

P200 Data Analysis Results

Kathryn Coffin / John Lucas

31 May 2006

Summary of Analysis Tasks

- 1) Establish which BMUs qualify for hedging scheme under each approach set out in Requirements Spec
- 2) Calculate F-factors for all Qualifying BMUs under each approach set out in Requirements Spec
- 3) For a few sample BMUs and sample Settlement Periods, show variation of Settlement Period output from monthly F-factor
- 4) For a few sample BMUs and sample Settlement Periods, show impact of F-factors on allocation of transmission losses compared with current baseline and P198

Summary of Analysis Tasks

- For the purpose of the analysis:
 - 1 April 2005 – 31 March 2006 used as Qualifying Period and Baseline Period
 - Assumed that the Trading Unit for each BMU remained constant over Qualifying Period (5 BMUs actually changed Trading Unit)
- Spreadsheet was issued to Group containing list of Qualifying BMUs and their F-factors under each approach
- These slides summarise the findings of this analysis and provide the results of the additional analysis tasks

Establish Qualifying BMUs

- Criteria Set 1:
 - Excludes Supplier BMUs
 - Includes any other BMUs with a net $QM > 0$ over the Qualifying Period
- Criteria Set 2:
 - Excludes Base Trading Units (i.e. excludes any Trading Unit comprising Supplier BMUs)
 - Includes all BMUs in any other Trading Units with a net aggregate $QM > 0$ over the Qualifying Period
- Analysis shows that choice of criteria makes a significant difference to whether a BMU qualifies

Establish Qualifying BMUs

- Supplier BMUs (2_)
 - Some Supplier BMUs would have qualified under Criteria Set 1 without a specific rule to exclude them
 - No Supplier BMUs in the sample period would have qualified under Criteria Set 2 in the absence of a specific exclusion, although theoretically this is possible

Establish Qualifying BMUs

- Embedded BMUs (E_)
 - Some embedded BMUs qualify under Criteria Set 1 but not Criteria Set 2
 - Opposite is true for other embedded BMUs
 - Some embedded BMUs qualify under both sets of criteria, whilst some do not qualify under either

Establish Qualifying BMUs

- Directly-Connected BMUs (T_)
 - With the exception of one BMU (T_CRA3, Cruachan Power Station), all directly-connected BMUs which qualified under Criteria Set 1 also qualified under Criteria Set 2
 - However, many which qualified under Criteria Set 2 did not qualify under Criteria Set 1
 - Many directly-connected BMUs qualified under both sets of criteria, but many did not qualify under either

Establish Qualifying BMUs

- Interconnector BMUs (I_)
 - All Interconnector BMUs in sample year were part of Sole Trading Units, although P174/P189 now allows them to form Trading Units with other BMUs
 - List of qualifying Interconnector BMUs therefore identical under each set of criteria
 - Production Interconnector BMUs qualify under both sets of criteria
 - Consumption Interconnector BMUs do not qualify under either

Establish Qualifying BMUs

- 'Other' BMUs (M_)
 - All part of Sole Trading Units in sample year
 - Therefore either qualify under both sets of criteria or do not qualify under either

Calculate F-factors for Qualifying BMUs

- Calculation Approach 1:

- Uses Qualifying BMUs under Criteria Set 1

- Where Monthly Average BMU QM > 0 then:*

- BMU F-Factor = Monthly Average BMU QM*

- Else BMU F-Factor = 0*

Calculate F-factors for Qualifying BMUs

- Calculation Approach 2:
 - Uses Qualifying BMUs under Criteria Set 2
 - TU F-Factor = sum of Monthly Average BMU QM for each BMU in TU
 - TU X = sum of Monthly Average BMU QM in TU where Monthly Average BM QM > 0

Where Monthly Average BMU QM > 0, then:

$$\text{BMU F-Factor} = (\text{Monthly Average BMU QM} / \text{TU X}) \\ * \text{TU F-Factor} > 0$$

Else BMU F-Factor = 0

Calculate F-factors for Qualifying BMUs

- Under both approaches:
 - Qualifying BMUs with a monthly average QM of zero (including outages) were given an F-factor of zero for that month
 - Qualifying BMUs with a monthly average $QM < 0$ (i.e. which were net import) were given an F-factor of zero for that month
 - Qualifying BMUs which registered part-way through the sample year were given an F-factor of zero for the months in which they did not exist
 - Qualifying BMUs which registered part-way through a month were given an F-factor which reflected their average QM in the remainder of that month

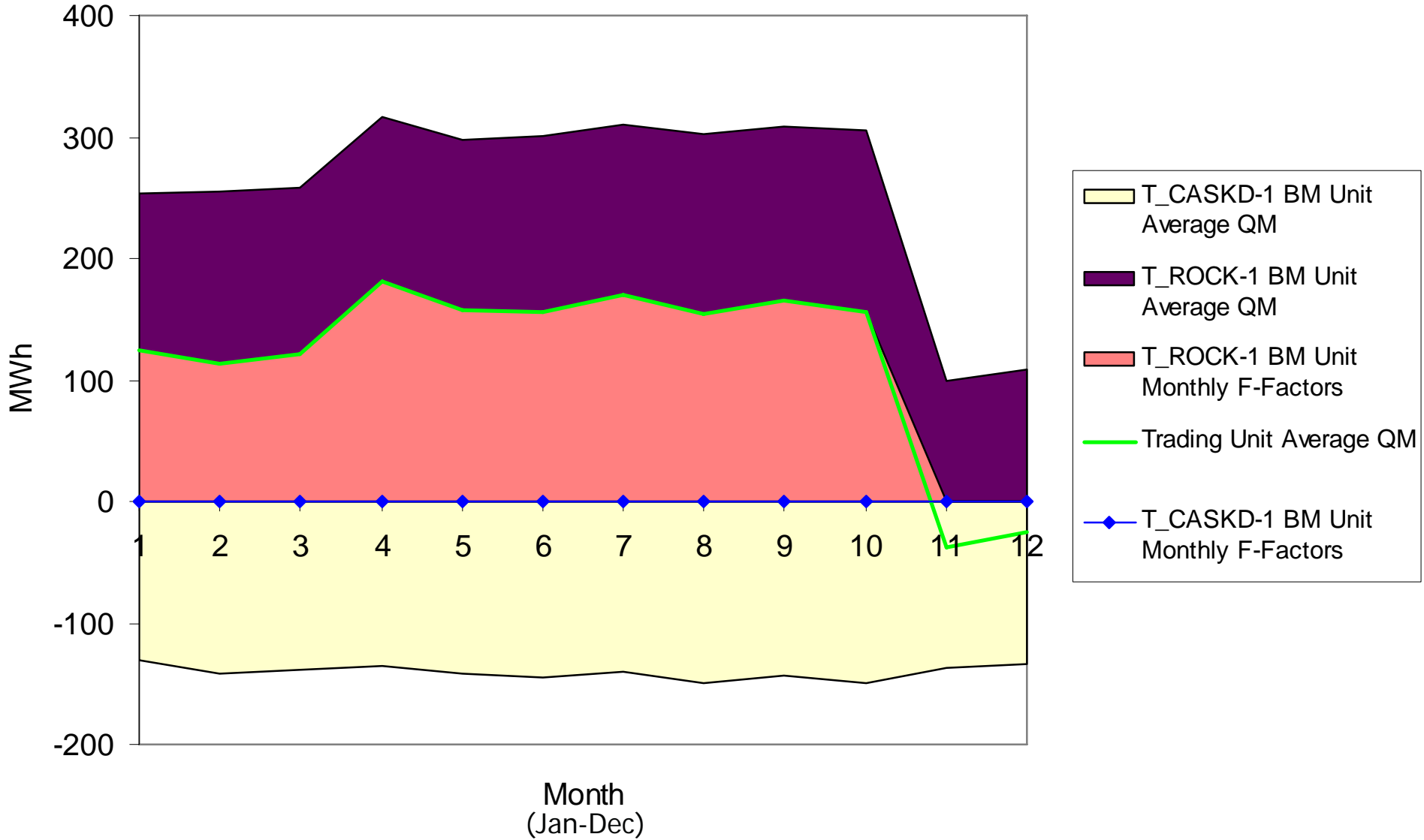
Calculate F-factors for Qualifying BMUs

- Under Criteria Set 1 and Calculation Approach 1, a BMU only qualifies if it has an annual net $QM > 0$
 - BMUs whose annual net $QM \leq 0$ therefore do not qualify and receive a zero F-factor for each month
- However, under Criteria Set 2 and Calculation Approach 2 all BMUs in a Trading Unit qualify if the Trading Unit has an annual net aggregate $QM > 0$
 - BMUs whose annual net $QM \leq 0$ therefore receive an F-factor for any month in which their $QM > 0$

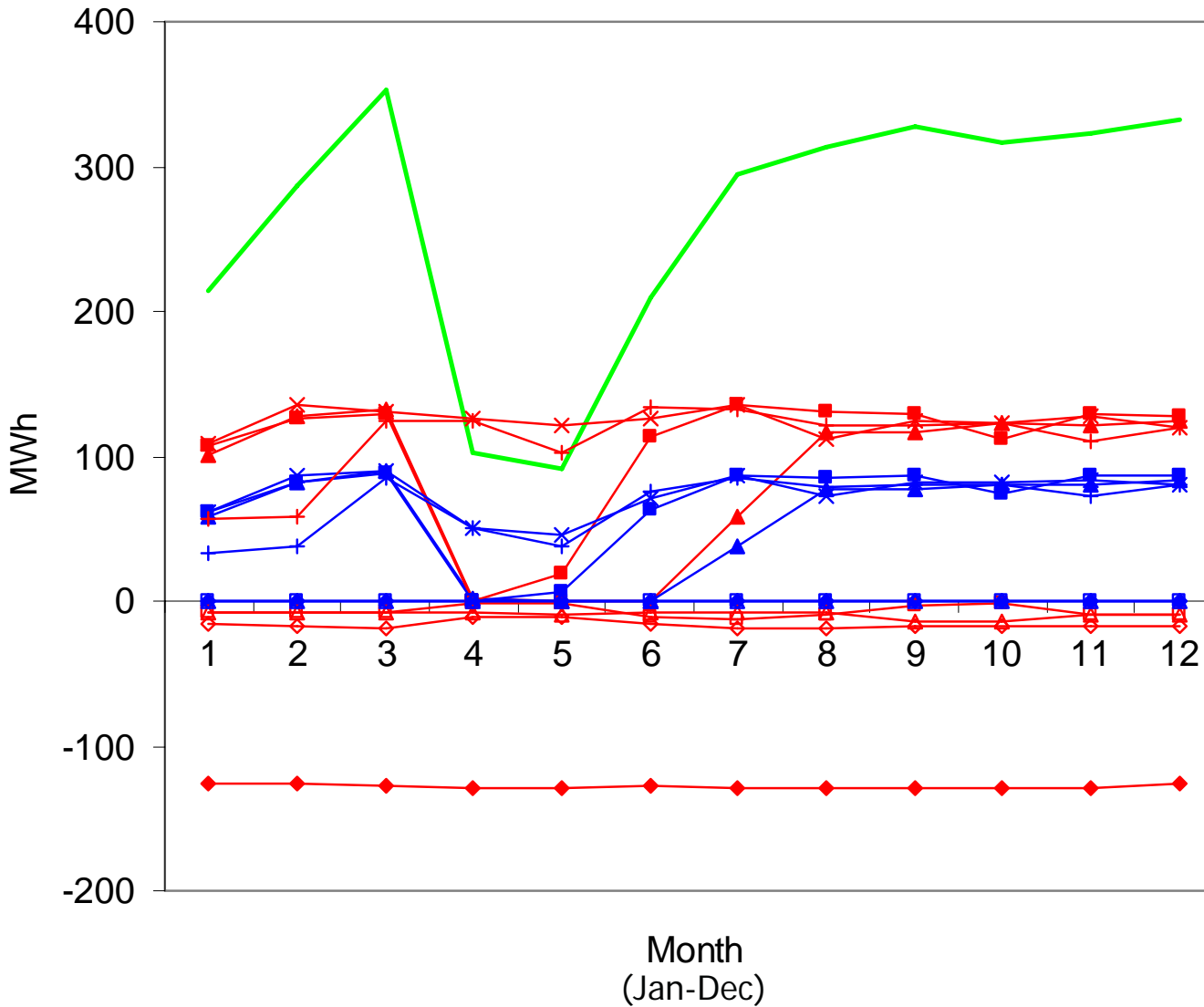
Calculate F-factors for Qualifying BMUs

- Analysis shows that the choice between calculation approaches can have a significant impact on F-factors for some BMUs
- F-factors under Calculation Approach 2 dependent on level of consumption within the Trading Unit
 - F-factors ‘pulled down’ to account for consumption
 - F-factors for a BMU may therefore be much lower than its monthly average QM
 - In some cases, this ‘pulling down’ effect may result in zero F-factors for BMUs which were net export during the month

Rocksavage Trading Unit

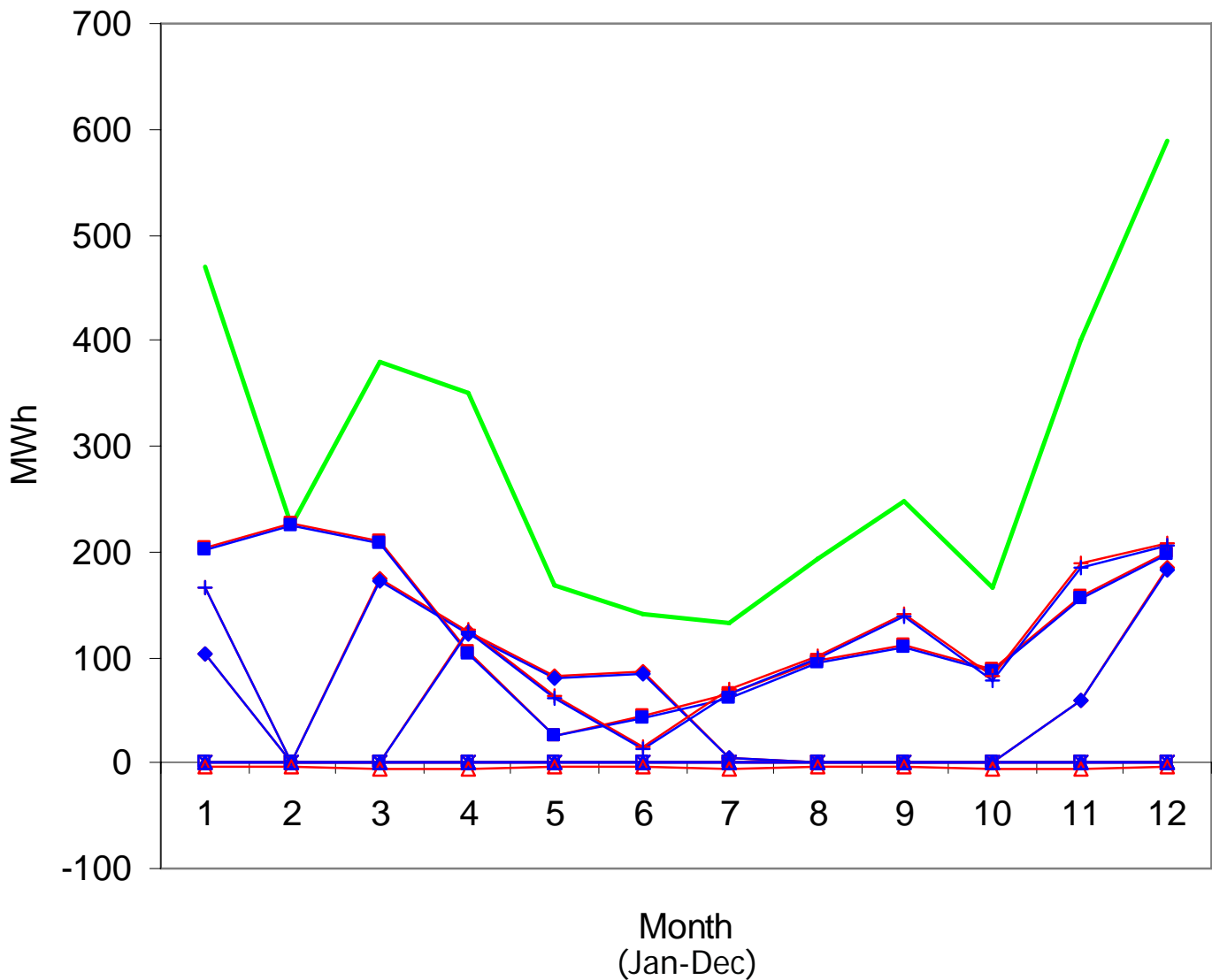


Wylfa Power Station



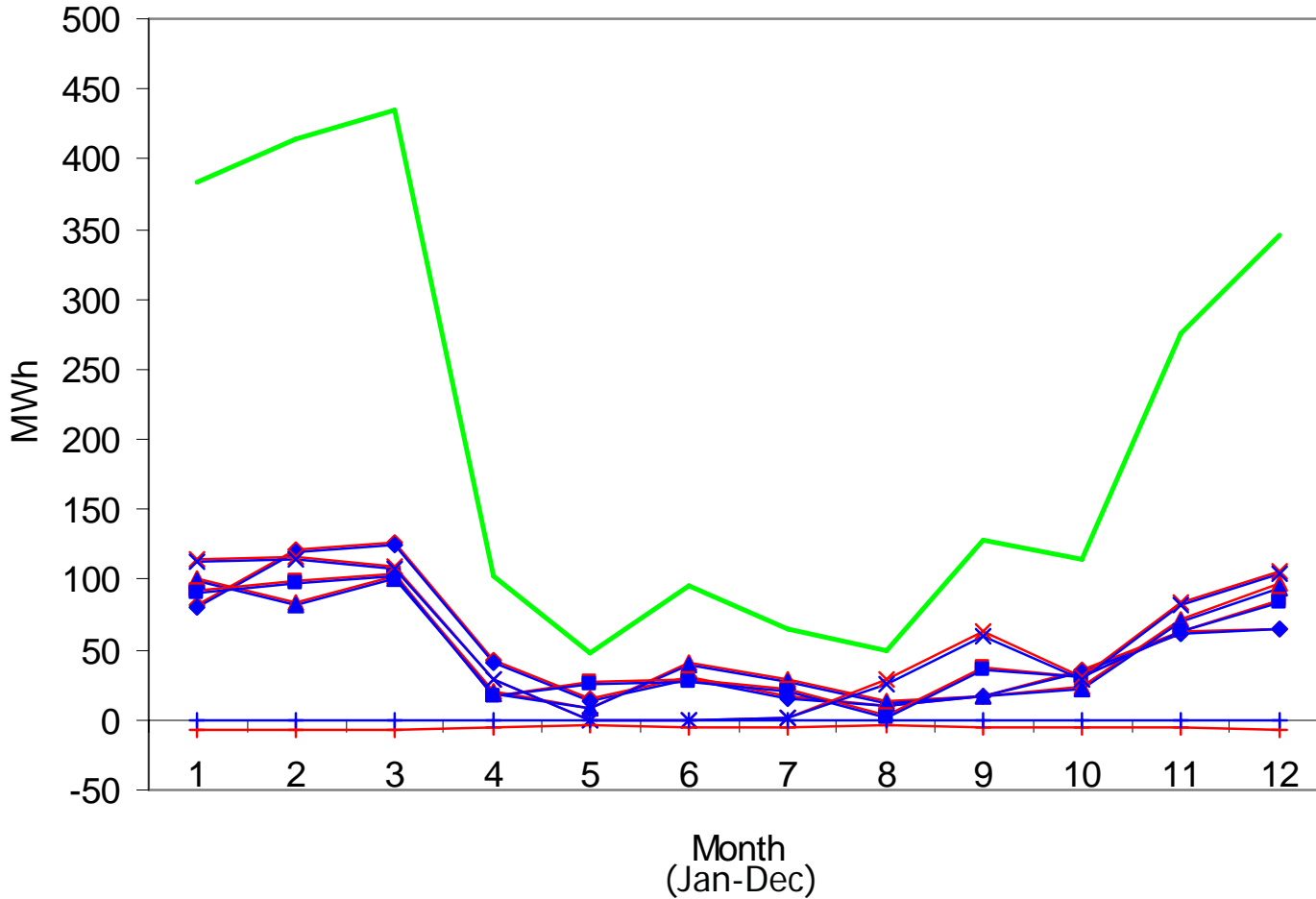
- ◆ Trading Unit Average QM
- ◆ T_ANGLD-1 BM Unit Average QM
- ◆ T_ANGLD-1 BM Unit Monthly F-Factors
- ▲ T_WYLF-1 BM Unit Average QM
- ▲ T_WYLF-1 BM Unit Monthly F-Factors
- T_WYLF-2 BM Unit Average QM
- T_WYLF-2 BM Unit Monthly F-Factors
- × T_WYLF-3 BM Unit Average QM
- × T_WYLF-3 BM Unit Monthly F-Factors
- + T_WYLF-4 BM Unit Average QM
- + T_WYLF-4 BM Unit Monthly F-Factors
- T_WYLF-D1 BM Unit Average QM
- T_WYLF-D1 BM Unit Monthly F-Factors
- △ T_WYLF-D2 BM Unit Average QM
- △ T_WYLF-D2 BM Unit Monthly F-Factors
- ◇ T_WYLF-D3 BM Unit Average QM
- ◇ T_WYLF-D3 BM Unit Monthly F-Factors

Aberthaw B Power Station



- Trading Unit Average QM
- ◆— T_ABTH7 BM Unit Average QM
- ◆— T_ABTH7 BM Unit Monthly F-Factors
- ▲— T_ABTH7G BM Unit Average QM
- ▲— T_ABTH7G BM Unit Monthly F-Factors
- T_ABTH8 BM Unit Average QM
- T_ABTH8 BM Unit Monthly F-Factors
- ×— T_ABTH8G BM Unit Average QM
- ×— T_ABTH8G BM Unit Monthly F-Factors
- +— T_ABTH9 BM Unit Average QM
- +— T_ABTH9 BM Unit Monthly F-Factors
- T_ABTH9G BM Unit Average QM
- T_ABTH9G BM Unit Monthly F-Factors
- △— T_ABTHD BM Unit Average QM
- △— T_ABTHD BM Unit Monthly F-Factors

Cockenzie Power Station



- Trading Unit Average QM
- T_COCK-1 BM Unit Average QM
- T_COCK-1 BM Unit Monthly F-Factors
- T_COCK-2 BM Unit Average QM
- T_COCK-2 BM Unit Monthly F-Factors
- T_COCK-3 BM Unit Average QM
- T_COCK-3 BM Unit Monthly F-Factors
- T_COCK-4 BM Unit Average QM
- T_COCK-4 BM Unit Monthly F-Factors
- T_COCKD-1 BM Unit Average QM
- T_COCKD-1 BM Unit Monthly F-Factors

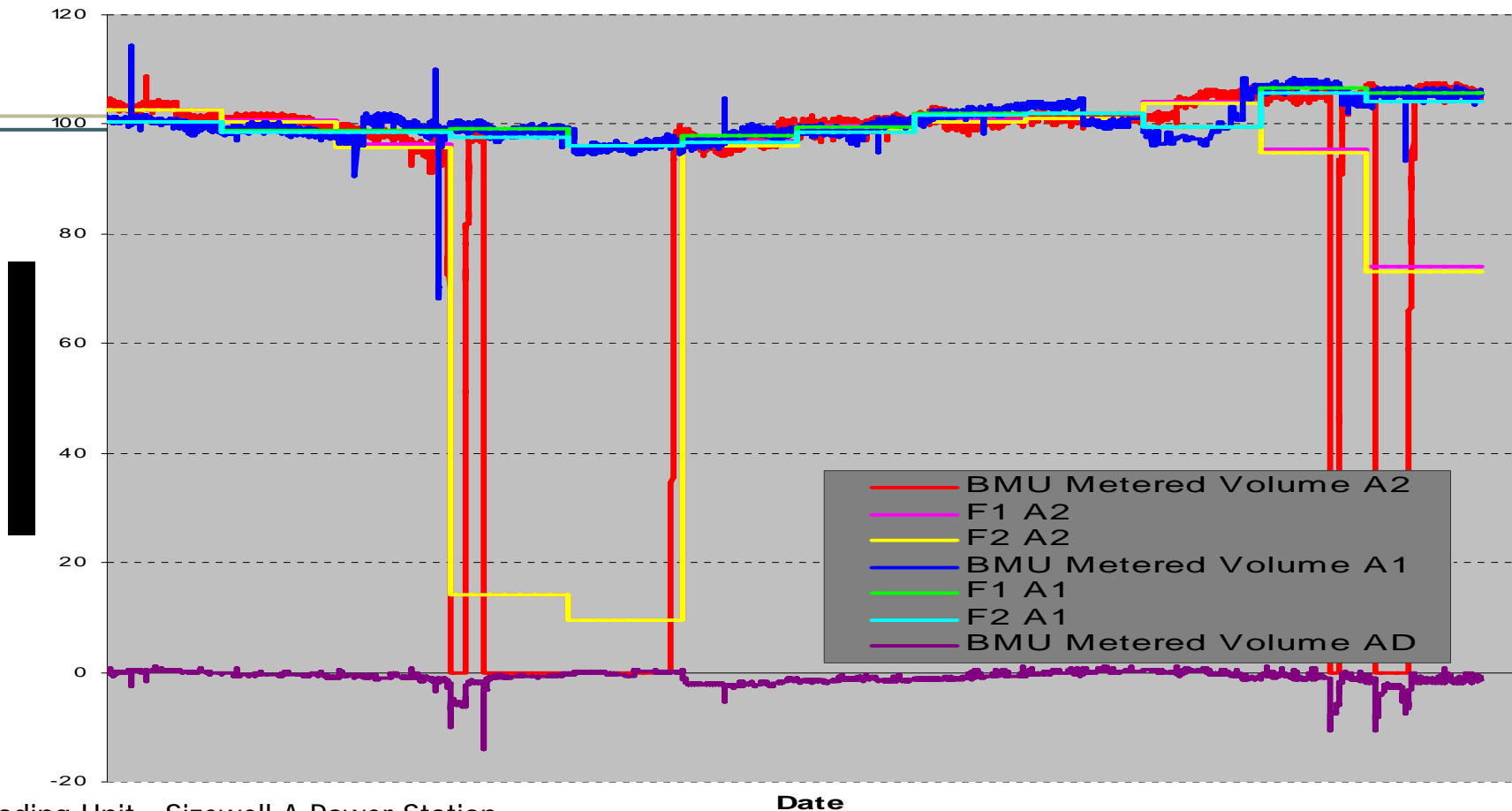
Establish Variation of Output from F-factor

- Small sample of BMUs selected, covering a range of TLF Zones and BMU types
- Analysis shows that the following factors determine how closely the F-factor corresponds to a BMU's actual Metered Volume in a Settlement Period:
 - The variation in a BMU's Metered Volume during a month (relevant for both calculation approaches)
 - The Metered Volumes of other BMUs in the Trading Unit and their variation during a month (only relevant for Calculation Approach 2)

Establish Variation of Output from F-factor

- Difference between F-factor and output becomes most extreme when:
 - Metered Volume of BMU concerned changes sign and becomes net import in a Settlement Period (relevant for both calculation approaches)
 - Metered Volumes of other BMUs in the Trading Unit change sign – i.e. a Production BMU becomes net consumption or vice versa in a Settlement Period (relevant for Calculation Approach 2)

BMU Output Vs F-Factors (April 05 - March 06): T_SIZEA1, T_SIZEA2 & T_SIZEAD



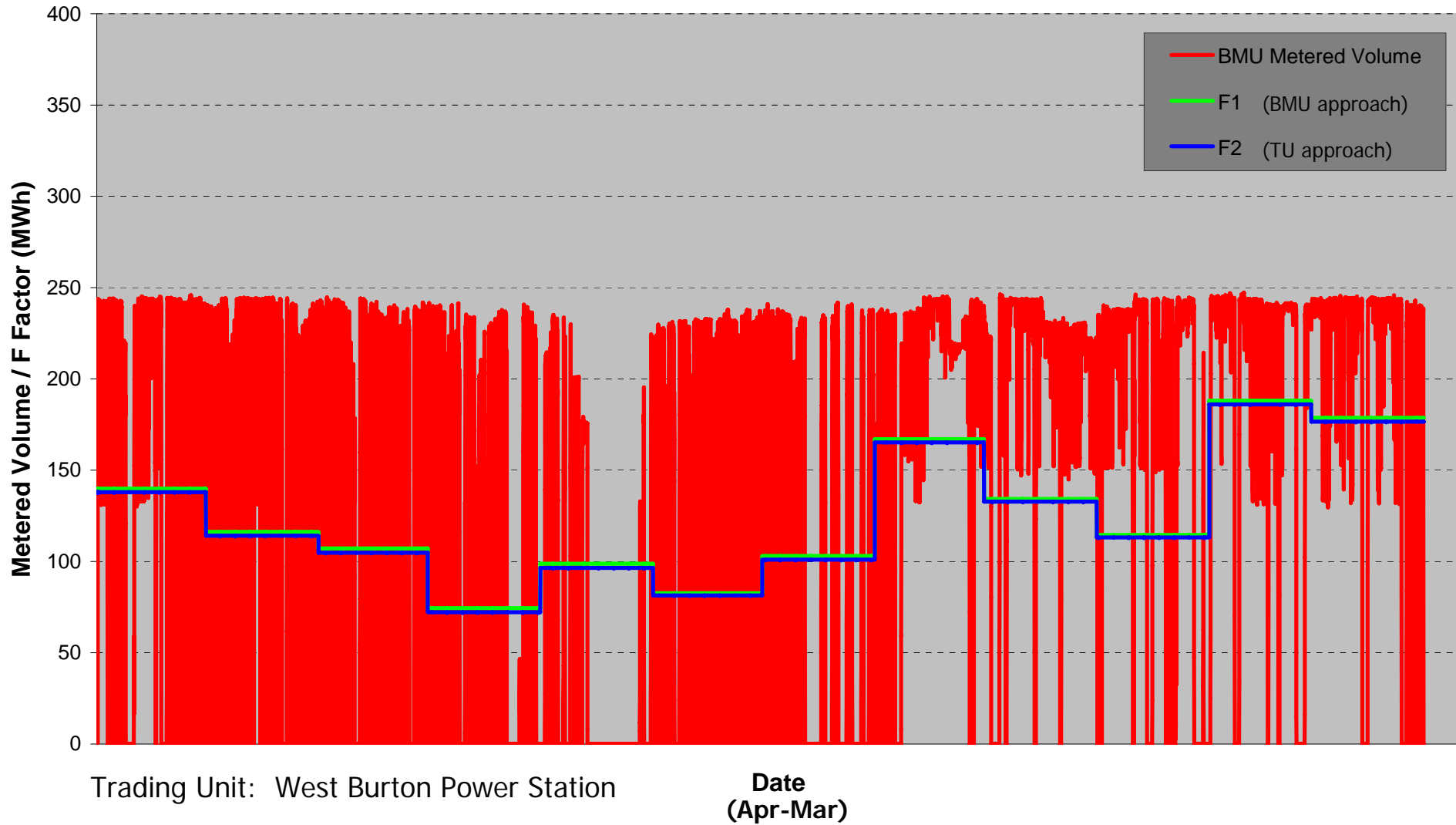
Trading Unit: Sizewell A Power Station

Other BMUs in Trading Unit: T_SIZEA2 and T_SIZEA-D.

T_SIZEA2 was net export in all months, but significantly reduced its export from ~100MWh to ~10MWh in Jul-Aug. As a result, the F-factors for T_SIZEA1 in these months picked up a greater share of the consumption from T_SIZEA-D (since consumption is pro-rated across all exporting BMUs according to their Metered Volume).

T_SIZEA-D was net import over the year, but net export in Apr and Dec. This had no effect on the F-factors of T_SIZEA1, since T_SIZEA-D received an F-factor >0 in these months reflecting its export.

BMU Output Vs F-Factors (April 05 - March 06): T_WBUPS-4



Trading Unit: West Burton Power Station

Date
(Apr-Mar)

Other BMUs in Trading Unit:

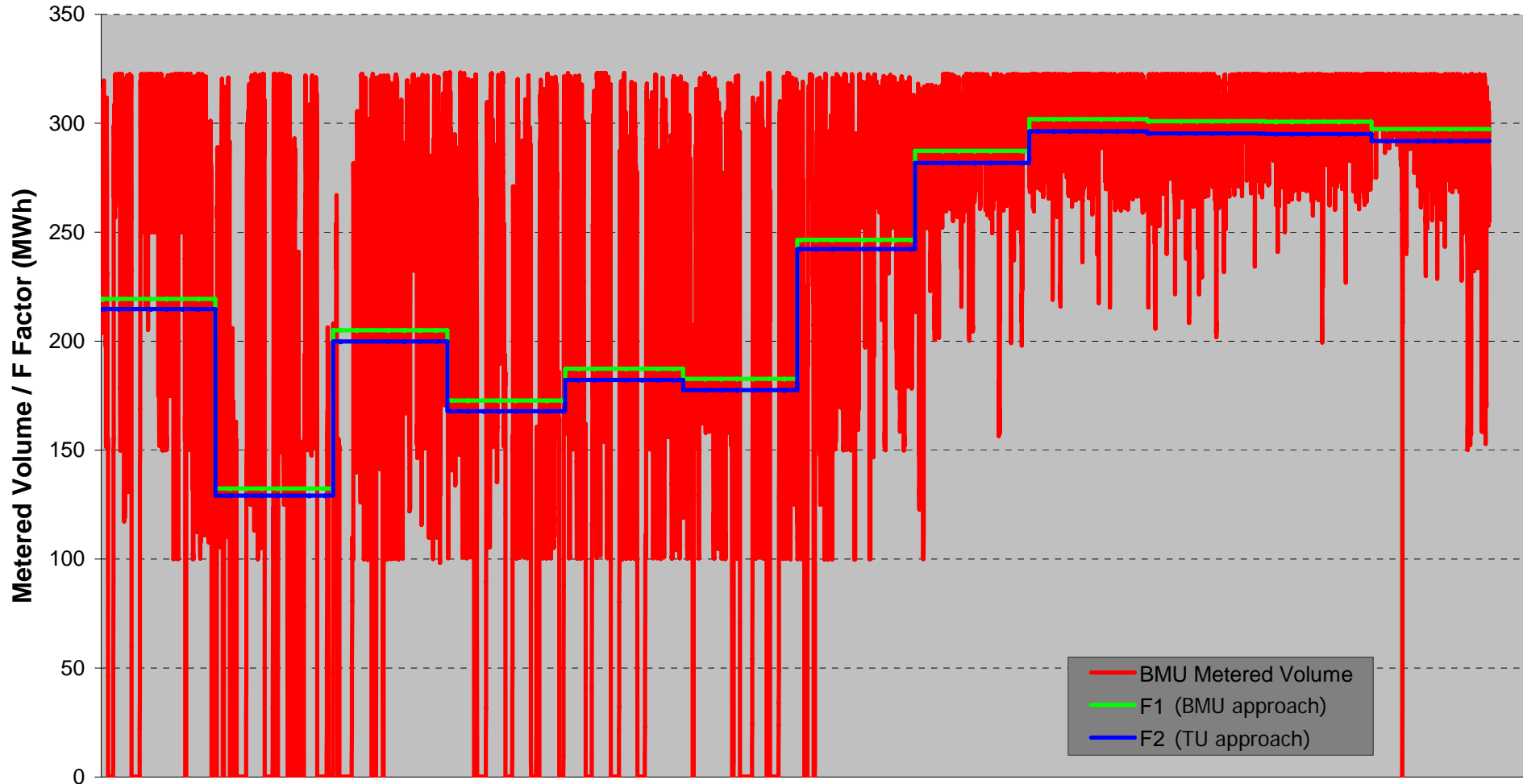
T_WBUGT-1

T_WBUPS-2

T_WBUGT-4

T_WBUPS-3

BMU Output Vs F-Factors (April 05 - March 06): T_DRAXX-1



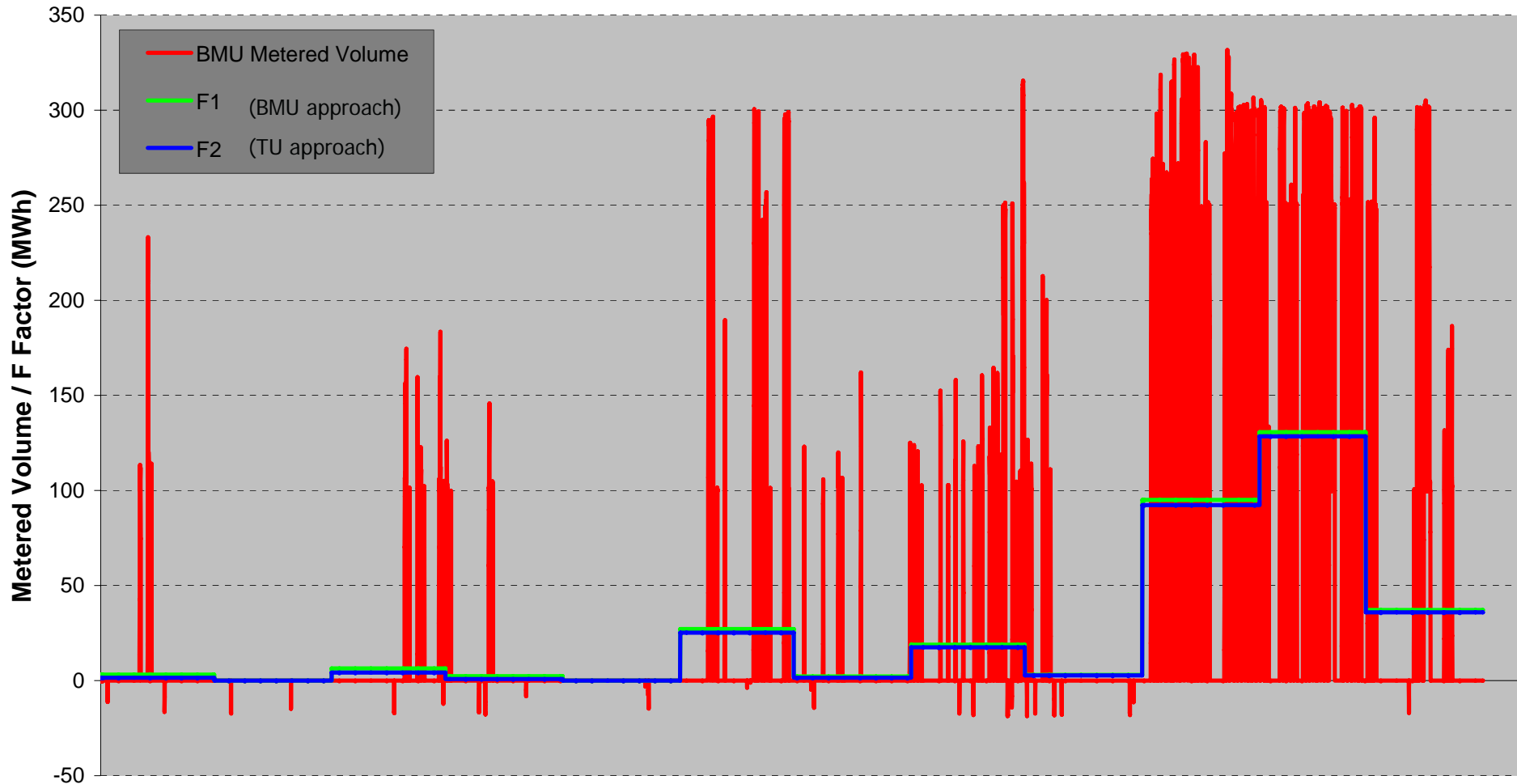
Trading Unit: Drax Power Station

Date
(Apr-Mar)

Other BMUs in Trading Unit:

E_MDRX001	T_DRAXX-1	T_DRAXX-12G	T_DRAXX-3	T_DRAXX-5	T_DRAXX-99
E_MDRX002	T_DRAXX-10G	T_DRAXX-2	T_DRAXX-4	T_DRAXX-6	

BMU Output Vs F-Factors (April 05 - March 06): T_LITTD1



Trading Unit: Littlebrook D Power Station

Date (Apr-Mar)

Other BMUs in Trading Unit:

T_LITTD1G

T_LITTD2G

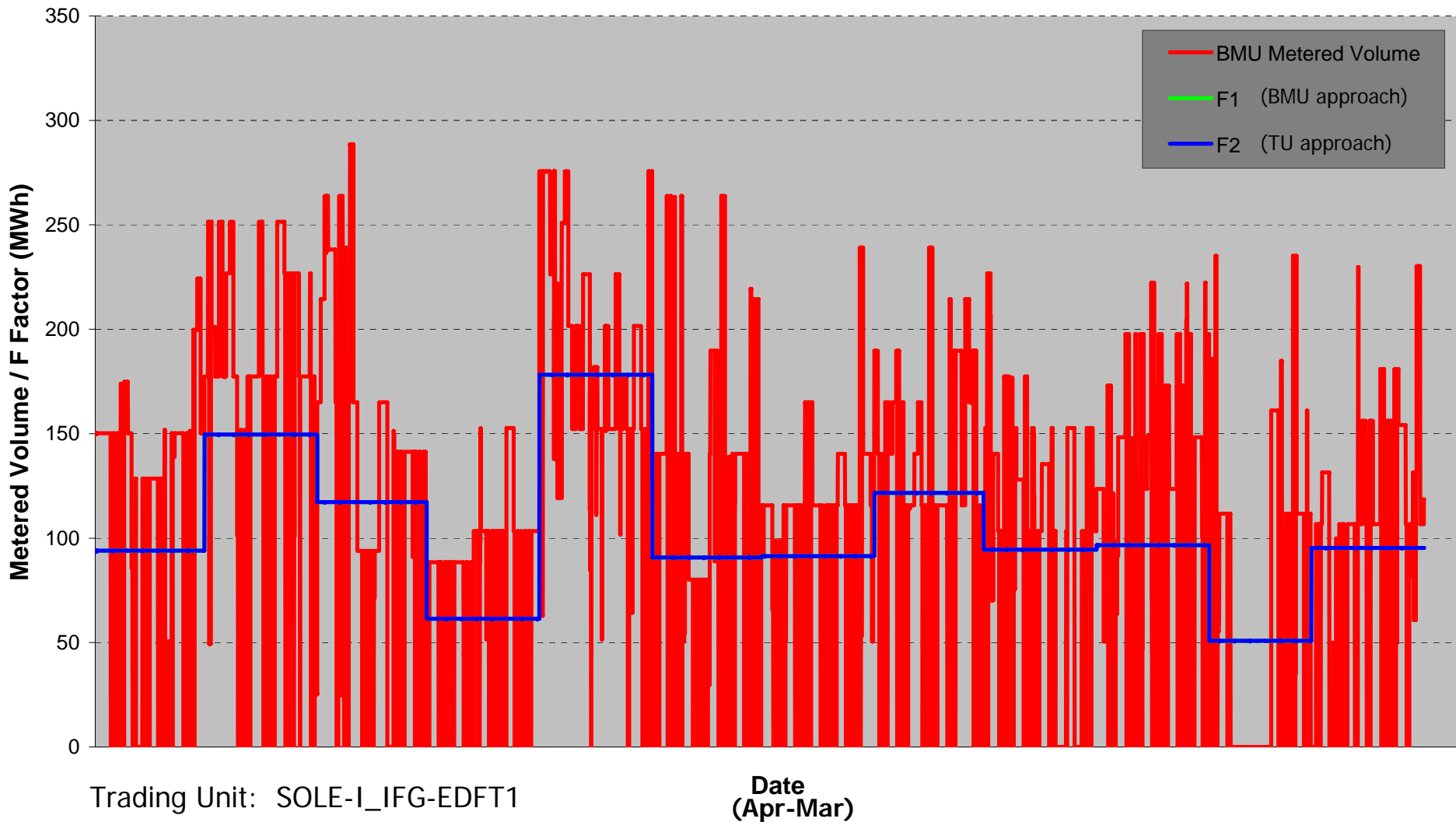
T_LITTD3G

T_LITTD2

T_LITTD3

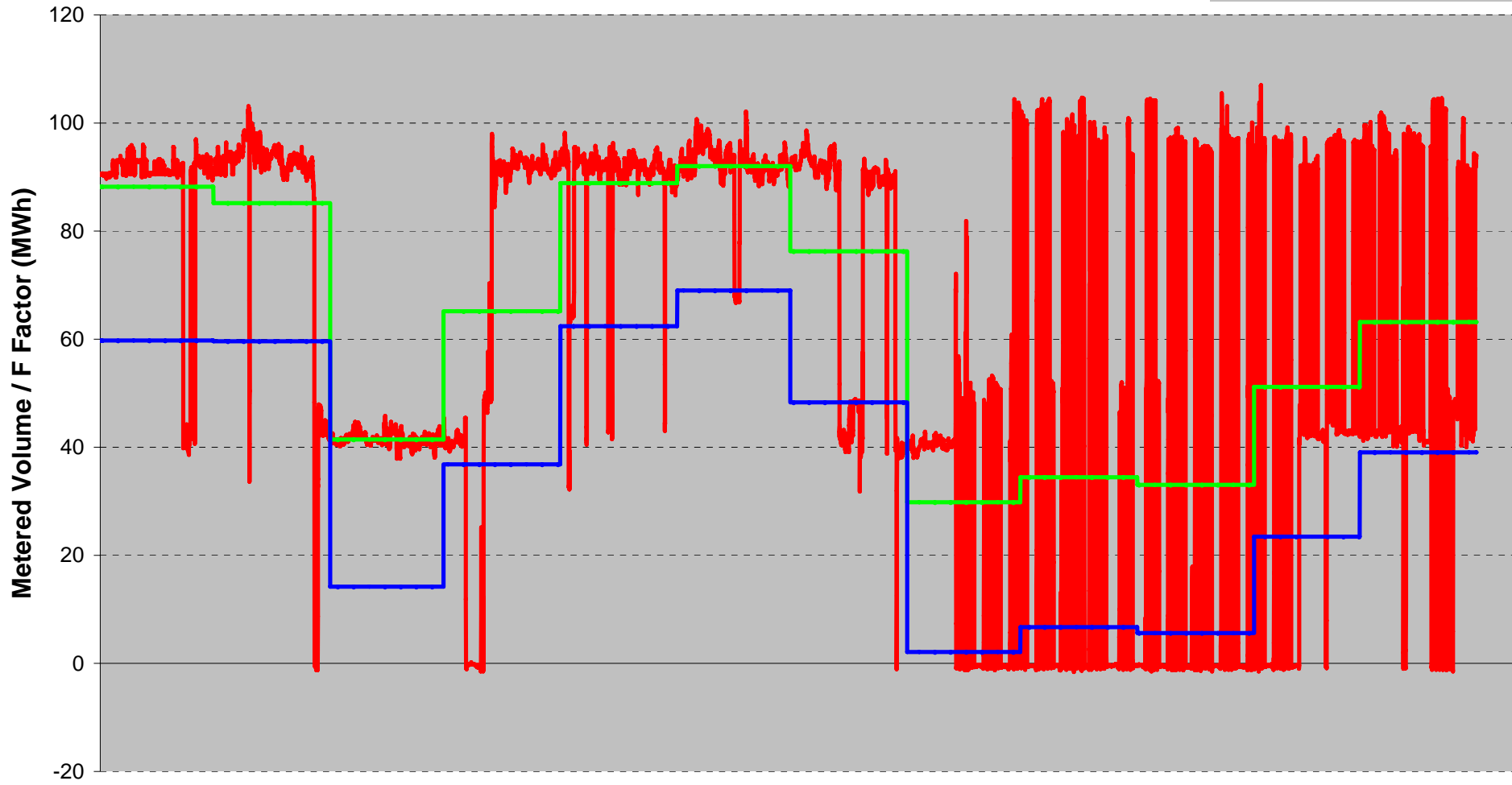
T_LITTD

BMU Output Vs F-Factors (April 05 - March 06): I_IFG-EDFT1



BMU Output Vs F-Factors (April 05 - March 06): E_SHOT-1

- BMU Metered Volume
- F1 (BMU approach)
- F2 (TU approach)



Trading Unit: Shotton CHP

Date
(Apr-Mar)

Other BMUs in Trading Unit:

E_SHOT-P (net import in each month)

BMU Output Vs F-Factors (April 05 - March 06): E_FELL-1

