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FCR allocation converter User Guide

Change history

Version	Date	Description
1.0	November 23, 2013	Initial version
1.1	December 2, 2013	<ul style="list-style-type: none"> - Added choice of destination folders for exports - Added Acknowledgement and Anomaly Report test messages - Moved process that copies PTU Schedule to Interval Schedule from export process to a new button
1.2	March 10, 2014	Converter improvements: <ul style="list-style-type: none"> - Added import buttons - Fixed decimal error for volumes in Interval schedule export - Fixed decimal error in droop display in PTU schedule - Added totals in PTU schedule - Increased number of allocation columns in PTU schedule - Fixed rounding errors in interval conversion - Added cell locking for PTU schedule Added and modified documentation
2.3	June 03, 2019	Overall update of convertor <ul style="list-style-type: none"> - Convertor made suitable for daily auctions. <ul style="list-style-type: none"> o Build in checks on symmetry (transferred and total) o Checks on over allocation (not permitted) - Transfer of obligation only allowed symmetrical. - No over allocation allowed - Added examples for transfer of obligations.
2.4	June 12, 2019	Converter error using Excel 2016: MSXML2.DOMDocument replaced by MSXML2.DOMDocument60. Documentation unchanged.
2.5	July 2019	<ul style="list-style-type: none"> - Bug in export of XML repaired - When an original provider has been specified, the asset on which the volumes are allocated also has to be specified. This situation raises a warning. If the export is continued, these time-series will be exported as unavailable, because they have not been allocated. Documentation unchanged.
3.0	June 2020	New version due to 4h block daily auction. XML export on PT15M resolution only. Examples adapted to new 3.0 version of the portfolio-converter.

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1. Introduction

As according to the new Dutch grid code, FCR (Frequency Containment Reserve) will be contracted from the market. Starting January 2014, Dutch Reserve Resource Providers may acquire FCR at the Regelleistung platform. In order to be able to monitor the actual delivery of FCR by the Reserve Resource Providers, TenneT TSO requires an allocation message from the Reserve Resource Providers which indicates how exactly the total obtained obligation is assigned to the respective Reserve Resource Objects (RLE/RLG's).

The allocation message is based on the ENTSO-E ERRP:PRS 5.0 message format. This Planned Resource Schedule format is defined as an XML message containing time series to specify the quantity of FCR allocated to prequalified Resource Objects during specific time periods. TenneT requires the allocation message to cover exactly one complete delivery day

TenneT provides a rudimentary tool for the Resource Providers that enables them to specify the daily Planned Resource Schedule in a PTU-based Excel worksheet. This document describes the main functions of this tool. Note that the provided example merely demonstrates certain functions of the tool and does not necessarily reflect a logical or valid data set.

2. General

The tool is an Excel spreadsheet file containing one worksheet. The worksheet provides a way to specify a daily schedule and export it to an XML message on the file system. The structure of the worksheet supports PTU-based schedules. The sheet has an export button that translates the specific schedule to an ENTSO-E ERRP-Planned Resource Schedule XML message and save it to the file system.

Before using the spreadsheet, make sure that you make the following setting:

The tool uses Excel macros for many of its functions. For the tool to function properly, the macros in the spreadsheet need to be enabled. There are several ways to achieve this. Check the security section of the Excel documentation for details. To ensure that the converter always opens in update mode having the macros enabled please in MS-Excel go to File -> Options -> Trust center -> Trust center settings -> Trusted locations. Then add the directory containing the FCR Portfolio Converter to the Trusted locations.

If you do not make this setting, the converter is not able to function properly.

The worksheet is "protected" to prevent users from unintentionally editing cells that are not supposed to be modified directly. If, for some reason, the protection needs to be removed, right/click on the worksheet tab and choose Unprotect Sheet... (Dutch: "Beveiliging blad opheffen..."). The password remains empty.

Note that if the protection is removed, you should not modify the gray cells in the fixed part of the sheets, since that may affect the correct functioning of the converter tool. Furthermore, if the Allocation Deficit columns of the PTU Schedule are modified, the automatic calculation is removed.

The ENTSO-E message definition for the allocation message requires all time elements in the message to be specified in UTC. All time elements in the PTU Schedule are based on the delivery date and the PTU sequences. The export of the PTU Schedule calculates the UTC values for the PTU ranges.

3. Basic PTU structure

The PTU schedule provides means to specify a Planned Resource Schedule for one delivery day in a single worksheet.

- One worksheet for one delivery day of a Resource Provider's acquired FCR

This daily schedule contains all time series at the PTU level of 15 minutes per PTU. A PTU series is defined by a column pair (Volume/Droop) in the PTU table of the worksheet. It reflects the schedule for a Resource Object (production unit) for a specific Direction (either up, down or both up and down). The FCR in these PTU series is either acquired by the Resource Provider on the auction platform, or it is supplied on behalf of another Resource Provider that acquired it on the auction platform, but is unable to deliver.

- One PTU series per Resource Object in one of the three Direction options (up, down, up and down)

The tool supports two special types of PTU series in case of transfer of volumes;

1. The Original Resource Provider has to transfer its volumes symmetrically (direction "Up and down").
2. The Substitute Resource provider may allocate the received volumes in all allowed directions, but the total allocated volume in the portfolio has to be symmetrical (volume "Up" = volume "Down").

Unavailable FCR NOT transferred (the Resource Provider cannot fulfill its obligation to deliver).

- PTU series might not be allocated to a Resource Object. These may or may not be transferred to a Substitute Resource Provider.
- Examples of filled out Excel-spreadsheets are given in chapter 6.

4. Usage

4.1 What's new?

Version 3.0.0 implements the following changes to the FCR Portfolio Converter:

- Adaptation to the 4h block auctions as per July 1st 2020. The transfer of the auction volumes towards the PTUs follows the rules set by Regelleistung.net, which means that the first 4h-block may contain 16, 12 or 20 PTUs depending on the clock change.
- Extra column (A): Auction Volume. This volume is synchronized with the Auction Volumes specification in the upper right corner of the worksheet.
- Placement of controls (export, import and validation) to the upper left of the worksheet.
- The XML export is generated with a fixed resolution of PT15M.
- Checks that were related to cell-properties of Excel have been transferred to VB-code

Some Reminders:

- The first 13 rows of the worksheet contain data that, when changed, may have huge implications for all rows starting at 16 and higher. This means that a lot of validations have to be performed when any changes are made to the first 13 rows. As a consequence performance may have suffered a little when changes are made to these rows, but mind that this is to ensure integrity of the whole worksheet.
- Rows 16 and higher require a validation that is tied to the range that is being changed. When performing large range cut and paste operations the user will require some patience for the validations to complete.

4.2 PTU Schedule

The figure below shows the PTU-schedule worksheet of the FCR Portfolio Converter. The elements are described in the following paragraphs.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
1	FCR Portfolio											4 hour block	1	2	3	4	5	6	
2	Version 3.0.0				Resource Provider EIC	11XRES-PROV1---1							Auction	MW	MW	MW	MW	MW	
3					Document ID	8FA7CA7A3B814AE8B6E561A88981C05C							Auction 1	16	17	15	17	16	
4					Portfolio version	1							Fall Back Auction	10	10	10	10	10	
5					Delivery day	2-6-2020		PTU's		96				Total	26	27	25	27	26
6					UTC interval	2020-06-01T22:00Z/2020-06-02T22:00Z													
7																			
8				PTU's		dinsdag 2 juni 2020													
9					Unit (internal reference)	87000000000000000016		87000000000000000023		87000000000000000030		87000000000000000032							
10	✓ All validations			Active	Original Resource Provider (supplied on behalf of ...)							11XRES-PROV1---6							
11	Export portfolio		Import XML		Substitute Resource Provider (transferred to ...)							11XRES-PROV1---4							
12					Resource Object EAN (empty if transferred)	87000000000000000016		87000000000000000023		87000000000000000030		87000000000000000032							
13					Direction (Up / Down / Up and down)	Up		Down		Up and down		Up and down		Up and down					
14	Auction Volume	Symmetry of substitution	Allocation Deficit (calculated)		Qualified for ... MW (for visual validation)		20		12		15		10		10				
15		Asymmetry	Up	Down	PTU	Volume	Droop	Volume	Droop	Volume	Droop	Volume	Droop	Volume	Droop	Volume	Droop	Volume	
16	26	0	0	-1	1	12	10,0%	12	8,3%	11	6,0%	0	4,0%	4	0,0%				
17	26	0	0	0	2	12	10,0%	10	8,3%	10	6,0%	0	4,0%	4	0,0%				
18	26	0	0	0	3	12	10,0%	12	8,3%	11	6,0%	0	4,0%	4	0,0%				
19	26	0	0	0	4	12	10,0%	12	8,3%	11	6,0%	5	4,0%	3	0,0%				
20	26	0	0	0	5	12	10,0%	12	8,3%	13	6,0%	5	4,0%	1	0,0%				
21	26	0	0	0	6	12	10,0%	12	8,3%	11	6,0%	0	4,0%	3	0,0%				
22	26	0	0	0	7	12	10,0%	12	8,3%	11	6,0%	0	4,0%	3	0,0%				
23	26	0	0	0	8	12	10,0%	12	8,3%	11	6,0%	0	4,0%	3	0,0%				
24	26	0	0	0	9	12	10,0%	12	8,3%	11	6,0%	0	4,0%	3	0,0%				
25	26	0	0	0	10	12	10,0%	12	8,3%	11	6,0%	0	4,0%	3	0,0%				
26	26	0	0	0	11	12	10,0%	12	8,3%	11	6,0%	0	4,0%	3	0,0%				
27	26	0	0	0	12	12	10,0%	12	8,3%	11	6,0%	0	4,0%	3	0,0%				
28	26	0	0	0	13	12	10,0%	12	8,3%	11	6,0%	0	4,0%	3	0,0%				
29	26	0	0	0	14	12	10,0%	12	8,3%	11	6,0%	0	4,0%	3	0,0%				

4.2.1 Header information

Resource Provider EIC contains the EIC of the party (Resource Provider) that sends in the allocation message to TenneT.

Document ID is a unique code for the resource provider's portfolio for a specific delivery day. Each subsequent portfolio version shall use the same Document ID. The maximum length of this element is 35 (alphanumeric) characters.

Tip: Make sure that the Document ID is empty before exporting version 1. The export will then generate a new Document ID and modifies the worksheet accordingly, so that any subsequent portfolio versions will use it (as according to the ENTSO-E message specifications).

Portfolio version is a sequence number for identifying changes in a Planned Resource Schedule, starting at version 1. Each subsequent Portfolio version may contain multiple changes compared to the previous Portfolio version. Note that subsequent Portfolio versions must use the same Document ID as all previous versions of the same schedule. Values 'in the past' should not be changed.

Delivery day contains the date of the day that the FCR allocated in the schedule will be delivered (the operational date). The date has the format d-m-yyyy.

After entering the date, the tool calculates the number of PTU's (92, 96 or 100, depending on the daylight savings transitions), the UTC Interval for the day in XML-format and UTC time (this date is used as an AgreementIdentification in the XML message). Do not modify these calculated elements, because that will affect the proper functioning of the tool.

4.2.2 Auction table

In the auction table on the top right of the PTU Schedule worksheet, the FCR quantities that the Resource Provider acquired at the specific auctions is entered in MW per 4h-block. The calculated Total is used by the tool to determine the Unavailable quantities in the PTU table underneath. The quantities in the auction table are synchronized with the "Auction Volume"-column (A). Keep in mind that in situations of clock-change the first 4h block may count 12, or 20 PTUs of 15 minutes instead of 16.

4.2.3 PTU table structure

The PTU table reflects the allocations of the FCR in time series. The Header rows mainly specify to which units the acquired FCR is allocated. Each column pair signifies a time series containing the allocation details for (part of) the acquired FCR.

The detail part of the PTU table is based on the PTU's of the delivery day.

4.2.4 PTU table Header

Unit provides an extra reference for the user. This element is not used by the background functions of the tool in any way. You may enter an asset name for the production unit or a special indication in case of a time series that specifies transferred FCR.

Original Resource Provider is an optional element that indicates that the allocation in the column pair signifies FCR that you are going to supply on behalf of another Resource Provider. If this header cell contains the EIC code of a Resource Provider, the Volumes are ignored by the calculation of the Allocation Deficit column pair. If an Original Resource Provider is specified, the Substitute Resource Provider cannot be specified and vice versa. Volumes that are allocated on behalf of other Resource Providers may be allocated as wished, however the total volume of the allocations on behalf of other Resource Providers must be symmetrical (total volume "Up" on behalf equals total volume "Down" on behalf).

Substitute Resource Provider is another optional element. It indicates that the FCR that is specified in the respective column, is transferred to the Resource Provider that is specified here. Consequently there is no Resource Object that you allocate these volumes to, neither should you specify the droop ratio's for this time series. If specified nonetheless, these are ignored. If an Original Resource Provider is specified, the Substitute Resource Provider cannot be specified and vice versa. When a Substitute Resource Provider is specified, the only direction acceptable will be "Up and Down" as a transfer to a Substitute Resource Provider has to be symmetrical.

Resource Object EAN contains the EAN of the Resource Object with which the volumes in this time series are going to be supplied. If it is not specified if the volumes are transferred to a Substitute Resource Provider.

Direction allows for a distinct allocation of the up and down parts of the acquired FCR. The total is always both up and down; the allocation allows for a distinction between the two. The Direction may be either "Up", "Down" or "Up and down". The calculation of the Unavailable columns depends on this element.

Qualified for ... MW is not used by the export function of the tool. This maximum quantity for the Resource Object is merely used to provide a visual signal when an allocation (volume) exceeds it.

4.2.5 PTU table Details

The Allocation Deficit columns are automatically calculated, based upon the Total acquired MW in the Auction table. Per PTU the volumes in the time series to the right are subtracted from the total. Allocations planned on behalf of another Resource Provider are ignored in the calculation.

If some of the total remains (so part of the acquired volume has not been allocated), the cell turns orange and the allocation deficit will be positive. If the allocations exceed the total, the allocation deficit will be negative and the cell turns red. The export will create Unavailable time series for the orange cells.

The PTU column contains sequence numbers for all consecutive 15 minute intervals of the delivery day. The table allows for 100 rows to be used. However, depending on the daylight savings transitions, the unused rows are grayed out.

The Volume columns contain the quantity of FCR in MW that is allocated to a Resource Object or transferred to a Substitute Resource Provider ¹for the respective PTU. If it exceeds the "Qualified for" value in row 14,

¹ Transfer of obligation can only be done with symmetrical amounts.

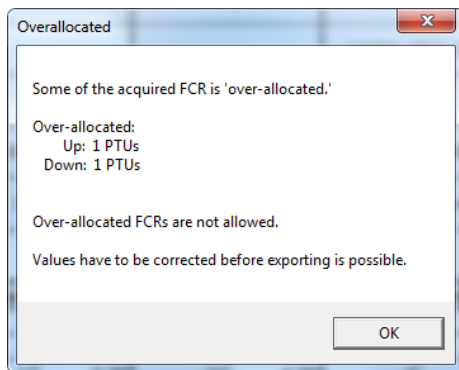
the volume cell will turn (light) red. A volume must always be greater or equal to zero and may contain one decimal at the most. Per PTU, the total allocated volume must be symmetrical and meet the total obligation (own allocation + transferred obligations + unavailability = total obligation) . Over-allocation is **not** allowed.

The Droop columns contain the droop ratio as a percentage. The cell will turn red when the value is negative. The Droop percentage may contain one decimal at the most.

4.2.6 Export button

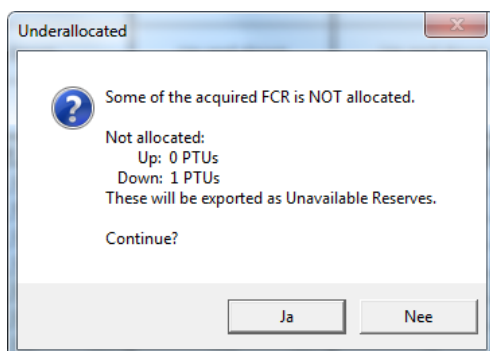
The export saves the portfolio as an ENTSO-E ERRP-Planned Resource Schedule XML message.

When the export encounters PTU's for which FCRs are not allocated or even over-allocated, a warning is shown and the export may be aborted. In case of over-allocation like shown in PTU 1 in the example in the start of paragraph 4.2, the export will trigger the following message:



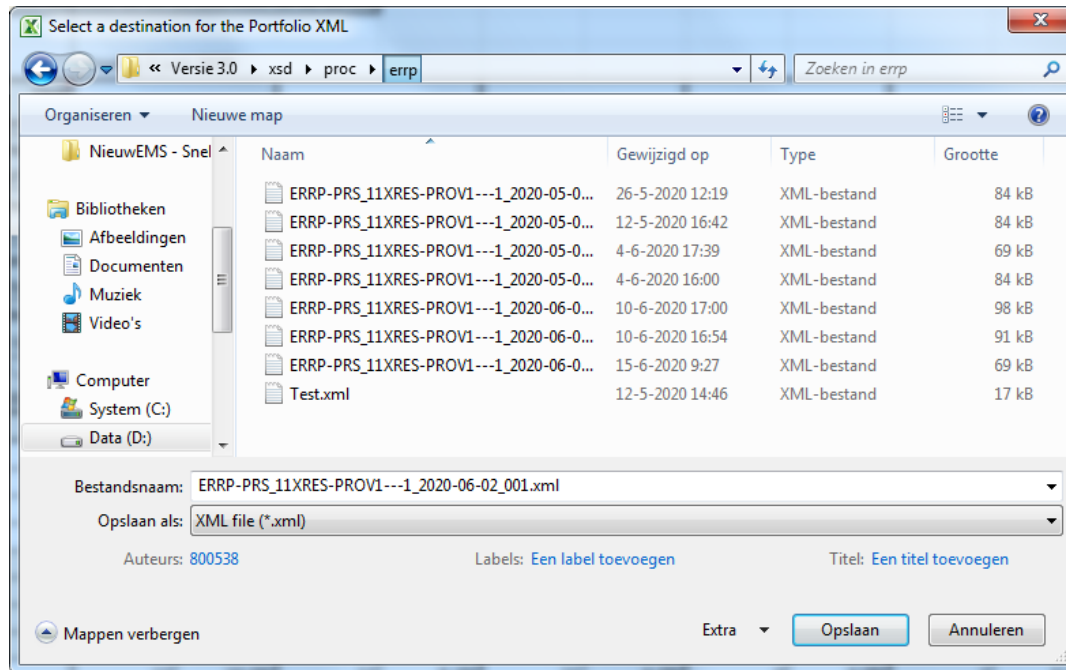
In this case an export is not allowed and activating 'OK ' will abort the export.

When this problem is solved, another issue exists: under allocation in PTU 2. This will generate the following warning:



If "NO" is activated, the export will be aborted. If "YES" is activated, the export will be generated and these under allocated PTUs will be reported as unavailable reserves (Dutch "Gemeelde niet-beschikbaarheid") in the allocation message. This means that the allocation will be accepted by TenneT and there will be no mentioning of this situation in the Acknowledgement message or Anomaly Reports.

Next, you can choose a destination folder for the XML message.

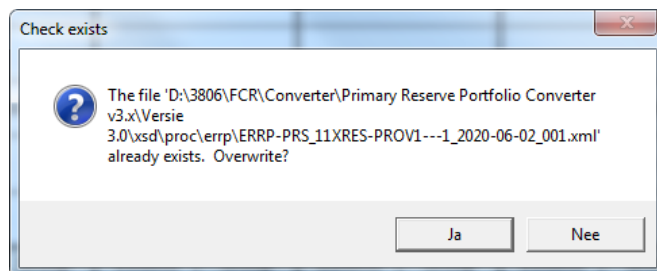


The file will be saved with a file name of the following format:

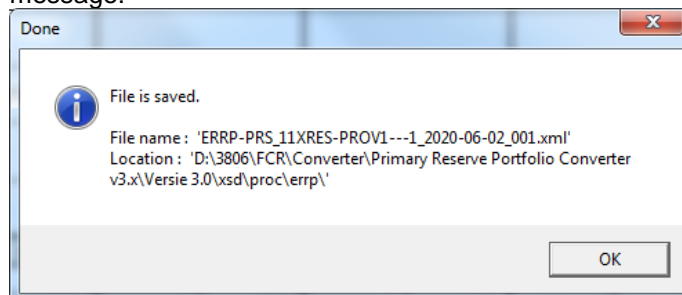
ERRP-PRS_eic_yyyy-mm-dd_vvv.xml

where eic is the EIC of the sending party, yyyy-mm-dd is the delivery date and vvv is the zero-padded portfolio version.

In case the file already exists, you will be allowed to choose an alternate name:

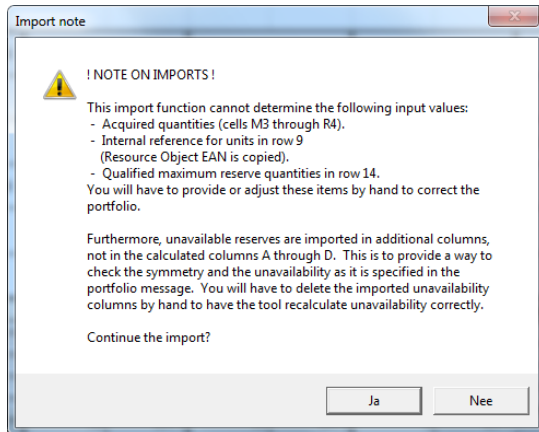


After the export finishes successfully, a message window shows the folder and filename of the saved XML message:



4.2.7 Import button

The button “Import XML” can be used to import an ERRP-PRS xml message into the PTU Schedule worksheet. Beware that the import will replace existing data in the worksheet.



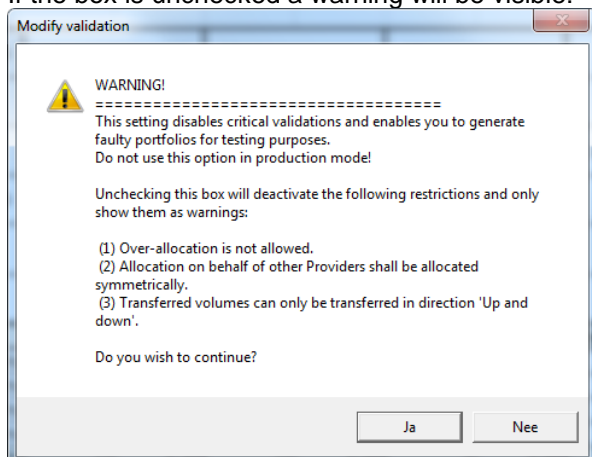
Because the allocation message does not contain all the information that the tool needs to function properly, the import starts (and ends) with an explanation of these limitations.

4.2.8 Validation checkbox

It is possible to deactivate all validation functions. Do not try to do this in a production situation! This might however be useful for testing the back end system of the BSP's message handling system. To deactivate the validations you can uncheck the validations box on the upper left of the convertor worksheet.

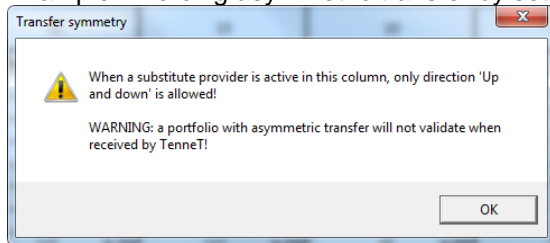
A	B	C	D
		FCR Portfolio	
Version 3.0.0			Reso
		PTU's	
			(in
			Original R
			(supplie
			Substitute R
<input checked="" type="checkbox"/> All validations		Active	

If the box is unchecked a warning will be visible:

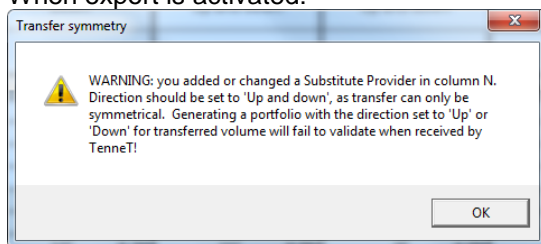


If the user tries to export to XML deliberately bypassing validations, a proper warning will follow:

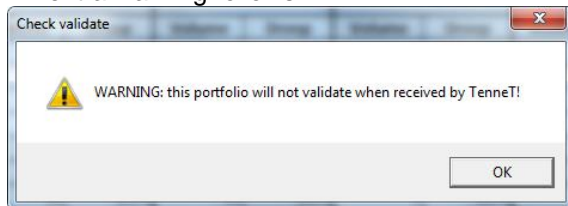
Example 1: forcing asymmetric transfer by setting the transfer direction to "Up" or "Down":



When export is activated:

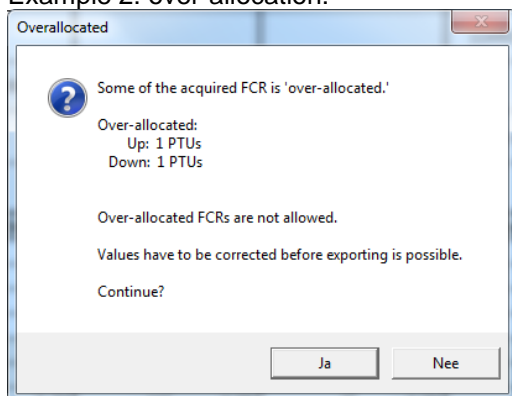


An extra warning follows:

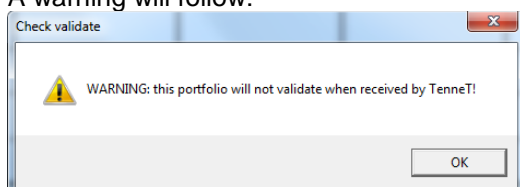


And the export will be generated.

Example 2: over-allocation:



A warning will follow:



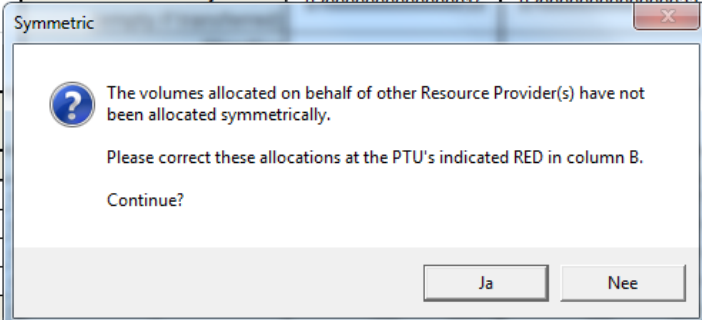
And the export will be generated.

Example 3: asymmetrical allocation of volumes that are allocated on behalf of other 'Original' Resource Provider(s):

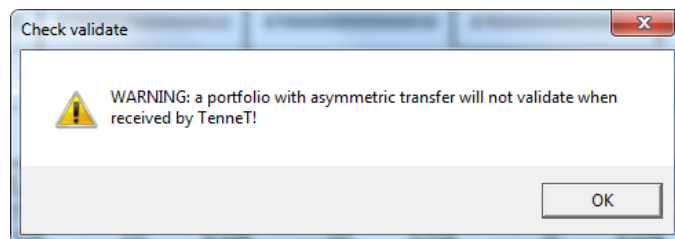
<input type="checkbox"/> All validations		Inactive	(internal reference)		8700000000000000016	8700000000000000023
Export portfolio		Import XML	Original Resource Provider (supplied on behalf of ...)			
			Substitute Resource Provider (transferred to ...)			
			Resource Object EAN		8700000000000000016	8700000000000000023

Auction Volume	Symmetry of substitution	Allocation Deficit (calculated)	
	Asymmetry	Up	Down
26	0	0	
26	0	0	
26	-5	0	
26	-5	0	
26	-5	0	
26	0	0	

0	6	12	10,0%	12	8,3%
---	---	----	-------	----	------



Activation "YES" will lead to an extra warning:



And the export will be generated.

Important remark:

If the checkbox for the validation is activated again, please manually correct any direction other than "Up and down" for transferred volume towards a substitute provider (if applicable) as this may lead to blocking the export later.

5. Special behavior

5.1 General

1. The schedule worksheets are "protected". This prevents making unintended changes to cells with special functions. No password is used for the protection, so users can unprotect the sheets.
2. Removing the protection and modifying the initially protected cells may produce unpredictable results.
3. When closing the spreadsheet, you may be asked if you want the changes to be saved, even if you did not change anything. This behavior is a result of a mechanism that is implemented to keep the calculated elements synchronized.
4. Transfer of obligation can only be done with symmetrical amounts. Transfer of obligation can be done on steps of 0,1 MW (100kW) and with a minimum of 0,1 MW (100kW). When a Substitute Resource Provider is filled out, only "Up and down" can be chosen in the cell direction.

5.2 PTU Schedule

1. For the PTU schedule, the tool will automatically export not allocated volumes (from the Unavailable columns) as Unavailable Reserves Time Series. The tool will only generate Direction = Up or Direction = Down; never Direction = Up and down. Note that this results in reported non-availability (Dutch "Gemelde niet-beschikbaarheid") and is accepted without notice by TenneT. There will be no mentioning of this situation in the Acknowledgement message or in Anomaly Reports.
2. Over-allocated PTU's (negative Unavailable) are **not** allowed.
3. Imports will overwrite any existing data in the worksheet.

6. Examples transfer of obligation

Portfolio before transfer Recourceprovider 1 and 2

Resourceprovider 1:

FCR Portfolio										4 hour block											
Version 3.0.0						Resource Provider EIC				11XRES-PROV1---1				Auction		1	2	3	4	5	6
						Document ID				8FA7CA7A38B14AE886E561A8B981C05C				Auction 1		MW	MW	MW	MW	MW	MW
						Portfolio version				1				Auction 1		24	18	23	17	22	19
						Delivery day				2-6-2020 PTU's 96				Fall Back Auction		10	10	10	10	10	10
						UTC Interval				2020-06-01T22:00Z/2020-06-02T22:00Z				Total		34	28	33	27	32	29

Portfolio after RP1 → 14 MW / 10MW → RP2

Resourceprovider 1

Version 3.0.0

Resource Provider ID

Document ID

Portfolio version

Delivery day

UTC interval

11XRES-PROV1--1

BFAZFA18B1448B561ABBB1C0C

1

2-6-2020

PTU's

96

2020-06-01T12:00Z-2020-06-02T12:00Z

4 hour block

1

2

3

4

5

6

Auction

Auction 1

Fall Back Auction

Total

MW

MW

MW

MW

MW

MW

24

18

23

17

22

15

30

30

30

30

30

30

34

28

33

27

32

25

PTU's

dinsdag 2 juni 2020

All validations

Active

Export portfolio

Import XML

Unit

Original Resource Provider

Substitute Resource Provider

Resource Object EAN

Direction

Qualified for -- MW

(internal reference)

(supplied on behalf of ...)

(transferred to ...)

(empty if transferred)

(Up / Down / Up and down)

(for visual validation)

Asset 1

Asset 2

Asset 3

11XRES-PROV1--2

Up

Down

Up and down

Up and down

35

40

35

Resourceprovider 2

Version 3.0.0

Resource Provider EIC

Document ID

Portfolio version

Delivery day

UTC interval

11XRES-PROV1--2

8FATCA3AB8A48B8E5A8B8E5C

1

2-6-2020

PTU's 96

2020-06-01T22:00Z/2020-06-02T22:00Z

PTU's

dimadag 2 juni 2020

All validations

Export portfolio

Import XML

Active

Link

(internal reference)

Original Resource Provider
(supplied on behalf of ...)

Substitute Resource Provider
(transferred to ...)

Resource Object EAN
(empty if transferred)

Direction
(Up / Down / Up and down)

Qualified for ... MW
(for visual validation)

Asset 1

Asset 2

Asset 3

Asset 1

Asset 2

Asset 4

11XRES-PROV1--1

11XRES-PROV1--1

11XRES-PROV1--1

8700000000000000000018

8700000000000000000025

8700000000000000000035

8700000000000000000018

8700000000000000000025

8700000000000000000035

Up

Down

Up and down

Up

Down

Up and down

35

40

35

35

40

50

Auction Volume

Symmetry of substitution

Allocation Deficit (calculated)

PTU

Volume

Droop

Volume

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FCR Portfolio										4 hour block											
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				Document ID		PTATOTASBIAHRESEBIAASBESIDAC				Auction MW		MW		MW		MW		MW		MW	
				Portfolio version		1				Auction 1		12		10		14		0		0	
				Delivery day		2-6-2020		PTU's		Fall Back Auction		0		0		0		0		0	
				UTC Interval		2020-06-01T22:00Z/2020-06-02T22:00Z				Total		12		10		14		0		0	
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				Unit ([internal reference])		Asset 1		Asset2		Asset3											
All validations		Active		Original Resource Provider (supplied on behalf of)		Substitute Resource Provider (transferred to)		11XRES-PROV1---1													
Export portfolio		Import XML		Resource Object EAN (empty if transferred)		8700000000000000S16		8700000000000000S24		8700000000000000S344											
				Direction (Up / Down / Up and down)		Up		Down		Up and down											
Auction Volume		Symmetry of substitution		Allocation Deficit (calculated)		Qualified for ... MW (for visual validation)		35		40		35									
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