Review of Colombian Firm Energy Auctions

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Background

- Capacity Payment system replaced with Reliability Charge scheme in Dec. 2006
- Payment of Reliability Charge entails commitment to provide minimum quantities of firm energy in scarcity periods (OEF)
- In scarcity periods, generators receive Scarcity Price for providing firm energy up to the level of the .ommitment
- From Dec. 2006 – Dec. 2012 the Reliability Charge is CREG-estimated CONE of $13.05/MWh
- From Dec. 2012, Reliability Charge determined by clearing price in auctions
- Descending clock auction (May 2008) – allocated 65,869 GWh/ano
- Three new plants with 3.009 GWh/ano and 62,860 GWh/ano of existing plant, at an auction price of $13.998/MWh
- GPPS auction in June 2008 allocated 6,285 GWh/ano to six new plants at reserve price of $13.998/MWh.

Our Purpose

Evaluate performance of descending clock and GPPS auctions. In particular:

- Information provided before and during auctions
- Any other aspects which are relevant to auction performance

Make recommendations for improved performance in future auctions.

Proposals discussed today are not final! Need input from CREG and industry.

Overview of Two Auctions

Descending clock auction attracted competition from 10 new plants (but only two new entrants – Poliobras and Cosenit)

- Six rounds with closing price = $13.998/MWh

GPPS auction attracted six new projects

- but no competition in any year, so no sealed-bid auction occurred

Descending Clock Auction I

Information

Before auction:

- Number of projects, total quantities offered and technical parameters
- Demand curve, CONE, auction starting price and price floor

During auction:

- Round opening and closing price, and excess supply at end of each round

Purpose of descending clock auction is “price discovery”, i.e. allow agents to revise their reserve prices in light of bidding behavior of other agents.

- Revealing excess supply allows agents to see when they are “pivotal”, i.e. when withdrawing their supply will end the auction
- Can avoid this by revealing no/less information on supply/demand
- E.g. reveal aggregate supply at end of each round and no/less information on demand
- Still allows for “price discovery” but avoids “pivotal agent” problem

Descending Clock Auction II

Is descending-clock necessary?

- Most companies reported that they did not revise their reserve prices during auction So no useful information transmitted?

Proposals:

- **Restrict information on excess supply during auction?**
- **Make future auctions sealed-bid auctions?**

Other Issues

I. Is a price floor necessary?

- New plant can withdraw at any price, and existing plant can withdraw (temporal withdrawals rule) at any price below 0.8CONE
- If new plant is willing to supply below price floor, should existing plant be paid more?
- So what is economic purpose of a price floor?
- Alternatively, if we have a price floor, do we need temporal withdrawals?

Descending Clock Auction III

Other Issues...

II. Temporal Withdrawals

- Cramton/Stoft rules revealed no information on temporal withdrawals during auction
- CREG rules reveal some useful information

CREG rules probably result in higher prices but provide better price discovery; Cramton/Stoft rules more strictly control market power.

Proposal: Use Cramton/Stoft rules?

III. Price Decrements

- Auction allows bidders to specify withdrawal prices up to three decimal places, i.e. $18.678/MWh
- Can exacerbate “pivotal agent” problem and possibly allow “signaling”

Proposal: Single decimal place is probably sufficient?

Descending Clock Auction IV

Other Issues...

IV. Insufficient Offers

- If at the end of the auction, 50% of OEFs from new plants are allocated to firms with a firm energy market share greater than 15%, the auction will be qualified as Insufficient Offers
- Price paid to existing power plants is then **Min [1.1 CE, auction closing price]**.
- This price is used as price ceiling in GPPS auctions

This rule can create incentives to withdraw new plant early from descending clock auction and/or allocate more new plant to GPPS auction.

Proposal: Apply this rule to new plant offered at beginning of auction, rather than to winners' market shares at end of auction?

GPPS Auction

Since supply offered < incremental demand in every year, no auction was held.

- But there is now “excess capacity” available in first two years
- i.e. total “offered supply” exceeds incremental demand in 2014/15 and 2015/16
- ENFICCs also exceed total cumulative demand in those years

By spreading offers over four/five years, companies avoided sealed-bid auction. All offers accepted at reserve price.

Solutions:

I. Submit price and quantity bids simultaneously

- Makes it harder to coordinate on quantity offers – provides incentives to offer larger quantity at slightly lower price

II. Provide less information on annual incremental demand, e.g. total only

III. Entire OEF offer for any project must be made in first year

- i.e. can't spread offers over four/five years

Multiple Auctions?

Descending clock auction attracted primarily thermal plant with shorter planning periods.

GPPS auction attracted large hydro projects with longer planning periods.

- Most of the new energy from both auctions applies to same time period, i.e. 2012 – 2032
- Different planning periods restricted the amount of competition in each auction
- Preferable if thermal and hydro competed in same auction?

Solution:

Hold single GPPS-type auctions in future, covering more years, with longer planning period.

- E.g. a combined descending-clock/GPPS auction in 2010 for years 2016/17 – 2020/21
- Apply rules suggested above for GPPS + special rules for existing plant from descending clock auction
- Clearing price in each year paid to new and existing plant

Single Auction Issues

Advantages of holding a single GPPS-type auction in future:

- Allows all new plant to compete in same auction, e.g. large hydro projects and thermal plant
- Sets single price for all new and existing plant in each year (subject to special rules for existing plant)
- Provides information/signals on timing of new projects, e.g. if a project does not win an OEF in first year it can delay construction

Issues to be resolved for new auction:

- Sealed-bid or descending-clock auction for each year? Since auction has combinatorial features, descending auction is more complex. Advantage of descending clock is price equalisation across years?
- First-price or second-price (proxy) auction? I.e. should each years' price be clearing price or lowest rejected offer? Latter simplifies bidding and can improve efficiency?
- What reserve price should be used? E.g 2xCONE? $13.998/MWh?

END