APC Calculation

This document details the APC fields and formulas used in the 2017 ITP10 study. 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 2017 ITP10
- 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.