Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Power Saving Classes objects**
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Re:	
Abstract	This contribution proposed the text and ASN.1 code for Power Saving Classess objects.
Purpose	Adoption
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1. Introduction

This contribution proposes the text for Section 15.2.1.1.2 and ASN.1 code Section 15.2.2 of IEEE P802.16i-06-001r1 draft.

2. Power Saving Classes

This section proposes new table for Power Saving Classes.

[Insert a new subclause 15.2.1.1.2:]

15.2.1.1.2 wmanIfBsCps

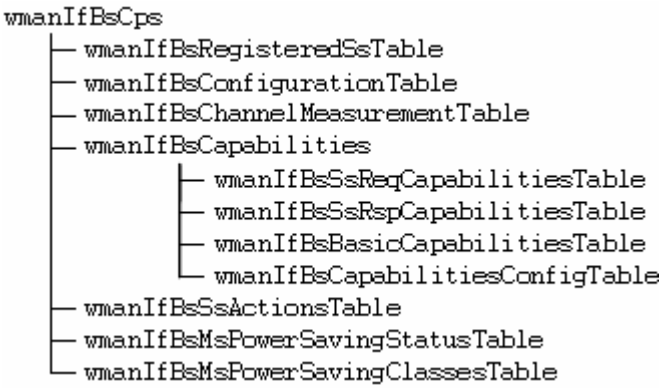

Figure 7— wmanIfBsCps structure

[Insert a new subclause 15.2.1.1.2.6 and 15.2.1.1.2.7:]

15.2.1.1.2.6 wmanIfMsBsPowerSavingStatusTable

wmanIfMsBsPowerSavingClassesTable contains the power saving status for each CID in an MS.

15.2.1.1.2.7 wmanIfMsBsPowerSavingClassesTable

wmanIfMsBsPowerSavingClassesTable contains the power saving classes definitions, and activation / deactivation information that are provided by MOB_SLP-REQ and MOB_SLP-RSP messages.

3. ASN.1 Code for Power Saving Classes

The following lists the ASN.1 code for power saving classes.

[Insert the following ASN.1 code to subclause 15.2:]

```
--
-- wmanIfBsMsPowerSavingStatusTable contains the power saving status
```

```
--
wmanIfBsMsPowerSavingStatusTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF WmanIfBsMsPowerSavingStatusEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "This table contains the power saving status for each CID
             in an MS. When the BS roams to a different BS, all entries
             associated with such MS will be deleted."
        ::= { wmanIfBsCps 6 }

wmanIfBsMsPowerSavingStatusEntry OBJECT-TYPE
        SYNTAX      WmanIfBsMsPowerSavingStatusEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "This table provides one row for each CID in an MS, and
             is indexed by ifIndex, wmanIfBsSsMacAddress,
             wmanIfBsMsCidDirection, and wmanIfBsMsCid."
        INDEX     { ifIndex,
                    wmanIfBsSsMacAddress,
                    wmanIfBsMsCidDirection,
                    wmanIfBsMsCid  }
        ::= { wmanIfBsMsPowerSavingStatusTable 1 }

WmanIfBsMsPowerSavingStatusEntry::= SEQUENCE {
        wmanIfBsMsCidDirection                  INTEGER,
        wmanIfBsMsCid                           WmanIfCidType,
        wmanIfBsMsPowerSavingClassId            WmanIfPsClassId}

wmanIfBsMsCidDirection OBJECT-TYPE
        SYNTAX      INTEGER {downstream(1),
                             upstream(2)}
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "An attribute indicating the CID is downstream or
             upstream."
        ::= { wmanIfBsMsPowerSavingStatusEntry 1 }

wmanIfBsMsCid OBJECT-TYPE
        SYNTAX      WmanIfCidType
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "A 16 bit channel identifier to identify a connection."
        ::= { wmanIfBsMsPowerSavingStatusEntry 2 }

wmanIfBsMsPowerSavingClassId OBJECT-TYPE
        SYNTAX      WmanIfPsClassId
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "wmanIfBsMsPowerSavingClassId identifies the power
             saving class associated with this CID. It maps to an
             entry in wmanIfBsMsPowerSavingClassesTable."
        ::= { wmanIfBsMsPowerSavingStatusEntry 3 }

--
-- wmanIfBsMsPowerSavingClassesTable contains the power saving classes
-- information
--
wmanIfBsMsPowerSavingClassesTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF WmanIfBsMsPowerSavingClassesEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "This table contains the power saving classes definitions,
             and activation / deactivation information that are provided
             by MOB_SLP-REQ and MOB_SLP-RSP messages. When the BS roams
             to a different BS, all entries associated with such MS will
             be deleted."
```

```
                ::= { wmanIfBsCps 7 }

        wmanIfBsMsPowerSavingClassesEntry OBJECT-TYPE
                SYNTAX      WmanIfBsMsPowerSavingClassesEntry
                MAX-ACCESS  not-accessible
                STATUS      current
                DESCRIPTION
                    "This table is indexed by ifIndex, wmanIfBsSsMacAddress,
                     and wmanIfBsMsPsClassesId. It is intended to support both
                     unicast and multicast service flows.
                     wmanIfBsSsMacAddress contains the MAC address of the MS
                     to which the power saving classes are associated."
                INDEX { ifIndex,
                        wmanIfBsSsMacAddress,
                        wmanIfBsMsPsClassId }
                ::= { wmanIfBsMsPowerSavingClassesTable 1 }

        WmanIfBsMsPowerSavingClassesEntry ::= SEQUENCE {
                wmanIfBsMsPsClassId                     WmanIfPsClassId,
                wmanIfBsMsStartFrameNumber              INTEGER,
                wmanIfBsMsPowerSavingClassType          WmanPsClassType,
                wmanIfBsMsPsClassCidDirection           WmanPsClassCidDirection,
                wmanIfBsMsTrafficTrigeredWakening       INTEGER,
                wmanIfBsMsInitialSleepWindow            INTEGER,
                wmanIfBsMsFinalSleepWindowBase          INTEGER,
                wmanIfBsMsFinalSleepWindowExponent      INTEGER,
                wmanIfBsMsLinteningWindow               INTEGER,
                wmanIfBsMsPowerSavingMode               WmanIfPowerSavingMode,
                wmanIfBsMsSlpId                         INTEGER}

        wmanIfBsMsPsClassId OBJECT-TYPE
                SYNTAX      WmanIfPsClassId
                MAX-ACCESS  not-accessible
                STATUS      current
                DESCRIPTION
                    "This object uniquely identifies the power saving classes
                     in a MS."
                ::= { wmanIfBsMsPowerSavingClassesEntry 1 }

        wmanIfBsMsStartFrameNumber OBJECT-TYPE
                SYNTAX      INTEGER
                MAX-ACCESS  read-write
                STATUS      current
                DESCRIPTION
                    "Start frame number for first sleep window."
                REFERENCE
                    "Subclause 6.3.2.3.44 in IEEE Std 802.16e-2005"
                ::= { wmanIfBsMsPowerSavingClassesEntry 2 }

        wmanIfBsMsPowerSavingClassType OBJECT-TYPE
                SYNTAX      WmanPsClassType
                MAX-ACCESS  read-write
                STATUS      current
                DESCRIPTION
                    "Power saving classes type I - BE & NRT-VR,
                     Power saving classes type II - UGS & RT-VR,
                     Power saving classes type III - multicast, management CID"
                REFERENCE
                    "Subclause 6.3.21.2-4, in IEEE Std 802.16e-2005"
                ::= { wmanIfBsMsPowerSavingClassesEntry 3 }

        wmanIfBsMsPsClassCidDirection OBJECT-TYPE
                SYNTAX      WmanPsClassCidDirection
                MAX-ACCESS  read-write
                STATUS      current
                DESCRIPTION
                    "The direction of power saving class's CIDs."
                REFERENCE
                    "Subclause 6.3.2.3.44, in IEEE Std 802.16e-2005"
                ::= { wmanIfBsMsPowerSavingClassesEntry 4 }

        wmanIfBsMsTrafficTrigeredWakening OBJECT-TYPE
```

```
                SYNTAX      INTEGER (0..1)
                MAX-ACCESS  read-write
                STATUS      current
                DESCRIPTION
                    "0 = Power Saving Class shall not be deactivated if
                     traffic appears at the connection as per 6.3.19.2.
                     1 = Power Saving Class shall be deactivated if
                     traffic appears at the connection as 6.3.19.2."
                REFERENCE
                    "Subclause 6.3.19.2, in IEEE Std 802.16e-2005"
                ::= { wmanIfBsMsPowerSavingClassesEntry 5 }

        wmanIfBsMsInitialSleepWindow OBJECT-TYPE
                SYNTAX      INTEGER (0..255)
                UNITS       "frame"
                MAX-ACCESS  read-write
                STATUS      current
                DESCRIPTION
                    "The initial duration for the sleep window. It is not
                     relevant for Power Saving Class type III, and shall
                     return '0'."
                REFERENCE
                    "Subclause 6.3.2.3.44, in IEEE Std 802.16e-2005"
                ::= { wmanIfBsMsPowerSavingClassesEntry 6 }

        wmanIfBsMsFinalSleepWindowBase OBJECT-TYPE
                SYNTAX      INTEGER (0..1023)
                UNITS       "frame"
                MAX-ACCESS  read-write
                STATUS      current
                DESCRIPTION
                    "The final value for the sleep interval. It is not
                     relevant for Power Saving Class type II, and shall
                     return '0'. For Power Saving Class type III, it is the
                     base for duration of single sleep window request."
                REFERENCE
                    "Subclause 6.3.2.3.44, in IEEE Std 802.16e-2005"
                ::= { wmanIfBsMsPowerSavingClassesEntry 7 }

        wmanIfBsMsFinalSleepWindowExponent OBJECT-TYPE
                SYNTAX      INTEGER (0..7)
                MAX-ACCESS  read-write
                STATUS      current
                DESCRIPTION
                    "The factor by which the final-sleep window base is
                     multiplied in order to calculate the final-sleep window.
                     The following formula is used:
                     final-sleep window = final-sleep window base x
                                          2^(final-sleep window exponent)
                     For Power Saving Class type III, it is the exponent for
                     the duration of single sleep window request."
                REFERENCE
                    "Subclause 6.3.2.3.44, in IEEE Std 802.16e-2005"
                ::= { wmanIfBsMsPowerSavingClassesEntry 8 }

        wmanIfBsMsLinteningWindow OBJECT-TYPE
                SYNTAX      INTEGER (0..255)
                UNITS       "frame"
                MAX-ACCESS  read-write
                STATUS      current
                DESCRIPTION
                    "The Duration of MS listening window. It is not
                     relevant for Power Saving Class type III, and shall
                     return '0'."
                REFERENCE
                    "Subclause 6.3.2.3.44, in IEEE Std 802.16e-2005"
                ::= { wmanIfBsMsPowerSavingClassesEntry 9 }

        wmanIfBsMsPowerSavingMode OBJECT-TYPE
                SYNTAX      WmanIfPowerSavingMode
                MAX-ACCESS  read-write
                STATUS      current
```

```
                DESCRIPTION
                    "Indicate whether the power saving class mode of such
                     CID is active or not.
                     wmanIfBsMsPowerSavingMode = Sleep_Approved && Operation."
                REFERENCE
                    "Subclause 6.3.2.3.45, in IEEE Std 802.16e-2005"
                ::= { wmanIfBsMsPowerSavingClassesEntry 10 }

        wmanIfBsMsSlpId OBJECT-TYPE
                SYNTAX      INTEGER (0..1023)
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "wmanIfBsMsSlpId is assigned by the BS whenever an MS is
                     instructed to enter sleep mode. This number shall be unique
                     among all MSs that are in sleep mode."
                REFERENCE
                    "Subclause 6.3.2.3.45, in IEEE Std 802.16e-2005"
                ::= { wmanIfBsMsPowerSavingClassesEntry 11 }
```