Commodities and Energy Products
Proposal for incorporation into FpML Version 4.0
16th September 2002
Status of this Document:

This document is a draft proposal to incorporate commodities and energy products into FpML Version 4.0 and is intended to be a starting point for an energy working group.

The primary focus of this document is on energy commodities with the intention that these products may potentially be extended in the future to other commodities such as metals and agricultural products.

Specific details of some of the products herein are still being defined (e.g., tiered and formula pricing, and cash- and physical-settlement). Some element, entity and scheme definitions are still stubbed.
# TABLE OF CONTENTS

1 INTRODUCTION .......................................................................................................................... 4

2 COMMODITY PRODUCTS .......................................................................................................... 5

3 ENTITY DEFINITIONS ............................................................................................................. 7

4 ELEMENT DEFINITIONS ....................................................................................................... 36

5 SCHEME DEFINITIONS .......................................................................................................... 39

6 XSD CHANGES ....................................................................................................................... 47

   6.1 Changes to fpml-main-3-0.xsd .......................................................................................... 47

   6.2 Excerpt from new fpml-commodities-3-0.xsd ................................................................. 47
1 INTRODUCTION

This proposal leverages the existing FpML specification as a basis to establish a standard XML format for exchanging trade data between energy companies. This proposal extends the FpML Version 3.0 Working Draft specification to incorporate both physical and financial commodity derivatives. Existing FpML components are reused where possible.

Assumptions are:

- The FpML specification is flexible enough to accommodate and adapt to the peculiarities of new derivative products within asset classes.
- The specification’s base framework for its existing asset classes is equally applicable for commodities and energy products.
- Physically-settled (vs. cash-settled) f/x and equity trades in the current specification provides a acceptable precedent for physically-settled commodity trades.

This proposal also assumes FpML’s adoption of FpML Version 3.0’s proposed implementation of “strategies” necessary to construct composite trades such as option collars. FpML Version 3.0, being only a working draft at this time, is subject to revision or obsolescence.

Disclaimer from FpML Financial products Markup Language, Working Draft 17 April 2002, Version: 3.0:

This is the FpML Version 3.0 Working Draft for review by the public and by FpML members and working groups. It is a draft document and may be updated, replaced or obsoleted by other documents at any time. It is inappropriate to use FpML Working Drafts as reference material or to cite them as other than "work in progress". There will be a subsequent release of this working draft to include Equity Derivative Products. This is work in progress and does not imply endorsement by the FpML.

2 COMMODITY PRODUCTS

The following products are herein defined for commodities and energy:

- commodityForward
- commoditySwap
- commodityOption
- commodityCapFloor
- commoditySwaption
- commodityCompoundOption

The commodityForward is the foundational product for the other commodity products.
3 ENTITY DEFINITIONS

The following entities are added to the specification within a new XSD called either fpml-commodities-3-0.xsd or fpml-ce-3-0.xsd.

The energy working group will evaluate the following entities to determine 1) whether existing entities can be reused instead of creating new ones, and 2) which new entities might be applicable to other products in which case they could be placed in the shared components XSD.

FpML_CommodityForward

Description:
An entity for defining a commodity forward product.

Figure:

Contents:

inherited element(s) (this entity inherits the element(s) defined by exactly one occurrence of the entity FpML_Product)
- The base entity which all FpML products extend.

buyerParty (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_PartyDetails)
- The party buying the forward.
(FpML_PartyDetails is reused from equity derivative components; it is not a "shared" component)

**sellerParty** (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_PartyDetails)
- The party selling the forward.

(FpML_PartyDetails is reused from equity derivative components; it is not a "shared" component)

**commodityBuyerPrice** (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_CommodityFormulaPrice)
- (copy element definition from section 4).

**commodityUnits** (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_CommodityUnits)
- (copy element definition from section 4).

**commodityDeliveryPeriod** (one or more occurrences; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_CommodityDeliveryPeriod)
- (copy element definition from section 4).

Either

**commodityCashSettlement** (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_CommodityCashSettlement)
- (copy element definition from section 4).

Or

**commodityPhysicalSettlement** (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_CommodityPhysicalSettlement)
- (copy element definition from section 4).

Used by:

**commodityForward**

**XSD Fragment:**

```xml
<xsd:complexType name="CommodityForward">
  <xsd:complexContent>
    <xsd:extension base="CommodityProduct">
      <xsd:sequence>
        <xsd:element ref="commodityBuyerPrice"/>
        <xsd:element ref="commodityUnits"/>
        <xsd:element ref="commodityDeliveryPeriod" maxOccurs="unbounded"/>
        <xsd:choice>
          <xsd:element ref="commodityCashSettlement"/>
          <xsd:element ref="commodityPhysicalSettlement"/>
        </xsd:choice>
      </xsd:sequence>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
```
FpML_CommoditySwap

Description:
An entity for defining a commodity swap product as a stream of forwards.

Figure:

Contents:

inherited element(s) (this entity inherits the element(s) defined by exactly one occurrence of the entity FpML_Product)
- The base entity which all FpML products extend.

buyerParty (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_PartyDetails)
- The party buying the forward.

sellerParty (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_PartyDetails)
- The party selling the forward.

commodityPremium (zero or one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_CommodityBuyerPrice)
- (copy element definition from section 4).

commodityForward (one or more occurrences; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_CommodityForward)
- (copy element definition from section 4).

Used by:
commoditySwap

XSD Fragment:
<xsd:complexType name="CommoditySwap">
    <xsd:complexContent>
        <xsd:extension base="CommodityProduct">
            <xsd:sequence>
                <xsd:element ref="commodityPremium" minOccurs="0"/>
                <xsd:element ref="commodityForward" maxOccurs="unbounded"/>
            </xsd:sequence>
        </xsd:extension>
    </xsd:complexContent>
</xsd:complexType>
**FpML_CommodityOption**

*Description:*
An entity for defining an option on a commodity forward product.

[Note: the strike price is the buyer price on the underlying forward.]

*Figure:*

![Diagram of FpML_CommodityOption](image)

*Contents:*

- **inherited element(s)** (this entity inherits the element(s) defined by exactly one occurrence of the entity FpML_Product)
  - The base entity which all FpML products extend.

- **buyerParty** (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_PartyDetails)
  - The party buying the forward.

- **sellerParty** (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_PartyDetails)
  - The party selling the forward.

- **commodityPremium** (zero or one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_CommodityBuyerPrice)
  - (copy element definition from section 4).

- **commodityOptionExercise** (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_CommodityOptionExercise)
  - (copy element definition from section 4).

- **commodityForward** (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_CommodityForward)
  - (copy element definition from section 4).
Used by:
commodityOption

XSD Fragment:

```xml
<xsd:complexType name="CommodityOption">
  <xsd:complexContent>
    <xsd:extension base="CommodityProduct">
      <xsd:sequence>
        <xsd:element ref="commodityPremium" minOccurs="0"/>
        <xsd:element ref="commodityOptionExercise"/>
        <xsd:element ref="commodityForward"/>
      </xsd:sequence>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
```
**FpML_CommodityCapFloor**

*Description:*

An entity for defining a commodity cap/floor product as a stream of options.

*Figure:*

```
CommodityCapFloor
   ----
      productType
      productld 
       0..\infty
   ----
      buyerParty
   ----
      sellerParty
   ----
      commodityPremium 
       0..\infty
   ----
   ----
      commodityOption 
       1..\infty
```

*Contents:*

**inherited element(s)** (this entity inherits the element(s) defined by exactly one occurrence of the entity FpML_Product)
- The base entity which all FpML products extend.

**buyerParty** (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_PartyDetails)
- The party buying the forward.

**sellerParty** (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_PartyDetails)
- The party selling the forward.

**commodityPremium** (zero or one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_CommodityBuyerPrice)
- (copy element definition from section 4).

**commodityOption** (one or more occurrences; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_CommodityOption)
- (copy element definition from section 4).

*Used by:*

commodityCapFloor

*XSD Fragment:*
<xsd:complexType name="CommodityCapFloor">
  <xsd:complexContent>
    <xsd:extension base="CommodityProduct">
      <xsd:sequence>
        <xsd:element ref="commodityPremium" minOccurs="0"/>
        <xsd:element ref="commodityOption" maxOccurs="unbounded"/>
      </xsd:sequence>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
FpML_CommoditySwaption

Description:
An entity for defining an option on a commodity swap product.

[Note: the strike price is the premium on the underlying swap.]

Figure:

Contents:

inherited element(s) (this entity inherits the element(s) defined by exactly one occurrence of the entity FpML_Product)
  • The base entity which all FpML products extend.

buyerParty (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_PartyDetails)
  • The party buying the forward.

sellerParty (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_PartyDetails)
  • The party selling the forward.

commodityPremium (zero or one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_CommodityBuyerPrice)
  • (copy element definition from section 4).

commodityOptionExercise (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_CommodityOptionExercise)
  • (copy element definition from section 4).

commoditySwap (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_CommoditySwap)
  • (copy element definition from section 4).
Used by:

commoditySwaption

XSD Fragment:

```xml
<xsd:complexType name="CommoditySwaption">
  <xsd:complexContent>
    <xsd:extension base="CommodityProduct">
      <xsd:sequence>
        <xsd:element ref="commodityPremium" minOccurs="0"/>
        <xsd:element ref="commodityOptionExercise"/>
        <xsd:element ref="commoditySwap"/>
      </xsd:sequence>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
```
**FpML\_CommodityCompoundOption**

**Description:**
An entity for defining nested commodity option products.

[Note: the strike price is the premium on the underlying option.]

**Figure:**

```
CommodityCompoundOption
  \[productType\]
  \[productid\]
  \[buyerParty\]
  \[sellerParty\]
  \[commodityPremium\]
  \[commodityOptionExercise\]
```

**Contents:**

- **inherited element(s)** (this entity inherits the element(s) defined by exactly one occurrence of the entity FpML\_Product)
  - The base entity which all FpML products extend.

- **buyerParty** (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML\_PartyDetails)
  - The party buying the forward.

- **sellerParty** (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML\_PartyDetails)
  - The party selling the forward.

- **commodityPremium** (zero or one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML\_CommodityBuyerPrice)
  - (copy element definition from section 4).

- **commodityOptionExercise** (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML\_CommodityOptionExercise)
  - (copy element definition from section 4).

Either
commodityCompoundOption (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_CommodityCompoundOption)
  • (copy element definition from section 4).

Or

commodityForward (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_CommodityForward)
  • (copy element definition from section 4).

Used by:

commodityCompoundOption

XSD Fragment:

```xml
<xsd:complexType name="CommodityCompoundOption">
  <xsd:complexContent>
    <xsd:extension base="CommodityProduct">
      <xsd:sequence>
        <xsd:element ref="commodityPremium" minOccurs="0"/>
        <xsd:element ref="commodityOptionExercise"/>
        <xsd:choice>
          <xsd:element ref="commodityCompoundOption"/>
          <xsd:element ref="commodityForward"/>
        </xsd:choice>
      </xsd:sequence>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
```
**FpML_CommodityFormulaPrice**

**Description:**

An entity for ... The fixed amount doubles as the full price of a fixed-price trade and the offset of an index plus offset trade.

[Need to include tiered gas pricing, complex crude pricing and averaging dates. Should NX1, NX3, NXAVG and NXPROMPT be expressed as averages of NYMEX-NG? Roll days and ... for NXPROMPT+1 and NXPROMPT-1.]

**Figure:**

![Diagram](image)

**Contents:**

- **index** (zero or one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_CommodityIndexPrice)
  - (copy element definition from section 4).

- **fixedAmount** (zero or one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_CommodityFixedAmount)
  - (copy element definition from section 4).

**Used by:**

commodityForward

**XSD Fragment:**
FpML_CommodityIndexPrice

Description:
An entity for....

Figure:
(see FpML_CommodityFormulaPrice above)

Contents:

index (exactly one occurrence; of type string, an enumerated domain value defined by indexScheme)
  • A published index price.

indexPct (exactly one occurrence; of type decimal)
  • A percentage of the published index price expressed as decimal amount (i.e., 1.0=100%; 0.5=50%).

Used by:
commodityFormulaPrice
commodityCashSettlement

XSD Fragment:
**FpML_CommodityFixedAmount**

**Description:**
An entity for.... (This entity extends FpML_Money.)

**Figure:**
(see FpML_CommodityFormulaPrice above)

**Contents:**

**inherited element(s)** (this entity inherits the element(s) defined by exactly one occurrence of the entity FpML_Money)

- An entity for defining a currency amount.

**perUom** (zero or one occurrence; of type string, an enumerated domain value defined by **uomScheme**)

- Defines the fixed amount as a per unit price relative to the volumetric quantity.

**Used by:**

commodityFormulaPrice

**XSD Fragment:**
**FpML_CommodityUnits**

**Description:**
An entity for....

Note: Whether the commodity is a financial or physical trade is defined by cash settlement or physical settlement.

**Figure:**
![Diagram of FpML_CommodityUnits](image)

**Contents:**
- **commodity** (exactly one occurrence; of type string, an enumerated domain value defined by commodityScheme)
  - The commodity being traded.
- **volumeAmount** (exactly one occurrence; of type decimal)
  - The volumetric quantity of the specified commodity.
- **volumeUom** (exactly one occurrence; of type string, an enumerated domain value defined by uomScheme)
  - The unit of measure in which the quantity is denominated.
- **volumePerFreq** (zero or one occurrence; of type string, an enumerated domain value defined by frequencyScheme)
  - Defines the volumetric quantity as relative to the delivery period.

**Used by:**
commodityUnits

**XSD Fragment:**

```
<commodityUnits>
  <commodity>NG</commodity>
  <volumeAmount>10,000</volumeAmount>
  <volumeUom>MMBtu</volumeUom>
  <volumePerFreq>M</volumePerFreq>
</commodityUnits>
```

**Natural Gas Example:**

```xml
<commodityUnits>
  <commodity>NG</commodity>
  <volumeAmount>10,000</volumeAmount>
  <volumeUom>MMBtu</volumeUom>
  <volumePerFreq>M</volumePerFreq>
</commodityUnits>
```
Power Example:

```xml
<commodityUnits>
  <commodity>Power</commodity>
  <volumeAmount>50</volumeAmount>
  <volumeUom>MWh</volumeUom>
  <volumePerFreq>H</volumePerFreq>
</commodityUnits>
```
FpML_CoMMODITYdeliveryPerioD

Description:
An entity for....

Figure:

Contents:

startDate (exactly one occurrence; of type date)
  • The start date of the delivery period.

(Should startDate be of type FpML_AdjustableDate or of type FpML_AdjustableOrRelativeDate?)

endDate (exactly one occurrence; of type date)
  • The end date of the delivery period.

(Should endDate be of type FpML_AdjustableDate or of type FpML_AdjustableOrRelativeDate?)

daysOfWeek (zero or one occurrence; of type string, an enumerated domain value defined by daysOfWeekScheme)
  • A mask restricting delivery to specific days of week between the startDate and endDate.

businessCenter (zero or one occurrence; of type string, an enumerated domain value defined by businessCenterScheme)
  • A code identifying a financial business center location. A list of business centers may be ordered in the document alphabetically based on business center code. An FpML document containing an unordered business center list is still regarded as a conformant document.
  • A code identifying the days between the startDate and endDate which are holidays.

startTime (zero or one occurrence; of type string)
• The start time of delivery on each delivery day in the delivery period.

**endTime** (zero or one occurrence; of type string)
• The end date of delivery on each delivery day the delivery period.

**timeZone** (zero or one occurrence; of type string, an enumerated domain value defined by timeZoneScheme)
• Qualifies the startTime and endTime of the deliveryPeriod.

(Other FpML asset classes, e.g., FpML_BusinessCenterTime, use FpML_BusinessCenter to indicate time zone, i.e., ‘GBLO’ to designate “London time”.)

**Used by:**

commodityDeliveryPeriod

**XSD Fragment:**

**Natural Gas Example:**

```xml
<commodityDeliveryPeriod>
  <startDate>2002-09-01</startDate>
  <endDate>2002-09-30</endDate>
</commodityDeliveryPeriod>
```

**Definitions of On-Peak, Off-Peak and ATC for U.S. Power:**

<table>
<thead>
<tr>
<th></th>
<th>PPT</th>
<th>MPT</th>
<th>CPT</th>
<th>EPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-Peak</td>
<td>HE0700-HE2200</td>
<td>HE0800-HE2300</td>
<td>HE0700-HE2200</td>
<td>HE0800-HE2300</td>
</tr>
<tr>
<td></td>
<td>-MTWTFS-</td>
<td>-MTWTFS-</td>
<td>-MTWTFS-</td>
<td>-MTWTFS-</td>
</tr>
<tr>
<td>Off-Peak</td>
<td>HE0100-HE0600</td>
<td>HE0100-HE0700</td>
<td>HE0100-HE0600</td>
<td>HE0100-HE0700</td>
</tr>
<tr>
<td></td>
<td>-MTWTFS-</td>
<td>-MTWTFS-</td>
<td>-MTWTFS-</td>
<td>-MTWTFS-</td>
</tr>
<tr>
<td></td>
<td>HE2300-HE2400</td>
<td>HE2400-HE2400</td>
<td>HE2300-HE2400</td>
<td>HE2400-HE2400</td>
</tr>
<tr>
<td></td>
<td>-MTWTFS-</td>
<td>-MTWTFS-</td>
<td>-MTWTFS-</td>
<td>-MTWTFS-</td>
</tr>
<tr>
<td></td>
<td>HE0100-HE2400</td>
<td>HE0100-HE2400</td>
<td>HE0100-HE2400</td>
<td>HE0100-HE2400</td>
</tr>
<tr>
<td></td>
<td>S-----H</td>
<td>S-----H</td>
<td>S-----SH</td>
<td>S-----SH</td>
</tr>
<tr>
<td>ATC (Around-the-Clock)</td>
<td>HE0100-HE2400</td>
<td>HE0100-HE2400</td>
<td>HE0100-HE2400</td>
<td>HE0100-HE2400</td>
</tr>
<tr>
<td></td>
<td>SMTWTFSH</td>
<td>SMTWTFSH</td>
<td>SMTWTFSH</td>
<td>SMTWTFSH</td>
</tr>
</tbody>
</table>

**Power Off-Peak PPT Example:**

```xml
<commodityDeliveryPeriod>
  <startDate>2002-09-01</startDate>
  <endDate>2002-09-30</endDate>
  <daysOfWeek>-MTWTFS-</daysOfWeek>
  <businessCenter>NERC</businessCenter>
  <startTime>HE0100</startTime>
  <endTime>HE0600</endTime>
  <timeZone>PPT</timeZone>
</commodityDeliveryPeriod>
```
<endDate>2002-09-30</endDate>
<daysOfWeek>-MTWTFS-</daysOfWeek>
<businessCenter>NERC</businessCenter>
<startTime>HE2300</startTime>
<endTime>HE2400</endTime>
<timeZone>PPT</timeZone>
</commodityDeliveryPeriod>

<commodityDeliveryPeriod>
<startDate>2002-09-01</startDate>
<endDate>2002-09-30</endDate>
<daysOfWeek>S------H</daysOfWeek>
<businessCenter>NERC</businessCenter>
<startTime>HE0100</startTime>
<endTime>HE2400</endTime>
<timeZone>PPT</timeZone>
</commodityDeliveryPeriod>
FpML_CommodityCashSettlement

Description:
An entity for....

Figure:

Contents:
[This entity is still being defined.]

Used by:
commodityCashSettlement

XSD Fragment:
**FpML_CommodityPhysicalSettlement**

**Description:**
An entity for....

[Note: all physical logistics and specifications for a physical commodities trade would be defined here.]

**Figure:**

![CommodityPhysicalSettlement diagram](image)

**Contents:**
[This entity is still being defined.]

**Used by:**

commodityPhysicalSettlement

**XSD Fragment:**

---
**FpML_CommodityPremium**

**Description:**
An entity for....

**Figure:**
![Diagram of FpML_CommodityPremium]

**Contents:**

inherited element(s) (this entity inherits the element(s) defined by exactly one occurrence of the entity FpML_CommodityFixedAmount)

- An entity for defining a currency amount per uom.

Either

- **perFreq** (zero or one occurrence; of type string, an enumerated domain value defined by frequencyScheme)
  - Defines....

Or

- **paymentDate** (one or more occurrences; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_AdjustableDate)
  - The payment date(s). This date is subject to adjustment in accordance with any applicable business day convention.

Or

- **payUpFrontFlag** (exactly one occurrence; of type boolean)
  - Defines....

**Used by:**
commodityPremium

**XSD Fragment:**
Non-recurring Premium Example:

<commodityPremium>
    <amount>0.02</amount>
    <currency>USD</currency>
    <perUom>MMBtu</perUom>
</commodityPremium>

Annual Premium Example:

<commodityPremium>
    <amount>1000</amount>
    <currency>USD</currency>
    <perFreq>Y</perFreq>
</commodityPremium>
FpML_CommodityOptionExercise

Description:
An entity for....

Figure:

Contents:

- **optionType** (exactly one occurrence; of type string, an enumerated domain value defined by optionTypeScheme)
  - The type of option transaction.

  (optionType is reused from equity derivative components; it is not a “shared” component)

- **exerciseStyle** (exactly one occurrence; of type string, an enumerated domain value defined by exerciseStyleScheme)
  - The manner in which the option can be exercised.

  (exerciseStyle is reused from f/x derivative components; it is not a “shared” component)

- **expirationDate** (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_AdjustableOrRelativeDate)
  - The last day within an exercise period for an American style option. For a European style option it is the only day within the exercise period.

- **expirationTime** (exactly one occurrence; contains the sub-element(s) defined by exactly one occurrence of the entity FpML_BusinessCenterTime)
  - The latest time for expiration on expirationDate.

  (businessCenter in expirationTime is not an adequate substitution for timeZone; need FpML_BusinessCenterTime modified for choice of businessCenter OR timeZone.)

- **automaticExerciseApplicable** (exactly one occurrence; of type boolean)
• If true then each option not previously exercised will be deemed to be exercised at the expiration time on the expiration date without service of notice unless the buyer notifies the seller that it no longer wishes this to occur.

(\textit{automaticExerciseApplicable} is reused from equity derivative components; it is not a "shared" component)

\textbf{Used by:}

\texttt{commodityOptionExercise}

\textbf{XSD Fragment:}

\textbf{Adjustable Expiration Date Example:}

\texttt{<commodityOptionExercise>}
  \texttt{<optionType>Call</optionType>}
  \texttt{<exerciseStyle>American</exerciseStyle>}
  \texttt{<expirationDate>}
    \texttt{<adjustableDate>}
      \texttt{<unadjustedDate>2002-09-28</unadjustedDate>}
      \texttt{<dateAdjustments>}
        \texttt{<businessDayConvention>NONE|FOLLOWING|PRECEDING</businessDayConvention>}
        \texttt{<businessCenters>}
          \texttt{<businessCenter>GBLO|USCH|USLA|USNY</businessCenter>}
        \texttt{</businessCenters>}
    \texttt{</dateAdjustments>}
  \texttt{</adjustableDate>}
  \texttt{</expirationDate>}
  \texttt{<expirationTime>}
    \texttt{<hourMinuteTime>11:00:00</hourMinuteTime>}
    \texttt{<businessCenters>GBLO|USCH|USLA|USNY</businessCenters>}
  \texttt{</expirationTime>}
  \texttt{<automaticExerciseApplicable>False</automaticExerciseApplicable>}
\texttt{</commodityOptionExercise>}

\textbf{Relative Expiration Date Example:}

\texttt{<commodityOptionExercise>}
  \texttt{<optionType>Put</optionType>}
  \texttt{<exerciseStyle>European</exerciseStyle>}
  \texttt{<expirationDate>}
    \texttt{<relativeDate>}
      \texttt{<periodMultiplier>1</periodMultiplier>}
      \texttt{<period>D|W|M</period>}
      \texttt{<dayType>Business|Calendar</dayType>}
      \texttt{<businessDayConvention>NONE|FOLLOWING|PRECEDING</businessDayConvention>}
      \texttt{<businessCenters>}
        \texttt{<businessCenter>GBLO|USCH|USLA|USNY</businessCenter>}
      \texttt{</businessCenters>}
    \texttt{</relativeDate>}
    \texttt{<dateRelativeTo>CalculationPeriodEndDate|…</dateRelativeTo>}
\texttt{</commodityOptionExercise>}

- 34 -
# 4 ELEMENT DEFINITIONS

The following elements are added to the specification.

<table>
<thead>
<tr>
<th>Element/Description</th>
<th>Used By</th>
</tr>
</thead>
<tbody>
<tr>
<td>commodityForward</td>
<td>FpML_ProductSelection, FpML_CommoditySwap,</td>
</tr>
<tr>
<td></td>
<td>FpML_CommodityOption, FpML_CommodityCompoundOption</td>
</tr>
<tr>
<td>commoditySwap</td>
<td>FpML_ProductSelection, FpML_CommoditySwaption</td>
</tr>
<tr>
<td>commodityOption</td>
<td>FpML_ProductSelection, FpML_CommodityCapFloor,</td>
</tr>
<tr>
<td></td>
<td>FpML_CommodityCompoundOption</td>
</tr>
<tr>
<td>commodityCapFloor</td>
<td>FpML_ProductSelection</td>
</tr>
<tr>
<td>commoditySwaption</td>
<td>FpML_ProductSelection</td>
</tr>
<tr>
<td>commodityCompoundOption</td>
<td>FpML_ProductSelection, FpML_CommodityCompoundOption</td>
</tr>
<tr>
<td><strong>commodityBuyerPrice</strong>; entity type:</td>
<td>FpML_CommodityFormulaPrice</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td>(insert element definition).</td>
<td></td>
</tr>
<tr>
<td><strong>commodityIndexPrice</strong>; entity type:</td>
<td>FpML_CommodityIndexPrice</td>
</tr>
<tr>
<td>FpML_CommodityForward</td>
<td>FpML_CommodityCashSettlement</td>
</tr>
<tr>
<td>(insert element definition).</td>
<td></td>
</tr>
<tr>
<td><strong>commodityFixedAmount</strong>; entity type:</td>
<td>FpML_CommodityFixedAmount</td>
</tr>
<tr>
<td>FpML_CommodityFormulaPrice</td>
<td></td>
</tr>
<tr>
<td>(insert element definition).</td>
<td></td>
</tr>
<tr>
<td><strong>commodityUnits</strong>; entity type:</td>
<td>FpML_CommodityUnits</td>
</tr>
<tr>
<td>FpML_CommodityForward</td>
<td></td>
</tr>
<tr>
<td>(insert element definition).</td>
<td></td>
</tr>
<tr>
<td><strong>commodityDeliveryPeriod</strong>; entity type:</td>
<td>FpML_CommodityDeliveryPeriod</td>
</tr>
<tr>
<td>FpML_CommodityForward</td>
<td></td>
</tr>
<tr>
<td>(insert element definition).</td>
<td></td>
</tr>
<tr>
<td><strong>commodityCashSettlement</strong>; entity type:</td>
<td>FpML_CommodityCashSettlement</td>
</tr>
<tr>
<td>FpML_CommodityForward</td>
<td></td>
</tr>
<tr>
<td>(insert element definition).</td>
<td></td>
</tr>
<tr>
<td><strong>commodityPhysicalSettlement</strong>; entity type:</td>
<td>FpML_CommodityPhysicalSettlement</td>
</tr>
<tr>
<td>FpML_CommodityForward</td>
<td></td>
</tr>
<tr>
<td>(insert element definition).</td>
<td></td>
</tr>
<tr>
<td><strong>commodityPremium</strong>; entity type:</td>
<td>FpML_CommoditySwap</td>
</tr>
<tr>
<td>FpML_CommodityOption</td>
<td>FpML_CommodityCapFloor</td>
</tr>
<tr>
<td>FpML_CommoditySwaption</td>
<td>FpML_CommodityCompoundOption</td>
</tr>
<tr>
<td>(insert element definition).</td>
<td></td>
</tr>
</tbody>
</table>

- 37 -
<table>
<thead>
<tr>
<th>commodityOptionExercise; entity type:</th>
<th>FpML_CommodityOption</th>
</tr>
</thead>
<tbody>
<tr>
<td>FpML_CommodityOptionExercise</td>
<td>FpML_CommoditySwaption</td>
</tr>
<tr>
<td>(insert element definition)</td>
<td>FpML_CommodityCompoundOption</td>
</tr>
</tbody>
</table>


5 SCHEME DEFINITIONS

The following coding schemes are added to the specification, with corresponding default scheme attributes added to the FpML root component:

- commodityScheme
- daysOfWeekScheme
- deliveryPointScheme
- firmnessScheme
- frequencyScheme
- indexScheme
- timeZoneScheme
- uomScheme

The following existing coding schemes are amended for additional values:

- businessCenterScheme
- exerciseStyleScheme
- periodScheme

businessCenterScheme (amended)

Definition:

A financial business center location.

URI:


Description:

In general, the codes are based on the ISO country code and the English name of the location.

Additional location codes can be built according to the following rules. The first two characters represent the ISO country code, the next two characters represent a) if the location name is one word, the first two letters of the location b) if the location name consists of at least two words, the first letter of the first word followed by the first letter of the second word.

There are exceptions to this rule. For example, the TARGET (Trans-European Automated Real-time Gross settlement Express Transfer system) business center for Euro settlement has a code of EUTA.

This coding scheme is currently consistent with the S.W.I.F.T. Financial Centre scheme used in the MT340/MT360/MT361 message definitions, although FpML controls the Business Center Scheme and it should not be assumed that both schemes will remain synchronized.

Coding Scheme
<table>
<thead>
<tr>
<th>CODE</th>
<th>SOURCE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARBA</td>
<td>FpML</td>
<td>Buenos Aires</td>
</tr>
<tr>
<td>ATVI</td>
<td>FpML</td>
<td>Vienna</td>
</tr>
<tr>
<td>AUME</td>
<td>FpML</td>
<td>Melbourne</td>
</tr>
<tr>
<td>AUSY</td>
<td>FpML</td>
<td>Sydney</td>
</tr>
<tr>
<td>BEBR</td>
<td>FpML</td>
<td>Brussels</td>
</tr>
<tr>
<td>BRSP</td>
<td>FpML</td>
<td>Sao Paulo</td>
</tr>
<tr>
<td>CAMO</td>
<td>FpML</td>
<td>Montreal</td>
</tr>
<tr>
<td>CATO</td>
<td>FpML</td>
<td>Toronto</td>
</tr>
<tr>
<td>CHGE</td>
<td>FpML</td>
<td>Geneva</td>
</tr>
<tr>
<td>CHZU</td>
<td>FpML</td>
<td>Zurich</td>
</tr>
<tr>
<td>CLSA</td>
<td>FpML</td>
<td>Santiago</td>
</tr>
<tr>
<td>CNBE</td>
<td>FpML</td>
<td>Beijing</td>
</tr>
<tr>
<td>CZPR</td>
<td>FpML</td>
<td>Prague</td>
</tr>
<tr>
<td>DEFR</td>
<td>FpML</td>
<td>Frankfurt</td>
</tr>
<tr>
<td>DKCO</td>
<td>FpML</td>
<td>Copenhagen</td>
</tr>
<tr>
<td>EETA</td>
<td>FpML</td>
<td>Tallinn</td>
</tr>
<tr>
<td>ESMA</td>
<td>FpML</td>
<td>Madrid</td>
</tr>
<tr>
<td>EUTA</td>
<td>FpML</td>
<td>TARGET (euro 'Business Center')</td>
</tr>
<tr>
<td>FIHE</td>
<td>FpML</td>
<td>Helsinki</td>
</tr>
<tr>
<td>FRPA</td>
<td>FpML</td>
<td>Paris</td>
</tr>
<tr>
<td>GBLO</td>
<td>FpML</td>
<td>London</td>
</tr>
<tr>
<td>GRAT</td>
<td>FpML</td>
<td>Athens</td>
</tr>
<tr>
<td>HKHK</td>
<td>FpML</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>IDJA</td>
<td>FpML</td>
<td>Jakarta</td>
</tr>
<tr>
<td>ILTA</td>
<td>FpML</td>
<td>Tel Aviv</td>
</tr>
<tr>
<td>ITMI</td>
<td>FpML</td>
<td>Milan</td>
</tr>
<tr>
<td>ITRO</td>
<td>FpML</td>
<td>Rome</td>
</tr>
<tr>
<td>JPTO</td>
<td>FpML</td>
<td>Tokyo</td>
</tr>
<tr>
<td>KRSE</td>
<td>FpML</td>
<td>Seoul</td>
</tr>
<tr>
<td>LBBE</td>
<td>FpML</td>
<td>Beirut</td>
</tr>
<tr>
<td>LULU</td>
<td>FpML</td>
<td>Luxembourg</td>
</tr>
<tr>
<td>MXMC</td>
<td>FpML</td>
<td>Mexico City</td>
</tr>
<tr>
<td>MYKL</td>
<td>FpML</td>
<td>Kuala Lumpur</td>
</tr>
<tr>
<td>NLAM</td>
<td>FpML</td>
<td>Amsterdam</td>
</tr>
<tr>
<td>NOOS</td>
<td>FpML</td>
<td>Oslo</td>
</tr>
<tr>
<td>NZAU</td>
<td>FpML</td>
<td>Auckland</td>
</tr>
<tr>
<td>NZWE</td>
<td>FpML</td>
<td>Wellington</td>
</tr>
<tr>
<td>PAPC</td>
<td>FpML</td>
<td>Panama City</td>
</tr>
<tr>
<td>PHMA</td>
<td>FpML</td>
<td>Manila</td>
</tr>
<tr>
<td>PLWA</td>
<td>FpML</td>
<td>Warsaw</td>
</tr>
<tr>
<td>RUMO</td>
<td>FpML</td>
<td>Moscow</td>
</tr>
<tr>
<td>SARI</td>
<td>FpML</td>
<td>Riyadh</td>
</tr>
<tr>
<td>SEST</td>
<td>FpML</td>
<td>Stockholm</td>
</tr>
<tr>
<td>SGSI</td>
<td>FpML</td>
<td>Warsaw</td>
</tr>
<tr>
<td>SKBR</td>
<td>FpML</td>
<td>Bratislava</td>
</tr>
<tr>
<td>THBA</td>
<td>FpML</td>
<td>Bangkok</td>
</tr>
<tr>
<td>TRAN</td>
<td>FpML</td>
<td>Ankara</td>
</tr>
</tbody>
</table>
Commodities and Energy Proposal v0.10–2002-09-16

<table>
<thead>
<tr>
<th>TWTA</th>
<th>FpML</th>
<th>Taipei</th>
</tr>
</thead>
<tbody>
<tr>
<td>USCH</td>
<td>FpML</td>
<td>Chicago</td>
</tr>
<tr>
<td>USLA</td>
<td>FpML</td>
<td>Los Angeles</td>
</tr>
<tr>
<td>USNY</td>
<td>FpML</td>
<td>New York</td>
</tr>
<tr>
<td>ZAJO</td>
<td>FpML</td>
<td>Johannesburg</td>
</tr>
</tbody>
</table>

(others to be added)

**commodityScheme**

**Definition:**
A commodity being traded.

**URI:**
http://www.fpml.org/spec/2002/commodity-scheme-4-0

**Coding Scheme**

<table>
<thead>
<tr>
<th>CODE</th>
<th>SOURCE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Gas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NG</td>
<td></td>
<td>Natural Gas</td>
</tr>
<tr>
<td>Power</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>Power</td>
<td></td>
</tr>
<tr>
<td>Crude and Products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CL</td>
<td>NYMEX</td>
<td>WTI Crude (CL is Periodic Table symbol for chlorine)</td>
</tr>
<tr>
<td>SC</td>
<td>NYMEX</td>
<td>Brent Crude (SC is Periodic Table symbol for scandium)</td>
</tr>
<tr>
<td>HO</td>
<td>NYMEX</td>
<td>Heating Oil (HO is Periodic Table symbol for holmium)</td>
</tr>
<tr>
<td>HU</td>
<td>NYMEX</td>
<td>Unleaded Gasoline</td>
</tr>
<tr>
<td>PN</td>
<td>NYMEX</td>
<td>Propane</td>
</tr>
<tr>
<td>Metals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AL (COMEX: AL)</td>
<td>Periodic Table</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Commodity</td>
<td>Periodic Table</td>
<td>Metal</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------</td>
<td>-----------</td>
</tr>
<tr>
<td>CU (COMEX: HG)</td>
<td>Periodic Table</td>
<td>Copper</td>
</tr>
<tr>
<td>AU (COMEX: GC)</td>
<td>Periodic Table</td>
<td>Gold</td>
</tr>
<tr>
<td>HG</td>
<td>Periodic Table</td>
<td>Mercury</td>
</tr>
<tr>
<td>PD (NYMEX: PA)</td>
<td>Periodic Table</td>
<td>Palladium</td>
</tr>
<tr>
<td>PT (NYMEX: PL)</td>
<td>Periodic Table</td>
<td>Platinum</td>
</tr>
<tr>
<td>PA</td>
<td>Periodic Table</td>
<td>Protactinium</td>
</tr>
<tr>
<td>SI</td>
<td>Periodic Table</td>
<td>Silicon</td>
</tr>
<tr>
<td>AG (COMEX: SI)</td>
<td>Periodic Table</td>
<td>Silver</td>
</tr>
</tbody>
</table>

(others)

### daysOfWeekScheme

**Definition:**
A mask specifying the specific days of week on which a commodity will be delivered.

**URI:**
http://www.fpml.org/spec/2002/days-of-week-scheme-4-0

**Description:**
Requires a corresponding business center or holiday calendar specification to define which days are business days and holidays.

**Coding Scheme**

<table>
<thead>
<tr>
<th>CODE</th>
<th>SOURCE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMTWTFSH</td>
<td></td>
<td>Weekends, weekdays and holidays</td>
</tr>
<tr>
<td>-MTWTF--</td>
<td></td>
<td>Weekdays only</td>
</tr>
<tr>
<td>-MTWTF-H</td>
<td></td>
<td>Weekdays and holidays</td>
</tr>
<tr>
<td>S-----SH</td>
<td></td>
<td>Weekends and holidays</td>
</tr>
<tr>
<td>(etc.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### deliveryPointScheme

**Definition:**

**URI:**
http://www.fpml.org/spec/2002/delivery-point-scheme-4-0

**Description:**
Coding Scheme

<table>
<thead>
<tr>
<th>CODE</th>
<th>SOURCE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>(TBD)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

exerciseStyleScheme (amended)

Definition:
The specification of how an FX OTC option will be exercised.

URI:
http://www.fpml.org/spec/2002/exercise-style-scheme-3-0

Coding Scheme

<table>
<thead>
<tr>
<th>CODE</th>
<th>SOURCE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>American</td>
<td>FpML</td>
<td>Option can be exercised on any date up to the expiry date.</td>
</tr>
<tr>
<td>European</td>
<td>FpML</td>
<td>Option can only be exercised on the expiry date.</td>
</tr>
<tr>
<td>Asian (added)</td>
<td>FpML</td>
<td></td>
</tr>
</tbody>
</table>

firmnessScheme

Definition:

URI:
http://www.fpml.org/spec/2002/firmness-scheme-4-0

Description:

Coding Scheme

<table>
<thead>
<tr>
<th>CODE</th>
<th>SOURCE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td></td>
<td>Firm</td>
</tr>
<tr>
<td>I</td>
<td></td>
<td>Interruptible</td>
</tr>
<tr>
<td>(others)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**frequencyScheme**

**Definition:**

Same as periodScheme.

[Need to reconsider whether introducing a synonym for period is necessary rather than just using period. See the relative expiration date example within the FpML_CommodityOptionExercise entity definition in section 3 for an example of period.]

**URI:**

http://www.fpml.org/spec/2000/period-1-0

**Root Element Example:**

\(<\text{FpML ... frequencySchemeDefault} = \text{“http://www.fpml.org/spec/2000/period-1-0”} \ldots\>\)

**indexScheme**

**Definition:**

**URI:**

http://www.fpml.org/spec/2002/index-scheme-4-0  

**Description:**

**Coding Scheme**

<table>
<thead>
<tr>
<th>CODE</th>
<th>SOURCE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>IF.ANR.LA.H</td>
<td>Inside F.E.R.C.’s Gas Market Report / Prices of Spot Gas Delivered to Pipelines / ANR Pipeline Co. / Louisiana / Range (High)</td>
<td></td>
</tr>
<tr>
<td>MD.16HR.COB.WA</td>
<td>Megawatt Daily’s MarketReport / Trades for Standard 16-Hour Daily Products / COB / Weighted Average Index</td>
<td></td>
</tr>
<tr>
<td>(others)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**periodScheme (amended)**

**Definition:**

The specification of a time period.
URI:

http://www.fpml.org/spec/2000/period-1-0

Coding Scheme

<table>
<thead>
<tr>
<th>CODE</th>
<th>SOURCE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>n/a</td>
<td>Day</td>
</tr>
<tr>
<td>M</td>
<td>n/a</td>
<td>Month</td>
</tr>
<tr>
<td>T</td>
<td>n/a</td>
<td>Term</td>
</tr>
<tr>
<td>W</td>
<td>n/a</td>
<td>Week</td>
</tr>
<tr>
<td>Y</td>
<td>n/a</td>
<td>Year</td>
</tr>
<tr>
<td>H (added)</td>
<td>n/a</td>
<td>Hour</td>
</tr>
</tbody>
</table>

 timeZoneScheme

Definition:

A time zone.

URI:

http://www.fpml.org/spec/2002/time-zone-scheme-4-0

(Is there an existing ISO definition for time zones, which also includes “prevailing” time?)

Coding Scheme

<table>
<thead>
<tr>
<th>CODE</th>
<th>SOURCE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMT</td>
<td></td>
<td>Greenwich Mean Time</td>
</tr>
<tr>
<td>UTC</td>
<td></td>
<td>Coordinated Universal Time</td>
</tr>
<tr>
<td>CDT</td>
<td></td>
<td>Central Daylight Saving Time</td>
</tr>
<tr>
<td>CPT</td>
<td></td>
<td>Central Prevailing Time</td>
</tr>
<tr>
<td>CST</td>
<td></td>
<td>Central Standard Time</td>
</tr>
<tr>
<td>EDT</td>
<td></td>
<td>Eastern Daylight Saving Time</td>
</tr>
<tr>
<td>EPT</td>
<td></td>
<td>Eastern Prevailing Time</td>
</tr>
<tr>
<td>EST</td>
<td></td>
<td>Eastern Standard Time</td>
</tr>
<tr>
<td>MDT</td>
<td></td>
<td>Mountain Daylight Saving Time</td>
</tr>
<tr>
<td>MPT</td>
<td></td>
<td>Mountain Prevailing Time</td>
</tr>
<tr>
<td>MST</td>
<td></td>
<td>Mountain Standard Time</td>
</tr>
<tr>
<td>PDT</td>
<td></td>
<td>Pacific Daylight Saving Time</td>
</tr>
<tr>
<td>PPT</td>
<td></td>
<td>Pacific Prevailing Time</td>
</tr>
<tr>
<td>PST</td>
<td></td>
<td>Pacific Standard Time</td>
</tr>
</tbody>
</table>

(uomers)

uomScheme

Definition:
A unit of measure.

**URI:**

http://www.fpml.org/spec/2002/uom-scheme-4-0  

**Coding Scheme**

<table>
<thead>
<tr>
<th>CODE</th>
<th>SOURCE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMBtu</td>
<td></td>
<td>Million British thermal units</td>
</tr>
<tr>
<td>MWh</td>
<td></td>
<td>Megawatt hours</td>
</tr>
<tr>
<td>(others)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6 XSD CHANGES

The following changes to support commodities and energy are based on the FpML Version 3.0 Working Draft XSD.

6.1 Changes to fpml-main-3-0.xsd

1. A new commodities XSD has been included into fpml-main-3-0.xsd:

   <xsd:include schemaLocation="fpml-commodities-3-0.xsd"/>

2. Attributes for new default schemes have been added to the root “FpML” element:

   <xsd:element name="FpML">
   :
       <xsd:attribute name="commoditySchemeDefault" type="xsd:normalizedString"/>
       <xsd:attribute name="daysOfWeekSchemeDefault" type="xsd:normalizedString"/>
       <xsd:attribute name="deliveryPeriodSchemeDefault" type="xsd:normalizedString"/>
       <xsd:attribute name="firmnessSchemeDefault" type="xsd:normalizedString"/>
       <xsd:attribute name="frequencySchemeDefault" type="xsd:normalizedString"/>
       <xsd:attribute name="indexSchemeDefault" type="xsd:normalizedString"/>
       <xsd:attribute name="uomSchemeDefault" type="xsd:normalizedString"/>
   :
   </xsd:element>

6.2 Excerpt from new fpml-commodities-3-0.xsd or fpml-ce-3-0.xsd

The following is excerpted from a larger file:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema targetNamespace="http://www.fpml.org/2002/FpML-3-0"
    xmlns:xsd="http://www.w3.org/2001/XMLSchema"
    xmlns="http://www.fpml.org/2002/FpML-3-0"
    elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xsd:include schemaLocation="fpml-shared-3-0.xsd"/>
    <xsd:include schemaLocation="fpml-eqd-3-0.xsd"/>
    <xsd:include schemaLocation="fpml-fx-3-0.xsd"/>
    :
    <xsd:complexType name="CommodityForward">
        <xsd:complexContent>
            <xsd:extension base="CommodityProduct">
                <xsd:sequence>
                    <xsd:element ref="commodityBuyerPrice"/>
                    <xsd:element ref="commodityUnits"/>
                    <xsd:element ref="commodityDeliveryPeriod"/>
                    <xsd:choice>
                        <xsd:element ref="commodityCashSettlement"/>
                        <xsd:element ref="commodityPhysicalSettlement"/>
                    </xsd:choice>
                </xsd:sequence>
            </xsd:extension>
        </xsd:complexContent>
    </xsd:complexType>
</xsd:schema>
```
</xsd:sequence>
</xsd:extension>
</xsd:complexType>

<xsd:element name="commodityForward" type="CommodityForward"
substitutionGroup="product"/>

</xsd:schema>