APC Zonal Calculation

The bolded parameters below are PROMOD output reporting parameters, with filters applied as indicated.

Adjusted Production Cost (APC) = Production Cost $ + Purchases $ - Sales $

- Production Cost $ = Unit Cost ($) + Billing Cost ($) + ($1000)* Emergency Energy (MW), by hour, by zone
  - Remove “PowerBase Tariffs” from Billing Cost ($)
  - The $1000 is the soft constraint for emergency generation in the 2019 ITP
- Sales $ = Sales (MW) * GLMP, by hour, by zone
    - Remove “PowerBase Tariffs” from Contract Participation Energy1 (MW)
    - If negative, set Sales (MW) to zero for that hour (net purchases).
  - GLMP = (Unit Revenue ($) + Transaction Market Value ($)) / (Unit Gen (MW) + Contract Participation Energy2 (MW))
    - For Transaction Market Value ($), remove “PowerBase Tariffs”, and include only “Purchases”, exclude “Sales” (PurchSale is the name of the field in Report Agent)
    - For Contract Participation Energy2 (MW), remove “PowerBase Tariffs”, and include only “Purchases”, exclude “Sales” (PurchSale is the name of the field in Report Agent). Note that this is different than the Contract Participation Energy1 from Sales MW calculation, though same query from PROMOD output files.
  - $1000 is the soft constraint in PROMOD used for emergency energy. This is set equal to the safety-net energy offer cap in SPP’s Integrated Marketplace.
- Purchases $ = Purchases (MW) * LLMP, by hour, by zone
    - Remove “PowerBase Tariffs” from Contract Participation Energy1 (MW)
    - If negative, set Purchases (MW) to zero for that hour (net sales).
  - LLMP is automatically calculated by PROMOD for each area – it is the hubs that begin with LS.
# APC Calculation for SPP Region

<table>
<thead>
<tr>
<th>SPP Market Economic Model Region</th>
<th>SPP APC Pricing Zone(s) / “SPP MAIN”</th>
<th>SPP APC Zone(s) with Load / “SPP INFORMATIONAL”</th>
<th>SPP Zone(s) without Load / “SPP OTHER”</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPP</td>
<td>AEPWALL EMDEALL GMOALL GRDA IS (UMZ) KCPLALL LES MIDWALL MKECALL NPPDALL OKGEALL OPPDALL SPCIUT (CUS) SUNCALL SWPAALL SWPSALL WESTALL WFECALL</td>
<td>KACY</td>
<td>OTHSPP – Includes Merchant Generation without contractual arrangements with load serving entities and additional Renewable Resource Plan Wind Resources</td>
</tr>
</tbody>
</table>

**SPP Regional APC Calculation**$ = **SPP MAIN**$ + **SPP INFORMATIONAL**$
# APC Calculation for External Regions

<table>
<thead>
<tr>
<th>Economic Model Region</th>
<th>APC Zone(s)</th>
<th>Region APC Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>AECI</td>
<td>AECI</td>
<td>AECI Regional APC$ = AECI APC Zone$</td>
</tr>
<tr>
<td>MISO</td>
<td>ALTWALL, ATC, BASINMSO, DPC, GRE, MDU, MEC, MISOC, MISOE, MISOS, MP, MPC, MPW, MRESMISO, NSP, OTP, SMP</td>
<td>MISO Regional APC$ = Sum of MISO APC Zones$</td>
</tr>
<tr>
<td>MRO</td>
<td>MHEB</td>
<td>MRO Regional APC$ = MHEB APC Zone$</td>
</tr>
<tr>
<td>TVA</td>
<td>TVA</td>
<td>TVA Regional APC$ = TVA APC Zone$</td>
</tr>
</tbody>
</table>
SPP Regional APC Benefit Calculation

1-year SPP Regional APC Benefit$ of solution = SPP Regional APC$ before solution addition – SPP Regional APC$ after solution addition