Andrew Smith

London Analytics

www.EnergyNumbers.info

Quantifying Exports and Minimising Curtailment: From 20% to 50% Wind Penetration in Denmark

- Hello
- Where
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- **Who**
- When
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“Denmark produces 20% of their electricity through wind. ”
President Barack Obama

“a recent average of 57% … is exported”
“12% of electricity” comes from wind, “but during dry years, as little as 4%”
Hugh Sharman

“Almost all of Denmark’s wind power is exported to its European neighbours”
Professor David MacKay FRS

“approx. 1% of Danish wind power has been exported”
Professor Henrik Lund

57% of wind is exported. Or 1%. “Both viewpoints are defensible”
Paul-Frederik Bach

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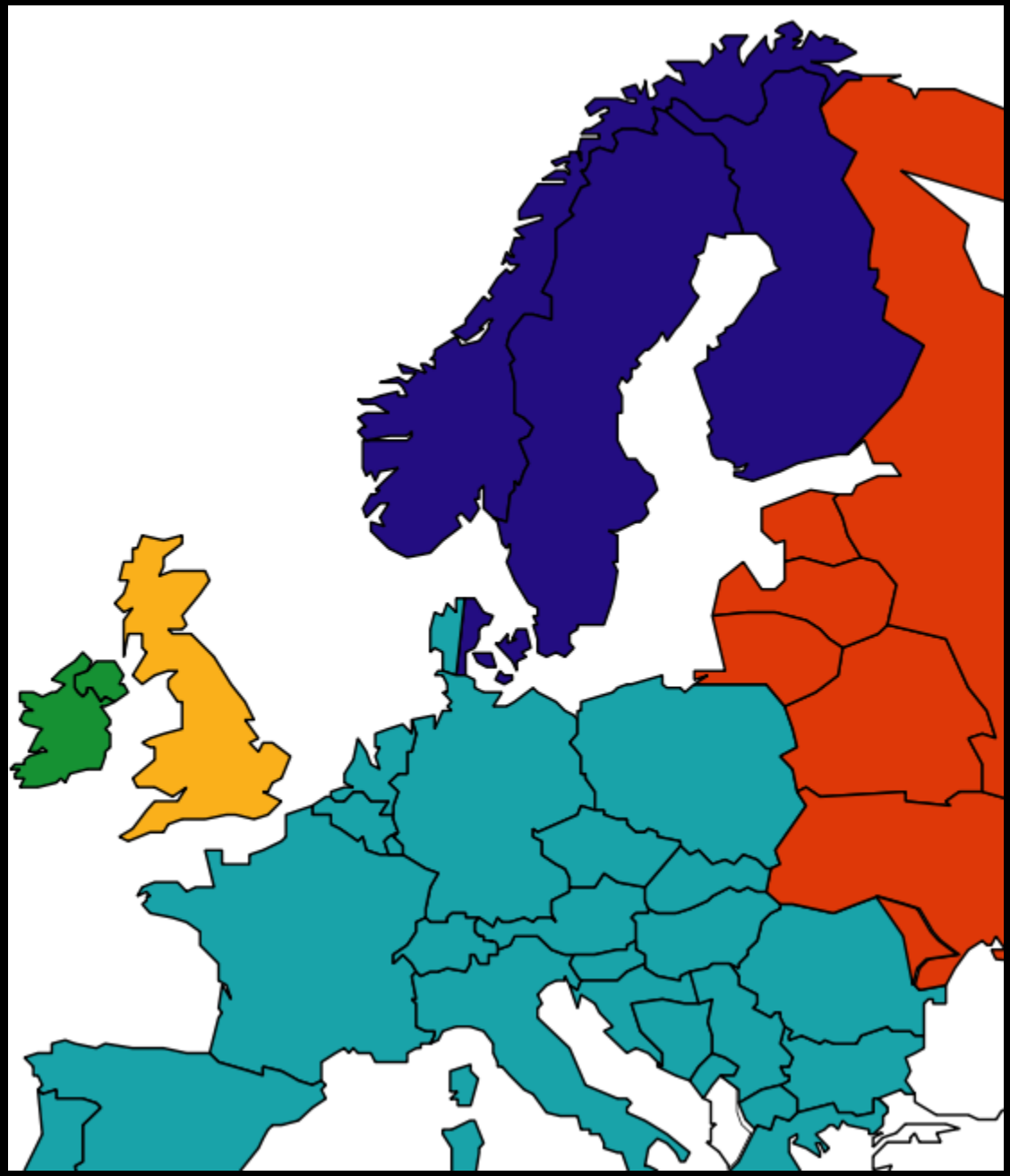

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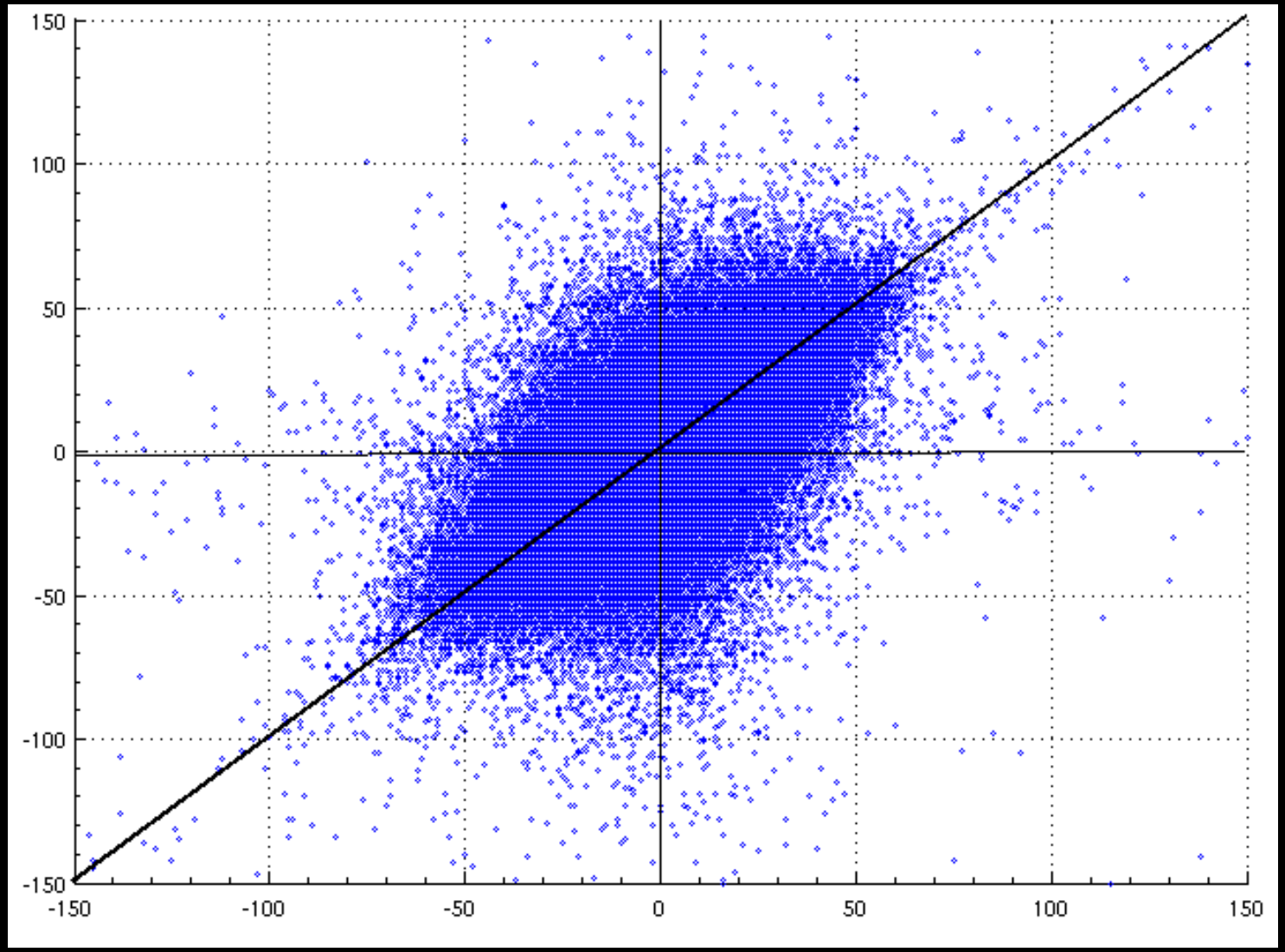

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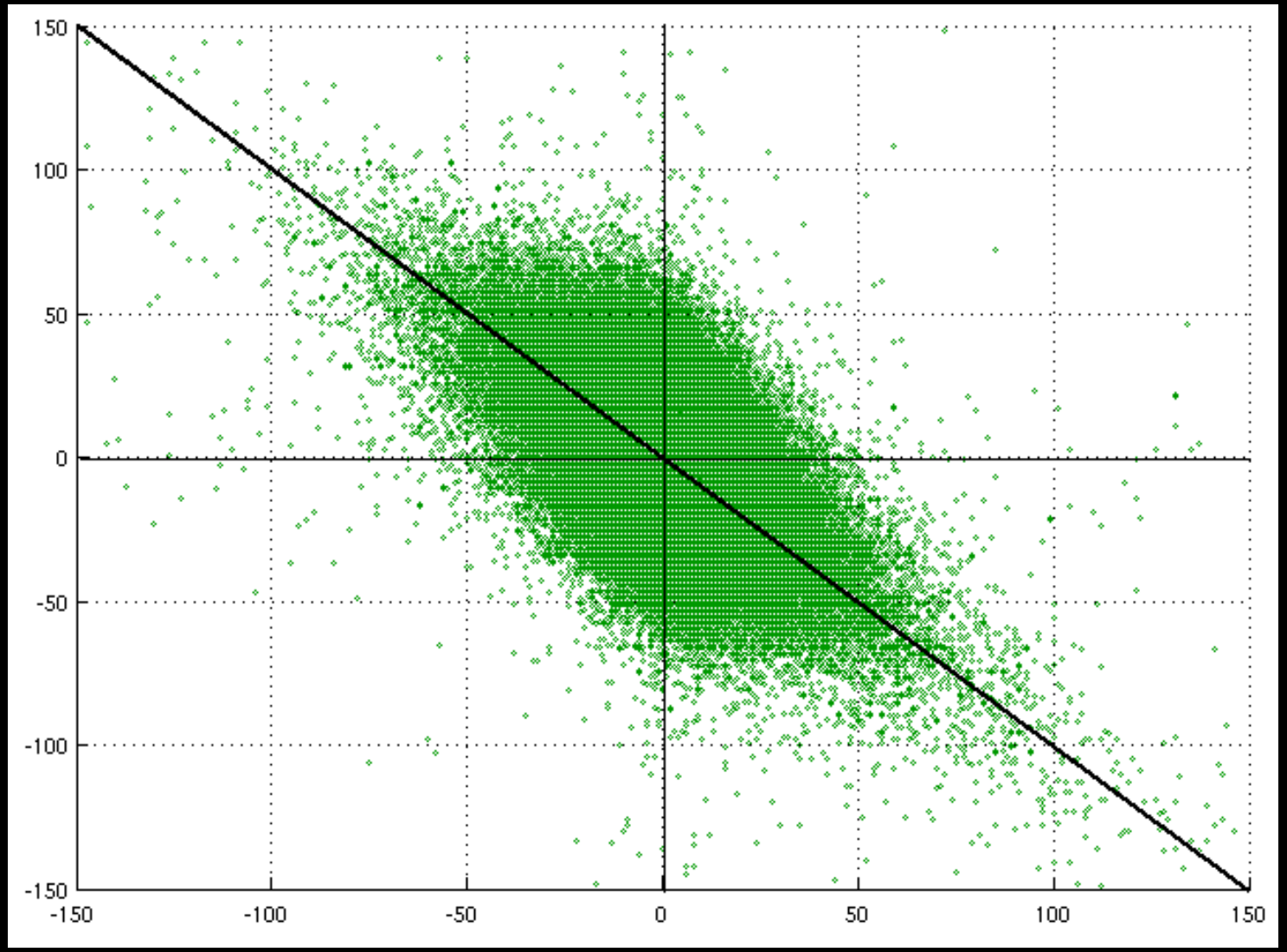

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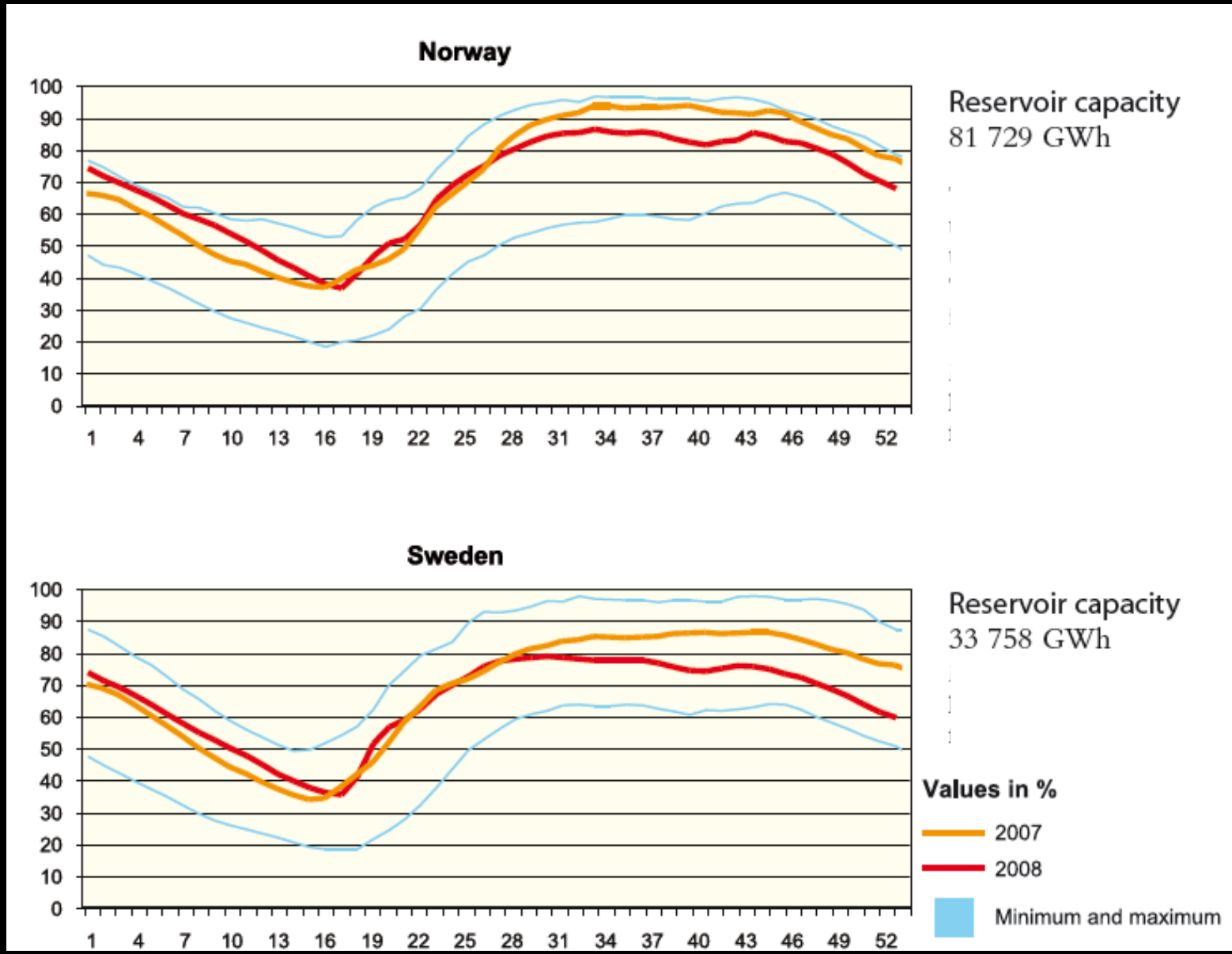

Nordel 2008 Annual report

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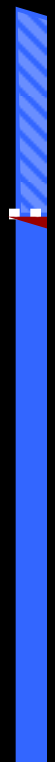
Imports



Exports

thermal

Wind

Hydro

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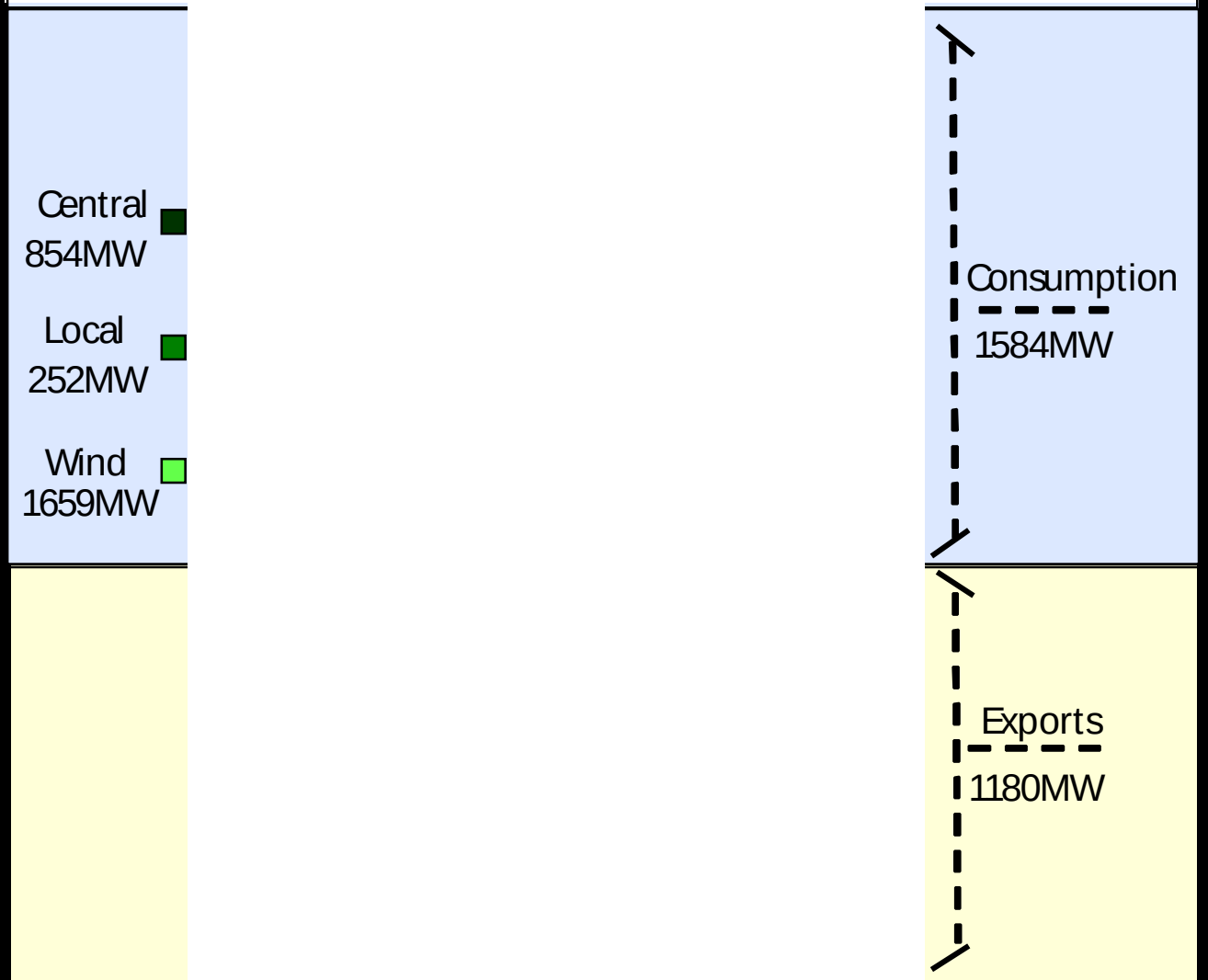
Three different ways to stack the merit order,
give three different numbers for the amount of wind exported



Power flows in Western Denmark, 03.00-04.00 on 11 October 2003

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Thank you