DRAFT DECISION
TransGrid transmission determination
2018 to 2023

Attachment 1 – Maximum allowed revenue

September 2017

AUSTRALIAN ENERGY REGULATOR

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Note

This attachment forms part of the AER's draft decision on TransGrid's transmission determination for 2018–23. It should be read with all other parts of the draft decision.

The draft decision includes the following documents:

Overview

Attachment 1 – Maximum allowed revenue

Attachment 2 – Regulatory asset base

Attachment 3 – Rate of return

Attachment 4 – Value of imputation credits

Attachment 5 – Regulatory depreciation

Attachment 6 – Capital expenditure

Attachment 7 – Operating expenditure

Attachment 8 – Corporate income tax

Attachment 9 – Efficiency benefit sharing scheme

Attachment 10 – Capital expenditure sharing scheme

Attachment 11 – Service target performance incentive scheme

Attachment 12 – Pricing methodology

Attachment 13 – Pass through events

Attachment 14 – Negotiated services

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Shortened forms

Shortened form	Extended form
AARR	aggregate annual revenue requirement
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ASRR	annual service revenue requirement
augex	augmentation expenditure
capex	capital expenditure
CCP	Consumer Challenge Panel
CESS	capital expenditure sharing scheme
CPI	consumer price index
DMIA	demand management innovation allowance
DRP	debt risk premium
EBSS	efficiency benefit sharing scheme
ERP	equity risk premium
MAR	maximum allowed revenue
MRP	market risk premium
NEL	national electricity law
NEM	national electricity market
NEO	national electricity objective
NER	national electricity rules
NSP	network service provider
NTSC	negotiated transmission service criteria
opex	operating expenditure
PPI	partial performance indicators
PTRM	post-tax revenue model
RAB	regulatory asset base
RBA	Reserve Bank of Australia
repex	replacement expenditure
RFM	roll forward model
RIN	regulatory information notice

Shortened form	Extended form
RPP	revenue and pricing principles
SLCAPM	Sharpe-Lintner capital asset pricing model
STPIS	service target performance incentive scheme
TNSP	transmission network service provider
TUoS	transmission use of system
WACC	weighted average cost of capital

1 Maximum allowed revenue

This attachment sets out our draft decision on TransGrid's maximum allowed revenue (MAR) for the provision of prescribed transmission services over the 2018–23 regulatory control period. Specifically, it sets out our draft decision on:[1]

- the estimated total revenue cap, which is the sum of the annual expected MAR
- the annual building block revenue requirement
- the annual expected MAR
- the X factor.

We determine TransGrid's annual building block revenue requirement using a building block approach. We determine the X factors by smoothing the annual building block revenue requirement over the regulatory control period. The X factor is used in the CPI–X methodology to determine the annual expected MAR (smoothed).

1.1 Draft decision

We do not accept TransGrid's proposed annual building block revenue requirement, annual expected MAR and total revenue cap. For the reasons discussed in the attachments to this draft determination, our decisions on TransGrid's proposed building block costs have a consequential impact on its annual building block revenue requirement. We have calculated the X factor and the annual expected MAR (smoothed) to reflect our draft decision on TransGrid's annual building block revenue requirement.

We determine a total annual building block revenue requirement for TransGrid of $3908.8 million ($nominal) for the 2018–23 regulatory control period. This is a reduction of $360.7 million ($nominal) or 8.4 per cent to TransGrid's proposal and reflects the impact of our draft decisions on the various building block costs.

We determine the annual expected MAR and X factor for each regulatory year of the 2018–23 regulatory control period by smoothing the annual building block revenue requirement. Our draft decision is to approve an estimated total revenue cap of $3910.0 million ($nominal) for TransGrid for the 2018–23 regulatory control period. Our approved X factor for 2019–20 to 2022–23 is –0.86 per cent per annum.[2]

Table 1.1 sets out our draft decision on TransGrid's annual building block revenue requirement, the X factor, the annual expected MAR and the estimated total revenue cap for the 2018–23 regulatory control period.

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1 NER, cll. 6A.4.2(a)(1)–(3), 6A.5.3(c) and 6A.6.8.

2 TransGrid is not required to apply an X factor for 2018–19 because we set the 2018–19 MAR in this decision.

Table 1.1 AER's draft decision on TransGrid's annual building block revenue requirement, annual expected MAR, estimated total revenue cap and X factor ($million, nominal)

	2018–19	2019–20	2020–21	2021–22	2022–23	Total
Return on capital	413.4	417.2	424.8	432.2	436.6	2124.2
Regulatory depreciation[a]	101.0	117.4	129.6	134.7	147.8	630.5
Operating expenditure[b]	177.2	182.7	188.0	193.6	199.4	940.9
Revenue adjustments[c]	4.5	18.4	5.2	12.5	4.1	44.7
Net tax allowance	30.2	32.1	33.6	35.5	37.2	168.5
Annual building block revenue requirement (unsmoothed)	726.2	767.8	781.1	808.6	825.0	3908.8
Annual expected MAR (smoothed)	**730.9**	**755.6**	**781.1**	**807.6**	**834.9**	**3910.0**[d]
X factor (%)[e]	n/a[f]	–0.86%	–0.86%	–0.86%	–0.86%	n/a

Source: AER analysis.

(a) Regulatory depreciation is straight-line depreciation net of the inflation indexation on the opening RAB.

(b) Includes debt raising costs.

(c) Includes revenue adjustments from the efficiency benefit sharing scheme (EBSS) and capital efficiency sharing scheme (CESS).

(d) The estimated total revenue cap is equal to the total annual expected MAR.

(e) The X factors will be revised to reflect the annual return on debt update. Under the CPI–X framework, the X factor measures the real rate of change in annual expected revenue from one year to the next. A negative X factor represents a real increase in revenue. Conversely, a positive X factor represents a real decrease in revenue.

(f) TransGrid is not required to apply an X factor for 2018–19 because we set the 2018–19 MAR in this decision. The MAR for 2018–19 is the same as the approved MAR for 2017–18 in real terms, or 2.5 per cent higher in nominal terms.

1.2 TransGrid's proposal

TransGrid proposed a total (smoothed) revenue cap of $4269.8 million ($nominal) for the 2018–23 regulatory control period. Table 1.2 sets out TransGrid's proposed annual building block revenue requirement, the X factor, the annual expected MAR and the estimated total revenue cap.

Table 1.2 TransGrid's proposed annual building block revenue requirement, annual expected MAR, estimated total revenue cap and X factor ($million, nominal)

	2018–19	2019–20	2020–21	2021–22	2022–23	Total
Return on capital	423.0	430.9	444.1	459.2	476.3	2233.5
Regulatory depreciation[a]	108.4	125.5	139.2	146.1	158.9	678.1
Operating expenditure[b]	189.6	195.7	203.1	211.1	219.0	1018.5

Revenue adjustments[c]	31.0	31.7	8.8	14.4	5.5	91.4
Net tax allowance	44.5	47.1	49.3	52.2	54.8	247.9
Annual building block revenue requirement (unsmoothed)	796.5	831.0	844.6	882.9	914.4	4269.5
Annual expected MAR (smoothed)	**796.5**	**824.3**	**853.0**	**882.7**	**913.4**	**4269.8**[d]
X factor (%)	n/a[e]	–1.07%	–1.07%	–1.07%	–1.07%	n/a

Source: TransGrid, *Revenue proposal*, January 2017, p. 214.

(a) Regulatory depreciation is straight-line depreciation net of the inflation indexation on the opening RAB.

(b) Includes debt raising costs.

(c) Includes revenue adjustments from EBSS and CESS.

(d) The estimated total revenue cap is equal to the total annual expected MAR.

(e) TransGrid is not required to apply an X factor for 2018–19 because we set the 2018–19 MAR in this decision.

1.3 Assessment approach

In this section, we describe the building block approach used to determine TransGrid's expected MAR. We also set out the annual revenue adjustment to be applied to TransGrid's MAR over the 2018–23 regulatory control period.

1.3.1 The building block approach

The MAR is calculated using the post-tax revenue model (PTRM).[3] The PTRM must be such that the expected MAR for each year of the regulatory control period is equal to the net present value (NPV) of the annual building block revenue requirement.[4] The total revenue cap is the sum of the expected MARs for the period.[5] In turn, the annual building block revenue requirement must be determined using a building block approach.[6] Therefore, we adopt a building block approach when making our decision on TransGrid's total revenue cap and expected MAR for each regulatory year of the regulatory control period. Under this approach we determine the value of the building block costs that make up the annual building block revenue requirement for each regulatory year. These building block costs are set out in section 1.3.2.

We developed the PTRM, which brings together the various building block costs and calculates the annual building block revenue requirement for each year of the regulatory control period.[7] The PTRM also calculates the X factors required under the CPI–X methodology which is used to escalate the MAR for each year (other than the

[3] NER, cll.6A.5.1 and 6A.5.3.

[4] NER, cl. 6A.5.3(c)(1).

[5] NER, cl. 6A.5.3(c)(4).

[6] NER, cl. 6A.5.4.

[7] NER, cl. 6A.5.

first year) of the regulatory control period.[8] Using the X factors and annual building block revenue requirement, the annual expected MAR (smoothed) is forecast for each year of the regulatory control period. TransGrid's revenue proposal must be prepared using our PTRM.[9]

The annual building block revenue requirement can be lumpy over the regulatory control period. To minimise price shocks, revenues are smoothed within a regulatory control period while maintaining the principle of cost recovery under the building block approach. Smoothing requires diverting some of the cost recovery to adjacent years within the regulatory control period so that the NPV of the annual expected MAR (smoothed revenues) is equal to the NPV of the annual building block revenue requirement (unsmoothed revenues). That is, a smoothed profile of the expected MAR is determined for the regulatory control period under the CPI–X methodology.

The expected MAR for the first year is generally set equal to the annual building block revenue requirement for the first year of the regulatory control period. It may be appropriate to set the expected MAR for the first year to align with the MAR from the last year of the previous regulatory control period to avoid any large revenue variation between periods (or P_0):[10]

$$MAR_1 = AR_1 \text{ or } MAR_L$$

where:

MAR_1 = the maximum allowed revenue for year 1 of the regulatory control period

AR_1 = the annual building block revenue requirement for year 1 of the regulatory control period

MAR_L ~ the maximum allowed revenue for the last year of the previous regulatory control period.

To enable the formula for the annual revenue adjustment process (discussed in section 1.3.3) to operate correctly, we will refer to the MAR determined in this decision using the building block costs as the allowed revenue (AR). This is because the expected MAR determined using the building block costs does not incorporate performance incentive scheme revenue adjustments and pass through amounts that may apply to each regulatory year.

In this determination for TransGrid, we first calculate annual building block revenue requirements for each year of the 2018–23 regulatory control period. To do this we

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8 NER, cll. 6A.5.3 and 6A.6.8.

9 NER, cl. 6A.5.1(a).

10 The MAR for year 1 of the regulatory control period may include adjustment for the performance incentive that applied during the previous regulatory control period, and under or over recovery adjustments from previous regulatory years.

consider the various costs facing TransGrid and the trade-offs and interactions between these costs, service quality and across years. This reflects our holistic assessment of TransGrid's revenue proposal.

We understand the trade-offs that occur between building block costs and test the sensitivity of these costs to their various driver elements. These trade-offs are discussed in the interrelationships section of the various attachments to this draft decision and are reflected in the calculations made in the PTRM.[11] Such understanding allows us to exercise judgement in determining the final inputs into the PTRM and the annual building block revenue requirements that result from this modelling.

Having determined the total annual building block revenue requirement for the 2018–23 regulatory control period, we smooth the annual building block revenue requirements for each regulatory year across that period. This step reduces revenue variations between regulatory years, and calculates the expected MAR and X factor for each year.[12] The X factors equalise (in NPV terms) the total expected revenue cap to be earned by TransGrid with the total building block revenue requirement for the 2018–23 regulatory control period.[13] They must minimise, as far as reasonably possible, the variance between the expected MAR and annual building block revenue requirement for the last regulatory year of the period.[14] We consider a divergence of up to 3 per cent between the expected MAR and annual building block revenue requirement for the last year of the regulatory control period is reasonable, if this can promote smoother price changes over the regulatory control period.

The building block costs (and the elements that drive those costs) used to determine the unsmoothed annual building block revenue requirements are set out in section 1.3.2.

1.3.2 The building block costs

The efficient costs to be recovered by TransGrid can be thought of as being made up of various building block costs. Our draft decision assesses each of the building block costs and the elements that drive these costs. The building block costs are approved reflecting trade-offs and interactions between the cost elements, service quality and across years.

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11 There are trade-offs that are not modelled in the PTRM but are reflected in the inputs to the PTRM. For example, service quality is not explicitly modelled in the PTRM, but the trade-offs between service quality and price are reflected in the forecast capex and opex inputs to the model. Other trade-offs are obvious from the calculations in the PTRM. For example, while someone may expect a lower regulatory asset base to also lower revenues, the PTRM shows that this will not occur if the reduction in the regulatory asset base is due solely to an increase in the depreciation rate. In such circumstances, revenues increase as the increased depreciation allowance more than offsets the reduction in the return on capital caused by the lower regulatory asset base.

12 NER, cl. 6A.6.8(a).

13 NER, cl. 6A.6.8(c)(1).

14 NER, cl. 6A.6.8(c)(2).

Table 1.3 shows the building block costs that form the annual building block revenue requirement for each year and where discussion on the elements that drive these costs can be found within this draft decision.

Table 1.3 Building block costs

Building block costs	Attachments where elements are discussed
Return on capital	Regulatory asset base (attachment 2) Rate of return (attachment 3) Capex (attachment 6)
Regulatory depreciation (return of capital)	Regulatory asset base (attachment 2) Depreciation (attachment 5) Capex (attachment 6)
Operating expenditure (opex)	Opex (attachment 7)
Efficiency benefits/penalties	EBSS (attachment 9) CESS (attachment 10)
Estimated cost of corporate tax	Value of imputation credits (attachment 4) Corporate income tax (attachment 8)
Adjustment for shared assets	Maximum allowed revenue (attachment 1)

1.3.3 Annual revenue adjustment process

The PTRM incorporates an expected inflation rate to calculate the expected MAR (excluding performance incentive scheme revenue adjustments and pass through amount that may apply to each regulatory year) in nominal dollar terms, whereas the actual MAR from the second year onwards is adjusted for actual inflation. As discussed in attachment 3, we will update TransGrid's return on debt annually. This means the actual MAR for each year will also be adjusted for revised X factors after the annual return on debt update. This annual revenue adjustment process is set out below.

The MAR for the subsequent year of the regulatory control period requires an annual adjustment based on the previous year's allowed revenue.[15] That is, the subsequent year's allowed revenue is determined by adjusting the previous year's allowed revenue for actual inflation and the X factor determined after the annual return on debt update:

$$AR_t = AR_{t-1} \times (1 + \Delta CPI) \times (1 - X_t)$$

where:

AR = the allowed revenue

[15] In the case of making the annual adjustment for year 2, the previous year's AR would be the same as the approved smoothed revenue for year 1 as contained in the PTRM.

t	=	time period/financial year (for t = 2 (2019–20), 3 (2020–21), 4 (2021–22), 5 (2022–23))
ΔCPI	=	the annual percentage change in the ABS consumer price index all groups, weighted average of eight capital cities from December in year t – 2 to December in year t – 1
X	=	the smoothing factor determined in accordance with the PTRM as approved in the AER's final decision, and annually revised for the return on debt update in accordance with the formula specified in the return on debt appendix calculated for the relevant year.[16]

The MAR is determined annually in accordance with the NER by adding to (or deducting from) the allowed revenue:

- the service target performance incentive scheme revenue increment (or revenue decrement)[17]
- any approved pass through amounts.[18]

Table 1.4 sets out the timing of the annual calculation of the AR and performance incentive:

MAR$_t$	=	(allowed revenue) + (performance incentive) + (pass through)
	=	$\mathrm{AR}_t + \left(\left(\mathrm{AR}_{t-2} \times \frac{1}{2}\right) + \left(\mathrm{AR}_{t-1} \times \frac{1}{2}\right)\right) \times \mathrm{S}_{ct} + \mathrm{P}_t$

where:

MAR	=	the maximum allowed revenue
AR	=	the allowed revenue
S	=	the revenue increment or decrement determined in accordance with the service target performance incentive scheme
P	=	the pass through amount (positive or negative) that the

16 Please see attachment 3 for details.

17 NER, cl. 6A.7.4.

18 NER, cll. 6A.7.2 and 6A.7.3.

		AER has determined in accordance with clauses 6A.7.2 and 6A.7.3 of the NER
t	=	time period/financial year (for *t* = 2 (2019–20), 3 (2020–21), 4 (2021–20), 5 (2022–23))
ct	=	time period/calendar year (for *ct* = 2 (2018), 3 (2019), 4 (2020), 5 (2021)).

TransGrid may also adjust the MAR for under or over-recovery amounts.[19] That is, if the revenue amounts earned from providing prescribed transmission services in previous regulatory years are higher or lower than the sum of the approved MAR for those years, the difference can be included in the subsequent years' MAR. In the case of an under-recovery, the amount is added to the subsequent years' MAR. In the case of an over-recovery, the amount is subtracted from the subsequent years' MAR.

Table 1.4 Timing of the calculation of allowed revenues and the performance incentive for TransGrid

t	Allowed revenue (financial year)	*ct*	Performance incentive (calendar year)
2	1 July 2019– 30 June 2020	2	1 January 2018– 31 December 2018
3	1 July 2019– 30 June 2021	3	1 January 2019– 31 December 2019
4	1 July 2019– 30 June 2022	4	1 January 2020– 31 December 2020
5	1 July 2019– 30 June 2023	5	1 January 2021– 31 December 2021

Note: The performance incentive for 1 January 2017–31 December 2017 is to be applied to the AR determined for 2018–19 (AR_1).

1.3.4 Average transmission charges

We are not required to determine the transmission charges in this transmission determination for TransGrid. Nonetheless, we provide the indicative transmission charges (and the resulting impact on annual electricity bills) that flow from the revenue determination as discussed in section 1.4.3. Although we assess TransGrid's proposed pricing methodology as part of this determination, actual transmission charges established at particular connection points are not determined by us. TransGrid establishes the transmission charges in accordance with the approved pricing methodology and the NER.[20]

[19] NER, cll 6A.23.3(e)(5) and 6A.24.4(c).

[20] NER, cl. 6A.24.1(d).

1.4 Reasons for draft decision

We determine a total annual building block revenue requirement of $3908.8 million ($nominal) for TransGrid for the 2018–23 regulatory control period. This compares to TransGrid's proposed total annual building block revenue requirement of $4269.5 million ($nominal) for this period.

Figure 1.1 shows the building block components from our determination that make up the annual building block revenue requirement for TransGrid, and the corresponding components from its proposal.

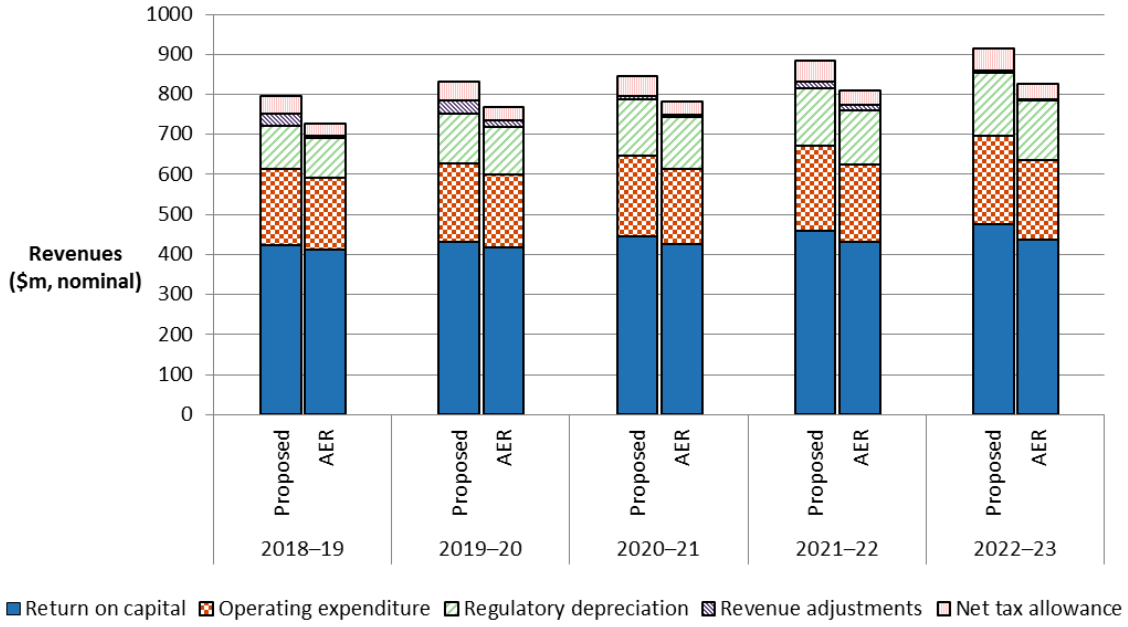
The most significant changes we made to TransGrid's proposal ($nominal) include:

- a reduction in the return on capital allowance of 4.9 per cent (attachments 2 and 3)
- a reduction in the regulatory depreciation allowance of 7.0 per cent (attachment 5)
- a reduction in the capex allowance of 40.1 per cent[21] (attachment 6)
- a reduction in the opex allowance of 7.6 per cent[22] (attachment 7)
- a reduction in the cost of corporate income tax allowance of 32.0 per cent (attachment 8)
- a reduction in the EBSS revenue increments of 75.1 per cent (attachment 9)
- an increase in the CESS revenue increments of 8.7 per cent (attachment 10).

[21] In nominal dollar terms and includes a half-WACC allowance to compensate for the six month period before capex is added to the RAB for revenue modelling.

[22] Includes debt raising costs.

Figure 1.1 AER's draft decision and TransGrid's proposed annual building block revenue requirement ($million, nominal)



Source: AER analysis.

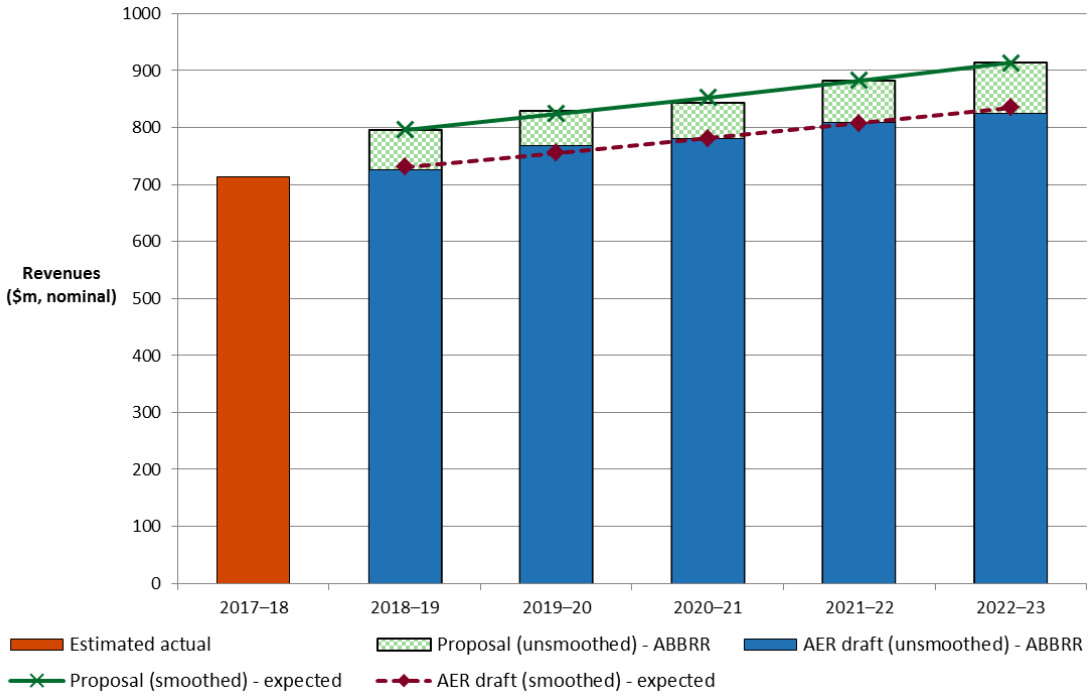
1.4.1 X factor, annual expected MAR and estimated total revenue cap

For this draft decision, we determine an X factor for TransGrid of –0.86 per cent per annum for the four years of the regulatory control period from 2019–20 to 2022–23.[23] The NPV of the annual building block revenue requirement is $3237.4 million ($nominal) as at 1 July 2018. Based on this NPV and applying the CPI–X method, we determine that the annual expected MAR (smoothed) for TransGrid is $730.9 million in 2018–19 increasing to $834.9 million in 2022–23 ($nominal). The resulting estimated total revenue cap for TransGrid is $3910.0 million for the 2018–23 regulatory control period.

Figure 1.2 shows our draft decision on TransGrid's annual expected MAR (smoothed revenue) and the annual building block revenue requirement (unsmoothed revenue) for the 2018–23 regulatory control period.

[23] TransGrid is not required to apply an X factor for 2018–19 because we set the 2018–19 MAR in this decision.

Figure 1.2 AER's draft decision on TransGrid's revenue for the 2018–23 regulatory control period ($million, nominal)



Source: AER analysis.

Note: Annual building block revenue requirement (ABBRR).

To determine the expected MAR for TransGrid, we set the MAR for the first regulatory year at $730.9 million ($nominal) which is $4.6 million higher than the annual building block revenue requirement. We then apply an expected inflation rate of 2.5 per cent per annum and an X factor of –0.86 per cent per annum to determine the expected MAR in subsequent years.[24] We consider that our profile of X factors results in an expected MAR in the last year of the regulatory control period that is as close as reasonably possible to the annual building block revenue requirement for that year.[25]

Our draft decision results in an average increase of 3.2 per cent per annum ($nominal) in the expected MAR over the 2018–23 regulatory control period.[26] This consists of an initial increase of 2.5 per cent from 2017–18 to 2018–19, followed by average annual increases of 3.4 per cent during the remainder of the 2018–23 regulatory control

[24] NER, cl. 6A.5.3(c)(3).

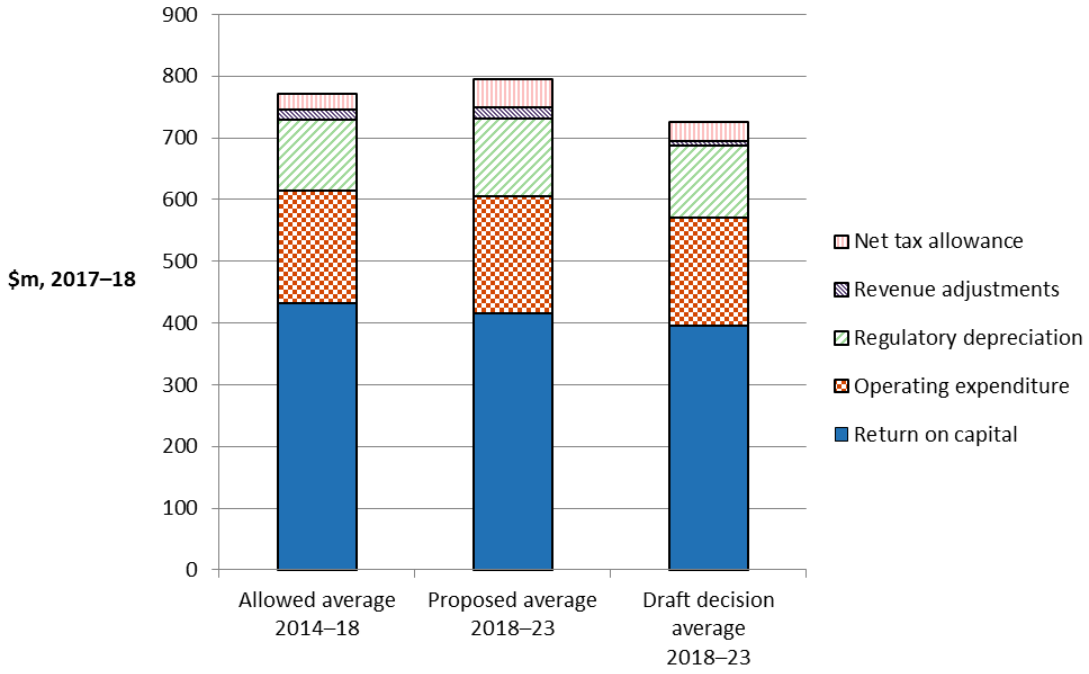
[25] NER, cl. 6A.6.8(c)(2). We consider a divergence of up to 3 per cent between the expected MAR and annual building block revenue requirement for the last year of the regulatory control period is appropriate, if this can achieve smoother price changes for users over the regulatory control period. In the present circumstances, based on the X factors we have determined for TransGrid, this divergence is around 1.2 per cent.

[26] In real 2017–18 dollar terms, our approved expected MAR for TransGrid results in an average increase of 0.7 per cent per annum over the 2018–23 regulatory control period.

period.[27] Our draft decision also results in a decrease of 5.9 per cent in real terms ($2017–18) to TransGrid's average annual allowed revenue relative to that in the 2014–18 regulatory control period. This is primarily because we have determined a lower rate of return, opex, capex and EBSS carryover amounts in this draft decision for the 2018–23 regulatory control period than those approved in the 2014–18 determination.

Figure 1.3 compares our draft decision building blocks for TransGrid's 2018–23 regulatory control period with TransGrid's proposed revenue requirement for the same period, and the approved revenue for the 2014–18 regulatory control period.

Figure 1.3 Annual average of revenue by building block components ($million, 2017–18)



Source: AER analysis.

1.4.2 Shared assets

Service providers, such as TransGrid, may use assets to provide both the prescribed transmission services that we regulate and other unregulated services. These assets are called 'shared assets'.[28] If the revenue from shared assets is material, ten per cent

[27] In real 2017–18 dollar terms, there will be no change to the MAR from 2017–18 to 2018–19, followed by subsequent average annual increases of 0.9 per cent during the remainder of the 2018–23 regulatory control period.

[28] NER, cl. 6A.5.5.

of the unregulated revenues that a service provider earns from shared assets will be used to reduce the service provider's revenue for prescribed transmission services.[29]

The shared asset principles establish that use of share assets should be material before cost reductions are applied.[30] The NER does not define materiality in this context. Our approach to what constitutes a material use of shared assets is that unregulated use of shared assets in a specific regulatory year is material when a service provider's annual average unregulated revenue from shared assets is expected to be greater than 1 per cent of the MAR for that regulatory year.[31]

TransGrid's shared asset unregulated revenues are forecast to be between 0.7 per cent and 0.9 per cent of its proposed total revenues in each year of the 2018–23 regulatory control period.[32] TransGrid therefore proposed no reduction in its total revenues for each year of that period.

We consider TransGrid's forecast unregulated revenues are reasonable, based on its reporting of historical shared assets revenue and our assessment of this revenue source for other service providers.[33] However, TransGrid's forecast unregulated revenues must be compared to the regulated revenues we determine, rather than those proposed by TransGrid. Our draft decision sets lower expected MARs than TransGrid's proposal, as such we estimate that the annual average unregulated revenue will be between 0.8 per cent and 0.9 per cent of its expected MARs in each year of the 2018–23 regulatory control period. Therefore, the materiality threshold is not met in any year of the 2018–23 regulatory control period and we do not apply a shared asset revenue adjustment.

We note unregulated revenues from shared assets may in future become material. We will monitor TransGrid's shared asset unregulated revenues for future regulatory control periods. We will also reassess the materiality of the forecast shared asset unregulated revenues at the final decision stage to reflect our final decision revenue determination.

1.4.3 Indicative transmission charges and impact on electricity bills

TransGrid is the main transmission network service provider in NSW and the ACT. Therefore, our draft decision on TransGrid's expected MAR will ultimately affect the annual electricity bills paid by customers in these regions. There are several steps required to translate our revenue decision into indicative transmission charges, and then to estimate bill impact.

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29 AER, *Shared asset guideline*, November 2013, p. 15.

30 NER, cl. 6A.5.5(c)(3).

31 AER, *Shared asset guideline*, November 2013, p. 8.

32 TransGrid, *Revenue proposal*, January 2017, p. 201; AER analysis.

33 This was undertaken when we developed our shared asset guideline, during the 2013 calendar year, as part of our Better regulation work program.

Since we regulate TransGrid's prescribed transmission services under a revenue cap, changes in the consumption of electricity will affect the transmission charges ultimately paid by consumers. Although TransGrid is the main transmission network service provider in NSW and the ACT, smaller components of the transmission network are owned and operated by Ausgrid, ActewAGL and Directlink. Hence, the transmission charges in NSW/ACT are also affected by the revenue determinations for Directlink's transmission network, and Ausgrid's and ActewAGL's transmission assets. However, our estimations do not take the revenue approved for the prescribed transmission services provided by these businesses as their regulatory control periods have not ended and hence do not align with TransGrid's 2018–23 regulatory control period. Therefore, we estimate the indicative effect of our draft decision on forecast average transmission charges in NSW/ACT by:

- taking TransGrid's annual expected MAR determined in this draft decision, and
- dividing it by the forecast annual energy delivered in NSW/ACT published by AEMO.[34]

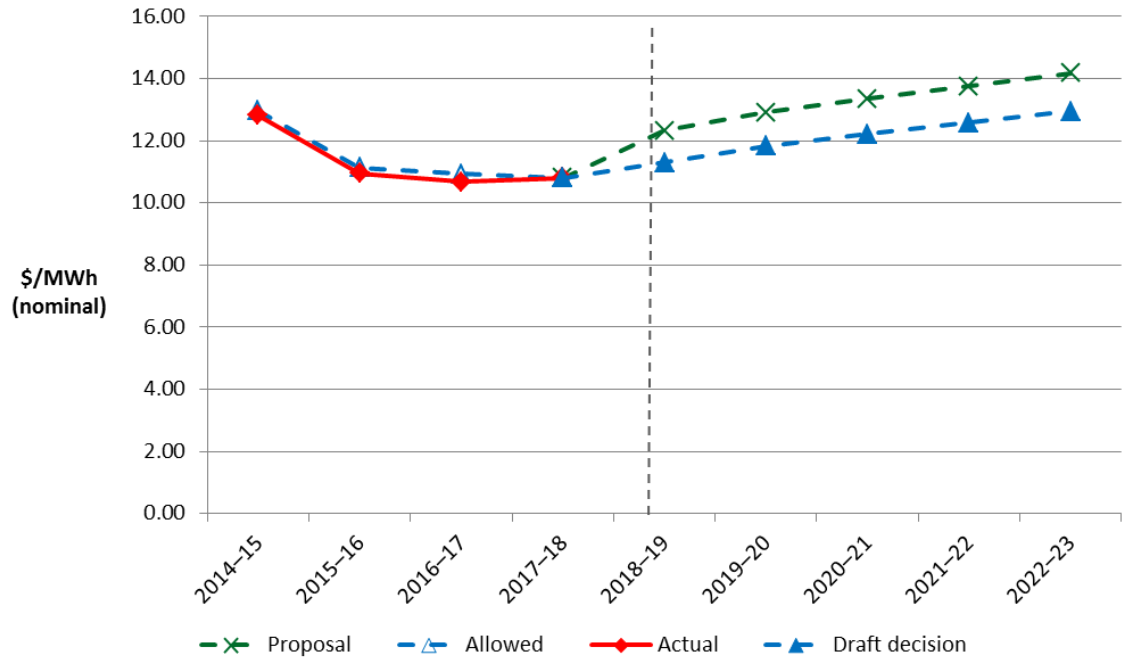
Based on this approach, we estimate that this draft decision will result in an increase in annual average transmission charges from 2017–18 to 2022–23.[35]

Figure 1.4 shows the indicative average transmission charges over the period 2014–15 to 2022–23 in nominal dollar terms. The average transmission charges are expected to increase from around $10.8 per MWh in 2017–18 to $12.95 per MWh in 2022–23.

[34] AEMO, *National Electricity and Gas forecasting - 2017 Electricity Forecasting Insights*, http://forecasting.aemo.com.au/Electricity/AnnualConsumption/Operational, accessed on 03 August 2017.

[35] On average, the draft decision transmission revenues will increase by 3.2 per cent ($nominal) per annum from 2017–18 to 2022–23. The forecast energy delivered in NSW/ACT will decrease by an average of 0.5 per cent per annum across that period. As a result, the indicative transmission charge will increase by 3.7 per cent ($nominal) per annum from 2017–18 to 2022–23.

Figure 1.4 Indicative transmission price path for NSW/ACT ($/MWh, nominal)



Source: AER analysis.

We then calculate the expected bill impact by varying the transmission charges in accordance with our draft decision, while holding all other components constant. This approach isolates the effect of our draft decision on the core transmission charges that represent approximately 11 per cent on average of a typical residential customer's annual electricity bill in NSW and the ACT.[36] This small percentage largely explains the relatively modest impact this draft decision is likely to have on average annual electricity bills.

However, our approach does not imply that components other than transmission will remain unchanged across the regulatory control period.[37] We note that in its recent electricity price trends report for NSW, the AEMC has indicated that wholesale costs are expected to rise on average, largely driven by the closure of Hazelwood power station and variations in inter-regional electricity flows.[38]

Based on this approach in our draft decision, we expect that the transmission component of a representative residential customer's annual electricity bill in NSW and

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36 AEMC, *Final Report: 2016 Residential electricity price trends*, December 2016, p. 108.

37 It also assumes that actual energy delivered will equal the forecast adopted in our final decision. Since TransGrid operates under a revenue cap, changes in energy delivered will also affect annual electricity bills across the 2018–23 regulatory control period.

38 AEMC, *Final Report: 2016 Residential Electricity Price Trends*, December 2016, p. 110.

the ACT to stay constant in 2018–19 from the 2017–18 level. And the annual bill will increase moderately over the remainder of the 2018–23 regulatory control period:

- For NSW, the transmission component of a representative residential customer's[39] annual electricity bill in 2022–23 is expected to increase by about $42 ($nominal) from the 2017–18 level. This equates to a 2.2 per cent increase in the representative annual bill over 5 years. By comparison, had we accepted TransGrid's proposal, the transmission component would increase by about $66 ($nominal) from the 2017–18 level. This equates to a 3.4 per cent increase in the representative annual bill over 5 years.
- For the ACT, the transmission component of a representative residential customer's[40] annual electricity bill in 2022–23 is expected to increase by about $43 ($nominal) from the 2017–18 level. This equates to a 2.2 per cent increase in the representative annual bill over 5 years. By comparison, had we accepted TransGrid's proposal, the transmission component would increase by about $68 ($nominal) from the 2017–18 level. This equates to a 3.4 per cent increase in the representative annual bill over 5 years.

Our estimated potential impact is based on an average annual electricity usage of 5936 kWh per annum for a representative residential customer in NSW.[41] For a representative residential customer in the ACT, our estimated potential impact is based on a typical annual electricity usage of 7312 kWh.[42] Customers with different usage will experience different changes in their bills. We also note that there are other factors, such as distribution network costs, wholesale and retail costs, which affect electricity bills.

Table 1.5 shows the estimated impact of our draft decision and TransGrid's proposal on the annual electricity bills for residential customers in NSW and the ACT over the 2018–23 regulatory control period.

Table 1.5 Estimated impact of TransGrid's revenue proposal and the AER's draft decision on annual electricity bills for residential customers ($nominal)

	2017–18	2018–19	2019–20	2020–21	2021–22	2022–23
AER draft decision						
NSW residential annual electricity bill[a]	1917	1927	1937	1945	1952	1959

39 A representative residential consumer in NSW is a 2 person household with no pool, no gas and off-peak hot water, AEMC, *Final Report: 2016 Residential electricity price trends*, December 2016, p. 107.

40 A representative residential consumer in ACT is a 2 person household with no pool and no gas, AEMC, *Final Report: 2016 Residential electricity price trends*, December 2016, p. 120.

41 AEMC, *Final Report: 2016 Residential electricity price trends*, December 2016, p. 107.

42 AEMC, *Final Report: 2016 Residential electricity price trends*, December 2016, p. 120.

	2017–18	2018–19	2019–20	2020–21	2021–22	2022–23
Annual change[c]		10 (0.5%)	10 (0.5%)	8 (0.4%)	7 (0.4%)	7 (0.4%)
ACT residential annual electricity bill[b]	1966	1976	1987	1994	2002	2009
Annual change[c]		10 (0.5%)	11 (0.5%)	8 (0.4%)	7 (0.4%)	7 (0.4%)
TransGrid Proposal						
NSW residential annual electricity bill[a]	1917	1947	1958	1967	1975	1983
Annual change[c]		30 (1.5%)	11 (0.6%)	9 (0.4%)	8 (0.4%)	8 (0.4%)
ACT residential annual electricity bill[b]	1966	1996	2008	2017	2025	2034
Annual change[c]		30 (1.5%)	12 (0.6%)	9 (0.4%)	8 (0.4%)	8 (0.4%)

Source: AER analysis; AEMC, *Final Report: 2016 Residential electricity price trends*, December 2016, p. 108; and TransGrid-*Post Tax Revenue Model*-0117-PUBLIC.

(a) Based on the annual electricity bill sourced from Energy Made Easy for a representative customer's consumption of 5936 kWh per year, and Origin Energy's standing offer during the period. The bill reflects the average annual charge of the three distribution zones in NSW. Sample postcode: Ausgrid (2112), Endeavour Energy (2500), Essential Energy (2650).

(b) Based on a representative residential customer in the ACT consuming 7312 kWh of electricity per year.

(c) Annual change amounts and percentages are indicative. They are derived by varying the transmission component of 2017–18 bill amounts in proportion to yearly expected revenue divided by AEMO's forecast energy delivered for NSW/ACT. Actual bill impacts will vary depending on electricity consumption and tariff class.

Similarly, for a small business customer in NSW and the ACT that uses approximately 10 MWh of electricity per annum, our draft decision for TransGrid is expected to result in the transmission component to the average annual electricity bill to increase slightly over the 2018–23 regulatory control period:[43]

- For NSW, the transmission component of an average small business customer's annual electricity bill in 2022–23 is expected to increase by about $93 ($nominal) from the 2017–18 level. This equates to a 2.2 per cent increase in the average annual bill over 5 years. By comparison, had we accepted TransGrid's proposal, the transmission component would increase by about $146 ($nominal) from the 2017–18 level. This equates to a 3.4 per cent increase in the average annual bill over 5 years.
- For the ACT, the transmission component of an average small business customer's annual electricity bill in 2022–23 is expected to increase by about $75 ($nominal) from the 2017–18 level. This equates to a 2.2 per cent increase in the average annual bill over 5 years. By comparison, had we accepted TransGrid's proposal,

[43] TransGrid, *Reset RIN – Table 7.6.1*, January 2017.

the transmission component would increase by about $117 ($nominal) from the 2017–18 level. This equates to a 3.4 per cent increase in the average annual bill over 5 years.

Table 1.6 shows our estimated impact of our draft decision and TransGrid's revenue proposal on the annual electricity bills for small business customers in NSW and the ACT over the 2018–23 regulatory control period.

Table 1.6 Estimated impact of TransGrid's revenue proposal and the AER's draft decision on annual electricity bills for small business customers ($nominal)

	2017–18	2018–19	2019–20	2020–21	2021–22	2022–23
AER draft decision						
NSW small business annual electricity bill[a]	4231	4253	4276	4293	4309	4324
Annual change[c]		22 (0.5%)	23 (0.5%)	17 (0.4%)	16 (0.4%)	16 (0.4%)
ACT small business annual electricity bill[b]	3411	3428	3447	3460	3473	3486
Annual change[c]		17 (0.5%)	18 (0.5%)	14 (0.4%)	13 (0.4%)	13 (0.4%)
TransGrid Proposal						
NSW small business annual electricity bill[a]	4231	4297	4322	4341	4359	4377
Annual change[c]		65 (1.5%)	25 (0.6%)	19 (0.4%)	18 (0.4%)	18 (0.4%)
ACT small business annual electricity bill[b]	3411	3464	3484	3499	3514	3528
Annual change[c]		53 (1.5%)	20 (0.6%)	15 (0.4%)	15 (0.4%)	14 (0.4%)

Source: AER analysis; AEMC, *Final Report: 2016 Residential electricity price trends*, December 2016, p. 108; and TransGrid-*Post Tax Revenue Model*-0117-PUBLIC.

(a) Based on the annual bill sourced from Energy Made Easy for a small business customer with a consumption of 10000 kWh per year and Origin Energy's standing offer. The bill reflects the average annual charge of the three distribution zones in NSW. Sample postcode: Ausgrid (2112), Endeavour Energy (2500), Essential Energy (2650).

(b) Based on a small business customer in the ACT consuming 10000 kWh of electricity per year.

(c) Annual change amounts and percentages are indicative. They are derived by varying the transmission component of 2017–18 bill amounts in proportion to yearly expected revenue divided by AEMO's forecast energy delivered for NSW/ACT. Actual bill impacts will vary depending on electricity consumption and tariff class.