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Subject: Format description for price stream membership broadcasting service of the
Ecogrid EU Market

1.Introduction

This document describes a XML format, which is used to communicate the current and future membership of an EcoGrid EU household to a pricestream. The original EcoGrid EU idea used only one Real Time Market Price (RTMP) for all participants at all times. To allow various tests this one Real Time Market Price for all EcoGrid EU participants is not enough. Multiple test price signals are used to conduct different tests, which will allow a better evaluation of the whole pilot program. This raises the need to share the information from the EcoGrid EU Market to all optimization parties which EcoGrid EU participant is to a certain time controlled by which pricestream.

2.Format description as XSD

```
<?xml version="1.0" encoding="UTF-8"?>
<schema xmlns="http://www.w3.org/2001/XMLSchema"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:jxb="http://java.sun.com/xml/ns/jaxb"
  jxb:version="2.1"
  xmlns:sig="http://www.w3.org/2000/09/xmldsig#"
  targetNamespace="http://smartgrid-
xu3.zurich.ihost.com/ecogrid/ecogrid_pricestream_announcer.xsd"
  xmlns:tns="http://smartgrid-xu3.zurich.ihost.com/ecogrid/ecogrid_pricestream_announcer.xsd"
  elementFormDefault="qualified">

  <!-- we have a local copy of this namespace's schema so we can import it. -->
  <import namespace="http://www.w3.org/2000/09/xmldsig#" schemaLocation="./xmldsig-core-
schema.xsd"/>

  <xsd:annotation>
    <xsd:appinfo>
      <jxb:schemaBindings>
        <jxb:package
name="com.ibm.zrl.ecogrid.jaxb.pricestream_announcer"></jxb:package>
      </jxb:schemaBindings>
    </xsd:appinfo>
  </xsd:annotation>

  <simpleType name="updateType">
    <restriction base="string">
      <enumeration value="full"/>
      <enumeration value="changes"/>
    </restriction>
  </simpleType>

  <complexType name="ID">
    <attribute name="dsoInstallNumber" type="xsd:int" use="required"></attribute>
    <attribute name="from" type="xsd:dateTime" use="required"></attribute>
    <attribute name="to" type="xsd:dateTime" use="required"></attribute>
  </complexType>

  <complexType name="Member">
    <sequence>
      <element name="id" type="tns:ID" minOccurs="1"
maxOccurs="unbounded"></element>
    </sequence>
  </complexType>

  <complexType name="PriceStreamEntry">
    <sequence>
      <element name="name" type="xsd:string" minOccurs="1" maxOccurs="1"></element>
      <element name="brokerURL" type="xsd:string" minOccurs="1"
maxOccurs="1"></element>
```

```

maxOccurs="1"></element>
    <element name="rtmTopic" type="xsd:string" minOccurs="1"
maxOccurs="1"></element>
    <element name="hourlyForecastTopic" type="xsd:string" minOccurs="1"
maxOccurs="1"></element>
    <element name="dailyForecastTopic" type="xsd:string" minOccurs="1"
maxOccurs="1"></element>
    <element name="members" type="tns:Member" minOccurs="1"
maxOccurs="1"></element>
    </sequence>
    <!-- mandatory ID for prices so that signature can reference the data to be signed --
>
    <attribute name="id" type="xsd:ID" use="required"></attribute>
</complexType>

<element name="SignedMembershipAnnouncement">
    <complexType>
        <sequence>
            <element name="update" type="tns:updateType" minOccurs="1"
maxOccurs="1"></element>
            <element name="pricestreams" type="tns:PriceStreamEntry" minOccurs="1"
maxOccurs="unbounded"></element>
            <element name="signature" type="sig:SignatureType"></element>
        </sequence>
    </complexType>
</element>

<element name="MembershipAnnouncement">
    <complexType>
        <sequence>
            <element name="update" type="tns:updateType" minOccurs="1"
maxOccurs="1"></element>
            <element name="pricestreams" type="tns:PriceStreamEntry" minOccurs="1"
maxOccurs="unbounded"></element>
        </sequence>
    </complexType>
</element>
</schema>

```

3.Example

3.1. Full update

```

<?xml version="1.0" encoding="UTF-8"?>
<SignedMembershipAnnouncement xmlns="http://smartgrid-
xu3.zurich.ihost.com/ecogrid/ecogrid_pricestream_announcer.xsd"
xmlns:ns2="http://www.w3.org/2000/09/xmlsig#">
  <update>full</update>
  <pricestreams id="4be65a19-4902-4492-9299-17b9dee3637f">
    <name>mqproxy.properties</name>
    <brokerURL>tcp://mqbroker1:61616</brokerURL>
    <rtmTopic>ecogrideu.mqproxy.rtm</rtmTopic>
    <hourlyForecastTopic>ecogrideu.mqproxy.hourly</hourlyForecastTopic>
    <dailyForecastTopic>ecogrideu.mqproxy.daily</dailyForecastTopic>
    <members>
      <id dsoInstallNumber="77777" from="2013-05-18T13:00:00.000Z" />
    </members>
  </pricestreams>
  <pricestreams id="ef2d705e-3757-4e23-8f7d-bafae60c4b8d">
    <name>rtm.properties</name>
    <brokerURL>tcp://mqbroker1:61616</brokerURL>
    <rtmTopic>ecogrideu.rtmp.rtm</rtmTopic>
    <hourlyForecastTopic>ecogrideu.rtmp.hourly</hourlyForecastTopic>
    <dailyForecastTopic>ecogrideu.rtmp.daily</dailyForecastTopic>
    <members>
      <id dsoInstallNumber="99999" from="2013-05-17T13:00:00.000Z" />
      <id dsoInstallNumber="88888" from="2013-05-17T13:00:00.000Z" />
      <id dsoInstallNumber="77777" from="2013-05-17T13:00:00.000Z" to="2013-05-
18T13:00:00.000Z" />
    </members>

```

```

</pricestreams>
<Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
  <SignedInfo>
    <CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315" />
    <SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1" />
    <Reference URI="">
      <Transforms>
        <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
      </Transforms>
      <DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1" />
      <DigestValue>6824dSDn3q4akEXfVUBBE+dTtWE=</DigestValue>
    </Reference>
  </SignedInfo>
  <SignatureValue> ... </SignatureValue>
  <KeyInfo>
    <X509Data>
      <X509SubjectName> ... </X509SubjectName>
      <X509Certificate> ... </X509Certificate>
    </X509Data>
  </KeyInfo>
</Signature>
</SignedMembershipAnnouncement>

```

3.2. Update changes

```

<?xml version="1.0" encoding="UTF-8"?>
<SignedMembershipAnnouncement xmlns="http://smartgrid-
xu3.zurich.ihost.com/ecogrid/ecogrid_pricestream_announcer.xsd"
xmlns:ns2="http://www.w3.org/2000/09/xmldsig#">
  <update>changes</update>
  <pricestreams id="4be65a19-4902-4492-9299-17b9dee3637f">
    <name>mqproxy.properties</name>
    <brokerURL>tcp://mqbroker1:61616</brokerURL>
    <rtmTopic>ecogrideu.mqproxy.rtm</rtmTopic>
    <hourlyForecastTopic>ecogrideu.mqproxy.hourly</hourlyForecastTopic>
    <dailyForecastTopic>ecogrideu.mqproxy.daily</dailyForecastTopic>
    <members>
      <id dsoInstallNumber="77777" from="2013-05-18T13:00:00.000Z" />
    </members>
  </pricestreams>
  <pricestreams id="ef2d705e-3757-4e23-8f7d-bafae60c4b8d">
    <name>rtm.properties</name>
    <brokerURL>tcp://fern-dev:61616</brokerURL>
    <rtmTopic>ecogrideu.rtmp.rtm</rtmTopic>
    <hourlyForecastTopic>ecogrideu.rtmp.hourly</hourlyForecastTopic>
    <dailyForecastTopic>ecogrideu.rtmp.daily</dailyForecastTopic>
    <members>
      <id dsoInstallNumber="99999" from="2013-05-17T13:00:00.000Z" />
      <id dsoInstallNumber="88888" from="2013-05-17T13:00:00.000Z" />
      <id dsoInstallNumber="77777" from="2013-05-17T13:00:00.000Z" to="2013-05-
18T13:00:00.000Z" />
    </members>
  </pricestreams>
  <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
    <SignedInfo>
      <CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315" />
      <SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1" />
      <Reference URI="">
        <Transforms>
          <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
        </Transforms>
        <DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1" />
        <DigestValue>6824dSDn3q4akEXfVUBBE+dTtWE=</DigestValue>
      </Reference>
    </SignedInfo>
    <SignatureValue> ... </SignatureValue>
    <KeyInfo>
      <X509Data>
        <X509SubjectName> ... </X509SubjectName>
        <X509Certificate> ... </X509Certificate>
      </X509Data>
    </KeyInfo>
  </Signature>
</SignedMembershipAnnouncement>

```