

This document details the APC Zonal Calculation, APC Calculation for SPP Region, APC Calculation for External Regions, and 1-year SPP Regional APC Benefit Calculation to quantify APC Benefit of solution(s) in the 2019 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 Adjusted Production Cost 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 2019 ITP
- Sales \$ = Sales (MW) * GLMP, by hour, by zone
 - Sales (MW) = **Unit Gen (MW)** + **Contract Participation Energy1 (MW)** + **Emergency Energy (MW)** – **Area Native Load (MW)** – **Pumping Energy (MW)** – **Dump Energy (MW)**
 - 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
 - Purchases (MW) = **Area Native Load (MW)** + **Pumping Energy (MW)** + **Dump Energy (MW)** – **Unit Gen (MW)** – **Contract Participation Energy1 (MW)** – **Emergency Energy (MW)**
 - 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

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

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

APC Calculation for External Regions

Economic Model Region	APC Zone(s)	Region APC Calculation
AECI	AECI	AECI Regional APC\$ = AECI APC Zone\$
MISO	ALTWALL ATC BASINMSO DPC GRE MDU MEC MISOC MISOE MISOS MP MPC MPW MRESMISO NSP OTP SMP	MISO Regional APC\$ = Sum of MISO APC Zones\$
MRO	MHEB	MRO Regional APC\$ = MHEB APC Zone\$
TVA	TVA	TVA Regional APC\$ = TVA APC Zone\$

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