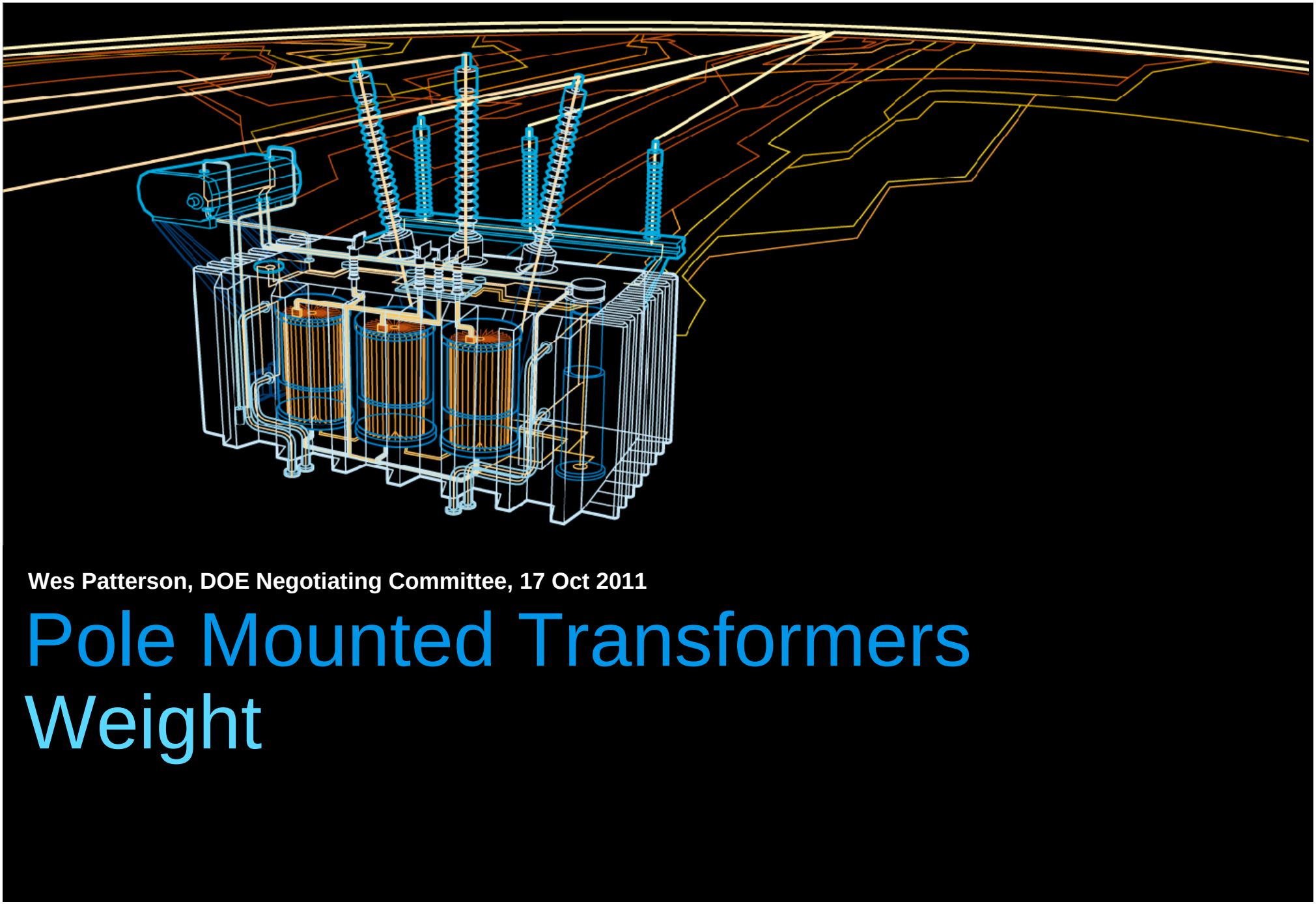
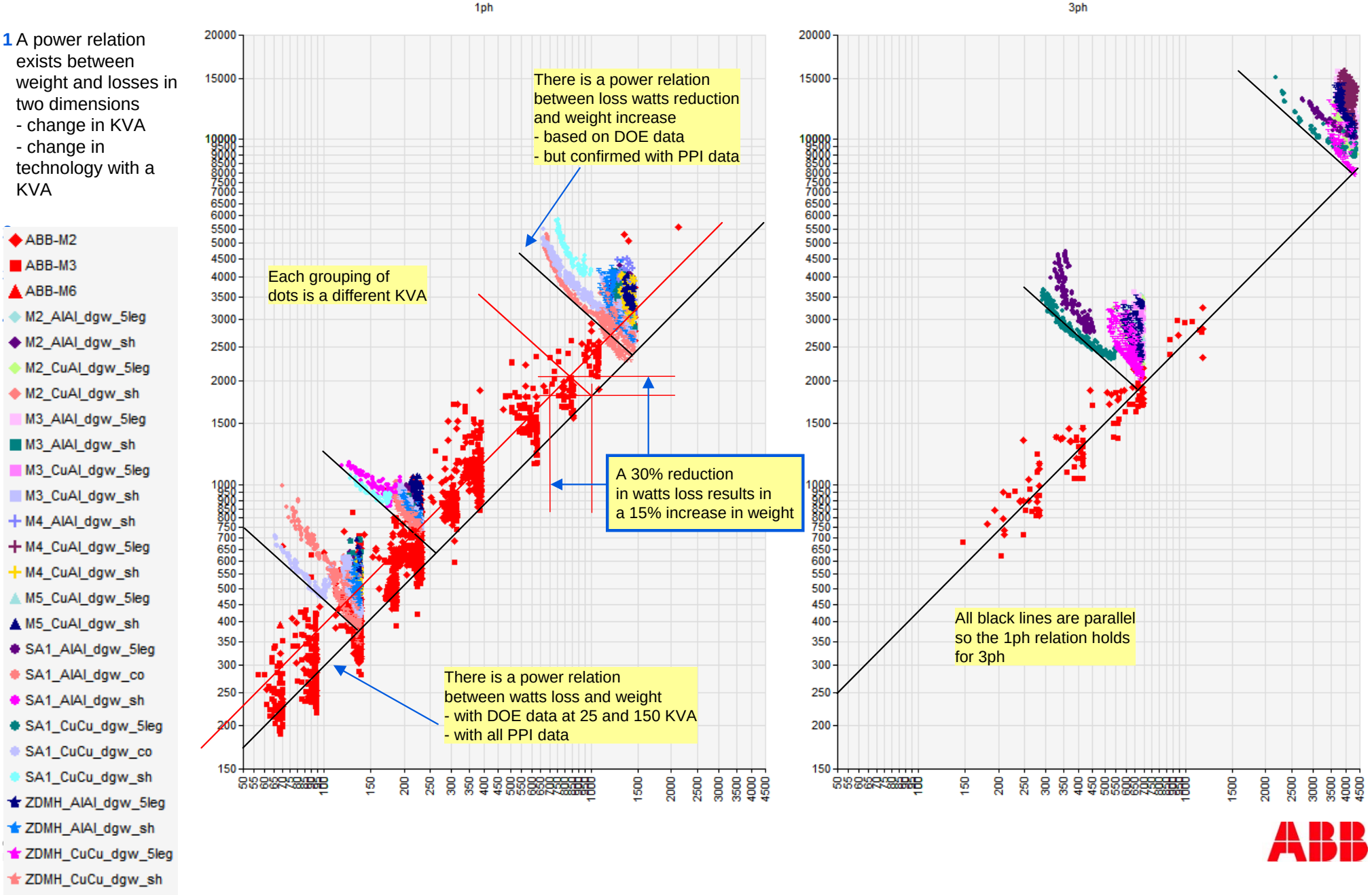


Wes Patterson, DOE Negotiating Committee, 17 Oct 2011

Pole Mounted Transformers Weight

MVLF – in-scope PPI Poles and all DOE designs (by Phase) 50% Load Total Loss (x-axis) vs Weight (y-axis)

1 A power relation exists between weight and losses in two dimensions
- change in KVA
- change in technology with a KVA



MVLF – Poles
Average Weight variation by KVA / BIL

1 Weight increase with a) increase in KVA and b) increase in BIL

2 within a given BIL rating the weight change roughly follows the ¾ scaling rule

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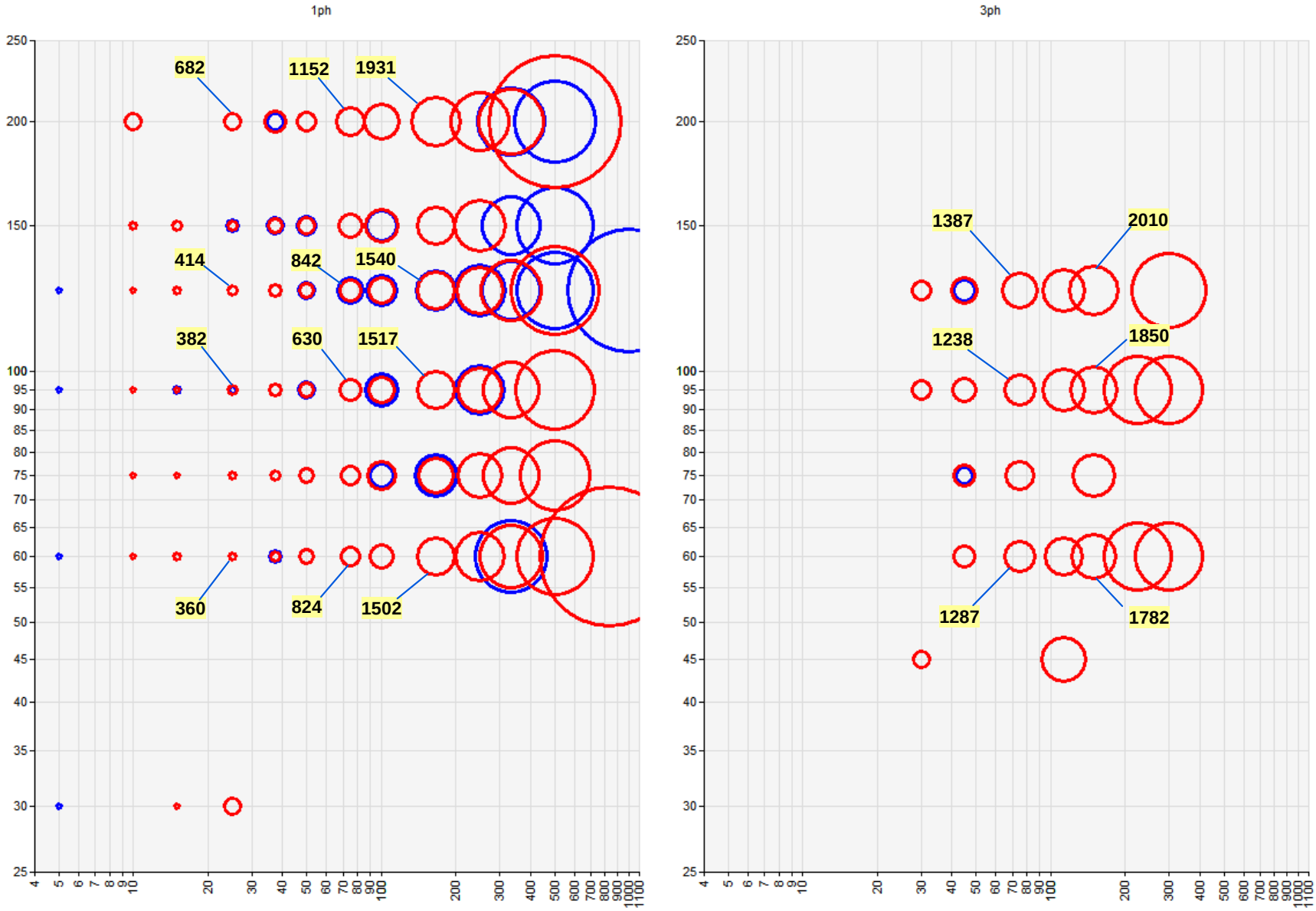


MVLF – Poles
MVA distribution (KVA x-axis, BIL y-axis, MVA bubble)

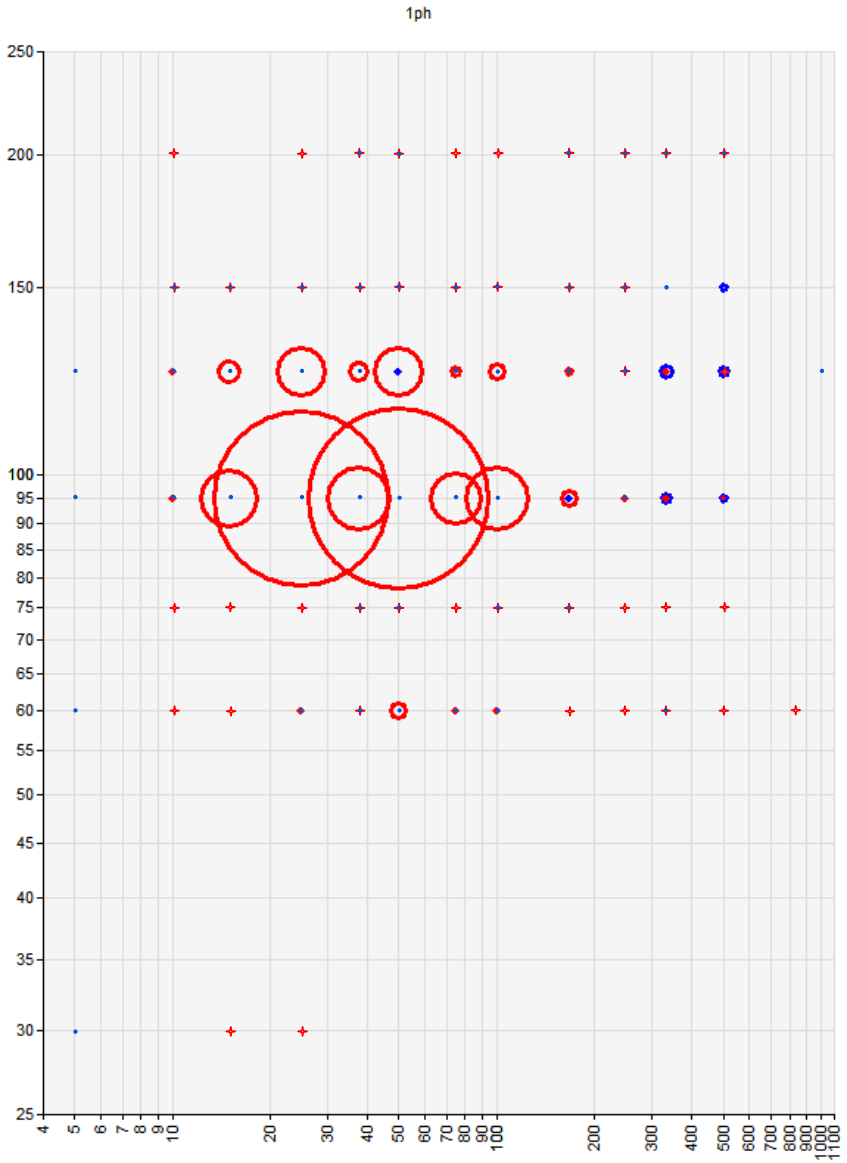
DOE Scope
NO
YES

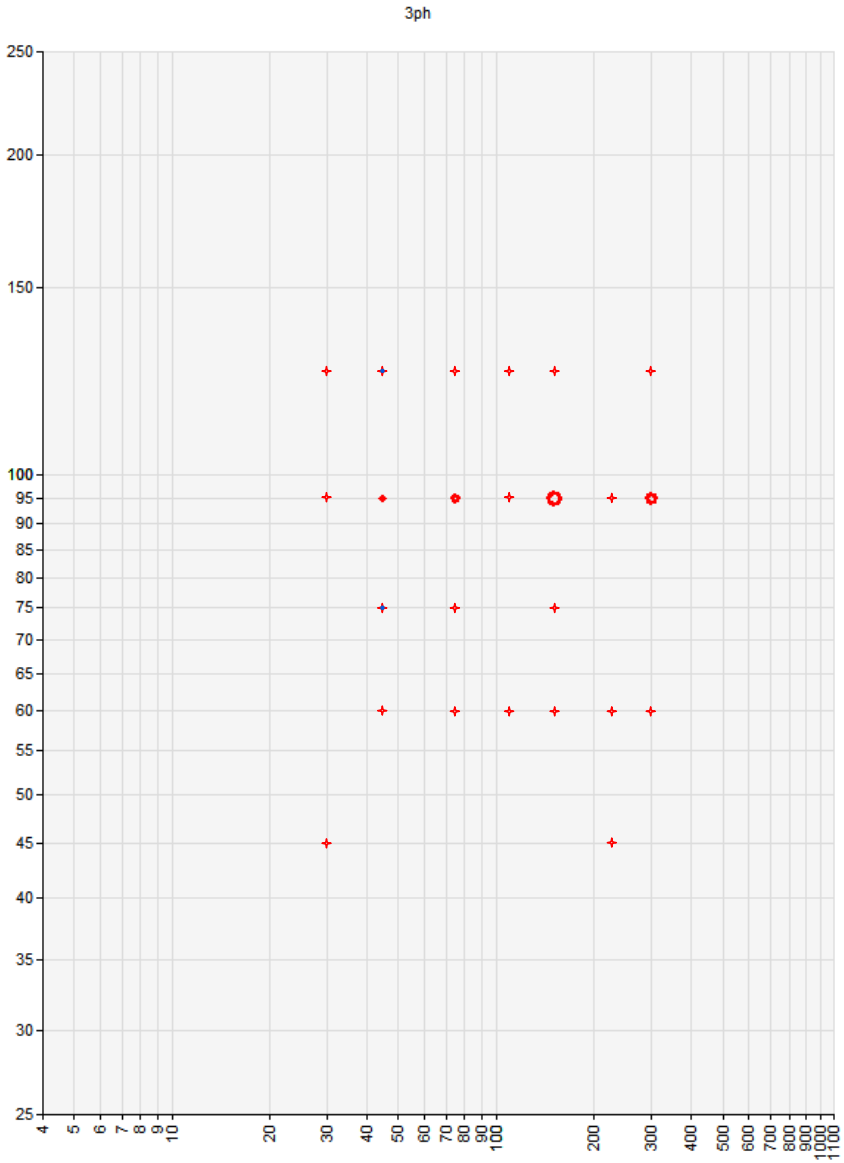
1 The market is dominated by 95 BIL at 25 KVA and 75 KVA

2 but the regulation must cover thru 200 BIL and

3 ---

4 Note: out-of-scope are mainly exports and are included to illustrate the situation with no regulation





Power and productivity
for a better world™

MVLF – **all** PPI Poles and all DOE designs
Efficiency (x-axis) vs Weight (y-axis)

1 NOTE: includes exports

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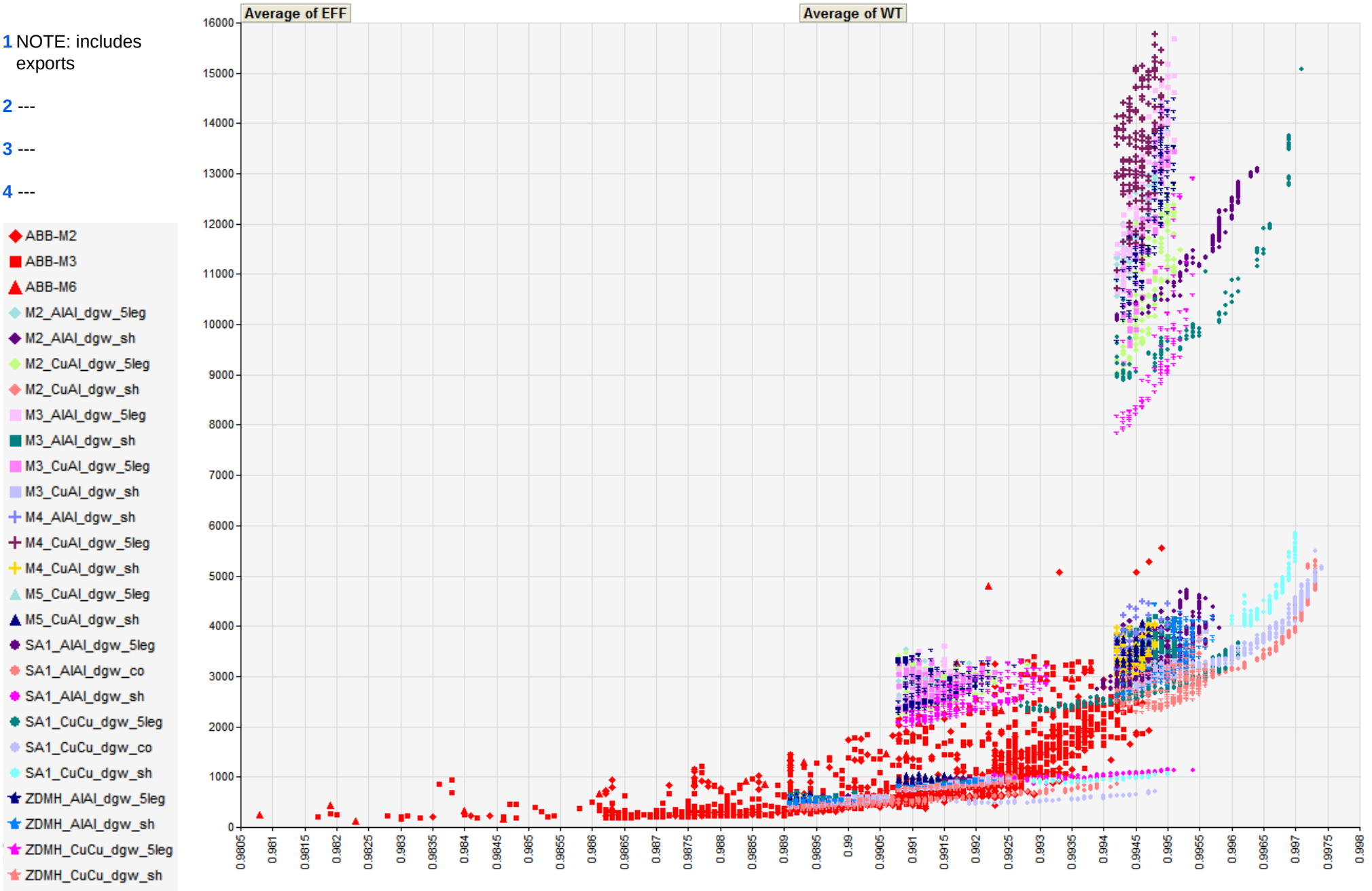
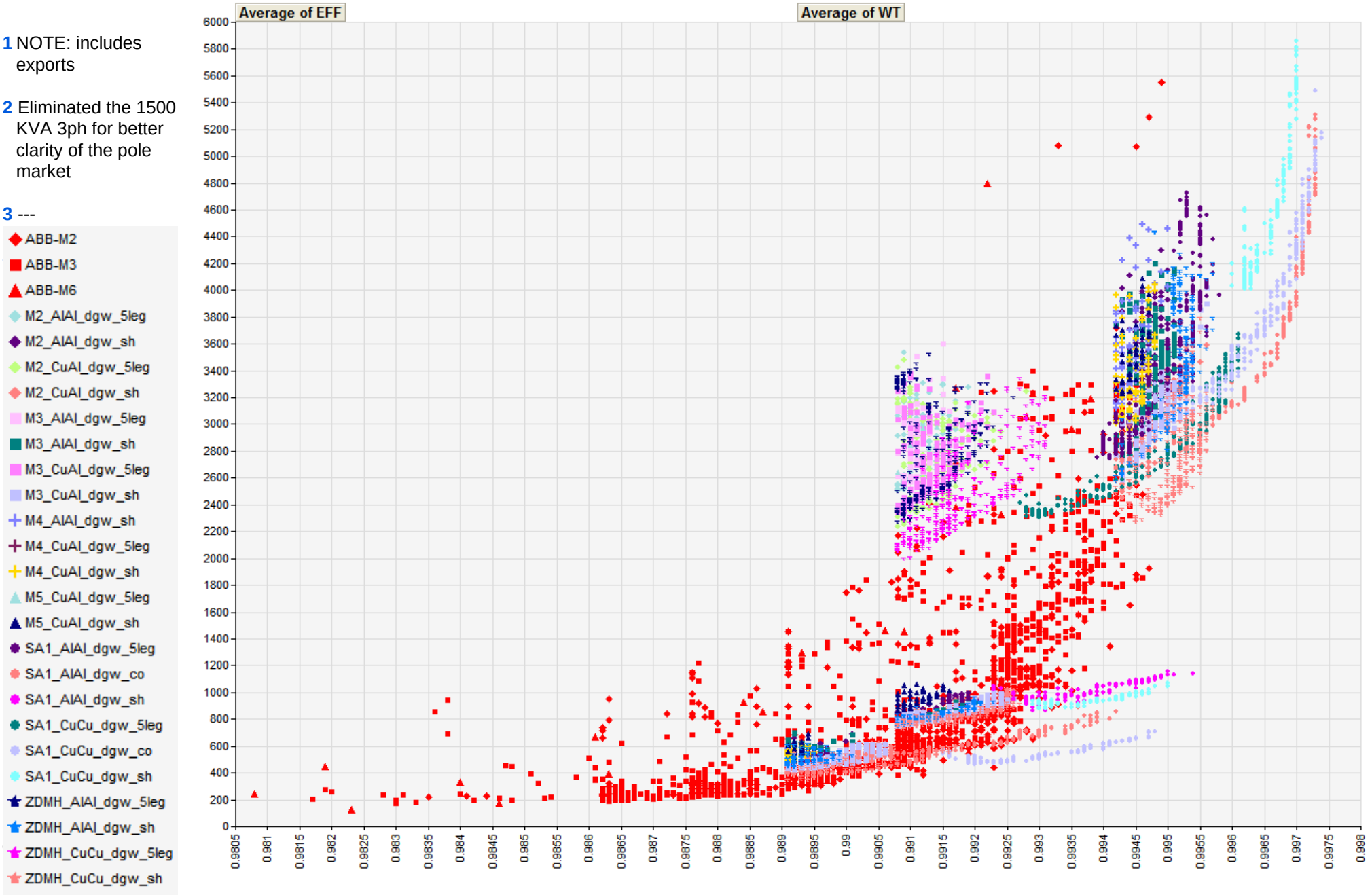


MVLF – all PPI Poles and DOE designs (excl 1500 KVA) Efficiency (x-axis) vs Weight (y-axis)

1 NOTE: includes exports

2 Eliminated the 1500 KVA 3ph for better clarity of the pole market

3 ---

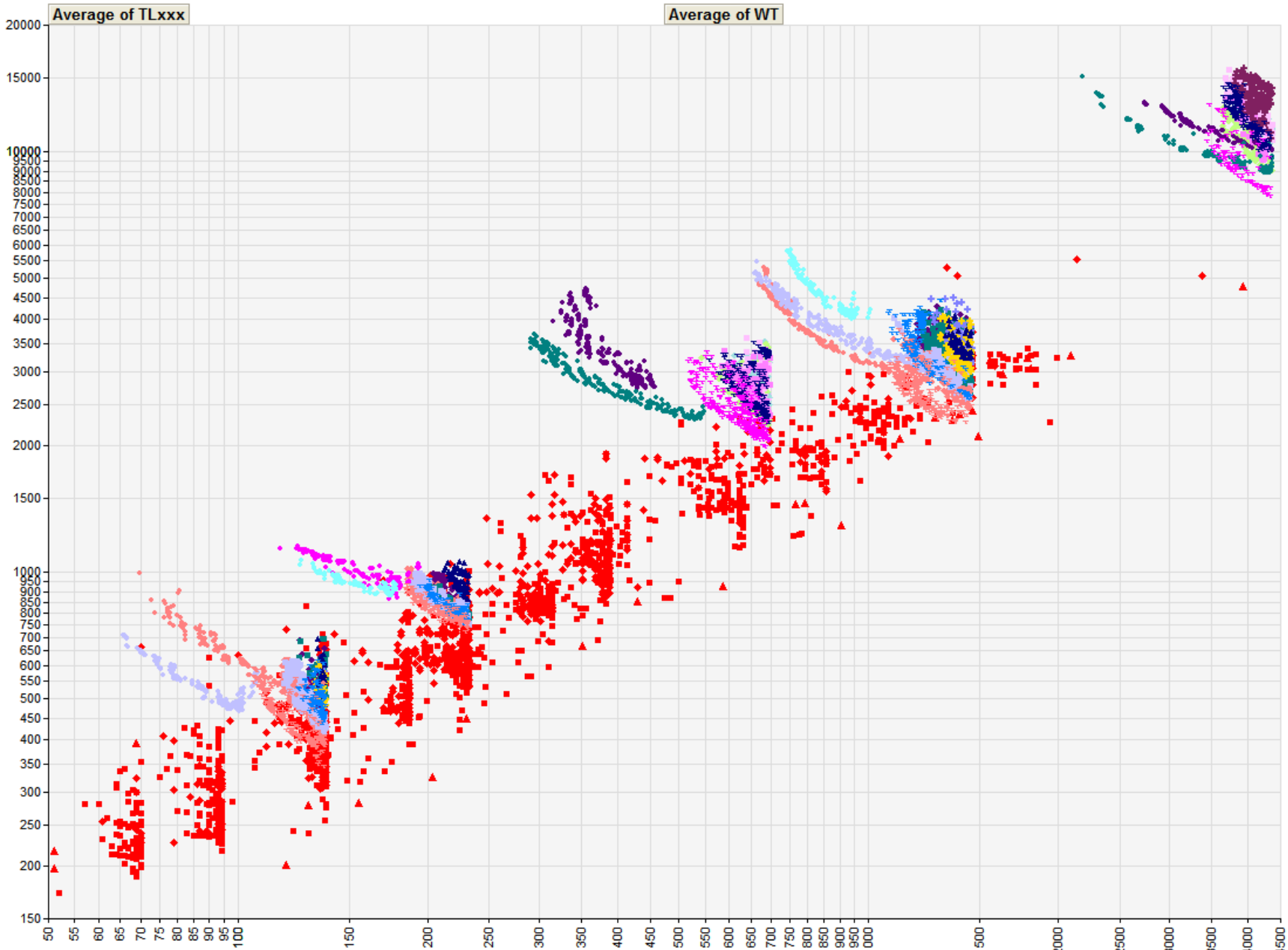


MVLF – all PPI Poles and all DOE designs
50% Load Total Loss (x-axis) vs Weight (y-axis)

1 NOTE: includes exports and both 1ph and 3ph

2 Note the power relation between losses and weights

3 ---

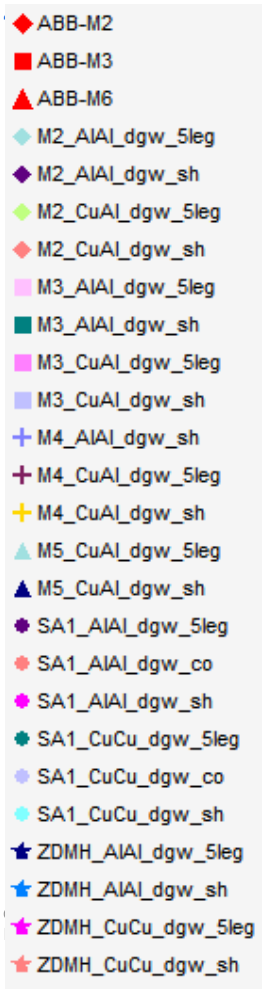


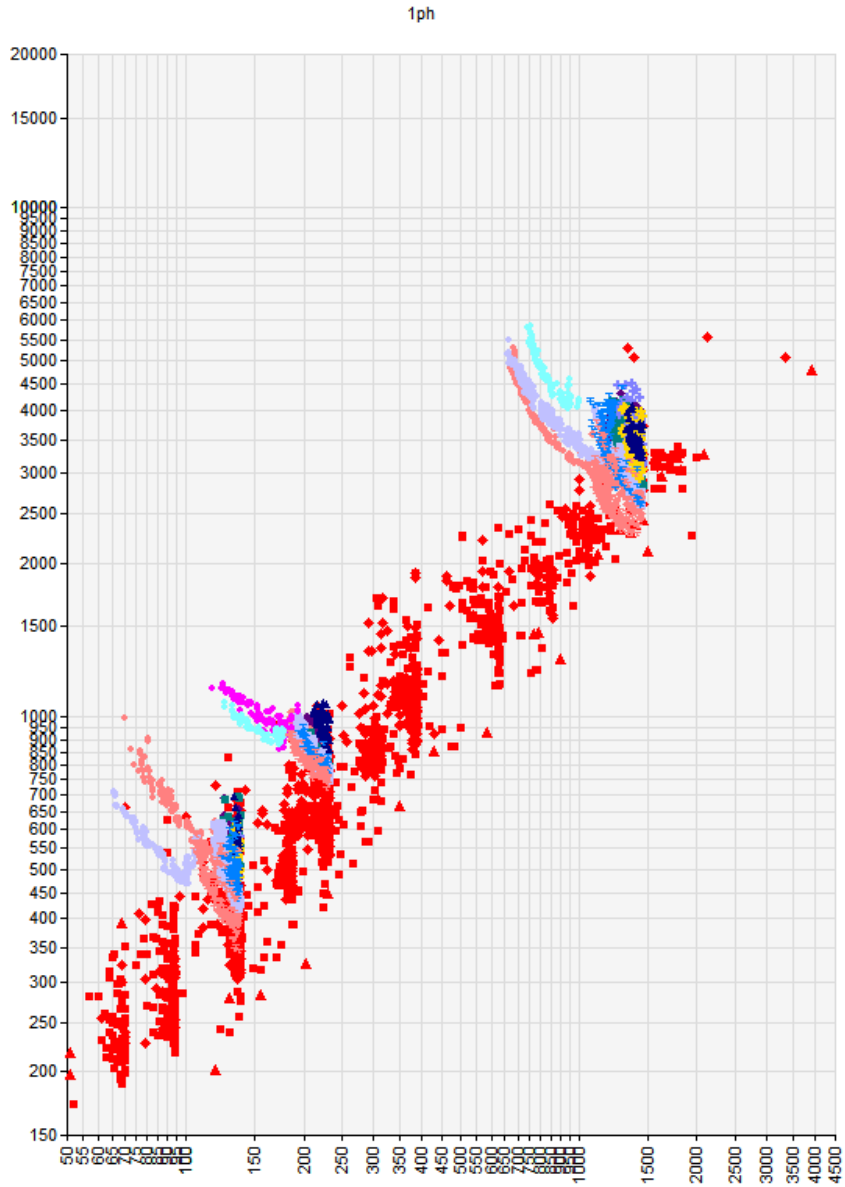
MVLF – **all** PPI Poles and all DOE designs (by Phase) 50% Load Total Loss (x-axis) vs Weight (y-axis)

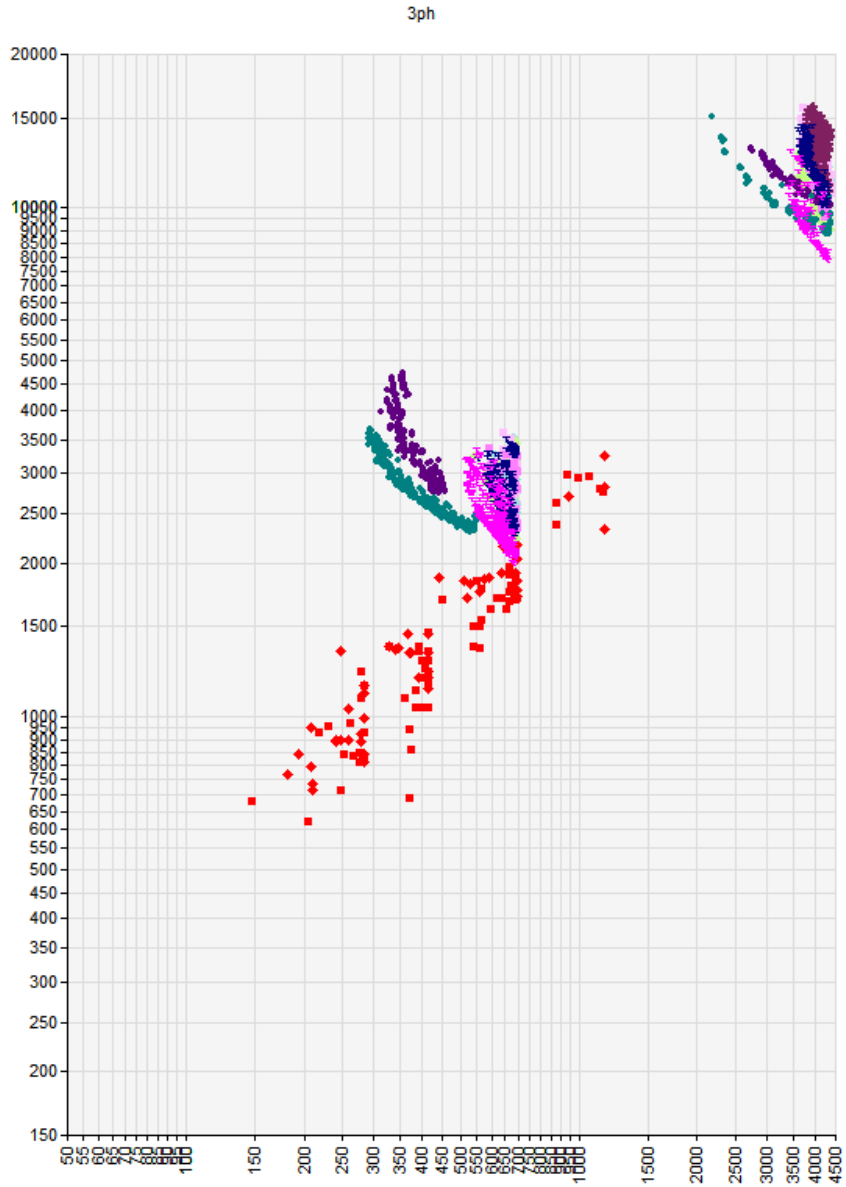
1 NOTE: includes exports

2 Note the power relation between losses and weights

3 ---







MVLF – in-scope PPI Poles and all DOE designs (by Phase) KVA (x-axis) vs Weight (y-axis) – the ¾ Rule

1 Check the fit to the ¾ rule

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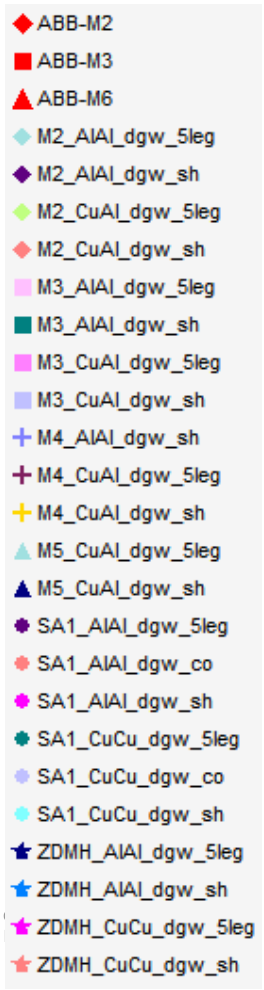

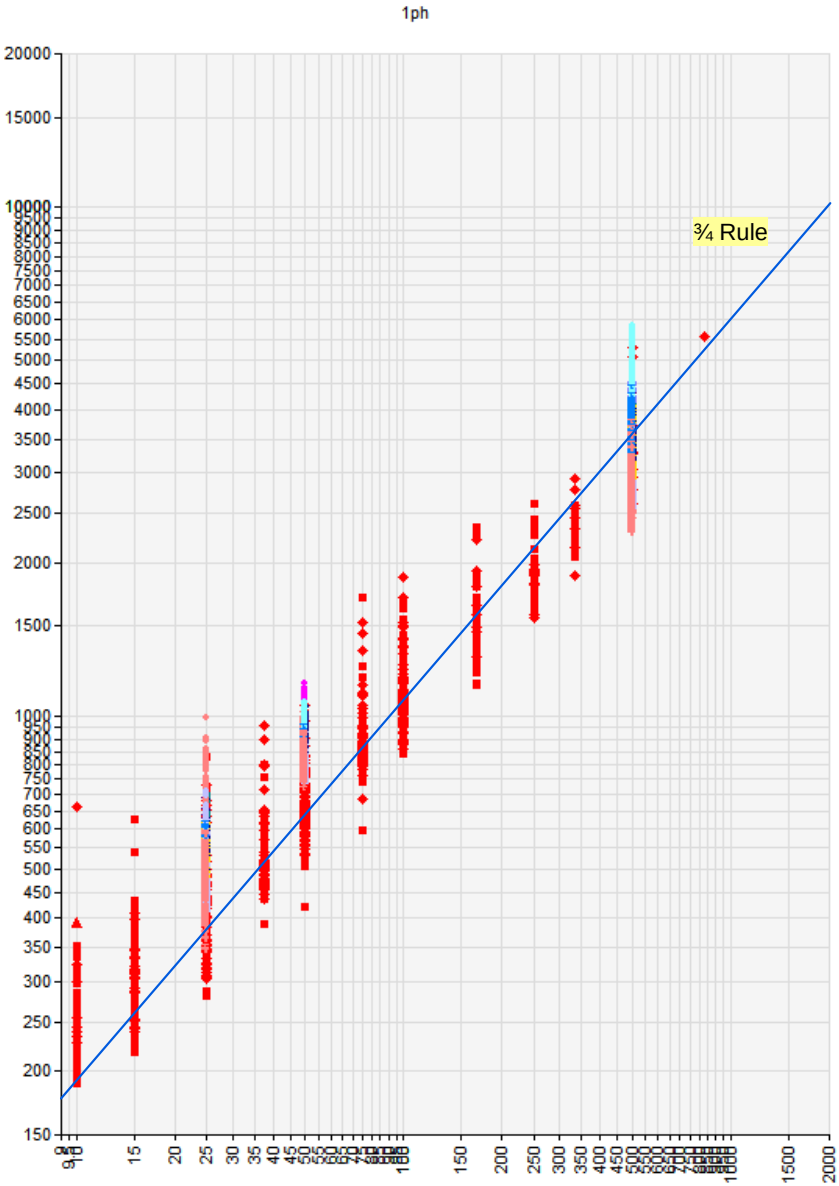

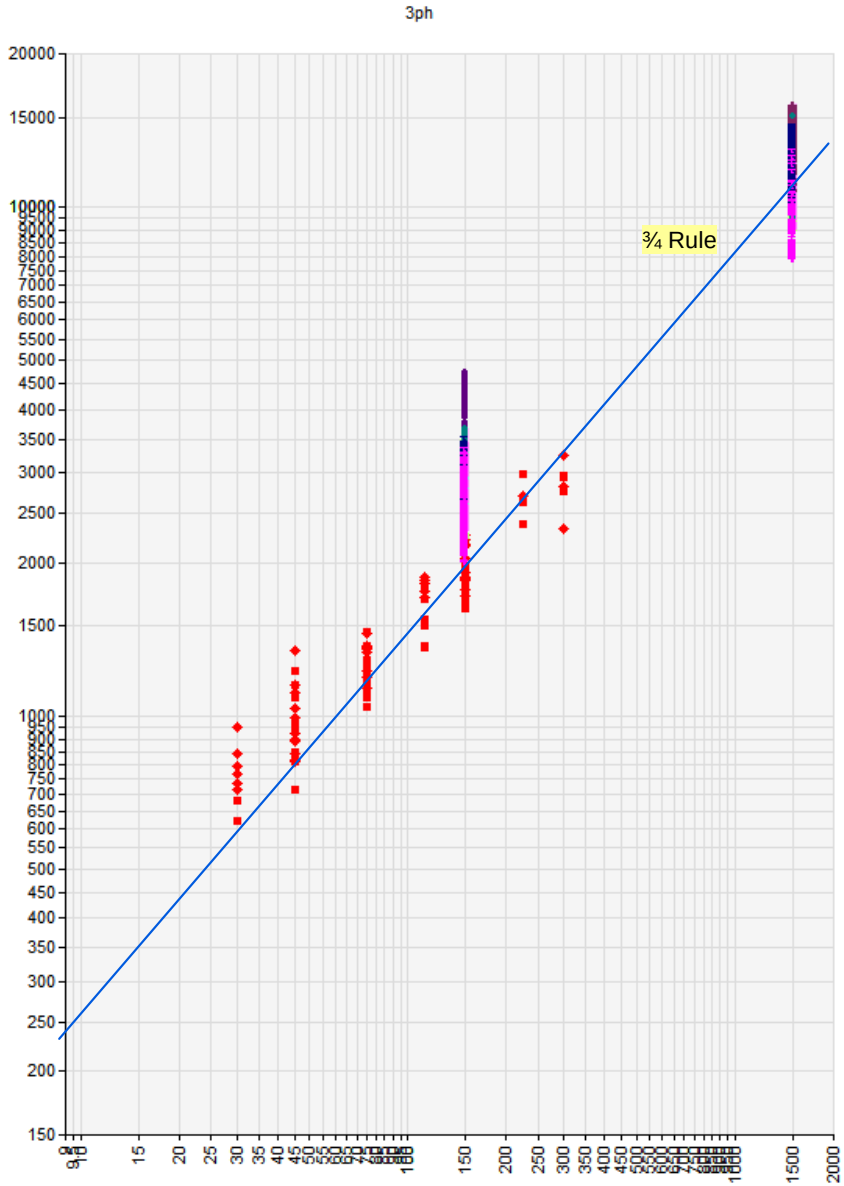

MVLF – all PPI Poles and all DOE designs (by Phase) KVA (x-axis) vs Weight (y-axis) – the ¾ Rule

1 Check the fit to the ¾ rule

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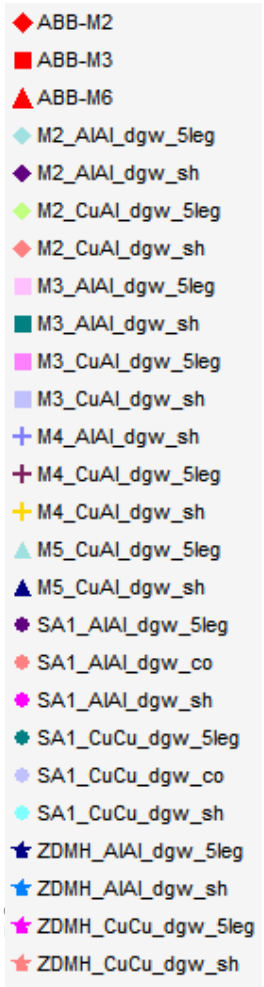

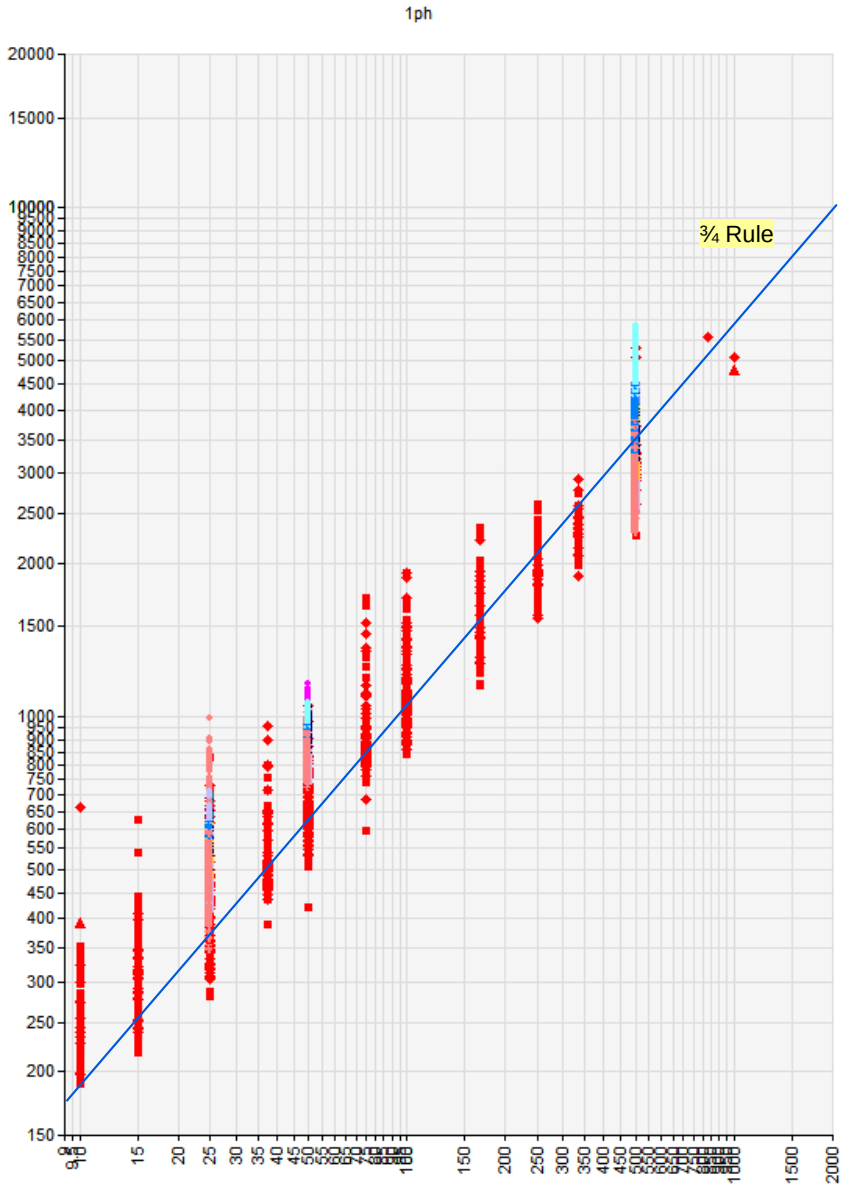

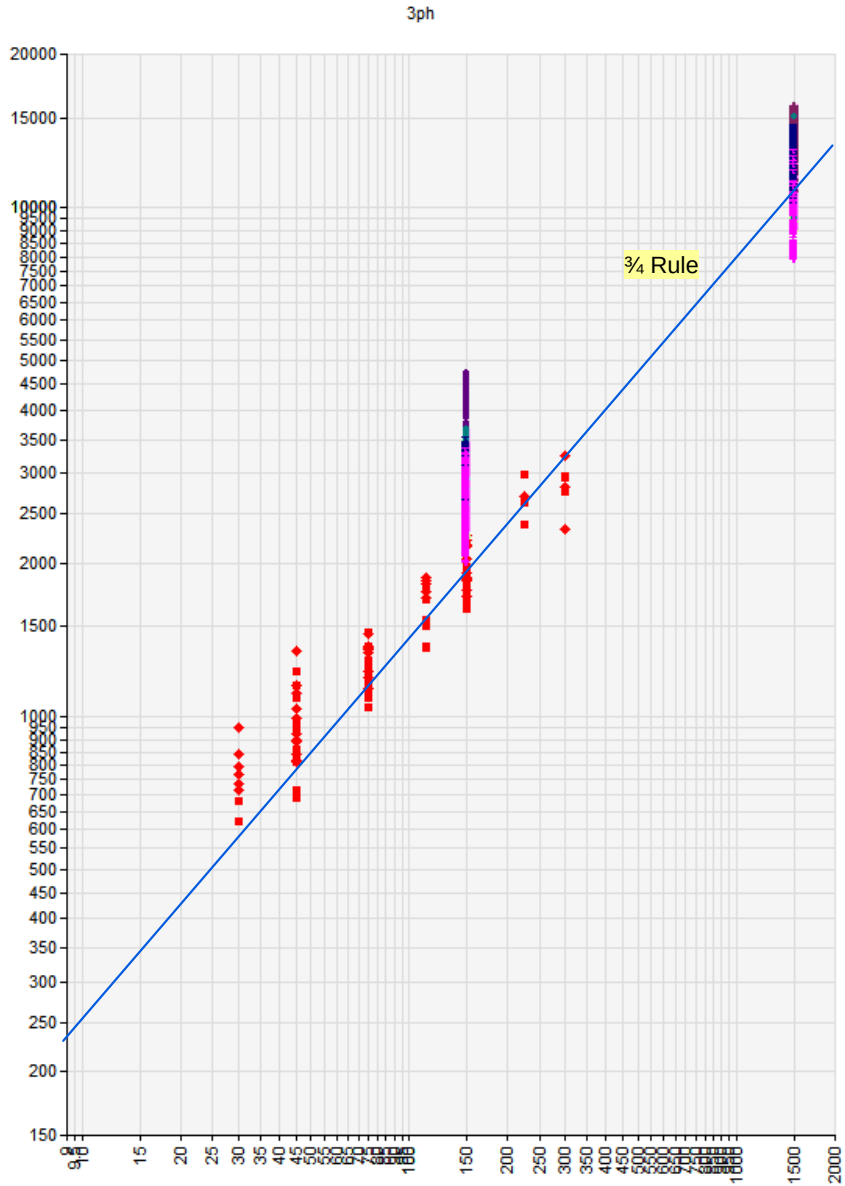

MVLF – in-scope PPI Poles and all DOE designs (by Phase) KVA (x-axis) vs 50% Load Total Loss (y-axis) – the ¾ Rule

1 Check the fit to the ¾ rule

2 ---

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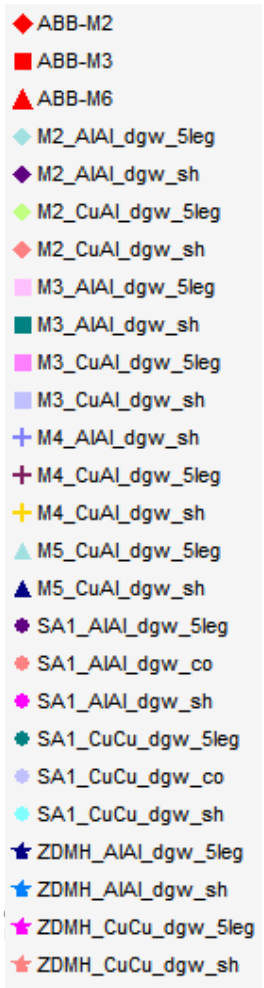

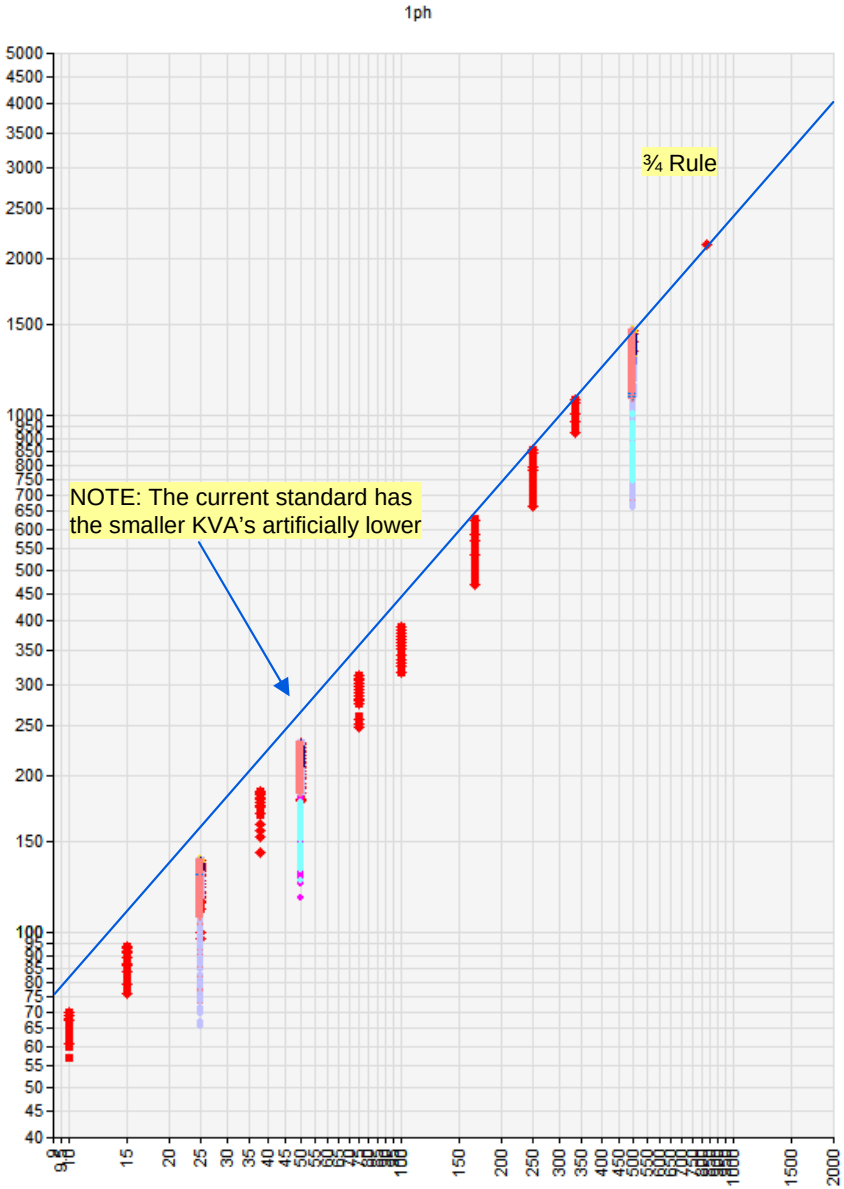

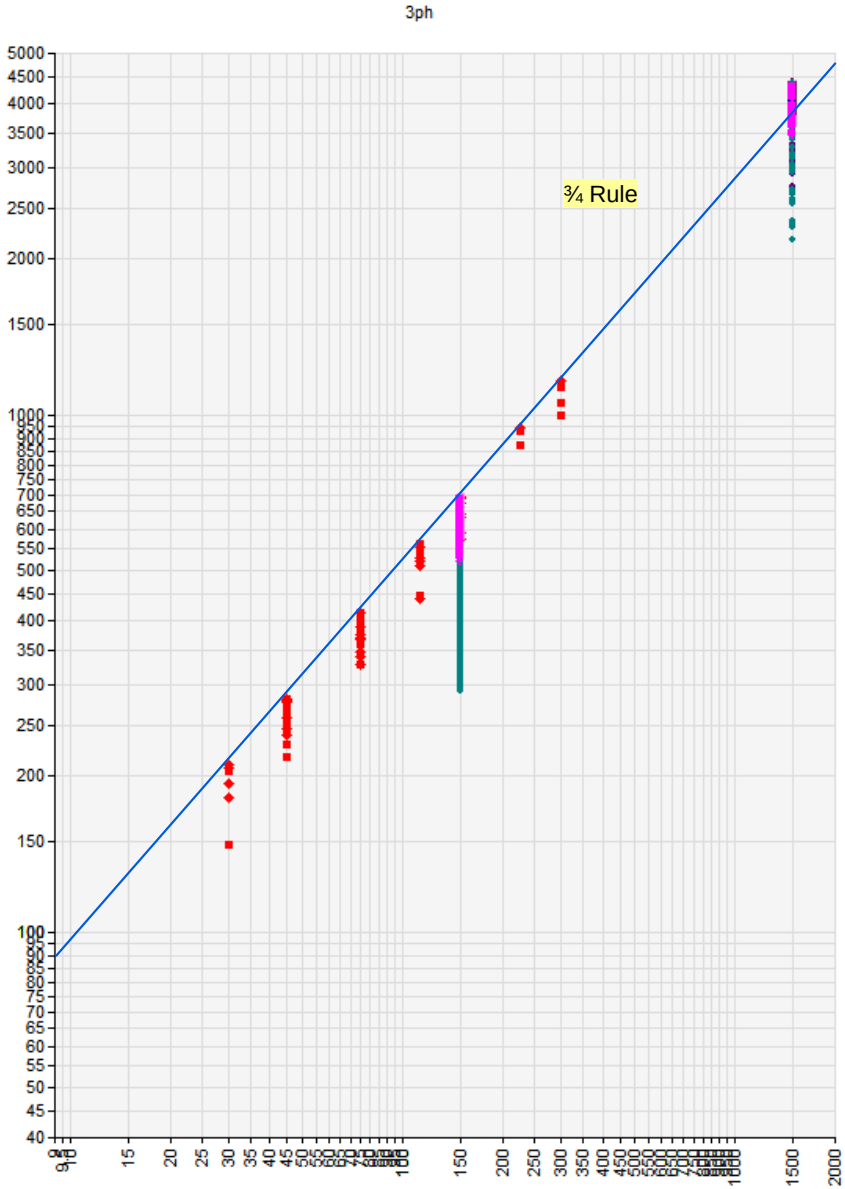

MVLF – **all** PPI Poles and all DOE designs (by Phase)
KVA (x-axis) vs 50% Load Total Loss (y-axis) – the ¾ Rule

1 Check the fit to the ¾ rule – it's a better fit with the exports included !!!

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