Locational BSUoS

Charging Methodology Proposal

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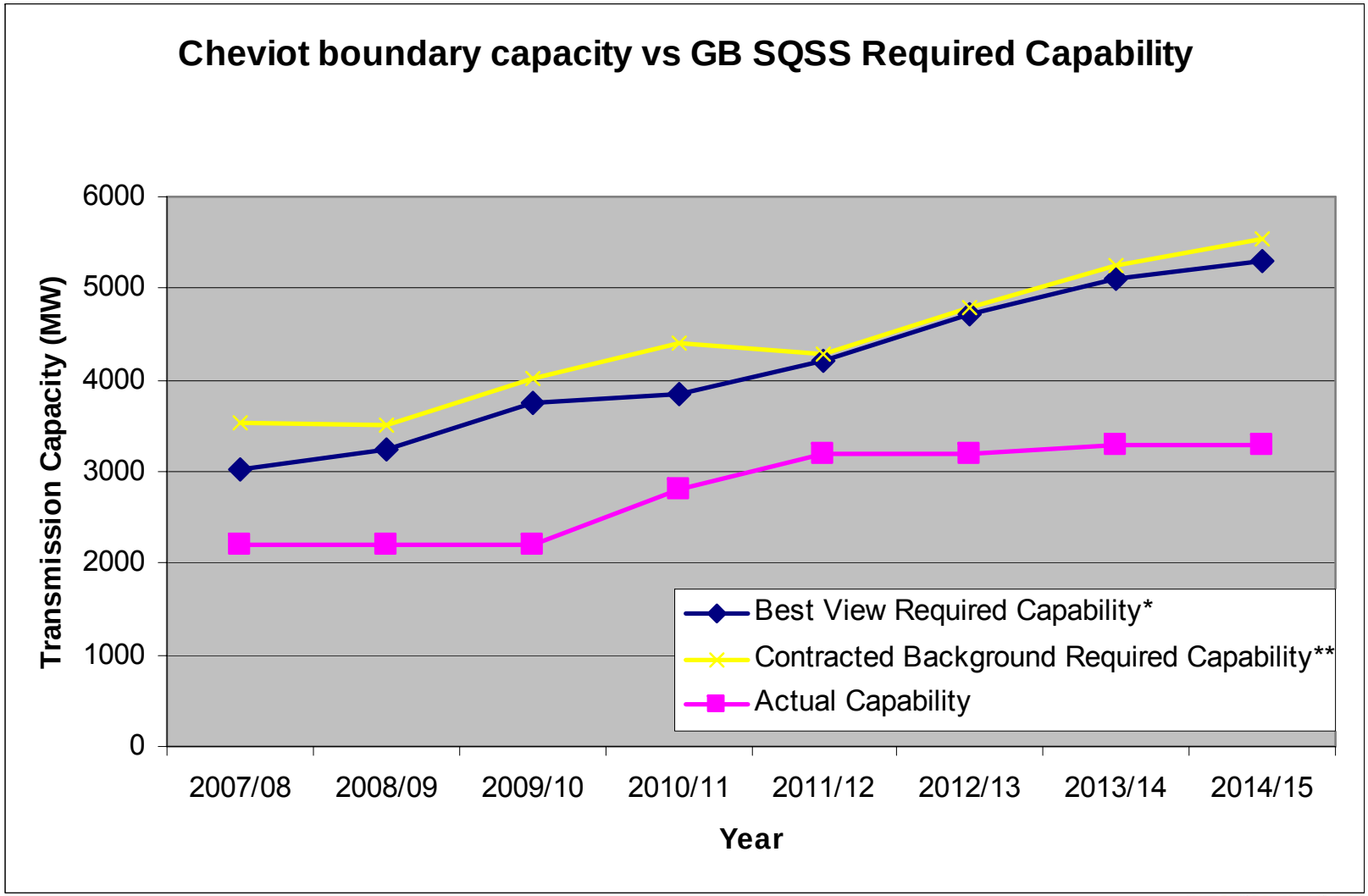
Agenda

- Background
- Locational BSUoS proposal
- TNUoS Implications
- Methodology for BSUoS with multiple derogated boundaries
- Summary

Background: Drivers for Consultation

- OFGEM Letter
  - Total Constraint Costs Rising
  - Connection Capacity Outstripping Transmission Capacity
  - National Renewable Targets
- National Grid Thoughts
  - National Grid believes that the commercial and charging arrangements it has in place fully meet its obligations and objectives
  - However forecast constraint costs are rising
  - Difference between current boundary capability & GBSQSS compliant boundary capability is significant
    - Forecast to remain siginificant
  - Prudent to explore with the industry whether the current BSUoS methodology is still the most appropriate in these circumstances

Forecast of capacity shortfall



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Initial Thinking

- TNUoS : Proxy for the long run cost of Transmission Access
  - Assumes SQSS compliance (assets have been built)
- Constraint costs (BSUoS)
  - Should reflect the efficient level of build on a Compliant Network
  - Proxy for short run costs of transmission access for non complaint capacity

However

- If enduring Short Run Cost (SRC) > Long Run Cost (LRC)
  - TNUoS does not equal cost of transmission Access
- BSUoS: Currently “Postage Stamp” charging
- Does Postage Stamp BSUoS + TNUoS correctly signal cost of Access?

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Locational BSUoS: Proposal

- BSUoS charges: two component parts;
  - A targeted locational element reflecting the costs of constraints incurred through derogated boundary non compliance; and
  - A residual element incorporating the remaining costs.
- Locational element is allocated to all BMUs located behind the derogated boundary who are exporting in the period in question or had ceased generating as part of the SO's constraint management process;
- The residual element is charged to all BMU who normally incur a BSUoS charge; and
- TNUoS rebate based on the level of TEC which is in excess of that which could be accommodated if the boundary was compliant under the GBSQSS.

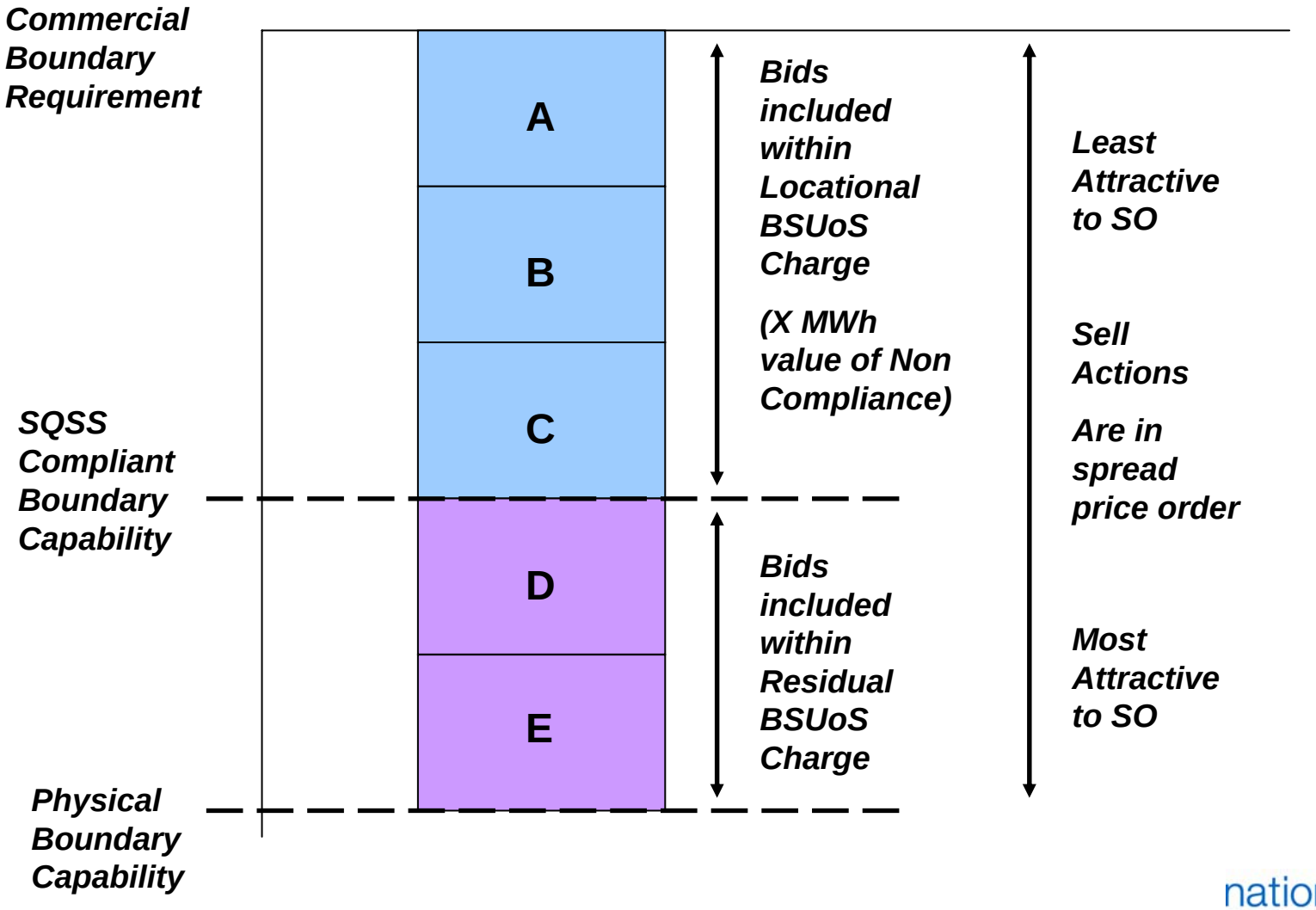
Determination of Level of Non Compliance

- Methodology Based on GB Security & Quality of Supply Standard (SQSS)
- Determination of required transmission capability on intact network at Winter Peak.
  - Compared to existing planning standard capability
  - Difference is deemed level of non compliance on the derogated boundary
- Example of B6 Boundary (Only current Derogated Non Compliant boundary)
  - Initial Calculation based on 2008 seven Year Statement
- Winter Peak GBSQSS required boundary capability = 4013MW
- Existing GBSQSS boundary capability = 2200MW
- SQSS shortfall = 4013MW – 2200MW = 1813MW
- Settlement Period volume of constraints due to non compliance
  - Minimum(1813MW, Volume of constraints taken to resolve B6 boundary)

Determination of Volume Due to Non Compliance

- All actions utilised to manage a constraint at a derogated non complaint boundary are ranked in “Spread Price” order
- Spread Price: reflects the cost per MWh of replacing that energy
- Includes
  - Bids and Offers
  - Forward Buy and Sell actions
  - PGBT
  - Inter trip volumes
  - PN contract costs
- If total constraint volume at boundary > non compliant boundary
  - Resolution of non compliance constraints deemed to utilise most expensive actions
  - Exception (If approved) being Cat 5 Operational Inter Trips (CAP170) – placed first in the stack

Determination of Volume Due to Non Compliance



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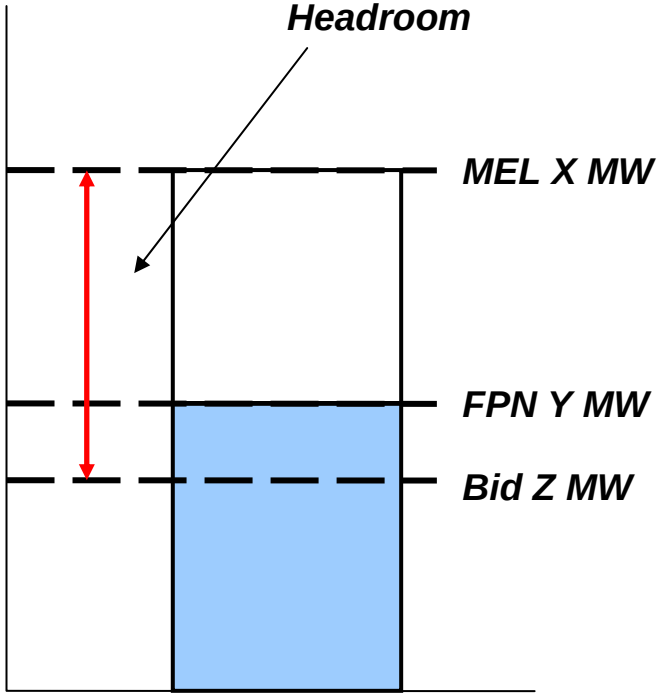
Costs of Sterilised Headroom

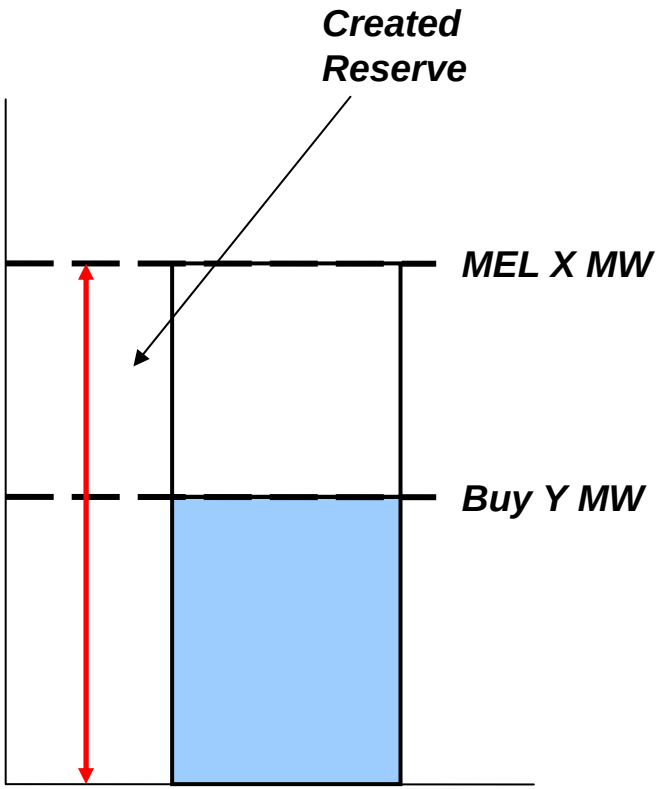
- Taking sell actions behind a boundary
  - Effectively stops the net buying of energy in the zone
- Makes “Headroom” reserve on part loaded generators inaccessible
  - If volume of reserve sterilised causes deficit in required holding needs to be replaced
  - Predominantly replaced by synchronising new generation
  - If a unit is synchronised wholly due to the need to replace sterilised reserve then considered a constraint cost
- Cost of Sterilised headroom apportioned equally between compliant and non compliant “Pots” based on relative MWh volume of constraints incurred
- Is it appropriate to allocate cost of replacing sterilised headroom through locational BSUoS?

Costs of Sterilised Headroom (2)

Generator Behind Export Constraint



Generator : Reserve Creation



Allocation of Costs to Individual Parties

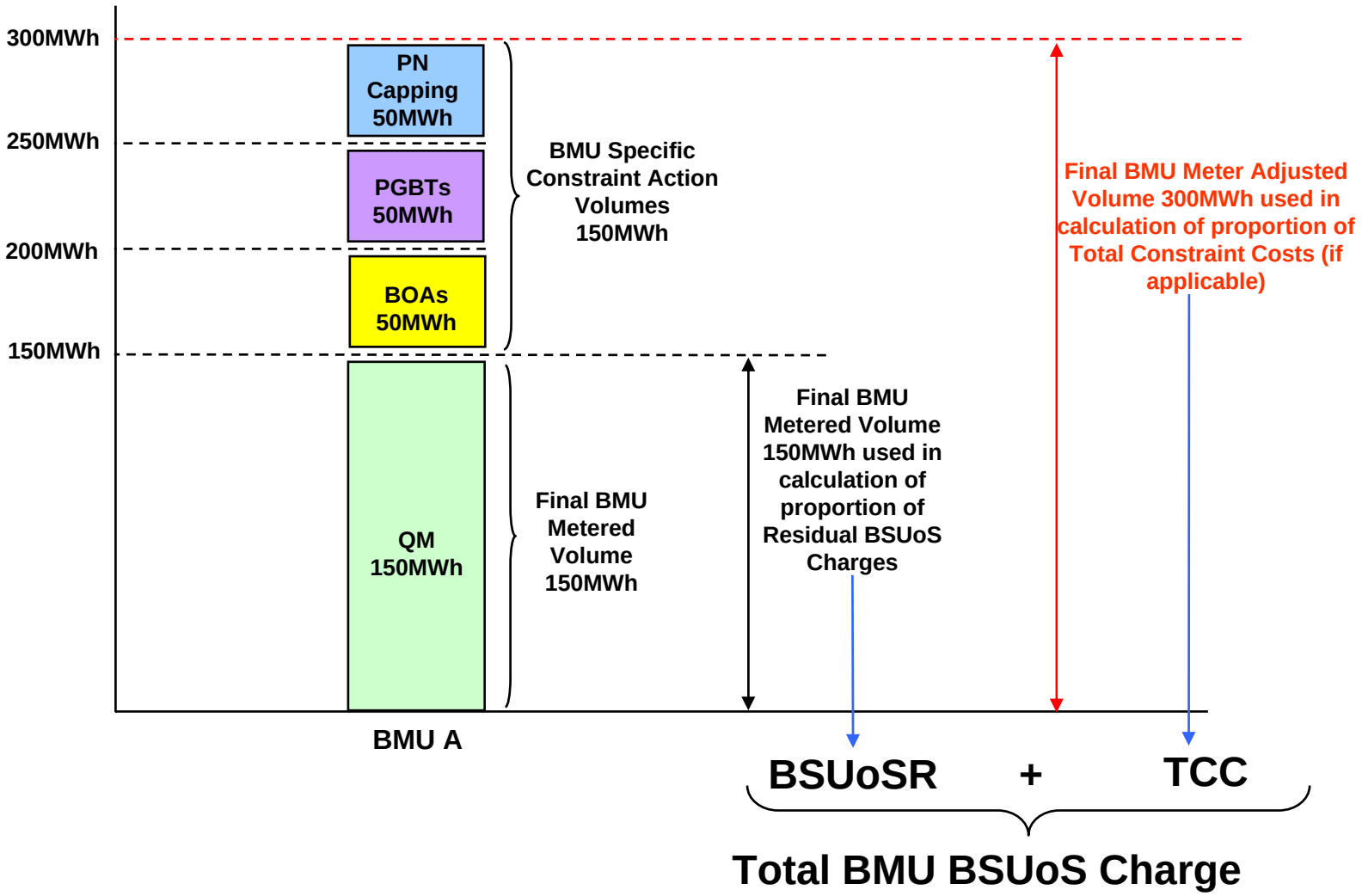
Locational BSUoS Element

- Allocated to all exporting BMU behind a derogated boundary
- Costs allocated based on BMU proportion of Total Metered Adjusted output behind boundary (***QMadj***$_{ij}$)
- ***QMadj***$_{ij}$ = The intended Metered Output of the BMU prior to intervention of SO to manage constraints
- Rational: Final metered position would not reflect parties contribution to constraint biting

Residual BSUoS Element

- Remaining BSUoS costs allocated on final MWh position

Example of BMU BSUoS Costs



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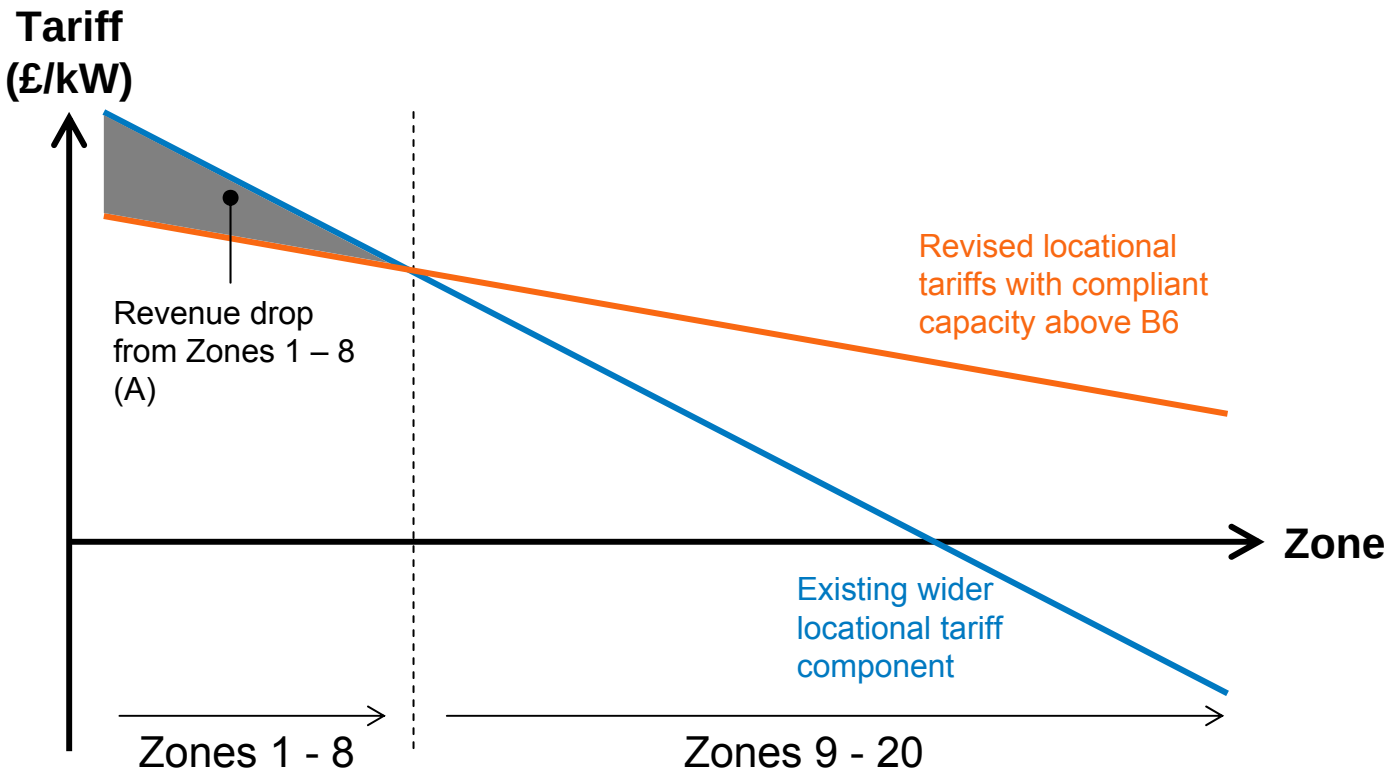
TNUoS Implications

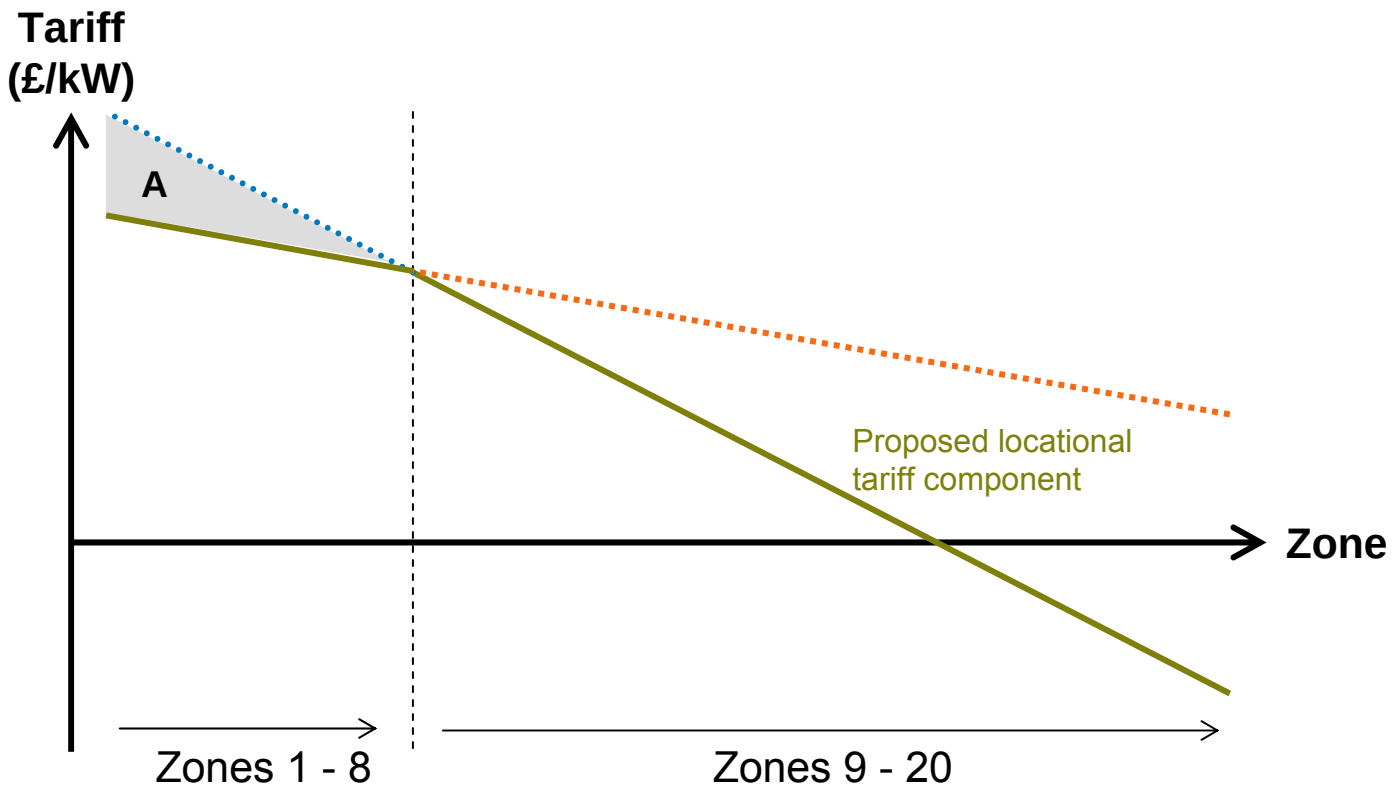
- TNUoS: proxy for the Long Run cost of transmission access
- Locational Element of BSUoS: proxy for the Short Run cost of transmission access for proportion of access capacity deemed non compliant
- If Parties exposed to both BSUoS and TNUoS for all capacity effectively charged twice for non compliant proportion of access.
- TNUoS charges in charging zones behind non compliant boundary will be scaled back to level of TEC that could be accommodated under a compliant network

TNUoS Revision of Tariffs (1) B6 Example



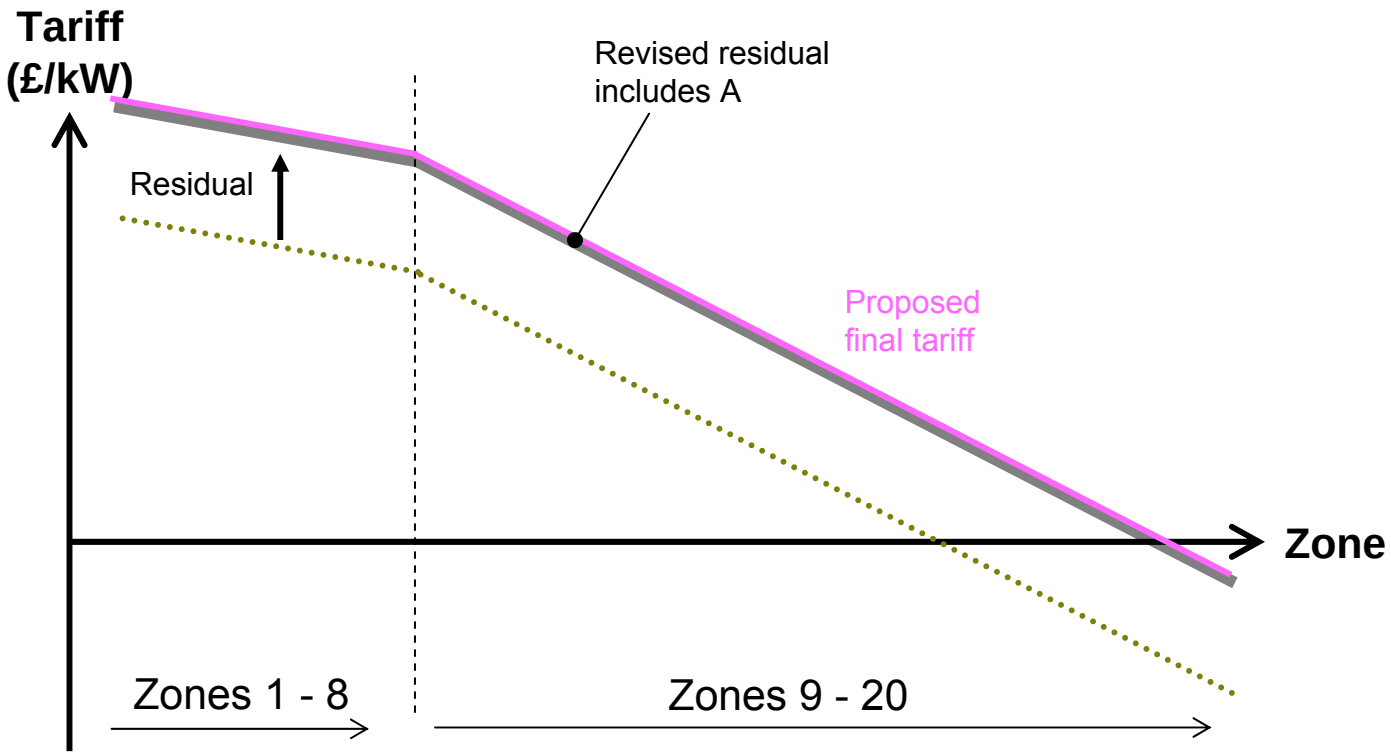
TEC levels scaled back to GBSQSS compliant boundaries and Locational TNUoS tariff recalculated

TNUoS Revision of Tariffs (2) B6 Example



Revised Locatonal TNUoS Tariff for zones behind non compliant boundary. Locational charges in other zones retain original value

TNUoS Revision of Tariffs (3) B6 Example



Residual Tariffs uplifted to recover appropriate costs

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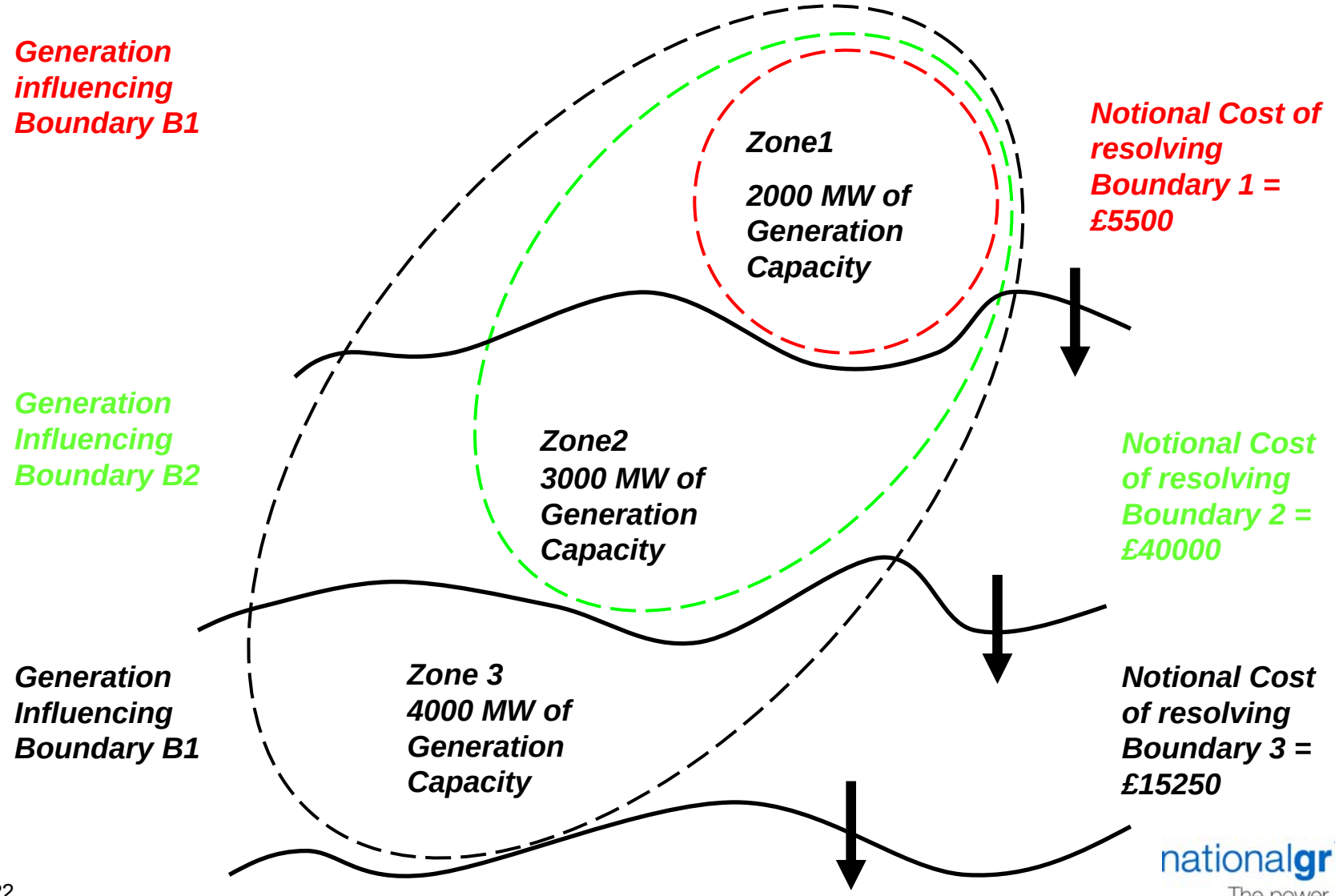
Methodology with Multiple Derogated Non-Compliant Boundaries (1)

- Generators will pay a cost proportional to the costs of resolving all derogated non-compliant boundaries to which their output contributes.
- In recognition of the efficiency arising from constraint actions that contribute to the resolution of more than one boundary, all boundary costs will be scaled to reflect this efficiency.
- Locational BSUoS will be calculated as the appropriate, scaled boundary costs, apportioned to generators in proportion to their output contribution to each non compliant boundary

Methodology with Multiple Derogated Non-Compliant Boundaries (2)
Example as per Consultation companion Costing document



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Methodology with Multiple Derogated Non-Compliant Boundaries (3)

- Notional Cost of resolving….
- B1 = £5500
  - Cost Allocated to all generation in Zone 1: total volume of generation = 2000MW
- B2 = £4000
  - Cost Allocated to all generation in Zone 1 & Zone 2: total volume of generation = 5000MW
- B3 = £15250 –
  - Cost Allocated to all generation in Zone 1, Zone 2 & Zone 3 : total volume of generation = 9000MW
- Actual total cost of resolving all non compliant constraint boundaries = £15250
- Scaling Factor = 15250 / (£5500 + £4000 + £15250) = 0.616161
- £/MWh costs of ($\boldsymbol{QMadj_{ij}}$)

Methodology with Multiple Derogated Non-Compliant Boundaries (3)

- ***Locational BSUoS charge £/MWh for generation in zone 1***
- ((£5500/2000MW) + (£4000/5000MW)+ (£15250/9000MW)) * 0.6161
- ***= £3.23/MWh***
- ***Locational BSUoS charge £/MWh for generation in zone 2***
- (£4000/5000MW)+ (£15250/9000MW)) * 0.6161
- ***= £1.54/MWh***
- ***Locational BSUoS charge £/MWh for generation in zone 3***
- (£15250/9000MW)) * 0.6161
- ***= £1.04/MWh***

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Summary

- Clear volume issue at non-compliant derogated boundaries
- Postage Stamp BSUoS + TNUoS does not correctly signal cost of Access
- Propose BSUoS charges split to two component parts
  - A targeted locational element reflecting the costs of constraints incurred through derogated boundary non compliance; and
  - A residual element incorporating the remaining costs.
- TNUoS rebate based on the level of TEC which is in excess of that which could be accommodated if the boundary was compliant under the GBSQSS

Comments requested

- A few key areas we specifically would welcome views on
  - What impact do you feel Locational BSUoS will make on constraint costs?
  - What do you see as to the benefits and/or consequences of this proposed change (e.g. in respect of new generation connecting)?
  - Do you agree with National Grid's assessment of the proposal against our relevant licence objectives?

Timeline

- Responses to the consultation requested by no later than close of play on 20 April 2009 (date extended following explanatory note)
- Offering to meet bilaterally to discuss further