

1 **OASIS Energy Market Information Exchange**
2 **Technical Committee Charter**

3 **Draft of July 28, 2009**

4
5 We are finalizing the list of supporters for this charter before submission in the near
6 future. Please send email to [wtcox@CoxSoftwareArchitects.com](mailto:wtcoc@CoxSoftwareArchitects.com) if you would like to
7 be identified as supporting this work. This proposal is not confidential, however, the
8 names and affiliations of sponsors will be until final review before submission to the
9 formal OASIS review process.

10
11 PLEASE NOTE: This is a draft for discussion and review and has not yet been
12 submitted into the formal process to create a technical committee for this work.

13
14 William Cox, [wtcox@CoxSoftwareArchitects.com](mailto:wtcoc@CoxSoftwareArchitects.com), editor.

15
16 Please send comments to the mailing list smartgrid-interest@lists.oasis-open.org
17 (preferred); optionally send comments to any other list on which you saw this.

18
19 To subscribe to the smartgrid-interest list, either send a message to the list address,
20 smargrid-interest@lists.oasis-open.org with “subscribe” in the subject line, or go to
21 <http://www.oasis-open.org/mlmanage/>, enter your email address, and click Manage
22 Subscriptions. Smartgrid-interest is half way down the right hand column on the next
23 page. In either case, you should receive a message from the subscription
24 management software. The mailing list is open to anyone, OASIS Member or not.

25
26
27 **1) The Charter of the TC, which includes only the following**
28 **items:**

29 **(1)(a) The name of the TC**

30 OASIS Energy Market Information Exchange TC

31 **(1)(b) A statement of purpose, including a definition of the problem to**
32 **be solved.**

33
34 The purpose of the Technical Committee is to define information models for
35 exchanging prices and product definitions in energy markets.

36 As we all know, price is more than just a number. The characteristics of energy, such
37 as quantity and units, generation source, carbon trading or tracing, power quality and
38 reliability, and the schedule on which energy is available are information that is
39 needed to make decisions in a market.

40
41 The committee will define neither market operations nor market structures; rather it
42 will define how to exchange energy characteristics, availability, and schedules to
43 support free and effective exchange of information in any energy market. In financial
44 markets, this type of description is called a product definition. Although today's
45 energy markets are almost exclusively wholesale, the product definitions will be
46 usable in other scenarios including retail markets and "prices to devices" scenarios.

47
48 Distributed energy generation challenges the traditional hierarchical relationship of
49 supplier and consumer. Alternative and renewable energy sources may be placed
50 closer to the end nodes of the grid. Wind and solar generation, as well as industrial
51 co-generation, allow end nodes to sometimes be energy suppliers. Energy storage,
52 including that in plug-in electric vehicles, means that the same device may be
53 sometimes a supplier, sometime a consumer. As these sources are all intermittent,
54 they increase the challenge of coordinating supply and demand to maintain the
55 reliability of the electric grid.

56
57 Dynamic pricing describes the situation where prices vary over time, in some cases
58 as short as five-minute intervals. Dynamic pricing allows buildings, industrial
59 facilities, homes, microgrids, and electric transportation to adapt to market
60 conditions, rather than the much slower pace of regulatory change of authorized
61 costs. Dynamic pricing is a reality in many markets for commercial and industrial
62 customers, and is expanding for residential customers. Technical solutions such as
63 Open Automated Demand Response, deployed in California markets and now being
64 standardized by the OASIS Energy Interoperation Technical Committee,
65 communicates both price signals and reliability signals.

66
67 This work extends the definition of a simple price to include other characteristics and
68 information to enable more effective markets and communication of market
69 information.

70
71 Of course, energy prices are in use today in various domains, business processes, and
72 markets. The goal of the Technical Committee is to provide an effective means of
73 exchanging price and other characteristics that can be used for transactions both

74 across and within domains. Specific work with which the TC intends to coordinate is
75 listed in Section (2)(a).

76
77 Better communication of actionable energy prices will help enable and expand
78 efficient markets (including forward and futures markets) that satisfy growing
79 demand for lower-carbon, lower-energy buildings, net zero-energy systems, and
80 supply-demand integration that take advantage of dynamic pricing. Local generation
81 and local storage require that the consumer (in today’s situation) make investments
82 in technology and infrastructure including electric charging and thermal storage
83 systems. Businesses, homes, electric vehicles and the power grid will benefit from
84 automated and timely communication of energy pricing, characteristics, quantities,
85 and related information.

86
87 A consistent model for market information exchange can be applied, with elaboration
88 or use of defined subsets, to allow essentially the same information communication
89 for homes, individual appliances, electric vehicles, small businesses, commercial
90 buildings, office parks, neighborhood grids, and industrial facilities, simplifying
91 communication flow and improving the quality of actions taken across the broad
92 range of energy providers, distributors, and consumers. A consistent information
93 model will reduce costs for implementation.

94
95 Price and characteristics of energy are not necessarily simple. Retail markets
96 typically have simple actionable information, in large measure because the retail
97 markets combined with distribution are defined with clear and specific prices;
98 wholesale markets are more complex, with transactions subject to later adjustments,
99 e.g. for balancing costs, as well as the complexities of tariff definitions. This work
100 does not intend to address those complexities, rather to define a means for effective
101 information exchange that permits immediate decisions—wholesale market
102 participants must independently understand the complexities of the markets in which
103 they operate. But a simple quotation of price, quantity, and characteristics in a
104 consistent way across markets has significant value, even though the participants
105 must understand and anticipate later adjustments.

106
107 In the evolving transactive power grid (the “Smart Grid”) these communications will
108 involve energy consumers, producers, transmission and distribution systems, and
109 must enable aggregation for both consumption and curtailment resources. Market
110 makers, such as Independent System Operators (ISOs), Regional Transmission
111 Operators (RTOs), utilities, and other evolving mechanisms need to deliver
112 actionable information in consistent formats as the Smart Grid evolves. With

113 information in consistent formats, building and facility agents can make decisions on
114 energy sale, purchase, and use that fit the goals and requirements of their home,
115 business, or industrial facility.

116
117 The Technical Committee will focus on means of exchanging market information
118 consistent with the OASIS Blue approach (see [http://www.oasis-
120 open.org/resources/white-papers/blue/](http://www.oasis-
119 open.org/resources/white-papers/blue/)), including consistency, transparency, and
121 security.

122 The data exchanged is critical information to allow buyers and sellers to
123 communicate, understand, and act on prices, quantities, and other characteristics of
124 energy that is bought and sold.

125 ***(1)(c) The scope of the work of the TC.***

126 This TC will leverage existing work wherever feasible, and will produce
127 specifications for interoperation consistent with architectural principles including
128 symmetry, composability, service orientation, and aggregation.

129
130 The TC will develop a data model and XML vocabulary to exchange prices and
131 product definitions for transactive energy markets. Web services definitions, service
132 definitions consistent with the OASIS SOA Reference Model, and XML
133 vocabularies supporting the information model will be developed as needed for
134 interoperable and standard exchange of:

- 135 • Dynamic price information
- 136 • Bid information
- 137 • Time for use or availability
- 138 • Units and quantity to be traded
- 139 • Characteristics of what is to be traded
- 140 • Deal/Bid/Acceptance confirmations

141
142 This work will facilitate interaction with energy markets, including but not limited to
143 allowing participants to:

- 144 • Take advantage of lower energy costs by deferring or accelerating usage
- 145 • Enable trading of curtailment and generation at retail, wholesale, and
146 aggregator markets
- 147 • Enable forward and futures markets and specific contracted time of use and
148 provision

- 149 • Enable retail, wholesale, and aggregator market decisions based on
150 characteristics of energy traded, including but not limited to source (e.g.
151 renewable) and carbon characteristics
- 152 • Enable auditing of transactions and characteristics of what is traded
- 153 • Support symmetry of interaction between providers and consumers of energy
- 154 • Provide for aggregation of provision, curtailment, and use at the retail and
155 wholesale level

156
157 The definition of a price and of other market information exchanged depends on the
158 market context in which it exists. It is not in scope for this TC to define
159 specifications for markets or for interoperation. The TC will coordinate with others
160 to ensure that commonly used market and communication models are supported.

161
162 The TC will define the specific type and amount of information exchanged as well as
163 define extensibility and subsetting. The TC does not intend to attempt to define all
164 characteristics of complex markets, but to define sufficient information exchange for
165 effective decisions by market participants, suppliers, and consumers, and to
166 communicate price quotations.

167
168 The data models and XML vocabularies defined by this TC will address issues in
169 energy markets and the Smart Grid, but may be defined so as to support requirements
170 for other markets.

171
172 This work is intended to be usable by the OASIS Energy Interoperation TC and other
173 Smart Grid standardization efforts.

174
175 Models and requirements for cybersecurity and privacy will be addressed in the TC's
176 work.

177
178 Specific work with which the TC intends to coordinate is listed in Section (2)(a).

179
180

180 **(1)(d) A list of deliverables, with projected completion dates.**

181 Projected times are from inception, the date of the initial TC meeting.

182
183 Insofar as possible the TC will coordinate its schedules with the OASIS Energy
184 Interoperation TC, UCAIug and other initiatives including those supported by NIST
185 and related regulatory agencies.

186
187 Based on coordination with Schedule and Interval, Energy Interoperation, and other
188 standards efforts, the projected timetable is

- 189
- 190 [1] Develop plan and identify funding for interoperability and conformance
 - 191 testing (1 month)
 - 192 [2] Define eMIX price and product (4 months)
 - 193 [3] Integrate eMIX with Common Schedule and Interval specification developed
 - 194 with others (5 months)
 - 195 [4] Define profiles for use of eMIX in OASIS Energy Interoperation (6 months)
 - 196 [5] Define profiles for use of eMIX in FIXML (12 months)
 - 197 [6] Continued maintenance and development of profiles for other areas as guided
 - 198 by identified needs including those in the United States Smart Grid Roadmap.
 - 199

200 After deliverable [5] is complete, the TC will enter "maintenance mode" described
201 schematically in [6]. The maintenance is intended to provide minor revisions to
202 address inconsistencies and any necessary modifications in a way that does not affect
203 core structure and functionality of the final deliverable, as well as to develop profiles
204 for other areas as identified in the future. Such updates will take place at least
205 annually. During the maintenance mode, the TC will continue to address the
206 interoperation and use of eMIX in its multiple contexts.

207 **(1)(e) Specification of the IPR Mode under which the TC will operate.**

208 The TC shall operate under RF on Limited Terms. [The TC may operate under Non-
209 Assert Mode if that mode is available when the TC Charter is approved]

210 **(1)(f) The anticipated audience or users of the work.**

211 Anticipated users of this work include:

- 212 • Implementers of facility agents, embedded controllers, decision management
- 213 systems, and gateways
- 214 • Market makers such as Independent System Operators and Regional
- 215 Transmission Operators

- 216 • Participants in energy markets at all levels (e.g. retail, wholesale, curtailment,
217 and forward and futures markets for energy trading)
- 218 • Aggregators of energy provision, curtailment, and use
- 219 • Generators
- 220 • Energy storage facilities
- 221 • Smart devices and premises automation systems
- 222 • Consumers of energy, for acquiring energy in a cost-effective manner
223 consistent with their business and/or personal activities

224 ***(1)(g) The language in which the TC shall conduct business.***

225 The TC will use English as the language for conducting its operations.

226

226 **(2) Non-normative information regarding the startup of the TC:**

227 ***(2)(a) Identification of similar or applicable work that is being done in***
228 ***other OASIS TCs or by other organizations, why there is a need for***
229 ***another effort in this area and how this proposed TC will be different,***
230 ***and what level of liaison will be pursued with these other organizations.***

231 There are many means for market information exchange of bids and prices, including
232 XML vocabularies. The characteristics of energy, such as source (e.g. geothermal,
233 hydroelectric, natural gas generation, hard coal, soft coal generators with stack
234 scrubbers, carbon characteristics) are of high present and future interest. Today's
235 energy markets command a premium for renewable energy, but there are no broadly
236 interoperable means of consistently tagging energy with its source or characteristics.
237 Specific markets, such as ISO New England's GIS =do handle tagging and
238 administration of credit. The interoperable extension of such information models is a
239 goal of this work.

240
241 The intention of this work is to define data models and vocabularies that allow
242 software to exchange energy market information, and may permit extensibility to
243 similar markets in the future.

244
245 We believe that close coordination and balancing among the full range of
246 stakeholders is essential to ensure that a single, technology independent requirements
247 specification and abstract information model can be developed that can be
248 implemented by the OASIS TC and any other entities that may develop non-XML
249 profiles, thus assuring interoperation at the semantic level in the future.

250
251 For one example, wholesale energy markets have specific requirements for
252 submission and acceptance of energy offers including standardized business
253 processes. The work of this Technical Committee is not intended to supplant those
254 requirements but rather to work with them as a means of exchanging information
255 among multiple entities. In particular, the utilities, Independent System Operators
256 (ISOs), Regional Transmission Operators (RTOs), energy market makers, and
257 wholesale energy market participants have defined models, business processes, and
258 XML vocabularies that could support and contribute to this TC's work. We welcome
259 them as stakeholders and contributors.

260
261 We anticipate input from technology, policy and business stakeholders and
262 organizations, including but not limited to NIST Domain Expert Working Groups

263 (NIST DEWG) and Task Groups (<http://www.nist.gov/smartgrid/>), The Federal
264 Energy Regulatory Commission (FERC <http://www.ferc.gov>), the United States
265 Department of Energy (DOE <http://www.energy.gov/>), the National Association of
266 Regulatory Utility Commissioners (NARUC <http://naruc.org/>) and the Electric Power
267 Research Institute (EPRI <http://www.epri.com>).

268
269 In addition we expect to coordinate and/or harmonize with work involving price
270 information in business processes and in-domain interoperability in Standards
271 Developing Organizations including but not limited to the North American Energy
272 Standards Board (NAESB <http://naesb.org/>) and the International Electrotechnical
273 Commission (IEC <http://www.iec.ch/>).

274
275 The development of open, transactive energy is a goal of the GridWise Architecture
276 Council (<http://www.gridwiseac.org/>). We expect to engage the members throughout
277 the lifecycle of the TC, as well as with emerging Smart Grid Architecture efforts
278 from NIST including the Interim Smart Grid Interoperability Roadmap

279
280 The definition of a market is a required context for understanding prices, pricing, and
281 bids. Market definition is outside the scope of this TC; we expect to interact with
282 work developing out of the 2009 GridEcon conference
283 (<http://www.gridecon.com/2009/>), NIST, and the evolving Smart Grid Interim
284 Interoperability Standards Framework (<http://nist.gov/smartgrid/>).

285
286 The Financial Information Exchange protocol (FIX, www.FixProtocol.org) is an
287 open specification intended to streamline electronic communications in the financial
288 securities industry. FIX supports multiple formats and types of communications
289 between financial entities including trade allocation, order submissions, order
290 changes, execution reporting and advertisements. FIX is employed by numerous
291 financial vendors and has emerged as the favored specification among trading
292 partners. FIX is used in many markets, so defining the FIX product definition profile
293 EMIX makes no pre-judgment of energy market design.

294
295 European markets have an additional area of economic interface, between
296 Transmission and Distribution (in American terminology), which are typically under
297 separate ownership. As time allows, or in a future update, the TC may address those
298 needs.

299

300 Demand Response interactions may be used to deliver Dynamic Price information;
301 the TC will coordinate with the OASIS Energy Interoperation Technical Committee
302 (http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=energyinterop).

303
304 Work on defining business attributes of a service, being developed by the OASIS
305 Service Oriented Architecture End-to-End Resource Planning TC (SOA-EERP TC),
306 may apply to define attributes of energy.

307
308 The (proposed, in formation) OASIS WS-Calendaring Technical Committee or other
309 work (identified in this draft as “Common Schedule and Interval”) will provide an
310 interoperable XML vocabulary and semantics for time that is applicable to energy
311 pricing, automated building management, and business process. We expect to
312 coordinate with that work.

313
314 Composability with the WS-Transaction family of OASIS Standards may be
315 beneficial for consistent distributed outcomes, particularly across enterprises with
316 diverse ownership.

317
318 Service definitions and the approach of the TC should be consistent with the OASIS
319 Service Oriented Architecture Reference Model ([http://www.oasis-](http://www.oasis-open.org/specs/#soa-rmv1.0)
320 [open.org/specs/#soa-rmv1.0](http://www.oasis-open.org/specs/#soa-rmv1.0)) and best practices in that area.

321

322 ***(2)(b) The date, time, and location of the first meeting, whether it will be***
323 ***held in person or by phone, and who will sponsor this first meeting. The***
324 ***first meeting of a TC shall occur no less than 30 days after the***
325 ***announcement of its formation in the case of a telephone or other***
326 ***electronic meeting, and no less than 45 days after the announcement of***
327 ***its formation in the case of a face-to-face meeting.***

328

329 TBD. The first meeting will be by teleconference.

330 ***(2)(c) The projected on-going meeting schedule for the year following***
331 ***the formation of the TC, or until the projected date of the final***
332 ***deliverable, whichever comes first, and who will be expected to***
333 ***sponsor these meetings.***

334 The TC will conduct its business via weekly teleconference calls. The time of the call
335 will be determined during the first meeting of the TC. The TC will conduct face-to-

336 face meetings as needed and determined by the TC. The TC participants will sponsor
337 teleconference facilities and face-to-face meetings.

338
339 Under OASIS procedures, a Chair or co-Chairs will be elected at the first meeting.

340
341 Time zone difference of participants may require flexibility in meeting times,
342 quorum, and subcommittees (if any).

343 ***(2)(d) The names, electronic mail addresses, and membership***
344 ***affiliations of at least Minimum Membership who support this proposal***
345 ***and are committed to the Charter and projected meeting schedule.***

346
347 ***Note: need a minimum of 5, of which at least two of which must work for OASIS***
348 ***Organizational Members.***

349
350 PENDING. Contact wtcov@CoxSoftwareArchitects.com if you are interested in
351 supporting this work.

352 ***(2)(e) The name of the Convener who must be an Eligible Person.***

353
354 TBD

355 ***(2)(f) The name of the Member Section with which the TC intends to***
356 ***affiliate***

357 The Energy Market Information Exchange TC intends to affiliate with the OASIS
358 Blue Member Section.

359 ***(2)(g) Optionally, a list of contributions of existing technical work that***
360 ***the proposers anticipate will be made to this TC.***

361
362 TBD
363

364 ***(2)(h) Optionally, a draft Frequently Asked Questions (FAQ) document***
365 ***regarding the planned scope of the TC, for posting on the TC's website.***

366
367 TBD

368 ***(2)(i) Optionally, a proposed working title and acronym for the***
369 ***specification(s) to be developed by the TC.***

370

371 eMIX