Energy Market Information Exchange Technical Committee
Minutes for Thursday, 30 September 2010, 11:00am EDT

Agenda

1. Call to Order
2. Roll Call
3. Approve minutes of previous meeting (2 September 2010)
4. Market Product Definitions (Toby and Ed and TC)
5. CIM coordination (Bill and Toby and TC)
6. Adjourn

Attendees  Member / Company (* = voting)

<table>
<thead>
<tr>
<th>Name</th>
<th>Company/Role</th>
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<tbody>
<tr>
<td>Bruce Bartell</td>
<td>Southern California Edison</td>
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<tr>
<td>Edward Cazalet*</td>
<td>Individual</td>
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<tr>
<td>Toby Considine*</td>
<td>University of North Carolina at Chapel Hill</td>
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<td>William Cox*</td>
<td>Individual</td>
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<td>Sean Crimmins</td>
<td>California Independent System Operator</td>
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<td>Girish Ghatikar</td>
<td>Lawrence Berkeley National Laboratory</td>
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<td>Anne Hendry*</td>
<td>Individual</td>
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<tr>
<td>David Holmberg*</td>
<td>NIST</td>
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<td>Jeremy Roberts</td>
<td>LonMark International</td>
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Minutes

1. Call to Order (Toby Considine)
   Call to order.

2. Roll Call (Anne Hendry)
   Voting Members: 5 of 8 (62%)
   Members: 9 of 48 (18%)
   Meeting achieved quorum.

3. Approve minutes of previous meeting
   Moved to next TC meeting.

4. Market Product Definitions (Toby and Ed and TC)
   [Hyperlinks to product definitions]
   Bill C:
   From a high level architectural sense, we don't want too many products. There may be different markets, but not necessarily different products. What is a product? Here we are trying to address current markets and existing types of products to determine where they fit into our model.
   We want a forward-looking model that also addresses current products. We also want to maintain as much simplicity as possible.
Toby C:
See Ed Cazalet's ontology of market systems (Products for EMIX, the first link in the agenda item). The second document links to a revision of Chapter 5 (Electrical Power and Energy Products) of the current EMIX Specification based on Ed's document which defines 6 classes of power products:

1. Transactive Products
2. Power Contract Products
3. Demand Response Products
4. Generation Capability Products
5. Ancillary Services Products
6. Transport Products

Bill C:
I think this is showing that many of the specific products (or subproducts) are in fact definable by having different information elements attached. So Ancillary Services could have 'quality of response' that would define different products? You could say “Here is today's regulation product” for example? We don't want the ontology to lock it in to today's times. Definitions change.

Ed C:
The devil is in details. Take, for example, Power Contract Products. If I say “These products are generally the same.” and we don't look at the details, we will have a problem. Look at 2.1 and 2.2 in this section: “Full Requirements Power” and “Full Requirements Power with Demand Charge”. These are two different prices. We should have a work session on looking at the details and discuss the parameters.

Sean C:
From an ISO perspective, that is problem – this is part of a bid, not a property of the product.

Ed C:
Yes, I agree. We have this duality. ISOs will define a product and a variety of generators might offer it. That's one type of product. Regulation and generation tend to be that way today. If you can meet those standards, then you participate, otherwise you go elsewhere. That's one definition of 'Product'. The other is, if I am a generator, I might want to sell to another party. Very much like DR – DR is a resource you turn over to another party. Not sure how to sort this out. We don't want to represent all types of generators, but most products I deal with are defined by the ISO. Most stage generation products have attributes that other generators won't use.

Sean C: For full-requirements power, you need the attributes so you can know how to deal with it. But that doesn't make it a different product. The same with ramp up. These are properties of bidding into the market, not a part of the generation. All our generation is 3-part.

Toby C: Could ramp time be '0'?

Sean C: Yes, could do it that way.

Bill C:
This is not intended to be mapped directly into a model or XML, but is way of looking at products today. We'll need to make sure whatever model is proposed and used, it covers this set of products (or else we say we are explicitly not covering ...).

Toby C:
From an ISO perspective, are DR and generation are the same; does DR have a 3-part bid like a generation product?

Sean C:
We give equal treatment to DR; does that mean it's the same? Reimbursed as if it were, which leads to the idea it should play in the market in the same way. But back to first point ... do we think tomatoes are different if a supplier says they have to be delivered before 5am and you have to give us a phone call before you deliver? Does that make them a different product?
Bill C:
No, that would fall under 'terms and conditions'. But what is different is that I can supply my tomato product regardless of what time it's delivered but with energy you have ramp time, etc, that are time sensitive so you need to create a market that is sufficiently broad.

Sean C:
To answer an earlier question, we could outline various properties of energy products and ancillary products, but that's a lot of scope and doesn't seem to add a lot of value to the standard. There would be too much detail at that level. For an energy product, for example, you have a 3-part bid, so that needs to be exchanged. But other things, ramp rate, etc, I don't think we should get into that level of detail. Those are properties that we need to run the grid, not necessary as part of a Product.

Rish G:
For any additional value added services (eg. phone call needed) OpenADR requires email notification. California also requires phone notification, etc. but that does not make it a different product. It adds value – added services as part of the product and it's beneficial to have this.

In the context of DR, how is this different from a program perspective? There are real-time pricing programs where the product is different from the program. We should give thought to this.

Ed C:
Yes, I'm in agreement that we want to define Product and other attributes of, say, Offer, that define how soon ahead I need to notify you, those are attributes of the Offer, but not of the product. It gets complex when it's an offer of power. For example:
- I'll deliver this amount at this time (a fixed profile with a specific ramp rate)
- If the offer is in to an ISO then I have to specify what rate can be ramped up and down

The second case gets more complex with a registration date for the generator, etc.

Dave H:
Is the issue whether this optionality should be part of the product? Are there standard ramp rates where products have ½ hr or 1-hr ramp rates as standard? Are there standards for DR programs?

Bill C:
In defining a Product, we need to think about how a facility/generator can respond to a request in a market. One of conclusions a while back is “If i can respond in 4 seconds then I can play in different markets for different products. That suggests there are standards products for these things. Separating the product from the market is useful.

Dave H: So if we can define what the options are those will become the attributes.

Bruce B:
I agree with the original question in terms of ramp rates – ramp times, etc, determine which transactions you can participate in.

Sean C:
Ed said ramp rates are properties of the Offer; then talked about properties of a product. Both of these are true. For regulation, we have to respond to range of quoted regulations within x # minutes. So that's what we are referring to as ramp rate in this document, but actually, that is response time. Usually ramp rate is when you bid for energy (as part of an Offer) saying this is what I can respond to. We should just talk about the response times for the product eg. an ancillary product has a response time for what you can do, such as 10 minutes). That is how a product is defined.

Dave H:
But as you are using 'response time' you are using it as part of a market transaction. What will a generator offer?

Sean C:
In dealing with response time, only certain generators will qualify with the capabilities to respond. But the ramp rate they submit will be their actual ramp rate. It could be different than what is actually in the response times defined in the product.
Ed C:
Back to question on how products get defined, if I have a buyer of products like an ISO, they create definitions of products they're willing to buy. Anyone able to meet the technical specifications of that product definition can sell that product. In a bilateral market, a generator may find a buyer and they could reach agreement on that transaction in terms of ramp rate, etc. It might not be the same product as the ISO is creating as a 'standard' product. and of course, ISOs and Utilities will change products over time ...

Sean C:
Ed has emphasized a critical point because we have deliberately said we are not defining markets or market context, we are defining how one interacts with markets. So ISO-NE may have different definitions than CAISO, different from forward markets like NYMEX. But you are playing and complying with the definitions there. It's up to operator, the market, etc

Bill C:
Markets define products. With a bilateral relationship, and with counterparty relationships, you can define any product you want. Markets define products in interaction with economic interaction with participants.

Sean C:
It's important to define a product in terms of it's intrinsic properties as opposed to how it is delivered. We will not need to know if it's a wind product or solar product.

Dave H: To recap, the kind of attributes I've heard are ramp rate and reliability. Any others?

Ed C: What do you mean by ramp rate?

Dave H: The rate I can increase my power output.

Toby C:
Looking back at Chapter 5 - this is rough sketch of the attributes we need. We also need to have CIM definitions and CIM words for these, but we have someone working on that from CIM.

Ed C:
'Full Requirements Power with Demand Charge' would require different properties. If you can parameterize each of these variations, then you probably can keep one product, but have to do that or make it separate products.

Sean C:
Earlier you said “Markets define products.” Does that mean utility programs are not products?

Bill C:
No, in some sense I may be using markets loosely as 'where prices are defined', so would include tariff programs, etc.

Toby C:
line 54: We now have updated power quality which also needs to be simplified.

line 68: Reactive Load – let me know if anything is missing.

Bill C:
Is 'reactive load' not more 'phase regulation'?

What is important other than power factor and quantity?

Ed C:
Generators are required to provide reactive power (often called voltage support). It may be required or paid to provide. So if I have a large load creating a phase shift, I may be charged a fee. This could be part of a contract offer. I'm not sure at this stage should spend any time on this. We won't
get this right in the next two weeks. But don't call it 'Reactive Load Artifact, call it 'Reactive Power'.

Sean C:
We don't do this; we just balance and have reactive power that we use to balance, but there's no market for it. Jeremy R: 'Reactive Power' or 'Reactive generation'? Sean C: 'Power'.

Ed C:
Above line 52, why is cycle time in there; it's an attribute of a generator. There may be a generator bid to an ISO, but an ISO doesn't generally put that in the product definition.

Toby C:
This is referring to 'reserve' power; getting paid not just to deliver, but to be on standby. For example, if I am called on once and can't be called again for another day, I'm less valuable than if I can be called again in an hour (spinning reserve).

Ed C:
I don't think an ISO puts that requirement in there. It's up to the bidder to bid on that product.

Bill C: But this is not just an ISO market. In a microgrid you can have a battery and if it is called on for reserve, then it can't call on again until it has recharged. Having this as an optional field doesn't harm the ISO definitions, but it is useful for other exchanges.

Sean C:
There are parameters that can be submitted with the offer to make that happen, but way the product is defined, you must be able to provide that level of service for a specified time period (one hour, 4 hours) but still that is not part of product.

Toby C: I call that cycle time ...

Sean C:
We don't have that (cycle time) as part of the product. Just once you're called you'd better be able to stay for at least 30 minutes. Which is why we have discussions about battery storage.

Toby C: Do you distinguish between someone who may be able to be called again?

Sean C: No we don't separate that in the product definition; we handle that in dispatch.

Ed C:
An ISO defines products and you submit offers to provide products. It's up to you, although perhaps the ISO checks that capability. If you can only offer once a day then you don't respond again.

Sean C:
Yes, if you've done your work and that's all you can do then you've lost the contract; then the ISO just goes buys from someone else.

Bill C:
I think this concept (of how quickly you can re-respond) comes from the PAP 7 work in defining DER interfaces and DER electrical capabilities.

Ed C:
Any party can offer to buy any products it wants to define unambiguously; it doesn't have to be an ISO.

Ed C: line 49: I'd like to move 'Autonomous Dispatch' from that table out of EMIX and put in EI.

Sean C:
Will the standard ever get to point where it defines range of products eg. products with attributes?

Toby C: No, although allowing product definitions by reference is reasonable thing to do.

ALL: Give specific comments through the EMIX list!

5. **CIM Coordination** (Bill and Toby and TC)

TBD.

6. **Adjourn**