

# 1 Energy Interop Resources

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2 *(which may, as Ed Cazalet suggested, be misnamed)*

3 As defined in the EPRI white paper, all interaction is between the VEN and the VTN. Neither the VEN or  
4 the VTN can interact through the other or see past the other. EI is symmetric, in that a given VTN-VEN  
5 pair could swap rules for a different market interaction. EI is recursive, in that a VEN MAY be the  
6 interface to a microgrid that is itself managed by the VTN-VEN interactions of EI; in that internal market  
7 the system which exposes a VEN interface to the outside world may expose a VTN interface.

8 The inner workings of the “internal” microgrid might be by BACnet, or by LONTalk, or by OPC, or by SEP,  
9 or by KNX, or by any mix of open and proprietary protocols. The “internal” microgrid might be a  
10 municipal utility, an office park, or an industrial site that manages its internal energy using Energy  
11 Interoperation. Whatever the communications and interactions of the internal grid, the direct  
12 interactions through the exterior-facing VEN are the same: none.

## 13 Resources as Distinguishable Products

14 During enrollment, a VEN may choose to register one or more products with the VTN. These products  
15 are known as Resources. The VTN has no direct interaction with these resources. As in a restaurant,  
16 wherein the customer may request published menu items from the waitress, the VTN may transact for  
17 published resources from the VEN. Just as the customer is not allowed to fetch food from the kitchen,  
18 nor to order off menu meals, so the VTN is not able to interact directly with the systems that underlie  
19 each resource, or to request resources that are not registered.

20 The products represented by the resources may be distinguished by any number of characteristics. EMIX  
21 product definitions are distinguished by attributes that include schedule, location, and source and  
22 responsiveness. Investopedia defines product differentiation thus:

23 *It may be as simple as packaging the goods in a creative way, or as elaborate as incorporating*  
24 *new functional features. Sometimes differentiation does not involve changing the product at all,*  
25 *but creating a new advertising campaign or other sales promotions instead.*

26 The products represented by EI Resources may be as concrete as an industrial stone crusher or as  
27 abstract as an aggregator’s product, “Air Conditioning for the Elderly”. A Resource may be able to  
28 respond both up and down, as can a domestic water heater, or have unidirectional gradations of  
29 response, as might a thermostat. A VEN may even wish to register Resources for which no response is  
30 possible, say, at-home medical equipment.

31 EI makes no assertion as to what might distinguish two products or as to why different resources are  
32 registered by the same VEN. EI does not require that all load controlled by a VEN be indicated in  
33 resources. There may be market rules that require such “full registration” for all participants, but EI does  
34 not.

35 **Enrollment and Withdrawal of Resources**

36 A VEN MAY choose to enroll a single Resource, and reveal no information about its internal systems.

37 A VEN may have no Resources. Some markets may require that all participants Enroll, even if they are  
38 able to provide no resources. A VEN may enroll new Resources and withdraw other Resources. Having  
39 withdrawn its Resources, a VEN may again have no enrolled Resources. A VEN with no Resources is  
40 unable to participate in VEN-VTN based markets. It is not in scope to define the market rules for VENs  
41 without Resources

42 **Ancillary Reporting Requirements**

43 Some markets may have reporting requirements beyond those defined in Energy Interoperation. Energy  
44 Interoperation neither requires these requirements, nor supports them. Examples of such requirements  
45 discussed in the Committee include:

- 46 1. Nameplate information for exact identification of assets behind each Resource
- 47 2. Location information to identify local distribution effects of Resources exposed by a single VEN  
48 that are distributed geographically (if allowed).
- 49 3. Customer information to enable a third party to audit the market and determine if a single  
50 Resources is being sold multiple times
- 51 4. Demographic information about the people represented by each VEN.

52 All such information is outside the scope of Energy Interoperation. To the extent that participant  
53 business rules or market rules requires this information, Energy Interoperation will support this  
54 requirement, but it will not include or enforce these requirements. *(Perhaps this means that we need to*  
55 *have an approval status on each Resource: Pending, Approved, Refused. Perhaps only Resources*  
56 *approved by the VTN can come to market. If so, that Approval is out of scope; it is merely a reflection of*  
57 *an out-of-band Enrollment.)*

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