

Local asset charging arrangements

TAR Meeting 2

May 08

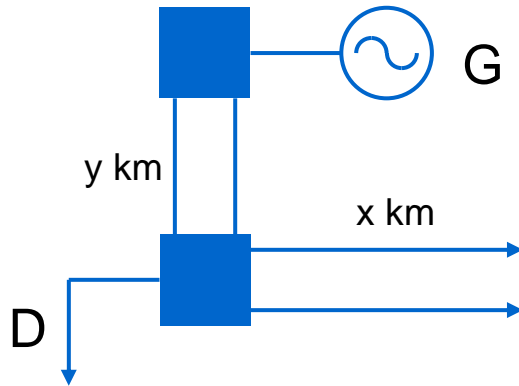
Local Charging

- ◆ Review
 - ◆ Main options
 - ◆ Pros and cons
 - ◆ Summary of responses to pre-consultation
- ◆ Further work
 - ◆ Specific treatment
 - ◆ Interconnected tees / shared demand and generation spurs
 - ◆ Definition of MITS substation
 - ◆ Distance to zonal hubs
 - ◆ No local charge signal at hub
 - ◆ Secured / unsecured MWkms
 - ◆ Substation
- ◆ Next steps

Review

- ◆ Previous charging consultations applicable to design variation connections (GBECM 06 & 09)
- ◆ Scope widened to cover charging for infrastructure local to all generators – sufficient to permit short term access
- ◆ Preconsultation published in March 2008 – three main options:
 1. Specific treatment of generation local assets
 2. Distance to zonal hub
 3. Change to the charging boundary
- ◆ Specific substation element also considered

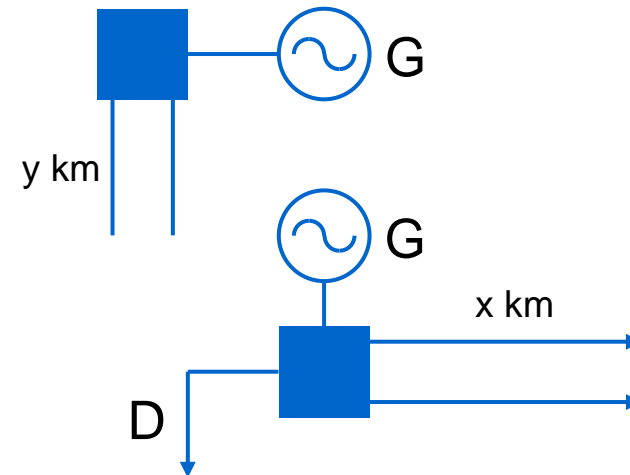
Specific treatment of generation conns



For $G > D$; $1\text{MW} \times (x+y) \times \text{EF} \times \text{LSF}$

◆ Current arrangements

- ◆ “Local” and “wider” circuits subject to the same expansion factor (£/MWkm)
- ◆ “Local” and “wider” circuits different construction type and costs (particularly at 132kV)



For $G > D$, $(1\text{MW} \times x \times \text{EF}_{\text{WIDER}} \times \text{LSF}) + (1\text{MW} \times y \times \text{EF}_{\text{LOCAL}} \times \text{SF}_{\text{SPECIFIC}})$

◆ Specific treatment gen con

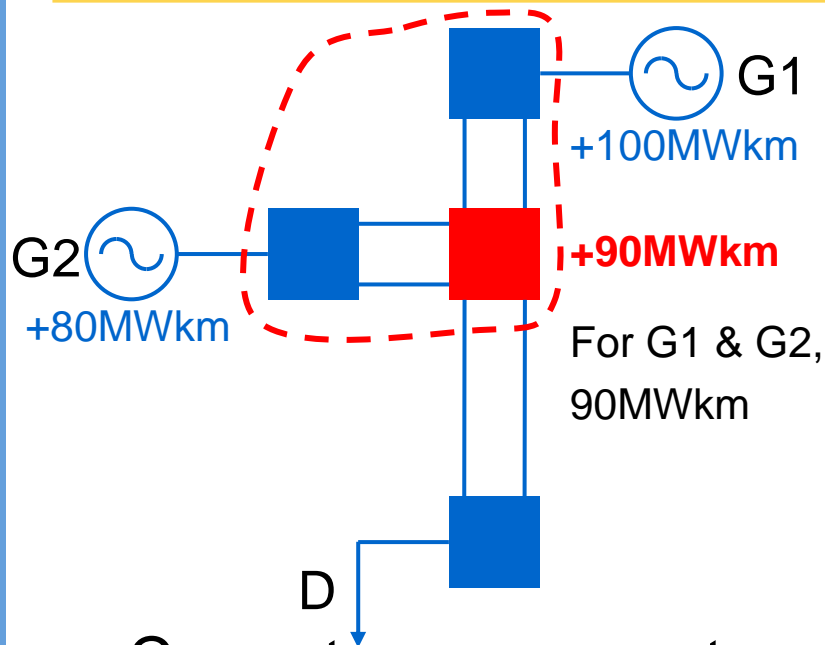
- ◆ “Local” assets removed from transport model
- ◆ Separate treatment of “local” assets with more specific expansion factor and security factor

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Pros and Cons – specific treatment of generator connections

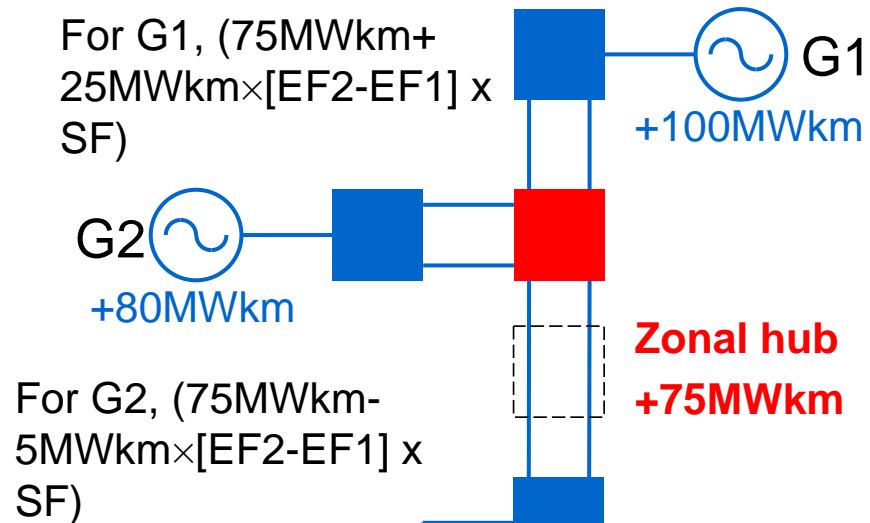
- ◆ Specific treatment of generation connections
 - ◆ Pros
 - ◆ Maintain some advantages of plugs (avoid exposure to TO wider decisions)
 - ◆ Simple concept
 - ◆ Cons
 - ◆ Provision of signal for all types of connection design variation (e.g. interconnected tee design) may be problematic
 - ◆ Definition of “local” asset may be problematic

Specific treatment of distance to zonal hub



- ◆ Current arrangements

- ◆ Transport model used to calculate nodal costs based on standard expansion factors
- ◆ Tariffs based on zonal costs; weighted average of applicable nodal costs



- ◆ Distance to zonal hub

- ◆ Nodal charges based on:
 - ◆ Zonal charge
 - ◆ Difference between nodal and zonal MWkm
 - ◆ Difference between “local” and “wider” EF

Pros and Cons – distance to zonal hub

- ◆ Specific treatment of distance to zonal hub
 - ◆ Pros
 - ◆ Maintain some advantages of plugs
 - ◆ Calculation is straightforward
 - ◆ Improved signals for connection design variations and “connection only”
 - ◆ Cons
 - ◆ Concept is more complex

Change to connection/use of system boundary

- ◆ Change to the connection/use of system boundary
 - ◆ All assets “local” to generation connections classified as connection assets
 - ◆ Asset based charging
 - ◆ Anticipated that “local” assets would include spur circuits and remote substation
- ◆ Complex rules required to cover all current and future connection designs, including shared assets
- ◆ User that chooses:
 - ◆ Connection design variation; or
 - ◆ Local only connectionexposed to cost-reflective charge

Pros and Cons - connection/use of system boundary

◆ Pros

- ◆ Cost reflective signal provided for connection design variation connections and local only connections

◆ Cons

- ◆ User is exposed to decisions made for wider system reasons
- ◆ Methodology for shared connection assets is required
- ◆ Definition of local assets problematic
 - ◆ Will impact on other Users (i.e. demand)

Local asset charging of substation assets

- ◆ A £/kW average cost for the remote end substation
 - ◆ Zonal
 - ◆ TO region
 - ◆ GB
- ◆ Not required if connection/use of system boundary changed (i.e. third option)
- ◆ Example: For a connection at 275kV:
 - ◆ SQSS compliant connection: £0.60/kW
 - ◆ Single circuit connection: £0.38/kW
- ◆ Residual charge
- ◆ May be required to reflect the full cost of local assets

Summary of preconsultation responses

- ◆ General support for both specific treatment of generation connections (1) and distance to zonal hub (2) with little appetite to increase depth of charging boundary
- ◆ 1 - Simple and transparent but hard to consistently identify actual 'local' assets
- ◆ 2 – Predictable but complex; further analysis is required to demonstrate robust cost reflectivity
- ◆ Appropriate to include a non-locational element

Further work

Specific treatment of generation conns

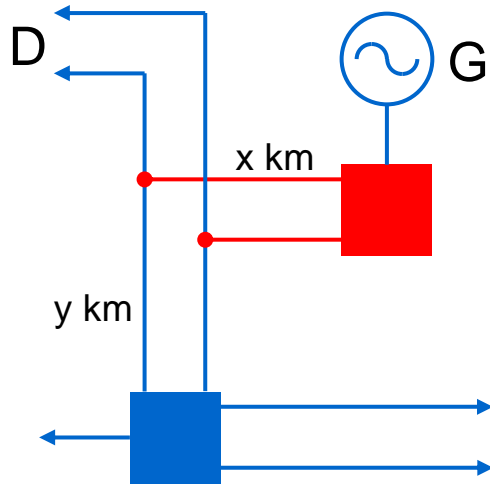
- ◆ Sub-options

- a) Generator only vs. marginal investment
 - ◆ Marginal investment required for 'shared use' circuits
 - ◆ Marginal investment consistent with Charging Methodology
- b) Applicable voltages
 - ◆ 132kV only
 - ◆ All voltages
- c) Local expansion factors
 - ◆ Generation zone/ TO region/ GB
 - ◆ construction type/ circuit rating
- d) TEC, CEC or "other"
 - ◆ Agreed that existing terms don't work
 - ◆ New term: "Local Connection Capacity"

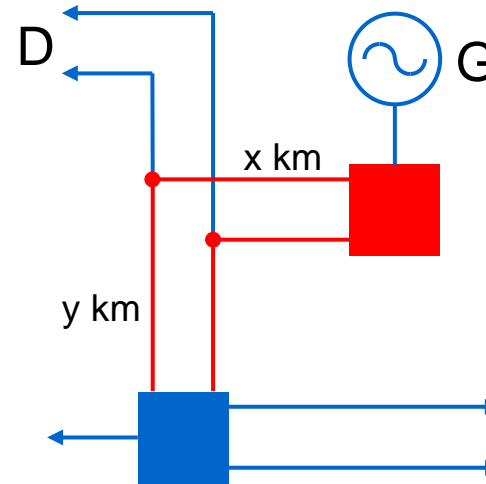
Issues

- ◆ Definition of MITS substation
 - ◆ Local/ Wider asset boundary
 - ◆ Definition of consistent, simple rules problematic
- ◆ Shared use circuits
 - ◆ Demand and generation spurs
 - ◆ Interconnected tees

Shared I - Demand and Generation spurs



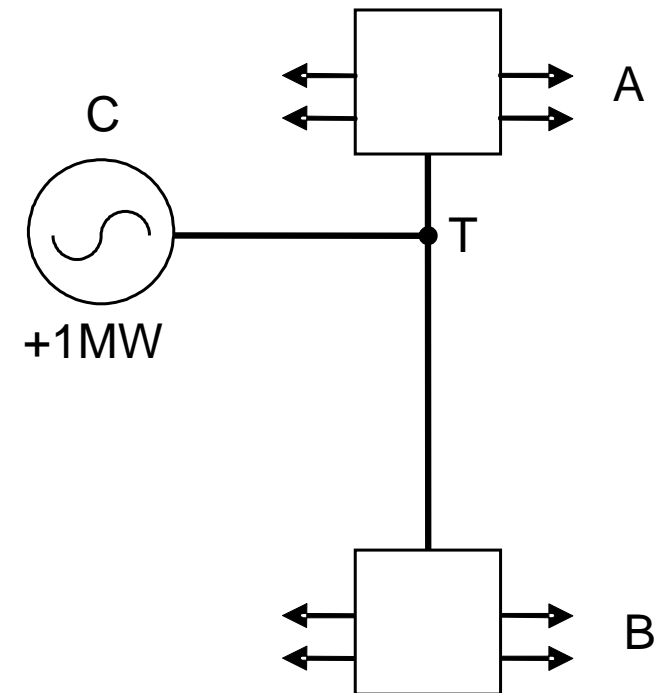
- ◆ Generation only
 - ◆ “Local” assets
 - ◆ x km of ohl



- ◆ Marginal investment for generation
 - ◆ “Local” assets
 - ◆ For $G > D$; $(x+y)$ km of ohl
 - ◆ For $D > G$; $(x-y)$ km of ohl

Shared II - Interconnected tee

- ◆ Local charge should include entire cost of spur leg (C to T) and proportion of MITS circuit (A to B)
- ◆ Power flow analysis required to determine split of additional MW at T point
 - ◆ What proportion flows T to A?
 - ◆ What proportion flows T to B?
- ◆ To ensure other User's charges not affected, model must inject corresponding flow at nodes A and B



Specific treatment of distance to zonal hub

- ◆ Sub-options

- a) Local Expansion Factors

- ◆ Volume weighted for gen zone or TO region
- ◆ Simplified model (last connecting circuit)
- ◆ Average of generation connection circuits

- b) Local Security Factors

- ◆ Simplified assumptions
- ◆ Seculf

- c) Selection of Zonal Hub

- ◆ Generation marginal cost weighted average
- ◆ Lowest generation node
- ◆ Demand marginal cost weighted average

Issues

- ◆ Secured/ unsecured MWkms
 - ◆ Local Security Factors already considered by Secured Load Flow model (SECULF)
- ◆ Zero local charge at zonal hub
 - ◆ Use of a generation node as zonal hub produces a zero local charge for this node.
 - ◆ “Wider” charge factors in locational signal although retains existing issues with TNUoS averaging

Substation element

- ◆ Industry views:
 - ◆ A balance between cost reflectivity and stability
 - ◆ Voltage and connection standard basis appears sensible

Change to connection/use of system boundary

- ◆ Options
 - ◆ 132kV only or all voltages
 - ◆ Connection asset sharing methodology
 - ◆ TEC
 - ◆ CEC
 - ◆ Fault level contribution

Next Steps

- ◆ NG seeking to implement revised local charging arrangements for April 2009
 - ◆ Indicative charges to be produced in December 2008
- ◆ Draft consultation to be produced with input from the Working Group
- ◆ Intension to circulate a draft before next meeting
- ◆ Followed by 28 day consultation
- ◆ Conclusions report
- ◆ 90 day Impact Assessment