EFFICIENCY CARRYOVER MECHANISM

A Report for TransGrid

Prepared by NERA

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1. OVERVIEW

In its ***Draft Statement of Principles for the Regulation of Electricity Transmission Revenues*** the ACCC proposes an efficiency carry-forward mechanism (ESM). This mechanism provides for the efficiency benefits earned or losses incurred by TransGrid to be carried forward from one regulatory period to the next.

NERA has been asked by TransGrid to review the proposed efficiency carryover mechanism. In particular, we have been asked to advise on how the proposed mechanism differs from that adopted by the Victorian Essential Services Commission (ESC) and whether any differences are reasonable from a regulatory policy perspective.

The remainder of this report is structured as follows:

- section two outlines the ACCC's draft decision;
- section three evaluates the ACCC's draft decision and includes:
  i. an analysis of the definition of an efficiency gain;
  ii. an evaluation of the Commission's approach to calculating the efficiency benefit or loss (E_t) in Year 1;
  iii. an analysis of the wording of the carry-forward mechanism in the Commission's draft decision;
  iv. an analysis of the implications of allowing for a negative carry-forward; and
  v. an evaluation of the Commission's treatment of unanticipated cost changes stemming from pass-through events or other factors which lead to significant departures from forecasts.
- section four concludes.

2. ACCC DRAFT DECISION

In its ***Draft Statement of Principles for the Regulation of Electricity Transmission Revenues*** the ACCC proposes an efficiency carry-forward mechanism. The Commission believed this mechanism would play a key role in driving the incentives of TNSPs to reduce their operating costs (opex).[1] The Commission's draft decision is repeated below in full:

> ***'The efficiency gain or loss in a year may be expressed mathematically as:***
>
> ***$E_t = (A_{t-1} – A_t) – (F_{t-1} – F_t)$, where***
>
> ***E_t is the efficiency benefit/loss in year t,***
>
> ***A_t, A_{t-1} is the actual operating cost for year t, t-1 respectively,***
>
> ***F_t, F_{t-1} is the forecast operating cost for the years t, t-1 respectively.***
>
> ***The efficiency benefit/loss will be carried forward for five years after the year in which the benefit/loss is incurred. During the regulatory period in which the efficiency benefit/loss is incurred, the carry forward mechanism does not affect the annual opex allowance. The opex allowance for the next regulatory control period will be based on:***
>
> - ***the expected efficient costs (determined after taking into account past opex and reasons as to why future opex may be different from past opex;***
> - ***plus/minus the carry-forward of the efficiency benefit/loss from the previous regulatory control period.***
>
> ***Since the actual opex for the last year of the regulatory control period will usually not be known at the time when the revenue cap is set for the next regulatory control period, the carry-forward of losses or gains will be incorporated through the use of a correction mechanism.***
>
> ***The efficiency carry-forward calculation will be undertaken in such a way as to ensure inflation does not erode the value of any benefit/loss to be retained by the TNSP.'***

It appears that the ACCC's intent is to implement an efficiency carryover mechanism (ECM) similar to the ESC's current mechanism. However, the Commission's mechanism is not fully specified and is, in an important manner, mis-specified. The principal issues that we have identified are outlined below.

[1] ACCC, ***Draft Statement of Principles for the Regulation of Electricity Transmission Revenues,*** p.20.

3. EVALUATION OF DRAFT DECISION

3.1. Definition of an Efficiency Gain

The ACCC defines an efficiency gain as the difference between actual and forecast costs. This will only be an accurate definition of the true efficiency gain if the forecast costs do not already incorporate (explicit or implicit) efficiency gains. The current ACCC Draft Decision for TransGrid's revenue cap sets opex to include a 2% explicit efficiency gain and a number of implicit efficiency gains. In our report for Gilbert and Tobin[2] we discuss the implications of this for the Draft Decision's compliance with the National Electricity Code (the Code). However, for the purposes of this report we note that the ACCC's wording should refer to (with the tracked change text representing our suggested amendment):

'The efficiency gain or loss in a year relative to the efficiency gain already incorporated in the forecast of costs may be expressed mathematically as:….'

3.2. Calculation of E_t in Year 1 is Inappropriate

The ACCC's formula defines the "efficiency gain" in any given year as the change in the difference between actual and forecast expenditure compared to the previous year. For example, if in the previous year expenditure was $10 below forecast and in the current year it is $11 below forecast then an efficiency improvement of $1 ($11 - $10) is said to have occurred in the current year. In this sense, only incremental improvements relative to forecasts are captured in any given year.

In years 2 to 5 of the regulatory period this matches the ESC's mechanism.[3] However, in year 1 this definition is inappropriate and is also different to the ESC definition.[4] This approach is inappropriate since in year 1 of the new regulatory period expenditure forecasts will be newly formulated and will be based on the most up to date estimates of forecast costs. It is therefore appropriate in year one for E_t to be measured relative to the benchmark forecast.[5]

The ACCC's approach should therefore be amended as follows:

> ***'For year 1 of the regulatory period*** $E_1 = F_1 - A_1$
>
> ***For all other years*** $E_t = (A_{t-1} - A_t) - (F_{t-1} - F_t)$***, where***

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[2] ***Allocation of Efficiency Gains,*** A NERA report for Gilbert and Tobin, September 2004.

[3] See: Office of the Regulator General, ***Electricity Distribution Price Determination 2001-2005, Volume I Statement of Purpose and Reasons,*** p.98.

[4] Ibid.

[5] As distinct from the relative difference in actual and forecast expenditure in year 5 of the previous period.

E_t is the efficiency benefit/loss in year t,

A_t, A_{t-1} is the actual operating cost for year t, t-1 respectively,

F_t, F_{t-1} is the forecast operating cost for the years t, t-1 respectively.'

This avoids the problem associated with the ACCC drafting which currently means that even if a business hits its precise forecasts in year 1 of the regulatory period it can still be treated as though it has been "inefficient" if it was "below forecast" at the end of the last regulatory period (or ***vice versa***). Given that forecast costs will already have been adjusted down to reflect past efficiencies this effectively passes on double the efficiency gain to consumers.

3.3. Unspecific Drafting Regarding the use of E_t

While the current drafting is almost certainly intended to give an ESC style application to the ECM, read on its own one might not draw that conclusion. That is, absent the ESC's existing mechanism, or knowledge thereof, it would be difficult to interpret what the ACCC's words meant. A self-explanatory re-wording is provided below:

~~***The efficiency benefit/loss will be carried forward for five years after the year in which the benefit/loss is incurred.***~~ ***During the regulatory period in which the efficiency benefit/loss is incurred, the carry forward mechanism does not affect the annual opex allowance. The opex plus carry-forward allowance for the next regulatory control period will be based on:***

- ***the expected efficient opex costs in year t (determined after taking into account past opex and reasons as to why future opex may be different from past opex);***

- ***plus/minus the carry-forward of the efficiency benefit/loss from the previous regulatory control period. Where this amount is calculated as:***

  Carry-forward allowance in year t = $\sum_{t-6}^{0} E_t$ ***;***

  where t=0 signifies the last year of the previous regulatory period.

The ACCC's current drafting leaves it unclear as to what ***"plus/minus the carry-forward of the efficiency benefit/loss from the previous regulatory control period"*** means**.** In particular, it is not clear how the carry-forward allowance in any given year will be calculated from the "E_t's" of the previous regulatory period. The above equation is intended to clarify this.

3.4. Negative Efficiency Carry-forward

The Commission's mechanism clearly contemplates a negative carry-forward from one regulatory period to the next. In such cases, revenue would be reduced below the level otherwise determined by the building block approach. That is, the revenue cap will be

insufficient to cover expected efficient future costs. In this respect, the ACCC's mechanism differs significantly from the ESC's approach.

Whilst the ESC thought it desirable, other things constant, that gains and losses were treated symmetrically it was:[6]

> ***'[M]indful of the distributors' comments that a negative carry-over would reduce revenue below the level determined by the building blocks approach'***

The ESC efficiency carryover mechanism therefore puts a floor of zero on the efficiency carryover in any given year. For example, if $\sum_{t-6}^{0} E_t$ is less than zero in any given year the carry-forward allowance will be set equal to zero. However, any negative amount will be offset against future positive amounts. That is, if $\sum_{t-6}^{0} E_t$ is -$10 in year t=1 and +$15 in year t=2 then the ESC will set the carry-forward allowance at zero in year 1 and +$5 in year 2.

The ESC's approach of employing a 'zero floor' appears to be more compatible with the revenue adequacy requirements outlined in the Code than the ACCC's proposed mechanism. Under clause 6.2.2(b)(2), the ACCC must provide for:[7]

> ***'[O]n a prospective basis, a sustainable commercial revenue stream which includes a fair and reasonable rate of return to Transmission Network Owners and/or Transmission Network Service Providers (as appropriate) on efficient investment, given efficient operating and maintenance practices of the Transmission Network Owners and/or Transmission Network Service Providers (as appropriate)'***

A revenue stream that is insufficient to cover expected efficient future costs is not commercially sustainable in the long run. Nonetheless, the ACCC's mechanism allows for the possibility that prospective revenues will fall short of prospective efficient costs. By incorporating a zero floor this possibility is eliminated whilst retaining the incentive for the TNSP to make efficiency savings. In our opinion the ESC's approach strikes a superior balance between providing a TNSP with appropriate incentives to pursue efficiency gains, whilst guaranteeing, on a prospective basis, a commercially sustainable revenue stream, as required by clause 6.2.2(b)(2).

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6 Office of the Regulator General, ***2001 Electricity Distribution Price Review – Draft Decision,*** p.120.

7 See Clause 6.2.2(b)(2).

3.5. Unanticipated Cost Changes

3.4.1. Pass-through Events

It would be appropriate for the ACCC to make clear that any change in opex allowances under 'pass through' provisions should also be made in the calculation of E_t. If an adjustment to the revenue path can be justified by reference to the principle that costs have increased due to factors beyond the firm's control then it would appear reasonable that the efficiency carryover mechanism also reflect this. That is, the forecasts (F_t and F_{t-1}) used in the ACCC's calculation of E_t should be inclusive of any pass through relating to opex costs. This would also be consistent with the ESC approach.

3.4.2. Revisiting Forecasts

More generally, it should also be possible to revisit the reasonableness of the forecasts used at the beginning of the regulatory period to account for experience ***during*** the regulatory period. Under the current approach, forecasts at the beginning of the regulatory period represent the unalterable benchmark from which the carryforward amount is defined. However, if demand grew at double the pace that was anticipated it may be reasonable to increase the 'efficient benchmark' for opex above the values implicit in F_t and F_{t-1}. Similarly, if real wages in the economy grew at double the anticipated rate a further adjustment could be made.

The ESC examined this issue and concluded that no such adjustments should be made on the grounds that it added to complexity and would allow businesses to exploit information asymmetries (with business only providing evidence on factors that tended to increase costs but not ***vice versa***).

This decision was appealed by AGL and Powercor who argued that an adjustment should be made for deviations in the number of customer connections from the forecast level. The Victorian Appeal Panel set aside the ESC's Determination, stating:[8]

> ***'The efficiency measure, as adopted by the Office in the rule of thumb, is inconsistent with the Office's objectives for the efficiency carry over as enunciated on p83 of the Determination to the extent that it fails to scale for cost changes as a result of changes in size and scope of operations … Accordingly, the Panel decided to set aside the Determination and remit it to the Office for amendment of the Determination to incorporate the effects on costs of the differences between forecast and actual demand in the measure of efficiency carry over.'***

After receiving submissions from distributors, the ESC adjusted the expenditure benchmarks to take account of the impacts of growth in excess of that forecast. These

[8] Appeal Panel, ***Statement of Reasons, AGL Electricity Ltd,*** p.9.

adjusted benchmarks were then used to recalculate the amended efficiency carryover amounts.[9]

In our opinion, it would be appropriate for the ACCC to also take into account the impact on costs of unanticipated factors beyond the control of TransGrid when setting the carryforward amount. It may also be required that the ACCC do this under the Code. In particular, it would seem that penalising a TNSP in the next regulatory period for cost increases clearly beyond their control in the last regulatory period could be inconsistent with clauses 6.2.2(b)(2) and 6.2.2(b)(1). These clauses require the ACCC to allow:

> ***'[O]n a prospective basis, a sustainable commercial revenue stream which includes a fair and reasonable rate of return to Transmission Network Owners and/or Transmission Network Service Providers (as appropriate) on efficient investment, given efficient operating and maintenance practices of the Transmission Network Owners and/or Transmission Network Service Providers (as appropriate)'.*** 6.2.2(b)(2)

> ***'[A]n equitable allocation between Transmission Network Users and Transmission Network Owners and/or Transmission Network Service Providers of efficiency gains reasonably expected to be achievable'.*** 6.2.2(b)(1).

For example, a cost increase due to circumstances beyond TransGrid's control would result in revenues being below efficient costs in the next regulatory period – potentially inconsistent with 6.2.2(b)(2). Similarly, penalising TransGrid in the next regulatory period for a cost increase that does not reflect inefficiency could be viewed as being an inequitable allocation under 6.2.2(b)(1).

[9] Office of the Regulator General, ***2001 Electricity Distribution Price Review – Re-Determination***, p.7.

4. CONCLUSIONS

1. The ACCC's definition of efficiency gain should refer to (with the tracked changes text representing our suggested amendment): ***'The efficiency gain or loss in a year relative to the efficiency gain already incorporated in the forecast of costs may be expressed mathematically as:….'***.

2. In the first year of the new regulatory period E_t should be measured relative to the benchmark forecast, since the newly formulated expenditure forecasts will be based on the most up to date estimates of forecast costs.

3. The ACCC's Draft Statement of Principles should be reworded to clarify how the carry-forward allowance in any given year will be calculated from the "E_t's" of the previous regulatory period.

4. The ECM employed by the ESC that incorporates a 'zero floor' appears to be more compatible with the revenue adequacy requirements outlined in clause 6.2.2(b)(2) of the Code than the ACCC's proposed mechanism. In our opinion, the ESC's approach strikes a superior balance between providing a TNSP with appropriate incentives to pursue efficiency gains, whilst guaranteeing a commercially sustainable revenue stream, as required by the Code.

5. It would be appropriate for the ACCC to make clear that any change in opex allowances under 'pass through' provisions should also be made in the calculation of E_t. This would also be consistent with the ESC approach.

6. More generally, it would be appropriate for the ACCC also to take into account the impact on costs of unanticipated factors beyond the control of TransGrid when setting the carryforward amount. The ACCC may also be required to do this under the Code. In particular, it would seem that penalising a TNSP in the next regulatory period for cost increases clearly beyond their control in the last regulatory period could be construed as inconsistent with clauses 6.2.2(b)(2) and 6.2.2(b)(1).