

Briefing to the Independent Electricity Generators Association

Distributed generation pricing principles and TPM proposal

26 May 2016

Distributed generation pricing principles

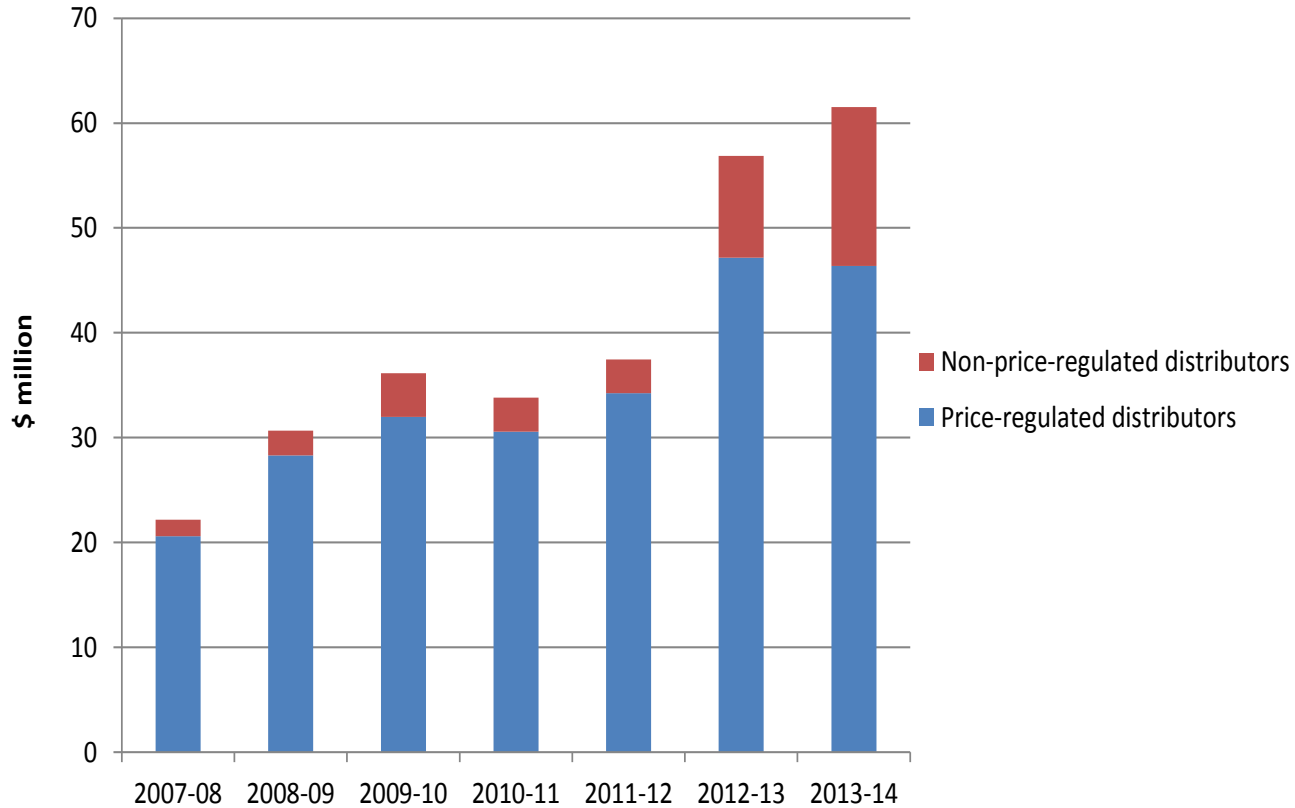
DGPPs provide the wrong price signals for distributed generation

- 1) *Connection services issue*: distributed generation owners do not contribute to common costs
 - Distributed generation pays a maximum of incremental cost of distribution services
 - Consumers pay their own share of common costs plus distributed generation owners' share

 - 2) *ACOT issue*: many distributed generators do not reduce transmission costs
 - Avoided cost of transmission (ACOT) payments
 - Should reflect transmission costs avoided
 - But are based on avoided transmission charges
 - Consumers are paying for something for which they receive no benefit
- Both problems encourage inefficient investment in, and operation of, distributed generation

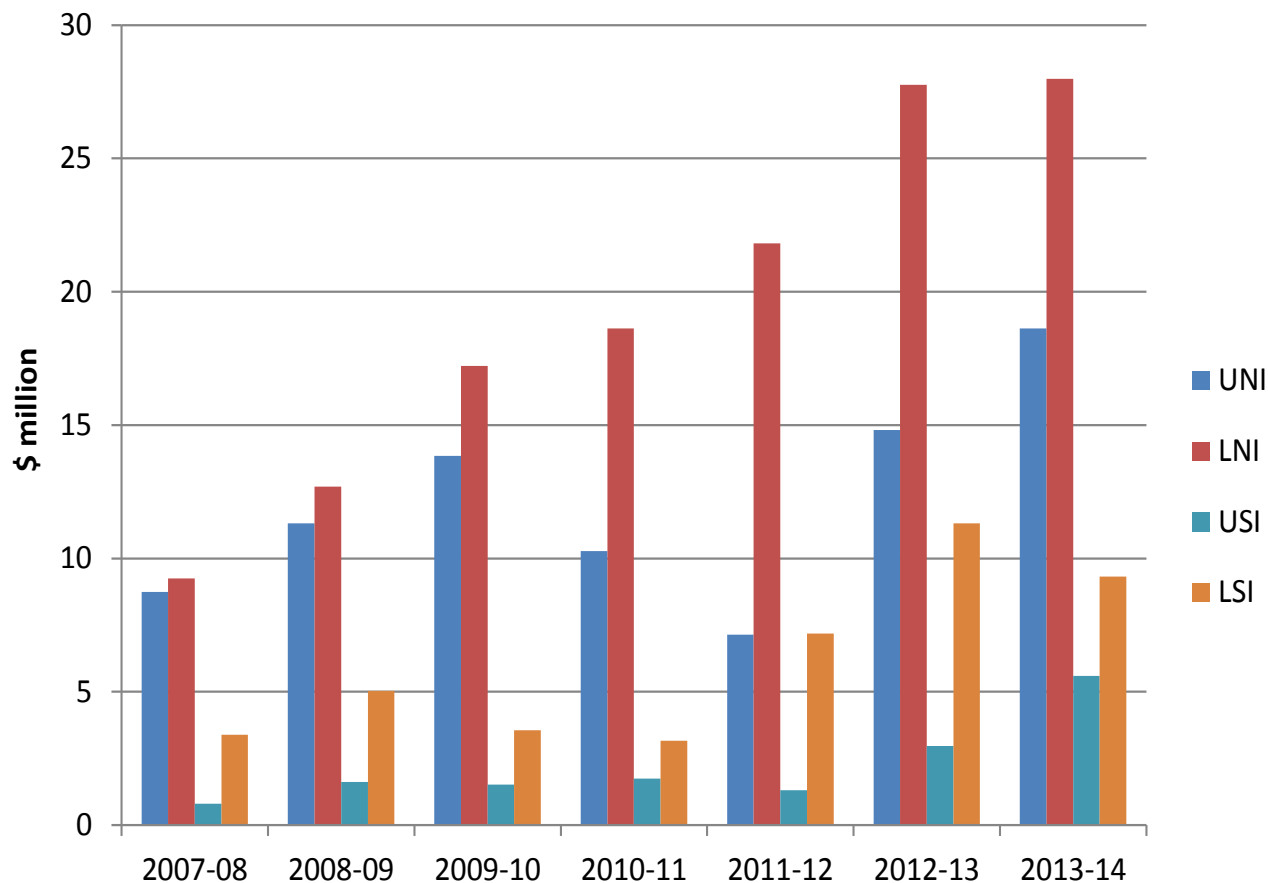
ACOT payments are growing rapidly

Allowance for 'avoided transmission charges'



Distributed generation has been built in unexpected locations

'Avoided transmission charges' by region



The Authority proposes to remove the DGPPs from the Code

- Transpower would make decisions on ACOT payments
 - Similar to existing demand response programme (being trialled by Transpower)
 - Payments only to those distributed generators that reduce transmission costs
 - Transpower is best able to identify distributed generators that can reduce transmission costs
- Commerce Commission's regime would allow Transpower to recover payments to distributed generators when transmission costs are reduced
- Price-regulated distributors
 - Would no longer be able to recover ACOT payments
 - Would still be able to recover payments for avoided cost of distribution (ACOD)
- Distributed generators could contribute to common costs of distribution network

Cost-benefit analysis shows net economic benefit

Expected net economic benefits

(\$million, present value)

	Expected net economic benefits
Current TPM	2.0 – 21.7
Current TPM for two years from April 2017, then area-of-benefit-based TPM	0.5 – 4.2

Proposal also has financial benefits for consumers

Expected net economic benefits and financial benefits

(\$million, present value)

	Expected net economic benefits	Financial benefit to consumers
Current TPM	2.0 – 21.7	232 – 325
Current TPM for two years from April 2017, then area-of-benefit-based TPM	0.5 – 4.2	46 – 64

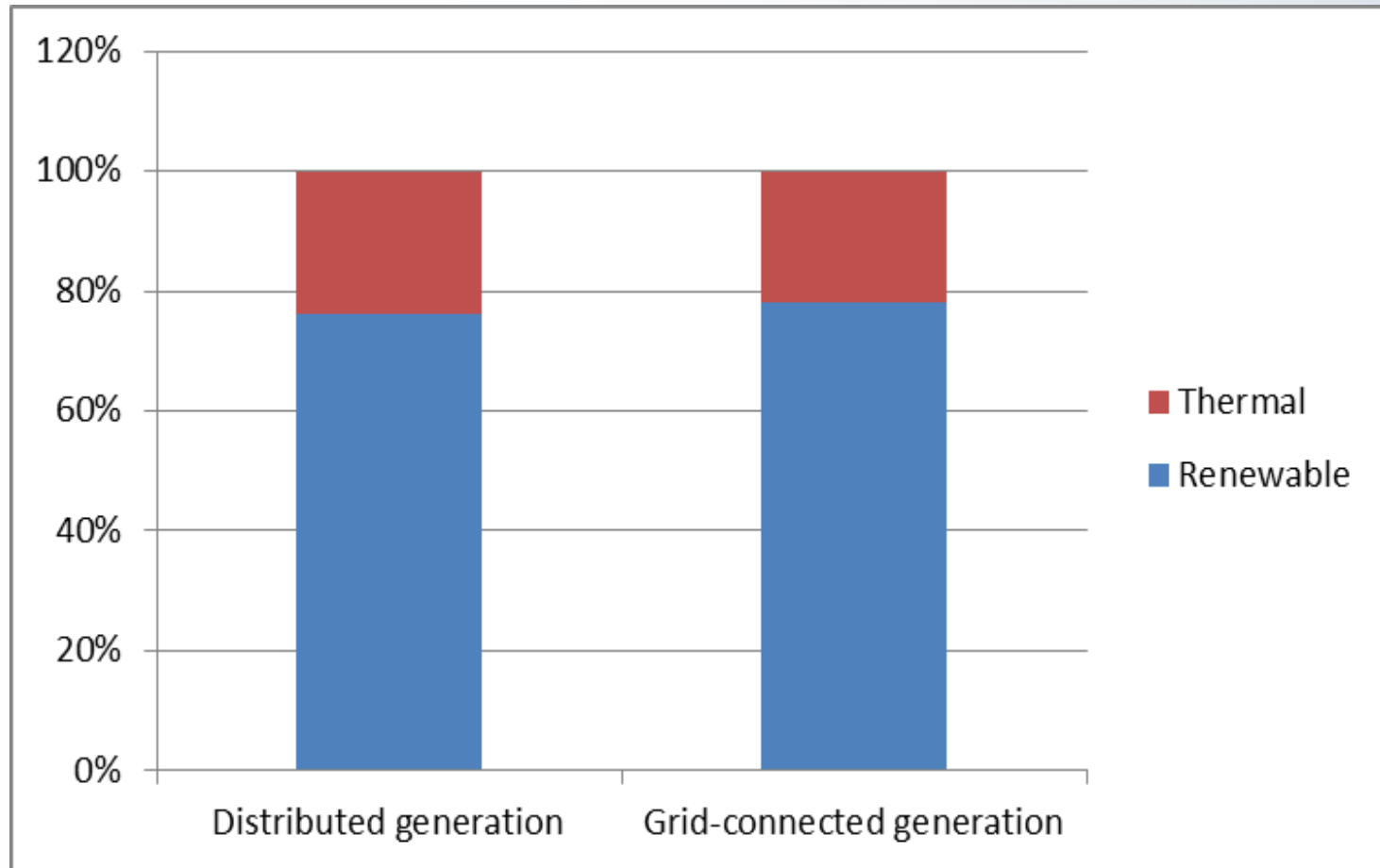
NB: This is for information only (as the Authority does not take financial benefits into account)

Proposal has limited impacts on other matters

Impact on	Our response
Competition	Our proposal achieves a more level 'playing field' as it removes subsidies to competitors
Security of supply	Security of supply is unaffected <ul style="list-style-type: none">▪ Not expecting existing DGs to close-down▪ Subsidising DGs undermining security of supply?
Climate change targets	The proposal does not put climate targets at risk as <ul style="list-style-type: none">▪ Grid-connected generation is as renewable as DG▪ 95% of new generation pipeline is renewable
Regional employment	Grid-connected and distributed generators would continue to locate in the regions
Regulatory risk	Not affected as the Authority's commitment to its statutory objective is predictable

Most generation in New Zealand is renewable

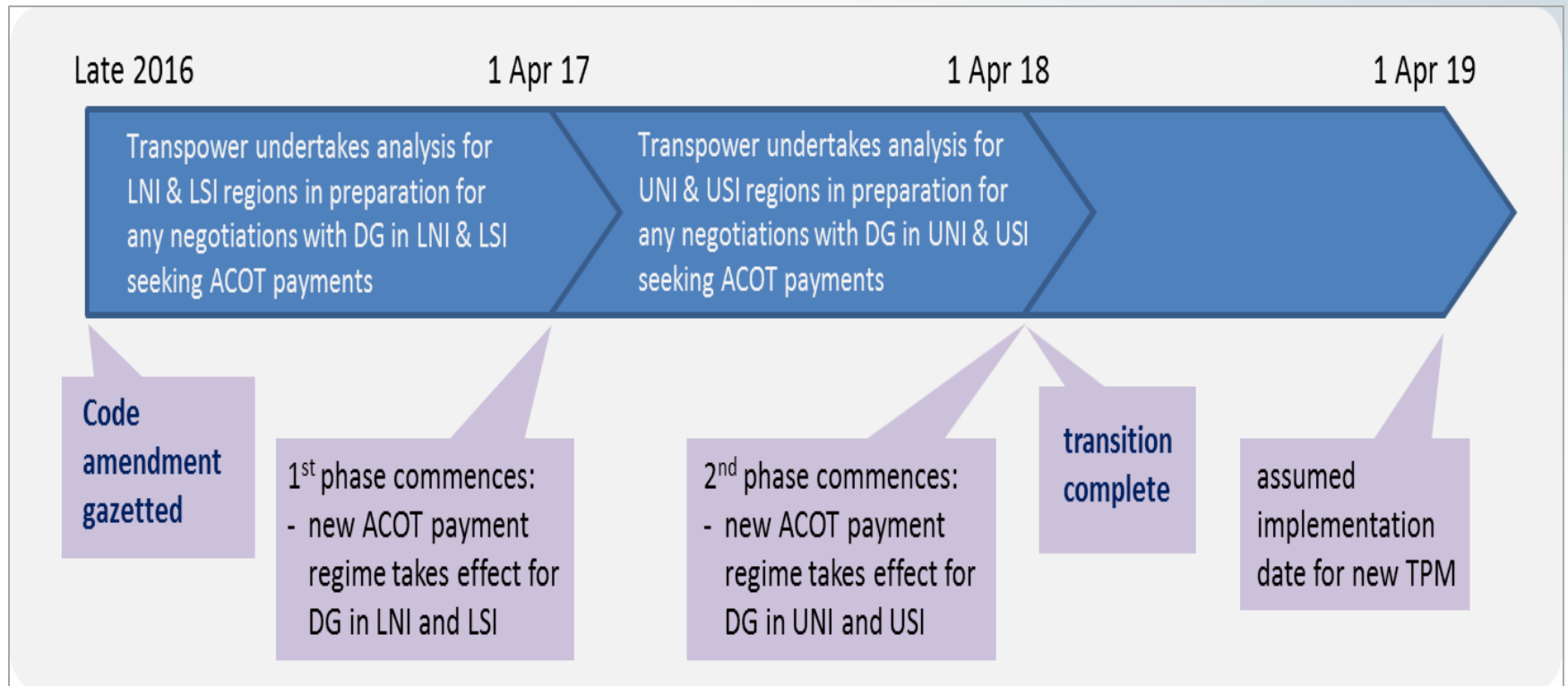
Proportion of generation renewable and thermal (by capacity)



We considered other options

- Alternative to proposal on connection services issue: amend DGPPs
 - Charges between incremental cost and standalone cost
- Alternatives to proposal on ACOT
 - Redefine incremental cost to exclude transmission cost
 - Ban on distributors paying ACOT
 - Distributors pay ACOT if Transpower approves them

Proposing to introduce changes in two phases



Transmission pricing methodology (TPM) second issues paper

The current TPM is complex and sends the wrong price signals

- The TPM determines which parties pay, and how much they pay, to Transpower for transmission services
- Currently, the costs are around \$900 million per year
- Two charges in the current TPM fail two key pricing principles
 - Not service-based
 - Not cost-reflective
- This encourages inefficient use of the grid and inefficient investment activity
 - Example #1: Generator location decisions
 - Example #2: Use of DG and DR when and where there's plenty of spare transmission capacity
 - Many more examples in our paper
- Consequences
 - Incentivises wasteful transmission investment
 - Poor information about alternatives to specific transmission proposals
 - The TPM is not durable

Two main current charges

HVDC \$150 million per year
Interconnection \$639 million per year

Proposing to replace two current charges with two new charges

- **Key change:** proposing to allocate the cost of grid investments to those that benefit from them; called the area-of-benefit (AoB) charge

Two main current charges

HVDC \$150 million per year
Interconnection \$639 million per year
Prudent discount policy (PDP)



Two main new charges

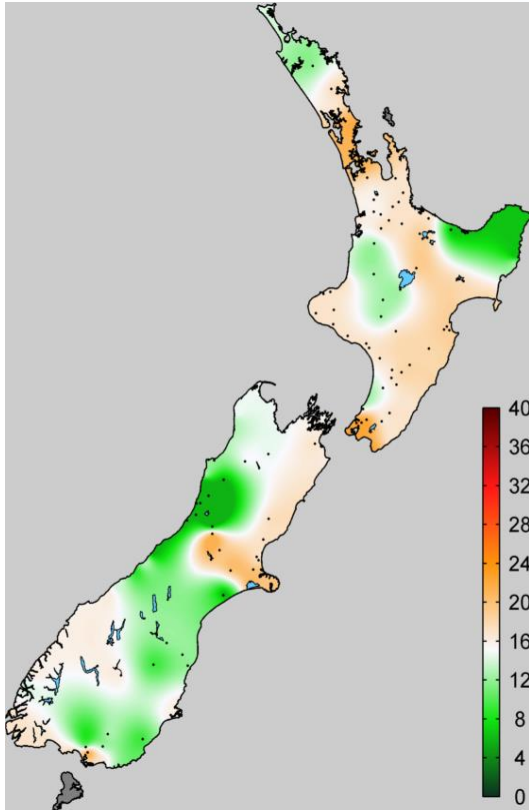
Area-of-benefit \$296 million per year
Residual charge \$500 million per year
Expanded PDP

Overview of Authority's proposal: Main components

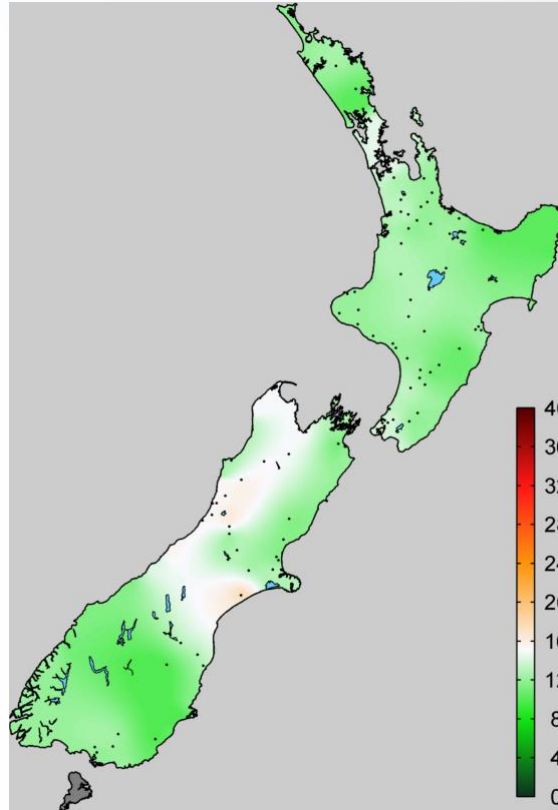
	Main components	Proposal
Beneficiaries pay	Connection charge (Access charge)	<ul style="list-style-type: none"> Retain the existing connection charge subject to possible inclusion of additional components
	Area-of-benefit charge (Access charge)	<ul style="list-style-type: none"> Applied to both load and generation Parties would pay in proportion to their share of benefits (unless not practicable for some customer) A standard method would apply for new investments >\$5m and for post 2004 investments > \$50m and for Pole 2 A simplified method for new investments <\$5m
	Residual charge (Broad base low rate charge)	<ul style="list-style-type: none"> Applied to load customers only Allocated in proportion to share of historical physical capacity <ul style="list-style-type: none"> Transpower may proxy physical capacity by using gross AMD in the 5 years prior to publication of today's paper Overhead and unallocated operating expenses are currently \$198m <ul style="list-style-type: none"> Proposing similar allocation to status quo but also considering a surcharge approach

The residual charge is more even than interconnection charge

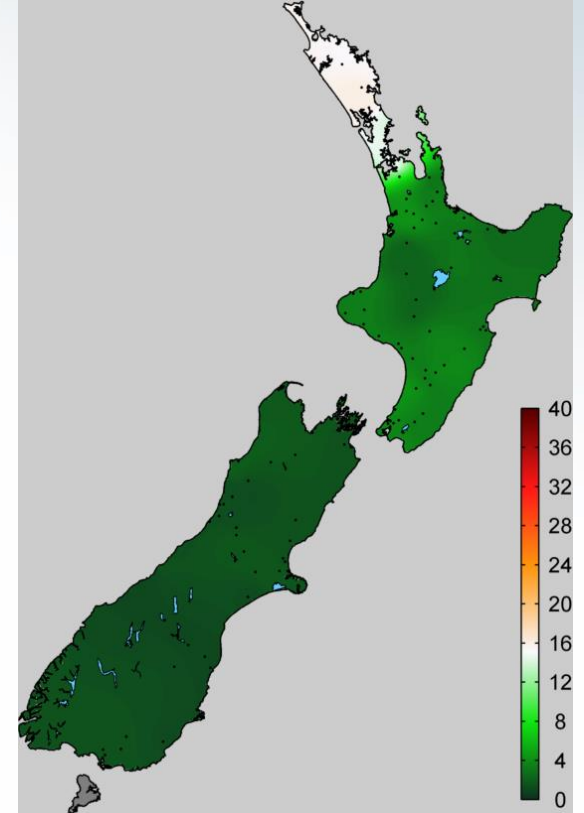
Current interconnection charge



Proposed residual charge

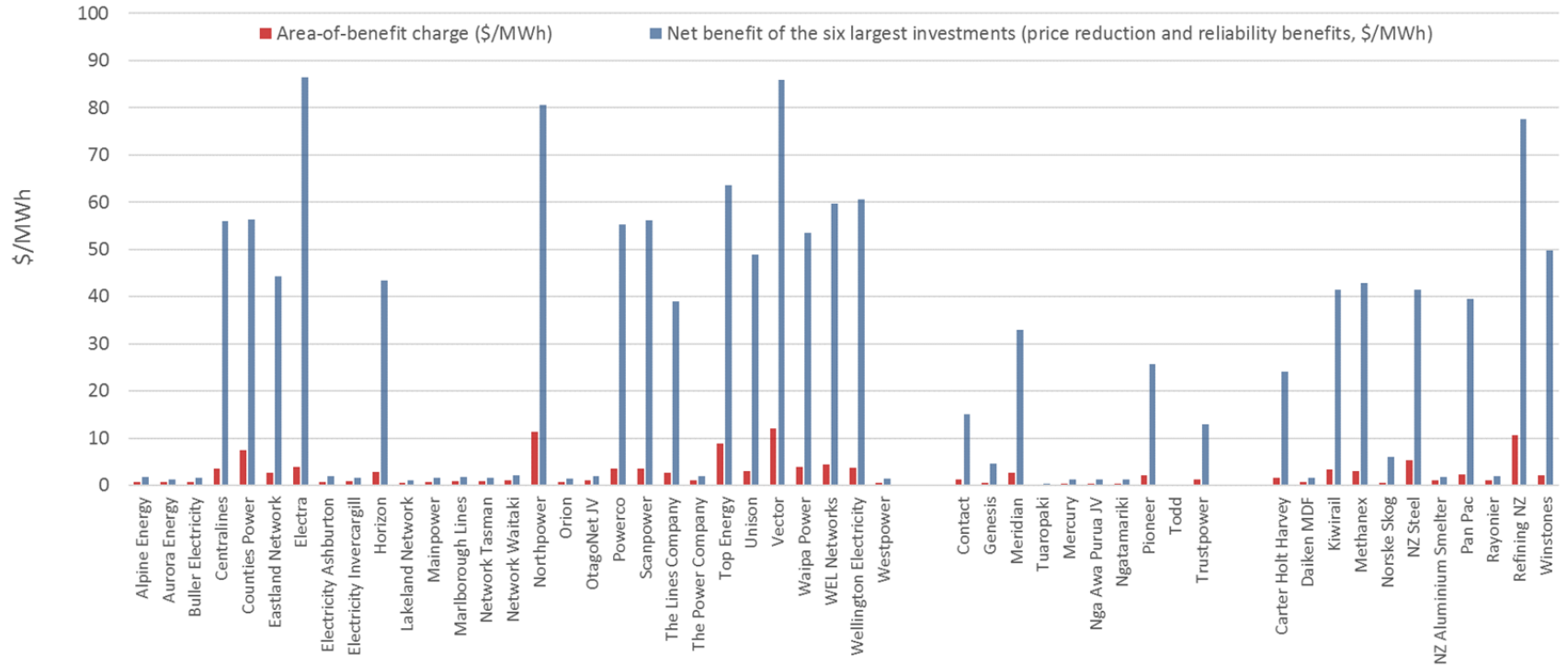


Proposed area-of-benefit charge



AoB charges are substantially lower than the benefits received

Area-of-Benefit Charge Compared to Indicative Net Benefits for the Six Large Investments (as \$/MWh)



The TPM proposal affects ACOT payments even if retain DGPPs

- The proposal to remove the DGPPs shouldn't remove all ACOT payments
 - ACOT and ACOD would still be paid when DGs reduced transmission and distribution costs
- The TPM proposal would reduce misalignment between transmission charges and costs
 - Transmission charges would no longer be set on the basis of RCPD
 - The residual charge would be set based on a fixed capacity allocator for 10 years and then on a rolling-average basis with a 10-year lag ~ hence DG wouldn't reduce residual charges and so ACOT would not be available from this source
- Even if a fixed allocator was not adopted for the residual the proposal would reduce ACOT payments
 - The \$639m interconnection 'bucket' for 2015/16 would reduce to a \$500m residual 'bucket'
 - The area-of-benefit charge provides incentives for further reduction in the residual charge 'bucket' over time eg, allocation of unallocated operational expenses to area-of-benefit assets
 - If the Authority adopted the surcharge approach to allocating \$198m of "overhead and unallocated operational" expenses then this could also alter the 'bucket'

Overview of Authority's proposal : Main components

Main components	Proposal
Prudent discount policy (PDP) extended	<ul style="list-style-type: none">▪ Discount may apply for the expected life of relevant asset▪ New circumstances for load customers to apply for discount<ol style="list-style-type: none">a) If privately beneficial to build generation to disconnect from the gridb) If materially at risk of closing down its NZ plant and so would disconnect from the gridc) If its transmission charges exceed standalone costsd) If a distributor has an embedded consumer in a similar circumstance to (b) and (c) above <p>Any prudent discounts for closure risk would be linked to key factors affecting closure decision, eg, world price of output</p> <p>Requesting submitter views on who should approve PDP applications under (b), (c) and (d)</p>

Transpower would have three mechanisms to alter its transmission charges to particular customers

- There are several pragmatic aspects to the proposal to ensure that transmission pricing can adjust to 'real world' changes and continue to deliver good outcomes for consumers
- These adjustments reflect adjustments often seen in workably competitive markets

Mechanism	Description
Expansion of the prudent discount policy (PDP)	<ul style="list-style-type: none">▪ Needed primarily because of the residual charge▪ Reduces charges to an applicant when not doing so would <u>increase</u> costs to other transmission customers, and would not be efficient or for the long-term benefit of consumers▪ Hence, achieves 'win-win' outcomes for the applicant, other transmission customers and consumers
Optimisation	<ul style="list-style-type: none">▪ Specific assets subject to the standard AoB charge can be optimised if there is a substantial reduction in transmission demand in a region▪ This avoids other transmission customers paying substantially higher prices as a result of the actions of a single large customer or local economic conditions
Revision of charges	<ul style="list-style-type: none">▪ The standard AoB charge can be revised if there is a material change in circumstances

Overview of Authority's proposal: Additional components

Transpower to consider whether implementing these components would promote the statutory objective

If don't propose, then must keep under review

Additional components

Long run marginal cost (LRMC) charge

Kvar charge

Staged commissioning

Charging for assets when other grid investments join those assets in a loop

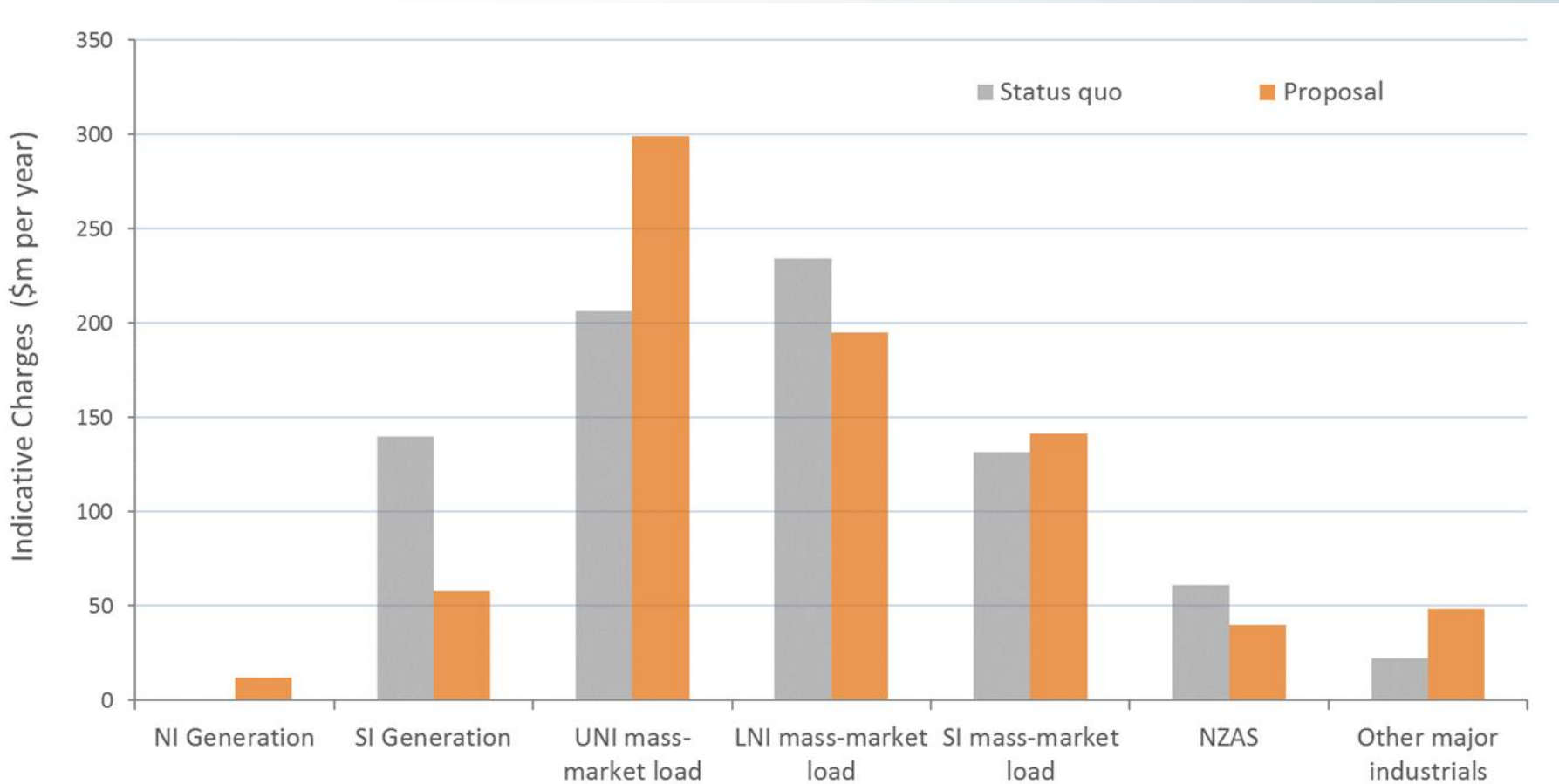
Allocation of operating and maintenance cost

Code changes outside the TPM guidelines

Loss and constraint excess (LCE) refunds

Minimum power factors

Impact of the two main charges by customer group (\$m)



The proposal is good for consumers and the economy

- Australian economic consulting firm Oakley Greenwood undertook an independent cost-benefit analysis (CBA) of the proposal
- The CBA shows that the net benefits from adopting the proposal are \$213 million. The net benefits are consistently large across a range of sensitivities
- The proposal has other net benefits that have not been quantified. These are likely to be substantial
 - Benefits from improved scrutiny of transmission investment that arise from the AoB charge
 - Benefits from reduced cost of disputes and reduced cost of uncertainty associated with moving to service-based and cost-reflective pricing
 - Benefits from the actual benefits extending beyond the period modelled
- The benefits arise because a move to a more service-based and cost-reflective TPM will
 - Incentivise generation plants to be built in the most economically efficient location
 - Incentivise investment in the electricity industry that is of the right size, located in the right place and developed at the right time
 - Ensure that distributed generation and demand response is developed and operated in an efficient manner

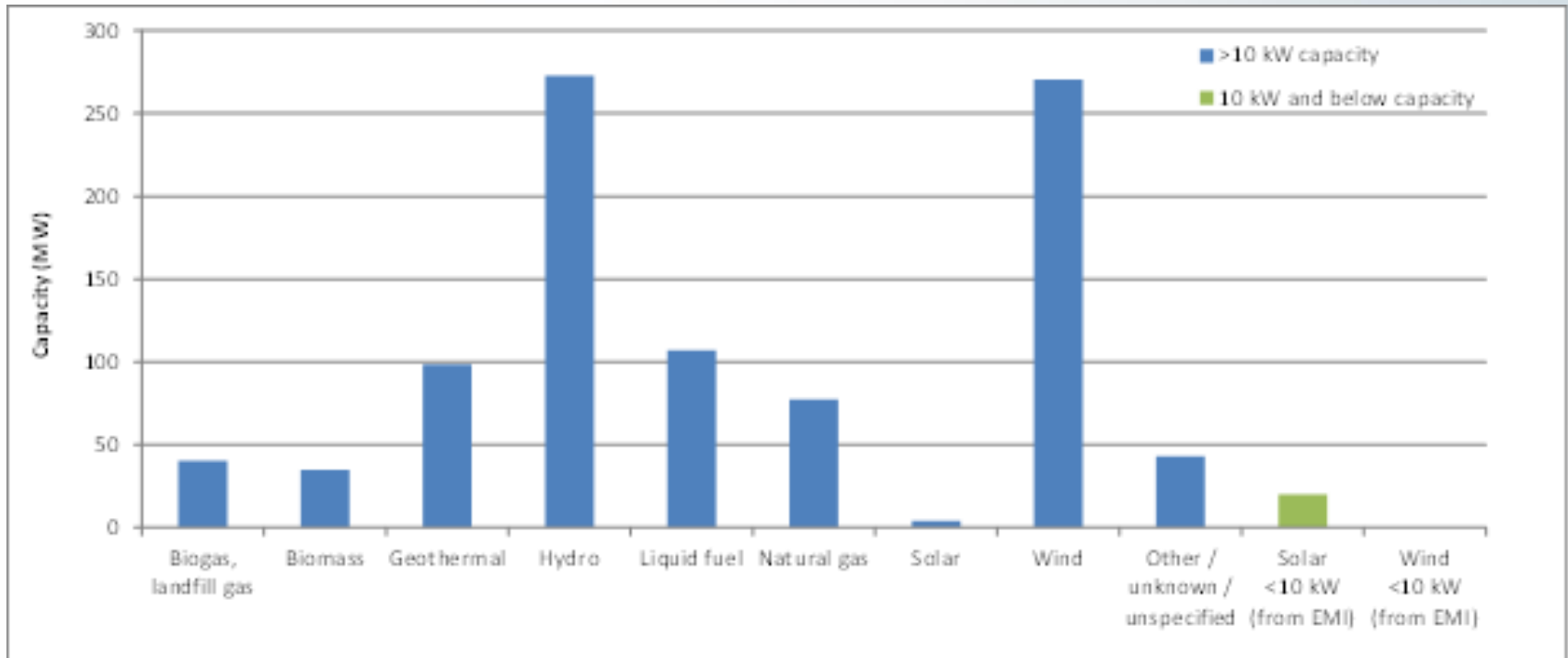
Next steps for the TPM review (and also review of DGPPs)

Milestone/Action	Date
Release of TPM second issues paper and DGPPs consultation paper	17 May 2016 (for 10 week consultation period)
Final decisions on the TPM review and review of DGPPs, approval of the TPM guidelines	October 2016 – indicative
Transpower develops draft TPM in accordance with the TPM guidelines the Authority approves	October 2016 – 2017
New ACOT arrangements phased in	April 2017 – 2018
New TPM takes effect	April 2019

Discussion

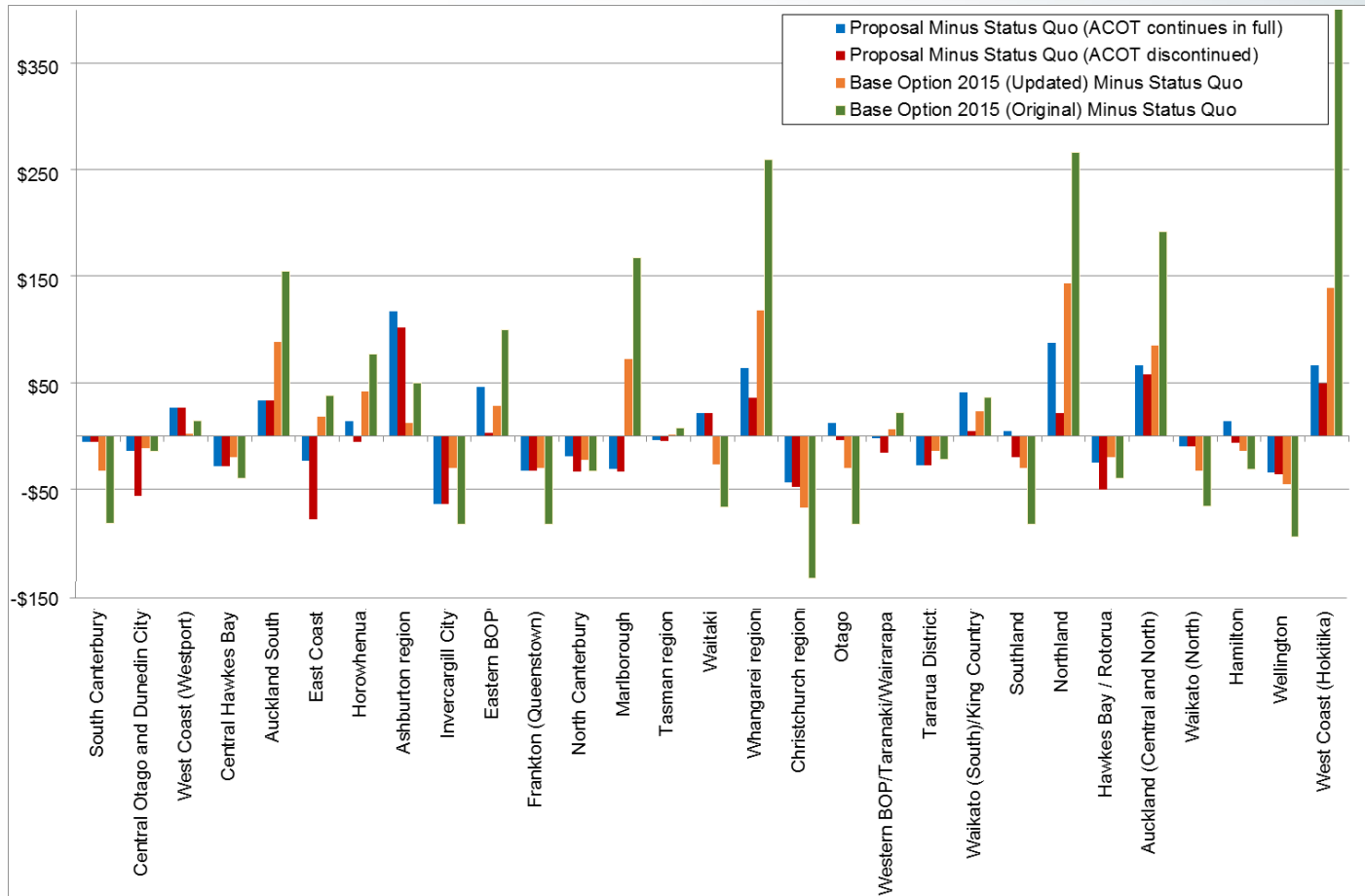
Background slides

Size and types of distributed generation

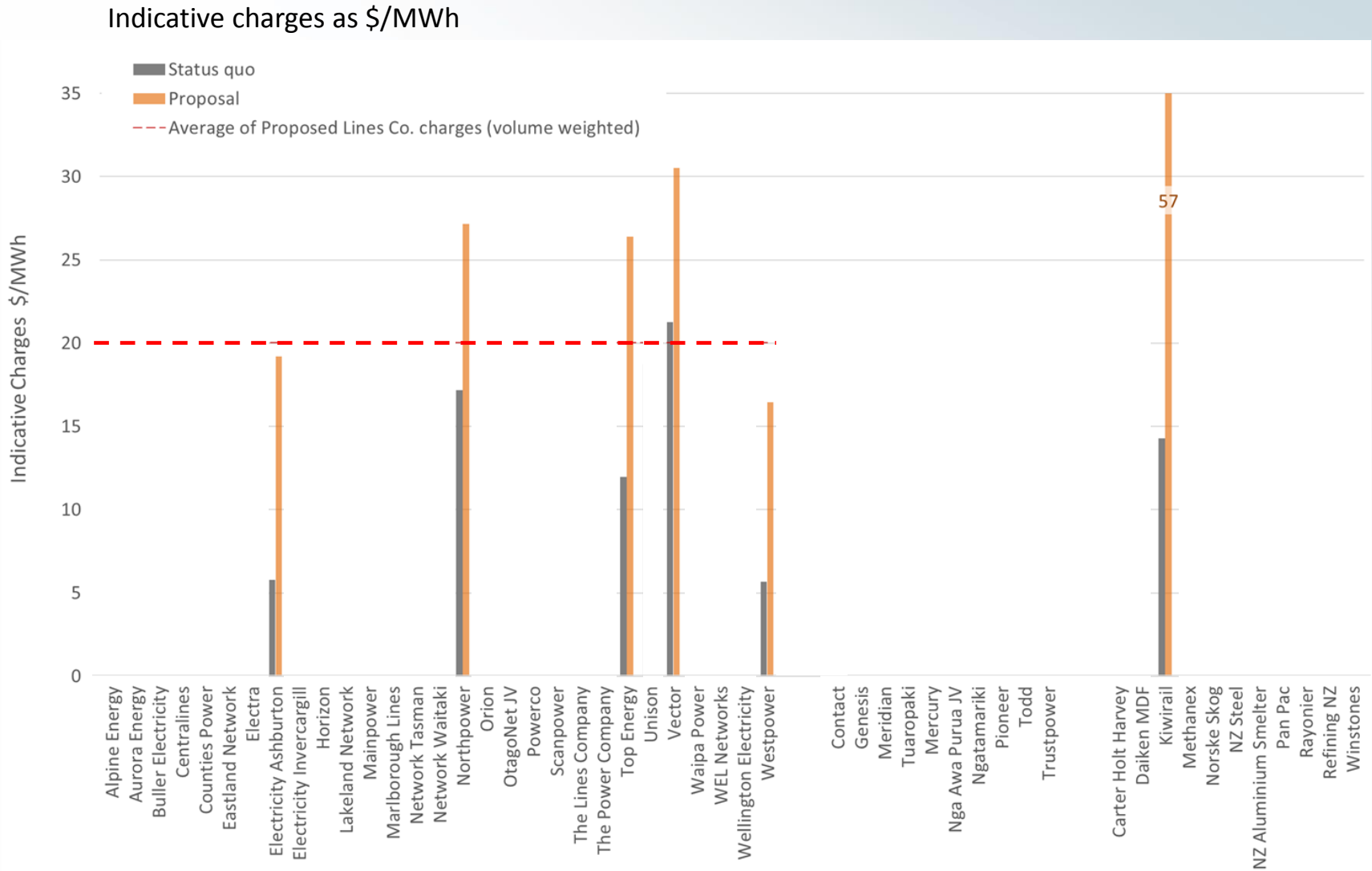


More moderate impact on households than in 2015 discussion

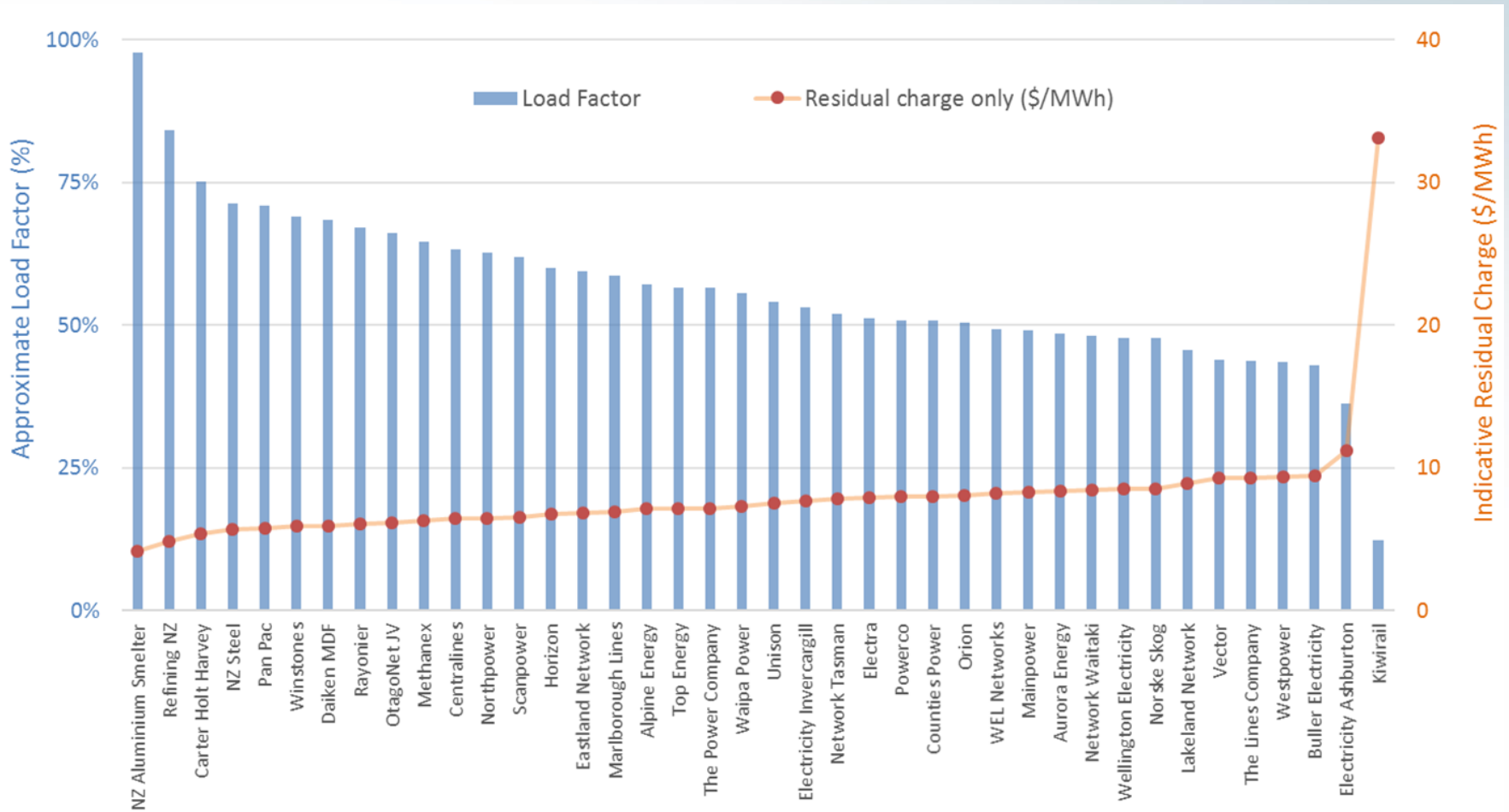
\$/year impact for a typical household



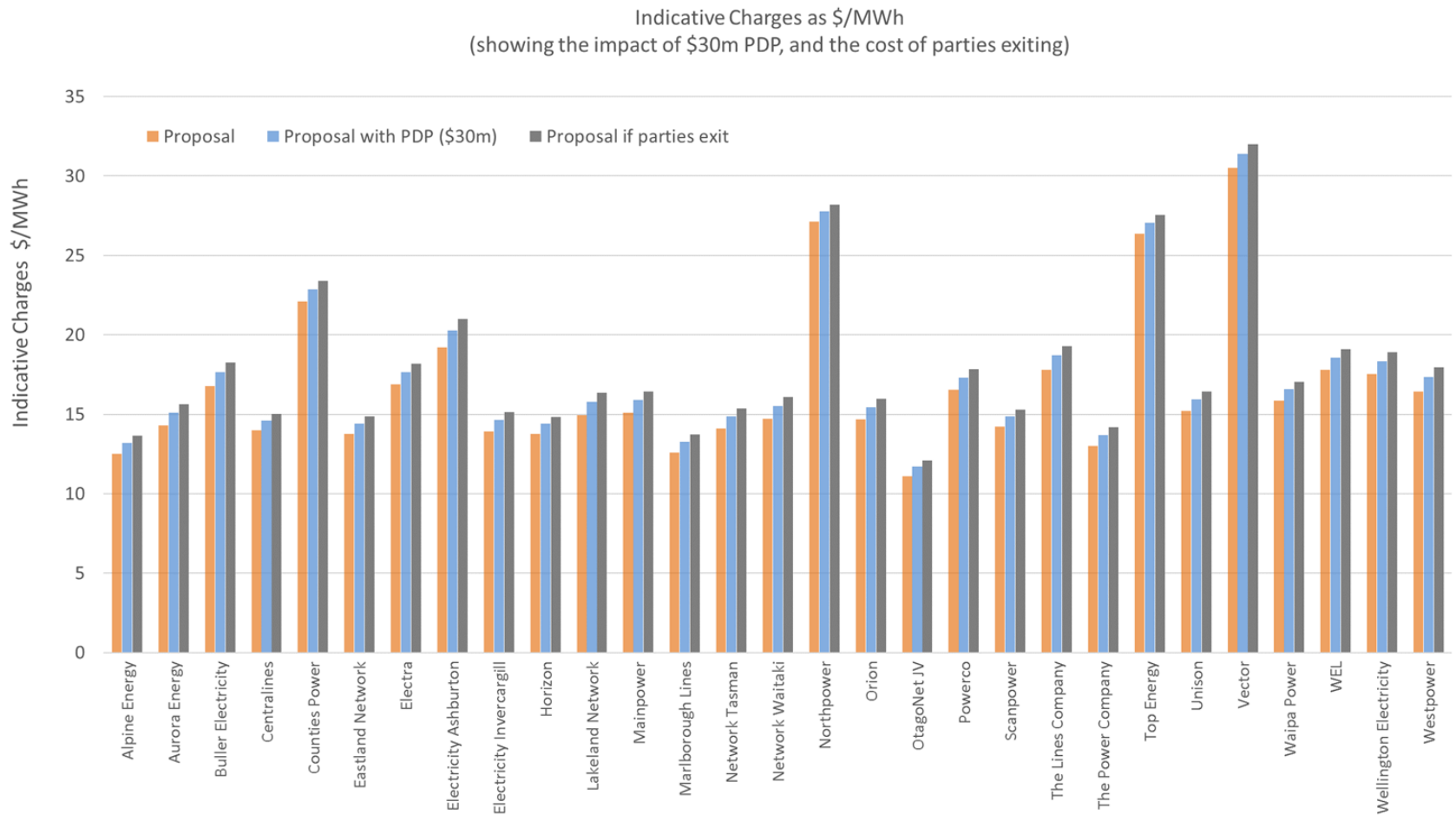
Impact of the proposal by customer group (\$/MWh)



Effect of customer load factor on the residual charge



PDP changes have a small impact on overall charges and avoid higher charges if parties exit



The proposal is good for consumers and the economy

Scenario	Net Benefit
Base case: 8% discount rate, 20-year analysis	\$213 million
Sensitivities	
1. 6% discount rate, 20-year analysis	\$242 million
2. 10% discount rate, 20-year analysis	\$191 million
3. 50% reduction in the price of capital	\$302 million
4. Scenario: 50% increase in diesel generation offset, 8% rate, 20 years	\$217 million
5. Scenario: 50% reduction in diesel generation offset, 8% rate, 20 years	\$210 million
6. 8% discount rate, 10-year analysis	\$172 million
7. 8% discount rate, 30-year analysis	\$258 million
8. Increased scrutiny	\$233-279 m
9. 100% increase in implementation costs	\$210 million