Independent review of

Operating Environment Factors

used to adjust efficient operating expenditure for economic benchmarking

Workshop on draft report

March 2018

sapere research group

MERZ Consulting

Workshop agenda

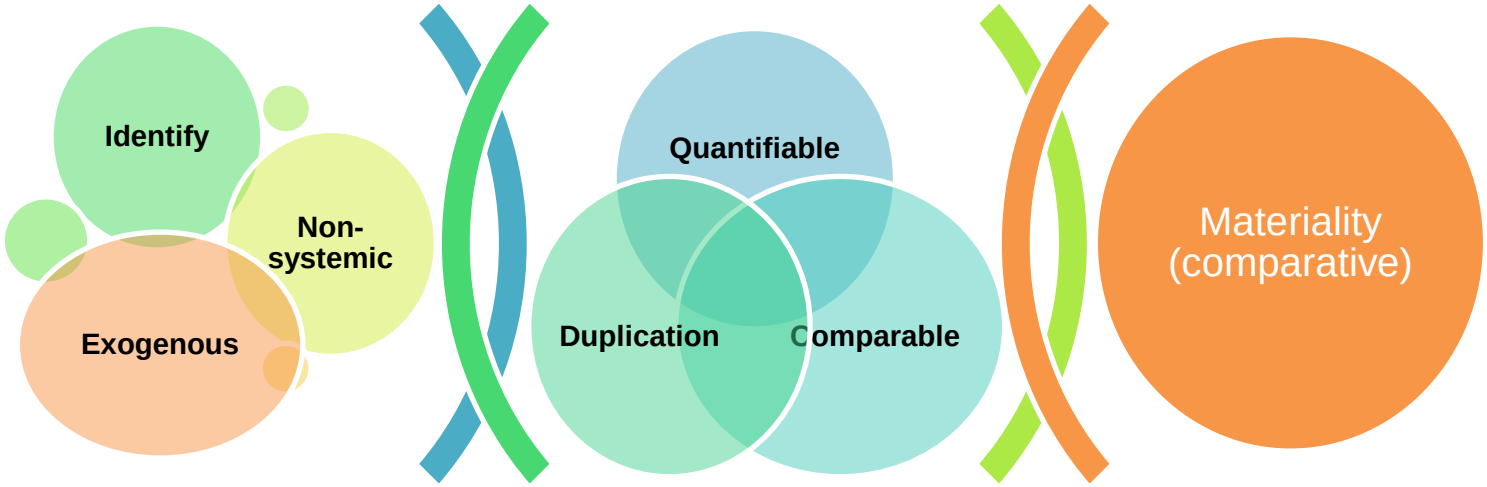
Time	Item	Presenter
1.30 to 1:45	Welcome and preamble Aim of the workshop and scope of discussion	AER
1.45 to 2.00	Introduction by Sapere-Merz The OEF review in context and workshop approach	Sapere-Merz
2.00- 3.30	Discussion of OEF topics • Sub-transmission + licence conditions • Vegetation	Sapere-Merz/ AER
3.30-3.45	Break	
3.45-5.45	Discussion of OEF topics • Termite exposure • Extreme weather • Other candidate OEFs	Sapere-Merz / AER
4:45 to 5.00	Final Questions and Wrap up	Sapere-Merz

Workshop Approach

Consistent approach to all OEF matters:

- Identify the issue or matter raised in submissions
- Invite respondents to talk to each matter
- In our responses, we will focus on:
  - Distilling the point(s) at issue
  - Whether the issue relates to the $ OEF estimate
  - Identifying and discussing relevant or missing data, evidence, principles or guiding rules
  - Capturing the outcome of the discussion including agreements, disagreements or next steps (e.g. new or revised data)

General issues:
Eligibility, data, calculation



Cost drivers | Cost data | Cost effect

OEFs we will not discuss today

- Small number of responses on
  - Harmonisation of WHS regulations
  - Backyard reticulation
  - Connection services OPEX
  - Taxes and levies
  - Capitalisation
- Addressed in final report, rather than occupy time today
  - Bilateral discussions as relevant

Sub-transmission

Main matters raised

- SM modelling of incremental feeder OPEX
  - Basis for the estimation of optimised circuit OPEX
  - Basis for the incremental feeder cost estimate
- SM modelling of incremental transformer OPEX
  - Basis for the estimation of optimised feeder OPEX
  - Exclusion of indirect costs in the transformer OPEX estimate
- Identifying the sub-transmission threshold

Sub-transmission/Licence conditions

DNSP	AER OEF adjustment		S-M OEF estimate		S-M OEF adjustment	
ActewAGL	0.00%	$0	3.49%	$1,480	1.20%	$510
Ausgrid	6.40%	$24,527	8.39%	$32,162	6.11%	$23,402
Citipower	0.00%	$0	5.71%	$3,191	3.43%	$1,914
Endeavour	5.60%	$11,654	9.70%	$20,193	7.42%	$15,436
Energex	3.20%	$9,953	8.14%	$25,311	5.85%	$18,200
Ergon	5.30%	$12,965	6.16%	$15,074	3.88%	$9,482
Essential	4.30%	$12,452	5.83%	$16,891	3.55%	$10,271
Jemena	0.00%	$0	2.01%	$1,383	-0.27%	-$186
Powercor	0.00%	$0	1.42%	$2,701	-0.87%	-$1,660
SAPN	0.00%	$0	2.44%	$6,051	0.15%	$373
Ausnet	0.00%	$0	1.15%	$2,366	-1.14%	-$2,347
TasNetworks	0.00%	$0	0.01%	$8	-2.27%	-$1,425
United Energy	0.00%	$0	2.63%	$3,097	0.35%	$406
Reference point	0.00%		**2.29%**			

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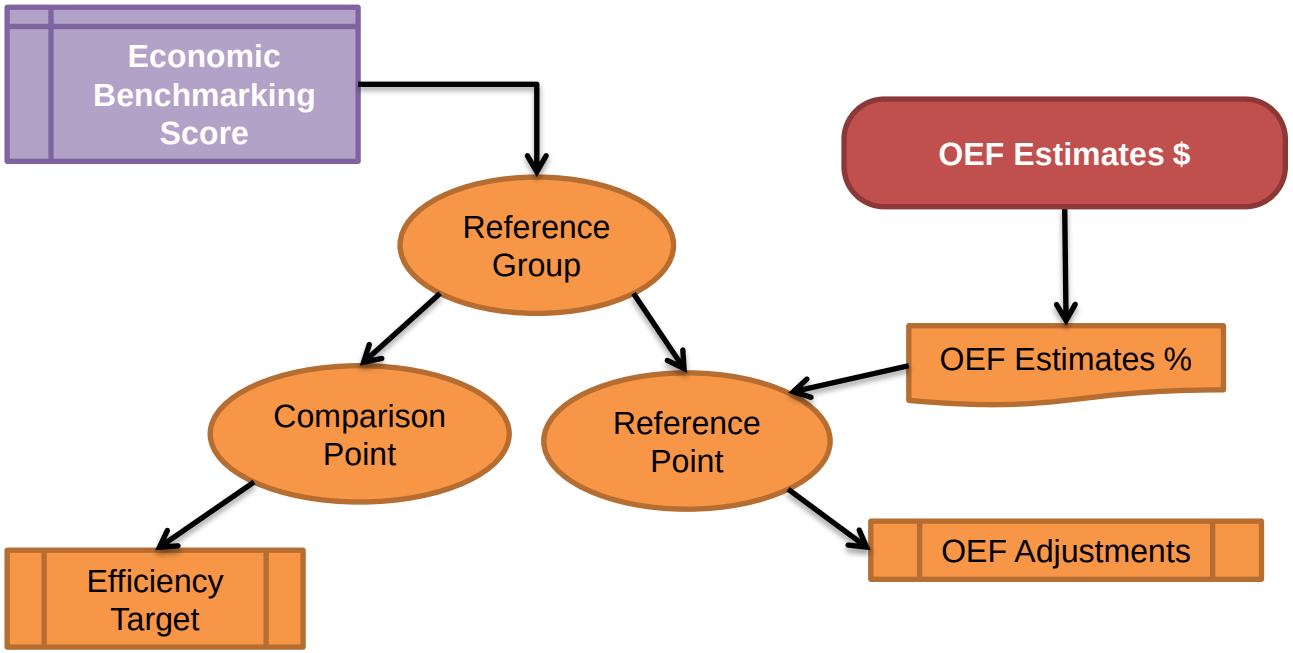
Inputs into relative OEF adjustments

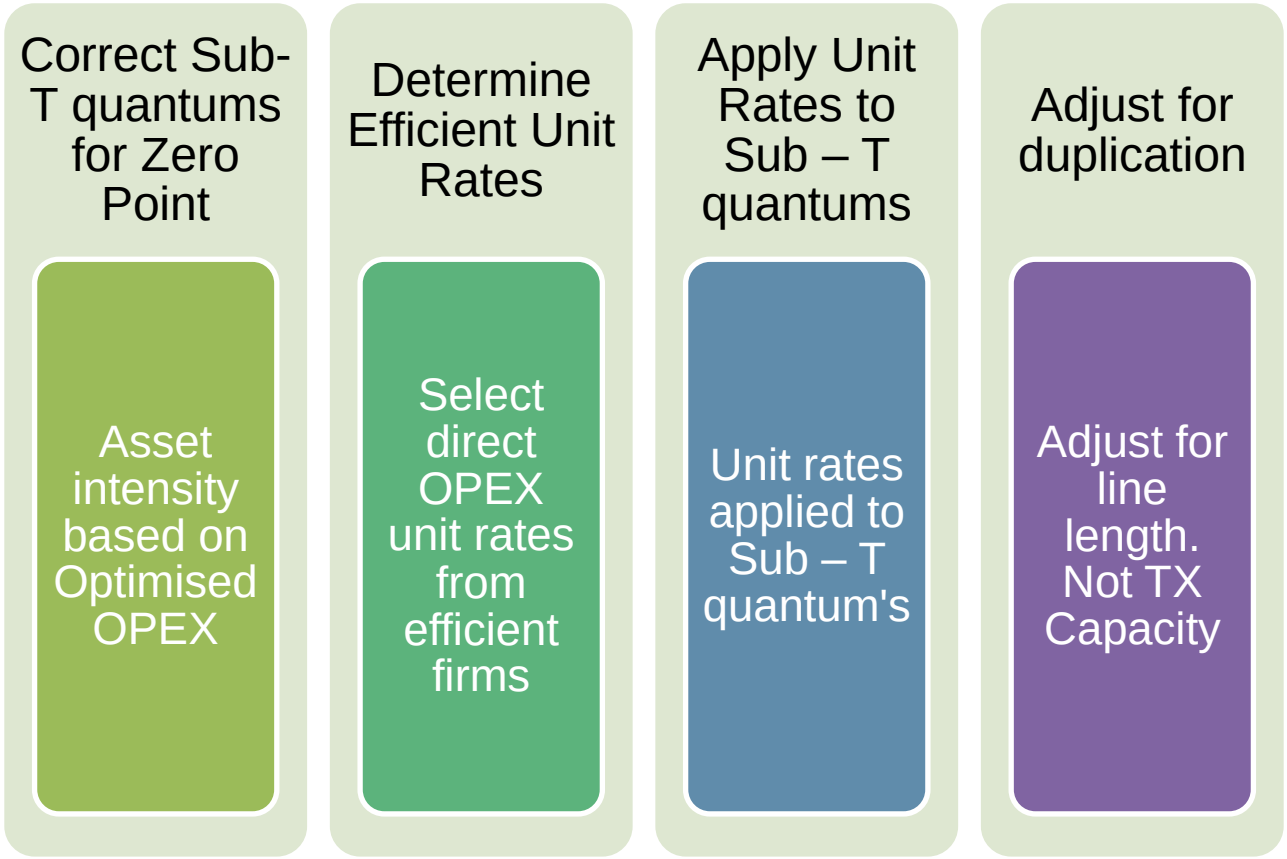


Economic Insights

AER

Sapere/Merz

Sub – T Calculation



Sub-T - licence conditions

Matters raised

- Whether the distribution component of NSW LCs meets the materiality criterion.
- Whether estimating the sub-T OEF using 2015 as reference year alongside efficiency scores drawn from 10 years is problematic (see general comment on 2015 reference year).

Sub-transmission threshold

- Agree boundary between transmission and distribution is functional, not technical
- Dual use assets captured at highest voltage.

Distribution and LCs

This Exhibit is a screen shot from Schedule 1 to the NSW Licence conditions

How much incremental OPEX is attributable to urban distribution feeder LC?

If different planning criteria were uniquely applied to Essential, is Essential able to provide a copy of the instrument?

SCHEDULE 1 DESIGN PLANNING CRITERIA

Network Element	*Load Type*	*Forecast Demand or Expected Demand*	*Security Standard*	*Customer Interruption Time*
Sub Transmission Line	CBD	Any	N-2[6]	Nil for 1st credible contingency <1 hr for 2nd credible contingency
	Urban & Non-Urban	≥ 10 *MVA*	N-1[1]	< 1 minute
	Urban & Non-Urban	< 10 *MVA*	N[2]	*Best practice repair time*
Sub Transmission Substation	CBD	Any	N-2[6]	Nil for 1st credible contingency <1 hr for 2nd credible contingency
	Urban & Non-Urban	Any	N-1	< 1 minute
Zone Substation	CBD	Any	N-2[6]	Nil for 1st credible contingency <1 hr for 2nd credible contingency
	Urban & Non-Urban	≥ 10*MVA*	N-1[1]	< 1 minute
	Urban & Non-Urban	< 10 *MVA*	N[2]	*Best practice repair time*
Distribution Feeder	CBD	Any	N-1[3]	Nil
	Urban	Any	N-1[4]	< 4 Hours[5]
	Non-Urban	Any	N	*Best practice repair time*
Distribution Substation	CBD	Any	N-1[3]	Nil
	Urban & Non-Urban	Any	N[7]	*Best practice repair time*

Vegetation

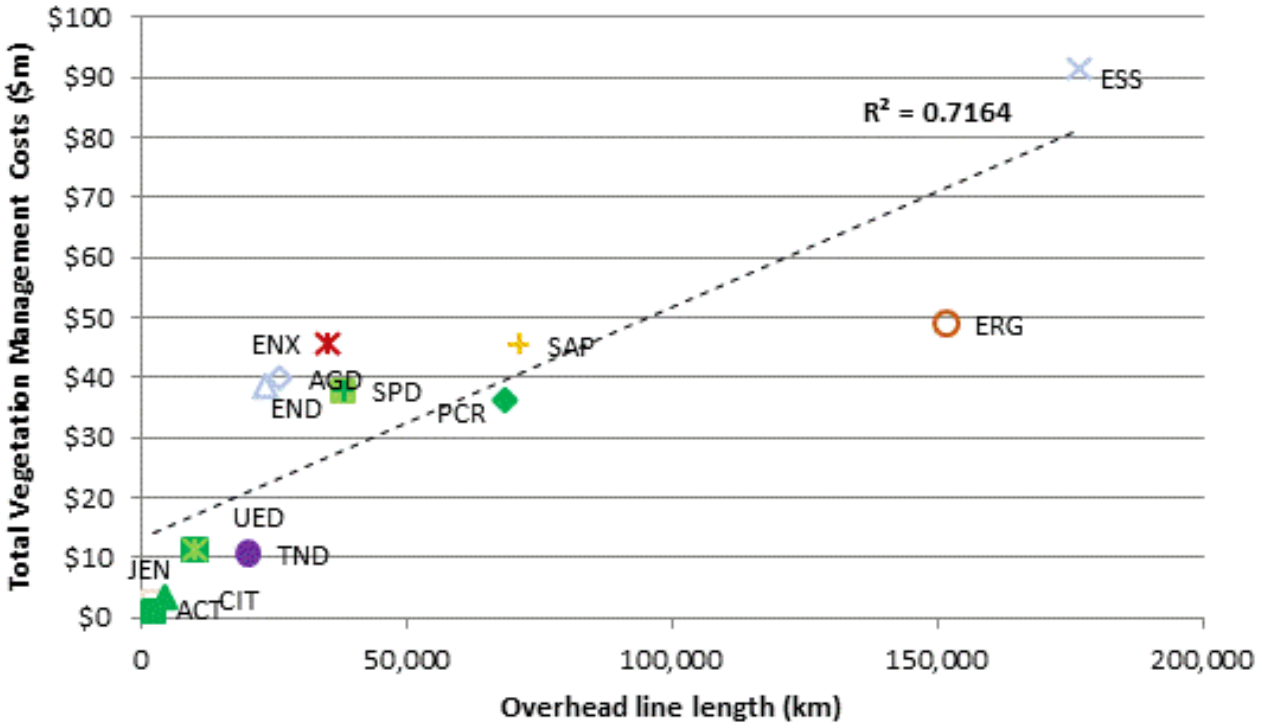
- Main matters raised:
  - Not quantified whereas less significant OEFs are
  - RIN vegetation data “immature”
  - Whether Victoria has higher vegetation management and related compliance costs
  - Whether there is material non-vegetation management bushfire expenditure

Vegetation – exogenous drivers

- Multiple cost drivers of variations in efficient vegetation management OPEX:
  - Intersection between vegetation density and network assets
    - Length of overhead lines requiring active management
    - Vegetation density and growth rate (place and time)
  - Regulation
    - Standards relating to vegetation management (e.g. Bushfire regulations)
    - Allocation of responsibility (and cost recovery)

Vegetation – non-duplication

Figure 1 Total Vegetation Management as a function of overhead line length



Vegetation - materiality

- Vegetation OPEX is a material cost to DNSPs
- Therefore it has the potential to be a material OEF

DNSP	Total Vegetation Management	Proportion of Total OPEX
ActewAGL	$2,446	3%
Ausgrid	$39,914	6%
Citipower	$1,083	2%
Endeavour	$38,551	14%
Energex	$45,750	12%
Ergon	$48,930	13%
Essential	$91,473	23%
Jemena	$3,431	5%
Powercor	$36,221	19%
SAPN	$45,572	18%
Ausnet	$37,820	18%
TasNetworks	$10,753	17%
United Energy	$11,381	10%

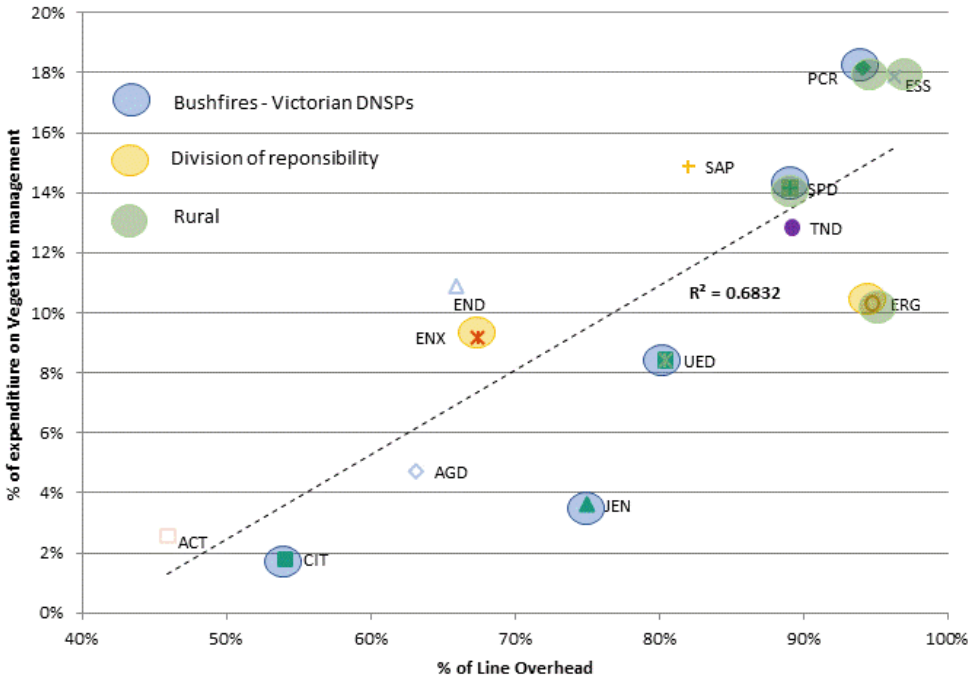
Vegetation

Link between *cost drivers* and *cost effects*

It's complicated…

- Differences in regulation (bushfires and division of responsibility) do not explain vegetation cost variation
- Multi-factorial

Figure 1 Raw productivity outcomes as a function of Total Veg. Mgt. Costs



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Vegetation – way forward

- No suggestion vegetation OEF should be set at zero
- No suggestion vegetation OEF could not be quantified in the future, with sufficient consistent data
- Proposed method envisages inclusion of incremental OPEX impact of regulation (bushfire & division of responsibility)
  - Any boundary/definition issues could be addressed in the context of a vegetation RIN data improvement process

Vegetation – data

Possible data:

- Vegetation intensity (volume)
  - Circuit length exposed to vegetation types (density / terrain)
  - Coincidence between network and vegetation types (suggest growth category in quintiles)
  - Variations in cycle length (growth rate / frequency)
- Unit costs per line length per category
  - Extent procured
  - Cost of inspections and any ancillary activities – records etc.

Vegetation – improving data

Data on incremental impact of regulation:

- Incremental OPEX attributable to bushfire regulations
  - Ex Victoria (including whether and extent Victorian regulations impact costs industry wide)
  - Victoria
- Incremental OPEX attributable to division of responsibility
  - Differences in *de jure* responsibility relative to growth categories
  - Evidence on cost shifting to or from DNSPs (variance from *de jure*)

Termite exposure

- Matters raised:
  - Only two data points
  - Correction for termite activity
  - Use of “non-frontier” firm in setting efficient rates
  - Future capital responses should reduce exposure

Termite exposure

DNSP	AER OEF adjustment		S-M OEF estimate		S-M OEF adjustment	
ActewAGL	0.00%	$0	0.11%	$46	0.00%	$0
Ausgrid	0.00%	$0	0.06%	$213	-0.05%	-$205
CitiPower	0.00%	$0	0.04%	$20	-0.07%	-$41
Endeavour	0.20%	$416	0.36%	$744	0.25%	$517
Energex	0.20%	$622	0.43%	$1,353	0.33%	$1,014
Ergon	0.50%	$1,223	1.21%	$2,950	1.10%	$2,684
Essential	0.60%	$1,738	1.05%	$3,029	0.94%	$2,713
Jemena	0.00%	$0	0.03%	$19	-0.08%	-$56
Powercor	0.00%	$0	0.28%	$538	0.17%	$330
SAPN	0.00%	$0	0.00%	$0	-0.11%	-$271
AusNet	0.00%	$0	0.13%	$274	0.02%	$49
TasNetworks	0.00%	$0	0.00%	$0	-0.11%	-$68
United Energy	0.00%	$0	0.06%	$68	-0.05%	-$60
Reference point	0.00%		0.11%			

Termite exposure

- Sapere / Merz welcome any additional data
- Correcting rate for termite activity appropriate – activity drives increased termite related forced outage costs.

Extreme weather – matters raised

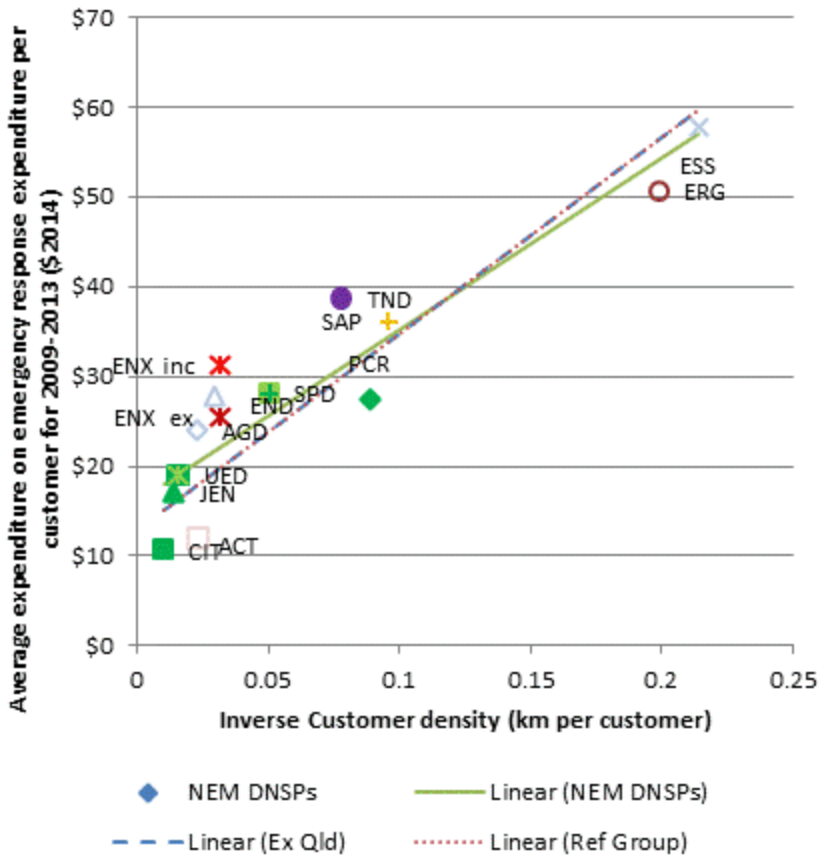
- Accounting for difference:
  - Definition and consistency of data reporting
  - Reactive *versus* proactive costs
  - What is the benchmarking impact of low frequency, high impact events?
- Need to account for Guaranteed Service Levels and inconvenience payments

Extreme weather - severe storms

DNSP	AER OEF adjustment		S-M OEF estimate		S-M OEF adjustment	
ActewAGL	0.00%	$0	0.00%	$0	0.00%	$0
Ausgrid	0.00%	$0	0.00%	$2	0.00%	$2
CitiPower	0.00%	$0	0.00%	$0	0.00%	$0
Endeavour	0.00%	$0	1.12%	$2,321	1.12%	$2,321
Energex	2.70%	$8,398	0.99%	$3,081	0.99%	$3,081
Ergon	3.00%	$7,339	0.31%	$755	0.31%	$755
Essential	0.00%	$0	0.12%	$354	0.12%	$354
Jemena	0.00%	$0	0.00%	$2	0.00%	$2
Powercor	0.00%	$0	0.00%	$0	0.00%	$0
SAPN	0.00%	$0	0.00%	$0	0.00%	$0
AusNet	0.00%	$0	0.00%	$0	0.00%	$0
TasNetworks	0.00%	$0	0.31%	$192	0.31%	$192
United Energy	0.00%	$0	0.00%	$0	0.00%	$0
Reference point	0.00%		0.00%			

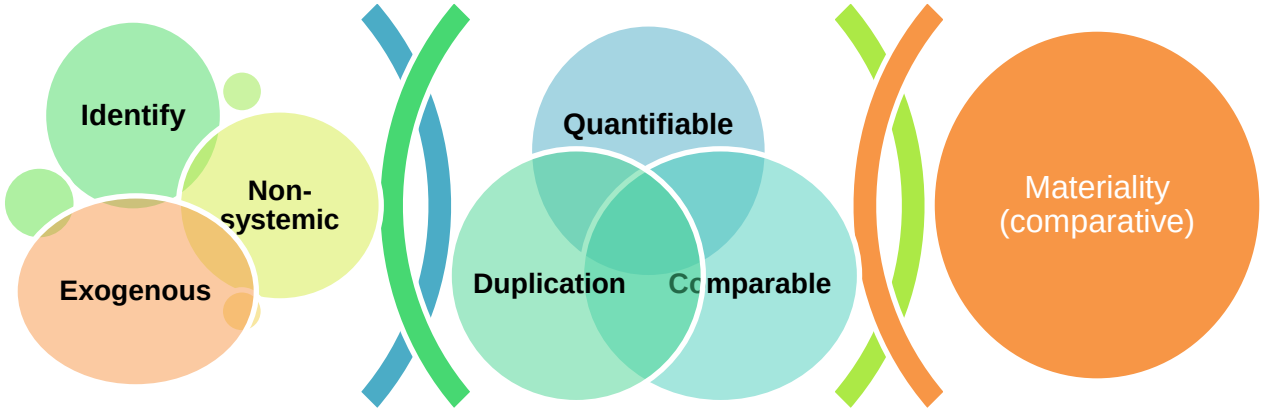
Extreme weather - severe storms

- Unlike other extreme weather modes:
  - is regularly experienced everywhere
  - but poorly defined
- Some meteorological evidence of systematic difference (driver)
- What evidence of systematic difference in costs?



Possible additional OEFs

- Matters raised:
  - Whether the vegetation OEF captures all bushfire related exogenous costs
  - Other OEF categories



Wrap-up

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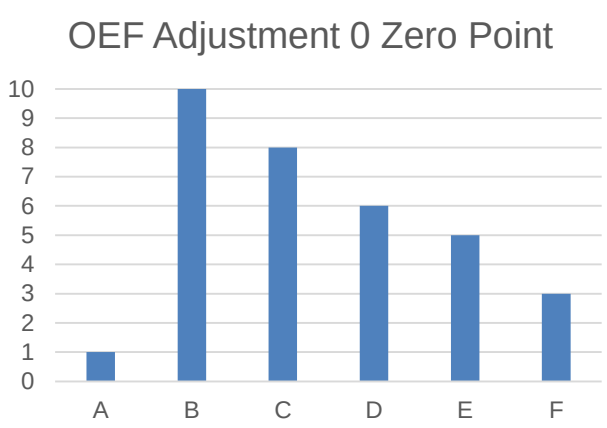
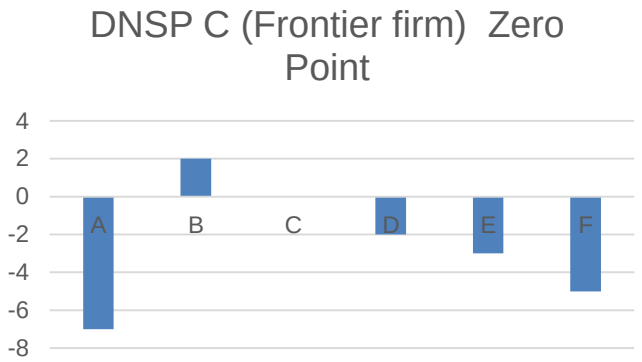
Movement of Zero Point (Support Sub-T discussion)

Relativity of OEFs is what is critical, actual base line does not affect outcome



Difference between each firm is the same in all graphs



Frontier firm Zero Point removes need to make further adjustments to all to retain frontier firm at 100% efficient