

US Electric Utilities & IPPs

Dissecting MISO Bilateral Capacity Prices (Including Conference Call Transcript)

Equities

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Bilateral capacity contracting trends confirm some MISO tightening

We teamed up with Jonathan Burnston, Partner at Karbone and Judah Rose, Managing Director at ICF on our latest conference call to discuss MISO bilateral capacity pricing and supply/demand trends. Please also see the two corresponding slide presentations corresponding this call for significant further details.

Peak MISO pricing is around the corner: 2015-2017

We suspect MISO will shift through its 'tightest' periods beginning mid-2015 through 2017, as new resources are built out. We suspect the low \$2 to ~\$3/kW-mo price range (\$65-100/MW-day) observed in coming years likely represents peak pricing power, as the market is at its tightest given resource transition following implementation of MATS resources in April, 2015, with a 2-year window seemingly the tightest (a full indicative breakout of regional/yearly prices across MISO is provided on p.3). However, with even these bilateral prices for capacity meaningfully below new build, there is the potential for prices to remain at these levels, seeing muni's and coop's as biased to continue to commit to bilateral deals rather than develop. The question remains the extent to which future regulated development will put downward pressure on third-party capacity sales off these new assets. We also suspect future capacity auctions will similarly see price inflation – particularly should Zone 4 prove 'constrained' as bids fully reflect higher ongoing costs.

Market appears to be transacting consistent volumes for 2015 at higher prices

We remain fixated on the depth of this market in committing real MWs at these elevated prices. While our speaker emphasized that meaningful volumes have been transacting for 2015/2016, the market is significantly less liquid beyond this period. It appears to be smaller coops and muni's that are the primary buyers of this capacity, typically on a transient basis. We also emphasize temporary fulfilling of obligations by IP&L and CMS for 2015, likely through bilateral transactions as their own portfolios transition prior to start-up of new resources.

Dynegy: MISO remains a source of modest upside for estimates

DYN remains the most levered to improving bilateral pricing trends. We see upside specifically around its expectations to commit only ~50% of its MISO capacity (both DYN parent and IPH portfolios totaling ~7GW). Within this 50% commitment target, mgmt also includes ~850 MWs of exports to PJM, with a further +240 MWs expected in '18/'19. We suspect many Street estimates (including our own) do not reflect more than 50% of volumes are sold, nor necessarily the significant improvement in bilateral prices observed in the last ~6-month period, vs. April's formal capacity auction results of just ~\$16.75/MW-day. In a best case, we see +\$100 Mn/yr to our DYN estimates, for 2015-2017, with potential in subsequent years as well to the extent prices hold. We suspect increased pricing and volumetric commitments disclosed around quarterly results will put broader upward pressure on estimates.

Regulated build to the rescue? We think vertically integrateds will build

We see the tightened MISO thesis as supportive of efforts by DTE and CMS to continue to both acquire regional assets in Michigan and pursue new build. Both CMS and DTE are poised to pursue new gas to address both near/future coal retirements, as well as replacing expiring PPA arrangements. Further West in MISO, we continue to see relatively limited opportunity for new capacity, with XEL actually revising down its latest demand projections, delaying its contemplated thermal RFP (which had already been downsized). The growth and pricing opportunity in MISO remains firmly rooted in the Eastern footprint, alongside the seam with PJM.

Entergy zones still over-supplied: how much can ship north remains oppt'y

With bilateral pricing in the largely robust ETR-zone, prices appear to remain near ~\$1/kW-mo on a bilateral basis (~\$50/MW-day), reflecting a seeming 'floor' with which capacity is willing to meaningfully commit any volumes (or at least, it would appear). The discussion also focused on whether the ORCA (Ops. Reliability Coordination Agreement) could yet be revised up from its capped 1GW flow between MISO-North (classic) and South (Entergy zone). Should seams issues with SPP be resolved, up to ~4G could yet flow between the regions easing capacity/dispatch concerns. We suspect long-term, Entergy could yet be poised to raise spend (in 2017+ period) to improve this MISO interconnection without interfering with the SPP seam. Details are likely in 2015/16 as it works its way through the inaugural planning process in conjunction with MISO

Do the PJM reforms help MISO? Not clear, but probably a help

We suspect higher capacity prices in the neighboring PJM region are likely a benefit to MISO in the near term, particularly should contemplated transition auctions take place for the 2016 and 2017 period. Our latest call appears to indicate that MISO is pricing near parity to PJM through this period, particularly in the key Zone 7 region, which has seen the bulk of its merchant capacity in the state exported into neighboring PJM. We further suspect Zone 4 (Illinois), relevant for Dynegy, could experience this uplift as well. With the latest tighter requirements on pseudo-tie already in effect as of the last auction results, we don't necessarily see any impediment to committing resources – aside the higher risk of non-performance under the 'capacity performance' product.

Please see our other recent notes on MISO –

[Managing Michigan's Coal Transition & the MISO Upside Story](#)

[Lessons Learned and Outlook for MISO Capacity Auction](#)

MISO Bilateral Capacity Trends

The table below shows *indicative* prices for capacity market pricing as of 10/01/2014 from Karobone. The data shows that the markets are in contango, with largest price upticks in forward years, and also highlight the resource tightening in key zones such as in Michigan (Zone 7), Indiana (Zone 6) and Iowa (Zone 3). The Illinois Zone for Dynegy appears to reflect pricing only in the middle of the pack for the region.

Figure 1: Capacity Markets: Indicative "Fair value" Price Ranges as on 10/01/2014

MISO Zone 7 (Michigan)	KW-month	MW-Day
2015-2016	Mid \$2 - Low \$3	~\$85
2016-2017	Mid \$3 - Low \$4	~\$120
2017-2018	Low to Mid \$4	~\$140
2018-2019	<u>Low to Mid \$4</u>	<u>~\$140</u>
2019-2020	<u>Mid to High \$4</u>	<u>~\$155</u>
MISO Zone 6 (Indiana)		
2015-2016	<u>Mid \$2 - Low \$3</u>	<u>~\$85</u>
2016-2017	<u>Mid to High \$3</u>	<u>~\$115</u>
MISO Zone 4 (Illinois)		
2015-2016	High \$1 - Low \$2	~\$65
2016-2017	Mid to High \$2	~\$85
MISO Zone 3 (Iowa)		
2015-2016	Low \$2	~\$70
2016-2017	<u>Mid to high \$2</u>	<u>~\$90</u>
2017-2018	<u>High \$2 to Mid \$3</u>	<u>~\$105</u>
MISO Zone 1 (MN /MT /WI /ND /SD)		
2015-2016	High \$1 - Low \$2	~\$60
2016-2017	Low to Mid \$2	~\$70
MISO Zone 2 (East WI / Upper MI)		
2015-2016	Low \$2	~\$70
2016-2017	Mid to High \$2	~\$80
MISO Zone 8 (Arkansas)		
2015-2016	Mid to High \$1	~\$55
MISO Zone 9 (Louisiana)		
2015-2016	Mid \$1	~\$50

Source: Karbone Brokerage Desk

MISO Bilateral Capacity Trends: Conference Call Transcript

The following are highlights from our call with Jonathan Burnston, Partner at Karbone and Judah Rose, Managing Director at ICF. The comments below have been edited to improve grammatical clarity and provide enhanced context. Reach out to us, if you would like to get a copy of the two separate sets of slides used on this call.

A replay of the call can be accessed using the replay dial in details below:

Replay Information (available until 10/24):

Toll Free: 800 633 8284

Toll: +1 402 977 9140

Passcode: 21734520

Julien Dumoulin-Smith: Hello and good afternoon everyone. We are teaming up with Karbone and ICF today to discuss bilateral capacity transactions - to give an fully exhaustive review on the MISO market and the latest trends there. Frankly, as we see it, we don't think the complete picture is being captured at least in the quoted auction out there.

So with that, I'll turn it over first to Johnathan Burnston at Karbone to add a little bit of a view as what he's seen on the bilateral side before turning it over to ICF to talk about more fundamentals. So with that, Johnathan, why don't you take it away?

(Johnathan Burnston): That's great. Thank you very much Julien.

I'm going to speak with you broadly about an interesting and potentially valuable market development that we've been observing and facilitating in our role as a market agent for the past several months - the ongoing rally in MISO bilateral capacity markets.

Firstly, just a bit about myself and about Karbone. For those of you who don't know us, Karbone is a full service energy and environmental market firm. We're based in New York, and we have representation in London. For my part, I'm a partner at Karbone and I lead our power market coverage around North America.

At Karbone, we provide three services. Commodity brokerage, capital advisory services, and research & market advisory services. On the commodities side, we cover environmental commodities. Everything from energy credits to carbon credits; to emissions permits. And on the energy side, it's primarily power products, which is where my team comes in.

And we tend to excel in mid- and long-term structured product classes; fixed price power hedges as well as capacity products where those constructs exist - MISO of course, and also PJM, NISO, and ISO New England. As far as what the rest of what Karbone does, on the capital advisory front it's largely boutique investment banking for power generation projects around North America.

And on the research front, we do have an in-house dedicated research team. As I mentioned, our footprint really is across North America and our client network really spans the gamut of power market participants from the naturals to the utilities to the munis and co-ops to the IPP's to financial institutions, to project developers and other project stakeholders through the value chain.

And a very important product for particularly my team on the power market side is capacity. And of late, one of the markets that we've been very active in has been the MISO bilateral capacity market where we've been observing and facilitating an ongoing rally in that market. So I'm now on slide 5.

To some extent, bilateral markets reflect capacity market fundamentals in MISO than really any other venue. And that's primarily due to the fact that the auction mechanism in MISO has a limited tenor to it.

Virtually all of the forward transactional activity in MISO happens bilaterally. The resource squeeze has really hit ground and **for the past four to six months we've seen more bilateral flow in MISO than we've seen in quite some time.**

Particularly in those states and regions that have overlapped with PJM, such as MISO Zone 4 – Illinois; and MISO Zone 7 – Michigan; and perhaps this is not a coincidence that a large percentage of the load profile of those regions is retail Choice as opposed to the more regulated areas of MISO which are dominated by investor owned utilities, munis and co-ops.

With that said, the price uptake that we've seen has really been across the board geographically and through the curve. There has been a particularly noticeable resource squeeze in some key zones such as MISO Zone 7, Michigan, Zone 6, Indiana and even in Zone 3. And as I mentioned the price uptakes that we've seen have really been the sharpest out in the curve in a forward market.

At the bottom of this slide 5 I've included an excerpt from the Carbon capacity market stack. I just want to be very clear, we've very purposely included only illustrative indicative of value ranges. Not only because I don't want to be held to these numbers, but also because this is a relatively high moving market.

That said, I can speak anecdotally about some specific highlights. And let's start for example with MISO Zone 7, for which there's been some focus on of late. Julien, I know your group has put out some great literature on Michigan MISO zone seven.

And from what we're seeing bilaterally, **value in MISO zone 7 market for the planning year 2015-16 has crept up to break the \$2.00/kW-month handle and over recent months, it has gone up to \$2.20 to \$3.00 range of kilowatt month. For 2016-17, value has crept up to break the \$3.00 handle and our latest, relatively recent marks saw value framed up roughly in the \$3.20 to \$4.00 range.**

I don't want to give the impression that transactions are closing at the high end of where value has been framed - where sellers offering at. But just by looking at where the bid-asks pricing frame has crept up to you can really see that uptake in value which I've been talking about.

Another good example is **MISO Zone 4, Illinois. This is probably one of the most liquid capacity Zones in MISO for planning year 2015-16. We peg value closer to the \$2.00 mark give or take. For 2016-17, value has crept up to more like the \$2.25 to \$2.75 range.** Now I also don't want to give the impression that the price uptake has been as dramatic in every zone.

If we look for example at MISO Zone 8 and MISO Zone 9 [Entergy zones], we'd peg fair value closer to the \$1.50 of kilowatt range for 2015-16.

What I want to note about all the data that we shared on slide five is that this has to be compared to the latest public data source for value, which is the MISO auction clear. And clearly as you'll see on slide six, **where the auction cleared at is at a fraction of virtually all of the value points that I mentioned across the board bilaterally in MISO.**

Moving on to slide seven. Basically what we're seeing is the impact of coal retirements hitting ground in the market. The information we provided on slide seven is taken from a recent MISO survey. And they show that a fair amount of coal capacity is planned to be decommissioned and there's a fair amount that very well could be decommissioned largely driven by environmental regulations such as MATS. Now combining these potential coal retirements with the traditional MISO capacity exports into PJM - **what we're seeing in the bilateral market is a flattening of that MISO to PJM arbitrage.**

And I'm now on slide eight. At this stage, we've already seen a basic convergence between MISO and PJM capacity of pricing in bilateral markets. Especially in key MISO zones. Now whether or not that picture will remain flat, is unclear.

There are moving parts on either side of that seam which could serve to change the picture. For example, there's the much discussed capacity performance proposal in PJM, which in turn will likely have impact on the MISO capacity market – although exactly what that impact will be is unclear.

Higher pricing for capacity fulfillments products in PJM, may recreate the segmentation between MISO and PJM. Will that in turn incentivize additional exports from MISO exacerbating the supply constraints that we've already seen taken place in that market? It's unclear. On the flip side, could the more stringent eligibility criteria for the capacity performance product dis-incentivize MISO exports leaving those supply resources at home in MISO alleviating some of the supply constraints we've seen? That is also unclear.

From the Karbone perspective, our view is that for the near term, and potentially mid-term - MISO capacity pricing in bilateral markets is likely to stay relatively high, and this will only be alleviated fundamentally by new resource builds, or new participation in the MISO market.

And with that I will pass it on to Judah. Thank you very much.

Judah Rose:

Good afternoon everybody, this is Judah Rose with ICF. For those who are not aware, ICF is a large consulting firm. There are several hundred people involved in energy. I co-chair the Energy Advisory Services and practice for the consulting practice.

We have a wide range of clients ranging from government entities like EPA to utilities to RTO's etc. We do a lot of modeling of the grid and I'll be talking a little bit about how we see the MISO fundamentals and what's going on there.

On page 1 of the slides that we've sent around, you see another version of the capacities on the MISO map, and what you can see is that the zones closest to PJM - the eastern most zones - 6 and 7 - are the ones that are short of capacity for 2016 – by roughly 3GWs combined.

There some zones particularly in the south of the Entergy areas that are a little bit positive, but overall, the market is tight for capacity or in-balance.

On the next slide, on slide 2, we show the latest numbers from the June survey versus the January survey- [of capacity resources conducted by MISO] and what you see in Zones 6 and 7 is that combined they have continued to show a combined deficit. So there's a fair amount of steadiness over the last few months showing the market being tight.

If you turn to slide 3 of my slide deck, what you see is for the central and north MISO regions the forecast shortfalls in January 2014 starts at 2GW and ends up 2.3GW in June. And what's been happening over time is there's actually been a load growth because of improved economic conditions and then some more supply balancing it off so you don't have any major change.

So again, you have some regions that are short, for 2016. Why are they short? **They're primarily short because of the significant amount of retirements that are related at least in terms of their timing directly to the mercury and air toxic regulations - which have a deadline of the spring of 2016.** So you basically have had the excess capacity which has for a

long time characterized MISO, and it is in the process of going away.

If you turn to slide 4, it shows the capacity prices from the auction. These are numbers that you saw earlier in the Karbone deck, and I just wanted to point out that they work out to around \$0.50/kW-mo. Very low capacity prices, but nonetheless higher in 2014/15 compared to 2013/14. The most recent auction is higher than the previous auction, but the prices are a lot higher in most regions and are still around a half dollar a kilowatt month.

We are seeing a pretty significant movement by a factor of 4, up to around \$2.00 per kilowatt month for transactions. Maybe a higher \$3.00 a kilowatt month for a longer transactions and the market is thin, but it is moving and it's moving in the direction that our models have been indicating that it would move – consistent with overall fundamentals.

On page 5 I the graphic shows the demand resources. Demand resources are one of the sources of supply in MISO, albeit not a huge amount. Sometimes these demand resources are behind the meter generation, and sometimes they are interruptible load.

I wanted to make a couple of points about that. The first is that there were two Court decisions in May and September that indicated that there were problems with having demand resources in capacity markets. The second issue was that there was a problem with having these resources in the energy market, but there's also a complaint applying the same logic to the capacity market. So it's possible that the future of demand resources in the capacity markets may be up for questioning, and the issue can be pretty dynamic.

So it does look like one thing that can move the market in a very dynamic way would be some reduction in capacity resources in MISO. Even more than that the legal problems that demand resources are having indicate that it won't be the answer to the problem. That is **in some market the demand resources have greatly suppressed the capacity prices on the order of factor 3.**

So it indicates that that's just not an avenue that's available anymore or likely to be available given the Court decisions. That reinforces the concern that things can move very dynamically and is consistent with the movements we've already seen.

The next point which I think is not fully understood by many people in the industry is the reserve margin targets. There were a lot of liability or resource adequacies targets in the United States. And every situation assumes that there is supply available from your neighbor when you need it. To the extent that 15,000 MW of capacity might in the extreme case may disappear in the capacity market in neighboring PJM [*unlikely following latest capacity performance white paper released after the call*], it means that you can't assume any more that you're going to get help when you need it. And in that event, the planning reserve margin targets instead of being 15% for like installed capacity, might have to be increased by 5, 10 maybe as much as 15%.

Slide 6 shows the capacity shortfall on a planning basis over time, assuming everything is status quo in terms of the reserve margin and assuming that there's no accounting for 111-D, which is the proposed CO2 Control Program at the Federal level for existing units.

And the point that I wanted to make is this looks like it's a fairly manageable transition process, but I did want to

point out that **one of our experiences when you make these transitions from being in excess to being in short of a balance, when it's due to retirement, is that you end up having what's known as transmission security problems.**

And we expect there's a good chance that there could be unexpected transmission security issues, which would require the creation of sub-regions. That is the eight or nine regions that you saw on the map, might have to be further sub-divided on an expedited basis. That has happened in New England and New York and so that may hide the fact that the need might be more significant in some areas.

On slide 7, we can see that MISO has been estimating that there might be about 5GW of capacity which might be made available that were transmission upgrades or other adjustments.

But what happens is when the system makes a transition from periods of low capacity payments to ones in which there are higher capacity payments, and you need the capacity; you find that you have much higher forced outage rates as people may defer maintenance etc. So there may be additional pressure on the system that will be revealed only in a stress circumstance.

The next slide shows the results of a MISO study and it shows that 111-D adds an additional 14 GW of retirements - roughly doubling the retirements that have occurred already due to MATS.

Of course this is just a proposed program, but the thing that I think is not that understood about the proposed program is that although this is described as a 2030 compliance program; **in many cases individual states have compliance targets which can mean 80-90% of**

the 2030 target actually needs to be achieved by 2020. If the proposals go forward they could add another degree of uncertainty and non-smoothness to the transition.

The modeling that we've been doing has been expecting to see an uptake in the need for capacity but also capacity prices. We expected it to occur with a lag because the PJM market nearby is a three year forward while MISO is the shorter one year forward - and that's exactly what happened.

It's reassuring, from a modeling prospective, that what we expected to see to a degree is happening. And that it's partly related to the fact as indicated that PJM is taking large amounts of megawatts from MISO which creates price convergence between the two regions. It's not the only thing that's going on. The main thing is that both regions are experiencing retirements.

But there has been a movement, a continuing movement to move megawatts out of MISO into PJM which increases the likelihood of sharp upward movement. It's consistent with the tightness in the markets being in the areas nearest PJM west. And we have seen it because we do our modeling both on energy and capacity basis, so that we follow the firm megawatts around and we see this tightening.

We are concerned about the lack of smoothness. We've already seen the prices moving fairly quickly and you can have some pretty dynamic movements if you start to run out of capacity. Particularly because the load is not allowed to speculate. It has to secure the capacity reliably. I can't speculate the prices will come down, and so it creates an added pressure of risk averseness to manifest itself when you get close to being balanced.

As we talk about PJM, there are a couple things to keep in mind. They're also working hard on a challenging dynamic situation. On August 20th of this year, they indicated that if there was a repeat of the polar vortex, they would have to shut load. And that was for the 2015-2016 year due to retirements.

So that indicates that the latest analysis supports the view that there's, a strong pressure in the neighboring market particularly in the event of cold weather. And so it's a situation that again points the possibility of some moves some of which we're seeing, some of which we can see.

We talked about the Court decisions. There isn't a planning document in the United States that takes into account the possibility that both Court decisions on DR would continue to be the law, and at the first energy complaint which applies that same legal doctrine to the capacity markets, would take effect on an expedited basis.

The market monitor in PJM has indicated that the situation which didn't have DR in the capacity market would triple the capacity prices in PJM. And as described there are additional efforts to the capacity performance proposal on PJM which would perhaps continue in my view, to lead unless there's a reaction in MISO to additional exports and additional stress on the MISO system.

One thing on the fundamentals basis, is that we would expect capacity prices, to actually on a theoretical basis to be higher in MISO than they would at PJM because the energy prices would be lower because of lower fuels costs.

On my last slide I wanted to reiterate the fact that when you get into a situation where you have retirements at

different flow patterns that you haven't seen before, it's a challenge. Despite having extremely talented people looking at transmission security, there's a limit to the ability to look at all possible scenarios fully and it's only when you see the stresses and new flows and the retirements that you **find that you need to create additional sub-regions.**

And I think that increases the possibility that you could have some regions move very quickly and that's why I think you'll see people that are properly risk averse trying to lock up term transactions. It is true that if you could open up the flow from the southern region to the northern region, that could help.

But I think that overall the concern is that there might be additional outages and lower their u-cap or lower capacity that might become apparent in the stressful situation for win and non-win resources.

I think all these issues would continue to move over the next year or two. And with that, I complete my remarks.

Julien Dumoulin-Smith: Great. Excellent. Well thank you both. At this point I'm going to interject a couple of comments. I hope to compliment what the last speaker spoke about. From our perspective what we've really been focused on is the reference level. And we just had a price, so I think from the supply side perspective, one of the key points that I think has been frequently overlooked in many of the different situations.

This is not exclusive to MISO, but it's the ability for prices to be dictated through bidding practices. And I think the emphasis that we have in looking at the prior auctions and looking prospectively at future auctions is really in the market mitigation practices around the reference level.

And the ability to a certain extent, to bid up to reference levels. I think it's a very important point in terms of setting. At least from our view, like the ceiling price on where pricing could happen. You may ask where that

stands. **And the answer is it is now currently at about \$180 megawatt day. Also the 165 that was previously approved for the 14-16 period, so I want to emphasize here the ability to bid higher ultimately seems to be a very important element in terms of negotiations - bilaterally and ultimately what we expect to see in the auction.** I suspect a good bit of focus in the future will be framed around how those bids are contemplated. What is embedded in those bids from an environmental and cost perspectives from an ongoing cash perspective? How are these derived?

I suspect there will be a certain amount of scrutiny prospectively, but again, I think that comes naturally with market creation. That's not necessarily limited or exclusive to MISO. Frankly, the latitude with which MISO has offered MISO generation is probably greater than the market says it stands today.

So the key point in my mind is that the generators are able to drive prices here through bidding practices that are ultimately supported by supply demand sentiments.

I now want to ask both Jonathan and Judah a key question here about the liquidity of the data points that we're talking about. Johnathan, you mentioned some pretty steep rises in future pricing if you think about the contango in that capacity curve. Can you comment briefly about how many megawatts received place there? How much liquidity is in the front end of the curve and the back end of the curve? And then ultimately, do you think we can legitimately see the bulk of conversion capacity committed at these levels or is there a finite amount of megawatts that need to be committed here - I suppose the supply demand deficit that you're eluding to.

(Johnathan Burnston): Yes absolutely. That's a great question Julien. And at a minimum I can characterize if I can't give a very tangible

number as far as nameplate that's transacting in any given planning year. Certainly liquidity is very much front weighted in 2015-16, 2016-17. There is decent liquidity there pretty much across the board.

If you go past that, liquidity does dry up a bit. To some extent that's also because of where offer side is priced. At this stage we are in a rising price environment and in this contango market, those forward years are priced at a level which I don't want to necessarily have to form a view, but I think could probably if you just look at the illustrative bid-ask frames, could be seen as presumably high.

But certainly from what we're seeing liquidity is lower further out in the curve. Pricing is very high out in those forward years and I think to some extent because of where pricing has crept to in the contango curve buyers are waiting to see what happens. They want to see what might change in this market because with pricing at those levels - above \$4.00 a kilowatt month apples to apples - we're talking over \$130 a megawatt day, which is very high. So I think that **ultimately pricing out in the curve is preventing too much liquidity out there**. However, certainly in the front years - '15-'16; '16-'17 - there's pretty good liquidity depending on which zone you're talking about.

Judah Rose:

Hi this is Judah speaking. We don't trade the market so I'll have to caveat my response, but I do want to make two points. One is it does seem that in terms of the transactions that are the most transparent, it is being able to see a capacity price that's for true capacity or megawatts counting toward reserve margin.

It seems like it's been measured in hundreds of megawatts, and therefore it's a likeness to send liquidity. But having said that, the second point is that there is actually a lot of different types of the products

that are traded - a lot of arrangements in which the capacity prices are embedded and it's hard to tease out.

So I think it's a significant enough trend in terms of liquidity to be a harbinger of changed market conditions over the next 12 to 24 months. And also the possible harbinger of some more significant moves particularly if some of the factors that I mentioned work adversely from the buyer's perspective and favorably from the sellers perspective.

(Johnathan Burnston): Yes, just a thought on that if you don't mind. I want to understand here whether you think the way I think about the various merchant assets out there. What I mean is, as you look at the market today, as you look at 15-16, do you legitimately believe that you can actually have fully committed merchant portfolios out there?

As in the excess is going to be absorbed at this pricing or is there always going to be a portion that is held out there – that this pricing did get a better supply-demand but you're not necessarily able to place all of that at that price.

Judah Rose: The history of the industry has been one in which **the realization of the value that seems to be indicated by the fundamentals has generally been somewhere in the order of 50-75% of what the fundamentals support.** And I think a baseline expectation is that you would be in that zone for a lot of the capacity. Now again the results are more favorable as you get closer to the east.

I will say, however that that there is a significant possibility that MISO will begin to move like some of the other markets have moved. Like New England; like New York. And we believe that PJM has potential as well. And this relates to the fact that this happened in some of the

sub-markets where you're getting very significant realization of the value. The challenges facing the reliability are so significant and the things are moving so quickly, you might have a situation where you're hired to 75 or closer to 100% in the area.

There are several trends which I've already spoken on which are very difficult to manage. Again, PJM itself has indicated that it would shed load in a repeat utilizing 15,000 megawatts in the 15-16 period on DR adjustable load, etc. And the compliance deadlines are not really 2030, but they're really closer to 2020 for the CCP -- the 111-D Program. So all of these things I think create a situation in which there's greater probability for greater realization.

Julien Dumoulin-Smith: Johnathan, can you comment? I mean just from the volume metric perspective.

(Johnathan Burnston): Yes, I'm trying to think of this on a transactional side. So maybe to present your question another way - you're asking for a new build or even an existing merchant facility in MISO that is looking to remain merchant, but then place its capacity in full nameplate - a couple hundred megawatts or whatever it might be. Is there special liquidity to place that capacity for any amount of term? Is that the question?

Julien Dumoulin-Smith: Yes, indeed.

(Johnathan Burnston): I guess it would depend on what you would call sufficient term. I think that depending on what's on your end, if you're talking a three to potentially as long as five year term. Then in the hedge world that we live in, there is likely to be a home for your full nameplate capacity at pricing which might not be at the top of each of those value marks that I put in there.

But somewhere close to or within that bid-ask spread, it would be a home for the capacity for three or five years.

I think that for significant volume, it's rare to see longer than five year tenure on a pure capacity deal or even capacity within a hedge deal. But if the capacity is divided into several different transactions, then I think that could be placed.

To give you just an order of magnitude guide here; typical bilateral capacity market transactions that we see as least stand flipside is going to range anywhere from between 25-100 MW at any given transaction. Now that's from a macro perspective, of course that's relatively modest, but we're talking about single transactions here. So adding that up, you get to fairly material nameplate. I hope that answers the question.

Julien Dumoulin-Smith: It absolutely does. I'm curious why does he give a pricing differentiation between the various zones here? I mean what is driving that ultimately? I just want to get a little bit of granular sense on what you're seeing there.

(Johnathan Burnston): Sure. With a few exceptions, the greatest resource squeeze that we're seeing are indeed in zones that have overlapped with PJM, or which are relatively close to PJM. Quite likely it is because many of the resources that could be used in those zones wind up being sold elsewhere.

Now coincidentally we are talking about some of the zones already mentioned MISO zone 7; MISO zone 4; lower Michigan and then Illinois have a large percentage of the low profile which is retail choice as opposed to more regulated munis and Co-op types of markets. So I think to some extent, the combination of those factors is what's serving to create that segmentation within MISO.

Judah Rose: I would just add that they're many features about PJM that make it a desirable place to get your megawatts into. And of course you use firm transmissions and close ties and the closer you are to be jammed easier that is.

So you have a situation in which you have a slow demand curve; you have a lot of rules that are designed to protect against buy side market power.

There's also the element that historically as you've gone west to east in the PJM footprint, there's generally been more supply. Part of that's really a fact that you've been in areas where demand growth perhaps hasn't been this robust or where you have good access to coal or other resources including wind.

Also as you go south and north, you're in a situation which historically the Entergy regions have had excess capacity. And in a general manner that also explains some of the regional differences. I do think that these regional differences do seem to be bearing themselves out as the fundamentals aspect of it. They do seem to be varying out in terms of the transactional side of things. And I would expect that to continue to be the case.

Julien Dumoulin-Smith: All right. Then next just following up on the constraint thesis. I mean what are you guys expecting from zone 4, Illinois, and Zone 7, Michigan, as well? In terms of getting higher prices regionally, what are your expectations of the next years? Do you expect the bilateral prices that you're seeing to ultimately drive auction outcomes that have binding prices significantly higher in certain regions?

(Johnathan Burnston): That's a great question. It's tough to talk about the MISO auction too much given there's only been two auctions. It's a fairly new construct and from what we see bilaterally, there's plenty of activity there which to date has been doing a lot of the work.

Increased capacity pricing is across the board. There is segmentation in terms of from a liquidity perspective zone to zone. And as prices rises, in combination with some other factors, we do expect to see new build.

I think that typically the way that these macro factors play themselves out is that there's a tightening of the market. There's a squeeze after which there's an

overbuild and then the supply demand over time evens itself back out. **We expect to see new build.**

We expect to see new or renewed participation in the MISO market. Part of one of the issues that we have here is that at least publicly outside of conference calls such as this; **the MISO market construct only gives a one year forward pricing. But what we're seeing in the bilateral market does indicate enough for forward signals that we expect new build to come.**

(Johnathan Burnston): First of all the zone 7 in Michigan looks like it's one of the three zones that will move the most. I think with all three of them; the Illinois; the Indiana and the Michigan zones all have reasons to be fairly strong. Michigan because it's proximate to PJM and therefore has that outlet.

And Indiana because there's not that much supply. Illinois because there's a lot of retail activity that's going on there, so I think they're all - including Michigan - looking like attractive, and there's definitely reason if you were a seller to be optimistic in Michigan.

In terms of the auction, we would expect that within the next 12-24 months to see a significant move in the auction price. It can't be long sustained that the auction would be showing a significantly different price because I think that would lead to investigation as to why that is. There would be some flaw.

It's the 2016 or 2017 period when things should really be at its tightest. Those periods of time are the ones that look like the tightest and so we would expect that market to move.

Julien Dumoulin-Smith: Let me follow that up. You bring up the next point. When do we expect prices to moderate? I mean DTE, CMS, vertically integrated regulated utilities, all have projects slated for late in the decade. I mean (A) what's

the pace of moderation that you guys are expecting, if any? (B) How do you get transmission overlay in terms of regional planning? And then (C) If you think about this, how long does that take place? How do you think of longer term capacity prices just generally in this market? Is there anything structural, support at a given level?

Judah Rose:

I guess, what it is, is that the transparency that you have for supply and demand and developments. You have over a couple years - given particularly the circumstance that we're in right now. It's a very dynamic situation.

But where you would expect to see some of the moderation is once you see a stronger set of prices, and you can start to begin to bring some of the capacity on. You get greater clarity about the ability to get recovery so, you would expect it. It could be a pretty rough two to three years under certain scenarios.

And then it starts to moderate as hopefully things begin to get, a little bit better situated. In terms of the transmission system situation; the issue is that there's a lot of individual constraints moving west to east where a lot of these interface limits are focused. There's no homerun such as a huge DC line that's expected in the next two or three years.

Really what it is, is a bunch of singles that can be hit that can bring additional megawatts into PJM. If there's any, MISO market doesn't develop as expected, so I would expect to see it's more a series of singles. If you happen to hit the single, it's good for you.

The problem is pretty difficult because your main issues are how do you move megawatts out of MISO into PJM? particularly if they are losing 15,000 megawatts of DR in the extreme situation. The other issue is the possible creation of newer sub-zones. So it's going to be I think more incremental and not a single solution.

Julien Dumoulin-Smith: Johnathan, anything to add?

(Johnathan Burnston): What I would say is that under perfect economic market conditions, right - the developer world would react quickly to the incentives that are showing themselves in MISO. And so your lag is really just as long as it takes to, site, permit, contract, build projects. So two years - give or take - depending on the location and of course there's already build pipeline out there. That said, the one factor that I would point out is lag around regulatory approval. Short of a full-fledged capacity crisis.

So it's a little bit vaguer than I usually like to answer a question, but I think that there are certain x factors that work.

Judah Rose: Many people have taken that view and it is partially supported by the fact that there is construction at PJM. There has been some construction, and there's a prospect for additions in a few other places.

The things seem to be working and I do think that that there's reason for optimism over some period of time. The area where there is concern is there have been things that have been hiding the problem. Market monitor at PJM for two years running has concluded unambiguously that in the absence of the DR, the capacity price would triple.

And so what looks like a relatively smooth transition, has been an artifact of the treatment of DR by FERC. And so in the situation in which that is no longer the case, you could end of having, less smooth transitions.

Julien Dumoulin-Smith: Let me just follow-up. You expect merchant build in MISO?

Judah Rose: I expect merchant build with some lag after you see strong prices. And I think it'll be probably a function of how close you are also to PJM so that you will have other

access. I think it's going to take a while to get there so I don't want to be excessively sanguine here. I do think that there could be some significant challenges and what we want to do is try to minimize those by working collaboratively with MISO to have a smoother transition.

Julien Dumoulin-Smith: (Johnathan), quick last question for you here. I mean when did you see this pricing recovery happen? I mean it seems like last year or so it transpired. Can you give us a sense and what triggered it?

(Johnathan Burnston): Yes, absolutely. I think that certainly within the four to six months there's been a noticeable uptake. And it's happening incrementally, that's how the markets work.

And again it is depending on what zone you're talking about. Some zones have a more adequate supply scenario as I've mentioned. Others have more resource weaves. But yes, I'd say a year is probably a bit much. Four to six months is probably more like it. And as far as what triggers it, ultimately it's just the supply demand fundamentals which are displayed through by orders versus sell orders if that makes sense.

Julien Dumoulin-Smith: Right. Absolutely. Great and last question for you Judah, I mean are the OCRA's that you eluded to north, south. Where does that stand?

Judah Rose: Well there are incentives to try to open that up and to bring some megawatts from south to north. We're talking about 1,000-4,000MWs. The challenge is that it involves four major regions. So it could be more challenging due to the number of parties involved; the physical complexities and the challenge of retirements.

Julien Dumoulin-Smith: Great. Well with that we've got to call it. I thank you both very much for taking the time. Thank you all for listening in.

END

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Dynegy, Inc. ^{2, 4, 5, 16}	DYN.N	Buy	N/A	US\$29.57	10 Oct 2014

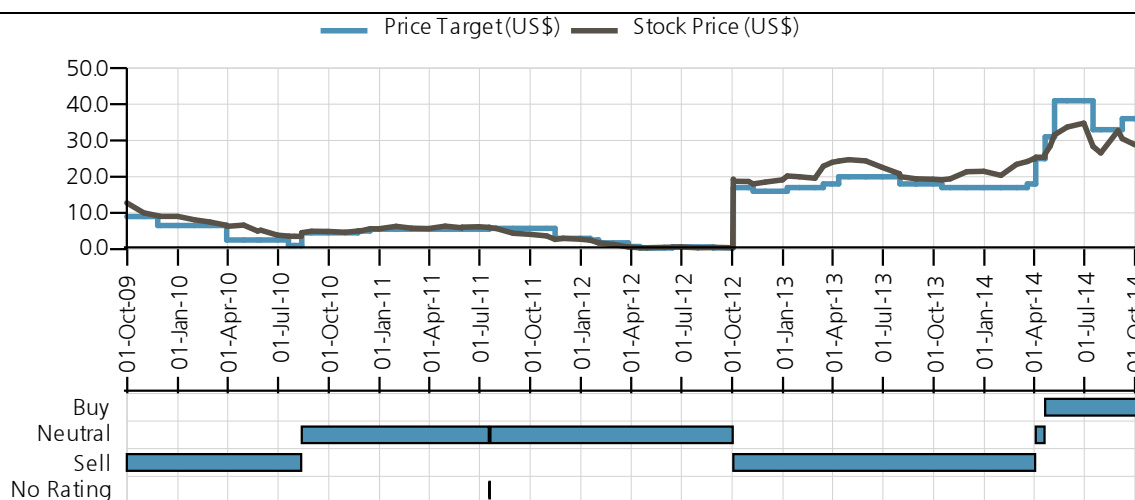
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