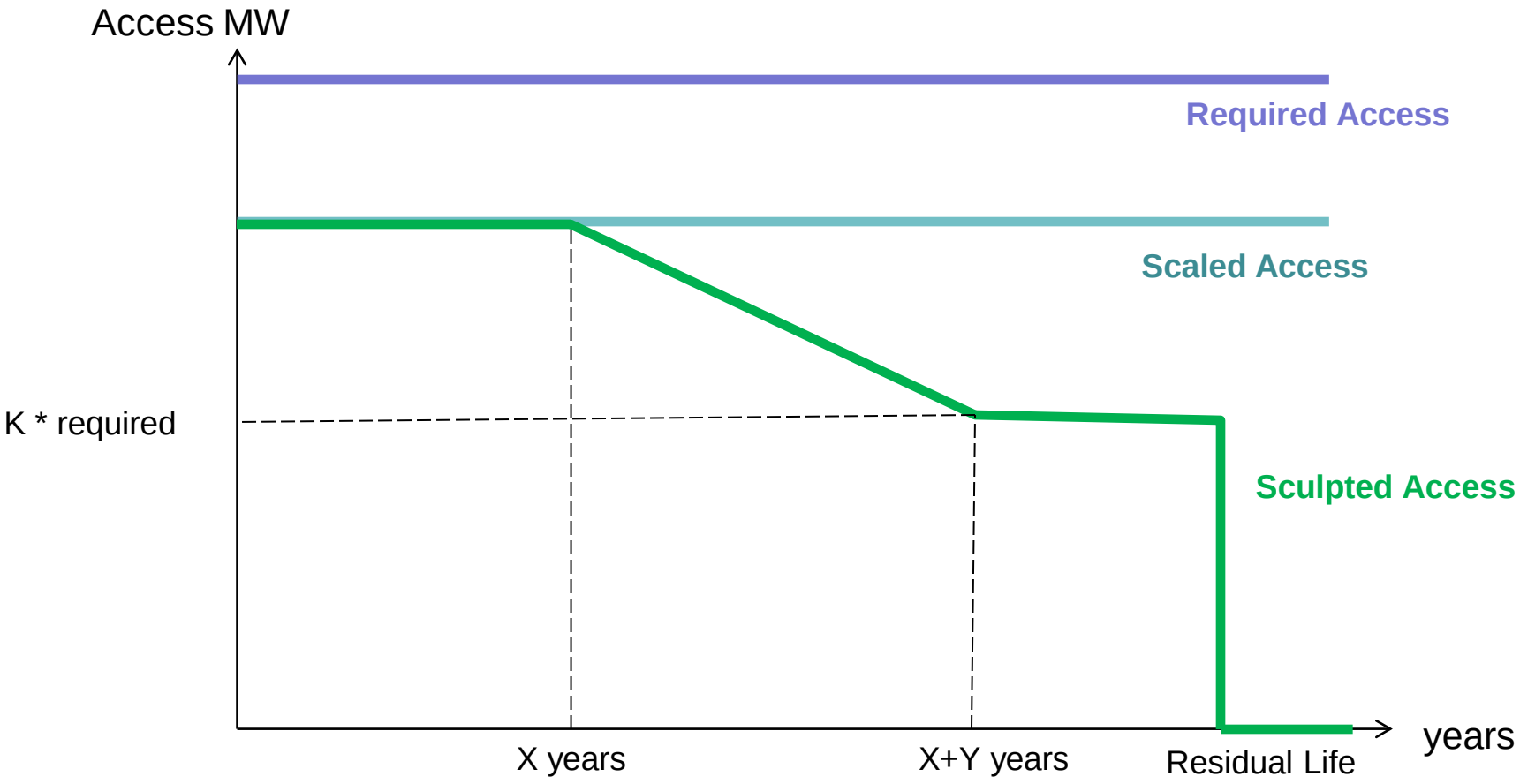
Transition Objectives

- *Mitigate impact*: to mitigate any sudden changes to prices or margins for market participants (generators and retailers) on commencement of the OFA regime;
- *Promote efficient firm access levels*: to encourage and permit generators – existing and new – to acquire and hold the levels of firm access that they would choose to pay for;
- *Provide learning period*: to give time for generators and TNSPs to develop their internal capabilities to operate new or changed processes in the OFA regime without incurring undue operational or financial risks during the learning period; and
- *Smooth access changes*: to prevent abrupt changes in aggregate levels of agreed access that could create dysfunctional behaviour or outcomes in access procurement or pricing.

Transition Process



Proposed Sculpting



Residual Life is *higher* of: X+Y years or residual PS economic life

Transition Design Issues

- Implications for generation market competition and contestability
- Choosing the sculpting parameters
- Etc…

Inter-regional Access

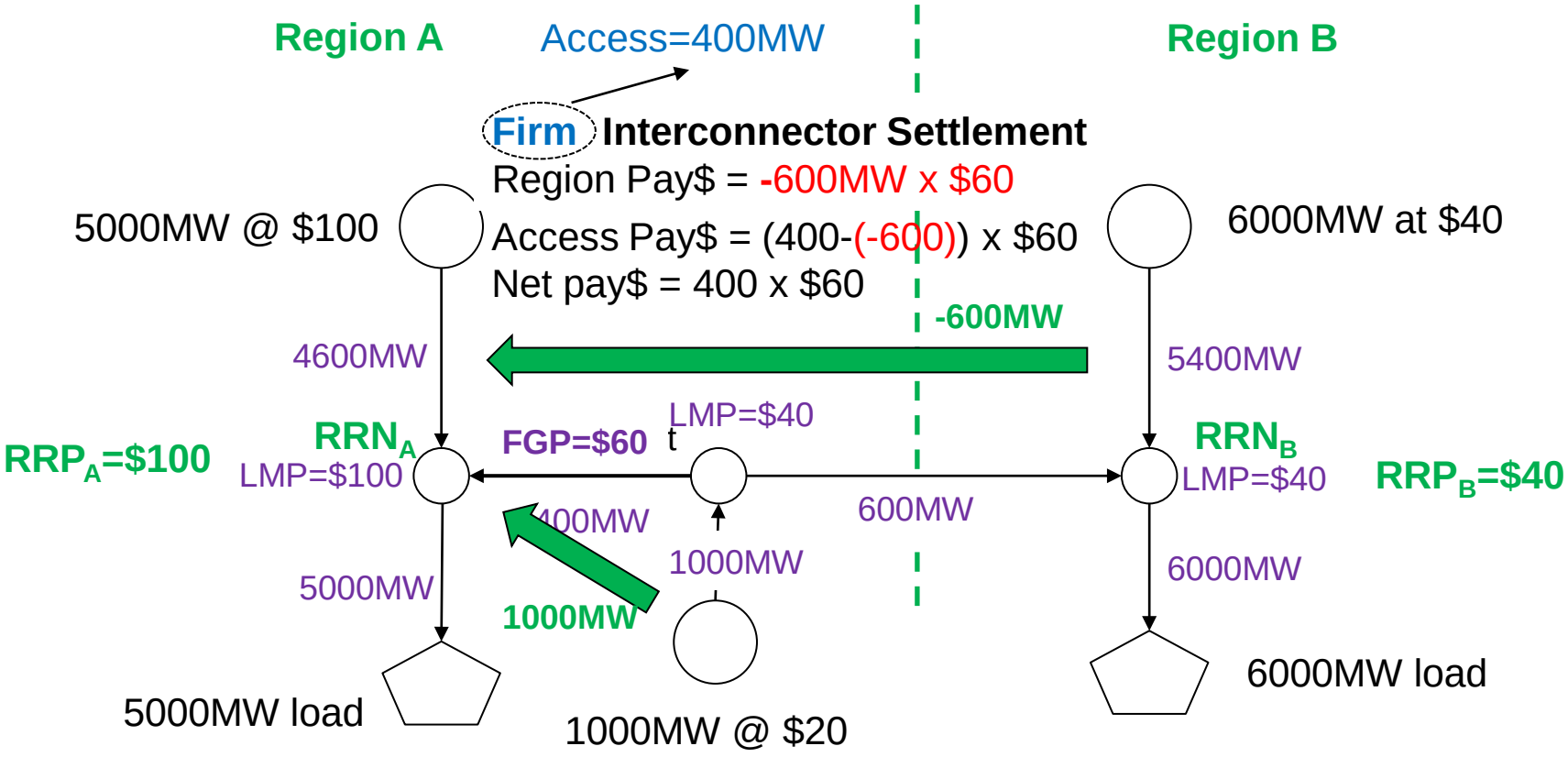
Inter-regional Access Principles

- Inter-regional access means payment of the inter-regional price difference on the access volume;
- Inter-regional agreed access is held in trust by AEMO, with the benefits passed to holders of Firm Interconnector Rights (FIRs);
- FIRs are allocated:
  - In relation to interconnector expansion, to market participants funding that expansion
  - In relation to existing interconnector capacity, through an auction process similar to the existing Settlement Residue Auction
- Future interconnector expansion may be jointly funded by market participants and TNSPs, according to shares of expected benefits;

Comparison of intra-regional and inter-regional

	Intra-regional	Inter-regional
Access	From G node to RRN	From RRN to RRN
Settlement	With G	With IRSR
Beneficiary	G	FIR holder
Procurement	Agreed with TNSP	Inter-regional Expansion Process
Access Firmness	FAS	FAS
Transition	Priority Allocation	Residual Allocation

Counterprice Flow on a Firm Interconnector:



Non-firm Generator Settlement

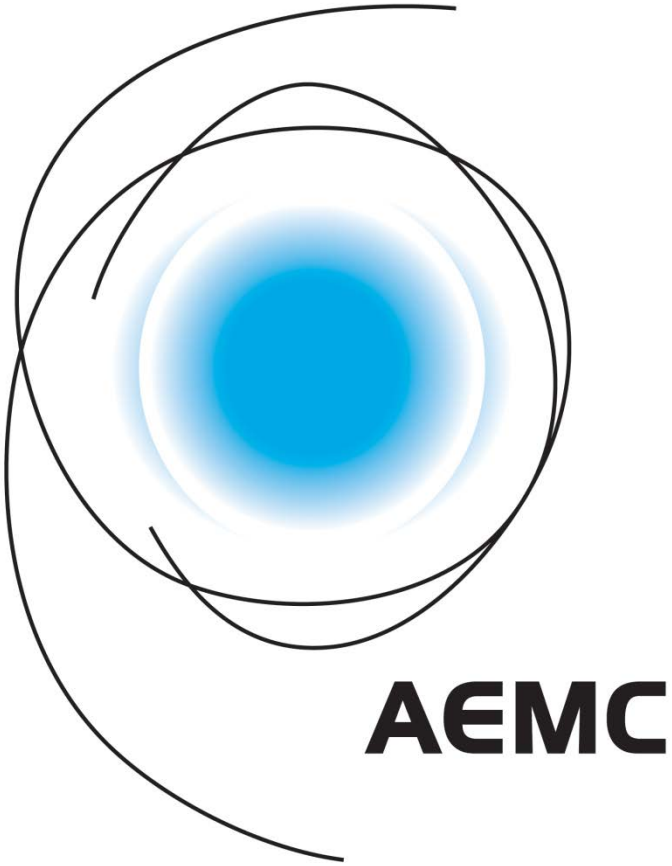
Region Pay$ = 1000MW x $100

Access Pay$ = (0 - 1000) x $60

Net pay$ = 1000 x $40

Inter-regional Access: Design Issues

- Pricing of inter-regional access: actual expansion costs rather than LRIC
- Low interconnector priority in transitional access allocation
- No sculpting of inter-regional transitional access
- Supply- or demand-driven expansion?
- Counterprice flows and revenue adequacy
- Etc…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