**Supplement to CMP316 Workgroup Report**

Includes numerical tariff calculation for the WACM

August 2022 (amended November 2022)

Supporting calculations to note

Wider tariffs by generation category:

### 

### Conventional Carbon Generators

(Biomass, CHP, Coal, Gas, Pump Storage)

**ALF**

**Peak Element**

**Year Round Shared**

**Element**

**Year Round Not Shared Element**

**Adjustment Tariff**

**ALF**

### Conventional Low Carbon Generators

(Hydro, Nuclear)

**Adjustment Tariff**

**Peak Element**

**Year Round Shared Element**

**Year Round Not Shared Element**

**ALF**

### Intermittent Generators

(Wind, Wave, Tidal)

**Year Round Shared Element**

**Year Round Not Shared Element**

**Adjustment Tariff**

**ALF**

Co-located generation site examples

Power station A has TEC of 60MW, and it consists of three BMUs/technology types. The capacity and the annual outputs (MWh) are listed below

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Maximum Capacity (MW)** | **Fuel type** | **Annual exporting (MWh)** |
| BMU1 | 50 | Wind | 135,000 |
| BMU2 | 40 | CHP | 250,000 |
| BMU3 | 15 | Battery | 35,000 |

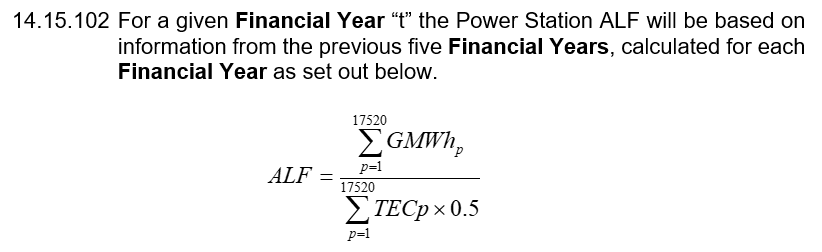
Given the following wider generation tariffs (note these are not current tariffs provided for illustration only)

|  |  |  |  |
| --- | --- | --- | --- |
| **Wider Tariffs (£/kW)** | | | |
| **Peak Security** | **Shared Year Round** | **Not Shared Year-Round** | **Adjustment** |
| 5 | 15 | 12 | 0 |

1. Baseline

As the predominant technology is wind, the power station is treated as wind.

As CUSC Section 14



The Power Station ALF will use the sum of the annual exporting MWh for each technology type.

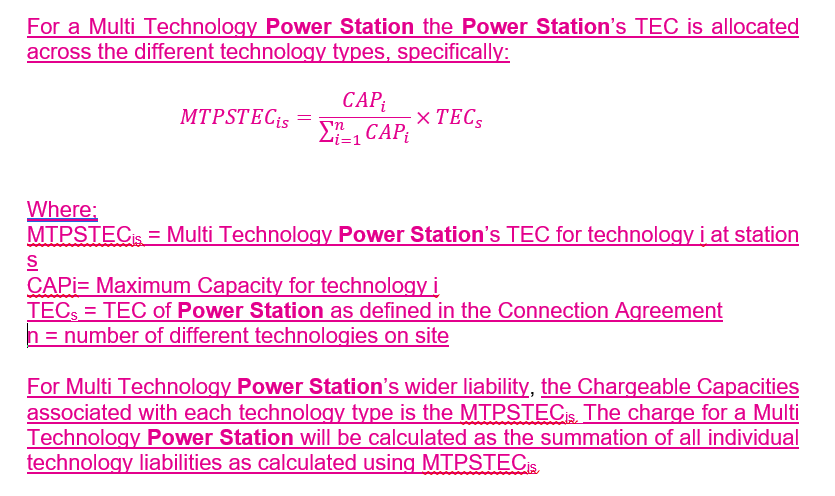
ALF = (135000+250000+35000)/(60\*8760)=80%

Then for the intermittent generation, its wider tariff is (15X80%+12+0=)£24/kW, and its wider charge is (24X60=) **£1,440k**

1. CMP316 Original solution

The TEC of the power station is apportioned to each technology according to the Maximum Capacity (as defined within the Grid Code) of the relevant BMUs

As CUSC 14.18.7



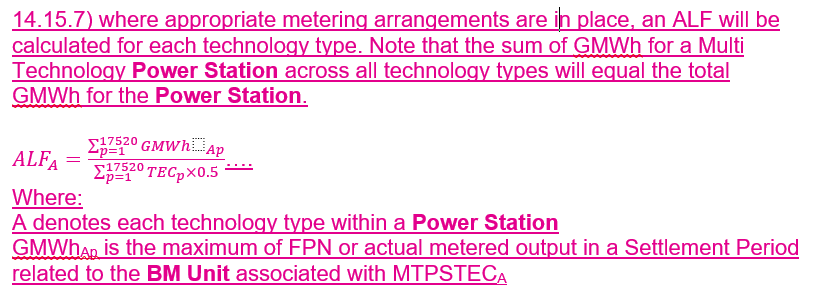
|  |  |
| --- | --- |
|  | **MTPSTEC (MW)** |
| Technology 1 (Wind) | 28.6 |
| Technology 2 (CHP) | 22.9 |
| Technology 3 (Battery) | 8.6 |

Generation charge

Given the wider generation tariffs

|  |  |  |  |
| --- | --- | --- | --- |
| **Wider Tariffs (£/kW)** | | | |
| **Peak Security** | **Shared Year Round** | **Not Shared Year-Round** | **Adjustment** |
| 5 | 15 | 12 | 0 |

As CUSC 14.15.102  

ALF1=135000/(60\*8760)=26%

ALF2= 250000/(60\*8760)=48%

ALF3=35000/(60\*8760)=7%

(Note there is some rounding in the illustration above. The sum of the technology ALFs does sum exactly to the Power Station ALF with additional decimal places)

Wider tariffs for each technology are

Wind: (15X26%+12+0=)£15.9/kW

CHP: (5+15X48%+12X48%+0=)£17.8/kW

Battery: (5+15X7%+12X7%+0=)£6.8/kW

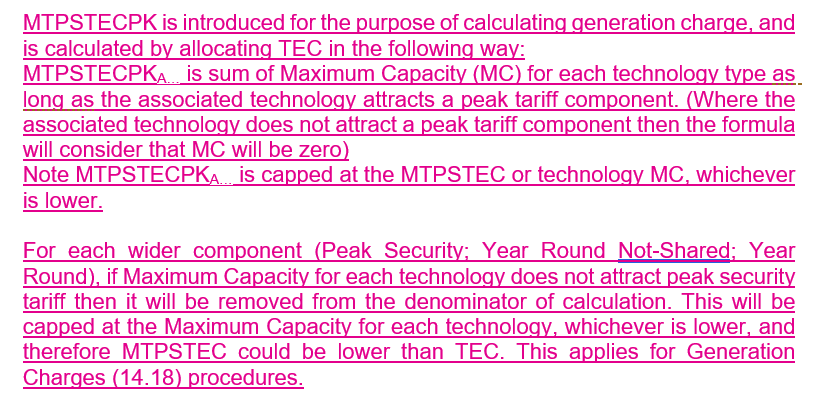
And the wider charge for this power station is (15.9X28.6+17.8X22.9+6.8X8.6=) **£919k**

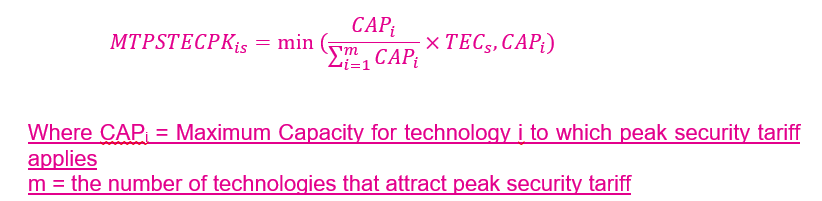
1. CMP316 WACM Solution

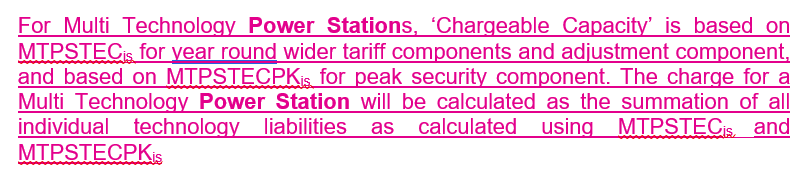
The TEC of the power station is apportioned to each technology according to the maximum capacity of the relevant BMUs –

The solution does not change the calculation of the tariffs. The tariff calculation is as the Original proposal. The charges differ by use of MTPSTECPK and the ALF calculation.

As CUSC 14.8.7 (note MTPSTECPK – used for each technology type could sum to less than the Power Station TEC but cannot higher than TEC)







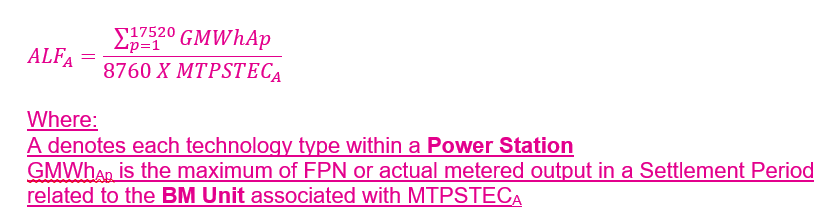
|  |  |  |
| --- | --- | --- |
|  | **MTPSTEC (MW)** | **Peak Capacity (MW) MTPSTECPK** |
| Technology 1 (Wind) | 28.6 | 0 |
| Technology 2 (CHP) | 22.9 | 40 |
| Technology 3 (Battery) | 8.6 | 15 |

Generation charge

Given the wider generation tariffs

|  |  |  |  |
| --- | --- | --- | --- |
| **Wider Tariffs (£/kW)** | | | |
| **Peak Security** | **Shared Year Round** | **Not Shared Year-Round** | **Adjustment** |
| 5 | 15 | 12 | 0 |

As CUSC 14.15.102



ALF1=135000/(28.6\*8760)=54%

ALF2= 250000/(22.9\*8760)=125%

ALF3=35000/(8.6\*8760)=47%  
(note that an ALF at technology level, for the WACM, can exceed 100% but not at TEC level)

Wider tariffs for each technology are

Wind: (15X54%+12+0=)£20.1/kW

CHP: (5X40/22.9+15X125%+12X125%+0=)£42.5/kW

Pk + YR round shared + YR not shared

CHP: (5X40/22.9+15X125%+12X125%X40/22.9+0=)£/kW so would be higher value

CAP in +ve zone but what if -ve more or less negative value?

From 14.18.7 For Multi Technology **Power Station**s, ‘Chargeable Capacity’ is based on MTPSTECis for shared year round wider tariff components and adjustment component, and based on MTPSTECPKis for peak security and not shared year round component. The charge for a Multi Technology **Power Station** will be calculated as the summation of all individual technology liabilities as calculated using MTPSTECis and MTPSTECPKis

but doesn’t say CAP to total station and address +ve/-ve zones

Generic ALF out of scope

Battery: (5X15/8.6+15X47%+12X47%+0=)£21.3/kW

(where 40 (CHP) and 15 (Battery) are Peak Capacity (MW) MTPSTECPK introduced by the WACM)

And the wider charge for this power station is (20.1X28.6+42.5X22.9+21.3X8.6=) **£1727k**

**To calc each station individually and sum together**