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# FRR-A uppföljning 2015

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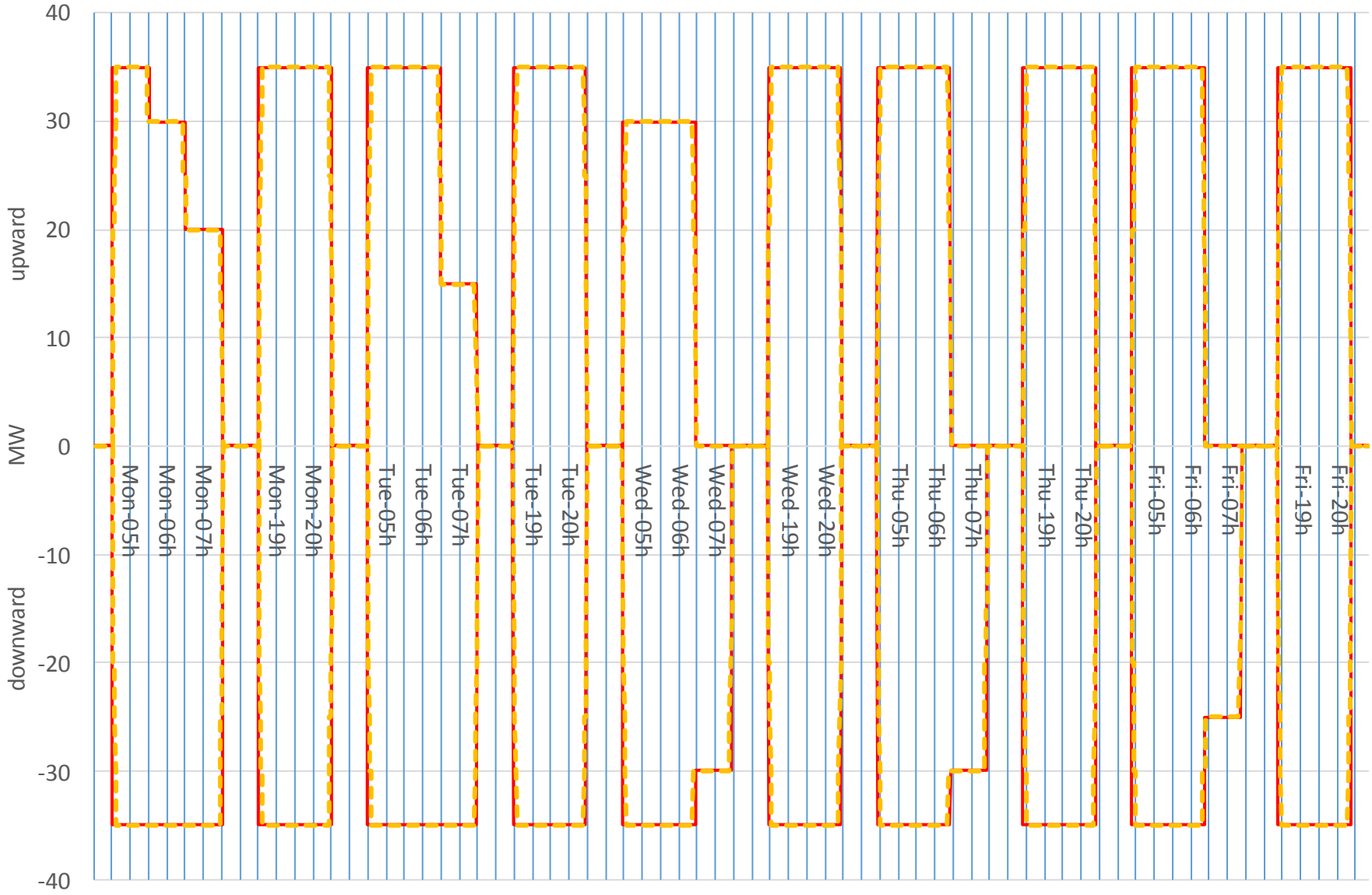


SVENSKA  
KRAFTNÄT

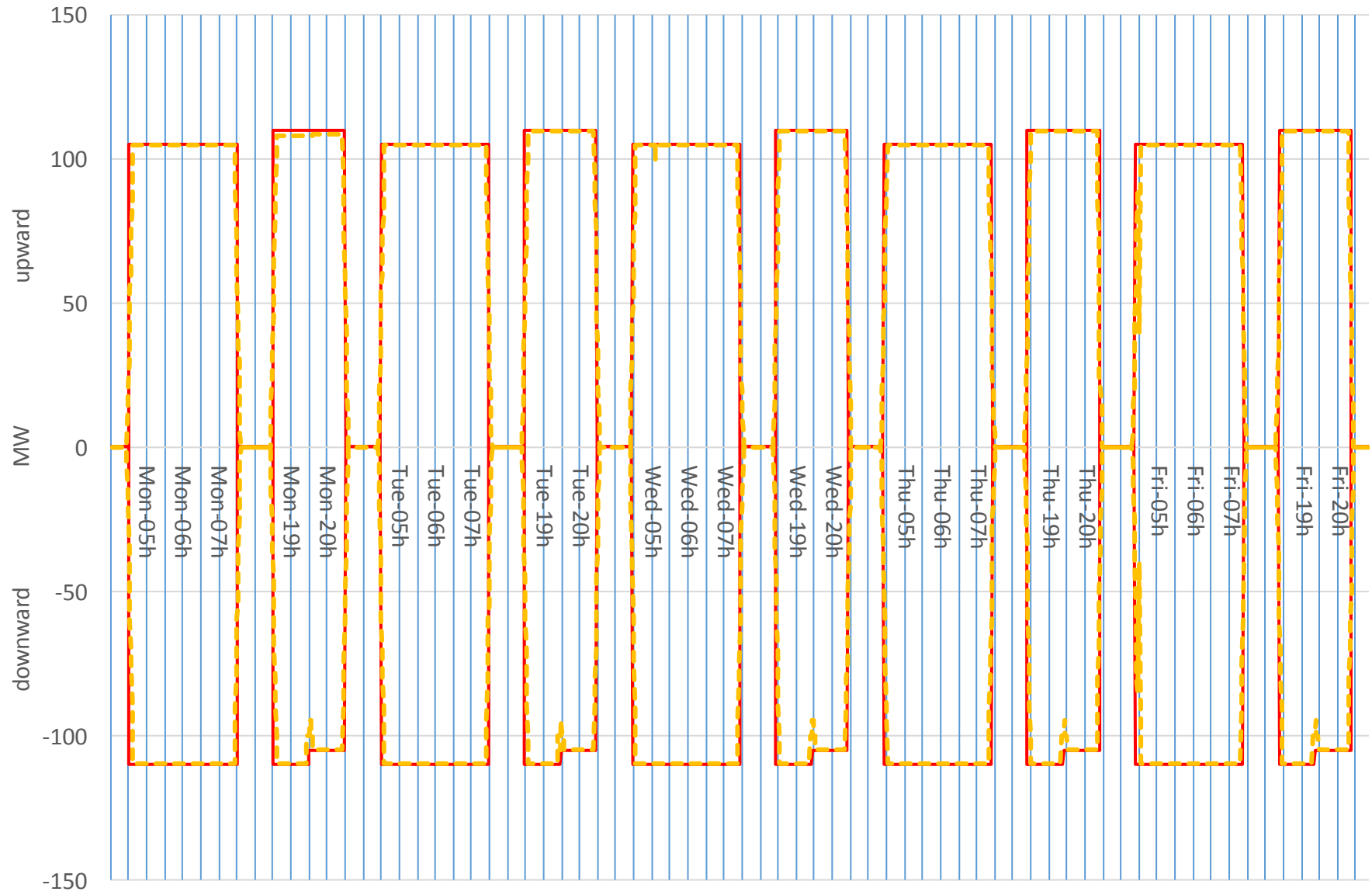
### Contracted and Available FRR-A - Denmark



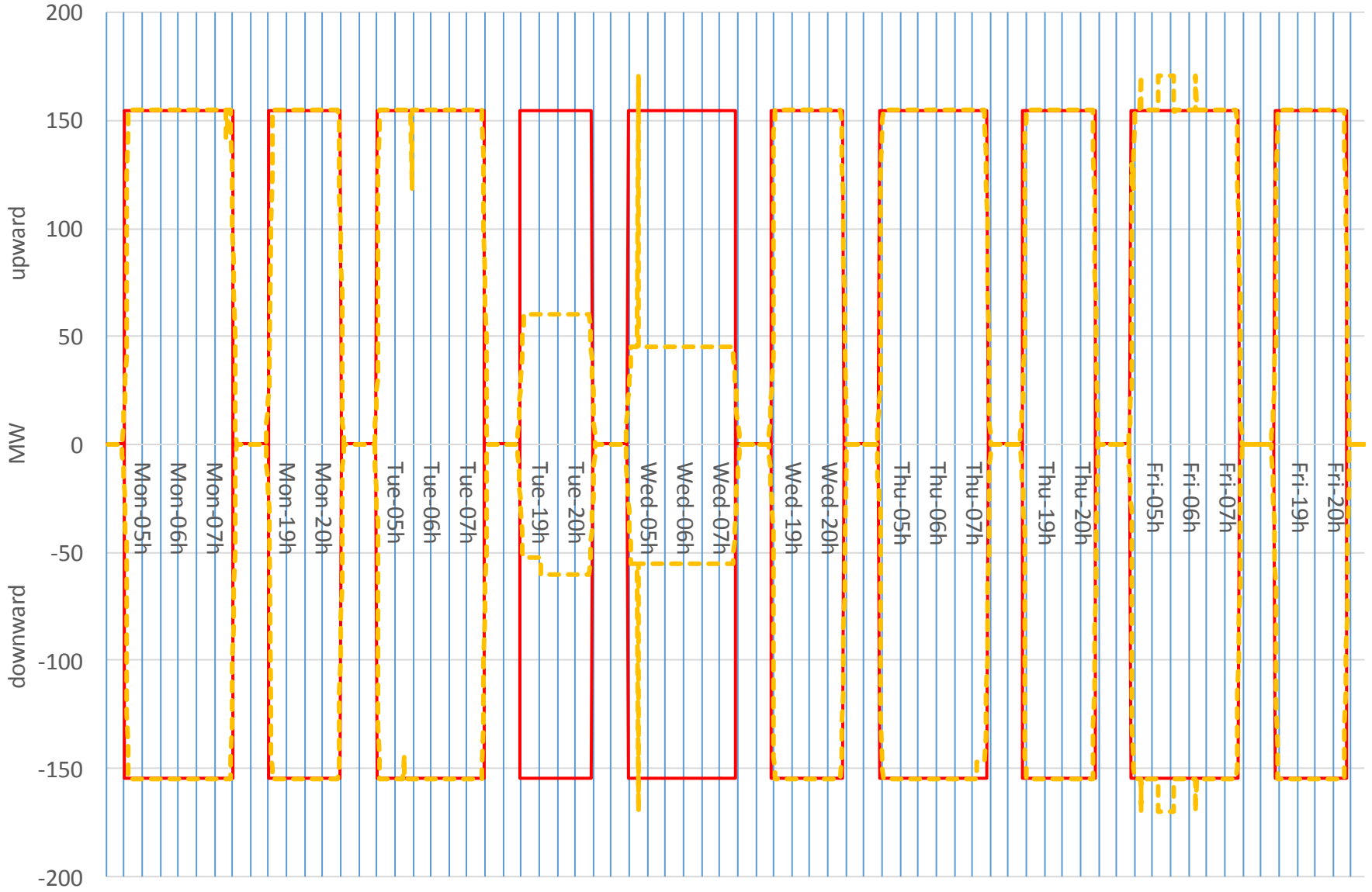
### Contracted and Available FRR-A - Finland



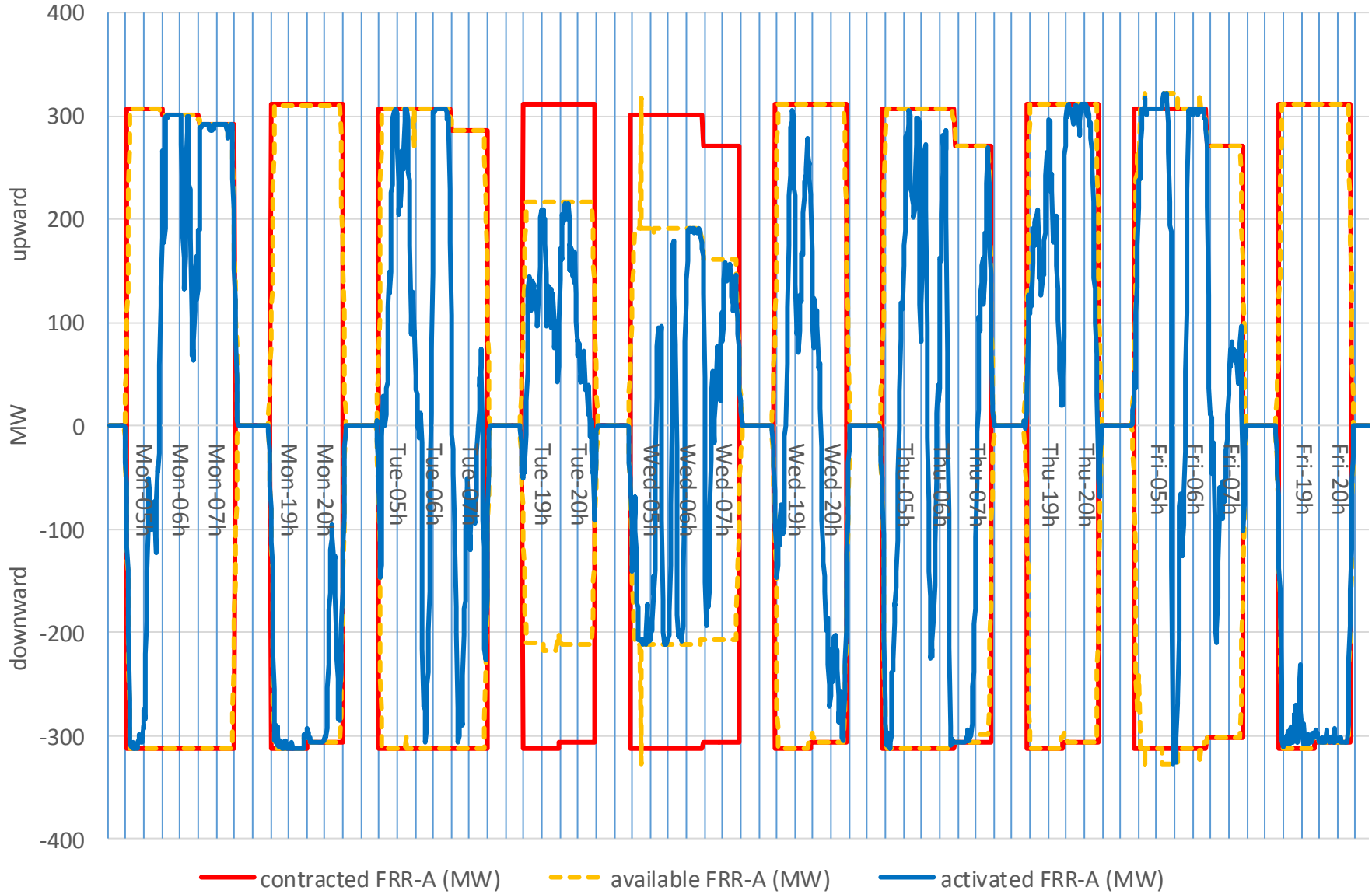
### Contracted and Available FRR-A - Norway



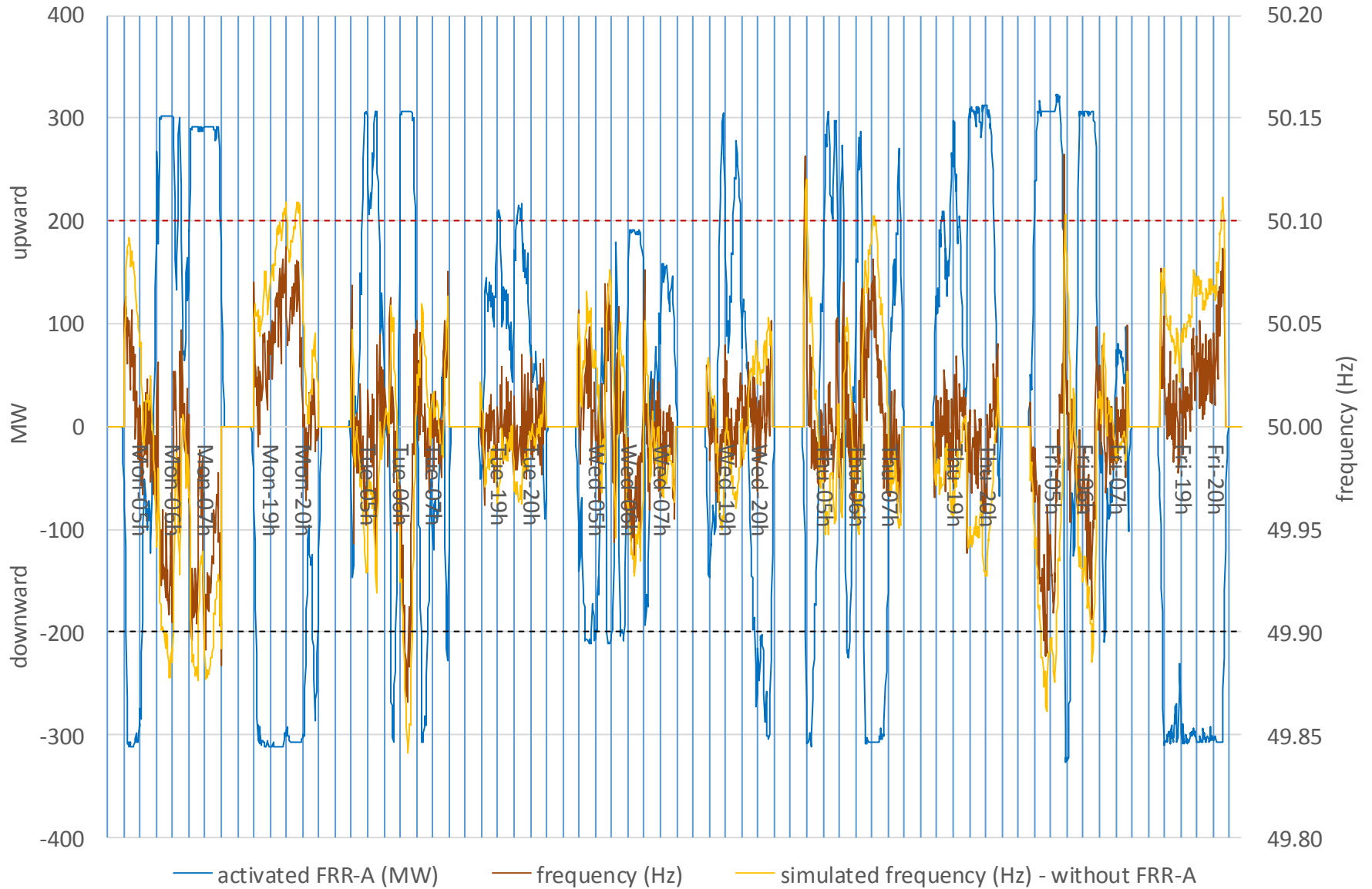
### Contracted and Available FRR-A - Sweden



### Contracted, Available and Activated FRR-A - Nordic



### Activated FRR-A and frequency - Nordic



## FRR-A statistics 2015/week 22

<i>contracted, available, activated FRR-A</i>	<b>upward</b>	<b>downward</b>	<b>combined</b>
average contracted capacity	302.8MW	310.2MW	306.5MW
average available capacity (percentage of contracted)	278.4MW (92%)	286.9MW (92%)	282.6MW (92%)
average activated capacity (percentage of available)	104.0MW (37%)	97.4MW (34%)	100.7MW (36%)

<i>minutes outside the 49.9-50.1Hz band</i>	<b>&lt;49.9Hz</b>	<b>&gt;50.1Hz</b>	<b>outside band</b>
measured frequency (% of contracting time)	18min (1.20%)	2min (0.13%)	20min (1.33%)
simulated frequency without FRR-A (% of contracting time)	96min (6.40%)	32min (2.13%)	128min (8.53%)
reduction of minutes outside band because of FRR-A	78min (5.20%)	30min (2.00%)	108min (7.20%)

<i>saturation</i>	<b>upward</b>	<b>downward</b>	<b>combined</b>
% of minutes that more than 90% of available FRR-A is activated	22%	24%	46%

<i>statistics</i>	<b>per week</b>	<b>per hour</b>
number of direction changes FRR-A activation	441	17.6
number of zero crossings	35	1.4

<i>frequency quality in periods with FRR-A capacity</i>	<b>average</b>	<b>standard deviation</b>	<b>min-max</b>
frequency in minutes that FRR-A is contracted	49.998Hz	0.036Hz	49.866-50.133Hz
frequency in minutes that less than 90% of available FRR-A is activated	50.000Hz	0.023Hz	49.884-50.133Hz
simulated frequency without FRR-A in minutes that FRR-A is contracted	49.997Hz	0.055Hz	49.841-50.120Hz

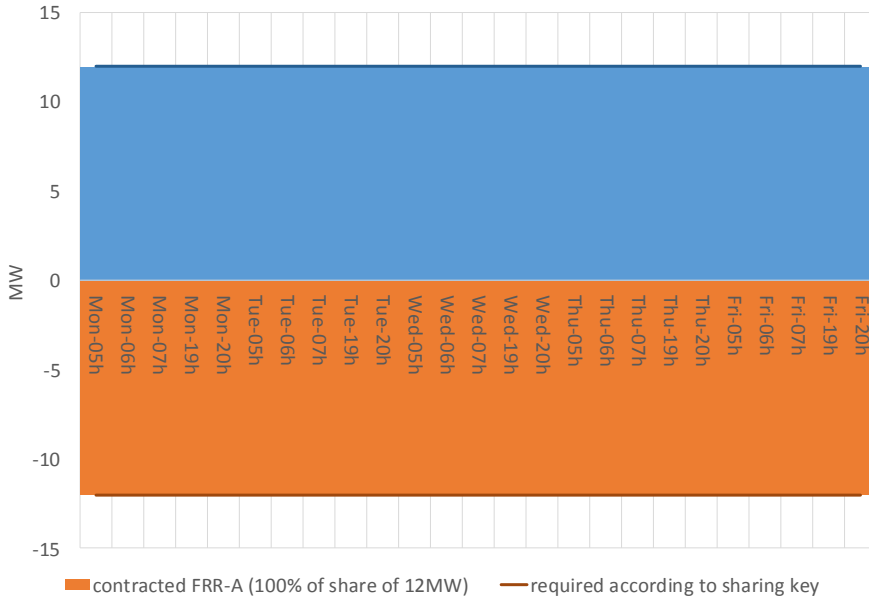


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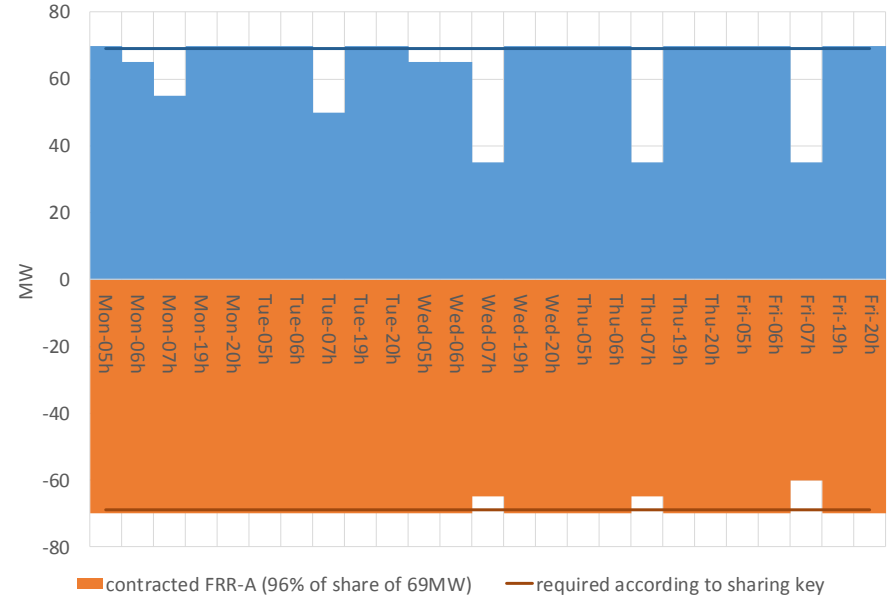
## Reducering av antal minuter utanför +/- 100 mHZ på grund av bidrag från FRR-A under 2015 vecka 3 – 22.

- > Från vecka 3 t.o.m. vecka 22 har FRR-A varit kontrakterad fem timmar per vardagsdygn.
- > Ackumulerad reduktion under perioden 1133 minuter.
- > Utanför gränserna under perioden, 4691,2 minuter
- > Mål för perioden för att klara 10000 över året, 4339,44 minuter
- > Just nu, minus 351,76 minuter

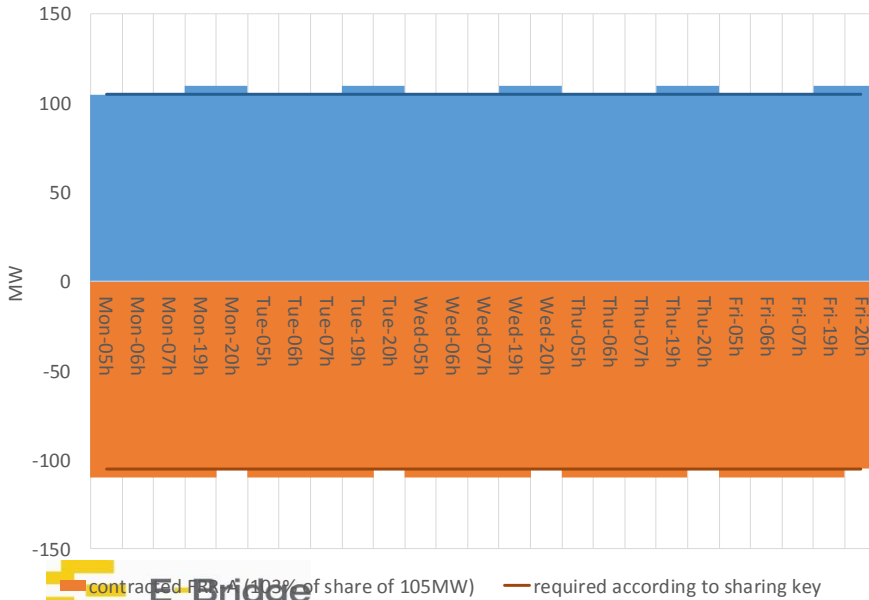
Required and Contracted<sup>1</sup> FRR-A - Energinet.dk



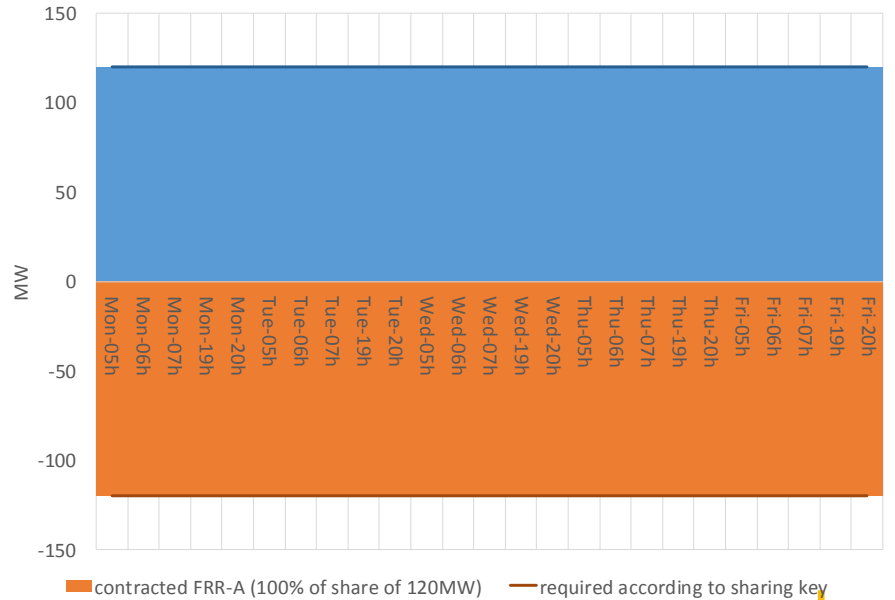
Required and Contracted FRR-A - Fingrid



Required and Contracted FRR-A - Statnett



Required and Contracted FRR-A - Svk



<sup>1</sup> Energinet.dk makes 12MW FRR-A available from the FRR-A capacity that Energinet.dk contracts in DK1