

Modifying the PBR framework in Hawai'i COMMENTS ON THE PUC STAFF PROPOSAL

PREPARED FOR

The Hawaiian Electric Companies

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I. Introduction

A. Brattle's assignment

The Public Utilities Commission of the State of Hawai'i has instituted a proceeding to investigate performance based ratemaking (PBR).¹ The PUC Staff filed a report *Staff Proposal for Updated Performance-Based Regulations*, dated February 7th 2019, in Docket 2018-088.

The Hawaiian Electric Companies ("the Companies") have asked The Brattle Group to review the PUC Staff proposal, and to provide comments based on experience of PBR in other jurisdictions, and the economic theory that underpins PBR and explains the incentives it provides. This report addresses the PUC Staff recommendations relating to a multi-year rate plan, but does not address the selection and design of targeted performance incentive mechanisms (PIMs).

B. Structure of this report

This report is structured as follows:

- In Section 2 I discuss the main elements of the proposed design of a multi-year rate plan in the PUC Staff report
- In Section 3 I recommend an approach to determining the annual revenue adjustment in the rate plan.

¹ Order No. 35411 in PUC of Hawai'i Docket 2018-088, filed April 18, 2018.

II. Design of a multi-year rate plan

A. Plan components

A multi-year rate plan commonly consists of the following elements:

- Authorized revenues in the base year
- Plan term, and a process for rebasing authorized revenues at the end of the plan term
- Annual revenue adjustments
- Trackers or pass through mechanisms
- An Earnings Sharing Mechanism (ESM)
- An Efficiency Carryover Mechanism (ECM)
- Re-opener or off-ramp provisions
- A process for adjusting rates and rate structure

Each of these components is discussed in the subsections which follow.

A multi-year rate plan provides a strengthened financial incentive to control costs by, for a time, ensuring that revenues are independent of changes in the utility's costs. The PUC Staff proposal is for a five-year rate period. If costs increase in the second year of the rate plan, the cost increase is borne by the Companies until authorized revenues are "rebased" at the end of the plan term (ie, year 6). The incentive to control costs can be strengthened by the PUC Staff proposal because the rebasing happens in year 6, rather than in year 4 under the current framework. This point is explained in detail and quantified in Brattle's January paper filed in this docket. The PUC Staff paper correctly connects incentives to control costs with extending the rate period.^{2,3}

It is sometimes asserted that incentives can be strengthened by changing the annual revenue adjustment (for example, by freezing revenues in nominal terms rather than in real terms). This is not correct: in both cases the proportion of a cost increase borne by the utility is the

² "To provide cost reduction incentives, staff proposes suspending the existing triennial rate case cycle, to be replaced with a five-year multi-year rate plan ("MRP")." (PUC Staff paper, p. 12). The incentive provided by a five-year rate plan is stronger than the incentive provided by a three-year rate plan. The incentive is to reduce costs below the level they would have at if the incentive were less strong; it is not correct to say that the incentive is to "reduce costs" in the sense of costs being lower one year than the year before.

³ "A 5-year rate plan represents a balanced approach, weighing the need to have a longer control period to adequately amplify cost containment pressures, against concerns that too long of a control period would not permit adequate opportunities for course correction in a dynamic and rapidly changing regulatory environment." (PUC Staff paper, p. 25).

same.⁴ A revenue adjustment mechanism using an external index (eg, inflation) or a revenue adjustment mechanism using a pre-specified set of annual dollar amounts has the same incentive properties. Provided that both provide adequate revenue increases over the rate period and therefore do not risk triggering off-ramp provisions, both provide the same incentives to control costs.

It is essential to consider the design of a PBR plan as a whole, rather than assessing plan components in isolation. For example, a five year PBR plan term might be an acceptable feature if the plan also provides for adequate annual revenue adjustments, and tracker/pass through mechanisms that have reasonable scope. In contrast, it would not be acceptable to extend a PBR plan to a five year term if it had inadequate annual revenue adjustment and/or tracker mechanisms that are too limited in scope. The latter plan would not be acceptable because it would not provide a reasonable opportunity to earn the authorized rate of return over the plan term.

B. Authorized revenues in the base year

A multi-year rate plan starts with authorized revenues in the first year of the plan which are designed to recover test year costs and an authorized return on the test year rate base. This should be no different from a typical rate proceeding. The PUC Staff paper asserts that “Performance-based regulations should deliver significant ‘day one’ savings on customer bills as soon as the new regulations take effect.”⁵ The benefits of strengthened incentives to control costs, in terms of utility costs being at a level below where they would otherwise have been, will take some time to be realized. However, benefits could be brought forward in time by smoothing anticipated changes in revenue requirement over the term of the plan. I am not aware of any examples where authorized revenues at the start of a multi-year rate plan have been set explicitly below the level that would be required to earn the authorized rate of return.

I address the related topic of a “stretch factor” or “consumer dividend” below.

The PUC Staff paper also asserts that “a new general rate case would not be required for each utility in order to commence implementation of any new PBR framework elements.”⁶ I do not agree with this assertion. As explained above, a PBR plan design needs to be considered as a whole. A plan design that is reasonable if it is implemented immediately following a general rate case might not be reasonable without one. If the current authorized revenue (or current “target revenue”) is insufficient to provide a reasonable opportunity to earn the authorized rate of return, using current revenues as the foundation for a five-year PBR plan would preclude that reasonable opportunity for a further five years.

⁴ The PUC Staff paper refers to “the cost containment incentives provided by an index-driven revenue cap”. The incentive comes from the fact that revenues are not adjusted for changes in costs. The use of an index to adjust revenues is not relevant for incentives.

⁵ PUC Staff paper, p. 2. See also p. 21.

⁶ PUC Staff paper, p. 27

C. Plan term and rebasing

The PUC Staff proposal is for a five-year plan term. This is in line with PBR plan terms in many jurisdictions, including Great Britain,⁷ Australia, New Zealand and Alberta. I am not aware of any similar PBR plans in the US with five year terms. PBR plans in California and New York are somewhat similar to the PUC Staff proposal but typically have three-year terms, and have annual revenue increases based on forecasts rather than inflation.⁸

PBR plans in Great Britain, Australia and New Zealand provide for larger annual revenue adjustments than would result from the PUC Staff proposal (see below). The PBR plan in Alberta has an annual revenue adjustment mechanism similar to that in the PUC Staff proposal; however, the PBR plan in Alberta also includes a tracker mechanism that enabled the utilities to collect additional revenues for a broad set of programs.⁹

A five-year plan term is in line with good practice provided that the plan also includes other necessary design features, including adequate annual revenue adjustments and tracker/pass through mechanisms with reasonable scope.

The PUC Staff paper does not specify a process for re-setting or rebasing authorized revenues at the end of the plan term.¹⁰ Uncertainty has the effect of weakening incentives that flow from the PBR plan. It is therefore preferable that the re-basing process be set out with some precision at the outset of the PBR plan. All of the jurisdictions cited above involve re-basing at the end of the plan term.

D. Annual revenue adjustments

The PUC Staff paper proposes an annual revenue adjustment whereby target revenues would increase by inflation, less a fixed offset (possibly to include a “consumer dividend” or “stretch”). It appears that the PUC Staff anticipates a fixed offset in the range of 0.5% to

⁷ The term of PBR plans in Great Britain has traditionally been five years. The current PBR plans gave an eight year term, but the regulator has proposed reducing the term to five years again in future.

⁸ See Brattle’s January 2019 paper filed in this proceeding. I am also aware of multi-year rate plans in Georgia and Minnesota which similarly have annual revenue adjustments based on forecasts rather than inflation (see Georgia PSC, *Order Adopting Settlement Agreement*, 23 December, 2013, Docket 36989 and Minnesota PUC, *Findings of Fact, Conclusions and Order*, June 12, 2017, Docket 002/GR-15-826).

⁹ Over the 2013 to 2017 period, the scope of the tracker mechanism was broad and enabled cost-recovery for a range of programs where inflation-based revenue adjustments were not sufficient to collect program costs. For the 2018 to 2022 period, the scope of the tracker mechanism has been significantly reduced.

¹⁰ “The process and criteria to be used for re-determining revenues and rates at the end of the initial 5-year control period will need to be established in Phase 2.” (PUC Staff paper, p. 27).

1.5%.¹¹ The PUC Staff paper correctly identifies that the revenue adjustment “compensate[s] utilities automatically for important external cost drivers”.¹² The revenue adjustment mechanism is a crucial element of the PBR plan because it permits a longer plan term than would otherwise be possible. A longer plan term is advantageous because it strengthens incentives to control costs, as explained above. However, without adequate annual revenue adjustments, a long PBR plan is not possible because of the risk that revenues will not be sufficient to provide a reasonable opportunity to earn the authorized rate of return. Indexing revenues to inflation, even without an offset like the PUC Staff paper proposes, will usually not provide adequate revenue over a five year period.

There are many examples of utilities operating under PBR where authorized revenues have increased in real terms during the plan term.¹³ In general, there are many factors which could lead to a need for real-terms revenue increases during a plan term, including: rapid replacement of aging assets; need to improve reliability/resiliency; integrating increasing amounts of renewable capacity; or reducing pollution. These factors are specific to the circumstances of an individual utility, although I note that in general US utilities seem to be in an increasing cost environment.¹⁴ In contrast to the suggestions in the PUC Staff paper, the PBR frameworks with which I am familiar can (where warranted by the utility’s circumstances) result in annual real-terms revenue increases. For example, the DPCR5 price control in Great Britain provided the 14 distribution utilities with real terms increases of 5.8% each year for five years from 2010 to 2015. In New South Wales the annual real terms increase for 2009-2014 was 6.1%, and in Victoria it was 2.6% from 2011 to 2015, and 1.8% from 2016 to 2020. Utilities in both California and New York are receiving above inflation revenue increases under their current PBR plans, and the California gas and electric utilities have received annual real terms revenue increases of 2.5% on average between 2008 and 2018.¹⁵

All of the jurisdictions mentioned above use forecasts of anticipated revenue requirements over the plan term in order to determine the annual revenue adjustments that will be required. As such, the forecast of anticipated revenue requirements will incorporate (explicitly or implicitly) the anticipated effect of the PBR plan’s incentive to control costs.

I am also aware that the costs for the Companies to provide utility service have been increasing in recent years. For example, HECO’s target revenues increased on average by 3.4% per year over the 2012-2016 period. Furthermore, over this period HECO’s equity

¹¹ The PUC Staff paper cites “productivity trends” in the range zero to 1% (PUC Staff paper, p. 27) and a consumer dividend or stretch factor of 0.5% (PUC Staff paper, footnote 20).

¹² PUC Staff paper, p. 23.

¹³ For example, the January 2019 Brattle paper filed in this proceeding contains examples from Great Britain, Australia and California. In these examples, authorized annual rate increases are based, at least in part, on a forecast of utility costs rather than an external index.

¹⁴ For example, the January 2019 Brattle paper filed in this proceeding showed that, on average, US utilities have net distribution plant in service growing at about 5% per year over the last five years.

¹⁵ All figures from the January 2019 Brattle paper filed in this proceeding.

return was \$6m per year below the level required to achieve the authorized return. If target revenues had included sufficient revenue to achieve the authorized return, target revenues would have increased at 4.4% per year.¹⁶

E. Trackers or pass through mechanisms

The PUC Staff paper acknowledges the need for pass-through mechanisms for fuel and purchased power costs, as well as for a mechanism to recover the costs of major projects.¹⁷ The PUC Staff paper explains that a tracker mechanism for major projects (such as the existing MPIR mechanism) is needed because an index-based annual revenue adjustment cannot address “lumpy” additions. In most of the PBR plans with which I am familiar (outside North America), the issue of lumpy changes in required revenue is addressed by “smoothing” revenues across the plan term. Revenue smoothing means that the (real terms) increase in each year is the same, and the rate of revenue increase is chosen so that the net present value of revenues over the plan term is equal to the net present value of anticipated costs. Smoothing of plan revenues in this way also has the effect of “bringing forward” the anticipated benefits flowing from strengthened incentives to control costs. In the US plans I am familiar with (eg, California), lumpy changes in cost can be addressed because annual revenue increases are a schedule of dollar amounts, determined in the rate case at the outset of the plan, that can be different in each year of the plan term. In all of these jurisdictions, the amount of the annual revenue increases during the plan term is based on a forecast of what the utility’s costs is anticipated to be.¹⁸

Provided that the annual revenue increase is adequate to address anticipated changes in cost over the plan term, the function of the tracker mechanism is to address changes in cost that cannot be forecast and are driven by external factors. For example, costs associated with integrating renewable generation may be difficult to forecast if the overall quantity of renewable generation is highly uncertain. As the PUC Staff paper points out,¹⁹ a tracker mechanism does not provide the same cost-control incentives as an annual revenue adjustment that it is independent of actual costs.

It is also reasonable to include a pass-through mechanism, sometimes called a Z-factor, for events outside the utility’s control that have a significant impact on costs. An example of such an event would be a change in income tax rates.

F. Earnings Sharing Mechanism (ESM)

An ESM can reduce the risk of extreme outcomes under a PBR plan. As such, it makes the plan more robust and less likely to require re-opening. This helps to maintain the strength of

¹⁶ Brattle analysis of HECO ESM filings and revenue reports.

¹⁷ PUC Staff paper, p. 30.

¹⁸ In Great Britain and Australia, this is achieved by “back solving” the X-factor which provides revenues over the plan term equal in net present value to the anticipated costs.

¹⁹ PUC Staff paper, p. 30.

incentives provided by the PBR plan. Nonetheless, the primary impact of an ESM is that earnings (perhaps outside a deadband) are shared, hence reducing the strength of financial incentives. I am not aware of many examples of a PBR plan with earnings sharing.²⁰ However, it may be reasonable to include an ESM if it is felt that the risk of extreme outcomes would otherwise be unacceptable.

It is important that any ESM be symmetrical (as the PUC Staff paper seems to recommend), since otherwise the ESM would bias down expected returns and hence would not provide a reasonable opportunity to earn the fair rate of return.

G. An Efficiency Carryover Mechanism

An ECM can serve two related purposes. First, without an ECM the incentive to control costs naturally weakens as the end-of-period rebasing approaches.²¹ Second, an ECM can be designed to address, in part, a perceived bias in favor of capex solutions otherwise created by the regulatory framework. The PBR framework in Great Britain, Australia and New Zealand includes an ECM.

H. Re-opener or off-ramp provisions

PBR plans sometimes contain a mechanism for the plan to be terminated early or otherwise adjusted if outcomes (in terms of achieved returns) are extremely high or extremely low. If such a mechanism is included, it is essential that the conditions under which it would be triggered are very clearly described. If they are not, the mechanism could give rise to uncertainty, and uncertainty weakens incentives.

I. Rates and rate structure

The discussion above has addressed revenues rather than rates. The PUC Staff report recommends that a revenue decoupling mechanism continue to be included in the PBR plan. This is in line with good regulatory practice.²²

It may also be important to consider additional mechanisms for adjusting rates during the term of the PBR plan. For example, in jurisdictions with extended PBR plan terms, it is often possible to adjust rate structure within the plan term (in a revenue-neutral fashion).²³

²⁰ The PBR plans in Australia and California lack an ESM. The PBR plans in Great Britain contain sharing provisions, but these are better regarded as part of the “menu” approach to PBR plan implementation than a way of avoiding extreme outcomes.

²¹ The reasons for this are discussed in detail in the January 2019 Brattle paper filed in this proceeding. The PUC Staff report acknowledges this feature of an ECM (see p. 24).

²² All of the following jurisdictions have revenue decoupling as part of the PBR plan: Australia, New Zealand, Great Britain, California and New York.

²³ For example, rate structure can evolve during the plan term in Great Britain, Australia and California.

III. Recommendations for annual revenue adjustment

The PUC Staff report appears to recommend that annual revenue adjustments be set equal to inflation less a small fixed offset in the range 0.5% to 1.5%. I do not agree with this recommendation because I have not seen any evidence that a revenue adjustment of this nature will provide the Companies with a reasonable opportunity to earn the authorized return on investment over the next five years. In contrast, I have cited several pieces of evidence which suggest that, for many utilities at different times, a much larger rate of revenue increase is required. Furthermore, if such revenue adjustments had been implemented for HECO in the past, HECO's revenues would have been lower than the levels in fact authorized and HECO's achieved returns would have been further below the authorized level.

If annual revenue adjustments of inflation less a small offset were to be implemented in circumstances where the Companies in fact require larger annual revenue increases, there are several possible consequences:

- The Companies may continue to invest and spend money on their systems at close to the required level, but the Companies' financial integrity is threatened.
- The Companies may be unable to invest at the required level, thereby risking a deterioration in service quality and/or lagging behind on needed replacement work.
- The Companies may be forced increasingly to use other revenue recovery mechanisms, such as trackers or pass throughs, with inferior incentive properties.

Since all of these would result in adverse consequences for customers, it is necessary to test whether annual revenue increases such as those proposed in the PUC Staff report would be sufficient for the Companies over the next (say) five year period.

One piece of relevant evidence would be to estimate the rate at which revenues should have increased in the recent past in order for the Companies to achieve the authorized ROE historically.²⁴ However, the best evidence is to look at the level of revenue requirement that is anticipated.

²⁴ The rate of target revenue increase for HECO over the 2012 to 2016 period was 3.4%, and an increase of 4.4% would have been required to achieve the authorized rate of return.

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