A Memo on Transactive States, Product and Scheduling In Support of EMIX WD 12 Draft and Schema.

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The following table is an attempt to make sense out of the transactive state defined in EMIX.xsd and its relationship to the various types of EMIX products and to scheduling of intervals and transport service. Definitions follow the table.

**Table 1: Transactive States and Interval Scheduling for EMIX Products**

<table>
<thead>
<tr>
<th>Transactive State Number</th>
<th>Energy Product</th>
<th>Energy Option Product</th>
<th>Ancillary Service Product</th>
<th>Resource Product (DR, and DER/Gen control for energy or AS)</th>
<th>Transport Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Offer / Tender for an Energy Product</td>
<td>Offer / Tender for an Energy Option Product</td>
<td>Offer / Tender for an Energy Option Product</td>
<td>Offer / Tender for a Resource Product</td>
<td>Offer / Tender for a Resource Product</td>
</tr>
<tr>
<td>4</td>
<td>N/A</td>
<td>Option Exercise Event creates an Energy Transaction</td>
<td>Option Exercise Event creates an Energy Transaction</td>
<td>DR Event, AS dispatch or DER/Gen dispatch of a Resource Product creates an Energy Transaction</td>
<td>N/A</td>
</tr>
<tr>
<td>6</td>
<td>Delivery &amp; Measurement</td>
<td>Delivery &amp; Measurement</td>
<td>Delivery &amp; Measurement</td>
<td>Delivery &amp; Measurement</td>
<td>Delivery &amp; Measurement</td>
</tr>
<tr>
<td>7</td>
<td>Settlement</td>
<td>Settlement</td>
<td>Settlement</td>
<td>Settlement</td>
<td>Settlement</td>
</tr>
</tbody>
</table>


**Product Types**
The three types of EMIX products are:

1. **Energy Product** - delivery of energy
2. **Energy Option Product** -- a call or put option to deliver energy
3. **Ancillary Service Product**
4. **Resource Product** -- a option to manage or control the dispatch of generation (including DER), and DR to produce energy or ancillary services (AS)
5. **Transport Product** -- a service to transport energy from point to point using transmission or distribution services

**Terminology**
1. Offer and Tender are two words for the same action
2. Transaction and Contract are two words for the same commitment.

**Transactive States**
The transactive states apply to all products except that there is no exercise or dispatch state for an Energy Product. A transactive state indicates what message accompanies the product in a transactive interaction.

**Transactive State 1:** Similar to State 2 except the Indication of Interest is a request for information and does not constitute a binding offer.

**Transactive State 2:** An actual offer that if accepted is binding on both parties

**Transactive State 3:** A transaction that is typically the result of acceptance of an offer.

**Transactive State 4:** The exercise of optionality or dispatch in transaction (contract) that provides such flexibility. The result is an Energy Transaction Product.

**Transactive State 5:** The purchase or commitment to purchase transport services by posting a scheduled transaction to one or more Transport operators or the receipt of such schedules by a Transport service provider.

**Transactive State 6:** The actual delivery of energy and the measurement of actual delivery using meter data or estimation.

**Product Interval Scheduling for Each Transactive State**
Transactive States 1 & 2: an offer or IOI may specify either a scheduled or unscheduled (no start time) sequence of intervals.

Transactive State 3: requires a scheduled sequence of intervals

Transactive State 4,5,6: may result in dispatch of all or a subset of the scheduled sequence of intervals.