



***The Costs and Benefits of
Cost-Benefit Studies
- A Client's Perspective -
(“To LMP or Not to LMP”)***

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Background

Update on Cal ISO LMP Cost-Benefit Analysis

- On February 18th, 2003, California State Senators Burton, Bowen, Sher and Dunn requested that the ISO conduct a “peer reviewed” cost-benefit analysis regarding LMP.
- ISO Board committed to undertake such an analysis.
- ISO has drafted a preliminary scope-of-work. Team recommends that the C/B Study be structured so as to ascertain both the potential *qualitative* and *quantitative* costs and benefits of LMP.



LMP CBA – Recent Activity

Update on LMP Cost-Benefit Analysis

- ISO has interviewed four nationally recognized consulting firms for purpose of conducting LMP cost-benefit analysis.
- Four consultants offer a mix of expertise – both technical/modeling (quantitative) and market design (qualitative)
- ISO has identified preferred consultants and, once we have secured the go ahead, will work towards finalizing the business arrangements between the ISO and the consultants.



What's The Question?

“If you don’t know where you are going, all roads will get you there!”

Before embarking on any cost-benefit answer, it is critical that all involved (especially those requesting the analysis) have a clear idea of what they want answered? What are the *real* issues?



The Environment

Those in favor of LMP

-largely silent (or discredited – i.e., see Gelinas Report).
-would rather not see study performed – point to “obvious successes of eastern ISOs.

Those on the edge

-unwilling to commit, want to see larger picture (state procurement) clarified first.

Those opposed

-perceive that LMP-based congestion management regime will erode existing rights, create additional risks, or will highlight existing but non-transparent cost differentials (and therefore cross-subsidies).



The Environment

What are the real issues?...LMP has become the catchword for the collective angst regarding restructuring...but the *real* issues vary by perspective

- Impact on Existing Transmission Rights
- Ability to “schedule *my* resources to serve *my* load” (i.e., I’m worried about central optimization)
- May increase costs of State contracts by subjecting them to congestion costs.
- ...you name it, I’ve just lost faith in the market.



The Environment

One need is clear – everyone needs to understand what LMP is and what it is not

What it is:

- Transparent means to price and allocate the use of the transmission system
- A pricing regime that is aligned with the needs of system operators
- A tool that provides useful information to both policymakers and investors alike.

What it is not:

- A system under which transmission and generation will magically appear.



The LMP Study...

**Ok...if we really have
to....**



The DOE Study

DOE Report to Congress highlights both “costs” and “benefits” of such analyses and is instructive in its approach

- Highlighted need for both *quantitative* and *qualitative* analytic approaches
- Quantitative – focused on:
 1. Impact of increased trading on wholesale and retail electricity prices
 2. Near-term changes in the use of the grid



The DOE Study (Continued)

- Qualitative – because quantitative analysis of all features “not feasible”, study focused on the following qualitative analyses:
 1. Impact on electricity prices and the need for market power mitigation
 2. Impact on infrastructure development and investor confidence
 3. Impact on security and reliability of infrastructure
 4. Potential benefits of enhanced demand response



The DOE Study (Continued)

Some observations on the DOE study:

- Assumed participants would bid cost – perhaps a constraint of the GE MAPS model.
- Assumed local market power mitigation at costs + 10% - need clear direction from FERC.
- Unit commitment assumptions unclear...
....all part of “planner’s paradox” – need to characterize both direct and indirect as well as unintended consequences.



The Next Generation

Most studies to date have focused on the benefits of consolidated control-area operations. Thus, *easier* to quantify energy savings resulting from central dispatch and coordination. However, as usual, California is different...

- California already captured benefits of control-area operations (although not all economic efficiencies)
- As opposed to RTO formation or SMD, California study focused on LMP (MD02).



A “Qualitative” Analysis

In Search of Hogan’s Heroics

Frank Wolak (MSC) – “Just download all the stuff on Hogan’s website”

- *What have other CBAs/Studies revealed (RTO West, SETrans, New Zealand, NERTO, now DOE)?*
- *What has happened in other markets?*
- *The Benefits – Reliability, Transparency, Price Signals (good information)*
- *Most Important for California – “The Counterfactual” What happens if you don’t redesign and, if not LMP, then what?*



The Counterfactual

Five years and counting...

The existing California zonal market design is inefficient and subject to manipulation:

- Existing congestion management system allocates and prices transmission based on an inaccurate (incomplete) representation of the grid...thus promoting manipulation.
- Existing design does not support reliable operation of the grid...lack of operating and price transparency, out-of-sequence, out-of-merit order,
- Ever increasing intra-zonal congestion due to new generation...



A “Quantitative” Analysis

Who cares about data, we just want to know whether our prices will go up!

- The need to manage expectations – seek and you probably will not find!
- Simulation studies based on a myriad of assumptions will be of questionable value.
- An LMP study must include assumptions regarding bidding behavior, weather, fuel prices, hydrologic conditions, the economy (demand), overall market conditions (supply/revenue adequacy)



A “Quantitative” Analysis

....other key assumptions (lessons learned from Path 15)

- **New Generation/Transmission** – how much, where, and when.
- **Existing Transmission Contracts** – conversions, usage, impact under a LMP-based regime.
- **Congestion Revenue Right (CRR) Scheduling Priority** – How much will it be used? What will be the impact?



A “Quantitative” Analysis

Two paths diverged in the woods...

Type A – Historical Analysis

- Use historic data to compare outcomes of different design scenarios against current market design outcomes (known costs)

Type B – Simulation

- Construct hypothetical test periods and cases to model and analyze overall market outcomes as well as isolated design features.



A “Quantitative” Analysis

*...and we, we took the one more traveled
by...*

Type A - Historical

↑ *Pros*

- Uses actual bids (don't need to simulate bidding behavior)
- Don't need to model existing design (rely on historic outcomes)

↓ *Cons*

- Uses actual historical bids (bidding structure/behavior likely to change under new market design)



A “Quantitative” Analysis

...and that will make all the difference.

Type B – Simulation

↑ *Pros*

- Depending on inputs/assumptions, may be perceived as more realistic
- Allows you to isolate the impact of specific design features.

↓ *Cons*

- Depending on inputs/assumptions, may be perceived as more *unrealistic*



In Summary

Costs:

- Study likely to be inconclusive and will surely be criticized as unrealistic;
- Cost of study likely to be significant (and since ISO funding, perception of bias will exist);
- *Very real cost of continuing under current flawed design until study is completed.*

Benefits:

- “Next generation” analysis *may* be helpful in future nationwide redesign efforts;
- Otherwise...unclear – just another study that adds to the debate.