This document details the zonal and regional APC calculations for SPP and external regions and the 1-year SPP regional APC benefit calculation to quantify APC benefit of solution(s) in the 2020 ITP study. Stakeholders can refer to the SPP Benefit Metric Manual benefit metrics posted at https://www.spp.org/Documents/44031/Benefit%20Metrics%20Manual.doc for more details on the APC savings metric and calculation of 40-year benefits.
**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 2020 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>Market Economic Model Region</th>
<th>SPP APC Pricing Zone(s) / “SPP MAIN”</th>
<th>SPP 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), KACY, KCPLALL, LES, MIDWALL, MKECALL, NPPDALL, OKGEALL, OPPDALL, SPCIUT (CUS), SUNCALL, SWPAALL, SWPSALL, WESTALL, WFECELL</td>
<td>(none)</td>
<td>OTHSPP – Includes Merchant Generation without contractual arrangements with load serving entities and additional Renewable Resource Plan Wind and Battery Storage Resources</td>
</tr>
</tbody>
</table>

*SPP Regional APC Calculation$ = SPP MAIN$ + SPP INFORMATIONAL$

*The SPP OTHER zone includes Battery Storage assumptions in years 5 and 10 for the 2020 ITP. There is currently no load hub assigned to the zone to account for charging operation to calculate a zonal load LMP in the event that the zone is purchasing. This has a negligible impact, as the zone is only purchasing in Future 2 year 10 for 75MWh.*
## APC Calculation for External Regions

<table>
<thead>
<tr>
<th>Market 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$</td>
</tr>
<tr>
<td>MISO</td>
<td>LRZ 01, LRZ 02, LRZ 03, LRZ 04, LRZ 05, LRZ 06, LRZ 07, LRZ 08, LRZ 09, LRZ 10, MISO Unknown Owner</td>
<td>MISO Regional APC$ = Sum of MISO APC Zones$ (excluding MISO Unknown Owner)</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