Definition of Power Price Index (D3.1) v100

Info (not part of baseline)

Currently the PSE power price index is defined in 79.3.8.2 as:

79.3.8.2 PSE power price index

The PSE power price index field shall contain a linear index of the current value of electricity within the PSE. This is a 15 bit unsigned integer in the range 0 through 32767, as defined in Table 79–7d. The PSE shall set the value of this field taking the availability of power from any external and internal resources, and the relative supply and demand balance, into account. A value of zero means that no power price index is available. The meaning of this field is implementation dependent.

Table 79–7d—Power price index

Bit	Function	Value/meaning
15	Reserved	Set to zero on transmit. Power price index only valid when bit is zero on reception.
14:0	Power price index	Valid values for these bits are decimal 1 through 32767.

In this form it is not well defined enough to be used, but does get in the way of external specification. Proposed is to provide specification for the interpretation of this field, as well as expand it to allow comparison of the price index against different time periods.

Aims:
- Define a transfer function from the TLV field to the actual K_{PPI} (power price index)
- Betters description of what the K_{PPI} compares against

Replace 79.3.8.2 as follows:

79.3.8.2 PSE power price index

The PSE power price index field shall contain an index of the current price of electricity compared to what the PSE considers the nominal electricity price. The determination of the nominal electricity price is implementation dependent. The field is encoded as defined in Equation (79–1). The PSE sets the value of this field taking the availability of power from any external and internal resources, and the relative supply and demand balance, into account. A value of 0xFFFF means that no power price index is available.

Table 79–7d — Power price index

Bit	Function	Value/meaning
15:0	Power price index	Valid values for these bits are decimal 0 through 65000, and hexadecimal value 0xFFFF.

$$K_{PPI} = \left(\frac{(\text{Power price index} + 10046) \times 2.512}{75046} \right)^5 \tag{79–1}$$

where

K_{PPI}	is the power price index expressed as a factor ranging from 0.0004 to 100 the nominal price
Power price index	is the value of the ‘Power price index’ field defined in Table 79–7d

Info (not part of baseline)

The transfer function was chosen to make optimal use of the available 16 bits.

$$K_{PPI} = \left(\frac{(\text{Power price index} + 10046) \times 2.512}{75046} \right)^5$$

K_{PPI} has a value of 0.0004 for an input value of 0, and exponentially increases to value 100 at an input value of 65000. The unity value lies at an input value of "Power price index" = 19829. The offset choice of 10046 also produces an exact unity value, while limiting the amount of bits used to express lower than unity factors.