What: Develop Common Specification for Price and Product Definition

Abstract:
Price is more than a number. Price is a number associated with product characteristics. Already identified product characteristics include delivery schedule, quality, environmental characteristics, and regulatory characteristics. A common specification for price is a precursor to new market developments, to demand response, to distributed energy resources, to understanding meter information, and to every other hand-off between domains.

Description:
Shared responsibility for balancing energy production and consumption requires shared access to information about energy markets and actual use. Price is a common abstraction for market conditions including abundance, scarcity, and quality. Energy quality may include reliability, power quality, and source. Energy source may be as a important as energy price to influencing consumption decisions in some scenarios.

A common price model will define how to exchange energy characteristics, availability, and schedules to support free and effective exchange of information in any market. In financial markets, this type of description is called product definition. Although today's energy markets are almost exclusively wholesale, the product definition will be usable in other scenarios including retail markets and "prices to devices" scenarios. The completed price model will be used in Demand Response (DR) communications, in usage sharing between the meter and the premises Energy Service Interface, and in potential market operations

Today's large-scale trading systems are built using the FIX (Financial Information) Protocol. The FIX product attribute dictionary already includes many elements used in today's wholesale energy markets; this plan's work can be completed more quickly if it re-uses this work. A common product profile compatible with FIX is a secondary deliverable of this plan.

Energy prices and energy products are closely tied to schedules and intervals. Building systems and enterprise activities must share an understanding of those schedules for effective collaborative energy. Product definitions must include schedule information.

Objectives:

1. Develop a summary of product characteristics of interest to energy consumers.

2. Develop summary of power reliability and quality characteristics that affect price and availability (supply side) and desirability (demand side).

3. Develop and implement a plan to expedite harmonized standards development and adoption within the associated standards bodies.

Why:

Coordination of energy supply and demand requires a common understanding of supply and demand. Future energy markets will see greater variability than today. Consumer interests in green power, parallel markets for energy, and carbon regulations may create increased interest in energy sources. Distributed energy resources introduce new market focuses and new market sources.

Better communication of actionable energy prices will help enable and expand efficient markets (including forward or futures markets) that satisfy growing demand for lower-carbon, lower-energy buildings, net zero-energy systems, and supply-demand integration that take advantage of dynamic pricing. Local generation and local storage require that the consumer (in today's situation) make investments in technology and infrastructure including electric charging and thermal storage systems. Businesses, homes, electric vehicles and the power grid will benefit from automated and timely communication of energy pricing, characteristics, quantities, and related information.

A consistent model for market information exchange can be applied, with elaboration or use of defined subsets, to allow essentially the same information communication for homes, individual appliances, electric vehicles, small businesses, commercial buildings, office parks, neighborhood grids, and industrial facilities, simplifying communication flow and improving the quality of actions taken across the broad range of energy providers, distributors, and consumers. A consistent information model will reduce costs for implementation.

Price and characteristics of energy are not necessarily simple. Retail markets typically have simple actionable information, in large measure because the retail markets combined with distribution are defined with clear and specific prices; wholesale markets are more complex, with transactions subject to later adjustments, e.g. for balancing costs, as well as the complexities of tariff market definitions. This work does not intend to address those complexities, rather to define a means for effective information exchange that permits immediate decisions—wholesale market participants must independently understand the complexities of the markets in which they operate. But a simple quotation of price, quantity, and characteristics in a consistent way across markets has significant value, even though the participants must understand and anticipate later adjustments.

Without transparency and common formats, energy markets, as with other markets, are prone to manipulation and gaming. Pricing and product definition are the key to transparent market accounting. Commonly agreed upon schedule and interval information is essential to developing forward markets.

Where:

Price and product definition is a common component of information exchange across almost every domain. In the evolving transactive power grid market communications will involve energy consumers, producers, transmission and distribution systems, and must

enable aggregation for both consumption and curtailment resources. Market makers, such as Independent System Operators (ISOs), Regional Transmission Operators (RTOs), utilities, and other evolving mechanisms need to deliver actionable information in consistent formats as the Smart Grid evolves. With information in consistent formats, building and facility agents can make decisions on energy sale, purchase, and use that fit the goals and requirements of their home, business, or industrial facility.

Price and product definition are critical to open market operations. Machine understandable product definitions will be included in any retail forward markets. Wherever a decision to use or not use energy is made, energy product definition and price are potential decision points.

Common price and product definitions are critical across the GWAC stack. Product definition is the core of Semantic Understanding (level 4) and setting Business Context (level 5). As price is an abstraction for scarcity and value, reliance on price reduces the complexity required to achieve syntactic interoperability (3). Price is the primary means for sharing objectives between businesses (7). Today, prices are determined largely by regulatory policy (8); because product definitions enable multiple clearing markets over the same wired, future economic and regulatory policies will be affected by these definitions.

How:
- Engage today's market makers in energy (ISO/RTOs) to better support today's markets
- Select common models and delivery format for specifications to support 1-n relationships among domains.
- Develop semantic mapping between scheduling in energy and in other domains and within energy between supply and demand..
- Use interval and schedule formats from other domains, especially the WS-Calendar (PAP 04) specifications.
- Develop cross-reference between market terms in energy and in financial markets.
- Engage FIX Protocol organization to supply those attributes and definitions already in use in commodity and energy markets. Extend FIX attributes as needed.
- Engage NAESB to formulate market rules for FIX profiles.
- Engage Regulatory entities to determine model product representations of existing tariffed products.

Task Descriptions
(These task descriptions are a starting point for discussion within the workshop process on August 3 & 4, 2009)

- Develop plan and identify funding for interoperability and conformance, to be done in parallel with specification development
- Define attributes and features needed for product description, including environmental and regulatory attributes.
- Integrate product description with schedule and interval specifications, to be developed separately (PAP04)
- Define profiles for packaging product definitions and prices into automatable trading platforms, e.g., FIX profiles.
- Identify business process attributes from non-energy trading operations and markets useful for energy space. These might include blended products (Energy with Carbon Credits) or Sequences of Operations (Storage Management), et al.

Deliverables

Develop along with project team.

Who:

Project Team
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[RTO/ISO trade association]
The event organizers below run purpose-driven organizations in the areas of standards-based building systems and grid communications (building system suppliers & integrators) and IT-based facility operations (owner-operators). Each can be very helpful in building participation and consensus) Jim Young, RealComm jyoung@realcomm.com Anto Budiardjo, Clasma, antob@clasma.com
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When: [*Timeline for deliverables.*]

Task	Responsible	Due Date	Notes
Convene Cross-Domain Group Price+	OASIS, NAESB	200911	DEWGs, FIX, others
--High level concept of operation	BAE (volunteer)	200911	DEWGs, No Magic, Ron Melton
--Survey existing price communication	FIX, NAESB	200910	FIX, JPM, FISD, NARUC/NAESB, ISO/RTO CTO, EEI, AHAM, ZigBee, OpenHAN, OASIS
--Data model	OASIS IEC TC57 CIM WG	ongoing	EMIX; FIX; IEC/CIM
--Draft pricing specification	OASIS	201004	data model, XML expression?, No Magic Review by IEC, FIX, CalConnect, NAESB, FIATECH, NIBS, DEWGs, others
Continued coordination		ongoing	
Convene Schedule Group	CalConnect	200912 out for review	OASIS, NAESB Review DEWGs, FIATECH, others
Attributes	Defer/conveners		
SHARE EVERYTHING AT GRID-INTEROP			

Metrics:

Issues, Comments, or Observations of Note
• Look to areas of coordination (DR & PEV for example)

- IEC TC57 Use Cases to Harvest
- FIX futures contract information (fidelity of information?)
- Forward and future contracts? Consumer/participation?
- Standard modeling interface (Jay)
- Aggregation points above devices, participate in markets; real-time expensive.
- Identity (security)
- Get out of the weeds ☺ /
- Make it simple and understandable
- Simplicity is a security feature
- Align pricing with NAESB Pricing Model
- ISO / RTO Participation
- Implementation Testing
- Simplify to meet Needs of Customer
- Each group pull out pricing model, pricing information and submit to (SDO working on it)
- Start with End User Price? Working backward, what does the supplier need to know?
- Use Composable model