

Issue 24: Group Endorsed Solution – Outline Modification

Perceived BSC Defect

The BSC is defective in that it does not provide clear guidance on the direction of, and hence responsibility for, metered reactive power flows. In the SVA market, the general practice is to allocate all reactive power to the import MPAN (where there is also an export MPAN) – even at times when active power is being exported. This can then burden the supplier responsible for an import MPAN with excessive DUoS charges - driven by supposed ‘excess’ demand and ‘excess’ reactive power, which actually relate to periods of active power export. The proposed modification will ensure that reactive power ‘follows’ active power – both being either ‘import’ or ‘export’ at any given time, depending on the direction of flow of active power. This will ensure the fair allocation of responsibility to the importing or exporting parties respectively and facilitate DUoS billing. The proposed modification will remove a potentially significant barrier to entry in respect of embedded generators and mitigate a burden on suppliers, hence better facilitating competition in the generation and supply of electricity.

Proposed Change

The proposed change aims to achieve a clear and unambiguous definition of the direction of flow of reactive power. The definition relies on the concept of ‘**electricity**’ as a single indivisible flow, which can have only one direction at a particular instant in time - this being the direction of active power flow (i.e. the direction of real energy transfer). This definition seems consistent with the legal advice received concerning the nature of electricity, and is designed to prompt consequential changes in subsidiary documents which will be beneficial to the industry as a whole and to embedded generators in particular.

A number of relevant BSC Code definitions are set out below (these have been re-ordered and grouped for clarity). It is proposed that these should remain unchanged, save for the definitions of import and export which will be changed by the addition of a new paragraph to K1.1.4 as set out below.

BSC Definitions

"electricity": means Active Energy and Reactive Energy;

"Active Power": means the product of voltage and the in-phase component of alternating current measured in units of watts and standard multiples thereof, that is:

1000 Watts = 1 kW

1000 kW = 1 MW

"Active Energy": means the electrical energy produced, flowing or supplied by an electric circuit during a time interval, being the integral with respect to time of instantaneous Active Power, measured in units of watt-hours or standard multiples thereof;

"Reactive Power": means the product of voltage and current and the sine of the phase angle between them, measured in units of voltamperes reactive and standard multiples thereof;

"Reactive Energy": means the integral with respect to time of Reactive Power;

"Import": has the meaning given to that term in Section K1.1.4(b) as interpreted in accordance with the provisions of Section K1.1.4;

"Export": has the meaning given to that term in Section K1.1.4(b) as interpreted in accordance with the provisions of Section K1.1.4;

K1.1.4 For the purposes of the Code:

(a) in relation to the terms Export and Import, references to the Plant or Apparatus of a Party shall be treated as including:

- (i) the premises of a Customer supplied by that Party;
- (ii) Plant and Apparatus of a Third Party Generator for whose Exports that Party has elected to be responsible in accordance with paragraph 1.2.2(a)(ii)(2);
- (iii) Plant or Apparatus (whether or not owned or operated by that Party), not forming part of the Total System, by which electricity is transported from the Total System to premises supplied by the Total System or (as the case may be) to the Total System from Generating Plant providing electricity to the Total System;
- (iv) an Interconnector in relation to which that Party is an Interconnector User.

(b) subject to paragraphs (c) (d) and (e), unless otherwise provided:

- (i) **"Export"** means, in relation to a Party, a flow of electricity at any instant in time from any Plant or Apparatus (not comprising part of the Total System) of that Party to the Plant or Apparatus (comprising part of the Total System) of a Party;
- (ii) **"Import"** means, in relation to a Party, a flow of electricity at any instant in time to any Plant or Apparatus (not comprising part of the Total System) of that Party from the Plant or Apparatus (comprising part of the Total System) of a Party;

and Export and Import, as verbs, shall be construed accordingly;

(c) any Export or Import is to be determined at a single Boundary Point;

(d) for the purposes of paragraph (c), in relation to a Party any flow (under paragraph b(i) and (ii) respectively) which occurs at a Boundary Point:

- (i) to or from Plant or Apparatus of that Party shall be considered to be a single Export or Import of that Party;
- (ii) to or from the Plant or Apparatus of that Party shall be considered to be a separate Export or Import from any Export or Import of any other Party.

(e) notwithstanding paragraphs (c) and (d):

- (i) the flow to or from each Generating Unit (where such Generating Unit individually constitutes or is capable of constituting a

Licensable Generating Plant) and to or from the associated unit transformer of that Generating Unit (if any) shall be combined. Such combined flow shall be considered to be a single Export or Import and separate from any Export or Import of any other Plant or Apparatus; and

(ii) the flow to or from a station transformer associated with a Licensable Generating Plant shall be considered to be a single Export or Import, and separate from any Export or Import of any other Plant or Apparatus.

(f) In relation to the term “**electricity**”, the direction of flow at any instant in time shall be deemed to be consistent with the direction of flow of Active Power at that instant in time. For the avoidance of doubt, at any instant in time when the flow of Active Power is classified as Import the associated flow of Reactive Power will also be deemed to be import flow related, and at any instant in time when the flow of Active Power is classified as Export the associated flow of Reactive Power will be deemed to be export flow related.