AGCTF Update to CAWG

May 25, 2011

Southwest Power Pool

Area Generation Connection Task Force

- **AGCTF Charter from the MOPC:**
  - **The Area Generation Connection Task Force (AGCTF) is responsible for developing and recommending policy to guide SPP Staff and/or recommendations for Tariff modifications or business practices to determine the optimum methods and locations for interconnecting generation to the transmission system given the complex situations generally prevalent.**
- **AGCTF has developed a Whitepaper describing many of these issues and proposed solutions.**

Area Generation Connection Task Force

- MOPC accepted AGCTF recommendations at April meeting but recognized additional action is required
  - Recommendations related to payment of certain facilities were contingent upon CAWG and RSC approval
- AGCTF was directed to hold further discussions on open issues affecting other working groups, Legal etc.
- AGCTF was directed to hold discussions on cost allocation and to obtain approval from CAWG and RSC
- AGCTF was directed to work with RTWG to develop needed Tariff language
- MOPC did not address collector system issues except for an acknowledgment that there is a need for such

The Generation Interconnection Issue

- Current practice is that each GI customer independently interconnects, and directly pays for all costs, associated with its request for interconnection
- SPP has received multiple requests for interconnection in the same geographical area on the same line
  - May have multiple substations in very close proximity to each other
  - Can cause operational issues on the power line
  - Increase impedance on a line if static inductors are required
- GI customers appear to be reluctant to jointly share the same interconnection facilities
  - Ownership issues and lease agreements can make this difficult

AGCTF Recommendation on Generation Hubs

- In areas where multiple generators wish to interconnect on the same line
  - Generators will be required to interconnect at a centrally located substation (a Generation Hub)
  - This will minimize the number of interconnections on the same line
- Existing Substations may qualify as a Hub
  - Minimize costs
  - Consistent with current Tariff (Attachment V. Section 4.2.3).

Generation Hubs

- Hubs can be identified by:
  - ITP process by identifying significant areas of generation potential
  - GI Cluster Study process when multiple generators request interconnection in the same geographical area
- No existing substation or new substation will become a Hub unless identified as necessary through one of the above processes and approved by the BOD
- No NTC's issued until SPP has an executed and approved GIA
- Hubs preferably located and spaced for optimum connections to other substation/hubs

Requirements to Interconnect to a Hub

- A GI customer is NOT required to connect to a Hub unless a Hub is determined to be needed
- When a Hub is identified, a GI customer must connect to the Hub if directed to do so through the GI process
- GI customer may ask for an exception
  - Reasons for Granting: Access to Hub, costs, etc.
  - Must independently fund all related studies
  - May have its GI request delayed to complete the studies
  - If granted, the GI customer is responsible for all interconnection costs pursuant to Attachment V

Cost Recovery for Generation Hubs

- 345 kV and above substations
  - Regionally fund the initial cost to build a Hub – land, fencing, breakers to tie in and out of the transmission line
    - Offset to GI customers who may have to build longer generator leads to get to a Hub
  - Additional costs are direct assigned to the GI customer(s)
    - E.g. bus work, relaying, switches, breakers, etc.
- Substations interconnected at voltages below 345 kV
  - Direct assigned to GI customer(s)
    - Eligible for credits in accordance with Attachment Z

Potential Generation Hubs

- ITP Hub Locations
  - Midpoint of Hitchland-Woodward 345kV
  - Midpoint of Tuco – Woodward 345kV
- Additional locations may be identified due to GI requests on any 345kV or higher voltage line known to be in a generation resource rich area
- Hubs should be planned to be potential terminal points for future lines to other hubs (i.e. the collector system)

Possible Tariff Changes

- This proposal should not require major changes to the Tariff language
  - ITP and GI processes have enough flexibility to allow Hubs to be identified and created
  - Waiver process for GI customers may need to be in Tariff
  - Some minor changes (not yet identified) in the Base Plan Funding rules to allow cost recovery as approved by the RSC

Discussion Questions:

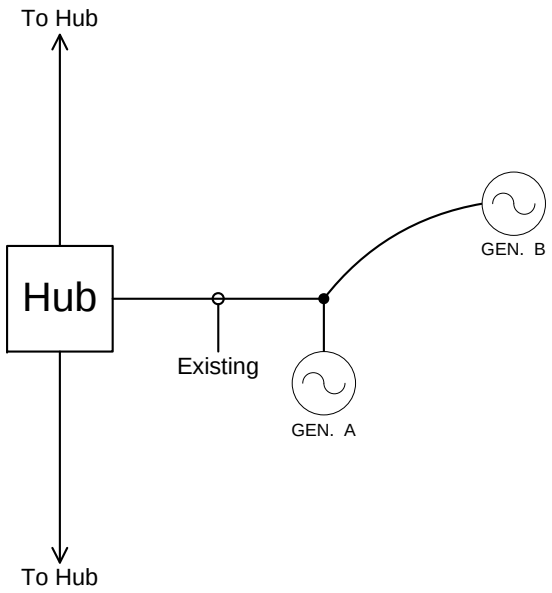
- Recovery of some costs of Hubs through Base Plan Funding?
- Are rules around identifying Hubs clear enough?

Next Step for the AGCTF

- Address “Collector System” Issues
- Requiring GI customers to interconnect at the Hub can cause issues
  - Longer Generator Leads (higher cost to GI customer)
  - Unable to get right-of-way access to Hub
- Building a collector system can solve some of these issues
- Creates issues of:
  - “who pays for what”
  - How collector systems are designed and identified

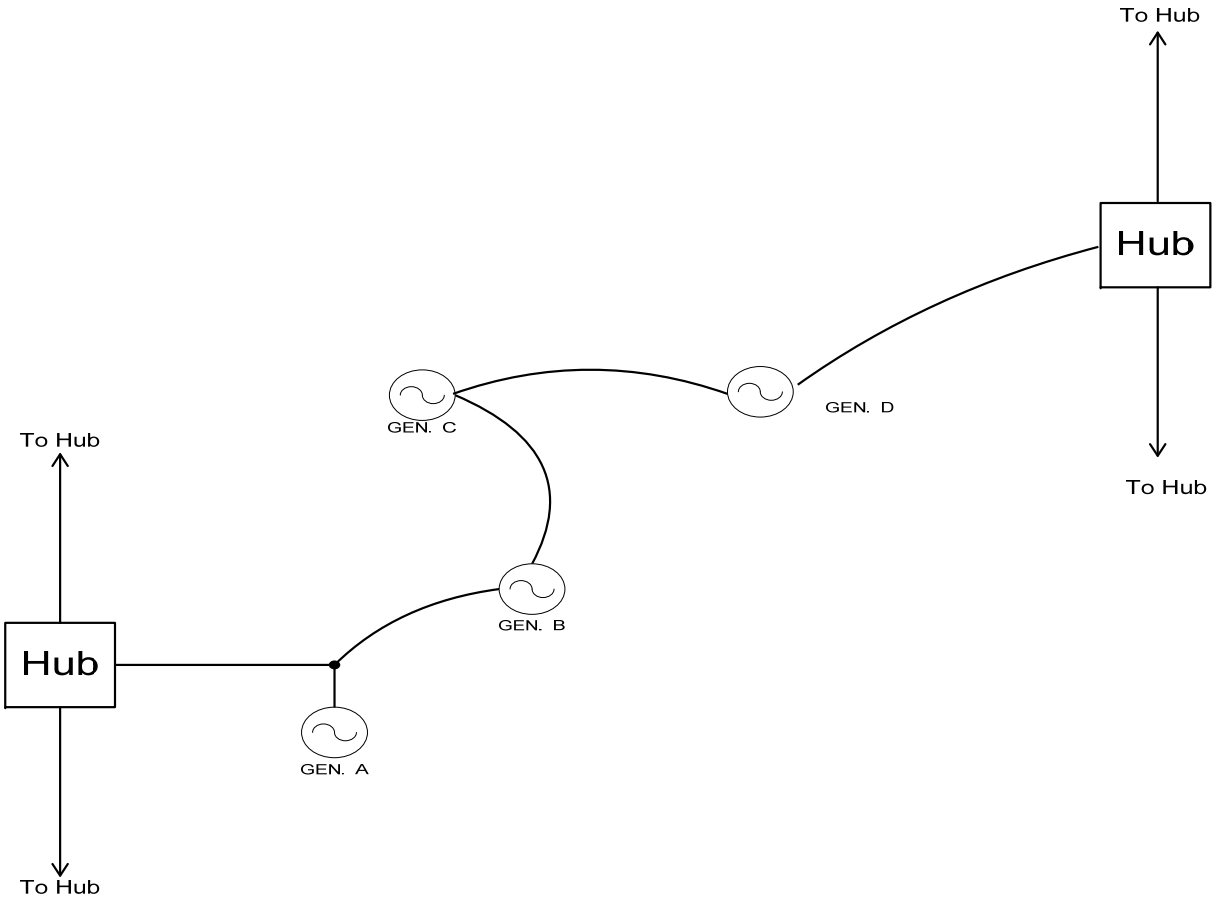
Collector System

- Hubs are the beginning of a Collector System. The first step of a collector system is to have the ability to share generator leads from the proposed Hubs
- Who builds those leads (T.O. or Generator) and their cost allocation has been much debated



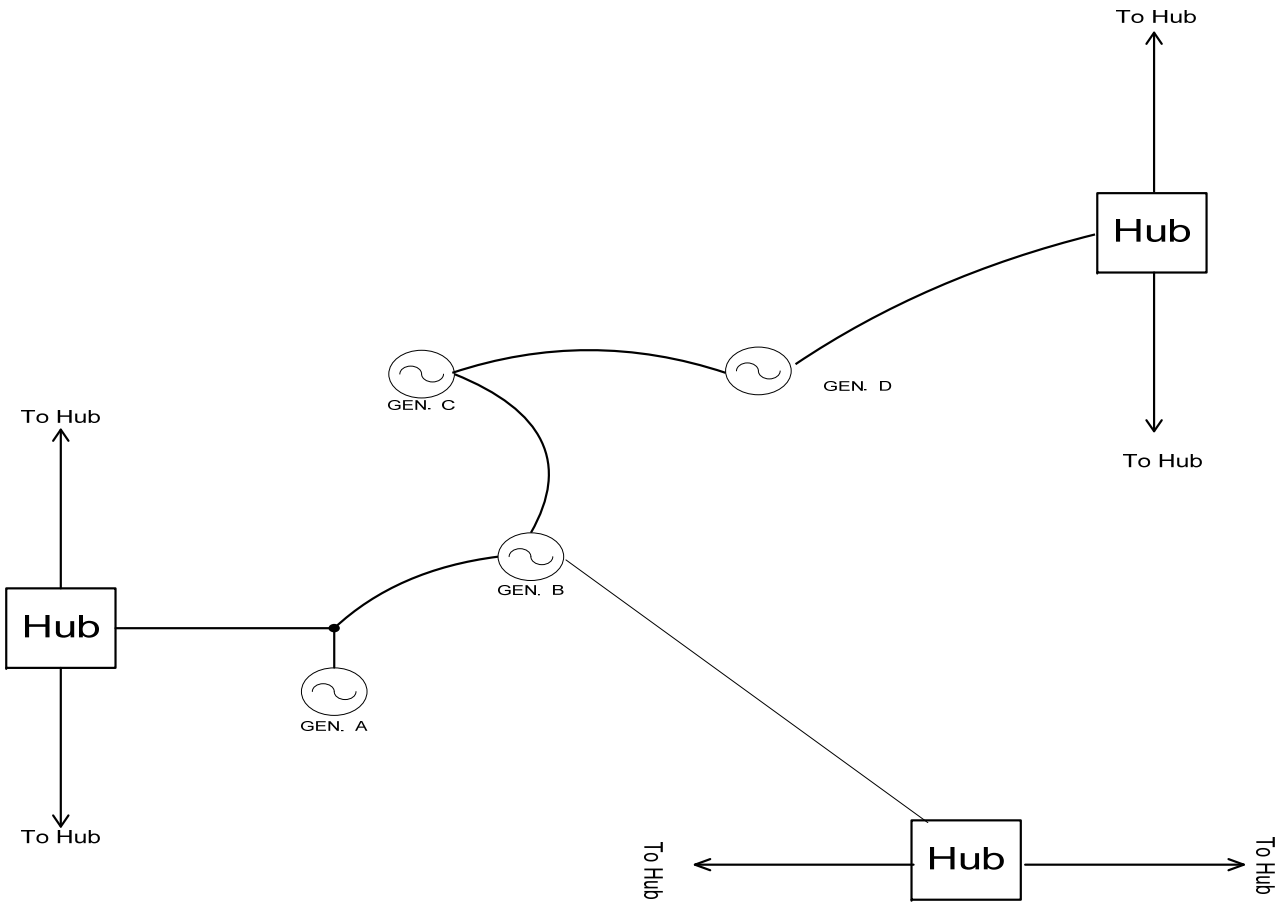
Collector System

- Collector System can be further refined by combining shared leads



Collector System

- **For a robust collector grid system – additional ties to other hubs may be required**

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