SCE

simulator of the Brazilian electric power commercialization chamber – CCEE

Background

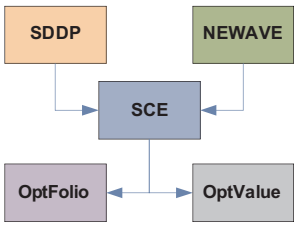
The objective of the original development of SCE in 1998 was to implement the algebraic rules of the Wholesale Electricity Market (MAE). After the "second generation" of the Brazilian Reform, the original program was updated in order to simulate the rules of the then newborn CCEE (electric power commercialization chamber) in 2004. Among the most important rules are the energy reallocation mechanism (MRE), the systems service charge (ESS), the surplus allocation to mitigate the contracts exposure and the risk sharing mechanisms to mitigate price differentials derived from the contracts between generation and distribution companies in the regulated market (CCEAR). The result is a tool that simulates the Brazilian Market rules coupled with simulation models (such as NEWAVE or SDDP), guiding the economic evaluation of generation, distribution and trading companies. SCE results are often used as inputs for the investment decisions, or for devising contracting strategies or for helping bidders in the electricity auction in Brazil..

Historically, SCE was developed for the following purposes:

- To assist in the economic analysis of generation utilities privatized in the FHC Government. The first version of the program was developed in the second semester of 1998 for the privatization of the 5918 MW Gerasul utility (now Tractebel). Later, it was utilized for the analysis of 2237 MW CESP Paranapanema utility (now Duke Energy Brasil) and the 7455 MW CESP Parana, whose privatized halted
- SCE was also used as "laboratory" to simulate different alternatives for MAE rules. In this regard it should be emphasized that PSR has been consultant to several institutions, such as: the MME (Ministry of Mines and Energy), ANEEL (National Agency of Electric Power), ONS (National System Operator), BNDES (National Development Bank), former Wholesale Energy Market Service Administrator (former MAE, now CCEE). As an example, of this usage, there are the studies with SCE to analyze different alternatives for the energy reallocation mechanism (MRE), number of sub-markets (price regions), effects of the Annex 5 clause of the initial contracts, allocation rules for the exposure of the market participants due to price-differentials among the sub-markets and allocation of trans-mission surplus (congestion revenues)
- To assist the Energy Crisis Management Chamber (2001) during and after the energy rationing in Brazil in the presentation of proposals to revitalize the electricity sector. On this occasion, SCE was used to investigate different alternatives for MAE algebraic rules which eventually guided a large agreement between Generation and Distribution companies that prevented a complete halt of the MAE activities
- To study contracting and risk control strategies for investors, generation concessionaires and energy traders
- To study the generation utilities contracting strategy in the auctions for "new energy" and "existing energy", such as the 3,100 MW Santo Antonio hydropower auction (in 2007) and the 3,500 MW Jirau hydropower auction (in 2008), both at the Rio Madeira, an Amazon tributary

Present use of the model

SCE is integrated to the set of models developed by PSR, in particular to SDDP, OPTFOLIO and OPTVALUE. The objective is to advise utilities on their energy contracting strategies in the auctions and on their investment decisions. SCE is also fully compatible with the tools being used in the Sector, such as the NEWAVE model.



SCE Results

Results produced by SCE are in CSV-format files. These files are managed by a graphical interface (GRAPH program) which retrieves or processes the desired results from the CSV files, graphing the results in Excel, where the data becomes available and can be easily edited. SCE main results are:

- MRE energy credit, generation outside MRE and GSF (assured modulated energy allocation factor)
- Total net contracts and energy balance at CCEE
- Net Revenues in each sub-market and contracts revenues for CCEAR (regulated environment) PPAs
- Financial exposure to the MRE, allocation of the ESS (energy service charges)
- Transmission surplus (congestion revenues) and allocation
- Risk-sharing adjustments among distribution companies for the regulated market contracts and final negative exposure of each distribution company