

**Non-Blondel MIEC**  
**WYE Grounded System**

# **WYE Grounded Systems**

- **Requires 3 element metering to be Blondel compliant**
- **Existing non-Blondel metering installations permitted as per Wholesale Revenue Metering Standard - Hardware Section 4.3.3(d)**
- **MSP must determine non-Blondel MEC**

# **Non-Blondel MEC**

- **Use pickup setting of Ground Fault Relay (default) - worst case error**
- **Monte Carlo simulation as per Market Manual 3.4, section B.4.5**
- **Measure Neutral Current and assume unbalance as maximum error**
- **Perform System Study**

# **Non-Blondel Power System Study**

- **Comparison of a 2 Element Meter vs 3 Element Meter**
- **Must have access to:**
  - **Three phase currents**
  - **Two phase-phase voltages (open delta)**
    - **OR-**
  - **Three phase-ground voltages (WYE)**

# **Non-Blondel System Study (2)**

- **Metering device must be:**
    - **accurate and traceable**
    - **capable of measuring and recording the following:**
      - **$I_a$   $I_b$  and  $I_c$  magnitude and phase angle\***
      - **$V_{ab}$  and  $V_{cb}$  magnitude and phase angle\***
  - OR –
  - **$V_{bn}$  and  $V_{cn}$  magnitude and phase angle\***
- \* to common reference

# **Non-Blondel System Study (2)**

- **Metered data is used to compute system components (per interval)**
    - **In calculated from measured  $I_a$   $I_b$  and  $I_c$**
    - **$V_{an}$   $V_{bn}$  and  $V_{cn}$  calculated from measured  $V_{ab}$  and  $V_{cb}$  (open delta)**
- or-**
- **$V_{ab}$  and  $V_{cb}$  calculated from measured  $V_{an}$   $V_{bn}$  and  $V_{cn}$  (WYE)**

## **Non-Blondel System Study (2)**

- **System components used to calculate 2 element and 3 element meter values (per interval)**

$$- 2 \text{ el} = V_{ab} * I_a + V_{cb} * I_c$$

$$- 3 \text{ el} = V_{an} * I_a + V_{bn} * I_b + V_{cn} * I_c$$

- **Non-Blondel error is the difference between the 2el. meter and 3el. meter**

# Conditions

- Study must be performed over a 7 day period and reflect true operation of the load
- Interval data logged every 5 minutes
- Unmetered phase of the system study must be unmetered phase of the 2 element revenue metering installation
- non-Blondel MECC Error is averaged over the study period