

Resource Adequacy and Price Signal Quality

As you will all appreciate the MSA is not a stakeholder per se in LTA...but

- we are keen students of the market,
- we believe passionately in it,
- we see it from multiple perspectives,
- we have no axe to grind,

We believe that price signal integrity is central to a fair, efficient and openly competitive market and that is very much our franchise

The MSA is not predisposed to any particular form of market nor is it our place to be so disposed, our interest is simply to do what we can to foster a high quality price signal and then stand out of the way and let competition and pursuit of self interest do as much of the heavy lifting as possible.

Quality as you will all appreciate is not black or white. We have been producing a price signal in Alberta for almost 9 years and it has taken us all (in my view) to a better place than regulation would have. But...it has not been perfect, is not perfect and in my view is getting less perfect all the time.

Today I would like to introduce the idea of price signal integrity (or fidelity as I have been calling it) share with you some of the imperfections in our current signal and the implications that those imperfections have on resource adequacy...both short and long term and the lessons that might be in those imperfections for market designers.

I would like to start by offering you 3 premises on which the balance of my remarks are based....

Premise #1

The essence of a restructured market is a price signal.

Martin Merritt Sept 9, 2004

The first premise that I want to offer you is that a price signal is the essence of a restructured market. In a restructured market the price signal is meant to speak to people, tell them when to turn off the lights, when to start up a generator, when to build a new one or retire an old one, in most respects the price signal replaces the regulator.... I shall be making the case later on that this particular regulator needs to be R&V'd!

Premise #2

The AESO and all market participants are competent, and rational. Each act in their self interest per the market rules, guided by a price signal.

My second premise is that... (I realize that this seems obvious but sometimes in the parry and thrust of the debate the obvious escapes us)

Premise #3

The optimal outcome for Albertans should not depend on expecting or *forcing* participants to behave irrationally.

My last premise is that...

It's time to recommit ourselves to the notion that the price signal is the centre piece of a restructured market and ours has fallen into some disrepair.

Our challenge is to structure the rules of the game **to produce a price signal** such that individually optimal strategies pursued by competent, rule abiding, profit motivated participants produces collectively optimal results – resource adequacy both short and long term being key among them.

Rules designed **to prescribe outcomes** take us down a slippery slope toward re-regulation, The hope that participants will act irrationally to produce collectively optimal outcomes is folly and forcing them to do would be equally so.

In the next few slides I'm going to offer you some examples of issues and behaviors that have their roots in problems with the integrity price signal. My examples are born of a question, I think it's the most important one we have to ask...

Seminal Question

- What is it about the nature of our price signal (or the rules, or interaction between rules and participants or between participants) that cause individually optimal strategies to produce collectively sub-optimal results?

The answer(s) to this question will give us the most useful insights into where we might start to make improvements.

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How can it be that we've got supply adequacy concerns **at the same time as** high installed capacity and low prices?

How can it be that even with the large installed capacity **both** the AESO and generators are unsatisfied with the risks that they are forced to carry?

It seems unlikely to me that we are going to make meaningful improvements to our market without examining the circumstances that produce this paradox. In fact I think it's the place to start and that's what I would like to do next with a few examples.

A few examples...

1. Parked at the knee of the supply curve and needing 20MW (*dispatch up 20MW from merit order, get 300MW, spend balance of hour trying to stabilize system, spend next day dealing with generator complaints of 5 min dispatches*)
2. :45 past the hour, trailing high prices, current price \$20, trying to shed supply (*once hour is guaranteed to settle high, supply response is tardy, over generation prevalent, load stays off till top of hour*)
3. :05 past the hour, price \$500, do I accept a dispatch? (*no, price goes to \$999, I ramp and get screwed anyway, dispatched off @ :30, hour settles @ \$150*)

*In each of these cases the **price signal quality** not behavior is the root of the problem!*

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This sub-committee is focused on Long Term adequacy and this slide deals exclusively with short term issues but there is a link that I would like to explain.

1. there can be no LTA without STA
2. In the short run we have many examples that illustrate the concept of "low integrity signals" we produce them every day...the short run is also the first place we should look for evidence that we are improving price signal quality
3. the short run signal provides the basis for the OTC and exchange markets to build the only long term signal that we have today

<walk through examples>

I haven't even touched on the logical chaos created by zero priced imports... a whole other story I won't go into but it too contributes to poor signal quality.

Not only does our current price signal cause a real time difficulties for SC's at the AESO and risk/cost allocation issues for participants but erroneous attribution of the root cause of all these issues impairs the quest for real improvement because it leads to blame based advocacy .

- The AESO see restatements a scurrilous behavior by generators,
- Generators believe that the AESO systematically depresses price with RR,
- Some loads seem unwilling to acknowledge that jumping on/off unannounced is part of the problem while they are the primary beneficiaries of reliability

On analysis the MSA does not believe that any of these positions are supportable.

I hearken you all back to premises # 2 & 3, "The AESO and all market participants are competent, and rational and that optimal outcomes should not depend on expecting people to act irrationally"

It is price signal integrity that is the root of many of our issues and that should be where we start, that is something that we can all work on, and all have an interest in.

In the next slide I want to drill down a little further into the connection between the signal quality and behavior...

A low integrity price signal drives goofy behavior ...

- **Dispatch on one price and settle on another**
⇒ Have to offer \$500 to get \$250
- **Dispatch fidelity**
⇒ Participants don't get on/off when asked
⇒ Don't produce what they're asked
⇒ Some get on/off without ever advising or being asked
- **Unrevealed megawatts & negawatts**
⇒ A logical risk/profit management strategy for participants
- **Steep supply curve**
⇒ A byproduct of participants doing what they have to

These issues are connected, they result from people doing what the price signal tells them to! (rational participants produce collectively sub-optimal results)

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Dispatch on one price settle on another creates material risks for participants...both load and supply and consequently for the AESO. Participants manage those risks by self dispatching and pursuing higher offer strategies, these are rational responses that are within the rules, but they in turn impose risks on the AESO....and we wonder why the merit order looks like a bended knee!?

Dispatch fidelity (as we discussed in the first example on the previous slide) is closely related to price fidelity. Participants do not always do what the real time price tells them to, they don't always do what the AESO tells them to either! The SC imagines he's operating the system by running up and down a merit order that produces an SMP every minute while every knowledgeable participant...and certainly all of the marginal ones have their eye squarely on their expectation of the **hourly** settlement price and they govern themselves accordingly....it is no wonder that in this real-time tower of Babble, both market operator and market participants spend their time trying to out guess each other and blaming some of their troubles on the mischief of the other!

Unrevealed supply is really a secondary problem, not a trivial issue but one that is best not solved directly, sure we could impose a "must offer rule" but that is precisely the type of "sledge hammer" response that I would advocate against, at least before exhausting the alternatives.

I believe we need to recognize unrevealed supply as a logical risk management strategy for those who pursue it; let's find the risks that drive it and either eliminate them or provide more constructive ways for them to be managed.

The steep supply curve is another secondary problem again not a trivial one but one that will defy being solved directly, we have to get to the root of how we have created an environment in which two dominant and opposite strategies for participants, have emerged, offer @ \$0 and be a price taker or offer @ \$999 and self dispatch with not much in between.

All of these issues (and many others) are connected. I think the Department and this task force has very appropriately recognized market design as a holistic exercise from the beginning; my pitch today is simply that price signal integrity (or sometimes lack of) is the common thread that links many of our issues and that we will learn the most by looking at it and accomplish the most by recognizing it for the high leverage point that it is. We make more hay, fix more issues and create fewer collateral problems when we treat the price signal as the patient. Structural or rule changes designed to amend behaviour directly before the price signal gets a tune up feel like a second best approach to me.

Steps to improved adequacy Short Term / Long Term

- Better focus on parties' rational self interest:
 - Find and eliminate irrational lurches in the price signal
 - Improve coincidence of cost, risk and control
 - Improve confidence in each other
- Many possible indicators of improved price signal quality:
 - More mid merit offers (less \$0, less \$999)
 - Less un-offered supply
 - Fewer restatements

Improving the integrity of the price signal will give us a much better place to begin considering market design improvements to ensure adequacy.

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To get back to the question that I posed earlier “what is it that leads rational people to acting in their self interest to produce collectively sub-optimal results?”...

There is not a single answer

- The MSA has some thoughts of what not to do (direct prescription of behavior)
- We have some observations about where the price signal is complicit in leading to sub-optimal results (a few shared earlier)
- We have some ideas about what to do next (focus on price signal and rational self interest)

Nine years ago we installed a wonderful dynamic control system in our market...PRICE, I think we'll be better served by tuning that up first before trading one used car for another.

In closing I want to mention a couple of things that the MSA has in the pipeline that we hope will contribute to Task Force's work without getting in the way of it or getting us too far out of our depth:

Sep 29/Oct 5 – MSA Stakeholder meeting “Review of Regulating Reserves Performance” (paper to be published on website coincidentally, speaks to some price/dispatch integrity issues)

TBD – Import/export activity on the BC tie, economics of, impact on signal quality in Alberta. Analysis well along, title and publication date pending.

TBD – Further enumeration of the noise generators that make the price signal less effective at regulating than it could be. Analysis well along, title and publication date pending.