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30/09/2020

Ms Merryn York
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Australian Energy Market Commission
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60 Castlereagh Street
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Dear Ms York

Rule Change Proposal – Making ISP Projects Financeable

The Australian Energy Market Operator's (AEMO) Integrated System Plan (ISP) identifies an optimal path for the development of the transmission system to provide reliable, secure and affordable electricity to electricity consumers across the National Electricity Market.

As the provider of transmission services in New South Wales and parts of the Australian Capital Territory, we are pleased to be able to contribute to the energy transition through the delivery of these ISP projects, which are critical to ensure the power system meets its security and reliability requirements, at the least cost to consumers.

In the course of our assessment of Project Energy Connect (PEC), we have identified there are features of the regulatory framework that have significant implications for the financeability of large scale projects with long asset lives. This issue has not been apparent before and has emerged as a direct result of the unprecedented capital investment required in order to deliver the ISP projects.

We have been working closely with the Australian Energy Regulator (AER) and other stakeholders through the course of this year to find an appropriate solution that facilitates the timely and efficient delivery of ISP projects and reduces the barrier to attracting capital in a manner that does not increase the costs to consumers. This dialogue has concluded that the financeability issue is unable to be resolved within the existing regulatory framework and a rule change is the most efficient solution.

The financeability issue results from the interaction of the regulatory concepts and revenue modelling that defers revenue recovery through two mechanisms: indexation of the Regulatory Asset Base; and delay of the recovery of revenue for depreciation to when the investment is commissioned rather than incurred. The unintended consequence of these two concepts on a project the size of PEC is that the cash flows are insufficient to support 60% debt funding at a BBB+ credit rating (or indeed an investment grade credit rating at all) for an extended period of time. The implications of this are that the returns for these projects are well below what the AER considers will attract investment in a benchmark efficient entity under the Rate of Return Instrument (RORI) and a transmission network service providers' revenue determination.

We are seeking a rule change in the form of a participant derogation from the NER to remove these two regulatory concepts on TransGrid's share of the ISP projects, that have either not commenced or have not been completed through the contingent project process at the date of this request.

Importantly, the rule change does not seek to change the total amount of revenue recovered (in present value terms) for the ISP projects - the rule change is solely designed to ensure that the timing of revenue is aligned with the efficient financing costs of the projects.

We are seeking this rule change request be considered as urgent because it is required to enable us to establish finance for the ISP projects in time to ensure they are delivered consistent with maximising benefits to customers, and in line with the expectations of the South Australian Government (for PEC), the NSW and Federal Governments (for HumeLink), and AEMO for the ISP overall. These timelines would require an investment decision by no later than January 2021 for PEC to be in place by 2022 and late 2021 for HumeLink to be in place in time for the completion of Snowy 2.0 in 2025.

We would like to note that even if the AEMC were to approve this rule change, TransGrid will still not achieve the returns under the RORI and the TNSP's current revenue determination. This is due to aspects of the regulatory framework that we are not seeking to address as part of this rule change request. TransGrid is actively engaging with the AER on these issues as part of the current consultation processes on their review of treatment of inflation and the development of the 2022 RORI.

Nevertheless, TransGrid has proposed the rule change in good faith in order to enable the ISP projects to be financed and delivered to support the requirements of the energy system in transition and the energy policies of the Federal and State Governments.

We look forward to working with the Commission as it progresses this rule change request and thank the Commission staff for their early and constructive engagement with TransGrid on the issues outlined in this request.

Yours sincerely

Paul Italiano
Chief Executive Officer

TransGrid

National Electricity Rules change proposal – 30 September 2020

Making ISP projects financeable - Participant Derogation

Contents

Executive Summary

TransGrid is the operator and manager of the high voltage transmission network connecting electricity generators, distributors and major end users in New South Wales **(NSW)** and the Australian Capital Territory. Our network is also interconnected to Queensland and Victoria, and is instrumental to an electricity system that facilitates reliable, competitive and affordable electricity supply for consumers. Our responsibility is to operate and manage the transmission network safely, securely and efficiently in the long-term interests of consumers.

Australia is in the midst of an energy transition and the energy system is evolving at a rapid pace. A significant recent change to the regulatory framework has been rules providing for the development of the Integrated System Plan **(ISP)** and the actioning of this Plan by the Australian Energy Market Operator **(AEMO)**. AEMO considers that major transmission projects on the optimal development path (**ISP projects**) are critical to enable the energy market transition and ensure the power system meets its security and reliability requirements, at the least cost to consumers.

The ISP projects in NSW include Project EnergyConnect **(PEC)**[1], HumeLink[2] and the upgrade to the Victoria New South Wales Interconnector **(VNI)** and require an unprecedented level of capital investment. TransGrid understands the importance of ensuring that the ISP projects proceed for the benefit of consumers and we are committed to making the required investment in the energy system, subject to resolving the financeability issue outlined below.

1. The financeability issue

In the course of our assessment of PEC (as part of the Contingent Project Application **(CPA)** development), we have identified there are features of the regulatory framework that have significant implications for the financeability of large scale projects with long asset lives, such as PEC. This issue has not been apparent before and has emerged as a direct result of the unprecedented capital investment required in order to deliver the ISP projects mentioned above.

The financeability issue is due to the regulatory framework deferring revenue recovery for capital investment costs until later in the asset's life.

The deferral of revenue recovery under the current rules results in a multi-decade period at the start of the assets life where the revenue allowance for large projects like PEC, will fall substantially short of covering the efficient costs of financing the project during that period[3]. Naturally, this mismatch creates a barrier to securing the capital necessary to finance the project and as a result denying consumers the benefits of the projects concerned.

The regulatory returns set out in TransGrid's current determination and also the 2018 Rate of Return Instrument (**RORI**) are intended to provide a revenue allowance to enable the recovery of efficient financing costs over the life of the asset. These include an assumption of 60% debt funding, a level of financial risk commensurate with a strong investment grade credit rating (Standard & Poor's BBB+[4]), and a return to equity investors assuming 40% equity funding.

Our analysis confirms that cash flows from PEC (and many other ISP projects) will be insufficient to support 60% debt funding at a BBB+ credit rating (or indeed an investment grade credit rating at all) for an extended

1 A 330KV interconnector between Wagga Wagga in NSW and Robertson in South Australia.

2 An interconnection project to support the Australian Government's hydroelectric development know as Snowy 2.0.

3 The efficient cost of financing investment in regulated networks is determined by the Australian Energy Regulator **(AER)** in determinations and under its Rate of Return Instrument 2018.

4 Equivalent to a Moody's credit rating of Baa1.

period of time. This has two implications, each of which creates a significant barrier to securing the funding necessary to proceed with the project and substantially undermines the incentive to invest. Either:

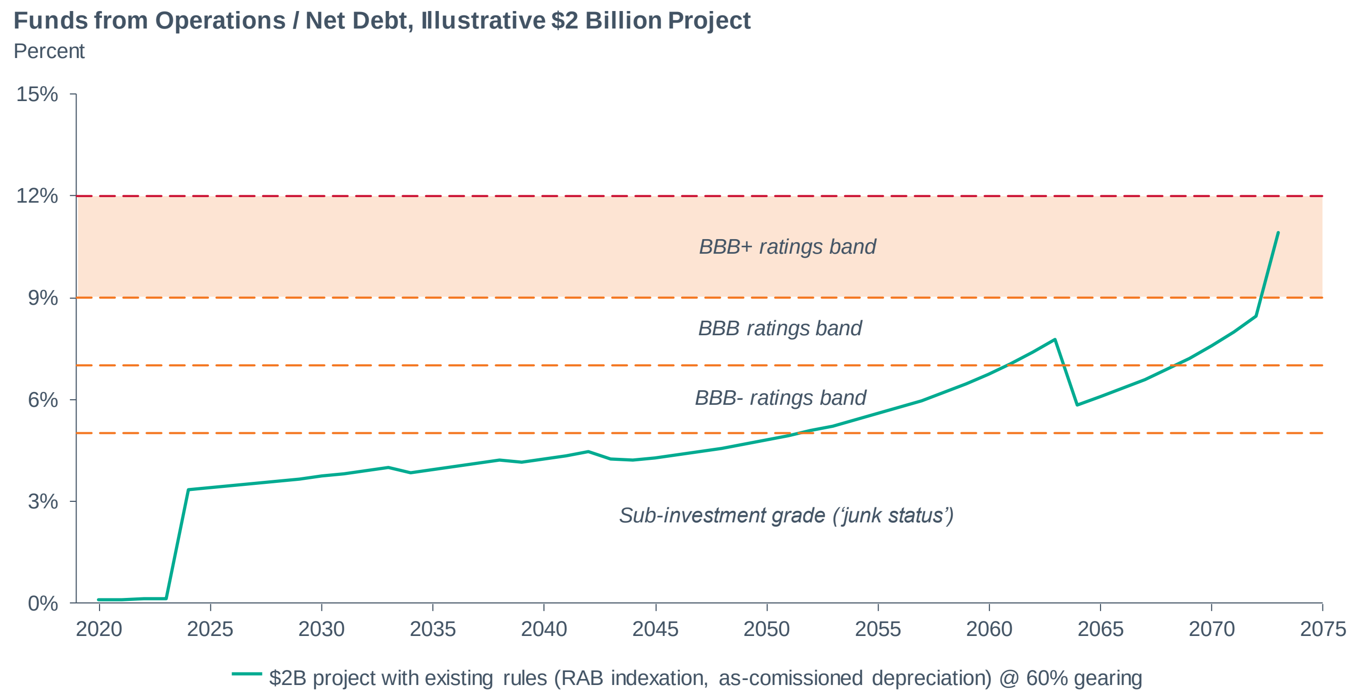
> the project would require equity funding substantially in excess of the 40% ratio provided for in the revenue allowance, resulting in an uneconomic return to equity investors and lower than the equity returns to those set out in the AER's RORI (the return on additional equity would be at the regulated cost of debt); or

> the project could seek to proceed with 60% debt funding but this could only occur on a sub-investment grade ('junk') basis resulting in debt funding costs substantially in excess of those compensated for in the revenue allowance, causing serious adverse impacts to financial resilience increasing the risks borne by equity holders to significantly above the level contemplated in the AER's RORI. Further, the shortfall between compensated debt costs and those incurred at sub-investment grade would have to be borne by equity holders reducing returns to equity holders below those set out in AER's RORI.

Figure 1, below illustrates the problem. It shows the main credit metric (funds from operations relative to net debt, often referred to as FFO/Net Debt) that is used by credit rating agencies to assess the level of financial risk in a project with a given level of debt funding, and thereby determine its credit rating. The analysis presents the results for a $2 billion greenfield project (a project substantially the same as PEC) where capital expenditure is 60% debt funded (the **Notional Project**).

Figure 1 demonstrates FFO to Net Debt for the Notional Project (which directly reflects the profile of the revenue allowance) is insufficient to achieve even a baseline investment grade credit rating (BBB-) for more than 20 years. The benchmark credit rating of BBB+ is not achieved at any point in the project's life.

Figure 1



These financeability issues are not simply a function of the returns determined by the AER as set out in the RORI – higher returns under the RORI would improve the situation but would not, of itself, solve this problem. The issue results from the interaction of the regulatory concepts and revenue modelling that defers revenue recovery through two mechanisms: indexation of the Regulatory Asset Base (**RAB**); and delay of the recovery of revenue for depreciation until the investment is commissioned rather than when capital expenditure incurred. These issues are explained in more detail at section 2 of this executive summary.

The financeability issues can be mitigated by removing these features (the majority of the impact by removing RAB indexation). Figure 2, below, shows analysis for the Notional Project, but with RAB indexation removed and depreciation shown on an 'as incurred' basis (i.e., commencing from when capital expenditure occurs).

Figure 2

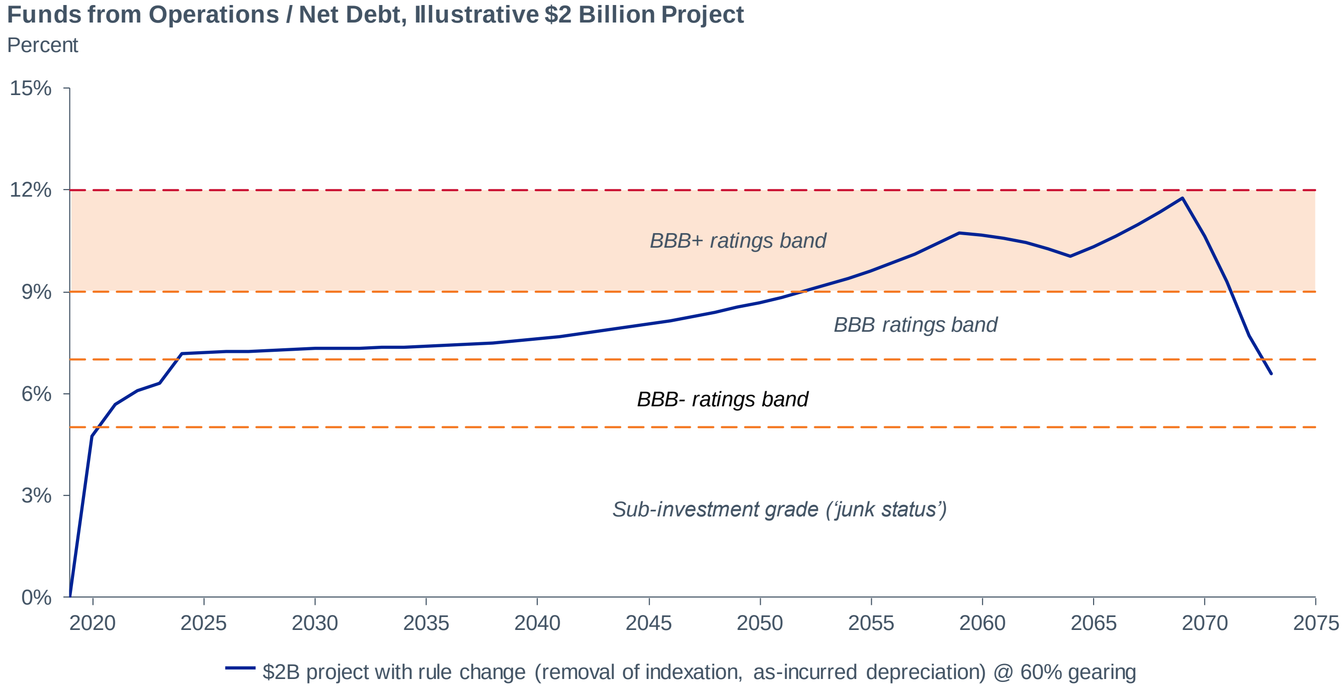


Figure 2 shows that, even with the proposed changes, the Notional Project is unlikely to achieve the benchmark credit rating of BBB+ until quite late in its life. However, it could, with prudent capital management, nonetheless achieve an investment grade rating sufficiently early to overcome the barrier to securing the capital necessary to proceed with the project.

It is important to note that this solution removes barriers to securing capital without increasing the overall regulated return or the transmission costs to be recovered over the life of the project (in present value terms).

We are therefore seeking a rule change in the form of a participant derogation to remove these features from the calculation of TransGrid revenues that arise from ISP projects. This change would yield a revenue profile that is neutral in present value terms at the AER's RORI, but enables efficient financing of the projects which will result in consumers accessing the benefits set out in the ISP.

2. Features of the current regulatory framework that cause this issue

There are two design features of the current regulatory framework which defer revenue recovery and create a mismatch between when costs are incurred and when revenue is recovered:

> The provision of compensation for inflation through CPI **indexation** of the RAB, which involves a deduction of forecast CPI indexation from the revenue calculation; and

> Recovery of revenue for **depreciation** not commencing until projects are commissioned.

Compensation for inflation through indexation

Under the National Energy Rules (**NER**), compensation for inflation is intended to be provided through indexing the RAB. This approach effectively defers compensation for inflation to the later years of the investment through revenues being reduced by a forecast of the CPI indexation, on the expectation that it will be recovered in later years (in effect, a negative adjustment to the depreciation allowance). For PEC, under the current rules, an amount of negative depreciation would be deducted from the revenue allowance in the 2018-2023 regulatory period (and in the immediately following regulatory periods). The effect of this rule change is to remove this negative depreciation, thereby allowing a positive amount for depreciation (return of capital).[5]

In the case of a business-as-usual (**BAU**) project or investment that is of a modest scale, this 'indexed RAB' revenue profile does not create significant cash flow issues because the RAB of a typical transmission network service provider **(TNSP)** is made up of assets of varying economic lives and vintages. This diversity means that the negative cash flow impact of RAB indexation on newer RAB assets is offset by the positive impact of indexation on cash flows associated with older assets.

However, for projects of a significantly larger size and comprised of assets with relatively longer asset lives, such as the ISP projects, the negative cash flow impacts of indexation are very significant and result in revenue that is insufficient to support the financing requirements of a benchmark efficient entity, as illustrated above. The issue is exacerbated where multiple major ISP projects are undertaken simultaneously, which is the situation TransGrid is likely to be in over the next ten years.

Depreciation for capital expenditure

Currently, the AER requires depreciation of capital expenditure (the return of capital) to be recovered by TNSPs once the relevant assets are commissioned[6] ('as-commissioned' depreciation). This requirement creates a delay to the recovery of revenue from the time the investment is made until the time the asset is finally commissioned and in service. For an investment like PEC, this means that many hundreds of millions of dollars is invested before any revenue for depreciation is received.

The cumulative effect

The cumulative effect of these two features of the current regulatory framework is that cash flow from the projects is insufficient to achieve the benchmark credit rating or gearing, thereby creating a significant barrier to securing the capital necessary to proceed with the type of projects set out in the ISP.

We have been working closely with the AER and other stakeholders through the course of this year to find an appropriate solution that facilitates the timely and efficient delivery of ISP projects and reduces the barrier to securing capital in a manner that does not increase the costs to customers. This dialogue has concluded that the issue is unable to be resolved within the existing regulatory framework, and a rule change is the most efficient solution.

3. Rule change requested

In order to more closely align the timing of revenue recovery with the incurrence of efficient financing costs, and make ISP projects financeable, we propose the following changes to the NER:

> Remove indexation of the RAB for TransGrid's investment in ISP projects; and
> Require that depreciation be calculated on an 'as incurred' basis for TransGrid's share of the ISP projects.

5 Post tax revenue model in TransGrid's contingent project application for PEC.

6 Under the *roll forward model* and *post-tax revenue model* developed by the AER under the NER.

We are seeking a participant derogation from the NER[7] to contain the change so that it only applies to TransGrid and only to ISP projects that have either not commenced or have not been completed through the CPA process[8] at the date of this request[9]. This will ensure the issue is addressed in an expeditious manner in order to progress PEC and HumeLink within the timelines that are most likely to maximise benefits to consumers. Further, at this time, only TransGrid is being required to undertake this scale of investment. If this issue were to arise for other TNSPs at some point in the future, a broader consideration of this issue is not prejudiced in any way by this rule change.

We note that similar approaches to those proposed in this rule change request have been adopted in other jurisdictions, including for Transpower[10] in New Zealand. In the case of Transpower, which faced a similar step change in required transmission investment, the New Zealand Commerce Commission allowed for the value of assets for Transpower to be rolled forward without indexation.[11]

We have considered and analysed other approaches to addressing the timing of revenue recovery, such as accelerating depreciation or shortening asset lives. However, these approaches are less transparent, are less simply implemented and retain significantly more uncertainty in application.

Importantly, the rule change does not seek to change the total amount of revenue recovered for the ISP projects. As discussed above, **the rule change is solely designed to ensure that the timing of revenue is aligned with the efficient financing costs of the projects**.

4. Urgent rule

We consider that this rule change request is an urgent rule under section 87 of the National Electricity Law **(NEL)** and should be considered by the AEMC under the expedited pathway under section 96 of the NEL. The rule change request is urgent because it is required to enable us to establish finance for the ISP projects in time to ensure they are delivered consistent with maximising benefits to customers, and in line with the expectations of the South Australian Government (for PEC), the NSW and Federal Governments (for HumeLink), and AEMO for the ISP overall. These timelines would require an investment decision by no later than January 2021 for PEC to be in place by 2022 and late 2021 for HumeLink to be in place in time for the completion of Snowy 2.0 in 2025.

These projects have been deemed by AEMO as critical to the security and reliability of the national electricity system and the inability to finance (and therefore deliver them to the requested timeframes) will place risk on the system. Further information on why this rule change request meets the test for urgent treatment under the NEL is provided in section 7 of this request.

5. Impact on consumers

The change to the timing of revenue recovery does not increase costs to customers over the life of the project, as the same amount of revenue will be recovered on a present value basis. Nor does it increase the regulated return provided under the existing TransGrid revenue determination or the RORI. The change to timing reduces the deferral of revenue to improve the ability to access efficient finance.

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7 A participant derogation may be requested under section 91(5) of the National Electricity Law.

8 Under clause 6A.8.2 of the NER.

9 The contingent project process under clause 6A.8.2 of the NER will have commenced on two ISP projects (PEC and VNI Minor) before the AEMC makes its determination on this rule change request.

10 NZ's government-owned transmission business.

11 Commerce Commission, Input Methodologies (Transpower): Reasons Paper, December 2010, pp. 30–31.

The transmission charges to distribution network service providers and consequently retailers will increase marginally compared to no change. However, the ISP projects are designed to deliver lower total bills to customers over time.

We estimate that the application of the proposed rule change to PEC will result in consumers paying, on average, an additional $3 per household per year in transmission charges for the remaining years of TransGrid's current regulatory period because of the rule change.

However, the rule change will facilitate investment in ISP projects that would otherwise not be financeable. The benefits to consumers of having the ISP projects in place have been identified to be significantly greater than the increase in transmission charges by AEMO.[12] FTI, the consultant that has reviewed the costs and benefits for us of PEC, estimates that the net cost saving to a household in NSW arising as a result of PEC would, on average, be between $58.40 and $63.90 per year[13].

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[12] AEMO, *2020 Integrated System Plan*, July 2020, pp. 97.

[13] The report from FTI accompanies this rule change request.

1. Current arrangements

This Chapter provides background to the rule change request. It also sets out the current arrangements in the regulatory framework relating to this rule change request and related regulatory projects that are currently being undertaken by market bodies. Finally, it sets out the stakeholder consultation that we haves undertaken on the rule change request.

1.1 Background

A significant recent change to the regulatory framework has been rules providing for the development by the AEMO of the ISP and the actioning of this Plan. AEMO describes the projects it has identified as being in the optimal development path in the ISP as "nationally significant and essential investments in the electricity system to ensure the system meets its security and reliability requirements with the least cost and lowest regret to consumers".[14] In the final 2020 ISP, AEMO also describes the projects as "essential actions to optimise consumer benefits as Australia experiences what is acknowledged to be the world's fastest energy transition."[15]

The ISP projects in NSW include Project EnergyConnect **(PEC)**[16], HumeLink[17] and the upgrade to the Victoria New South Wales Interconnector **(VNI)** and require an unprecedented level of capital investment. TransGrid understands the importance of ensuring that the ISP projects proceed for the benefit of consumers and we are committed to making the required investment in the energy system, subject to resolving the financeability issue outlined below.

Figure 1 below sets out our forecasts of ISP and business as usual capital expenditure to 2035. Subject to our proposed changes to the regulatory framework, we expect to spend $9-10 billion on greenfield capital investments over the next ten years to deliver our share of the ISP projects. To put this into context, our RAB at the start of the current regulatory control period was approximately $6.4 billion.

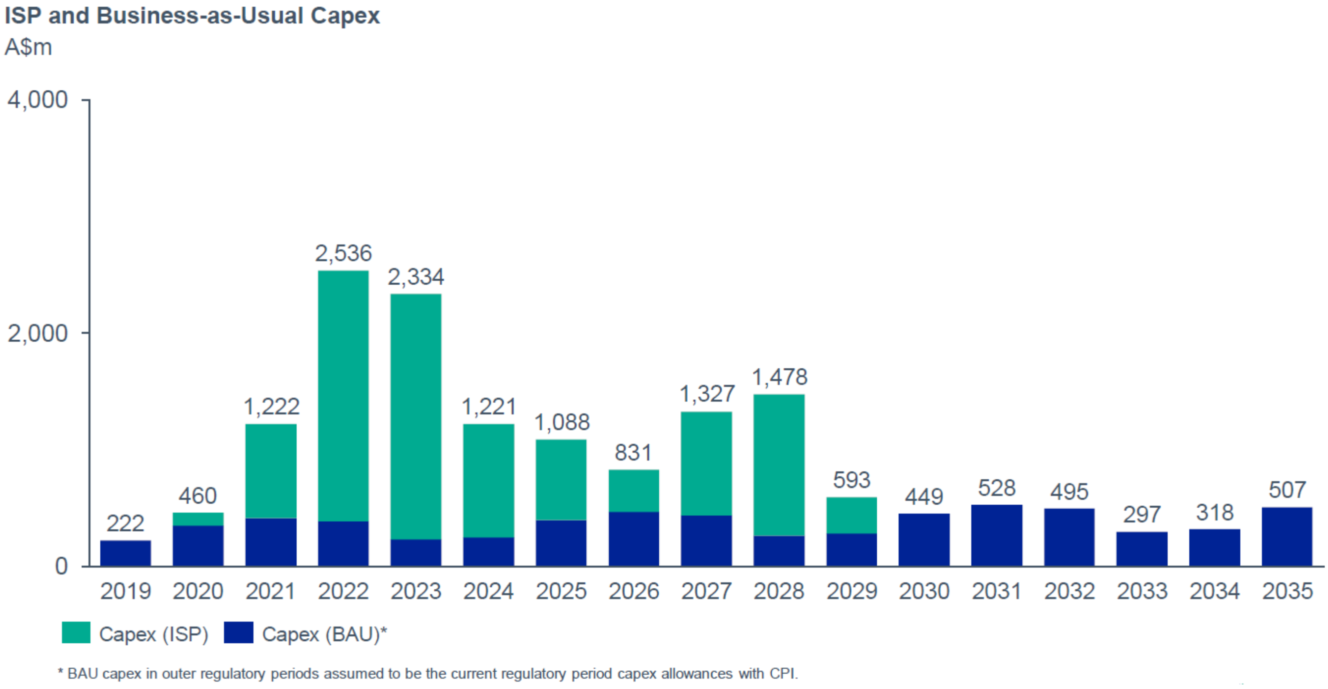
14 AEMO, Draft 2020 ISP, 12 December 2019, p. 6.

15 AEMO, 2020 Integrated System Plan, July 2020, p. 8.

16 A 330KV interconnector between Wagga Wagga in NSW and Robertson in South Australia.

17 An interconnection project to support the Australian Government's hydroelectric development know as Snowy 2.0.

Figure 1: Forecast of our ISP and business as usual capital expenditure to 2035



In the course of our assessment of PEC (as part of the Contingent Project Application **(CPA)** development), we have identified there are features of the regulatory framework that have significant implications for the financeability of large scale projects with long asset lives, such as PEC. This issue has not been apparent before and has emerged as a direct result of the unprecedented capital investment required in order to deliver the ISP projects mentioned above.

The financeability issue is due to the regulatory framework deferring revenue recovery for capital investment until later in the asset's life.

There are two design features of the current regulatory framework which defer revenue recovery and create a mismatch between when costs are incurred and when revenue is recovered:

> The provision of compensation for inflation through CPI **indexation** of the RAB which requires a deduction of forecast CPI indexation from the revenue calculation; and

> Recovery of revenue for **depreciation** not commencing until projects are commissioned.

Each of these design features in the NER is set out in more detail in section 1.2. The issues that these design features create is explained in Chapter 2.

We have been working closely with the AER and other stakeholders through the course of this year to find an appropriate solution that facilitates the timely and efficient delivery of ISP projects and reduces the barrier to securing capital in a manner that does not increase the costs to customers. This dialogue has concluded that the issue is unable to be resolved within the existing regulatory framework and a rule change is the most efficient solution.

Resolving this issue will allow us to proceed to a final investment decision on PEC, subject to the AER's approval of our prudent and efficient expenditure forecasts, and the resultant changes in our revenues and prices that are reflected in our CPA.

1.2 Current arrangements

This section sets out the current arrangements to index the RAB and the timing of when capital expenditure goes into the RAB for the purpose of calculating depreciation.

1.2.1 RAB indexation

The current regulatory framework is designed to return the cost of efficient investment over the life of the assets – a principle often referred to as Financial Capital Maintenance. This principle is applied within the regulatory framework in the NER using an approach that indexes the RAB for inflation.

Under the NER, a TNSP is required to:

> Index its regulatory asset base (RAB) by the consumer price index **(CPI)** at the start of each regulatory control period.

> Make a negative adjustment to its tariffs (via depreciation) to prevent double compensation for inflation.

This approach in the NER results in a reduction in cash inflows from revenue in the initial years of the project's operations and a theoretical compensatory increase in later years. Indexing of the RAB does not impact on the amount consumers pay in present value terms for the use of the assets over their life. It only delays the recovery of revenue.

The current approach was established in an environment of increasing energy demand per customer from the network. While the amount of energy consumed is still increasing in the current environment, overall the average consumption per customer is now decreasing. Reasons for the decline in average residential consumption include an increase in localised solar penetration, more energy efficient appliances and more energy efficient building standards.

The current approach is well understood by investors for BAU capital investment. This rule change application is not seeking to change the current approach for our existing RAB.

1.2.2 When capital expenditure goes into the RAB for the purpose of calculating depreciation

The timing of revenue recovery is also determined by whether depreciation for capital expenditure is recovered 'as commissioned' or 'as incurred'. The AER currently requires depreciation of capital expenditure to be recovered by TNSPs once the relevant assets are commissioned. The AER requires this approach through the roll forward model and post-tax revenue model that it develops under the NER and applies to TNSPs as part of their revenue determinations.

1.3 Related regulatory projects

We identify the following regulatory projects which are relevant to investment in the ISP projects:

> The AER is considering whether the existing incentive-based revenue determination framework can deliver efficient outcomes for consumers when applied to large transmission projects, or whether amendments to the existing framework or an alternative regulatory approach might deliver better outcomes and intends to consult with stakeholders on the issues once their thinking is further developed.[18] We will actively engage in the AER's proposed consultation process.

[18] AER submission to the AEMC's Electricity Network Economic Regulatory Framework review, July 2020.

- On 7 April 2020, the AER initiated a review of the treatment of inflation in the regulatory framework which considers the method for estimating expected inflation.[19] We made a submission on the AER's review on 3 August 2020.[20]
- The AER has commenced its review of the rate of rate of return instrument 2022 for network service providers. The AER expects the active phase of this review will commence in the middle of 2021.[21]
- AEMO recently published its final 2020 ISP which sets out the optimal development path for the NEM including actionable and future ISP projects.[22]
- On 25 August 2020, the AER published final guidelines to make the ISP actionable including cost benefit analysis guidelines which set out the requirements that AEMO has to follow in developing the ISP and for TNSPs when assessing actionable ISP projects.[23]

1.4 Stakeholder engagement

The timing of revenue recovery issue was first raised with key stakeholders such as our Advisory Council[24], the ESB and the Federal Minister in January 2020. Since then, we have:

- Been continuing direct discussions with the AER Board and relevant AER staff on this issue.
- Engaged with consumers and other stakeholders including members of our Advisory Council, Major Energy Users Inc., Clean Energy Council, Energy Networks Australia and other TNSPs.
- Held discussions with the NSW, Federal and South Australian Governments.

1.5 Additional information provided as part of this rule change request

The following additional information is provided and attached to this rule change request:

- Proposed rule drafting.
- Report prepared for TransGrid by Incenta Economic Consulting **(Incenta)** on the issue and how it can be solved in a way that best promotes the national electricity objective **(NEO)**.[25]
- Summary of results of revenue modelling that we have undertaken on the issue and options to solve it.
- FTI report for TransGrid on the benefits of interconnectors.[26]

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19 AER, *Initiation notice – 2020 inflation review*, 7 April 2020.

20 TransGrid, *Response to AER 2020 inflation review*, 3 August 2020.

21 AER, *Pathway to 2022 rate of return instrument – Position paper*, May 2020, p. 8.

22 AEMO, *2020 Integrated System Plan*, July 2020.

23 AER website, www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/guidelines-to-make-the-integrated-system-plan-actionable, viewed 30 September 2020.

24 Chaired by TransGrid, the Advisory Council is made up of the following member organisations: Australian Industry Group; City of Sydney; Energy Consumers Australia; Energy Users Association of Australia; Ethnic Communities Council NSW; Goldwind; Public Interest Advocacy Centre; Snowy Hydro; St Vincent de Paul Society; Tomago Aluminium; Tesla.

25 Incenta, *Attracting Capital for ISP projects, TransGrid*, September 2020.

26 FTI, *Assessing the benefit of interconnectors, A report for TransGrid*, 9 September 2020.

2. Issues with the current framework

This Chapter sets out the issues with the current regulatory framework and provides some examples as to how these issues have been addressed in other jurisdictions.

2.1 The current framework defers revenue recovery into the future

As set out in Chapter 1, there are two design features of the current regulatory framework which defer revenue recovery and create a mismatch between when costs are incurred and when revenue is recovered:

> The provision of compensation for inflation through CPI **indexation** of the RAB which requires a deduction of forecast CPI indexation from the revenue calculation; and
> Recovery of revenue for **depreciation** not commencing until projects are commissioned.

This section set outs the issues that arise as a result of each of these design features.

Compensation for inflation through indexation

Under the National Energy Rules (**NER**), compensation for inflation is intended to be provided through indexing the RAB. This approach effectively defers compensation for inflation to the later years of the investment through revenues being reduced by a forecast of the CPI indexation, on the expectation that it will be recovered in later years (in effect, a negative adjustment to the depreciation allowance). For PEC, under the current rules, an amount of negative depreciation would be deducted from the revenue allowance in the 2018-2023 regulatory period (and in the immediately following regulatory periods). The effect of this rule change is to remove this negative depreciation, thereby allowing a positive amount for depreciation (return of capital).[27]

In the case of a business-as-usual (**BAU**) project or investment that is of a modest scale, this indexed RAB revenue profile does not create significant cash flow issues because the RAB of a typical TNSP is made up of assets of varying economic lives and age. This diversity means that the negative cash flow impact of RAB indexation on newer RAB assets is offset by the positive impact of indexation on cash flows associated with older assets.

However, for projects of a significantly larger size and comprised of assets with relatively longer asset lives, such as the ISP projects, the negative cash flow impacts of indexation are very significant and result in revenue that is insufficient to support the financing requirements of a benchmark efficient entity, as demonstrated in section 2.2. The issue is exacerbated where multiple major ISP projects are undertaken simultaneously, which is the situation TransGrid is likely to be in over the next ten years.

Depreciation for capital expenditure

Currently, the AER requires depreciation of capital expenditure (the return of capital) to be recovered by TNSPs once the relevant assets are commissioned[28] ('as-commissioned' depreciation). This requirement creates a delay to the recovery of revenue from the time the investment is made until the time the asset is finally commissioned and in service. For an investment like PEC, this means that many hundreds of millions of dollars is invested for several years before any revenue for depreciation is received.

The cumulative effect

The revenue impact of the current arrangements is illustrated as an example in Figure 2. Figure 2 shows the capital-related revenues for a large stand-alone $2 billion project, which is similar in size to TransGrid's ISP projects. It shows the revenues that would be received for the project under the current arrangements

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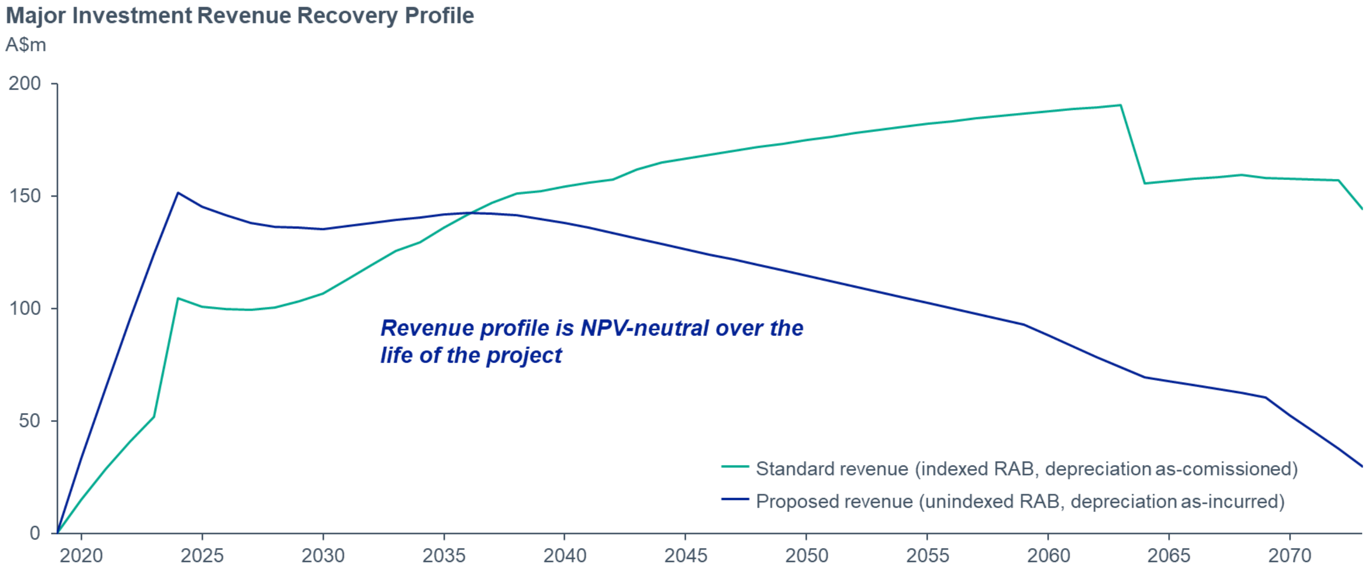
27 Post tax revenue model in TransGrid's contingent project application for PEC.
28 Under the *roll forward model* and *post-tax revenue model* developed by the AER under the NER.

compared to if the RAB is not indexed and depreciation can be recovered once capital expenditure is incurred. It shows that the current arrangements in the NER defer the recovery of revenue for capital expenditure.

Figure 2: Illustrative impact of current and proposed arrangements on allowed revenues for a $2 billion project



In particular:

> Indexation of the RAB results in the pushing of revenue recovery to much later in the investment horizon compared to if the RAB is not indexed.

> Allowing revenue for depreciation for capital expenditure to be recovered once the capital expenditure is commissioned creates a delay to the recovery of revenue from the time the investment is made until the time the asset is in service.

The cumulative effect of the two design features of the current regulatory framework is that cash flow from the projects is insufficient to achieve the benchmark credit rating or gearing, thereby creating a significant barrier to securing the capital necessary to proceed with the project. This is set out in more detail in section 2.2 below.

2.2 The ISP projects cannot be financed by the AER's benchmark efficient entity

The regulatory returns set out in TransGrid's current determination and also the 2018 Rate of Return Instrument (**RORI**) are intended to provide a revenue allowance to enable the recovery of efficient financing costs over the life of the asset. These include an assumption of 60% debt funding, a level of financial risk commensurate with a strong investment grade credit rating (Standard & Poor's BBB+[29]), and a return to equity investors assuming 40% equity funding.

Our analysis confirms that cash flows from PEC (and many other ISP projects) will be insufficient to support 60% debt funding at a BBB+ credit rating (or indeed an investment grade credit rating at all) for an extended period of time. This has two implications, each of which creates a significant barrier to securing the funding necessary to proceed with the project and substantially undermines the incentive to invest. Either:

> the project would require equity funding substantially in excess of the 40% ratio provided for in the revenue allowance, resulting in an uneconomic return to equity investors and lower than the equity

29 Equivalent to a Moody's credit rating of Baa1.

returns to those set out in the AER's RORI (the return on additional equity would be at the regulated cost of debt); or

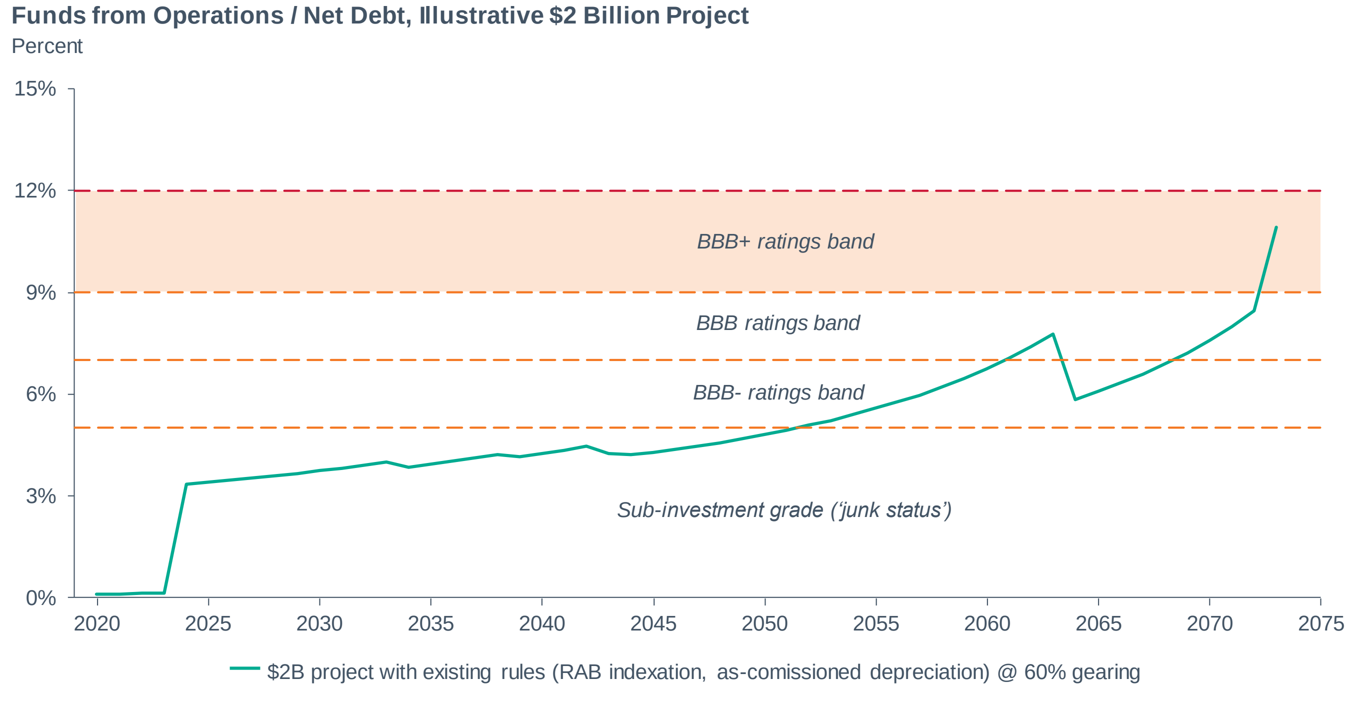
> the project could seek to proceed with 60% debt funding but this could only occur on a sub-investment grade ('junk') basis resulting in debt funding costs substantially in excess of those compensated for in the revenue allowance, causing serious adverse impacts to financial resilience increasing the risks borne by equity holders to significantly above the level contemplated in the AER's RORI. Further, the shortfall between compensated debt costs and those incurred at sub-investment grade would have to be borne by equity holders reducing returns to equity holders below those set out in AER's RORI.

Both of these outcomes are inconsistent with the design of the regulatory framework.

Figure 3, below illustrates the problem. It shows the main credit metric (funds from operations relative to net debt, often referred to as FFO/Net Debt) that is used by credit rating agencies to assess the level of financial risk in a project with a given level of debt funding, and thereby determine its credit rating. The analysis presents the results for a $2 billion greenfield project (a project substantially the same as PEC) where capital expenditure is 60% debt funded (the **Notional Project**).

Figure 3 demonstrates FFO to Net Debt for the Notional Project (which directly reflects the profile of the revenue allowance) is insufficient to achieve even a baseline investment grade credit rating (BBB-) for more than 20 years. The benchmark credit rating of BBB+ is not achieved until the end of the project's life.

Figure 3: Illustrative impact on the credit rating of a benchmark efficient entity under the current arrangements



The impact on a benchmark efficient entity's credit metrics is more extreme when significant projects are to be built concurrently, which is expected to be the case for us over the next ten years.

These financeability issues are not simply a function of the returns determined by the AER as set out in the RORI – higher returns under the RORI would improve the situation but would not, of itself, solve this problem. The issue results from the interaction of the regulatory concepts and revenue modelling that defers revenue recovery through two mechanisms: indexation of the Regulatory Asset Base (**RAB**); and delay of the recovery of revenue for depreciation until the investment is commissioned rather than when capital expenditure incurred.

2.3 Impact of investing in the ISP projects under the current arrangements

If we invested in PEC (a typical ISP project) under the current arrangements and at benchmark gearing of 60%, we would receive a credit rating downgrade (from our current credit rating of Baa2 from Moody's[30]). Our credit rating would fall further (to well below investment grade) if we invested in more ISP projects. The downgrade in credit rating would result in a cost of debt well above that assumed to be faced by a benchmark efficient entity with a BBB+ credit rating, and will impact our ability to attract capital due to the increased risk associated with these projects.

It is critically important for TNSPs to maintain investment metrics for stability and continuity. The ability to raise debt is critical and those same investment grade metrics also give equity markets confidence. The negative impacts of an investment downgrade are substantial and include transaction costs, managerial distraction, ability to maintain reliable operations, and decline of the firm. Expansionary activities are simply implausible until the firm stabilises.

As maturing debt in the total debt portfolio needs to be replaced, any credit rating downgrade due to the ISP investment impacts the ability to raise efficient finance for existing assets as well as any new investments.

2.4 Incenta's view

As set out in Chapter 1, we have engaged Incenta to provide expert advice on the issue and how it can be solved in a way that best promotes the NEO.

Incenta's views on the issue with the current arrangements in the NER is as follows.

> *"As part of the regulatory regime, financing parameters are set for a benchmark efficient firm. While regulated businesses are ostensibly free to decide what level of leverage to adopt, in reality, a regulated business's decision over leverage is constrained by the need for regulated energy networks to ensure they maintain an investment grade credit rating.*
>
> *The level of gearing that can be sustained whilst meeting a particular credit rating is materially affected by the strength of the firm's cash flows. The issue at stake for TransGrid is that the cash flows associated with very large projects under the AER's standard method of depreciation (straight line depreciation applied over the economic life of the assets), and CPI indexation of the RAB, are weaker than for existing investments. Specifically, the recovery of costs is materially more deferred into future periods than for the existing assets. The more deferred nature of the cash flows under existing regulatory methods means that:*
>
> - *the level of gearing that any of the ISP projects could support is materially lower than for the current business, when considered on a stand alone basis, and*
> - *the size of the ISP projects is such that financing just the first of the projects would require gearing to be reduced materially overall, and consequently a reduction in the rate of return on equity that is provided, and this effect would be compounded as more ISP projects are undertaken.*
>
> *The implications of this are:*
>
> - *Maintaining gearing at levels consistent with the benchmark efficient entity would mean:*
>   - *the first of the ISP projects would likely to trigger a credit rating downgrade for a benchmark TNSP from BBB to BBB-, which would see a material increase in its cost of debt financing and reduce its safety margin significantly against the risk of falling below investment grade, and*

30 Equivalent to a Standard & Poor's credit rating of BBB.

- *with the additional ISP projects pressure would be created for its credit rating to fall further, in this case below investment grade, which would trigger a further (and likely more material) increase in its cost of debt financing, but more importantly, create a substantial barrier to its capacity to raise the debt finance required to action the ISP projects.*

- *Conversely, if the benchmark TNSP sought to maintain its investment grade credit rating by reducing gearing levels to below that of the benchmark entity it would likely have real world challenges in attracting equity finance. Specifically, the clientele of investors for network businesses are attracted to stable equity returns that are at a level that is consistent with a relatively high level of gearing. If gearing levels are reduced to maintain the credit rating, equity returns would be reduced, which would most likely be viewed unfavourably by existing and potential new providers of equity funds, in turn creating a risk to the capacity to attract the required investment funds. This potential is supported by empirical evidence of how the clientele of investors behave in Australia and also how infrastructure business will take actions, and incur costs, in order to maintain a stable flow of equity returns. We set out in detail the evidence supporting the existence of such clientele effects in Appendix A."*[31]

Incenta's view is consistent with our view.

2.5 How the issue has been addressed in other jurisdictions

Regulatory authorities and policy makers in other jurisdictions have considered this issue in different ways.

Faced with a similar step change in required transmission investment, the Commerce Commission (in New Zealand) allowed for the value of assets for Transpower – NZ's government-owned transmission business – to be rolled forward without indexation.[32] This effectively flattened the revenue profile faced by Transpower in an effort to help fund needed investment in its network, while doing so in a way that meant that consumers paid the same amount over the longer term (in net present value terms).

The following sets out the Commerce Commission's decision to require Transpower's RAB to be rolled forward without indexation including its reasons:

> *"The Commission considers that the initial RAB under Part 4 should be based on the RAB applying under the previous regulatory arrangements, consistent with the approach applying to all businesses regulated under Part 4. As set out above, initial RAB values for Transpower's assets must be established in accordance with the IM for the valuation of assets, by using the values determined under the settlement agreement as at 30 June 2011. This will include the remaining pseudo assets yet to be fully depreciated. The arguments in favour of an un-indexed approach for the roll-forward of the asset base still apply. Transpower should continue to value its RAB using an un-indexed approach under Part 4. No indexation will be applied.*
>
> *The Commission considers an un-indexed approach is appropriate for Transpower for the following reasons:*
>
> - *Transpower is planning to invest over $3 billion in upgrading and renewing the transmission network over the next five years, which will more than double the value of Transpower's RAB. This level of proposed investments is significantly larger than any of the [Electricity Distribution Businesses (EDBs)] in both an absolute and relative sense. In addition, unlike the EDBs, a significant portion of Transpower's planned investment programme involves expenditures being incurred a number of years in advance of commissioning. The level of Transpower's investments will result in it having, relative to other lines businesses, high investment programme funding requirements;*

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31 Incenta, *Attracting Capital for ISP projects*, TransGrid, September 2020, pp. 2-3.

32 Commerce Commission, Input Methodologies (Transpower): Reasons Paper, December 2010, pp. 30–31.

- *updating the RAB value using an un-indexed approach will, given the likely age structure of Transpower's asset base, be likely to lead to higher revenues for Transpower over the near term. This level of revenue will be likely to be better matched to Transpower's investment needs; and*
- *Transpower's capex is subject to ex ante and ex post approval processes. Where minor capex is above the ex ante approved level, or does not fully comply with Transpower's approval processes, Transpower will make a separate [economic value (EV)] account adjustment to fully offset the revenue impact of the value of the excess expenditure over the life of those assets. Unapproved overexpenditure on a major capex project must be excluded from each annual calculation of ex post economic gain or loss. Transpower will similarly make a separate EV account entry to fully offset the revenue impact of the value of the excess expenditure over the life of the project assets.*

Some of the above factors might be more relevant over the short to medium term than over the long-term (e.g. because of Transpower's current tranche of investment). In the case of EDBs, the Commission considers the greater protection against inflation risk that is afforded by CPI-indexation is sufficient reason to prefer such an approach over an un-indexed approach. In Transpower's case this factor is currently outweighed by the factors discussed above. In the longer term, some of the differences between Transpower and EDBs might become less significant, in which case consideration of greater alignment in some of the approaches for electricity distribution services and electricity transmission services might be warranted. Given that an un-indexed approach is already implemented under the terms of the settlement agreement, changing valuation approaches may incur additional compliance costs. Continuation of an un-indexed approach would prolong the benefits associated with aligning the regulatory and financial accounting records."[33]

With an expected fifty percent increase in our RAB in the next few years and a doubling in the following five years, the predicament facing TransGrid is very similar to that which was faced by Transpower.

While the Commerce Commission broadly adopted an 'as commissioned' capital expenditure basis for rolling forward the RAB, the issue of whether depreciation should be calculated on an 'as incurred' basis was not specifically considered.[34]

In its expert report, Incenta identifies additional methods that have been adopted to address the issue including by Ofgem and Ofwat in Great Britain.[35] The different options we have considered to address the issue are set out in section 3.3 of this rule change request.

[33] Commerce Commission, Input Methodologies (Transpower): Reasons Paper, December 2010, pp. 30-31.

[34] Ibid. p. 46.

[35] Incenta, *Attracting Capital for ISP projects*, TransGrid, September 2020, p. 13.

3. Proposed changes and rationale

This Chapter sets out the proposed rule changes, in the form of a derogation, and the reasons for these changes.

3.1 Proposed changes

TransGrid proposes the following changes to the NER, in the form of a participant derogation, for our share of the transmission projects identified in the ISP as actionable:

> AER to roll forward the RAB for TransGrid's share of the ISP projects without indexation (this removes the need for the AER to make a subsequent negative inflation adjustment to prevent double compensation of inflation).

> AER to calculate regulatory depreciation on an 'as incurred' basis rather than on an 'as commissioned' basis for TransGrid's share of the ISP projects.

The rule change request provides for transitional arrangements to provide that it would apply to VNI minor and Project EnergyConnect (PEC), which are likely to have already commenced the contingent project process[36] at the time the AEMC makes its decision on the rule change, as well as TransGrid's share of all ISP projects subsequently approved through the regulatory process.

The key aspects of the proposed rule are:

> The creation of a new 'ISP Projects RAB' that is separate to TransGrid's current RAB. The ISP Projects RAB will include the value of all assets associated with 'TransGrid's ISP Projects'.

> TransGrid's ISP Projects are defined as any transmission project in NSW[37] that has not had revenue approved by the AER at the date the rule change is submitted to the AEMC and that:

  – is identified in an ISP as an actionable ISP project or an existing actionable ISP project (as defined in clause 11.126.1); and

  – for which the AER approves forecast capital expenditure under Chapter 6A (including under the contingent project framework).

> Modifications to existing rules that require the AER to index the RAB to require the AER to roll forward the ISP Projects RAB without indexation.

> The removal of the existing requirement for the AER to make a negative inflation adjustment to prevent double compensation of inflation in respect of the ISP projects RAB.

> A requirement on the AER to calculate regulatory depreciation under the post-tax revenue model based on as incurred forecast net capital expenditure for TransGrid's ISP projects (the current approach is to calculate depreciation based on as commissioned forecast net capital expenditure).

> A provision that specifies that references to the RAB in other provisions of the NER apply, in respect of TransGrid, to each of the current RAB and the ISP Projects RAB separately.

> A transitional provision under which the AER is required to make a revenue adjustment decision in respect of any TransGrid ISP Projects in respect of which the AER has commenced public consultation on a contingent project process after 1 September 2020 but before the rule commences (transitional ISP project). The adjustment mechanism would require the AER to make an adjustment to TransGrid's allowed revenue in the remaining years of the current regulatory control period for an amount equivalent to the difference between:

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36 Under clause 6A.8.2 of the NER.

37 This includes the Australian Capital Territory which is incorporated into the NSW region of the NEM.

– the incremental revenue that TransGrid would have been entitled to in the current *regulatory control period* in respect of the transitional ISP project if the AER's decision under clause 6A.8.2 was based on an unindexed RAB and depreciation calculated on an 'as incurred' forecast net capital expenditure basis; and
– the incremental revenue allowance approved by the AER in its determination under clause 6A.8.2 in respect of the transitional ISP project.

> A transitional provision under which the AER is required to amend the post-tax revenue model and the roll forward model to reflect the participant derogation.

The derogation would expire on the date TransGrid's lease with the NSW Government ends (including under an extension of term of that Lease).

3.2 Rationale for the proposed changes

3.2.1 Our view

The financeability issues can be mitigated by removing indexation of the RAB and revenue for depreciation being able to be recovered as capital expenditure is incurred (the majority of the impact by removing RAB indexation). Rolling forward the RAB without indexation and calculating regulatory depreciation on an 'as incurred' basis for ISP projects would significantly improve the stand alone credit metrics of the these projects by more closely aligning the timing of revenue recovery with when financing costs are incurred for these projects.

Figure 4, below, shows impact on a benchmark efficient entity's credit rating for the Notional Project, but with RAB indexation removed and depreciation shown on an 'as incurred' basis (i.e., commencing from when capital expenditure occurs).

Figure 4: Illustrative impact on the credit rating of a benchmark efficient entity under our proposed arrangements

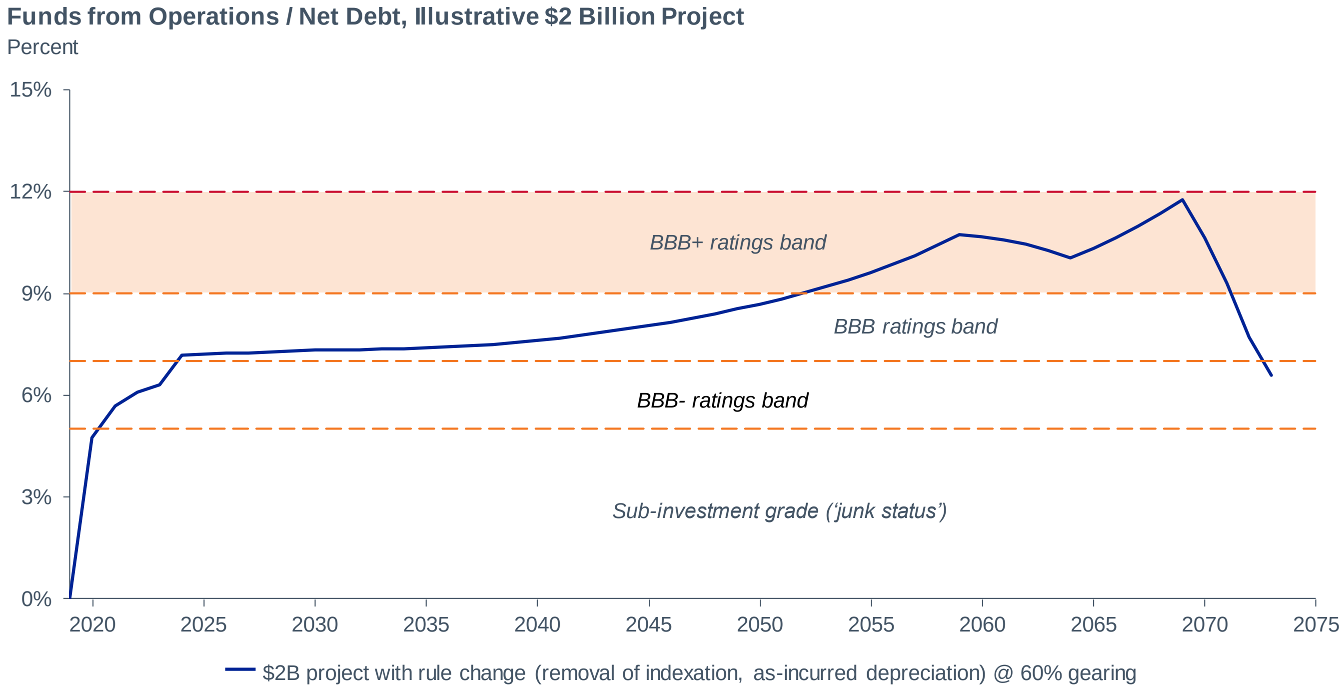

Figure 4 shows that, even with the proposed changes, the Notional Project is unlikely to achieve the benchmark credit rating of BBB+ until quite late in its life. However, it could, with prudent capital management, nonetheless achieve an investment grade rating sufficiently early to overcome the barrier to securing the capital necessary to proceed with the project.

The rule change request does not seek to allow us to obtain an improved credit rating in line with the AER's benchmark credit rating for setting the rate of return. It is our reasonable expectation that it will allow us to maintain our current credit rating.

Table 1 shows the ten year average credit metric (FFO/ND) for different scenarios where:

> Debt can be sourced using a BBB+ credit rating, which is the credit rating that the AER uses to determine the cost of debt.
> Debt can be sourced using a BBB credit rating, which is equivalent to our current rating of Baa2.

It shows that in funding a typical ISP project on a 60/40 debt to equity basis at our current credit rating with a Baa2/BBB cost of debt, we can reasonably expect to maintain that rating if indexation of the RAB is removed and we adopt regulatory depreciation calculated on an 'as incurred' basis. We are forecast to have a FFO/ND of 7.76% (10-year average) under the proposed rule which would be the same as the FFO/ND for our current RAB.

Table 1 also shows that the BBB+ credit rating that the AER assumes when setting the return on debt (which requires a FFO/ND of 9%) is not achieved in any of the scenarios set out. The proposed changes would prevent a deterioration in a benchmark efficient entity's credit rating.

Table 1: Credit metric impact of proposed changes

Scenario	FFO/ND 10 year average Baa1/BBB+ Cost of Debt	FFO/ND 10 year average Baa2/BBB Cost of Debt
Existing RAB	7.83%	7.76%
Existing RAB plus • $2bn investment	6.95%	6.88%
Existing RAB plus • $2bn investment, and • as incurred depreciation (on $2bn investment)	6.98%	6.91%
Existing RAB plus • $2bn investment (unindexed) and • as incurred depreciation (on $2bn investment)	7.73%	7.76%

Note: An FFO/net debt of 8% is required for TransGrid to maintain its current credit rating of Baa2/BBB. An FFO/net debt of 9% is required to achieve the benchmark credit rating that the AER uses to set the rate of return, that being Baa1/BBB+. We are not proposing to improve its credit rating through this rule change.

It is important to note that this solution removes barriers to securing capital without increasing the overall regulated return or the transmission costs to be recovered over the life of the project (in present value terms). This change would yield a revenue profile that is neutral in present value terms at the AER's RORI, but enables efficient financing of the projects which will result in consumers accessing the benefits set out in the ISP.

There would be an increase in the transmission component of the bill in the short term compared to the current approach. For example, we estimate that the application of the proposed rule change to PEC will result in consumers paying, on average, an additional $3 per household per year in transmission charges for the remaining years of TransGrid's current regulatory period because of the rule change.

However, the costs of the projects for consumers has to be considered alongside the benefits they will receive from the delivery of the ISP projects which will place downward pressure on the prices they pay overall. The costs and benefits of the rule change are discussed in Chapter 5 of this rule change request.

We undertook detailed modelling of the issue and potential options for addressing it. The results of this modelling is provided with this rule change request.

3.2.2 Supporting expert advice from Incenta

Incenta provides the following overarching view:

> *"The adverse impact on the capacity to access capital that is caused by very large projects can be ameliorated or remedied by changing the regulatory settings to bring-forward cash flows. This, in turn, will increase the level of gearing that can be maintained.*
>
> - *Whilst there are a number of tools available for this, we support TransGrid's view that removing indexation of the RAB is the preferred method to advance cash flows. We also agree with TransGrid that the further measure of applying depreciation on an "as incurred" rather than "as commissioned" basis would be an appropriate means of improving credit metrics during the construction phase of an ISP project.*
> - *We observe that these measures (separately and in combination) present an NPV-neutral solution to the problem, meaning that they merely alter the time profile of revenue rather than its value. In addition, the combination of these solutions provides just enough bringing-forward of cash flow to remedy the issue. Moreover, both measures can be accommodated within the AER's standard regulatory calculations without adding undue additional complexity."*[38]

On the removal of RAB indexation, Incenta states that:

> *"TransGrid's modelling demonstrates that removing the current indexation of the RAB is very effective means of improving the conditions for firms to access capital when undertaking very large projects. This is because it would be expected to deliver a particularly meaningful improvement in the timing of the cash flow, and so resulting credit metrics, and come close to maintaining the credit metrics of a benchmark entity after undertaking the ISP project to their pre-existing level."*[39]
>
> *"Of the options modelled by TransGrid, as noted above the removal of indexation comes closest to preserving the credit metrics of a benchmark TNSP after undertaking the ISP projects. Therefore, this also implies this solution does a better job at enabling the existing benchmark equity returns to continue and so provide the capacity to attract equity investors. We would also note that this measure also provides an enduring improvement to credit metrics, so that there is no drop-off in metrics in future periods,"*[40]

Incenta makes the following comments on the use of as incurred capital expenditure to calculate depreciation of the RAB:

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[38] Incenta, *Attracting Capital for ISP projects*, TransGrid, September 2020, p. 3.

[39] Ibid. p. 18.

[40] Ibid. p. 19.

"Depreciation "as incurred" improves the project revenue profile during construction phase and so before commissioning. This change therefore aids in the potential that benchmark debt and equity conditions can be preserved during the construction period. As construction can span a number of periods, measures to address this short term need are relevant."[41]

"TransGrid's modelling shows that applying deprecation "as incurred" for the stand alone project materially improves the project revenue profile during construction by bringing forward depreciation during the construction phase. Whilst on its own, however, this option would be insufficient to preserve the credit metrics of a benchmark entity – as it does nothing to address the post construction position – it has substantial merit as a measure in combination with one of the alternative measures."[42]

In considering all of the different options for addressing the issue, Incenta states that:

"It is our view that the best option to address the financeability issues that arise for ISP projects is to remove indexation of the RAB for these projects and to combine this with depreciation on an as incurred basis, also restricted to the ISP projects…

From the table above, it is clear that these combination of measures come very close to preserving the credit metrics of the benchmark entity in the context of one ISP project, and so it would be expected that subsequent projects should similarly be financeable.

A benefit of using the removal of indexation to address financeability is that makes a material improvement to the timing of cash flows but does not compromise the integrity of the PTRM or how depreciation is undertaken. Specifically, it does not require an artificial adjustment the economic life of the assets, or a different profile of depreciation to the standard approach that is applied to all other investments; i.e. straight line depreciation is preserved. Further, how compensation for inflation is to be provided is a valid choice with advantages and disadvantages, and so where change can be justified depending on the specific need. To this end, we note that compensation for depreciation in "cash" (equivalent to no indexation) is already the position in some regulatory regimes, particularly in North America, and has been used as a tool to address financeability in a similar situation for the transmission business in New Zealand, and so is a measure that should not be considered unusual. In addition, as this option preserves the straight line depreciation method, credit metrics will naturally improve as the ISP projects age, meaning that there can be comfort that measures to address the immediate credit metrics will not come at the expense of greater problems in the future.

We note that the removal of indexation alone may be expected to still leave financing issues for a benchmark business during the construction phase, which is not an immaterial matter given that the construction for major transmission projects can span multiple years (up to five and sometimes more). Accordingly, we agree that it is sensible to combine the removal of indexation with an additional measure to target the short term issue. The measure that TransGrid proposes – move to an "as incurred" treatment of depreciation – is a relatively modest change that specifically addresses near term cash flow, and so is appropriate for this task. Moreover, like the removal of indexation, applying an "as incurred" treatment of depreciation for ISP projects is straightforward to accommodate within the structure of the PTRM given that capital expenditure

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41 Ibid. p. 19.

42 Ibid, p. 20.

measured on an "as incurred" basis is already used to calculate the return on assets part of the annual revenues.

Lastly, we comment once more that all of the measures that have been assessed – and those that have been recommended – are NPV neutral and so there is no consequence for the total cost of the solution. Rather, the effect is only on the time path of revenues and prices."[43]

We agree with Incenta's view, including its reasons, that the best option to address the financeability issues that arise for very large projects is to remove indexation of the RAB where there is no change to the other key drivers of financeability such as the rate of return or treatment of inflation. We also agree with Incenta's view that we are able to receive revenue for depreciation for capital expenditure as it is incurred for the ISP projects to address financing issues during the construction phase of a project.

Section 3.3 below, sets out the other options considered by us in coming to our view on the proposed rule changes.

3.3 Other options considered

We have explored a number of other options to address the issue.

These are:

> Financial assistance from governments or the Clean Energy Finance Corporation **(CEFC)**. Consumer groups asked us to consider this option in our discussions with them on the rule change request.
> Accelerating regulatory depreciation.
> Shortening regulatory asset lives.
> Changing capitalisation policy/ classification of expenditure.

A CEFC or Government loan is not expected to be an appropriate long-term solution as:

> We understand the CEFC currently lends at market rates, so it would not solve the problem.
> A TNSP's credit metrics apply to and are calculated for the overall business. Taking on a significant volume of debt for an ISP project will still count towards our credit metrics, even if that debt comes from a non-market provider.
> We are not able to set up a special purpose vehicle for debt provided by CEFC or a state government as this is explicitly prohibited by the terms of our lease with the NSW Government.

More generally, addressing the issue using a non-market solution such as a CEFC or Government loan also undermines the market-based principles of the regulatory regime. Non-market government debt or contributions should not be needed to address a market failure due to an issue in the regulatory framework. The issue should be addressed through changing the regulatory framework.

A CEFC or Government loan would also shift the burden to tax payers. Our proposed approach is NPV neutral over the life of the ISP projects so is the most efficient way of addressing the problem.

An assessment of the other options we have considered is set out in the Incenta expert report. Information on the other options we have considered can also be found in the attached report summarising results of modelling we have undertaken.

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[43] Ibid, pp. 23-24.

3.4 Rationale for a TransGrid derogation

Whilst the issue we have identified is likely to occur for any TNSP that is required to undertake the scale of investment that we are about to undertake, we are seeking a participant derogation from the NER which would apply only to us.[44]

This approach has been taken because:

> We need to address the immediate issue of proceeding with investment in PEC and HumeLink.

> The scale of investment required of us is significantly higher than any other business at the current time.

> This is consistent with the approach that we have discussed with the AER.

[44] A participant derogation may be requested under section 91(5) of the National Electricity Law.

4. Costs and benefits of the rule change

This section sets out the costs and benefits of our rule change request, in particular the impact of the rule change request on the transmission component of consumers' bills and the market benefits that are to be obtained should our share of the ISP projects go ahead.

4.1 Impact on the transmission component of consumers bills

The change to the timing of revenue recovery does not increase costs to customers over the life of the project, as the same amount of revenue will be recovered on a present value basis. Nor does it increase the regulated return provided under the existing TransGrid revenue determination or the RORI. The change to timing reduces the deferral of revenue to improve the ability to access efficient finance.

The transmission charges to distribution network service providers and consequently retailers will increase marginally compared to no change. However, the ISP projects are designed to deliver lower total bills to customers over time.

We estimate that the application of the proposed rule change to PEC will result in consumers paying, on average, an additional $3 per household per year in transmission charges for the remaining years of TransGrid's current regulatory period because of the rule change.

However, the rule change will facilitate investment in ISP projects that would otherwise not be financeable. The benefits to consumers of having the ISP projects in place have been identified to be significantly greater than the increase in transmission charges by AEMO.[45] FTI, the consultant that has reviewed the costs and benefits for us of PEC, estimates that the net cost saving to a household in NSW arising as a result of PEC would, on average, be between $58.40 and $63.90 per year.[46]

4.2 Net market benefits from the ISP projects

The ISP is a whole of system plan for the efficient development of the power system that achieves power system needs for a planning horizon of at least 20 years for the long-term interests of the consumers of electricity.[47] It identifies an optimal development path for the NEM, including ISP projects and development opportunities.

In its final 2020 ISP, AEMO identifies that the optimal development path will deliver $11 billion in net market benefits and meet the system's reliability and security needs through its transition.[48] Included in the optimal development path are a number of major transmission projects that need to be delivered by us.

A number of these are to be delivered in the next one to five years, those being:

> QNI minor (this project has already received AER approval and commenced construction)

> VNI minor

> PEC

> HumeLink

> Central West Orana REZ transmission link, and

> VNI West.

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[45] AEMO, *2020 Integrated System Plan*, July 2020, pp. 97.

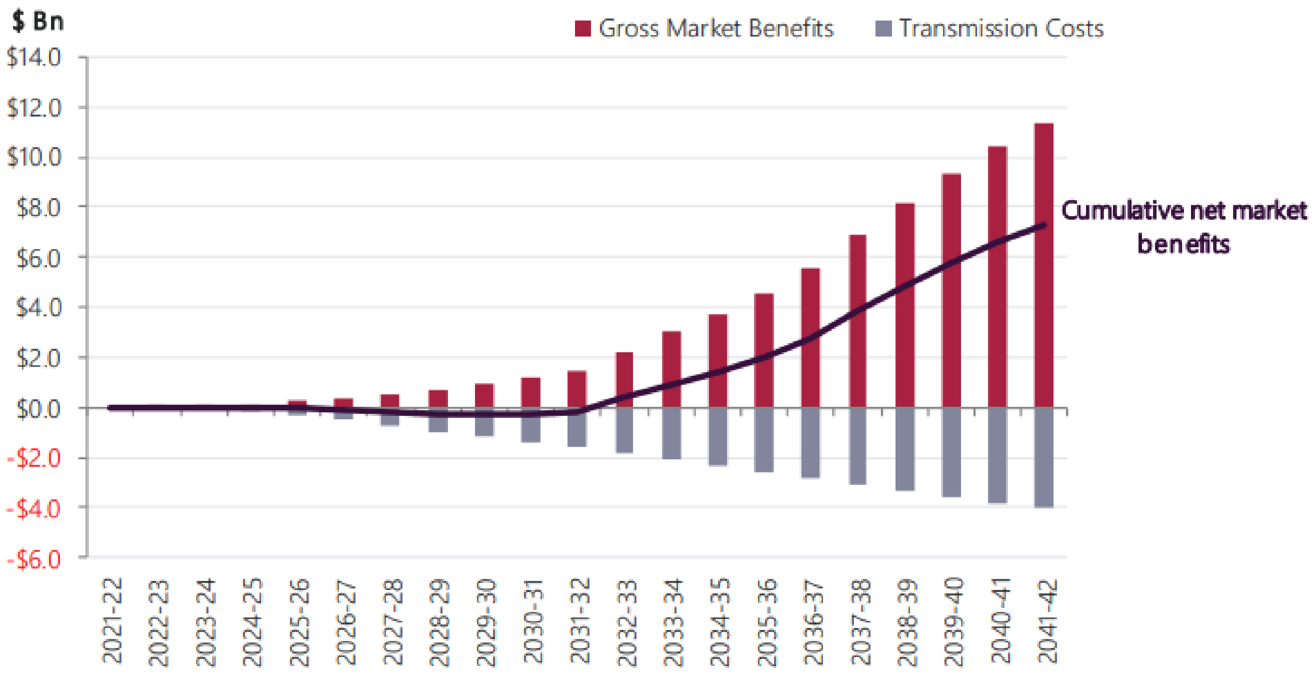
[46] FTI, *Assessing the benefit of interconnectors, A report for TransGrid*, 9 September 2020, p. 13.

[47] NER 5.22.2.

[48] AEMO forecasts $11bn in net market benefits in its central scenario. The benefits could be larger or smaller if a different scenario eventuated.

Our investment in the ISP projects is therefore essential for the $11 billion in net market benefits of the optimal development path in the ISP to be achieved and to ensure the reliability and security of the system is maintained through the energy market transition. Figure 5 below shows the expected net market benefits of the optimal development path in the ISP over time.

Figure 5: Net market benefits from the ISP optimal development path, central scenario



Note: Based on development path 8 outcomes in ISP.
Source: AEMO, *2020 Integrated System Plan*, July 2020, pp. 97.

Net market benefits are also identified for each individual actionable ISP project through the RIT-T process.

4.3 Administrative costs to TransGrid and the AER of implementing the changes

There are no significant administrative costs for us arising from the rule change request.

We consider the administrative costs for us to receive revenue for our share of the ISP projects in a different manner to the rest of our capital expenditure are not significant.

The rule change would also require that the AER amend its post-tax revenue model and roll forward model. It does not compromise the integrity of the post-tax revenue model and roll forward model or the method of calculating depreciation. That is, it does not require an artificial adjustment of the economic life of the assets, or a different profile of depreciation to the standard approach that is applied to all other investments for example. Straight line depreciation is preserved. In our opinion, this minimises the AER's administrative costs associated with the rule change.

5. Assessment against the NEO

This Chapter sets out the costs and benefits of the proposed rule changes, in the form of a derogation, and how the proposed changes promote the NEO as required by the NEL.

5.1 The rule making test

When considering whether to accept the rule change proposal the AEMC must determine whether it considers the proposed changes will, or are likely to, contribute to the achievement of the NEO.[49]

The NEO is to promote efficient investment in, and efficient operation and use of, electricity services for the longer term interests of consumers of electricity with respect to:

> price, quality, safety, reliability and security of supply of electricity, and
> the reliability, safety and security of the national electricity system.[50]

5.2 Assessment against the NEO

Our proposed rule change relates to the efficient investment in electricity services in the long-term interests of consumers. In particular, the rule change seeks to facilitate the efficient investment in actionable ISP projects in the NSW region of the NEM[51]. Efficient investment requires access to efficiently priced debt and equity finance so that regulated businesses have the capacity to deliver on the service requirements that are demanded by consumers.

Incenta provides the following comments in support of the rule change promoting the NEO:

"Access to efficiently priced debt and equity finance is needed so that regulated businesses have the capacity to deliver on the service requirements that are demanded by customers. Specifically, ensuring that the benchmark efficient entity has access to deep and efficiently priced debt and equity will promote the NEO by:

- *Maintaining the incentive on regulated businesses to investigate and invest in new major capital programs that bring material benefits to consumers across the entire NEM. Conversely, where deferred cash flow impacts on the capacity to attract capital, a business would be better off avoiding those projects and only doing smaller but less beneficial projects. This approach would see it meet its regulatory requirements while still retaining its equity investors and also an investment grade credit rating by avoiding very large capital expenditure requirements. However, it would come at the cost of the material NEM wide benefits that are associated with projects that have been identified by the ISP, such as the PEC.*
- *It would promote productive efficiency by facilitating access to efficiently priced and reliable sources of debt and equity finance, and so minimising the costs to society for investment."*[52]

Incenta also comments that:

"Importantly, bringing forward cash flows to support businesses accessing capital does not create any additional cost to consumers over the long term. That is, it only impacts on the timing of

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49 Section 88 of the NEL.

50 Section 7 of the NEL

51 This region also includes the Australian Capital Territory.

52 Incenta, *Attracting Capital for ISP projects*, TransGrid, September 2020, pp. 14.

revenue to the regulated business, and not the overall value of the investment. As such, the change is NPV neutral. It follows, therefore, that bringing forward cash flows is also neutral in the context of the long term interests of consumers with respect to price.

An implication of bringing forward cash flows is that it will impact on the profile of transmission prices. That is, it will cause prices to be relatively higher early on and relatively lower in later years than would occur under the status quo. It is our view, however, that in the context of ISP projects that this change in the profile of prices is unlikely to have any material impact on the promotion of the NEO.

- *First, we note that the sheer size of the capital expenditure necessary for ISP projects means that prices will inevitably rise because of the project, with or without bringing forward cash flows. As such, it is only the marginal increase on a price rise that is caused by the bring forward that is relevant.*
- *Secondly, and more importantly, the objective of the rule change is to ensure the capacity to finance the ISP projects, and so the relevant counterfactual is a world in which there is a serious risk that the ISP projects may not be delivered, or are not delivered in a timely manner. Accordingly, any apparent distortion from efficient use that may be caused by a shift in the profile of prices would need to be weighed against the very large benefits that are expected from the ISP projects.*

It is also our view that it is not inappropriate for customers to pay prices as are necessary to preserve the capacity for firms to access capital needed for ISP projects. As indicated above, ultimately the financing function of a transmission business is undertaken to deliver investments that are for the direct benefit of end use customers. Network businesses are required to bear the costs of these investments over their entire economic life, the quid pro quo from customers is that they also commit to assisting to maintain the conditions needed to attract capital over that time."[53]

We agree with Incenta on how the rule change request will contribute to the NEO.

5.3 Assessment against the revenue and pricing principles in the NEL

In addition to the NEO, the AEMC must also take into account the revenue and pricing principles in the NEL when considering whether to accept the rule change request.[54] The revenue and pricing principles include the recovery of efficient costs, incentives to promote efficiencies and that prices should reflect returns commensurate with the risks involved in providing services.[55]

We consider the rule change request is consistent with the revenue and pricing principles in the NEL for the following reasons:

> By providing a benchmark efficient entity a reasonable opportunity to recover at least the efficient costs it incurs in providing network services.[56] A requirement for maintaining an expectation of efficient cost recovery is that the cash flows generated by tariffs are consistent with maintaining access to investment grade debt, within the constraint that the level of gearing needs to remain at a level that supports the returns needed to attract equity investors. The large capital expenditure requirements of ISP projects mean that at the benchmark efficient entity's level of gearing, which is necessary to attract investors, the cost of debt would materially exceed the cost of debt assumed by the AER in setting prices. This cost

53 Ibid. pp14-15.

54 The revenue and pricing principles are set out in section 7A of the NEL.

55 Section 7A of the NEL.

56 Clause 7A(2) of the NEL.

increase occurs because we would be unable to sustain an investment grade credit rating in this scenario.

- Making changes to the NER that better match the timing of revenue recovery with when financing costs are incurred will provide incentives for a benchmark efficient entity to invest in large projects that deliver material benefits across the NEM, and so is consistent with the revenue and pricing principle that a regulated network service provider be provided with effective incentives to promote economic efficiency, including efficient investment in a transmission system.[57] This is because such changes would enable a benchmark efficient entity to maintain the financial metrics needed to attract the large volume of debt and equity finance that is required for the forthcoming capital works program.
- The rule change also supports the principle that regard should be had to the economic costs and risks of the potential for under and over investment.[58] The current regulatory framework creates disincentives for major transmission investment, which may result in under-investment in the transmission system through the lack of timely investment in projects that deliver material market benefits. Conversely, because our proposal is NPV-neutral it would not promote over-investment in the transmission network.

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[57] Clause 7A(3) of the NER.

[58] Clause 7A(6) of the NER.

6. Why the rule change is urgent

We consider that this rule change request is a request for an urgent rule under section 87 of the National Electricity Law (NEL) and should be it be considered by the AEMC under the expedited pathway under section 96 of the NEL.

An urgent rule is a rule relating to any matter or thing that, if not made as a matter of urgency, will result in that matter or thing imminently prejudicing or threatening:

a. the effective operation or administration of the wholesale exchange operated and administered by AEMO, or
b. the safety, security or reliability of the national electricity system.

The rule change request is a request for an urgent rule because the rule change is required to enable us to establish finance for the ISP projects and meet deadlines that have been set for us by the South Australian Government for PEC and the NSW Government and the Federal Government in respect of HumeLink in time to ensure they are delivered consistent with maximising benefits to customers, and in line with the expectations of the South Australian Government (for PEC), the NSW and Federal Governments (for HumeLink), and AEMO for the ISP overall.

Our reasoning is set out in more detail as follows:

- The rule change request is urgent because it is required to enable us to establish finance and make a positive final investment decision on PEC by no later than January 2021. This would allow PEC to be in place by 2022 and within the timeframes required by the ISP and the South Australian Government. A delay of one month in the making of the PEC final investment decision is likely to result in a delay of up to six months in delivery of the project. The AEMC's timeframe for a standard rule change process is approximately six months which would mean that if the rule change is not expedited as an urgent rule, a decision on the rule change would not be made in time for us to make an investment decision on PEC by no later than January 2021. This would result in the project being delivered after the timeframes required by the ISP and the South Australian Government.
- If we do not invest in PEC in a timely manner, the security and reliability of the national electricity system will be prejudiced. This would have a flow on effect and would risk prejudicing the timely delivery of renewable projects and the ISP as a whole which will put the security and reliability of the national electricity system at further risk:
  - AEMO describes the ISP projects on the optimal development path as "nationally significant and essential investments in the electricity system to ensure the system meets its security and reliability requirements with the least cost and lowest regret to consumers".[59]
  - The South Australian Government has stated that PEC is critical to maintaining energy security in South Australia.[60]
- The rule change is also urgent because it is required to enable us to establish finance and make a positive final investment decision on HumeLink. This decision is required by late 2021 in order for HumeLink to be in place in time for the completion of Snowy 2.0 in 2025 and within the timeframes required by the ISP and the NSW and Federal Governments.

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[59] AEMO, Draft 2020 ISP, 12 December 2019, p. 6; AEMO, 2020 Integrated System Plan, July 2020, p. 8.

[60] Government of South Australia, Hon Dan van Holst Pellekaan MP Minister for Energy and Mining, *SA-NSW Interconnector and Smart Solar "critical" to maintain energy security*, Media release, 19 June 2020.

7. Contact details

This rule change proposal is submitted by TransGrid Electricity Networks Operations Pty Ltd (in this rule change proposal referred to as 'TransGrid'). TransGrid's address is 180 Thomas Street, Sydney, NSW, 2000.

The contact for this rule change proposal is Neil Howes, Regulatory Affairs Manager. Neil can be contacted by email at neil.howes@transgrid.com.au or by phone on 0417 572 127 during business hours.

Part 16 Derogations granted to TransGrid

8A.16 Derogations from Chapter 6A for the current regulatory control period and subsequent regulatory control period

8A.16.1 Definitions

In this *participant derogation*, rule 8A.16:

commencement date means ***[to be inserted]***.

current regulatory control period means the period of five *regulatory years* that commenced on 1 July 2018 and ends on 30 June 2023.

Existing ISP project has the meaning given in clause 11.126.1.

ISP project means:

(a) all existing actionable ISP projects that are deemed to be *actionable ISP projects* under clause 11.126.3; and

(b) all *actionable ISP projects* specified in an Integrated System Plan published by AEMO under clause 5.22.

ISP project regulatory asset base means the value of those assets that are:

(a) associated with ISP projects; and

(b) owned, controlled or operated by TransGrid,

but only to the extent that those assets provide *prescribed transmission services*.

Regular regulatory asset base means the value of all assets that:

(a) satisfy clause 6A.6.1(a);

(b) are owned, controlled or operated by TransGrid; and

(c) do not form part of the ISP project regulatory asset base.

Revenue recovery principle, in respect of TransGrid, means the principle that TransGrid must be given the ability to recover the same, but no more, revenue (in net present value equivalent terms) as it would have recovered if this *participant derogation* had applied from the commencement of the current regulatory control period.

TransGrid means the energy transmission operator known as "TransGrid" and established under the *Energy Services Corporations Act 1995* (NSW).

TransGrid's determination means the *transmission determination* made by the *AER* for TransGrid for the current regulatory control period.

TransGrid ISP project post-tax revenue model has the meaning given in clause 8A.16.5(b).

TransGrid ISP project roll forward model has the meaning given in clause 8A.16.6(c).

transitional ISP Projects means ISP projects in respect of which TransGrid makes an application to the *AER* under clause 6A.8.2 after 1 September 2020 but before the commencement date.

Variation amount, in respect of TransGrid, means an amount equal to:

(a) the sum of all *maximum allowed revenue* for each *regulatory year* of the current regulatory control period calculated as if this clause 8A.16

had been force at the time of each of the *AER*'s determinations under clause 6A.8.2 in respect of the transitional ISP projects; minus

(b) the sum of all *maximum allowed revenue* for each *regulatory year* of the current regulatory control period including any amounts included in TransGrid's determination following a determination by the *AER* under clause 6A.8.2 in respect of the transitional ISP projects.

Variation amount determination means a determination of the variation amount by the *AER* under clause 8A.16.8(b).

8A.16.1A Application

The *AER* must apply this *participant derogation* whenever the *Rules* require the *AER* to determine the *maximum allowed revenue* for TransGrid.

8A.16.2 Expiry date

This *participant derogation* expires on the date on which the lease entered into between TransGrid (as lessor), which at the date of this *participant derogation* is the Electricity Transmission Ministerial Holding Company, and NSW Electricity Assets Pty Limited as trustee of the NSW Electricity Network Assets Trust (as lessee) expires or terminates (including after its renewal of the lease under its terms), being 15 December 2114 at the date of this *participant derogation*.

8A.16.3 Application of Rule 8A.16

This *participant derogation* prevails to the extent of any inconsistency with:

(a) any other provision of the *Rules*;

(b) TransGrid's determination; and

(c) any change made to TransGrid's determination by the *AER* under clause 6A.8.2 that relates to an ISP project.

8A.16.4 Contents of revenue determination for TransGrid

(a) For the purposes of clause 6A.4.2(a)(3A), a revenue determination for TransGrid must specify two regulatory asset bases:

(1) the regular regulatory asset base; and

(2) the ISP project regulatory asset base.

(b) Despite clause 6A.4.2(a)(4), a *revenue determination* for TransGrid must specify that indexation does not apply to the ISP project regulatory asset base.

8A.16.5 Building blocks approach for TransGrid

(a) For the purposes of clause 6A.5.4(a)(1):

(1) the ISP project regulatory asset base will not be indexed; and

(2) depreciation of the ISP project regulatory asset base will be calculated on the basis of capital expenditure as incurred.

(b) The *AER* must publish a *post-tax revenue model* for TransGrid (**TransGrid ISP project post-tax revenue model**) that:

(1) does not index the ISP project regulatory asset base; and

(2) provides for depreciation of the ISP project regulatory asset base to be calculated on the basis of capital expenditure as incurred.

(c) The *AER* must publish the TransGrid ISP project post-tax revenue model as soon as reasonably practicable following the commencement date and no later than ***[5 February 2021]***.

(d) The *AER* may consult on the TransGrid ISP project post-tax revenue model, but is not required to follow the *transmission consultation procedures*.

(e) A reference to the *post-tax revenue model* in the *Rules* is deemed to be a reference to each of the TransGrid ISP project post-tax revenue model and the *post-tax revenue model* published by the *AER* under clause 6A.5.2 separately.

(f) For the avoidance of doubt, clause 6A.5 and the *post-tax revenue model* developed under it apply to the regular regulatory asset base without amendment.

8A.16.6 Regulatory asset bases for TransGrid

(a) For the purposes of clause 6A.6.1:

(1) the ISP project regulatory asset base will not be indexed; and

(2) depreciation of the ISP project regulatory asset base will be calculated on the basis of capital expenditure as incurred.

(b) The *AER* must publish the model for the roll forward of the ISP project regulatory asset base that:

(1) does not adjust the ISP project regulatory asset base for outturn inflation; and

(2) provides for depreciation of the ISP project regulatory asset base to be calculated on the basis of capital expenditure as incurred.

(c) The *AER* must publish the model for the roll forward of the ISP project regulatory base (**TransGrid ISP project roll forward model**) as soon as reasonably practicable following the commencement date and no later than ***[5 February 2021]***.

(d) The *AER* may consult on the TransGrid ISP project roll forward model, but is not required to follow the *transmission consultation procedures*.

(e) A reference to:

(1) the regulatory asset base in the *Rules* is deemed to be a reference to each of the ISP project regulatory asset base and the regular regulatory asset base separately; and

(2) the *roll forward model* is deemed to be a reference to each of the TransGrid ISP project roll forward model and the *roll forward model* published by the *AER* under clause 6A.6.1 separately.

(f) For the avoidance of doubt, clause 6A.6.1 and the *roll forward model* developed under it apply to the regular regulatory asset base without amendment.

8A.16.7 Roll forward of regulatory asset base within the same regulatory control period

For the purposes of clause S6A.2.4, the ISP project regulatory asset base will not be increased by an amount necessary to maintain the real value of the ISP regulatory asset base as at the beginning of a later year.

8A.16.8 Recovery of revenue for ISP projects for which the AER has made a determination under clause 6A.8.2 prior to the commencement of this participant derogation

Variation amount determination

(a) The *AER* must determine the variation amount for TransGrid.

(b) The *AER* must publish a variation amount determination as soon as reasonably practicable following the later of the commencement date and the date on which the *AER* has made a determination under clause 6A.8.2 in respect of all transitional ISP projects.

(c) The *AER* may consult on the determination of the variation amount, but is not required to follow the *transmission consultation procedures*.

Recovery in the current regulatory control period

(d) For the purposes of clause 6A.22.1, the *aggregate annual revenue requirement (AARR)* for TransGrid for each of the *regulatory years* of the current regulatory control period following the date of the variation amount determination is to be:

(1) the amounts specified in clause 6A.22.1; plus

(2) a proportion of the variation amount approved by the *AER*.

(e) The proportion of the variation amount to be included in the AARR under clause 8A.16.8(d)(2) for each of the *regulatory years* of the current regulatory control period following the date of the variation amount determination must satisfy the revenue recovery principle.

Attracting capital for ISP Projects

TransGrid

September 2020

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Tables and figures

1. Introduction and summary

1.1 Introduction

Incenta Economic Consulting (Incenta, "us", "we" or "our") has been engaged by TransGrid to provide advice regarding its proposed approach to addressing financing issues that arise with respect to very large transmission network projects that have been found to be beneficial to customers. Specifically, TransGrid is seeking our views on the economic merits of options available to it to improve financial metrics, and so its capacity to attract capital, when undertaking very large projects.

1.2 The financing challenge

Since the commencement of the NEM there has been a concern that there are major inter-regional transmission projects that would be beneficial to customers across the National Electricity Market (NEM) but, for a variety of reasons, have either not been investigated or invested in. Over the last decade or so, extensive cooperative work has been done between Transmission Network Service Providers (TNSPs), and as part of national planning arrangements, to identify if there are major inter-regional transmission network projects that would promote the long-term interests of consumers.

More recently, significant work has been done on developing an Integrated System Plan (ISP) and processes to action projects that are identified in that plan. A number of the ISP projects would require investment on the TransGrid network. The first of these projects, for which material benefits are expected to be delivered to customers, is Project EnergyConnect (PEC). However, PEC is a very large project with an estimated cost of $2.5 billion and is forecast to amount to almost 30 per cent of TransGrid's existing regulatory asset base (RAB). Moreover, PEC is just the first of several major ISP projects that TransGrid may be expected to undertake and finance. TransGrid has identified a work program of ISP projects over the next 10 years totalling nearly $10 billion, consisting of four projects, including PEC, that each have a value over $2 billion.

TransGrid has identified that the size of the ISP projects relative to its existing RAB, combined with the very different time profile of revenues from these projects compared to its existing RAB under current arrangements, will create material financing issues.

Essentially, the issue for TransGrid – and one that may be shared by other TNSPs that may undertake major ISP projects – is that the regulated revenue stream that will be generated is much more "back-ended" than the regulated revenue stream for existing investments. This follows simply from the fact that the ISP projects, being new, will be depreciated over much longer lives than is the case for the current RAB assets. Indeed, we calculate that the remaining weighted average asset life for TransGrid's RAB at the commencement of the current regulatory period to be approximately 25 years, whereas the weighted average remaining life of the PEC project assets are in excess of 50 years.[1] In addition, the standard regulatory revenue calculations result in only partial compensation during the period of construction, which depresses regulated revenue compared to existing assets even more during the construction period. These conditions, combined with the size of the ISP projects means that:

[1] We have calculated the weighted average remaining life as the reciprocal of the weighted average rate of depreciation for the respective baskets of assets. As land and easements are not depreciated when setting regulated revenues, a zero rate of depreciation applies to this asset class.

- it would not be possible for TransGrid to maintain its current level of finance via debt and maintain credit metrics that ensure a prudent credit rating is maintained, and

- retaining current credit metrics would require that a much lower proportion of debt be maintained than applies for exiting RAB investment, which in turn would have consequences for returns to equity investors in the business .

1.3 Summary of our findings

Our findings are as follows:

- As part of the regulatory regime, financing parameters are set for a benchmark efficient firm. While regulated businesses are ostensibly free to decide what level of leverage to adopt, in reality, a regulated business's decision over leverage is constrained by the need for regulated energy networks to ensure they maintain an investment grade credit rating.

- The level of gearing that can be sustained whilst meeting a particular credit rating is materially affected by the strength of the firm's cash flows. The issue at stake for TransGrid is that the cash flows associated with very large projects under the AER's standard method of depreciation (straight-line depreciation applied over the economic life of the assets), and CPI-indexation of the RAB, are weaker than for existing investments. Specifically, the recovery of costs is materially more deferred into future periods than for the existing assets.[2] The more deferred nature of the cash flows under existing regulatory methods means that:

  – the level of gearing that any of the ISP projects could support is materially lower than for the current business, when considered on a stand-alone basis, and

  – the size of the ISP projects is such that financing just the first of the projects would require gearing to be reduced materially overall, and consequently a reduction in the rate of return on equity that is provided, and this effect would be compounded as more ISP projects are undertaken.

- The implications of this are:

  – Maintaining gearing at levels consistent with the benchmark efficient entity would mean:

    ▪ the first of the ISP projects would likely to trigger a credit rating downgrade for a benchmark TNSP from BBB to BBB-,[3] which would see a material increase in its cost of debt financing and reduce its safety margin significantly against the risk of falling below investment grade, and

    ▪ with the additional ISP projects pressure would be created for its credit rating to fall further, in this case below investment grade, which would trigger a further (and likely

2 The net present value of the cash flows are the same, however.

3 The AER's current financing assumptions are that a benchmark efficient entity that is geared to 60 per cent debt-to-assets could maintain a BBB+ credit rating. However, currently, a 60 per cent gearing level for a benchmark efficient entity would most likely have a credit rating of BBB. TransGrid's rule change proposal is not directed to remedying any mismatch between the benchmark credit rating and the rating that could be achieved in practice.

more material) increase in its cost of debt financing, but more importantly, create a substantial barrier to its capacity to raise the debt finance required to action the ISP projects.

  - Conversely, if the benchmark TNSP sought to maintain its investment grade credit rating by reducing gearing levels to below that of the benchmark entity it would likely have real world challenges in attracting equity finance. Specifically, the clientele of investors for network businesses are attracted to stable equity returns that are at a level that is consistent with a relatively high level of gearing.[4] If gearing levels are reduced to maintain the credit rating, equity returns would be reduced, which would most likely be viewed unfavourably by existing and potential new providers of equity funds, in turn creating a risk to the capacity to attract the required investment funds.[5] This potential is supported by empirical evidence of how the clientele of investors behave in Australia and also how infrastructure business will take actions, and incur costs, in order to maintain a stable flow of equity returns. We set out in detail the evidence supporting the existence of such clientele effects in Appendix A.

- We observe that there is precedent for regulators investigating whether regulatory settings are consistent with delivering the dual outcomes of (i) maintenance of an investment grade credit rating (including a suitable safety margin), and (ii) payment of a rate of return on equity that is consistent with the expectations of the clientele that is attracted to this investment class. Furthermore, we think that it is reasonable to assume that the longstanding "benchmark efficient entity" assumption in Australia that gearing of 60 per cent debt-to-assets can support an investment grade credit rating has created the expectation that such a level of gearing – and the rate or return on equity that goes with it – can in fact be maintained.

- The adverse impact on the capacity to access capital that is caused by very large projects can be ameliorated or remedied by changing the regulatory settings to bring-forward cash flows. This, in turn, will increase the level of gearing that can be maintained.

  - Whilst there are a number of tools available for this, we support TransGrid's view that removing indexation of the RAB is the preferred method to advance cash flows. We also agree with TransGrid that the further measure of applying depreciation on an "as incurred" rather than "as commissioned" basis would be an appropriate means of improving credit metrics during the construction phase of an ISP project.

  - We observe that these measures (separately and in combination) present an NPV-neutral solution to the problem, meaning that they merely alter the time profile of revenue rather than its value. In addition, the combination of these solutions provides just enough bringing-forward of cash flow to remedy the issue. Moreover, both measures can be accommodated within the AER's standard regulatory calculations without adding undue additional complexity.

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4 To be clear, this argument does not mean that the regulatory WACC is too low. Rather, it observes that a higher level of debt financing will permit a higher return to equity to be provided (albeit with greater risk).

5 There may be other financial instruments ("hybrids") that could be used to increase the effective level of gearing whilst not harming credit metrics (such instruments are typically classed as equity by ratings agencies). However, these instruments would cost more than investment grade debt and this additional cost would not be reflected in regulated revenues, and so would also imply an erosion of equity returns.

- Maintaining the capacity for a benchmark efficient firm to attract necessary capital markets by bringing forward cash flows will promote the National Electricity Objective (NEO) by:
  - Ensuring that the firms maintain an incentive to investigate and invest in very large capital programs that are for the benefit of consumers, and
  - Minimising the cost of investments by ensuring access to efficiently priced and reliable sources of debt.
- While bringing forward cash flows will impact on the profile of prices, it is unlikely that this will cause a distortion to the efficient use of electricity services that is large enough to offset the very material NEM-wide benefits that are expected from ensuring that ISP projects, such as the PEC, can be financed and so will proceed.

2. Attracting capital for investment in transmission networks

2.1 Introduction

A key function for a network business is make investments on behalf of customers, and so raise capital to finance these investments. In return, customers agree to pay for those investments over their economic life, and implicitly, assist in the efficient financing of those investments. To that end, it is well accepted that an imperative for the regulatory regime is to provide the conditions under which regulated businesses have both the incentive and capacity to raise and commit investment funds to projects that promote the long-term interests of consumers, and to do so at the lowest efficient cost.

The principal focus of regulators and other authorities when assessing whether the regime will provide the incentive and capacity for investment is the adequacy of the overall rate of return that is offered. Clearly, this principal focus is appropriate given that infrastructure assets compete for funds with all other investment opportunities, and so must generate a return that is commensurate with the returns available elsewhere, adjusted for relative risk.

However, other aspects of the regulatory regime can also have a material effect on the capacity for regulated firms to attract finance.[6] The specific feature of the regime that is relevant to TransGrid's Rule Change Proposal is what we refer to here as the strength of the cash flows that are generated, and what that means for the decisions of regulated businesses over the leverage they adopt and the credit rating that can be maintained.

In this section, this issue is described further, addressing how:

- the practical requirement for a regulated network business to maintain an investment grade credit rating places a practical constraint to the level of leverage that is possible, and

- the level of leverage that is consistent with achieving an investment grade credit rating depends on the method by which regulated prices are determined.

We then explore the real world implications of a project – like the ISP projects – where the cash flows are not sufficiently strong to support maintaining the leverage assumed for a benchmark efficient entity. Anticipating the conclusions below (and which are set out in more detail in Appendix A that addresses "investor clienteles") we observe that, in such a circumstance, a constraint may exist to the capacity of a regulated business to attract equity investment due to the impact reduced leverage has on the stability and level of equity returns. The implications for the NEO are then drawn.

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6 A range of other aspects of the regulatory regime may have an effect on the capacity of regulated businesses to raise capital, including the institutional arrangements and the performance of those institutions. We observe that the Australian arrangements for the energy networks are typically regarded very highly by credit rating agencies (which can be interpreted as proxies for providers of debt finance).

2.2 Benchmark approach to financing decisions

2.2.1 Basic model – choice over leverage and equity return

The standard approach to estimating the required rate of return for a regulated business in Australia is to focus on the return that is required by a benchmark efficient entity, and specifically in how the regulated business chooses to structure and finance the regulated activity.[7] The rationale for focussing on a benchmark entity is to both provide an incentive for the business to be efficient in these decisions – as any benefit to be obtained from reducing financing costs below those of a benchmark efficient entity are retained – and to protect customers from the consequences of any inefficient decisions by the regulated entity.[8] The relevant benchmark assumptions made about financing by the AER are:

- an investment grade credit rating, and more specifically, a BBB+/Baa1 credit rating, and
- a debt to equity ratio of 60:40, whereby it is assumed that the firm is financed with 60 per cent debt and 40 per cent equity.

As part of these benchmark arrangements, regulated businesses are free – at least at first sight – to adopt the leverage level of their choice. The choice of leverage brings with it the ability to choose the rate of return that is provided to the suppliers of the business's equity finance – in general terms, raising the level of leverage will imply that a higher rate of return to the equity providers can be offered. Importantly, increasing leverage in this manner is not a "free lunch" because the risk associated with the equity investment will also increase with leverage, although as we discuss further below, a particular level of equity return may nonetheless be sought by investors in the asset.

2.2.2 The need to maintain an investment grade credit rating

In practice, regulated businesses are not completely free as to their choice of leverage levels. Network Service Providers (NSPs) rely on a considerable amount of debt financing to assist in funding their investments. As a practical matter, therefore, it is widely viewed as prudent for NSPs to achieve and maintain an investment grade credit rating,[9] together with a safety margin against falling below this level. The reason for targeting an investment grade credit rating (together with a buffer) is that access to the largest and most liquid of the pools of debt finance require such a rating, reflecting the constraints that exist for many institutional investors. Thus, if a regulated business's credit rating was to slip below investment grade then, as well experiencing a material increase to its cost of debt, additional risk over refinancing would be expected, which would require additional costs to be

7 By structure, we refer here to the ownership structure of the regulated business, including whether it is undertaken directly via a share market listed entity, whether there are entities or trusts interposed, or whether the entity is a state owned entity. We note that other aspects of the regulatory regime may place legal or practical limits on the ability for a regulated business also to participate in certain other activities, which is not relevant to the issues raised in this report.

8 In addition, focusing on the benchmark entity may be a practical necessity where the companies that own any particular regulated business may also own a number of different businesses, and raise finance jointly for all those activities.

9 An investment grade credit rating is one that is at or above BBB- (Standard and Poor's, Fitch) and Baa3 (Moody's).

incurred to manage and potentially also create the risk that new investment could not be financed (or not financed in a timely manner).[10]

We discuss in Appendix B the approach of the main credit rating agencies (Moody's and Standard and Poor's) to deriving the credit rating of the regulated energy networks, and observe that an analysis of indicators of the strength of cash flows (credit metrics) form a key component of their analyses.[11] These indicators of the strength of cash flow tend to be directly affected by the level of leverage that is adopted. Moreover, these indicators of the strength of cash flow can be materially affected by the method that is used, or assumptions employed, to determine regulated revenues.

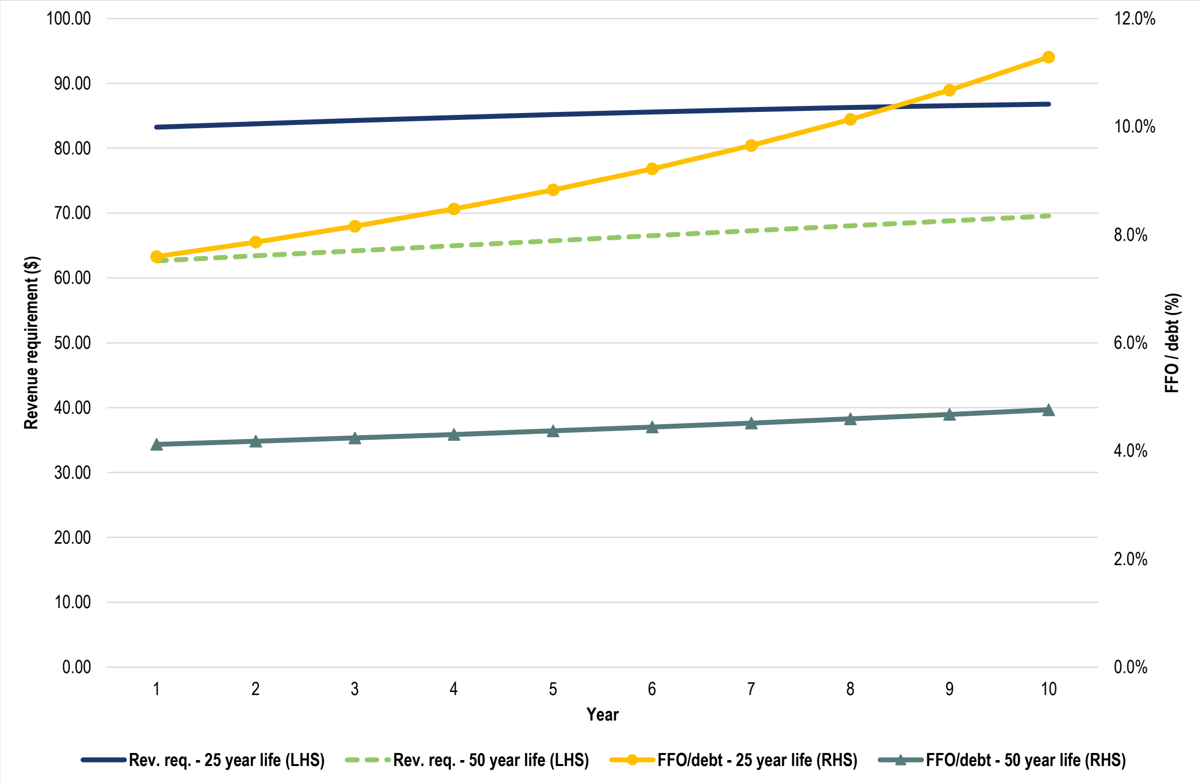
The relationship between the method that is used (or assumptions employed) to derive regulated prices and the potential credit rating for the firm is illustrated in Figure 1. This figure assumes a notional asset with an initial cost of $1000, and shows the effect on regulated revenues and a key indicator of cash flow (the ratio of funds from operation to debt) from the choice between an asset life of 25 years and 50 years over the first 10 years after an asset has entered into service.[12] The AER's benchmark assumption of leverage of 60 per cent debt-to-assets is assumed.

10 For example, a firm may need to have new financing arranged even further in advance than otherwise to manage the risk that debt may not be available at the time that existing debt matures.

11 In relation to the assessments undertaken by Standard and Poor's, its process involves first making an assessment is made of the nature of the business risk for the entity in question, and then the strength of the cash flows (via certain measures, which we refer to as credit metrics), the combination of which determines the "anchor" credit rating for the entity. That anchor rating may then be adjusted for other factors relevant to credit risk, including an exercise of benchmarking against peers, as well as for the effect from having a "parent" in the ownership chain to derive the final credit rating. The regulated electricity transmission networks in Australia are typically seen as being in the lowest category of business risk (labelled "excellent"). A key contributor for this "excellent" business risk is the positive view the ratings agencies take of the Australian network regulatory regime.

12 The example also assumes zero operating expenditure (or, equivalently, that expenditure is the same between the options) and that the tax life matches the regulatory life (i.e., that we are comparing a "new" and "old" asset). The cost of capital assumptions applied in TransGrid's 2018-23 decision were applied.

Figure 1 – Effect of asset life on the strength of cash flows (60 per cent gearing)



Source: Incenta analysis.

As shown in the chart, the revenue requirement with a 25 year life is approximately 30 per cent higher over this 10 year interval than the revenue requirement generated by a 50 year life.[13] This difference in revenue requirements is material to the potential credit rating. Drawing on the summary of the thresholds that credit rating agencies apply for regulated networks that is presented in Appendix B, it can be inferred from the figure above that:

- with a 25 year life, the regulated energy network would fall comfortably within the requirements for a BBB credit rating immediately, and exceed the threshold for BBB+ approximately half-way through the period,[14] whereas

- with a 50 year life, the regulated network would most likely commence with a sub-investment credit rating (BB+) and rise to a BBB- credit rating later in the period.

Figure 2 repeats the previous figure, but assumes the regulated business adopts leverage of 40 per cent debt to assets. Whilst the revenue requirements are identical, the strength of the cash flows is materially higher. That is, the “funds from operation to debt” credit metric for the longer asset life

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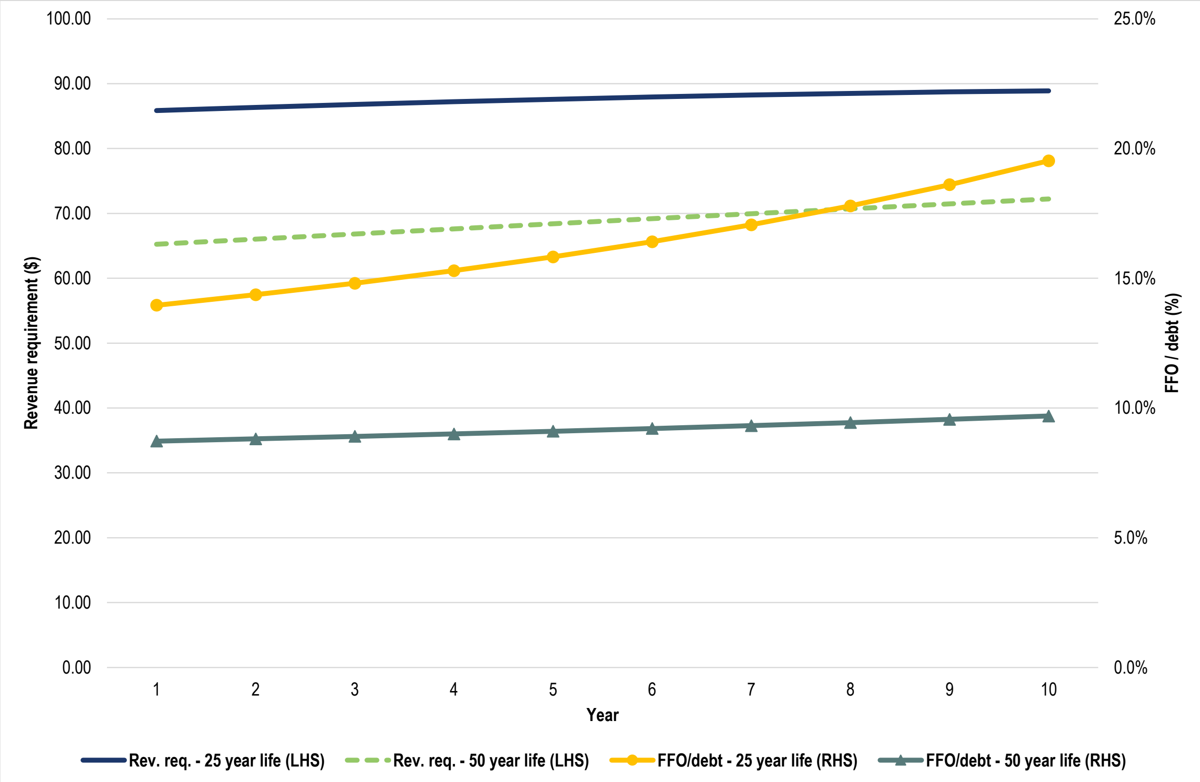
13 More accurately, this comparison is between the capital components of the revenue requirement because operating expenditure is omitted for simplicity.

14 This example assumes the firm comprises only a single asset, and so the credit metrics will naturally increase as the asset depreciates if debt is maintained at a constant proportion of the RAB, because the remaining life shortens and so the annual rate of depreciation will increase.

starts at the level that is marginally below the requirements for BBB+ and rises to be comfortably within the BBB+ region towards the end of the period.

Figure 2 – Effect of changing gearing (40%) on the strength of cash flows



Source: Incenta analysis.

It follows that the aspects of the regime that determine the timing of cash flows – that is, the period over which cost recovery is spread, as well as the trajectory of that spreading – will have a material effect on the leverage that it is possible for the regulated business to adopt and retain an investment grade credit rating.

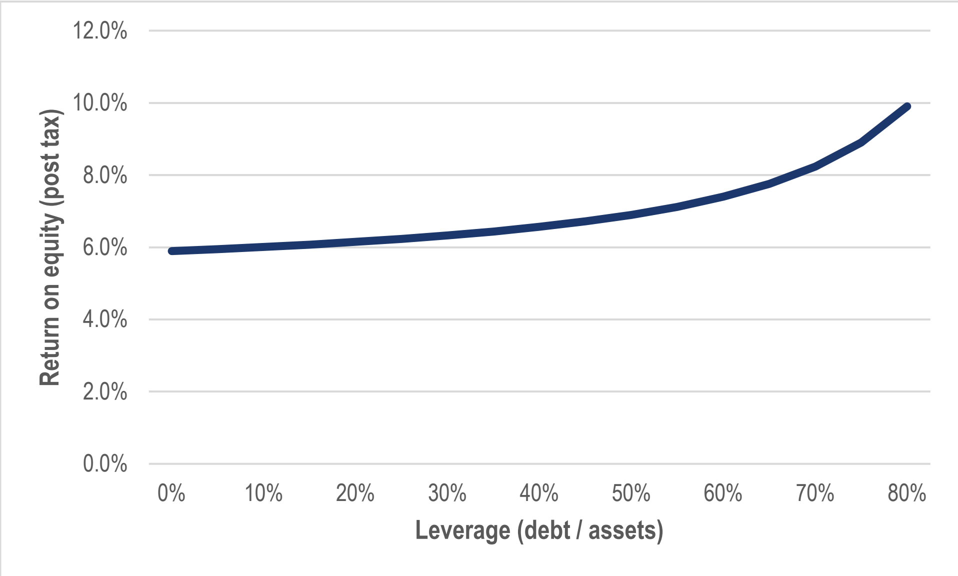
2.2.3 Practical constraint – effect of leverage on equity returns

Even though reducing gearing to levels well below that assumed for the benchmark efficient entity would permit a retention of an investment grade credit rating, the impact this has on equity returns creates a practical limitation to taking this course of action.

The effect of leverage on the rate of return to equity is shown in Figure 3 below. This example uses the cost of capital inputs from TransGrid's current determination, and adjusts for the tax effects that would flow from the AER's benchmark efficient entity assumptions.[15]

15 The example assumes a vanilla WACC of 6.54 per cent, a pre-tax cost of debt of 5.97 per cent and a dividend imputation utilisation factor (gamma) of 0.40. It is assumed for simplicity that the cost of debt is constant over the leverage range shown. The function allows for the benefit from greater interest

Figure 3 – Leverage and expected equity return



Source: PTRM for TransGrid 2018-23 regulatory period, Incenta analysis.

The figure shows that if the target leverage is adopted, then a return equal to the AER's assumption (7.4 per cent) would be achieved. However, if leverage of 40 per cent was adopted, the return to equity would fall materially, in this case to 6.6 per cent.

An electricity transmission business – in common with many infrastructure assets – has a clientele of investors that have been attracted by a stable equity return that is at a level commensurate with a relatively high gearing ratio.[16] Given such a clientele of investors, the potential for a reduction in equity returns would be expected to have a material adverse impact, the consequence of which is that its capacity to attract the additional equity investment funds that are required to action large new projects would reduce materially.

We address the factual assumptions in the propositions above – namely, whether an investor clientele is likely to exist and its implications, as well as how the nature of the ISP projects will constrain leverage – in detail in Appendix A. We observe here that the existence of an investor clientele is reasonable and well supported by the evidence such that a regulated network business may encounter difficulties with raising capital for projects that would cause a materially reduced equity returns from the level that is commensurate with the regulatory benchmark 60:40 gearing level.

We observe that there are precedents for regulators assuming a need for a reasonable level of equity returns (or, equivalently, dividend yields) by regulated businesses as well as maintaining an investment grade credit rating – and with a safety margin against adverse future events – and inquired whether the regulatory settings are consistent with the maintenance of these dual outcomes. For

deductibility as leverage is increased, scaled down to account for the reduced volume of dividend imputation credits.

16 Recall that high dividends need not imply that high returns to the asset will accrue overall because (i) the higher equity returns are, in part, a function of higher leverage, and the higher equity returns occur in conjunction with more lower-cost debt, and (ii) high dividends may come at the expense of lower growth in dividends.

example, Ofgem in the UK has been clear that it believes it is important that price controls support the achievement of an investment grade credit rating in combination with a reasonable level of dividends, stating:[17]

> *8.71. Ofgem has previously indicated that it intends to propose price controls that are consistent with the regulated companies being able to maintain credit ratings that are comfortably within investment grade. In order to assess whether the proposals are consistent with this approach, Ofgem has examined a range of financial indicators. This assessment has been based on a financial model with initial gearing set in line with that used in the cost of capital assessment (i.e. 57.5%) and, for the purposes of this financial model, Ofgem has assumed a dividend yield of 5 per cent.*

It is noted that the assumed 5 per cent dividend yield is materially higher than the average for UK stocks, and so implicitly assumes a clientele that expects a yield well above the market average (see Table 3 in Appendix A).

Moreover, we observe that the AER's benchmark efficient entity assumption about leverage was not developed in a vacuum, but rather reflects the long-standing practice of the Australian regulated energy networks and relevant peers. It should be no surprise, therefore, that equity investors have formed expectations about the return from regulated energy networks based on an assumption that this benchmark gearing level would be achievable and pursued in practice.

2.3 Deferral of cash flow associated with the ISP projects

TransGrid's key conjecture is that the ISP projects will generate a cash flow with a timing that is materially deferred compared to the timing of cash flows inherent in its existing RAB, reflecting for the most part the fact that the ISP projects will be "new" whereas the RAB is "old", evaluated in the context of the AER's standard method for setting regulated revenues.[18] We calculate that the remaining weighted average asset life for TransGrid's RAB at the commencement of the current regulatory period to be approximately 25 years, whereas the weighted average remaining life of the PEC project assets are in excess of 50 years.[19] The ISP projects are also very material. For instance, Project Energy Connect – which is one of the first of the material projects falling within TransGrid's responsibility – amounts to approximately 30 per cent of its existing RAB.

We agree with TransGrid's conclusion that these factors mean that under the current approach to determining regulated revenues maintaining existing gearing levels would most likely trigger a downgrade in the credit rating for a benchmark efficient TNSP to the lowest rung of the investment grade level. Such a downgrade would increase the cost of debt, but also create the risk that, if an adverse event were to occur and this triggered a further downgrade, then its credit rating may fall below an investment grade. This latter outcome would imply a further material increase to borrowing costs, and also pose the further risk that debt finance may not be available when required, potentially constraining how much the TNSP is able to invest.

17 Ofgem, 'Electricity Distribution Price Control Review, Final Proposals', November 2004, p.113.

18 That is, as reflected in the "Post Tax Revenue Model" algorithms.

19 We have calculated the weighted average remaining life as the reciprocal of the weighted average rate of depreciation for the respective baskets of assets. As land and easements are not depreciated when setting regulated revenues, a zero rate of depreciation applies to this asset class.

Conversely, TransGrid would need to adopt a level of financial leverage that is materially lower than its current leverage in order to maintain its existing credit rating. The effect of this is that the rate of return to TransGrid's equity investors will decline materially. As indicated above, the consequence of this outcome is that it is likely that the capacity for TransGrid to attract the additional equity investment funds that are required to action the ISP projects would reduce materially.

2.3.1 TransGrid empirical analysis

TransGrid has undertaken financial modelling to identify the impact that undertaking a large capital expansion program will have on its financial metrics. TransGrid has analysed a number of scenarios, which include targeting the financial metrics consistent with the credit rating that the AER assumes when determining the regulatory WACC (BBB+ / Baa1) as well as the financial metrics that are consistent with the credit rating that a benchmark efficient entity would most likely be able to maintain at the current time (BBB / Baa2).[20]

The details of the modelling and assumptions applied by TransGrid are set out in Appendix C. Also, in Appendix B we discuss the derivation of thresholds for the most important of the credit metrics at the present time – the ratio of funds from operations to net debt (FFO / ND) – that a benchmark efficient TNSP would need to achieve to qualify for the different credit ratings.[21] In summary, we conclude in Appendix B that FFO / ND:

- in excess of 9 per cent is required for a BBB+ / Baa1 credit rating
- between 7 per cent and 9 per cent is consistent with a BBB / Baa2 credit rating
- below 7 per cent is consistent with BBB- / Baa3, and
- at a point somewhere between 5 per cent and 6 per cent there is the risk of a sub-investment grade rating (i.e., BB+ / Ba1).

As shown in the table below, the modelling identifies that undertaking a single large ISP project would expose a benchmark efficient TNSP in the position of TransGrid to a credit rating downgrade from BBB to BBB- as the FFO/ND falls below a threshold 7% in each case. Once the full program of capital expenditure is included in the analysis it shows that the benchmark efficient entity faces a material risk of a downgrade to a sub investment grade credit rating. This would clearly be very serious problem and so something a prudent operator would seek to avoid at all cost.

20 However, as TransGrid's rule change proposal is targeted to the benchmark efficient entity achieving the same credit metrics after undertaking the ISP projects as it achieves from its existing RAB business, its rule change would not seek to remedy the mismatch between the benchmark credit rating and the credit rating that a benchmark efficient entity most likely would achieve in practice.

21 The major credit ratings agencies apply a variety of credit metrics when assessing credit ratings; however, an examination of credit ratings reports for regulated networks during recent years shows that FFO / ND has been the credit metric that has constrained credit ratings, and is typically singled out in the guidance provided in those reports about how metrics would need to change for there to be an upgrade or downgrade.

Table 1: Impact on FFO/ND from major ISP projects[22]

Scenario (60% gearing)	FFO/ND in first 10 years BBB+ / Baa1 cost of debt	FFO/ND in first 10 years BBB / Baa2 cost of debt
Business as usual	7.83	7.76
Exiting RAB + $2B hypothetical project	6.95	6.88
Existing RAB + All Major ISP projects		5.67

Source: TransGrid analysis

TransGrid's modelling analysis shows also that if it sought to retain an investment grade credit rating for the benchmark efficient entity by reducing its level of gearing then its equity returns would fall materially below that assumed for the benchmark efficient entity. For instance, for the full program of major ISP projects equity returns would fall to 5.87%, compared to the benchmark target cost of equity of 6.36% if it maintained gearing at a level designed to preserve the benchmark entity's existing credit rating (BBB). If TransGrid targeted the benchmark credit rating of BBB+ for the benchmark efficient entity, then equity returns would fall to 5.67%.

2.4 The NEO will be advanced by a rule change to support the capacity to attract capital

The obvious solution to the problems that are caused by deferred cash flow is to instead bring forward cash flows. That is, permit the regulated business to receive a higher proportion of revenue in the early years of the investment. In turn, the business is then able to achieve an investment grade credit rating at current levels of gearing and so also deliver the equity returns that are expected by equity investors in regulated energy networks.

Making a change to improve cash flows to support the capacity for firms to attract capital for large capital expenditure requirements has precedent in economic regulation, in particular, in the United Kingdom and New Zealand. For instance, in a joint paper published by Ofgem and Ofwat on financeability, it was noted that using extra revenue (i.e. a revenue uplift) has been employed to support the conditions needed to attract capital:[23]

> *As explained in Section 4, in the context of continuing high levels of capital investment the combination of revenue uplift and assumptions on dividend growth and yields were judged to be appropriate in order to continue to attract capital (including equity) to the water sector and to allow companies to maintain adequate credit quality based on projected ratios over the price limit period.*

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22 The first column of results are the credit metrics that assume a cost of debt consistent with the AER's assumed credit rating of BBB+, whereas the second column of results assumes a cost of debt that is consistent with the credit rating that a benchmark entity is likely to achieve at the current time.

23 Ofwat and Ofgem, 'Financing Networks, a discussion paper', February 2006, p. 46.

2.4.1 Implications for the National Electricity Objective

Access to efficiently priced debt and equity finance is needed so that regulated businesses have the capacity to deliver on the service requirements that are demanded by customers. Specifically, ensuring that the benchmark efficient entity has access to deep and efficiently priced debt and equity will promote the NEO by:

- Maintaining the incentive on regulated businesses to investigate and invest in new major capital programs that bring material benefits to consumers across the entire NEM. Conversely, where deferred cash flow impacts on the capacity to attract capital, a business would be better off avoiding those projects and only doing smaller but less beneficial projects. This approach would see it meet its regulatory requirements while still retaining its equity investors and also an investment grade credit rating by avoiding very large capital expenditure requirements. However, it would come at the cost of the material NEM-wide benefits that are associated with projects that have been identified by the ISP, such as the PEC.

- It would promote productive efficiency by facilitating access to efficiently priced and reliable sources of debt and equity finance, and so minimising the costs to society for investment.

The need to ensure that firms have efficient access to capital markets was acknowledged by Ofwat in its 2004 price determination for water businesses. It articulated that the financing requirement associated with the large capital requirements of the water and sewerage businesses meant that access to efficiently priced finance was required so that the ability to deliver on their service obligations was not jeopardised. It recognised also that large capital programs will impact on cash flows and so the ability to access capital markets:[24]

> *We have a duty to secure that companies are able to finance the proper carrying out of their functions as licenced undertakers ('finance functions'). We look at this as having two strands. One is to secure that, if a company is efficiently managed and financed, it is able to earn a return at least equal to the cost of capital. The second is that its revenues, profits and cash flows must allow it to raise finance on reasonable terms in the capital markets. We refer to this second strand as financeability.*
>
> *Continuing large capital programmes, such as those included in these price limits, can place a financing strain on the companies and has made our approach to the cost of capital and financeability a critical issue at this review. It is clear that a consequence of requiring companies, even efficient ones, to undertake large capital programmes is persistent negative cash flow. This can lead to a deterioration in credit quality which could restrict the access of companies, despite earning their cost of capital, to capital markets or could significantly increase the cost of finance. This could jeopardise their ability to deliver services and the improvements required. In the assumptions underpinning the price limits, we believe that we have reached an outcome that balances the interests of customers with the need to secure that efficient companies are able to finance their functions.*

Importantly, bringing-forward cash flows to support businesses accessing capital does not create any additional cost to consumers over the long-term. That is, it only impacts on the timing of revenue to the regulated business, and not the overall value of the investment. As such, the change is

[24] Ofwat, 'Future water and sewerage charges 2005-10, Final determinations', 2004, p.217.

NPV-neutral. It follows, therefore, that bringing forward cash flows is also neutral in the context of the long-term interests of consumers with respect to price.

An implication of bringing forward cash flows is that it will impact on the profile of transmission prices. That is, it will cause prices to be relatively higher early on and relatively lower in later years than would occur under the status quo. It is our view, however, that in the context of ISP projects that this change in the profile of prices is unlikely to have any material impact on the promotion of the NEO.

- First, we note that the sheer size of the capital expenditure necessary for ISP projects means that prices will inevitably rise because of the project, with or without bringing forward cash flows. As such, it is only the marginal increase on a price rise that is caused by the bring-forward that is relevant.

- Secondly, and more importantly, the objective of the rule change is to ensure the capacity to finance the ISP projects, and so the relevant counterfactual is a world in which there is a serious risk that the ISP projects may not be delivered, or are not delivered in a timely manner. Accordingly, any apparent distortion from efficient use that may be caused by a shift in the profile of prices would need to be weighed against the very large benefits that are expected from the ISP projects.

It is also our view that it is not inappropriate for customers to pay prices as are necessary to preserve the capacity for firms to access capital needed for ISP projects. As indicated above, ultimately the financing function of a transmission business is undertaken to deliver investments that are for the direct benefit of end-use customers. Network businesses are required to bear the costs of these investments over their entire economic life, the quid pro quo from customers is that they also commit to assisting to maintain the conditions needed to attract capital over that time.

3. Options to bring forward cash flows

3.1 Introduction

In the previous chapter we identified that ensuring that NSPs have the capacity to access capital for very large projects requires that cash flows be brought forward. The purpose of this chapter is to consider the options that can be used to achieve this objective. We note that only a subset of options to bring forward cash flow for a regulated transmission business are permitted under the current National Electricity Rules.

The purpose of advancing the timing of cash flow is to improve the credit metrics associated with the ISP projects to a level consistent with current metrics under the benchmark efficient entity 60/40 gearing assumption, in order to improve the capacity to access efficient sources of capital. The options considered here are:

- Removing indexation of the RAB
- Applying a different depreciation method
- Adjusting asset lives
- Calculating depreciation on as an “as-incurred” rather than “as-commissioned” capex, and
- Change the classification of expenditure – that is, expensing some project costs.

As indicated above, TransGrid has undertaken modelling on each of these options to identify the impact that they have on its credit metrics. In its analysis of options to address cash flow concerns it modelled a single hypothetical project valued at $2 billion with the costs of investment evenly spread over a five-year construction period. It has also assumed the credit metrics (FFO/net debt) needed for a benchmark efficient entity to maintain either the current credit rating expected for such an entity (BBB / Baa2) as well as the credit rating assumed in the AER’s estimate of the regulatory cost of capital (BBB+ / Baa1). The details of that modelling and the assumptions used are described in Appendix C.

Before considering these options, we consider the base case scenario for TransGrid under the current regulatory regime.

3.2 Base case scenario

As indicated above, the principal cause of the deterioration of the capacity to access capital for very large projects emerges as a result of the deferral of cash flows under the current regulatory regime. The current regime delays when costs are returned to the business because of the following features:

- Straight-line depreciation is applied for the economic life of the assets
- CPI indexation is applied to the RAB, and
- A requirement that depreciation commence on an ‘as-commissioned’ basis rather than when capital expenditure is first incurred.

A new very large project will enter the RAB with a "new asset" remaining asset life. As we identified earlier, the remaining life for TransGrid's PEC project is more than twice that of the average asset life for TransGrid's RAB at the commencement of the current regulatory period. This reality, combined with the indexation of the RAB and the timing for the commencement of depreciation, means that cash flow to the business will be low initially, but correspondingly higher later.

The lower cash flow in the earlier years of the project will depress the credit metrics for the business. The implication being that under the current regulatory framework, a benchmark efficient entity would need to adopt a level of financial leverage that is materially lower than the benchmark level in order to maintain an investment grade credit rating. The consequence of this is that the rate of return for equity investors would decline significantly, which in turn would create a barrier to attracting equity capital (in turn due to the clientele effect discussed earlier). Conversely, if the entity tried to maintain it financial leverage consistent with the benchmark, it would suffer a credit rating downgrade and so incur higher borrowing costs, and possibly also lose its investment grade credit rating, which would also place at risk its ability to raise the quantity of debt required to fund the projects.

In the discussion below and in the summary, we focus on the credit metrics for the benchmark TNSP after having undertaken the first of the ISP projects. We observe that if the treatment of the first ISP project is such that existing credit metrics can be preserved under the benchmark gearing, then credit metrics will be preserved for the subsequent ISP projects provided that the same measures are extended to be subsequent ISP projects.

3.3 Removing indexation of the RAB

3.3.1 Description

As indicated above, the AER's standard approach is to apply CPI indexation to the RAB. The effect of the inflation compensation to the RAB is that it pushes the recovery of the RAB into the future as the compensation for inflation is capitalised into the RAB rather than via an increment to annual revenue.[25]

The alternative to the AER's standard approach is to instead provide the inflation compensation via annual revenues. The effect being to increase short-term revenue and reduce the RAB recovery needed in the long-term. Each of these outcomes are then expected to improve the credit metrics of the business undertaking the very large project. There are two options for this:

- Include compensation for *forecast* inflation in annual revenues – which is achieved by simply dropping indexation of the RAB.
- Include compensation for *actual* inflation in annual revenues. This is achieved by indexing the RAB by the difference between forecast inflation (i.e. the inflation believed to be embodied in the nominal WACC) and actual inflation, so that the RAB indexation effectively "tops up" the inflation component in the WACC, or reduces it, depending on whether actual inflation is greater or lower than forecast, so as to preserve the real WACC.

25 Indexation for inflation also provides an inflation hedge; however, if desired it is straightforward to provide this hedge without also back-ending cash flows.

3.3.2 Effectiveness

TransGrid's modelling demonstrates that removing the current indexation of the RAB is very effective means of improving the conditions for firms to access capital when undertaking very large projects. This is because it would be expected to deliver a particularly meaningful improvement in the timing of the cash flow, and so resulting credit metrics, and come close to maintaining the credit metrics of a benchmark entity after undertaking the ISP project to their pre-existing level.

The practice of an unindexed RAB is relatively common for North American utilities. However, more relevantly, we note that there is also precedent for removing indexation or the RAB, as described here, for the purpose of facilitating large capital expansions. For instance, this tool has been used for electricity and airports in New Zealand. In the case of electricity, the NZ Commerce Commission applied an unindexed RAB in order to improve cash flows for what was forecast to be an NZ$3 billion investment. In approving the unindexed RAB the Commerce Commission stated the following:[26]

> *The Commission considers an un-indexed approach is appropriate for Transpower for the following reasons:*
>
> - *Transpower is planning to invest over $3 billion in upgrading and renewing the transmission network over the next five years, which will more than double the value of Transpower's RAB. This level of proposed investments is significantly larger than any of the EDBs in both an absolute and relative sense. In addition, unlike the EDBs, a significant portion of Transpower's planned investment programme involves expenditures being incurred a number of years in advance of commissioning. The level of Transpower's investments will result in it having, relative to other lines businesses, high investment programme funding requirements;*
>
> - *updating the RAB value using an un-indexed approach will, given the likely age structure of Transpower's asset base, be likely to lead to higher revenues for Transpower over the near term. This level of revenue will be likely to be better matched to Transpower's investment needs;*

The Commerce Commission gave further explanation when summarising its previous draft decision on the matter:[27]

> *In its draft decision and reasons paper for not declaring control of Transpower the Commission concluded that the higher cash flows that are associated with an un-indexed approach in the first years following an investment were better suited for Transpower's investment profile going forward than CPI-indexation would be. This was particularly important given the magnitude of Transpower's proposed investments, and the fact that the associated capex would often span multiple years prior to commissioning. Based on these factors, and given the scrutiny of Transpower's investments under Part F of the Electricity*

26 Commerce Commission, 'Input Methodologies (Transpower) Reasons paper', December 2010, paragraph 4.3.12.

27 Commerce Commission, 'Input Methodologies (Transpower) Reasons paper', December 2010, paragraphs 4.38 and 439.

Governance Rules (EGRs) by the EC and the magnitude and timing of proposed Transpower investments, the Commission accepted Transpower's settlement proposal.

TransGrid modelling

Of the options modelled by TransGrid, as noted above the removal of indexation comes closest to preserving the credit metrics of a benchmark TNSP after undertaking the ISP projects. Therefore, this also implies this solution does a better job at enabling the existing benchmark equity returns to continue and so provide the capacity to attract equity investors. We would also note that this measure also provides an enduring improvement to credit metrics, so that there is no drop-off in metrics in future periods.

3.3.3 Application under the current rules

It is our view that this solution would not be possible under the current Rules. This is because we believe the AER is bound to index the RAB by inflation, and so is precluded from withdrawing indexation. We take this view because the Rules:

- Require a negative indexation element to be applied when calculating the "annual building block revenue requirement"
- That the projected RAB for a regulatory period include an inflation indexation component,[28] and
- The text for the "correctness" of the depreciation schedule assumes inflation indexation of the RAB.

3.4 Apply depreciation on an "as-incurred" basis

3.4.1 Description

The AER's approach to the PTRM is that while capital expenditure starts earning a rate of return as it is incurred (i.e., an "as-incurred" approach), depreciation commences once the asset has been commissioned (i.e., an "as-commissioned" basis). The "as commissioned" approach to depreciation results in a deferral of cash flow during the construction period relative to the "as incurred" approach. Therefore, an alternative to improve credit metrics during the construction phase is to apply depreciation on an "as-incurred" basis so that depreciation commences earlier than otherwise.

3.4.2 Effectiveness

Depreciation "as incurred" improves the project revenue profile during construction phase and so before commissioning. This change therefore aids in the potential that benchmark debt and equity conditions can be preserved during the construction period. As construction can span a number of periods, measures to address this short term need are relevant.

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28 However, the provisions that deal with the ex-post roll-forward of the RAB (S6A6.21(f)) omit any mention of indexation, although the AER has always worked around this.

TransGrid modelling

TransGrid's modelling shows that applying deprecation "as incurred" for the stand-alone project materially improves the project revenue profile during construction by bringing forward depreciation during the construction phase. Whilst on its own, however, this option would be insufficient to preserve the credit metrics of a benchmark entity – as it does nothing to address the post-construction position – it has substantial merit as a measure in combination with one of the alternative measures.

3.4.3 Application under the current rules

It is our understanding that the rules do not require depreciation to be applied on an "as-commissioned" approach. Instead, this is merely how the AER has chosen to implement this as part of its PTRM.[29] We do note, however, that clause 6A.6.3(a)(1) of the Rules requires that depreciation must be calculated on the value of assets included in the regulatory asset base at the beginning of the regulatory year. As indicated above, assets are included in the RAB on an "as-incurred" basis.

3.5 Applying a different depreciation method

3.5.1 Description

Implementing a different depreciation method involves replacing the current straight-line (indexed) depreciation method with some alternative method. The alternative method would aim to advance the return of funds to investors relative to the AER's standard method (i.e., straight line inflation indexed).

The most likely candidate for an alternative depreciation method to improve cash flows for very large projects is the diminishing value method.[30] When applying this method, a choice is required about the 'accelerator' that is applied. This is the factor that is applied to straight-line depreciation in the first year to derive the diminishing value rate; with that rate held fixed for the remainder of the asset's life. The two most commonly used accelerators are 150 per cent and 200 per cent (the latter reflecting the accelerator that is currently permitted for tax purposes).

We note that one outcome of the diminishing value method is that an asset never becomes fully depreciated. This can be addressed, however, by switching to straight-line depreciation at some stage in the asset's life. That is, applying the written down value and remaining useful life at some point in the future.

3.5.2 Effectiveness

This approach of applying a more accelerated depreciation would be expected to materially improve the timing of cash flows, and so the credit metrics for a business that is investing in a very large project. The challenge with this approach, however, is that it would require fairly extreme settings in order to generate the same improvements in credit metrics that come with the removal of indexation.

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29 AER, 'Post-tax revenue model handbook | Electricity transmission network service providers', April 2019, p.22.

30 Diminishing value is a term used by the Australian Tax Office. It is also known as 'declining balance' or 'reducing balance'.

The implication being that this approach would have a material impact on prices in order to achieve the desired cash flow requirements.

Further to this, unlike under straight-line depreciation, there would not be a natural improvement in credit metrics over time for assets on a stand-alone basis under diminishing value depreciation. This is because the rate of depreciation as a proportion of the RAB remains fixed. Conversely, for straight-line depreciation, the rate of depreciation as a proportion of the RAB increases for an individual asset as the RAB is depreciated.

TransGrid Modelling

TransGrid's modelling of a double diminishing value approach shows that it is not able to preserve the existing credit rating for a benchmark TNSP after undertaking the benchmark ISP project. On a stand-alone basis, the ISP project would have an average FFO/ND of 5.74 per cent over the first 10 years,[31] and the equivalent ratio for the benchmark entity as a whole would fall to 7.35% (from 7.83 per cent).[32] Given the poor stand-alone credit metrics, additional ISP projects would reduce the FFO/ND ratio for the benchmark entity even further.

3.5.3 Application under the current rules

The electricity Rules permit transmission businesses to apply different methods for depreciation. This is provided that indexation continues, and the life applied for assets is set at the economic life. However, it is our view that some uncertainty remains as to whether this approach could apply in the case of very large projects. Specifically, the Rules require depreciation to reflect "the nature of the assets or category of assets". This requirement could be read as requiring that similar assets be depreciated in a similar way. As such, it would constrain the ability to treat very large projects differently to standard transmission assets that have the same features but are merely not as large.

We note, in addition to the arrangements in the Rules, implementing this change would also require that the AER amend its PTRM so that it permits the use of a different depreciation method.

3.6 Adjust asset lives

3.6.1 Description

An approach that adjusts asset lives would retain the straight-line approach to depreciation but would reduce the lives for the assets in question. A shorter asset life in turn means that funds are returned quicker, and at a higher rate, than would otherwise have been the case.

3.6.2 Effectiveness

On the basis that shortening asset lives would advance cash flow, this is an option that would improve credit metrics and so the conditions for attracting capital when TNSPs are required to undertake very large projects. However, our analysis indicates that an extreme change in asset lives would be required to generate the same advancement of cash flow as the removal of indexation or a change in

31 This assumes a BBB+ cost of debt – the metric would be slightly lower with a BBB assumption.
32 Again, assuming a BBB+ cost of debt.

the depreciation method. As with the adjustment to the depreciation method, this approach would have a material impact on prices in order to achieve the desired cash flow requirements.

Nevertheless, there is precedent in other jurisdictions for adjusting asset lives to address cash flow concerns. In the United Kingdom adjustments have been made to the asset lives, in addition to adjustments to the profile of depreciation, to improve cash flows. In one case Ofgem sought to shorten the average asset age so that capital is returned sooner to investors and, as such, minimising the potential for cash flow issues to arise. Further, it accelerated the depreciation associated with expenditure already incurred. Ofgem explained its approach in the context of electricity distribution as follows:[33]

> *3.13. The rate at which the RAV is depreciated has significant implications for the cash flows a company receives.*
>
> *3.14. In electricity distribution, the depreciation profile has been tilted by reducing assumed asset lives so that revenues are advanced. We have done this in a way that is neutral to consumers in net present value terms but brings cash flows forward, meaning that a greater burden is placed on present rather than future consumers.*
>
> *3.15. DPCR4 was a case in point. In essence, the assumed average asset life was reduced to around 20 years for assets that are likely to last on average at least 40 years with an acceleration of depreciation over 15 years for expenditure already incurred. This was done to overcome the so called "cliff face" issue. This accelerated depreciation profile has been maintained for DPCR5.*

TransGrid modelling

TransGrid model reduced the effective life for the ISP project to 50% of the standard lives. Even with this extreme change to asset lives, FFO/ND for the ISP project was materially lower than the existing entity (FFO/ND of 7.20 per cent over the first 10 years assuming a BBB+ cost of debt), which would drag down the credit metrics for the benchmark entity as a whole (to 7.66 per cent over the first 10 years, compared to 7.83 per cent for the existing business, assuming a BBB+ cost of debt).

3.6.3 Application under the current rules

The Rules require that the asset lives for assets entering the RAB reflet their economic life. This requirement would therefore preclude the shortening of asset lives to less than their economic life to improve access to capital.

3.7 Change the classification of expenditure – expense some project cost

3.7.1 Description

Implementing this approach requires, in essence, that a portion of capital expenditure is transferred to operating expenditure. An alternative way to conceptualise the approach is to consider that some of the asset life associated with the investment is set to zero years. Treating the capital expenditure in

[33] Ofgem, Regulating Energy Networks for the Future: RPI-X@20 Emerging Thinking – Embedding financeability in a new regulatory framework, 20 January 2010, p.8.

this way provides for an immediate return of the relevant portion of capital expenditure in the same way that operating expenditure is recovered immediately.

3.7.2 Effectiveness

Expensing costs in the way described here would improve credit metrics during the construction phase; however, there would be limited impact on ongoing credit metrics, apart from the fact that the size of the project cost that would remain outstanding would be smaller, thus making the ISP project easier to accommodate. In this context, expensing some of the project cost would be similar to a capital contribution. Expensing some capital expenditure for a large project like an ISP project would imply a substantial impact on prices in the short term.

Recovering capital expenditure as if it were operating expenditure is an approach that has been applied in the United Kingdom to address ‘financeability’ issues. For instance, in past gas reviews Ofgem has allowed businesses to recover 50 per cent of replacement expenditure in the year that it was incurred rather than over the life of the assets.

3.7.3 Application under the current Rules

We do not think the Rules would permit the classification of expenditure between “operating” and “capital” to depart to a material degree from the normal meanings of these words.

3.8 Conclusion on preferred option to advance cash flows

It is our view that the best option to address the financeability issues that arise for ISP projects is to remove indexation of the RAB for these projects and to combine this with depreciation on an as incurred basis, also restricted to the ISP projects. The implications for the credit metrics from these measures are summarised in Table 2 below.

Table 2 – Implications of proposed measures for credit metrics with ISP projects

Scenario	FFO/ND 10 year average Baa1/BBB+ Cost of Debt (%)	FFO/ND 10 year average Baa2/BBB Cost of Debt (%)
Business as usual	7.83	7.76
Exiting RAB + $2B project	6.95	6.88
Existing RAB + $2B project + as-incurred depreciation	6.98	6.91
Existing RAB + $2B project + as-incurred depreciation + remove indexation	7.73	7.66

Source: TransGrid analysis

From the table above, it is clear that these combination of measures come very close to preserving the credit metrics of the benchmark entity in the context of one ISP project, and so it would be expected that subsequent projects should similarly be financeable.

A benefit of using the removal of indexation to address financeability is that makes a material improvement to the timing of cash flows but does not compromise the integrity of the PTRM or how depreciation is undertaken. Specifically, it does not require an artificial adjustment the economic life of the assets, or a different profile of depreciation to the standard approach that is applied to all other investments; i.e. straight-line depreciation is preserved. Further, how compensation for inflation is to be provided is a valid choice with advantages and disadvantages, and so where change can be justified depending on the specific need. To this end, we note that compensation for depreciation in "cash" (equivalent to no indexation) is already the position in some regulatory regimes, particularly in North America, and has been used as a tool to address financeability in a similar situation for the transmission business in New Zealand, and so is a measure that should not be considered unusual. In addition, as this option preserves the straight line depreciation method, credit metrics will naturally improve as the ISP projects age,[34] meaning that there can be comfort that measures to address the immediate credit metrics will not come at the expense of greater problems in the future.

We note that the removal of indexation alone may be expected to still leave financing issues for a benchmark business during the construction phase, which is not an immaterial matter given that the construction for major transmission projects can span multiple years (up to five and sometimes more).[35] Accordingly, we agree that it is sensible to combine the removal of indexation with an additional measure to target the short term issue. The measure that TrasnGrid proposes – move to an "as incurred" treatment of depreciation – is a relatively modest change that specifically addresses near term cash flow, and so is appropriate for this task. Moreover, like the removal of indexation, applying an "as incurred" treatment of depreciation for ISP projects is straightforward to accommodate within the structure of the PTRM given that capital expenditure measured on an "as incurred" basis is already used to calculate the return on assets part of the annual revenues.

Lastly, we comment once more that all of the measures that have been assessed – and those that have been recommended – are NPV-neutral and so there is no consequence for the total cost of the solution. Rather, the effect is only on the time path of revenues and prices.

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34 Under straight line depreciation, the rate of depreciation as a proportion of the written-down value of the assets increases with age. This means that, under cost-based regulation, the credit metrics of a benchmark efficient entity will also improve over time. This is, in effect, the reverse of the financeability issue caused by ISP projects.

35 The credit metrics reported in the table above reflect the post-construction period, and so exclude this effect.

A. Investor clientele effects

A.1 Introduction

As stated in the main body of this report, it is our view that TransGrid – in common with other electricity utilities (and infrastructure in Australia more generally) – has attracted a “clientele” of investors who desire high and stable dividend payments. In the presence of this clientele, a reduction in dividends will be harmful to investors, and make it more difficult for TransGrid to attract future equity investment.

It is worth noting at the outset that the fact that a high dividend yield is paid does not necessarily mean the firm itself will make a high return – after all, this is low risk infrastructure, and earns overall returns that are consistent with this. Rather, the high yield is achieved by:

- sacrificing the prospect of material growth in dividends over time, which is the other component of returns, and
- adopting a high level of financial leverage (debt), which typically is made possible by stable and strong cash flows, and whilst this increases the risk of the equity investment, this risk remains modest, due to the monopoly and essential service nature of the service.

The issue at stake here is that the cash flows associated with the ISP projects under the AER’s standard method for setting regulated revenues are weaker than for the existing investments, and so will not permit the existing level of gearing and hence will not permit the existing dividend yields.

A.2 Investor requirements

The proposition that a clientele of investor would be attracted to the specific features of certain types of investments is entirely consistent with how the major infrastructure investors and their advisers describe the characteristics sought from these investments. The common factors described by such investors are as follows:

- high income stream (dividend yield), and
- stable dividend payments over time.

This combination of financial characteristics is possible due to the nature of the investments.

The nature of electricity network businesses is particularly attractive to investors with specific requirements, namely those with a preference for a stable and relatively high dividend yield, but at the expense of the promise of material growth.

Typically, it is super funds and pension funds that are the primary clientele for network businesses as they are investors that seek out stable high yield investments. In this respect, we understand that super funds themselves will segregate infrastructure investments into subclasses in order to drive their asset allocation decisions. This will be between lower risk assets that are able to offer a stable income (like regulated electricity networks) and higher risk, high growth assets (like unregulated infrastructure such as ports or airports).

Australian superannuation funds note the high dividend yields that are offered by regulated utilities and have attributed a relatively high weighting to this investment class within their portfolios. Australia has been one of the leaders in the field:[36]

AMP Capital[37]

> *Global listed infrastructure also has offered an attractive income component as part of the overall total return historically. The asset class had traditionally offered higher yields than global equities. The current dividend yield spread is at 1.57% compared to the historical median of 1.40%.*

Utilities Trust Australia [38]

> *During the past fifteen years, the leading Australian unlisted infrastructure fund managers have consistently recorded attractive returns (both cash yield and growth) as highlighted in Table 5 in Section 7.2. Furthermore, these results have been achieved with low volatility as evidenced by Chart 1 in Section 6.3. This chart highlights the steady and consistent performance of Hastings' Utilities Trust of Australia ("UTA") versus other asset classes.*

Infrastructure Partners Australia [39]

> *The typical investment profile for superannuation funds and the structure of infrastructure returns are closely matched, with infrastructure providing long-term, stable investments. Some of the most attractive characteristics of infrastructure assets to superannuation funds can be summarised as:*
>
> - *Earnings stability and dependable revenue stream (particularly for brown field or regulated assets);*
> - *Monopoly characteristics, reducing elasticity;*
> - *Inflation linked returns;*
> - *Long-term assets; and,*
> - *Potential tax benefits, dependent on structure.*

A.3 Investor clienteles - theory of dividends

The fact that investor clienteles exist and have real effects on the supply of capital – and so drive company behaviour – is well established in the finance literature.

36 George Inderst (Spring, 2014), "Pension Fund Investment in Infrastructure: Lessons from Australia and Canada," *Rotman International Journal of Pension Management*, Vol. 7, Issue 1, pp. 40-48.

37 See https://www.ampcapital.com/au/en/insights-hub/articles/2018/September/why-invest-in-global-listed-infrastructure

38 See: https://ipif.com.au/wp-content/uploads/2014/03/140328_IPIF_Chairmans-Message.pdf

39 Infrastructure Partnerships Australia, *The Role of Superannuation in Building Australia's Future*, p.20.

Whilst the starting theoretical proposition in finance was that in a perfect and frictionless world dividend policy is irrelevant as investors can declare their own dividends by selling shares, as has been stated by Brealey, Myers and Allen (BMA), it is well known that this does not explain real world behaviour.[40] A principal theory explaining dividend behaviour in a real-world context is known as clientele theory. This theory holds that different categories of investors prefer specific alternative dividend policies, with a preference for high (low) dividend payouts being explained by a number of non-mutually exclusive factors that include investor tax position, investor age, investor psychology, agency considerations, transaction costs, and investment opportunities relative to internally generated cash flow. BMA summarise this proposition as follows:[41]

> *There is a natural clientele for high pay-out stocks... Some financial institutions are legally restricted from holding stocks lacking established dividend records. Trusts and endowment funds may prefer high-dividend stocks because dividends are regarded as spendable "income" whereas capital gains are 'additions to capital. There is also a natural clientele of investors, such as the elderly, who look to their stock portfolios for a steady source of cash to live on.*

We observe that an alternative theory is that dividend behaviour is determined by tax considerations; however in Australia this has much less relevance given the presence of dividend imputation. Specifically with respect to Australia, BMA note that following "a tax change in 1987 that effectively eliminated the tax penalty on dividends for Australian investors, firms became more willing to increase their payout."[42] In particular, BMA note that with a tax rate that is lower than the corporate rate, Australian financial institutions will prefer a high dividend payout ratio.[43]

We note there is compelling empirical evidence relating to then importance of investor clienteles. The international academic literature examining determinants of dividend payout ratios specifically identifies clientele effects with respect to electricity utilities, as investors receive relatively higher dividend yields (versus high growth and capital gains), and finds that this effect is particularly strong in Australia owing to dividend imputation.

The most comprehensive study of clientele effects has recently been undertaken by Golubov, Lasfer and Vitkova (2020).[44] Their study examines the behaviour of acquiror businesses in public-to-public mergers where the consideration had a material stock component resulting in new shareholders. Using a sample of 5,366 acquisitions from around the world, including 200 Australian acquirers (6th largest country). Extracts from their conclusions are displayed in Box 1 below.

Box 1: Key findings of Golubov, Lasfer and Vitkova study of investor clienteles

We show that firms actively manage their dividend policy toward the preferences of their investors. Acquiring firms adjust their dividend payout toward that of the target when they inherit target shareholders through a stock-swap transaction.

40 Richard A. Brealey, Stewart C. Myers and Franklin Allen (2011) *Principles of Corporate Finance*, 10th Edition, McGraw Hill-Irwin, New York, Chapter 16.

41 *BMA (2010), Chapter 16 and Miller, Black and Scholes (1974 to 1986)*

42 Richard A. Brealey, Stewart C. Myers and Franklin Allen (2011), p.406.

43 Richard A. Brealey, Stewart C. Myers and Franklin Allen (2011), p.408.

44 Andrey Golubov, Meziane Lasfer and Valeriya Vitkova (2020), "Active catering to dividend clienteles: Evidence from takeovers," *Journal of Financial Economics*, 137, pp.815-836.

> *… this adjustment is more pronounced when legacy shareholders are more influential or vocal (or both)…*
>
> *…adjustment is greater when the target firm's shareholders reveal a greater preference for dividends via their portfolio holdings and trading behavior…*
>
> *…we find that the clientele effect is stronger when dividends are tax-advantaged…*

Source: Golubov, Lasfer and Vitkova (2020)

Golubov, Lasfer and Vitkova's research provides strong empirical support (at the 99 per cent confidence level) for investor clienteles explaining dividend behaviour. Their results are of particular relevance to Australia, which contributed the largest group of acquirer businesses in the sample located in an imputation tax jurisdiction. Based largely on Australian data,[45] this implies that the clientele effect is stronger in Australia than in countries such as the US, UK and Canada. This evidence corroborates our finding in section 1.4 below that the utility business dividend yield premium is materially higher in Australia compared with the other three countries observed.

The literature also finds direct evidence of investor clienteles in US electric utilities, and that changes to dividend policy will be met with a disproportionate change in the share price (indicating a withdrawal of capital by investors).

Becker, Ivkovic and Weisbenner (2011) examined geographical differences in shareholder characteristics to infer the presence of investor clienteles.[46] That is, companies headquartered in countries with a higher proportion of senior citizens, who show a greater preference for yield over the potential for future capital gains, are more likely to pay higher dividends.

A.4 Empirical evidence of clienteles in relation to infrastructure

In this section we summarise the most relevant studies related to clienteles effects for the infrastructure sector, with a focus on electricity networks and Australia. We consider three forms of empirical evidence in this respect:

- Investor clientele behaviour observed in the electricity sector,
- Australian case studies, and
- Dividend behaviour of network businesses.

45 During the study period

46 J. Becker, Z. Ivkovic and S. Weisbenner (2011), "Local dividend clienteles", *Journal of Finance*, Vol. 66, pp.655-683.

A.4.1 Investor clienteles in the electricity sector

The clientele theory has been shown to be particularly relevant to the electric utilities sector. The studies discussed below indicate that an investor clientele preference for high dividends has been observed in the electricity sector over a long period of time.

Impson (1997, 2000)

Two US studies by Impson (1997, 2000) found that the share price for public utility companies suffered a higher negative share price reaction than non-regulated businesses when a reduction in dividends was announced.[47] This finding implies that in order to retain equity investors it is necessary for regulated electricity utilities to retain relatively high dividend yields.

D'Souza, Jacob and Willis (2015)

D'Souza, Jacob and Willis examined the period of transition of the US electric utility industry to a less highly regulated framework (e.g. decoupled), and concluded:[48]

> *Overall, we interpret our results as being consistent with the theory of dividend clienteles. Electric utilities appear to attempt to retain their high dividend clientele even as they face greater competition and have access to greater investment opportunities.*

A.4.2 Case studies

The following case studies demonstrate the importance of a stable and high dividend policy for utility and infrastructure businesses. In the case of the Eastlink tollroad a dividend was paid from its inception even when no revenue was being earned, while in the AGA Group case dividend payments were maintained even when large capital expenditure projects necessitated equity raisings.

Eastlink

The 2004 offer made to investors in ConnectEast Group to raise equity funds for the Eastlink tollroad is instructive, as it showed that they were catering to the requirements of an investor clientele that requires a relatively high dividend yield. The issue in this case was that revenue would not be earned for several years while the construction of the tollroad was underway. The solution was to offer these investors an initial stream of dividends that would be funded by the investors themselves. The ConnectEast Group Prospectus featured this aspect of its equity offering prominently:[49]

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47 Michael Impson (1997), "Market reaction to dividend decrease announcements: public utilities vs unregulated industrial firms," *The Journal of Financial Research*, Vol. 20, pp.407-422; and Michael Impson (2000), Contagion Effects of Dividend Reduction or Omission Announcements in the Electric Utility Industry," *The Financial Review*, Vol. 41, pp.121-136.

48 Julia D'Souza, John Jacob and Vedronda F. Willis (2015), "Dividend Policy Responses to Deregulation in the Electric Utility Industry," *International Journal of Business Administration*, Vol. 6, No. 2, pp. 1-16.

49 ConnectEast Prospectus (10 December, 2004), *Product Disclosure Statement for the Offer of 1,120,000,000 Stapled Units in ConnectEast Investment Trust (ARSN 110 713 481) and ConnectEast Holding Trust (ARSN 110 713 614)*, p.16.

> *ConnectEast Group intends to pay semi-annual Distributions equivalent to 6.5 cents per Stapled Unit per annum during the Fixed Distribution Period (the period ending 31 March 2010). These Distributions equate to an annualised distribution yield on the Initial Instalment of 11.8% (for the first 12 months from Allotment Date) and a distribution yield of 6.5% per annum for the remainder of the Fixed Distribution Period (based on the Issue Price of $1.00). Distributions made during the Fixed Distribution Period are expected to be 100% tax deferred (see Section 5.3.3). Distributions to Unitholders over the remainder of the Concession Period will be from any cashflows generated from the MFP.*

In describing its Sources and Applications of Funds the Prospectus showed that out of a total raising of $3.795 billion, including $2.008 billion in bank debt, $315 million was to be set aside to pay "equity coupons," which were distributions providing a high dividend yield ahead of revenue being earned through operations. The emphasis in this case on provision of a dividend yield commensurate with the infrastructure asset class reflects the requirements of investors in that segment of the market (i.e. an investor clientele).

APA Group Limited

The Australian gas pipeline utility APA Group Limited (APA) provides another case study of how important dividends, and maintenance of a stable and superior dividend yield is to investors in this sector. Facing large capex requirements APA has consistently sought large injections of capital rather than compromising the payment of dividends.

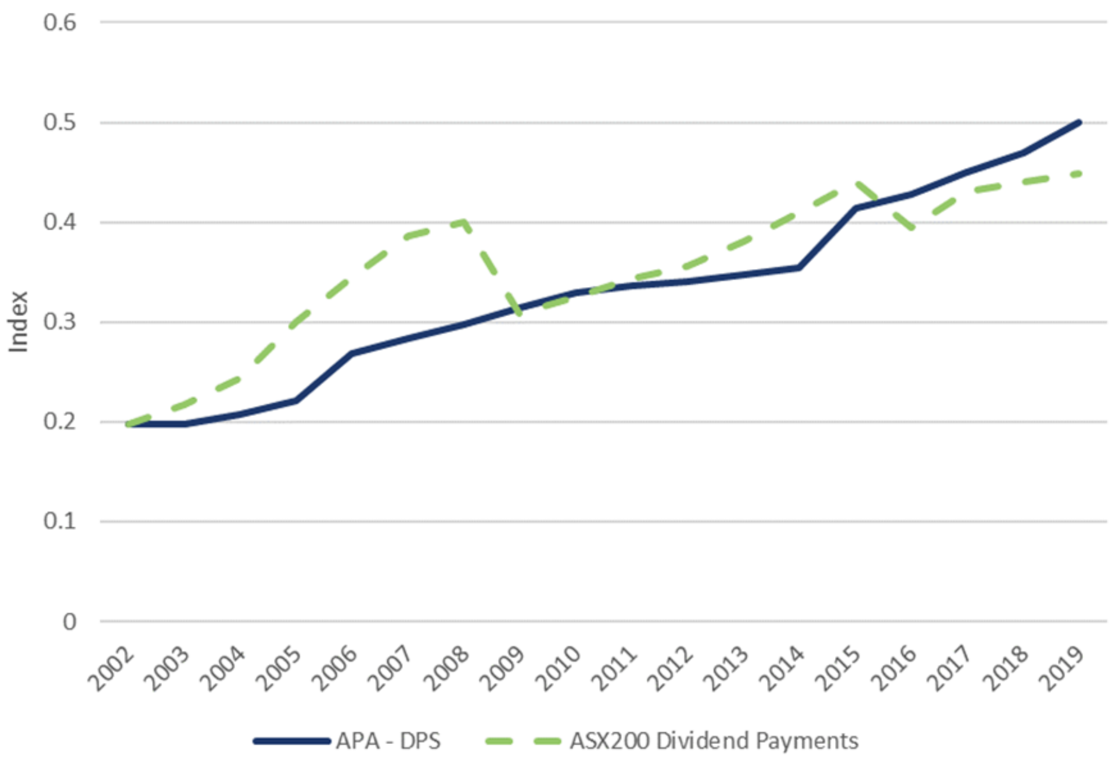
Figure 2 below compares the relative stability of APA and the ASX200 Index with respect to dividend payments. The figure shows that since 2002:

- APA's dividend per share (DPS) has only increased, including through the global financial crisis period of 2008 to 2009.
- By contrast, the average dividend payments by members of the ASX200 Index rose faster than APA's dividends per share between 2002 and 2008,[50] but the dividend payments of the ASX200 Index subsequently fell by 23 per cent during the global financial crisis and after a rebound, fell by 10 per cent between 2015 and 2016.[51]

[50] This is a measure of total dividend payments, and has been rescaled as an index for comparability with the AGA Group dividend per share payments.

[51] We note that this 10 per cent fall in the ASX200 Index total dividend payments in 2016 corresponds with a 4 per cent reduction in the overall value of the Index during that year.

Figure 4: APA Group vs AS200 Index – Dividend payments and dividend per share movements since 2002



Source: Bloomberg and Incenta analysis

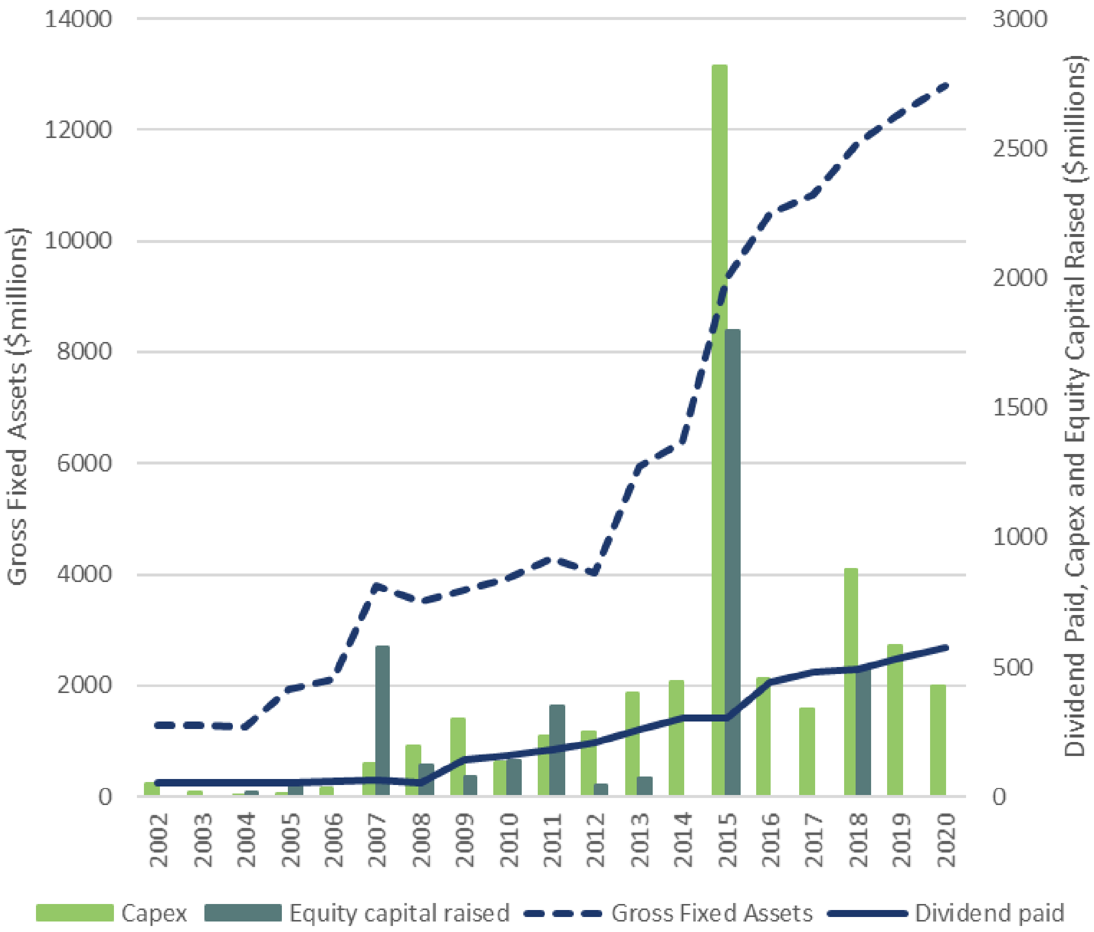
As APA's capital expenditure increased after 2005, and reached a peak in 2015, the dividends paid by the business increased in tandem. As the business faced a large capex program, APA undertook three separate equity capital raisings in 2011 and 2012 that raised $965 million.

As shown in Figure 3, 2015 was a year of particularly high expenditure as the business undertook $343 million in growth capex, $50.6 million of "stay in business capex" and successfully completed its USD 4.6 billion acquisition of the Wallumbilla Gladstone Pipeline, which required a $1.8 billion equity raising,[52] and a USD3.7 billion debt raising undertaken in three currencies.[53]

It is noteworthy that while these investments and associated equity raisings were being undertaken APA increased its DPS incrementally on the increased capital and increased its dividend payouts. That is, its dividend policy was not a residual that depended on the size of capital expenditure relative to current cash flows but was independent of it. It is also apparent that in proportionate terms the dividends being paid by APA increased approximately in line with the growth in gross fixed assets.

52 APA Group (10 December, 2014) *APA Group Retail Entitlement Offer*.
53 APA Group, (26 August, 2015), *Financial Year Results – Year Ended 30 June 2015*, Presentation, p.7.

Figure 5: APA Group Limited – dividend payments vs capital expenditure



Source: Bloomberg and Incenta analysis

The average dividend yields of AGA's peers (AusNet and Spark Infrastructure) were coming down after the peaks observed during the global financial crisis,[54] and APA remained at or above that average up until its large capital expenditure in 2015. Between 2016 and 2020, despite continuing to increase its dividend payout, in Figure 4 we find that APA's dividend yield has on average fallen below that of its peers by approximately 150 basis points. However, this fall has kept APA's yield averaging at 5.0 per cent, which is still comfortably above the ASX200 Index average dividend yield of 4.2 per cent over the same period.[55]

54 Whilst the operations of the businesses were not materially affected during the global financial crisis share prices reduced as capital markets closed and debt re-financings on the businesses' large debt stock loomed. The reduced share price increased their dividend yields.

55 We would also note that the major component of AGA's investments during 2015 was its purchase of the Wallumbilla Gladstone Pipeline, which is a seasoned asset.

Figure 6: Dividend yield – APA vs AusNet and Spark Infrastructure

Source: Bloomberg and Incenta analysis

With respect to APA Group we note that what cannot be observed is where:

a. The capacity to pay the expected dividend yield has been achieved commercially – e.g. where APA may have negotiated more upfront payments from its contacting customers (since it is unregulated), or

b. Where projects may have been passed by because dividend expectations of its clientele could not be maintained with the new project.

A.4.3 Dividend behaviour of regulated networks

Table 1 below demonstrates the yield differential that exists in four predominantly English-speaking countries around the world. The average yield differential since 2011 ranges from a high of 2.06 per cent in Australia to a low of 0.99 per cent in Canada, with the UK and US being 1.33 per cent and 1.70 per cent respectively. The general consistency of a differential in all these countries shows that the effect is not specific to particular corporate structures, but its size is likely to be influenced by such factors as market structure (i.e. relative sizes of industry sectors), the proportion of investors above the pensionable age, and taxation arrangements. As noted above, Australia's dividend imputation system is likely to promote payment of higher dividends, which increases the yield.

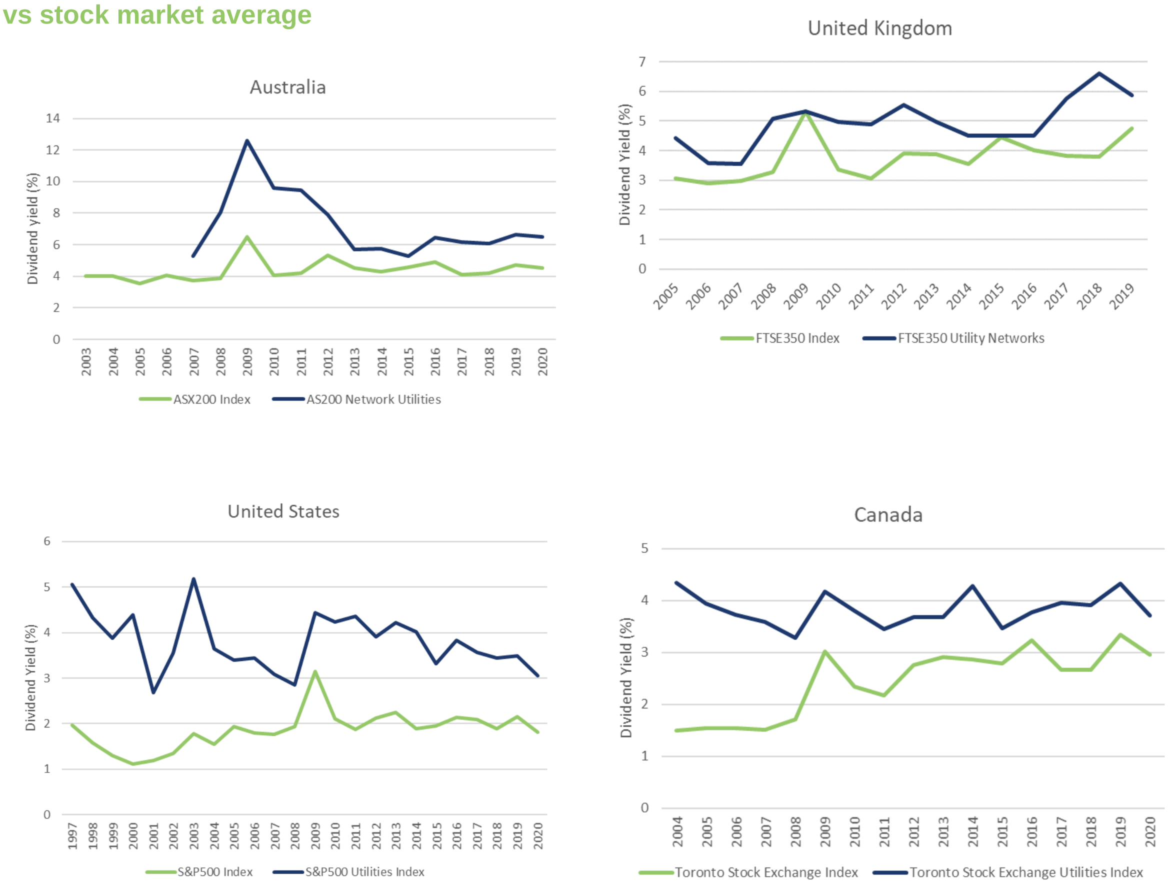
Table 3: Dividend yield premium - regulated utilities vs stock market average

	Australia	United Kingdom	United States	Canada
Major Index	ASX200	FTSE350	S&P500 Index	S&P/TXEQ Index
Whole period	2005 - 2020	2005 - 2020	1997 - 2020	2004 - 2020
Index average (Whole period)	4.57	3.75	1.86	2.44
Since 2011	4.53	3.92	2.02	2.83
Utilities Index	**Energy Networks**	**Utility Networks**	**S&P500 Utilities**	**Utilities Index (STELUT)**
Whole period	7.06	4.94	3.81	3.83
Since 2011	6.59	5.24	3.72	3.82
Utilities Yield Premium vs Major Index				
Whole period	2.49	1.20	1.94	1.39
Since 2011	**2.06**	**1.33**	**1.70**	**0.99**

Source: Bloomberg and Incenta analysis

Figure 1 below shows that the yield differential between regulated utilities and the home stock markets in the four countries has been a consistent feature over three decades.

Figure 7: Dividend yield - Regulated utilities vs stock market average



Source: Bloomberg and Incenta analysis

As for property trusts, the dividend yield of a regulated utility is fundamental to the market's valuation of these businesses, reflecting an expected yield that is consistent with the requirements of investor clienteles. As noted by Credit Suisse:[56]

> *For better or worse, we believe a significant portion of the market continues to value the regulated utilities on a dividend yield basis. Thus, we look at the current sector dividend yield relative to corporate 'A' rated and five-year government bonds as a valuation tool for the sector.*

Stability of dividend payouts

The current Covid-19 pandemic provides an example of the resilience of dividend payments made by regulated energy businesses relative to other industries.[57] By 30 June, 2020 many Australian businesses had been materially impacted by the pandemic, and were taking action to shore up their financial position going into the 2021 financial year. One of these strategies has been to reduce dividend payments relative to 2019.

Table 2 shows for ASX200 Index business arranged by industry, the Dividend Per Share (DPS) for the 12 months to 30 June, 2019 and the 12 months to 30 June, 2020.[58] Overall, we find that for most industries there has been a marked decline in DPS, but for a few, including energy utilities, (3.4 per cent), there was a small increase.[59] However, we also show the coefficient of variation of the DPS payouts over the previous decade,[60] and find that all four industries with higher increases in DPS between 2019 and 2020 (Software, Gaming, lodging and restaurants, Iron and steel, Transport and logistics) experienced greater variability in their DPS compared with the energy utilities.

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56 Ben McVicar, (3 June, 2013), Regulated Utilities Update – What equity IRRs are on offer?" *Credit Suisse Equity Research*, P.4.

57 The global financial crisis is another case where resilience of cash flows could be tested, however as noted above that was a time when some utilities came under pressure not because of their operating cash flows, but because they were highly geared and capital markets closed for a time.

58 This list has been compiles using the Bloomberg Industrial Classification System (BICS) and excludes businesses for which there was missing DPS data for any of the years 2011 to 2020, and where there were less than three businesses in an industry.

59 These firms were AusNet, AGA Group and Spark Infrastructure.

60 The Coefficient of Variation (standard deviation divided by the mean) has been used as the measure of DPS volatility, as different industries have markedly different DPS size (cents per share). The differential in DPS is equivalent to the percentage dollar reduction / increase in dividend payout that would be received by shareholders who hold one share of stock in each of the businesses in that industry.

Table 4: ASX200 Index dividend per share payments by industry – 2019 to 2020

Industry	No.	DPS 2019	DPS 2020	Per cent change	Coeff. of Variation
Software	4	0.05	0.07	34.9%	0.65
Gaming, Lodging & Restaurants	5	0.47	0.51	8.0%	0.43
Iron & Steel	5	1.06	1.14	7.7%	0.27
Transportation & Logistics	3	0.22	0.23	4.0%	0.26
Utilities	**3**	**0.24**	**0.25**	**3.4%**	**0.20**
Retail - Discretionary	6	0.90	0.92	2.1%	0.12
Real Estate	14	0.23	0.22	-3.4%	0.16
Metals & Mining	19	0.08	0.08	-6.1%	0.53
Consumer Services	6	0.27	0.25	-7.2%	0.30
Media	5	0.46	0.39	-14.5%	0.36
Asset Management	6	0.98	0.80	-18.6%	0.35
Banking	7	2.43	1.96	-19.1%	0.17
Construction Materials	4	0.28	0.22	-22.7%	0.36
Oil, Gas & Coal	6	0.50	0.33	-33.8%	0.23
Engineering & Construction Svcs	6	0.57	0.36	-36.1%	0.14
Health Care Facilities & Svcs	4	0.66	0.41	-38.2%	0.25
Biotech & Pharma	4	1.01	0.51	-50.1%	0.45
Insurance	5	0.30	0.15	-50.5%	0.22

Source: Bloomberg and Incenta analysis

In addition, in Table 2 we find that at the commencement of the pandemic the energy utilities industries have shown the greatest resilience in DPS compared with other industries that have generally low volatility of DPS payments over time: Retail – Discretionary, Real Estate, Banking and Engineering and Construction Services. Two of those industries (Banking and Engineering and construction services) have experienced material reductions in dividend payments in 2020.

Observed against the background of economic and share market falls due to the pandemic, the energy utility businesses have demonstrated their dividend paying resilience. Furthermore, the volatility that is present in energy utility dividend payments is sometimes due to regulatory outcomes that are not systematic in nature (i.e. not related to market movements) and therefore particularly attractive to investors who are dependent on these dividend flows for consumption expenditure (e.g. retirees).

B. Derivation of the thresholds for different credit ratings for TransGrid

B.1 TransGrid's current credit rating

TransGrid is currently rated Baa2 by Moody's,[61] which is equivalent to a Standard and Poor's rating of BBB. In the most recent credit opinion, Moody's has indicated that TransGrid's credit rating may be:

- Downgraded to BBB- if the ratio of "funds from operations" (FFO) to net debt falls on a sustained basis below 7 per cent, and
- Upgraded to BBB+ if the ratio of FFO to net debt rises on a sustained basis above 9 per cent.

Whilst we note that Moody's also specifies threshold values for other key financial ratios – namely net debt to RAB and FFO interest cover – we focus on the ratio of FFO-to-debt because this indicator is most likely to constrain the rating at the current time, and is given principal focus in the Moody's rating report cited earlier.[62] In addition, the FFO to debt ratio is the only financial metric to which Standard and Poor's has drawn attention when summarising the events that may trigger a downgrade or upgrade in recent credit ratings reports.

In our view, we think it is appropriate to apply the Moody's quoted thresholds to judge the points at which a change to this financial indicator may indicate a change to the credit rating, at least if the threshold was expected to be breached on a sustained basis. This conclusion reflects:

- Our reading of the credit opinion for TransGrid, which suggests that there are no factors that are unique to TransGrid that suggest the same thresholds would not be provided specified for a benchmark efficient entity in the position of TransGrid.
- Our benchmarking of the thresholds reported for TransGrid against those reported for comparable businesses to TransGrid (i.e., regulated energy networks) by Moody's and Standard and Poor's.

We discuss the benchmarking against the credit opinions for other networks next.

B.2 Review of credit rating reports for other regulated energy networks

B.2.1 The sample

We have reviewed the credit rating reports for a sample of regulated energy networks, spanning 3 recent credit opinions by Standard and Poor's and two by Moody's. The reports by Standard and Poor's that we have reviewed are as follows:

61 Moody's – NSW Electricity Networks Finance Pty Limited, 7 September 2020.

62 See the summary discussion (Moody's – NSW Electricity Networks Finance Pty Limited, 7 September 2020, p.1) where the focus is on the time path of FFO to net debt.

- United Energy[63]
- AusNet Services[64]
- Australian Gas Networks.[65]

The additional reports by Moody's that we have reviewed are as follows:

- ElectraNet[66]
- AusGrid.[67]

In addition, we also report the results of three previous credit opinions:

- ElectraNet by Standard and Poor's in 2015[68] (it is no longer rated by Standard and Poor's)
- United Energy by Standard and Poor's in 2016[69]
- Australian Gas Networks by Moody's in 2015,[70] and
- Australian Gas Networks by Standard and Poor's in 2015.[71]

When interpreting the financial ratios in these reports, we have focussed on the advice from the relevant credit rating agency about the likely events that may trigger a downgrade or upgrade, and have aligned the associated thresholds with the stand alone credit profile of the issuer.

- We observe that Standard and Poor's has a standard practice of raising the credit rating of an issuer by one notch if that issuer has a supportive parent, up to a limit of one notch below the credit rating of the parent. As Standard and Poor's identifies the stand-alone credit profile of the entity – and states when this has been adjusted for parental support – identifying the stand-alone credit profile is straightforward.[72]

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63 S&P Global Ratings – United Energy Distribution Holdings Pty Ltd, 16 June 2020.

64 S&P Global Ratings – AusNet Services Ltd, 6 November 2019.

65 S&P Global Ratings – Australian Gas Networks Ltd, 23 July 2020.

66 Moody's – ElectraNet Pty Ltd, 14 November 2019.

67 Moody's – Ausgrid Finance Pty Ltd, 5 June 2019.

68 S&P Ratings Services – ElectraNet Pty Ltd, 16 December 2015.

69 S&P Global Ratings – United Energy Distribution Pty Ltd and United Energy Distribution Holdings Pty Ltd, 20 May 2016.

70 Moody's – Australian Gas Networks Ltd, 19 January 2015.

71 S&P Ratings Services – AusNet Services Ltd, 22 May 2015.

72 That said, care is required when interpreting the thresholds that are specified when the rating has been increased to reflect a supportive parent as the stand alone credit profile may need to change by two notches to effect a one-notch change in the issuer rating. As an example, in 2015 AGN was given a stand-alone company profile of BBB+, but was also assessed as having a supportive parent whose rating was also BBB+. Thus, if AGN's stand-alone company profile had fallen to BBB then its rating would have remained at BBB+, thanks to the uplift from having a supportive parent. Thus, the trigger for a ratings downgrade identified in that report (7 per cent FFO/debt) was the threshold that would trigger a 2-notch decline in the stand-alone credit profile (i.e., from BBB+ to BBB-).

- In relation to Ausgrid, we note that Moody's described the credit metrics of the issue as more in line with BBB, but revised this upward to reflect the anticipated supportive nature of the parent entities (noting that the entity remains 49 per cent government owned).[73] We interpret these statements as implying a one notch uplift has been provided to Ausgrid from its stand-alone credit profile.

B.2.2 Results

Our summary of the thresholds for downgrade and upgrade that are drawn from the above ratings reports are summarised in Table 5 below.

Table 5 – Summary of financial ratio triggers identified for changes to credit ratings

Rating agency		Moody's					Standard and Poor's			
Network business	*TransGrid*	*Ausgrid*	*ElectraNet (2019)*	*AGN (2015)*	*United Energy*	*AusNet*	*AGN*	*United Energy (2016)*	*AGN (2015)*	*ElectraNet (2015)*
Issuer rating	BBB	BBB+	BBB+	BBB+	A-	A-	A-	BBB	BBB+	BBB+
Stand alone rating	BBB	BBB	BBB+	BBB+	BBB+	A-	BBB+	BBB	BBB+	BBB+
Threshold between BBB- and BBB	7.0%	7.0%						7.0%	7.0%	
Threshold between BBB and BBB+	9.0%	9.0%	9.0%	9.0%	8.0%		8.0%	not stated	n/a	8.5%
Threshold between BBB+ and A-			12.0%	12.0%	10.0%	9.5%	n/a		11.5%	11.0%
Threshold between A- and A					16.0%	15.0%	13%			

Source: credit rating agency reports (cited earlier).

We observe that the thresholds identified by the credit rating agencies are not precisely aligned between Moody's and Standard and Poor's and across assets, they are quite similar. From these reports, we conclude that the thresholds that Moody's identified as a possible trigger for a change to the credit rating for TransGrid:

- the trigger for a downgrade to BBB- (7 per cent ratio of FFO-to-debt) was aligned with all other reports that published this threshold, including by Standard and Poor's, and
- the trigger for an upgrade to BBB+ (9 per cent ratio of FFO-to-debt) was consistent with other assets rated by Moody's and only marginally above the threshold identified in the Standard and Poor's reports that we reviewed (which specified a threshold of 8-8.5 per cent ratio of FFO-to-debt).

We were unable to locate any ratings reports from credit rating agencies that identified a threshold at which the credit rating may be downgraded from BBB- to BB+ (that is, to sub-investment grade). Our assumption in this report is that the threshold would be a ratio of FFO-to-debt of somewhere between 5 per cent and 6 per cent, which is based on the pattern we observe in the thresholds for this metric for the higher ratings bands.[74]

73 Moody's – Ausgrid Finance Pty Ltd, 5 June 2019, p.5.

74 For example, the change in this indicator between the BBB+/A- threshold and the BBB+/BBB threshold that is implied by Moody's reports is 3 per centage points (i.e., 12 per cent to 9 per cent FFO-to-debt), whereas the change between the BBB+/BBB and BBB/BBB- thresholds is 2 percentage points (i.e., 9 per cent to 7 per cent FFO-to-debt). This suggests probability of default increases at an increasing rate as the FFO/debt ratio reduces. Accordingly, we would expect the BBB-/BB+ threshold to be between 1 and 2 percentage points below the BBB/BBB- threshold, implying a FFO-to-debt ratio of between 5 and 6 per cent.

C. TransGrid major project modelling

TransGrid undertook modelling to identify the impact that a hypothetical major project, such as PEC, would have on its financial metrics. It also modelled a number of different options that could be employed to improve financial metrics when undertaking a major capital expenditure project.

The modelling undertaken by TransGrid has sought to consider if financial metrics can be maintained for both the benchmark efficient entity following investment in a very large project. The modelling approach is based on TransGrid's PTRM for the 2019-23 revenue determination and so relies on (approximately) TransGrid's 2019 opening RAB. It also assumes the same annual replacement capex continues.

The main assumptions adopted by TransGrid for its modelling are:

- An existing asset base of around $6 billion as at 30 June 2018
- Total capex of $2 billion, evenly spent over a five year construction period
- For the portfolio of ISP projects, $9.2 billion of expenditure is assumed over FY21-30
- Rate of Return Guidelines approach adopted for the cost of equity (6.36%), leverage (60%), inflation (2.45%) and imputation credits (58.5%)
- Tax depreciation has been updated, applying diminishing value to new capex
- Cost of debt based on a 10-year trailing average, assumed base rate from Bloomberg
- The QTC cost of debt approach is applied (in the relevant scenarios) from FY19 onwards. Prior to FY19, cost of debt assumptions are consistent with the current 10-year trailing average approach adopted by TransGrid.

The model firm characteristics targeted in the TransGrid model are presented in the table below. This is used to determine the "baseline" cost of equity.

Parameter	Source	Value
Cost of equity	2018 RORG	6.36%
Gearing	2018 RORG	60%
Inflation	2018 RORG	2.45%
Imputation credits	2018 RORG	0.585
Cost of debt (BBB+)	2018 RORG, Bloomberg	Variable (10 year trailing average)
Cost of debt (BBB)	Advice from bank	Plus 10 basis points to BBB+

TransGrid's modelling derived the following key outputs:

- Gearing ratio, as a flat rate across all years
- Average FFO/ND in the first 10 years post construction (FY24-33)

- Average FFO/ND across all modelling years (i.e. construction plus operation periods)
- Economic internal rate of return (EIRR)
- EIRR plus the benefit from imputation tax credits (gamma).