Top Energy Limited

Avoided Cost of Distribution Benefit Policy

ACOD BENEFIT POLICY

Introduction

This policy details Top Energy Limited's (Top Energy) approach to calculating Avoided Cost of Distribution (ACOD) benefits for eligible distributed generators (DG) connected to Top Energy's electricity distribution network (the Network). It sets out eligibility criteria, the method for estimating ACOD benefits and payment details.

This policy has been developed consistent with Part 6 of the Electricity Industry Participation Code (the Code), which sets out regulatory pricing principles (DG pricing principles) for setting network charges for DG[1].

Background

Top Energy owns and operates the electricity distribution network in the Far North region, from Kaikohe north to Cape Reinga. Generation plant is directly connected to the Network, including the 25 MW Ngawha geothermal plant as well as a range of smaller solar PV and diesel genset installations.

When setting network charges for DG connected to the Network, Top Energy must apply the DG pricing principles. Under these principles, ACOD benefit payments must not exceed the incremental cost of connecting the DG to the Network, including consideration of identifiable avoided or avoidable costs.

Avoided costs include identifiable Avoided Costs of Transmission (ACOT) and ACOD. The former reflects avoided Transpower charges which can only be paid to eligible[2] DG consistent with Top Energy's ACOT pricing methodology[3].

ACOD is defined as:

> *"distribution costs that an efficient distributor would be able to avoid as a result of the connection of the distributed generation"*[4]

The calculation of avoidable costs is based on an assessment of Top Energy's future costs with and without connection of the DG:

> *[avoided costs] must be estimated with reference to reasonable estimates of how the distributor's capital investment decisions and operating costs would differ, in the future, with and without the generation*[5]

The DG regulations therefore allow ACOD benefit payments to be made to DG on an arm's length basis where network expenditure is deferred or avoided due to generation being connected to the Network.

Eligible generators

DG eligible for ACOD benefit payments must meet the following criteria:

- DG plant must be electrically connected to the Network and have a nameplate capacity of 1 MWe[6] or greater. Top Energy will also consider on a discretionary basis:
    - multiple DG plant of less than 1 MWe that is jointly operated and which has a combined capacity of 1 MWe or greater
    - other technologies that are capable of injecting electricity into the Network with an equivalent capacity of 1 MWe or greater (e.g. batteries).
- The connection of the DG to the Network must materially reduce or defer planned distribution capital expenditure (capex) and/or operating or maintenance expenditure (opex) over Top Energy's current ten-year

[1] Electricity Industry Participation Code 2010, Schedule 6.4

[2] *Ibid*, Schedule 6.4(2)(a)(i)

[3] See section 6.8 of Top Energy's pricing methodology

[4] *Ibid,* Schedule 6.4(2)(a)(ii)

[5] *Ibid*, Schedule 6.4(2)(b)

[6] Megawatts electric: Electrical output capability of generation plant

asset management planning period, consistent with Top Energy's published Asset Management Plan (AMP). Examples include:

  - deferral of planned Network capacity investments due to DG operating during forecast periods of Network congestion or in providing Network voltage support to meet the Network performance standards set out in the AMP

  - deferral of planned Network resilience investments due to DG operations (e.g. provision of backup generation during Network outages).

- The DG must operate on a consistent and reliable basis in order to provide a reasonable level of certainty over the anticipated Network benefits, and hence avoided costs.

DG that does not meet these criteria is unlikely to materially impact Top Energy's Network investment, operating and maintenance requirements and therefore will not provide an ACOD benefit.

Approach to the calculation of ACOD

Top Energy's approach to calculating ACOD benefit payments is consistent with the "with and with-out" test specified in the DG pricing principles.

Top Energy will work with the DG owner or operator to identify potential avoidable distribution costs and/or cost deferral arising from eligible DG being connected to the Network. This will be compared to the Network's distribution costs without the connection of the relevant DG.

The present value of any avoided/deferred costs will be estimated along with an adjustment for tax to quantify the ACOD benefit to Top Energy. An annuity payment will be calculated to pass on the estimated ACOD benefit to the eligible DG over the network expenditure deferral period.

The key inputs and assumptions used in the ACOD estimate calculation and the present value comparison are discussed in Table 1 below.

An illustrative example is provided in Appendix A.

Table 1: Key inputs used for ACOD benefit calculation

Input	Description	Provided by
Avoided/deferred Network capex	• Estimates of future Network capex that is avoided or deferred as a result of the connection of the eligible DG	Top Energy with supporting information provided by DG
Avoided/deferred Network opex	• Estimates of future Network opex that is avoided or deferred as a result of the connection of the eligible DG	
Network expenditure deferral period	• Time period over which the above costs are avoided or deferred	
Network investment life	• Asset life applying to applicable Network investments	
Network investment tax depreciation rate	• Tax depreciation rate applying to applicable Network investments	NZ Inland Revenue Department Depreciation Rates - IR265
Discount rate	• The forecast post tax nominal weighted average cost of capital (WACC) applying to Top Energy's regulated distribution business. • Current forecast from FY21 onwards is 5.2%	Top Energy forecast or Commerce Commission decision, as applicable
Inflation rate	• Cost price inflation estimates over the Network expenditure deferral period	2% per annum consistent with Reserve Bank of New Zealand's mid-point monetary policy target
Tax rate	• 28%	NZ marginal corporate tax rate

Application process

Top Energy will make an assessment of the value of any new ACOD benefit payments following request by an eligible DG.

Applications for ACOD payment assessments must be made in writing to:

Top Energy Limited
Attention: General Manager Network
PO Box 43
Kerikeri 0245

The following information should be provided with an application to support Top Energy's assessment:

- Documentation describing how the DG eligibility requirements are met
- Description of the DG plant, including at a minimum the following:
    - plant design description
    - capacity
    - location
    - forecast generation output (including typical loads, operating times and consistency)
    - operating protections or constraints
- Ownership and contact details.

Top Energy will endeavour to respond to the application, in writing within 15 working days, after receiving all necessary information from the DG applicant.

ACOD benefit payments

Annual ACOD benefit payments will be paid in 12 equal monthly instalments in arrears to the DG's nominated bank account.

ACOD payments will be reassessed by Top Energy annually following an initial assessment. The eligibility criteria, avoided/deferred expenditure estimates, network expenditure deferral period, and other key calculation inputs and assumptions will be reviewed to identify any material changes from the previous assessment. If material changes are identified, then Top Energy will recalculate the ACOD payments.

Any change to ACOD benefit payments will take effect from 1 April each year, unless otherwise notified by Top Energy, with notification of any changes made to the DG owner at least 20 business days prior to taking effect.

Payments will cease at the date a DG permanently disconnects from the Network, the eligibility status of the DG changes, or the DG no longer provides ACOD benefits to Top Energy.

Top Energy reserves the right to change the ACOD benefit calculation approach, inputs or assumptions or make any other changes to the assessed ACOD payment at its discretion[7], consistent with any applicable regulations, within 20 business days' notice of any change.

[7] including for any material change in inputs, assumptions or Network needs, such as changes to forecast demand or expenditure plans

Appendix A: Example ACOD benefit calculation

This example describes a hypothetical $1m Network investment that is deferred for a period of 5 years through connection of an eligible DG plant.

Without the connection of the DG plant the Network investment would be commissioned on 1 April 2019. Top Energy's analysis suggests that the Network investment is able to be deferred by 5 years with the DG plant connected.

By comparing the present value of commissioning the Network investment in 2019 versus 2024, the net ACOD benefit can be determined. Adjustments are also made for differences in incremental opex and tax payable. An annuity amount is calculated to recover the ACOD benefit over the 5-year network expenditure deferral period.

Please note that this example is simplified to demonstrate the application of the ACOD benefit methodology. Figures 1 and 2 illustrate the present value and ACOD benefit calculations, including the annual annuity amounts. The key inputs are summarised in Table 2.

Table 2: ACOD calculation inputs - example

Input	Example figures
Avoided/deferred Network capex	$1,000,000 (real $2019)
Avoided/deferred Network opex	2% of original capex per annum
Network expenditure deferral period	Date of investment without DG generation – 1/04/2019 Date of investment with DG generation – 1/04/2024
Network investment life	10 years
Network investment tax depreciation rate	8%
Discount rate	5.2%
Inflation rate	2%
Tax rate	28%

Figure 1: Example ACOD calculation – present value calculation without DG

			FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
Period Beginning			1/04/2019	1/04/2020	1/04/2021	1/04/2022	1/04/2023	1/04/2024	1/04/2025	1/04/2026	1/04/2027	1/04/2028	1/04/2029	1/04/2030	1/04/2031	1/04/2032	1/04/2033
Period Ending			31/03/2020	31/03/2021	31/03/2022	31/03/2023	31/03/2024	31/03/2025	31/03/2026	31/03/2027	31/03/2028	31/03/2029	31/03/2030	31/03/2031	31/03/2032	31/03/2033	31/03/2034
Valuation Period			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Inputs	**Units**	**Value**															
Capital expenditure																	
Capital expenditure (mid estimate)	*$ Nominal*	1,000,000															
Operational expenditure																	
Operating expenditure as % of capex	*%*	2.00%															
Time periods																	
Network investment planned date	*dd/mm/yyyy*	1/04/2019															
Network investment deferred date	*dd/mm/yyyy*	1/04/2024															
Asset life	*Years*	10															
Rates																	
WACC	*%*	5.20%															
Inflation rate	*%*	2.00%	1.02	1.04	1.06	1.08	1.10	1.13	1.15	1.17	1.20	1.22	1.24	1.27	1.29	1.32	1.35
Tax rate	*%*	28.00%															
Tax depreciation	*%*	8.00%															
Calculations - 1/04/2019	**Units**	**Value**															
Discount Factor																	
Discount factor	*#.##*		0.95	0.90	0.86	0.82	0.78	0.74	0.70	0.67	0.63	0.60	0.57	0.54	0.52	0.49	0.47
Capital expenditure																	
Capex as at investment date	*$ Nominal*	1,000,000	1,000,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating expenditure																	
Operating expenditure over asset life	*$ Nominal*	20,000	20,400	21,224	22,523	24,380	26,917	30,313	34,820	40,798	48,757	59,435	-	-	-	-	-
Tax benefit calculations																	
Opening asset value	*$ Nominal*		1,000,000	920,000	846,400	778,688	716,393	659,082	606,355	557,847	513,219	472,161	-	-	-	-	-
Tax depreciation	*$ Nominal*		80,000	73,600	67,712	62,295	57,311	52,727	48,508	44,628	41,058	37,773	-	-	-	-	-
Closing asset value	*$ Nominal*		920,000	846,400	778,688	716,393	659,082	606,355	557,847	513,219	472,161	434,388	-	-	-	-	-
Tax benefit due to opex and depreciation	*$ Nominal*		28,112	26,551	25,266	24,269	23,584	23,251	23,332	23,919	25,148	27,218	-	-	-	-	-
Present value																	
Capex	*$ Nominal*	950,570															
Opex	*$ Nominal*	239,385															
Tax benefit	*$ Nominal*	192,324															
Total	***$ Nominal***	**1,382,279**															

Figure 2: Example ACOD calculation – present value calculation with DG

			FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
Period Beginning			1/04/2019	1/04/2020	1/04/2021	1/04/2022	1/04/2023	1/04/2024	1/04/2025	1/04/2026	1/04/2027	1/04/2028	1/04/2029	1/04/2030	1/04/2031	1/04/2032	1/04/2033
Period Ending			31/03/2020	31/03/2021	31/03/2022	31/03/2023	31/03/2024	31/03/2025	31/03/2026	31/03/2027	31/03/2028	31/03/2029	31/03/2030	31/03/2031	31/03/2032	31/03/2033	31/03/2034
Valuation Period			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Calculations - 1/04/2024	**Units**	**Value**															
Discount Factor																	
Discount factor	*#.##*		0.95	0.90	0.86	0.82	0.78	0.74	0.70	0.67	0.63	0.60	0.57	0.54	0.52	0.49	0.47
Capital expenditure																	
Capex as at investment date	*$ Nominal*	1,000,000	-	-	-	-	-	1,126,162	-	-	-	-	-	-	-	-	-
Operating expenditure																	
Operating expenditure over asset life	*$ Nominal*	20,000	-	-	-	-	-	22,523	25,872	30,313	36,227	44,161	54,908	69,637	90,083	118,863	159,973
Tax benefit calculations																	
Opening asset value	*$ Nominal*		-	-	-	-	-	1,126,162	1,036,069	953,184	876,929	806,775	742,233	682,854	628,226	577,968	531,730
Tax depreciation	*$ Nominal*		-	-	-	-	-	90,093	82,886	76,255	70,154	64,542	59,379	54,628	50,258	46,237	42,538
Closing asset value	*$ Nominal*		-	-	-	-	-	1,036,069	953,184	876,929	806,775	742,233	682,854	628,226	577,968	531,730	489,192
Tax benefit due to opex and depreciation	*$ Nominal*		-	-	-	-	-	31,533	30,452	29,839	29,787	30,437	32,000	34,794	39,296	46,228	56,703
Present value																	
Capex	*$ Nominal*	830,819															
Opex	*$ Nominal*	353,708															
Tax benefit	*$ Nominal*	208,550															
Total	***$ Nominal***	**1,393,077**															
ACOD estimate	**Units**	**Value**															
Present value difference (early - late)	*$ Nominal*	(10,798)															
Annuity payment years	*Years*	5															
Annuity payment	*$ Nominal*	(2,508)	(2,508)	(2,508)	(2,508)	(2,508)	(2,508)	-	-	-	-	-	-	-	-	-	-

End of example