IPART

Independent Pricing and Regulatory Tribunal
New South Wales

# Sydney Desalination Plant Pty Ltd

## Energy Adjustment and Efficiency Carryover Mechanisms

**Draft Methodology Paper**
**Water**

**March 2017**

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# Invitation for submissions

IPART invites written comment on this document and encourages all interested parties to provide submissions addressing the matters discussed.

**Submissions are due by 18 April 2017**

We would prefer to receive them electronically via our online submission form <www.ipart.nsw.gov.au/Home/Consumer_Information/Lodge_a_submission>.

You can also send comments by mail to:

**SDP Energy Adjustment and Efficiency Carryover Mechanisms**
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We may choose not to publish a submission—for example, if it contains confidential or commercially sensitive information. If your submission contains information that you do not wish to be publicly disclosed, please indicate this clearly at the time of making the submission. IPART will then make every effort to protect that information, but it could be disclosed under the *Government Information (Public Access) Act 2009* (NSW) or the *Independent Pricing and Regulatory Tribunal Act 1992* (NSW), or where otherwise required by law.

If you would like further information on making a submission, IPART's submission policy is available on our website.

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# 1 Introduction

We determine Sydney Desalination Plant Pty Ltd (SDP's) prices in accordance with a standing Ministerial reference under section 52 of the *Water Industry Competition Act 2006* (WIC Act). Under the Terms of Reference (see Appendix D),[1] we are required to provide SDP with an:

- **Energy Adjustment Mechanism (EAM)** - a mechanism to allocate the costs or benefits to SDP customers of actual gains or losses beyond a core band that result from the difference between SDP's costs of electricity and Renewable Energy Certificates (RECs) under its contracts with Infigen and revenues from the sale of surplus electricity and RECs when in shutdown or restart.
- **Efficiency Carryover Mechanism (ECM)** – a mechanism to allow SDP to carryover demonstrated efficiency savings, net of efficiency losses, in operating expenditure for a period of 4 years following the year in which the efficiency saving was achieved.

In 2012, we published a Methodology Paper[2] setting out our approach to implementing the EAM and ECM. The Terms of Reference allows us to update the Methodology Paper from time to time.

We are currently reviewing the 2012 Methodology Paper, concurrent to our determination of SDP's maximum prices from 1 July 2017. Any changes or updates we decide to make to the Methodology Paper will not affect prices in the 2017 determination period. However, SDP will be responding to the incentives created by the Methodology Paper during the period of the 2017 determination period. This is why we have decided to review the Methodology Paper concurrent to our determination of SDP's maximum prices from 1 July 2017.

## 1.1 Our Draft Methodology Paper

Our Issues Paper[3] identified the key issues relating to how the existing energy adjustment and efficiency carryover mechanisms operate and asked what changes, if any, should be made to these mechanisms. Key issues identified for stakeholder consultation and feedback included:

- the scope and design of the mechanisms
- the calculation methods used, and
- the external data sources to be used.

1 We received the initial Terms of Reference on 6 May 2011. The initial reference was replaced by the current reference on 16 February 2012.

2 IPART, *Sydney Desalination Plant – Efficiency and Energy Adjustment Mechanisms - Methodology Paper*, April 2012.

3 IPART, *Review of water prices for Sydney Desalination Plant Pty Limited from 1 July 2017 – Issues Paper*, August 2016, Chapter 7.

In this review we are proposing to update, improve, and clarify how these mechanisms operate.

The EAM re-allocates some of the risk relating to SDP's surplus energy from SDP to customers. Re-allocating risk from SDP to customers changes SDP's incentive to manage these risks prudently and efficiently. Given that SDP (rather than customers) is best placed to manage the market price risk of its surplus energy, we consider it important that SDP retain sufficient incentive to manage this risk prudently and efficiently. We are proposing to support this objective by:

- increasing SDP's share of gains or losses outside the core band
- setting the core band relative to the value of surplus energy sold in the year, and
- signalling that we will undertake a prudence review of SDP's trading policy and trading activity and may decide to exclude trades from the EAM if there is evidence of imprudence in the management of SDP's surplus energy.

We have also refined and clarified how we intend to calculate gains and losses on the sale of surplus energy.

The purpose of the ECM is to allow SDP to retain permanent efficiency savings for a period of time before these savings are passed on to customers through lower prices. We are proposing refinements to the ECM that:

- clarify the purpose of the ECM to focus on identifying, delivering, and passing through permanent efficiency savings to SDP's customers
- clarify the scope of costs that are subject to the mechanism, and
- ensure efficiency savings are retained by SDP for a maximum of five years.

We are proposing to maintain our approach in relation to mode-specific efficiency savings which are to be retained for up to five years, while SDP is in that specific mode, over a five-consecutive year period, beginning when the efficiency saving is first achieved.

## 1.2 Our review process

In developing our Draft Methodology Paper, we have carefully considered and taken into account all feedback received from stakeholders including through SDP's pricing proposal, other stakeholder submissions, and views expressed at the Public Hearing.

We invite stakeholders to provide feedback in response to this Draft Methodology Paper. Stakeholders will be able to comment on our Draft Methodology Paper by 18 April 2017. We will take all feedback into account before finalising and publishing the Methodology Paper in June 2017.

The indicative timetable for this review is outlined in Table 1.1 below.

**Table 1.1 Timetable for the review of SDP's Methodology Paper**

| Milestone | Timeframe |
|---|---|
| *Released Issues Paper on the price review and Methodology Paper* | *29 August 2016* |
| *Received SDP's pricing proposal* | *24 October 2016* |
| *Received public submissions on Issues Paper and SDP's pricing proposal* | *11 November 2016* |
| *Held Public hearing* | *8 December 2016* |
| *Released Draft Methodology Paper* | *21 March 2017* |
| Receive submissions to Draft Methodology Paper | 18 April 2017 |
| Release Final Methodology Paper | June 2017 |

SDP submitted its pricing proposal to IPART on 27 October 2016. SDP redacted certain information from the public version of its pricing proposal on the grounds of commercial confidentiality.

At the Public Hearing, SDP disclosed some of the information that had been redacted from the public version of its pricing proposal. Accordingly, SDP has resubmitted its pricing proposal to include some information that was originally redacted. No other changes have been made to SDP's revised pricing proposal.

We have referred to SDP's revised pricing proposal throughout this Draft 2017 Methodology Paper. We will make SDP's revised pricing proposal available on our website at the same time as we publish our Draft 2017 Methodology Paper. To avoid any confusion, we will also mark SDP's original pricing proposal on our website as 'superseded'.

We also note the Metropolitan Water Plan was recently updated, released on 19 March 2017.[4] Under the new Plan, the 'on' and 'off' triggers for the desalination plant have been lowered to run the water supply system more cost effectively, taking account of changes in demand over the medium term.[5] SDP is to operate in drought response[6] when the total dam storage level is below 60% (previously 70%) and continue to do so until the total dam storage level reaches 70% (previously 80%).[7] We are seeking stakeholder comments on the implications of SDP's new operating rules under the 2017 Metropolitan Water Plan in making our Final 2017 Methodology Paper.

## 1.3 Structure of this Draft Methodology Paper

We have separated the draft 2017 EAM and ECM methodologies (covered in chapters 2 to 5) from our review of the 2012 Methodology Paper (covered in appendices A to C).

4 The Hon Don Harwin MLC, Minister for Resources, Minister for Energy and Utilities, *New Water Plan to save Greater Sydney,* Media release Sunday 19 March 2017.

5 NSW Government, *2017 Metropolitan Water Plan*, March 2017, pp 24.

6 The Metropolitan Water Plan does not define 'drought' according to the desalination plant's trigger levels. However, the desalination plant, along with other water sources, is accessed as the water levels in dams reduce. Therefore, the plant is a drought response measure, aimed at securing supply of water. We refer to SDP's operating rules to distinguish between when the plant is operating in its drought response role and when it is not.

7 NSW Government, *2017 Metropolitan Water Plan*, March 2017, pp 28-29; and NSW Government, *2010 Metropolitan Water Plan*, August 2010, p 36.

The remainder of this Draft Methodology Paper is structured as follows:

- Chapter 2 sets out our methodology for the Energy Adjustment Mechanism (EAM).
- Chapter 3 provides worked examples of the EAM.
- Chapter 4 sets out our methodology for the Efficiency Carryover Mechanism (ECM).
- Chapter 5 provides worked examples of the ECM.
- Appendices:
  - Appendix A sets out the questions we seek stakeholder feedback on.
  - Appendix B provides analysis and discussion on the issues we considered in our review of the 2012 Energy Adjustment Mechanism methodology.
  - Appendix C provides analysis and discussion on the issues we considered in our review of the 2012 Efficiency Adjustment Mechanism methodology.
  - Appendix D contains the Terms of Reference.
- Glossary of terms used in this Draft Methodology Paper.

## 1.4 Draft decisions

Our draft decisions are outlined in the chapters of this Draft Report. For convenience, they are also listed below.

### Energy Adjustment Mechanism (EAM)

We made the following draft decisions:

1 Increase SDP's share of gains and losses outside the core band from 10% to 20%. This change would take effect from 2017-18. SDP's current share of gains and losses outside the core band of 10% still applies for 2016-17. 31

2 Amend how gains and losses on RECs are calculated so that gains/losses are recognised in the year the RECs are sold (not accrued). 36

3 Clarify the method used to apply financing costs to EAM allowances. 36

4 Modify our prudence test of SDP's energy trading policy and activity from a test of "no manifest imprudence" to a test of "the prudence of SDP's energy trading policy and activity". 38

5 Not extend the EAM to partial production. This is consistent with the Terms of Reference. 38

### Efficiency Carryover Mechanism (ECM)

We made the following draft decisions:

6 Maintain the current approach of including efficiency savings, net of efficiency losses, for four years following the year they are achieved (ie, five years total). 39

7 Maintain the current treatment of mode specific efficiency savings (ie, held for up to five years, within a consecutive five year period, while SDP is in that specific mode). 39

8 Adopt aspects of the ECM we applied to other IPART regulated water businesses, including: 44

- Removing the requirement that in order to be carried over, efficiency savings must be the result of a 'management initiative'. 44
- Shifting the ECM application period to use the five most recent years of actual data. 44
- Adding a claw-back to ensure savings are held by SDP for a maximum of five years. 44

# 2 Energy Adjustment Mechanism Methodology

## 2.1 Terms of Reference

The Terms of Reference state:[8]

A mechanism(s) is required to allocate the costs or benefits to SDP customers (in Sydney Water's area of operation) of actual gains or losses beyond a core band that result from the difference between SDP's costs of electricity and RECs under its contracts with Infigen and revenues from the sale of surplus electricity and RECs. The mechanism would only operate at times when:

- The desalination plant is in Shutdown or in a Restart Period; and
- SDP complied with its requirements to maintain and operate the desalination plant under clause A2 of its network operator licence.

The Minister further advised that:[9]

For clarity, the intention of the proposed energy adjustment mechanism is that:

- It would only apply to electricity and RECs that are not required by SDP when the desalination plant is not in full operation mode when complying with the plant's operating rules, as established by the Metropolitan Water Plan and subsequently included in SDP's Network Operator's Licence under the Water Industry Competition Act.
- It would ensure that SDP customers for water (in Sydney Water's Area of Operations) receive the benefit of significant gains and bear significant losses incurred as a result of the difference between the cost of electricity and RECs under SDP's contracts with Infigen and the market price for electricity and RECs arising from the sale of SDP's surplus electricity and RECs (in the circumstances described in point 1).
- For electricity, the mechanism would mirror the 'Calculation of Shortfall Adjustment' in SDP's Electricity Supply Agreement with Infigen, with the 'market price' defined as the half-hourly spot price and/or the price of a contracted 'available block'.
- For RECs, the 'market price' would be the price shown in the Nextgen Greenroom Report, or another equivalent report.

## 2.2 Purpose of the EAM

SDP manages a large scale reverse osmosis desalination plant located on the coast of Kurnell, 25 kilometres from Sydney's CBD. The plant can produce on average 250 ML of drinking water per day, which is equivalent to about 15% of Sydney's total drinking water supplies.[10] SDP produces drinking water by forcing sea water through membranes at high pressure to remove the salt. This process requires considerable amounts of energy.

8 SDP Terms of Reference, February 2012, page 2.
9 Letter to IPART, 16 February 2012.
10 SDP, *Water supply*, at http://www.sydneydesal.com.au/what-we-do/water-supply/, accessed on 6 July 2016.

SDP has entered into long-term contracts to acquire fixed minimum volumes of electricity and RECs at fixed prices.[11] However, when the plant is not operating, the minimum quantity of electricity under the contract applies and SDP is exposed to the risk of reselling electricity that is not needed at an uncertain price. Notably, when the market price is below its contract price, SDP incurs a loss on the resale of surplus energy in shutdown or restart modes. On the other hand, in the event that the market price exceeds the contract price, SDP makes a gain on the resale of surplus energy.

SDP incurs these gains and losses, not as the result of our price structures, but because of the avenues available to SDP to deal with surplus electricity and RECs within the constraints of its Infigen (energy) contract arrangements (outlined below). The Government decided that not all of SDP's gains and losses on surplus energy should remain with SDP. In February 2012, the Government amended the Terms of Reference and required IPART to develop a methodology for calculating gains and losses on the resale of SDP's surplus energy outside a core band and passing them through to customers through prices.

## 2.3 Scope of the EAM

The EAM is to provide for the pass-through to SDP's customers of gains or losses, outside a core band, associated with the sale of surplus electricity and RECs when the plant is in shutdown and restart modes only.

The EAM applies to gains and losses on the sale of SDP's surplus energy contracts when SDP is in restart or shutdown and when SDP is in compliance with the relevant provisions of its network operator licence.[12] The EAM only applies to SDP's current energy (electricity and RECs) contracts with Infigen.

### 2.3.1 SDP's current energy contracts with Infigen

Electricity for the desalination plant is provided under a contract between SDP and Infigen Energy Markets Pty Ltd, which is a subsidiary of Infigen Energy Limited. In its submission to the 2012 price review, SDP described the conditions of the Electricity Supply Agreement:

- a 20-year term
- fixed real prices
- no pass-through of any future tax, levy, impost or charge relating to greenhouse gas or carbon emissions
- no pass-through of any cost arising from the introduction or operation of any emissions trading scheme
- a contracted annual volume sufficient to support full operations at the desalination plant, and

11 The project approval for SDP, granted under the *Environmental Planning and Assessment Act 1979*, included a requirement that the plant use 100% renewable energy. See SDP website at following link: http://www.sydneydesal.com.au/media/1101/2006-project-approval-desalination-plant.pdf, accessed 2 March 2017.

12 SDP has complied with its requirements to maintain and operate the desalination plant under clause A2 of its network operator licence granted under the WIC Act on 9 August 2010 and varied on 10 May 2013.

- the ability to sell load back to the market if electricity demand is lower than forecast.[13]

SDP also has agreements with Renewable Power Ventures Pty Ltd, another subsidiary of Infigen Energy Limited, for the supply of RECs to offset the power used by the desalination plant.[14]

SDP reports that the RECs are sold to SDP under a 20-year Renewable Energy Certificate Agreement, which provides for the supply of RECs at fixed real prices.[15] The agreement includes a minimum annual number of RECs that SDP must purchase. SDP may sell any surplus RECs in the market.

### 2.3.2 Changes to SDP's energy contracts

The EAM is premised on the continued operation of SDP's Electricity Supply Agreement with Infigen Energy Limited dated 28 July 2008 (as amended and restated on 31 March 2010) and its RECs Supply Agreement with Renewable Power Ventures Pty Limited dated 28 July 2008 (as amended and restated on 31 March 2010). These are collectively known as the Infigen Contracts.

We will exclude from the EAM any amendments to the contracts that increase the duration, risk, or cost of these contracts. We will include in the EAM any amendments to the contracts that decrease the duration, risk, or cost of these contracts. This approach is consistent with the standard regulatory principle that customers should be able to share in efficient gains while not being exposed to inefficient losses incurred by the regulated business.

The EAM will cease to apply from the date of the termination, assignment or novation (as the case may be) in the event that:

- the term of the contract expires
- either party terminates the Infigen Contracts, or
- SDP assigns or novates the Infigen Contracts to a third party (other than to a person who purchases SDP's entire interest in the Desalination Plant).

Notwithstanding the above, any loss or gain accruing to SDP as a result of assignment, termination or novation will be subject to the EAM.

Any net loss or gain accruing to SDP as a result of the assignment or termination of one of the Infigen Contracts — including any payment received or made by SDP — will be subject to the EAM. We will allow for financing costs on any such amount subject to the EAM at the financing interest rate specified in this Draft 2017 Methodology Paper.

In the event that SDP makes or receives a payment as a result of the assignment or termination of a contract, IPART may, at its discretion and having regard to the materiality of the payment, apportion the loss or gain over the remaining term of the current contract for purposes of the EAM.

13 SDP (Sydney Water) submission to IPART's review of prices, 8 July 2011, p 3.
14 SDP (Sydney Water) submission to IPART's review of prices, 8 July 2011, p 3.
15 SDP (Sydney Water) submission to IPART's review of prices, 8 July 2011, p 3.

### 2.3.3 Changes to renewable energy schemes

If there is a Change in Scheme and SDP is required to purchase another type of Environmental Credit, the EAM will apply to the other type of Environmental Credit in the same way it had previously applied to RECs.

'Change in Scheme' and 'Environmental Credit' have the meaning given to each of those terms in the RECs Supply Agreement with Renewable Power Ventures Pty Limited dated 28 July 2008 (in place as of 1 July 2012).

## 2.4 EAM timeframes

The EAM is structured around the following three periods:

- **Application period:** the five years immediately preceding the review year. The EAM will apply to gains and losses over the application period.
- **Review year:** the year the EAM is applied.
- **Adjustment period:** the determination period immediately following the review year. EAM allowances will apply.

Table 2.1 illustrates these time periods for the next EAM application in 2022.

**Table 2.1 EAM application period, review year, and adjustment period**

| | 2017 determination period | | | | | 2022 determination period | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 16-17 | 17-18 | 18-19 | 19-20 | 20-21 | 21-22 | 22-23 | 23-24 | 24-25 | 25-26 | 26-27 |
| | Application period | | | | Review year | Adjustment period | | | | |
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |

**Source:** IPART analysis.

**Note:** This example assumes a five-year 2022 determination period.

## 2.5 EAM calculation of gains and losses

### 2.5.1 Gains and losses are evaluated within a financial year

We will calculate gains and losses on a financial year basis. If SDP is in full operation or is deemed to not be in compliance with the relevant terms of its network operators licence for part of a financial year during the application period, any energy relating to that period will be excluded from the EAM.

The EAM will apply to gains and losses that are realised in each financial year.

- For electricity, the EAM gain or loss calculation applies to surplus electricity contracted and sold in that particular financial year. If electricity for next year is forward sold this year, any gain or loss on that electricity will be included in next year's EAM gain or loss calculation. In this case, although the price is locked in this year, the electricity is traded next year and the gain or loss isn't realised until next year.

- For RECs, the EAM gain or loss calculation applies to surplus RECs sold in that particular financial year. If RECs accrued this year are banked and sold next year, any gain or loss on those RECs will be included in next year's EAM gain or loss calculation. In this case, although the RECs are accrued this year, they are not sold until next year and the gain or loss isn't realised until next year.

### 2.5.2 Calculating gains and losses on surplus electricity contracts

For transparency, we will calculate both a hypothetical gain or loss (based on the spot market price) and an actual gain or loss (based on actual sale price which may be the spot market or a forward market price). The actual gain or loss calculation will be used for the EAM. The difference between hypothetical and actual gain or loss illustrates the value gained or lost if SDP decides to forward sell some portion of its surplus electricity.

Hypothetical gain or loss = (volume of surplus electricity) x
(spot market price less contract price)

Actual gain or loss = (volume of surplus electricity) x
(actual sale price less contract price)

In the event SDP sells all surplus electricity into the spot market, the actual gain or loss would equal the hypothetical gain or loss.

#### The process of calculating gains and losses on electricity

The following outlines how each of the formulas above would be calculated.

1. **Calculate the contract value of surplus electricity**:
   - Determine the volume of surplus electricity within scope of the EAM for each month of the application period. This volume will depend on how many days there are in each month.
   - Calculate the value of surplus electricity on a monthly basis (ie, volume of surplus electricity in a month multiplied by the contract price relevant to that month).
   - Sum the monthly values to generate totals for each financial year over the application period.
2. **Calculate the hypothetical gain or loss:**
   - Calculate the hypothetical revenue for each month (ie, volume of surplus electricity in month multiplied by monthly average spot price published on the AEMO website).
   - Sum the hypothetical monthly revenues to generate totals for each financial year over the application period.
   - Calculate the hypothetical gain or loss (ie, total hypothetical revenues less contract value for surplus electricity in each financial year over the application period).
3. **Calculate the actual gain or loss:**

- Calculate the actual revenue for each month (ie, volume of surplus electricity in each month multiplied by the volume weighted average sale price for that month provided by SDP).[16]
- Sum the monthly revenues to generate totals for each financial year over the application period.
- Calculate the actual gain or loss (ie, total actual revenues less contract value for surplus electricity in each financial year over the application period).

### 2.5.3 Calculating gains and losses on surplus REC contracts

For transparency, we will calculate both a hypothetical gain or loss (based on the average spot market price in the quarter the surplus RECs are accrued) and an actual gain or loss (based on the actual sale price when surplus RECs are sold). The actual gain or loss calculation will be used for the EAM. The difference between hypothetical and actual gain or loss illustrates and value gained or lost as the RECs are received at the end of the quarter in which they are accrued and then banked to be sold in subsequent the quarter/s.

Hypothetical gain or loss = (volume of surplus RECs sold in quarter) x
(spot market price relevant to the quarter in which RECs are accrued less contract price)

Actual gain or loss = (volume of surplus RECs sold in quarter) x
(actual sale price less contract price)

#### The process of calculating gains and losses on RECs

The following outlines how each of the formulas above would be calculated.

1. **Calculate the contract value of surplus RECs sold:**
   - Identify the transactions of surplus RECs sold in each quarter over the application period.
   - Identify the contract cost of surplus RECs sold in each quarter over the application period.
2. **Calculate the hypothetical gain or loss:**
   - Calculate the hypothetical revenue for each quarter. For each surplus REC sold in a quarter, identify the quarter in which that REC was accrued.[17] Assume each REC was sold for the average spot price for the quarter in which it was accrued. The quarterly spot market price is the simple average of daily LGC spot market prices over each quarter based on data provided through subscription with TFS Green Australia (or an alternative data source if this is not available).
   - Calculate the hypothetical gain or loss for each quarter. This is hypothetical revenue minus contract value for each quarter.
   - Calculate the hypothetical gain or loss for each financial year. This is the sum of the quarterly hypothetical gains or losses over each financial year of the application period.

16 Consistent with the calculation of shortfall adjustment in SDP's Electricity Supply Agreement with Infigen.
17 Information on REC trades, including when RECs are accrued, received, and sold, is maintained by SDP.

3. **Calculate the actual gain or loss:**
   - Calculate the actual revenue for each quarter. For each surplus REC sold in a quarter, identify the actual revenue generated from these sales.
   - Calculate the actual gain or loss for each quarter. This is actual revenue minus contract value for each quarter.
   - Calculate the actual gain or loss for each financial year. This is the sum of the quarterly actual gains or losses over each financial year of the application period.

An example of how gains and losses are calculated for RECs is presented in Box 2.1.

**Box 2.1 Clarifying the calculation of gains and losses on RECs**

For this example, assume a REC is accrued in the second quarter of 2017-18 and is received following that quarter on 1 January 2018. The REC is banked and sold by SDP one year later on 1 January 2019.

According to our Draft 2017 Methodology Paper:

- The actual gain or loss would be recorded as occurring in 2018-19 and would be based on the difference between SDP's contract price and the actual sale price on 1 January 2019.

This is different to the approach we took when applying the 2012 EAM methodology. With that approach:

- The actual gain or loss would be recorded as occurring in 2017-18 and would be based on the difference between SDP's contract price and the actual sale price on 1 January 2019.

The only difference in approaches is that we are now recognising and **recording** gains and losses in the year they are actually realised (which can be, but is not necessarily, the year the REC is accrued).

The new approach means customers will not pay (receive) holding costs for unrealised losses (gains) and we remove the potential complication of what to do when RECs are banked across application periods. That is, if a REC is accrued in year 5 of an application period and is not sold early enough during the review year, we would be unable to attribute the realised gain or loss to year 5 of the application period and we would need to add an adjustment factor to the next application of the EAM.

### 2.5.4 Combining gains and losses on electricity and RECs

For each financial year over the application period, we will sum the actual gains and losses on electricity and RECs to a single combined actual gain or loss on energy before we apply the core band (discussed below). By combining electricity and RECs into a single energy gain or loss, gains in one component will be able to offset losses in the other component. This means that customers will be exposed to gains and losses outside a core band on the resale of SDP's surplus energy (rather than being exposed to separate risks for electricity and RECs depending on where each component is trading relative to separate core bands).

### 2.5.5 Relationship to Shortfall Adjustment in SDP's electricity contract

In calculating the gain or loss on surplus electricity, we will follow the definitions and procedures specified in the 'Calculation of Shortfall Adjustment' in SDP's Electricity Supply Agreement with Infigen Energy Limited to the extent consistent with the methodology specified in this paper.

However, the combined actual gain or loss on energy may differ from the Shortfall Adjustment on the SDP contract as a result of:

- the inclusion of RECs
- the restriction to shutdown and restart modes of operation as specified by the Metropolitan Water Plan
- the allowance for financing costs (see below), and
- any timing differences (financial year vs. calendar year and the treatment of the final year of each price determination period).

## 2.6 How the EAM shares gains and losses between SDP and customers

As required by the Terms of Reference, actual gains or losses are shared between SDP and customers beyond a core band.

### 2.6.1 Defining the core band

We have defined a core band of +or- 5% of the total value of SDP's **surplus energy sold** (ie, electricity and RECs combined) for which gains and losses are realised in that financial year.

Therefore, instead of contracted volumes, the core band uses the same volumes that are used in the calculation of gains and losses (ie, sale volumes). This means that the core band is no longer necessarily a fixed value in each year of the application period, but will varies proportionate to the volume of energy sold that year. Basing the core band on surplus energy sold accommodates the potential 'banking' of RECs and ensures that gains and losses are treated symmetrically in the event that RECs are accrued and sold in different years.

An example of how the core band threshold is calculated is provided in Box 2.2.

**Box 2.2 Clarifying the calculation of the core band threshold**

We have changed the definition of the core band as a result of our change to how the gains and losses on RECs are calculated. That is, because we are recognising and recording gains or losses on the sale of RECs in the year the gains or losses are realised (rather than in the year the RECs are accrued), it is important the core band for a particular year also reflects the RECs sold in that year (rather than accrued in that year).

The following table illustrates the difference between how the core band is defined in this Draft Methodology Paper compared to how it is defined in the 2012 Methodology Paper.

- Under the 2012 methodology (ie, the 2012 core band), the core band is tied to the value of total contracted energy and is constant each year. This means in this example the core band is $10 in each year, even though the contract value of surplus energy increases over the application period from $189 in year 1 to $208 in year 5.
- Under the draft 2017 methodology (ie, the 2017 core band), the core band varies each year to match changes in total value of surplus energy sold each year. In this example the core band increases from $9.45 in year 1 to $10.40 in year 5 as the contract value of surplus energy increases over the application period from $189 in year 1 to $208 in year 5.

| Year of application period | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 2012 core band – contract value | | | | | |
| - Total contracted electricity ($) | 100 | 100 | 100 | 100 | 100 |
| - Total contracted RECs ($) | 100 | 100 | 100 | 100 | 100 |
| - Total contracted energy ($) | 200 | 200 | 200 | 200 | 200 |
| **- Core band (5% of total contract) ($)** | **10.00** | **10.00** | **10.00** | **10.00** | **10.00** |
| 2017 core band – contract value | | | | | |
| - Surplus contracted electricity ($) | 99 | 99 | 99 | 99 | 99 |
| - Surplus contracted RECs ($) | 99 | 99 | 99 | 99 | 99 |
| - Surplus sold electricity ($) | 99 | 99 | 99 | 99 | 99 |
| - Surplus sold RECs ($) | 90 | 95 | 99 | 102 | 109 |
| - Total surplus sold energy ($) | 189 | 194 | 198 | 201 | 208 |
| **- Core band (5% of surplus sold) ($)** | **9.45** | **9.70** | **9.90** | **10.05** | **10.40** |

**Note:** Figures used in this example are for illustration only.

**Source:** IPART analysis.

### 2.6.2 Defining the sharing ratio's outside the core band

Consistent with the Terms of Reference, SDP retains 100% of gains and losses within the +or- 5% core band. Relative to this core band:

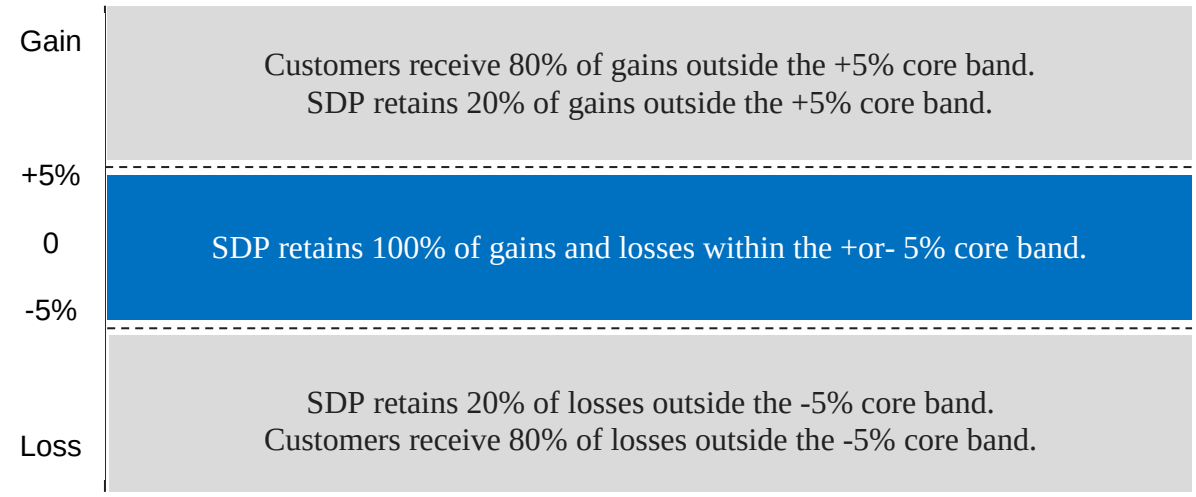
- SDP retains 20% of incremental gains and losses outside the +or- 5% core band.
- The remaining 80% of incremental gains and losses outside the +or- 5% core band are passed through to customers.

We note the exception to these sharing rules is that in 2016-17, SDP will retain 10% of any incremental gain or loss outside the +or- 5% core band and the EAM will pass through the

remaining 90% of any incremental gain or loss outside the +or- 5% core band to customers. This is because we expect to publish the final 2017 Methodology Paper at the close of 2016-17 and we are of the view that this change to SDP's incentives should apply prospectively (ie, from 2017-18) and not retrospectively (ie, it should not apply to 2016-17). All other aspects of the 2017 Methodology Paper will apply to 2016-17.

Figure 2.1 illustrates the key design elements of the EAM.

**Figure 2.1 EAM sharing of gains and losses on resale of surplus energy**




**Source:** IPART analysis.

## 2.7 We will review the prudence of SDP's energy trading policy and activity

At each review year when we apply the EAM, we intend to review the prudence of SDP's energy trading policy and its energy trading activity over the application period. Any evidence of imprudence may result in us excluding part of a trade, a trade, or multiple trades from the EAM.

## 2.8 We will calculate EAM allowances that include financing costs

EAM allowances are generated by calculating a five-year annual annuity over the adjustment period with a present value equal to the present value of the gains and losses to be passed on to customers under the EAM. Both present values are calculated as of the end of the review year. These calculations assume end of year cash flows and use the financing rates (ie, discount rates) outlined below.

The EAM includes financing costs to compensate SDP for the delay in passing on losses and/or to compensate customers for the delay in receiving gains through the EAM.

We intend to use the 3-year BBB Corporate Bond Rate series currently published by the RBA.[18] If this series is discontinued in the future, we will use a suitable alternative series. The RBA series is a monthly nominal series. If the RBA series is available, the EAM will use:

18 Reserve Bank of Australia, http://www.rba.gov.au/statistics/tables/#interest-rates, Aggregate Measures of Australian Corporate Bond Spreads and Yields – F3, accessed 22 February 2016.

- For the application period: 12-month simple averages for the relevant years of the application period.
- For the review year: simple average of available months for the review year.
- For the adjustment period: simple average of available months for the review year, converted to real using the RBA's latest inflation forecast and the Fisher equation.

Table 2.2 illustrates how EAM allowances are calculated.

**Table 2.2 How EAM allowances are generated**

| | 2017 determination period | | | | | 2022 determination period | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 16-17 | 17-18 | 18-19 | 19-20 | 20-21 | 21-22 | 22-23 | 23-24 | 24-25 | 25-26 | 26-27 |
| Application period ($nominal) | | | | | Review year | Adjustment period ($2021-22) | | | | |
| $CS | $CS | $CS | $CS | $CS | | $EAM | $EAM | $EAM | $EAM | $EAM |
| - | %n | %n | %n | %n | %n | %real | %real | %real | %real | %real |
| | | | | | Present value | | | | | |

**Note:** $CS is customers' share. $EAM is the annual annuity for the Energy Adjustment Mechanism (EAM). %n is the nominal interest rate. %real is the real interest rate.

**Source:** IPART analysis.

## 2.9 EAM process

The following points step through how we intend to apply the EAM at future price reviews:[19]

- Calculate hypothetical and actual gains and losses for electricity and RECs in each financial year of the application period.
- Sum the actual gains and losses for electricity and RECs into combined energy gains and losses for each year of the application period. This gives the total energy gain or loss in each year of the application period to potentially be shared between SDP and customers.
- Undertake a prudence review to ensure that any losses are not the result of imprudence in terms of SDP's energy management policy and/or its energy management activity.
- Calculate a core band for each year of the application period as +or- 5% of the combined value of surplus electricity and RECs (using the same volumes used to calculate the gains and losses above).
- Apply the +or- 5% core bands and sharing ratios to combined energy gains and losses for each year of the application period. This gives the allocation of gains and losses between SDP and customers for each year of the application period.
- Use the RBA corporate bond series (or a substitute series if the RBA series is discontinued) and the latest available RBA 1-year inflation forecast to generate:
  a) a nominal financing rate series using 12 monthly observations over the relevant years of the application period,
  b) a nominal interest rate using available months of data for the review year, and

19 We note that this process assumes all the qualifications set out in this paper have been met and therefore that gains and losses over the application period are subject to the EAM.

c) a real interest rate based on the nominal rate used for the review year, the RBA's most recent 1-year inflation forecast, and the Fisher equation, to be used over the adjustment period.

- Combing these rates into a series, calculate an annual annuity over the adjustment period (ie, five equal annual payments in constant real dollars) with a present value equal to the present value of customers' share of gains and losses on an annual basis over the application period.

## 2.10 Information requirements

We will collect information to implement the EAM at future price reviews. IPART will develop an appropriate framework to collect this information and include it in our written advice to SDP prior to future reviews.

We already have an annual reporting framework in place with SDP.[20] We will work with SDP over the 2017 determination period to ensure this reporting framework continues to meet our requirements.

20 Under the Water Industry Competition Act 2006 (NSW), licence holders are required to provide information requested by IPART.

# 3 Worked examples of the Energy Adjustment Mechanism

The following examples illustrate how we intend to implement the Energy Adjustment Mechanism (EAM) at future price reviews.[21]

## 3.1 Example 1 – gains and losses within the core band

Table 3.1 shows how the EAM allocates gains and losses when they are within the core band. Because the gains and losses are within the core band in each of the financial years, SDP retains 100% of the gains and losses. The EAM passes 0% of the gains and losses on to customers.

**Table 3.1 Gains and losses within the core band**

| | | 2017 determination period | | | | | 2022 determination period | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Financial year** | **16-17** | **17-18** | **18-19** | **19-20** | **20-21** | **21-22** | **22-23** | **23-24** | **24-25** | **25-26** | **26-27** |
| | Application period ($nominal) | | | | | Review year | Adjustment period ($2021-22) | | | | |
| Year of period | 1 | 2 | 3 | 4 | 5 | | 1 | 2 | 3 | 4 | 5 |
| Cost - surplus energy sold | | | | | | | | | | | |
| - Electricity | 100 | 100 | 100 | 100 | 100 | | | | | | |
| - RECs | 100 | 100 | 100 | 100 | 100 | | | | | | |
| - Total | 200 | 200 | 200 | 200 | 200 | | | | | | |
| Revenue - surplus energy sold | | | | | | | | | | | |
| - Electricity | 104 | 102 | 100 | 98 | 96 | | | | | | |
| - RECs | 104 | 102 | 100 | 98 | 96 | | | | | | |
| - Total | 208 | 204 | 200 | 196 | 192 | | | | | | |
| Gain or loss | | | | | | | | | | | |
| - Total gain (loss) | 8 | 4 | - | (4) | (8) | | | | | | |
| - EAM core band | 10 | 10 | 10 | (10) | (10) | | | | | | |
| EAM shares | | | | | | | | | | | |
| - SDP within band | 8 | 4 | - | (4) | (8) | | | | | | |
| - SDP outside band | - | - | - | - | - | | | | | | |
| - Customer share | - | - | - | - | - | | | | | | |
| - PV customer share | | | | | | 0 | | | | | |
| EAM | | | | | | | | | | | |
| - EAM allowance | | | | | | | - | - | - | - | - |
| - PV EAM allowance | | | | | | 0 | | | | | |

**Note:** The figures used in this example are for illustration only.

**Source:** IPART analysis.

21 The figures used in these examples are for illustration only.

## 3.2 Example 2 – gains and losses outside the core band

Table 3.2 shows how the EAM allocates gains and losses when they are outside the core band.

SDP retains 100% of the gain or loss up to the core band and 20% of the gain or loss outside the core band. The EAM adds financing costs to the Customer share (ie, 80% of gains and losses outside the core band) and passes this through to customers over the adjustment period.

In this example, the present value of the Customer share of gains and losses over the application period is ($10.2). This is equal to the present value of an annual annuity of ($2.2) over the adjustment period.

**Table 3.2 Gains and losses outside the core band**

| | | 2017 determination period | | | | | 2022 determination period | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Financial year** | **16-17** | **17-18** | **18-19** | **19-20** | **20-21** | **21-22** | **22-23** | **23-24** | **24-25** | **25-26** | **26-27** |
| | Application period ($nominal) | | | | | Review year | Adjustment period ($2021-22) | | | | |
| Year of period | 1 | 2 | 3 | 4 | 5 | | 1 | 2 | 3 | 4 | 5 |
| Cost - surplus energy sold | | | | | | | | | | | |
| - Electricity | 100 | 100 | 100 | 100 | 100 | | | | | | |
| - RECs | 100 | 100 | 100 | 100 | 100 | | | | | | |
| - Total | 200 | 200 | 200 | 200 | 200 | | | | | | |
| Revenue - surplus energy sold | | | | | | | | | | | |
| - Electricity | 80 | 90 | 100 | 110 | 120 | | | | | | |
| - RECs | 80 | 90 | 100 | 110 | 120 | | | | | | |
| - Total | 160 | 180 | 200 | 220 | 240 | | | | | | |
| Gain or loss | | | | | | | | | | | |
| - Total gain (loss) | (40) | (20) | - | 20 | 40 | | | | | | |
| - EAM core band | (10) | (10) | 10 | 10 | 10 | | | | | | |
| EAM shares | | | | | | | | | | | |
| - SDP within band | (10) | (10) | - | 10 | 10 | | | | | | |
| - SDP outside band | (3) [a] | (2) | - | 2 | 6 | | | | | | |
| - Customer share | (27) [a] | (8) | - | 8 | 24 | | | | | | |
| - PV customer share | → | | | | | (10.2) | | | | | |
| EAM | | | | | | | | | | | |
| - EAM allowance | | | | | | | (2.2) | (2.2) | (2.2) | (2.2) | (2.2) |
| - PV EAM allowance | | | | | | (10.2) | ← | | | | |

[a] Sharing outside the core band in 2016-17 is based on the 2012 EAM methodology of 10% SDP and 90% customers. Sharing outside the core band in all other years is based on the 2017 EAM methodology of 20% SDP and 80% customers.

**Note:** the figures used in this example are for illustration only and may not add due to rounding. This analysis assumes a nominal financing rate of 5% and an inflation forecast of 2.5%. The nominal interest rate of 5% is used over the application period and the forecast real interest rate (ie, (1.05 / 1.025) – 1) is used over the adjustment period.

**Source:** IPART analysis.

## 3.3 Example 3 – banking of RECs between years

This example illustrates the situation where RECs are banked between years. If SDP sells a relatively large portion of surplus energy in one year, the core band will increase to reflect this. For example, in year 1, SDP sells $190 of surplus energy (core band = $9.50) and in year 5 SDP sells $210 of surplus energy (core band = $10.50).

**Table 3.3 Banking of RECs between years**

| | | 2017 determination period | | | | | 2022 determination period | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Financial year** | **16-17** | **17-18** | **18-19** | **19-20** | **20-21** | **21-22** | **22-23** | **23-24** | **24-25** | **25-26** | **26-27** |
| | Application period ($nominal) | | | | | Review year | Adjustment period ($2021-22) | | | | |
| Year of period | 1 | 2 | 3 | 4 | 5 | | 1 | 2 | 3 | 4 | 5 |
| Cost - contracts | | | | | | | | | | | |
| - Electricity | 101 | 101 | 101 | 101 | 101 | | | | | | |
| - RECs | 101 | 101 | 101 | 101 | 101 | | | | | | |
| - Total | 202 | 202 | 202 | 202 | 202 | | | | | | |
| Cost - surplus energy | | | | | | | | | | | |
| - Electricity | 100 | 100 | 100 | 100 | 100 | | | | | | |
| - RECs | 100 | 100 | 100 | 100 | 100 | | | | | | |
| - Total | 200 | 200 | 200 | 200 | 200 | | | | | | |
| Cost - surplus energy sold | | | | | | | | | | | |
| - Electricity | 100 | 100 | 100 | 100 | 100 | | | | | | |
| - RECs | 90 | 95 | 100 | 105 | 110 | | | | | | |
| - Total | 190 | 195 | 200 | 205 | 210 | | | | | | |
| Revenue - surplus energy sold | | | | | | | | | | | |
| - Electricity | 80 | 90 | 100 | 110 | 120 | | | | | | |
| - RECs | 70 | 80 | 100 | 120 | 130 | | | | | | |
| - Total | 150 | 170 | 200 | 230 | 250 | | | | | | |
| Gain or loss | | | | | | | | | | | |
| - Total gain (loss) | (40) | (25) | - | 25 | 40 | | | | | | |
| - EAM core band | (9.5) | (9.8) | 10 | 10.3 | 10.5 | | | | | | |
| EAM shares | | | | | | | | | | | |
| - SDP within band | (9.5) | (9.8) | - | 10.3 | 10.5 | | | | | | |
| - SDP outside band | (3.1) [a] | (3.0) | - | 2.9 | 5.9 | | | | | | |
| - Customer share | (27.4) [a] | (12.2) | - | 11.8 | 23.9 | | | | | | |
| - PV customer share | → | | | | | (11.7) | | | | | |
| EAM | | | | | | | | | | | |
| - EAM allowance | | | | | | | (2.5) | (2.5) | (2.5) | (2.5) | (2.5) |
| - PV EAM allowance | | | | | | (11.7) | ← | | | | |

[a] Sharing outside the core band in 2016-17 is based on the 2012 EAM methodology of 10% SDP and 90% customers. Sharing outside the core band in all other years is based on the 2017 EAM methodology of 20% SDP and 80% customers.

**Note:** the figures used in this example are for illustration only and may not add due to rounding. This analysis assumes a nominal financing rate of 5% and an inflation forecast of 2.5%. The nominal interest rate of 5% is used over the application period and the forecast real interest rate (ie, (1.05 / 1.025) – 1) is used over the adjustment period.

**Source:** IPART analysis.

# 4 Efficiency Carryover Mechanism Methodology

## 4.1 Terms of Reference

The Terms of Reference state:[22]

> SDP should be allowed to carryover demonstrated efficiency savings, net of efficiency losses, in operating expenditure in providing the water supply services specified (in these Terms of Reference) for a period of 4 years following the year in which the efficiency saving was achieved.

## 4.2 Purpose of the Efficiency Carryover Mechanism

Our approach to regulating prices for monopoly services, which is referred to as our 'form of regulation', provides:

- incentives for the businesses we regulate to manage their costs prudently and efficiently, and
- incentives for the businesses we regulate to search for and deliver permanent cost savings that can benefit customers through lower prices.

Without an efficiency carryover mechanism (ECM), if the business makes a permanent efficiency saving in the first year of a five-year determination period, it is able to retain the saving for five years. However, if it makes a permanent efficiency saving in the fourth year of a five-year determination period, it is able to retain the saving for just two years. Therefore, businesses can have an incentive to delay permanent efficiency savings from the end of one determination period to the beginning of the next determination period. Although the saving is still made, its benefit to customers is delayed.

Our form of regulation includes an efficiency sharing mechanism to explicitly allow businesses to retain efficiency savings for a specified period in order to provide an incentive to achieve savings, on the condition that customers will benefit through lower prices in subsequent determination periods.

The ECM removes the incentive to delay efficiency savings, by allowing the business to retain a permanent savings for the same number of years regardless of when the saving is achieved within a determination period, while maintaining all other aspects of the form of regulation. One way to think of the ECM is that it takes the incentives for permanent efficiency savings that apply in the first year of the determination period, and applies these incentives consistently across the remaining years of the determination period. With an ECM in place:

- The business has an incentive to achieve efficiency savings as soon as they are identified.
- The business retains the efficiency saving for a fixed number of years, regardless of when during the determination period the efficiency saving is made.

22 SDP Terms of Reference, February 2012, page 2.

- In the case of savings that might otherwise be delayed until the next determination period, customers will benefit through lower prices sooner if the business responds to the incentive to achieve efficiency savings as soon as they are identified.

## 4.3 What costs are included in the ECM

The scope of the ECM is limited to operating costs (ie, capital expenditure is excluded, as it is beyond the scope of the Terms of Reference).

The ECM applies to operating costs across all modes of operation. Unlike other water utilities, SDP's costs, and thus its prices, vary depending on what operating mode it is in. As a result, we need to calculate its annual notional revenue requirement for each mode of operation.

There are some elements of SDP's operating costs, however, that are not relevant when it comes to setting regulated prices and are therefore excluded from the ECM. Specifically:

- SDP's actual energy prices are excluded from the ECM because we set prices based on benchmark energy prices that may be different to SDP's actual energy prices.
  - If SDP were to negotiate lower actual energy prices, this would not affect SDP's regulated prices because we would continue to set energy prices relative to a benchmark energy price (not SDP's actual price). Therefore, SDP's actual energy prices are excluded from the ECM.
  - We note that energy volumes are included in the ECM. If SDP is able to achieve efficiency savings that reduce its demand for energy, we will take this into account when setting prices and customers will benefit through lower prices in the future. Therefore, energy volumes are included in the ECM.
- Any operating costs that are outside the scope of SDP's regulated prices are excluded from the ECM. For example,
  - If SDP engaged in any unregulated activities, any costs associated with these activities would be excluded from the ECM.
  - In the absence of the EAM, any gains or losses from the sale of SDP's surplus energy contracts would be fully retained by SDP and would be outside the scope of SDP's regulated prices. Therefore, gains and losses on the sale of SDP's surplus energy are excluded from the ECM.

## 4.4 ECM timeframes

The ECM is structured around the following three periods:

- **Application period:** the five years immediately preceding the review year.[23] The ECM will apply to permanent net efficiency savings over the application period.
- **Review year:** the year the ECM is applied.

23 The application period starts in the final year of the previous determination period, because at the time actual expenditure and therefore efficiency savings were not known (ie, prices in that year were set based on forecasts).

- **Carryover period:** the first three years of the determination period immediately following the review year.[24] If an efficiency saving is made in year five of the application period, the ECM will allow the saving to carryover for the first three years of the next determination period (ie, allowing the saving to be retained for five years).

Table 4.1 illustrates these time periods for the next EAM application in 2022.

**Table 4.1 EAM application period, review year, and adjustment period**

| | 2017 determination period | | | | | 2022 determination period | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 16-17 | 17-18 | 18-19 | 19-20 | 20-21 | 21-22 | 22-23 | 23-24 | 24-25 | 25-26 | 26-27 |
| Application period | | | | | Review year | Carryover period | | | | |
| 1 | 2 | 3 | 4 | 5 | | 1 | 2 | 3 | | |

**Source:** IPART analysis.

The ECM applies to efficiency savings made in any of the five years immediately preceding the final year of the determination period (this five year period is called the application period). At the 2022 Determination, the ECM application period will be the five-year period 2016-17 to 2020-21 immediately preceding the review year (2021-22). This means that:

- The ECM application period is consistent with the EAM application period.
- The ECM will make use of actual expenditure data in every year (ie, there is no need to rely on forecasts for the review year).
- We can ensure savings are held by SDP for a maximum of five years, consistent with the Terms of Reference.

## 4.5 Identifying and carrying over efficiency savings

### 4.5.1 Definition of efficiency savings

The ECM applies to permanent net reductions in operating costs. If the identified cost reduction is the result of cost shifting or if the saving has been re-absorbed into the business with the effect of there being no surplus to share with customers, the identified cost reduction would not qualify as an efficiency saving for the ECM.

The ECM does not depend on what caused the net reduction in operating cost. What is important is that SDP identifies and commits to maintain the permanent reduction in operating costs. The purpose of the ECM is to allow SDP to retain permanent savings for a period of time before they are passed on to customers through lower prices. The ultimate test is whether an identified efficiency saving will lead to a permanent reduction in prices for customers.

24 The terms of reference requires us to apply a 5-year carryover period that includes the year in which the efficiency saving was achieved. Given the review year is the final year of a determination period, the last year that SDP can reveal an efficiency saving is in the penultimate year of a determination period. Therefore, the 5 year carryover period consists of the final two years of the current determination period *plus* the first three years of the next determination period.

### 4.5.2 Carrying over general and mode-specific efficiency savings

The Terms of Reference state that SDP should be allowed to carryover efficiency savings for four years following the year they are achieved (ie, five years total).

General efficiency savings occur every year regardless of what mode SDP is in. Therefore, the ECM allows these general efficiency savings to carryover for five years. Following this five year period, customers benefit each year into perpetuity from lower prices as a result of the permanent efficiency saving.

Mode-specific efficiency savings, on the other hand, occur only when SDP is in that specific mode. If SDP is in a specific mode for, on average, two years out of every five, it follows that an efficiency saving achieved in this mode will only generate benefits two years out of every five. Therefore, by definition, a $1 mode-specific saving is less valuable than a $1 general saving. To ensure mode-specific savings are not over-incentivised relative to general savings, the ECM allows mode-specific savings to be held for up to five years, while SDP is in that specific mode, over a consecutive five-year period beginning in the year the saving was first achieved.

### 4.5.3 Ensuring savings are held for a maximum of five years

We set prices for the next determination period during the last year of the current determination period before actual costs are known for this year.

Therefore, it is possible for SDP to make a permanent efficiency saving in the last year of a determination period and for us to not know about the saving when we set prices for the next determination period. The result is that SDP is able to retain this saving for a total of six years before we are able to pass it on to customers through lower prices.

The ECM needs to address this situation for two reasons:

- To be consistent with the Terms of Reference which stipulate SDP should be able to retain savings for four years following the year they are made.
- To remove the incentive for SDP to delay savings until the last year of a determination period. Removing the incentive for SDP to delay savings is the sole purpose of the ECM.

If a permanent efficiency saving is made in the first year of the ECM application period (ie, the last year of the previous determination period), SDP will retain the saving for six years. To correct for this, the ECM applies a negative carryover amount in the first year of the next determination period (ECM adjustment). The ECM adjustment is equal to the efficiency saving retained in the sixth year plus one year of financing costs. This effectively returns the sixth year of benefit retained by SDP in the last year of the current determination period to customers in the first year of the next determination period. Including financing costs is necessary to fully remove any incentive SDP might still have to delay savings until the last year of the determination period.

The financing cost assumption used by the ECM to return the sixth year of the efficiency saving from SDP to customers will be consistent with the financing cost assumption used by the EAM.

The ECM adjustment applies to both general and mode-specific efficiency savings. Because the ECM adjustment is about returning the sixth year of benefit retained by SDP to customers in the first year of the next determination period, the ECM adjustment will be applied to the base service charge, which applies regardless of the mode of operation.

## 4.6 ECM allowances

Table 4.2 summarises how ECM allowances will be applied to SDP's charges in future price reviews.

General efficiencies relate to operating costs recovered through SDP's base service charge.[25] Mode-specific efficiency savings relate to costs recovered through transition, incremental service, and water usage charges (ie, charges that only apply in those specific modes). However, note the ECM adjustment is made to the base service charge to ensure that savings held for more than five years can be returned to customers immediately, regardless of the mode of operation.

**Table 4.2 How ECM carryovers apply to SDP charges at the next price review**

| | Shutdown mode | Restart mode | Operation Mode |
|---|---|---|---|
| General efficiency carryovers | Applies to Base Service Charge (WSC) | Applies to Base Service Charge (WSC) | Applies to Base Service Charge (WSC) |
| Mode-specific efficiency carryovers | Not applicable | Applies to Transition Charge (TC) | Applies to Incremental Service Charge (ISC) and Water Usage Charge (WUC) |
| ECM adjustment | Applies to Base Service Charge (WSC) | Applies to Base Service Charge (WSC) | Applies to Base Service Charge (WSC) |

**Source:** IPART analysis.

## 4.7 ECM process

The following points step through the ECM calculation process:

- Identify whether SDP permanently reduced total in-scope operating costs below the regulatory allowance used by IPART in setting maximum prices? If so, quantify the size of the incremental efficiency saving ($X).
- Identify the financial year of the application period in which the saving was achieved (n)?
- Ensure SDP's retains the efficiency saving for five years and its expenditure allowance in subsequent determination periods is reduced by the amount of the incremental efficiency saving ($X).
- If an efficiency saving is achieved in year 2 of the application period (ie, the first year of the determination period), SDP will retain the saving for up to five years and, as intended, the ECM will have no effect.

25 Note that since we have capitalised membranes to be recovered through a separate membrane service charge, these costs are outside the scope of the ECM (which relates to operating costs only).

- If an efficiency saving is achieved in years 3 to 5 of the application period, apply a positive ECM allowance of $X per year for the first n-2 years of the next determination period. Ensure general ECM allowances are applied to the Water Security Charge and mode-specific ECM allowances are applied to the mode-specific charge they relate to.
- If the saving was achieved in year 1 of the application period and it is clear that without adjustment SDP will retain the savings in the sixth year after it was first achieved, apply a negative ECM adjustment of $X+$F (where $F represents financing costs) for the first year of the next determination period. ECM adjustments are applied to the base service charge.

## 4.8 Information requirements

We will need to collect additional information to implement the ECM at future price reviews. IPART will develop an appropriate framework to collect this information and include it in our written advice to SDP prior to future price reviews.

We already have an annual reporting framework in place with SDP. We will work with SDP over the 2017 determination period to ensure this reporting framework continues to meet our requirements.

# 5 Worked examples of the Efficiency Carryover Mechanism

The following examples illustrate how we intend to implement the ECM at future price reviews.[26]

## 5.1 Example 1 – General efficiency saving

The ECM allows permanent net efficiency savings to be retained for five years. The following example shows how the ECM allows a general efficiency saving achieved in the third year of determination period 2 to carryover for the first two years of determination period 3. This ensures general efficiency savings are retained by SDP for five years before being passed on to customers through lower prices.

**Table 5.1 General efficiency saving**

| | Determination period 1 | | | | | Determination period 2 | | | | | Determination period 3 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| | | | | | ECM Application Period | | | | | | | | | | |
| Allowance | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 90 | 90 | 90 | 90 | 90 |
| Actual | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Efficiency | - | - | - | - | - | - | - | 10 | - | - | - | - | - | - | - |
| ECM allowance | - | - | - | - | - | - | - | - | - | - | 10 | 10 | - | - | - |
| Net allowance | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 90 | 90 | 90 |
| SDP profit | - | - | - | - | - | - | - | 10 | 10 | 10 | 10 | 10 | - | - | - |

**Source:** IPART analysis.

## 5.2 Example 2 – Mode-specific efficiency saving

The ECM allows mode-specific efficiency savings to be retained for up to five years, while SDP is in that specific mode, over a five-consecutive year period, beginning when the efficiency saving is first achieved. The following example shows how the ECM allows a mode-specific saving to be held for up to five years, while SDP is in that specific mode, over a five-consecutive year period, beginning when the efficiency saving is first achieved. In this example, SDP remains in the specific mode for four out of the five years resulting in it retaining the efficiency saving for four years.

26 The figures used in these examples are for illustration only.

**Table 5.2 Mode-specific efficiency saving**

| | Determination period 1 | | | | | Determination period 2 | | | | | Determination period 3 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| | | | | | ECM Application Period | | | | | | | | | | |
| Mode | M1 | M1 | M1 | M1 | M1 | M1 | M1 | M2 | M2 | M2 | M2 | M1 | M1 | M1 | M1 |
| M1 allowance | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| M2 allowance | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 190 | 190 | 190 | 190 | 190 |
| Actual | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 190 | 190 | 190 | 190 | 100 | 100 | 100 | 100 |
| Efficiency | - | - | - | - | - | - | - | 10 | - | - | - | - | - | - | - |
| M1 ECM | - | - | - | - | - | - | - | - | - | - | 10 | - | - | - | - |
| M2 ECM | - | - | - | - | - | - | - | - | - | - | 10 | 10 | - | - | - |
| Net allowance | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 200 | 200 | 200 | 200 | 100 | 100 | 100 | 100 |
| SDP profit | - | - | - | - | - | - | - | 10 | 10 | 10 | 10 | - | - | - | - |

**Source:** IPART analysis.

## 5.3 Example 3 – Efficiency savings retained for a maximum of five years

The ECM now ensures that efficiency savings are held for a maximum of five year consistent with the Terms of Reference. If a permanent efficiency saving is achieved in the first year of the application period (ie, year 5 of determination period 1) and we are not aware of it when we set prices, SDP will retain this saving for six years. The ECM inflates the sixth year of the retained saving (ie, the $10 retained by SDP in year 5 of determination period 2) by financing costs (in this case assumed to be 5%) and passes this back to customers in year 1 of determination period 3.

**Table 5.3 Ensuring savings are held for a maximum of five years**

| Financing costs 5% | Determination period 1 | | | | | Determination period 2 | | | | | Determination period 3 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| | | | | | ECM Application Period | | | | | | | | | | |
| Allowance | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 90 | 90 | 90 | 90 | 90 |
| Actual | 100 | 100 | 100 | 100 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Efficiency | - | - | - | - | 10 | - | - | - | - | - | - | - | - | - | - |
| ECM allowance | - | - | - | - | - | - | - | - | - | - | (10.5) | - | - | - | - |
| Net allowance | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 79.5 | 90 | 90 | 90 | 90 |
| SDP profit | - | - | - | - | 10 | 10 | 10 | 10 | 10 | 10 | (10.5) | - | - | - | - |

**Source:** IPART analysis.

# Appendices

# A Questions for stakeholder feedback

We invite stakeholder feedback on any aspect of this draft 2017 Methodology Paper. To facilitate this round of consultation, we have identified specific questions that we seek stakeholder feedback on. We have grouped these questions into: common questions relating to both the EAM and ECM; questions relating specifically to the EAM; and questions relating specifically to the ECM.

### Questions common across EAM and ECM:

1 Are there any issues or questions that we have not addressed in the EAM and ECM methodologies presented in this paper?

2 Are there any aspects of the EAM and ECM that are unclear and require clarification in the final 2017 Methodology Paper?

3 Is our approach to financing costs appropriate? Are there alternative data series / approaches that we should consider using in our application of financing costs?

### Questions specific to the EAM:

4 Is the EAM design likely to provide SDP sufficient incentive to prudently and efficiently manage its surplus energy positions when its contracts are trading at more than +or- 5% in or out of the money?

5 Is our proposed approach for the calculation of gains and losses on the sale of surplus RECs appropriate? Are there alternative approaches that we should consider? Why would these alternatives be an improvement to the proposed approach?

6 Is our proposed approach for calculating the EAM threshold appropriate? Are there alternative approaches that we should consider? Why would these alternatives be an improvement to the proposed approach?

### Questions specific to the ECM:

7 Are there any other components of operating expenditure that should be excluded from the ECM?

8 Is our proposed approach for ensuring efficiency savings are held for a maximum of five years appropriate? Are there alternative approaches to achieve the intended outcome of providing appropriate incentives for both general and mode-specific savings? Why would these alternatives be an improvement to the proposed approach?

# B Review of 2012 Energy Adjustment Mechanism

This appendix outlines the how we have updated, improved, and clarified the design of the EAM. It discusses the issues we considered (and are still open to considering) in making these changes and responds to stakeholder views on these issues.

## B.1 Incentive to prudently manage surplus energy contracts

We have made a draft decision to:

1 Increase SDP's share of gains and losses outside the core band from 10% to 20%. This change would take effect from 2017-18. SDP's current share of gains and losses outside the core band of 10% still applies for 2016-17.

### B.1.1 The 2012 EAM aims to provide an incentive for prudent management of surplus energy

When SDP is not in full operation mode, it has surplus energy (electricity and RECs) contracts that it sells into the market. Depending on market prices at the time of each trade, SDP can incur gains and losses on the sale of these surplus energy contracts.

Without an EAM in place, these gains and losses would be retained by SDP in full. With an EAM in place, these gains and losses incurred during shutdown and restart are shared with customers. Because the gains and losses are shared with customers, it is important that SDP retains sufficient incentive to prudently and efficiently manage its surplus energy contracts.

The EAM set out in the 2012 Methodology Paper shares gains or losses on the sale of SDP's surplus energy on the following basis:[27]

- A materiality threshold is set based on 5% of the value of SDP's minimum energy contract cost (note this includes both energy used as well as surplus energy). This materiality threshold is used to create a core band of gains or losses of +or- 5% of the value of SDP's minimum energy contract cost.
- SDP retains 100% of gains or losses within the +or- 5% core band.
- SDP retains 10% of gains or losses outside the +or- 5% core band.
- The remaining 90% of gains and losses outside the +or- 5% core band are passed on to SDP's customers (in Sydney Water's area of operations) by the EAM.

The 2012 Methodology Paper also states that in the case of any manifest imprudence that may arise on the part of SDP, IPART may exclude the affected transactions (in whole or in part) from the EAM.[28]

27 IPART, *SDP Efficiency and Energy Adjustment Mechanisms, Methodology Paper*, April 2012, p 4.
28 IPART, *SDP Efficiency and Energy Adjustment Mechanisms, Methodology Paper*, April 2012, p 26.

### B.1.2 Stakeholder's disagree on whether SDP should forward sell electricity

In its pricing proposal, SDP said that it considers the 2012 specification of the EAM, as it applies during shutdown and restart modes, remains broadly appropriate. SDP's proposal was to retain the EAM as it applies to shutdown and restart modes as set out in the 2012 Methodology Paper.[29] SDP engaged Seed Advisory to undertake a review of SDP's Large Scale Generation Certificates (LGCs) and electricity trading.[30] Seed Advisory found that SDP's LGC and electricity trading activities:

- were broadly consistent with SDP's policy requirements
- were prudent and reasonable for a company not actively engaged in the energy market, and
- within this context, have achieved value for money.

In response to our Issues Paper, Sydney Water made the following observations in relation to SDP's management of its surplus energy:

- Sydney Water questioned SDP's view claiming that the risks and costs of actively managing resales of its excess electricity outweigh the potential benefits.[31]
- If SDP actively manages the resale of its electricity, it is clear that the benefits to customers significantly outweigh any risks or additional cost incurred by SDP.[32]
- IPART's 'manifest imprudence' measure is a particularly high test and it would be imprudent of SDP to not actively manage the resale of surplus electricity.[33]
- The EAM should incentivise active trading by calculating the pass through amount on the difference between the contract price and the average peak price for electricity contracts traded on the ASX each quarter.[34] The implication of this being:
  - that customers would receive the gains and losses associated with an active management style
  - if SDP remained passive it would retain the difference between a passive and active style, and
  - if SDP matched the active style it would not retain any of the gains or losses.

At the Public Hearing, there was further discussion around SDP's management of its surplus energy contracts. SDP responded to Sydney Water's proposal for SDP to actively manage the resale of its surplus electricity by arguing that it is not a merchant energy business and not equipped, nor financed, to take on these risky functions.[35] SDP also noted that one of the biggest barriers to trading electricity forward, even just one quarter ahead, is the risk that it might get called into action at relatively short notice, for example in response to a health issue, and if they had sold that quarter ahead, they would be "left high and dry for energy".[36]

29 SDP, Pricing Proposal to IPART, October 2016, p 47.
30 SDP, Pricing Proposal to IPART, October 2016, Appendix 5.5.
31 Sydney Water submission to IPART Issues Paper, November 2016, p vii.
32 Sydney Water submission to IPART Issues Paper, November 2016, p 44.
33 Sydney Water submission to IPART Issues Paper, November 2016, p 46.
34 Sydney Water submission to IPART Issues Paper, November 2016, p 46.
35 IPART, SDP public hearing transcript, 8 December 2016, p 13.
36 IPART, SDP public hearing transcript, 8 December 2016, pp 59-60.

Sydney Water maintained its view that its customers would likely be better off if SDP undertook a more active approach to the resale of its surplus energy under the EAM and that although it accepted there would be more risk and cost associated with active management, it said the relevant question was whether the benefits are likely to outweigh the associated costs.[37]

### B.1.3 Our energy consultant sees a role for some level of forward selling

As part of our determination of SPDs prices and review of the Methodology Paper, we engaged Marsden Jacob Associates (Marsden Jacob) to review SDP's energy costs. The public version of Marsden Jacob's report is available on our website.[38]

Marsden Jacob made the following observations in relation to SDP's energy trading policy:

- SDP's management of surplus RECs is sensible and prudent. However, SDP could improve its surplus electricity position by forward selling some portion of its contracted surplus one quarter ahead.[39]
- A 'less passive' strategy of forward selling electricity could be accomplished under the existing contractual arrangements with little, if any, increase in the risk of being short against contracted maximum capacity.[40] This is because high dam levels indicate a very low risk of drought in the next quarter. If drought breaks, SDP requires time to restart and it is unlikely it will reach full load within the next quarter. Last, the probability of being called on to respond to an emergency is extremely remote.[41]

The potential benefits of what Marsden Jacob term 'less passive position management' is estimated to be approximately $0.5 million to $1 million per annum on average when in shutdown, depending what proportion of SDP's surplus energy is forward sold.[42]

**Asymmetry of EAM outcomes**

Marsden Jacob formed a view that the 2012 EAM is likely to result in a disproportionate sharing of gains and losses between SDP and customers – with SDP retaining the majority of gains on the sale of SDP's surplus energy and customers receiving the majority of losses on the sale of SDP's surplus energy. This is because Marsden Jacob considers there is limited scope for market prices to exceed SDP's energy contract price while there is larger scope for market prices to be less than SDP's energy contract price.[43]

Marsden Jacob noted the reason for this is that SDP's surplus contracts, along with electricity and LGCs, also include other services (eg, retail margin and ancillary services) that SDP is not able to sell.[44] Because a portion of the value of SDP's surplus energy contracts cannot be sold in a secondary market, this will tend to limit the size of gains and amplify the size of losses on the sale of SDP's surplus energy contracts. Marsden Jacob also noted SDP's energy

37 IPART, SDP public hearing transcript, 8 December 2016, pp 58-59.
38 https://www.ipart.nsw.gov.au/Home/Industries/Water/Reviews/Metro-Pricing/Sydney-Desalination-Plant-prices-from-1-July-2017?qDh=2
39 Marsden Jacob, *Energy Review – SDP*, February 2017, pp 23-25.
40 Marsden Jacob, *Energy Review – SDP*, February 2017, p 2.
41 Marsden Jacob, *Energy Review – SDP*, February 2017, p 24.
42 Marsden Jacob, *Energy Review – SDP*, February 2017, p 2 and p 30.
43 Marsden Jacob, *Energy Review – SDP*, February 2017, p 61.
44 Marsden Jacob, *Energy Review – SDP*, February 2017, p 61.

contract prices are near new entry levels, which indicates the potential for losses on the sale of SDP's surplus energy is likely to exceed the potential for gains.[45]

**SDP's incentives under the EAM**

Marsden Jacob considered the 2012 EAM design shields SDP from the vast majority of the potential gains and also the vast majority of prudent losses. Marsden Jacob commented that the limited upside available would potentially act as a deterrent to any rational business to invest in less passive management of the surplus electricity (especially) and LGC sales.[46]

#### Recommended changes to the EAM sharing ratios to improve incentives

Marsden Jacob identified and analysed a number of alternative sharing arrangements to provide increased incentives for a less passive management of SDP's surplus energy. Some of the potential modifications that Marsden Jacob reviewed include:

- Modifying the core band to share some of the gains and losses within the threshold with customers.
- Increasing SDP's share of gains and losses outside the threshold.
- Introducing a different sharing profile for gains as opposed to losses.

The options identified by Marsden Jacob were as follows:

- **Option 1:** SDP retain 50% of the first $2 million gain or loss per year. SDP retain 15% of the incremental gain or loss in excess of $2 million.
- **Option 2:** SDP retain 50% of the first $3 million gain or loss per year. SDP retain 20% of the incremental gain or loss in excess of $3 million.
- **Option 3:** SDP retains 25% of the total gain or loss regardless of its size.

Marsden Jacob also express the view that if there are material changes made to the EAM, they should take effect from 1 July 2017, given that we are now half way through the 2016-17 financial year (ie, the 2012 EAM should apply to financial year 2016-17).[47]

### B.1.4 The EAM should provide a strong incentive for SDP to prudently manage its surplus energy

We agree with Marsden Jacob's view that the EAM should be amended to provide SDP a stronger incentive to prudently manage its surplus energy contracts (particularly its surplus electricity contracts). We have decided to:

- Maintain our approach of summing gains and losses on surplus electricity and RECs into a single gain or loss on surplus energy so that only net gains or losses on energy are shared with customers.
- Maintain a core band of +of- 5%. We have slightly modified this to be based off the value of surplus energy sold in a financial year (not the total value of contracted energy in a financial year). This will have two effects:

45 Marsden Jacob, *Energy Review – SDP*, February 2017, p 61.
46 Marsden Jacob, *Energy Review – SDP*, February 2017, pp 60-61.
47 Marsden Jacob, *Energy Review – SDP*, February 2017, p 63.

- the core band will narrow slightly because the value of surplus energy is slightly less than the value of total energy when SDP is in shutdown, and
- the core band will better match the contract value of surplus energy sold in each year. This will remove any potential incentive for SDP to time the sale of RECs in such a way as to retain a larger share of gains and smaller share of losses.[48]

- Maintain that SDP retain 100% of gains and losses within the core band. Our reasons for this are:
  - it is consistent with the Terms of Reference, and
  - it provides SDP the appropriate and efficient incentive to prudently manage surplus energy contracts when those contracts are trading in the market within 5% of their contract value.
- Increase SDP's share of gains and losses outside the core band from 10% to 20%. Our reasons for this are:
  - Marsden Jacob advise that a conservative approach to forward selling some of SDP's surplus electricity could be expected to generate gains of approximately $0.5 million per year on average. Marsden Jacob also advise this activity is likely to involve additional administrative costs of up to $75,000 a year.[49]
  - Under the 2012 EAM where SDP retains 10% of gains and losses outside the core band, SDP would retain $50,000 of the estimated gains of forward selling surplus energy (assuming its contracts are trading outside the core band). This is less than the estimated cost of $75,000 per year and explains why, under the 10% sharing arrangement, SDP may not have sufficient financial incentive to forward sell surplus electricity.
  - Under the proposed 2017 EAM where SDP retains 20% of gains and losses outside the core band, assuming its contracts are trading outside the core band, SDP would retain $100,000 of the estimated gains of forward selling its surplus energy. This is more than the estimated cost of $75,000 per year. By increasing SDP's share of gains or losses outside the core band from 10% to 20%, we are removing the potential disincentive to forward sell surplus energy.

We note that this change is symmetric in design in that SDP will bear a slightly larger share of both gains and losses outside the core band.

We agree with Marsden Jacob that this change in the share of gains and losses outside the threshold should take effect from 1 July 2017 (ie, the 10% SDP and 90% customer sharing ratio should apply in 2016-17). The reason for this is that by the time the Methodology Paper is finalised, 2016-17 will be almost over. In this case there is little value in applying the stronger incentive retrospectively.

48 For example, under the previous fixed core band, if two years' worth of deeply in the money RECs are sold in one financial year, SDP will be able to retain a larger share of the resulting gains than if these RECs were sold over two financial years (assuming the sale price is the same in both years).

49 Marsden Jacob, *Energy Review – SDP*, February 2017, p 2.

## B.2 Calculation of gains and losses for RECs

We have made a draft decision to:

2 Amend how gains and losses on RECs are calculated so that gains/losses are recognised in the year the RECs are sold (not accrued).

Our Issues Paper discussed how the ability to 'bank' RECs complicates the calculation of gains or losses because there is a delay between when RECs are accrued and when they are subsequently sold.[50]

Through the 2017 SDP price review it became apparent that the 2012 Methodology Paper was not clear about when to record realised gains and losses on RECs. That is, if a REC is accrued in one financial year and is then sold in the next financial year, should the EAM recognise the realised gain or loss in the first financial year (ie, the year it was accrued) or the second financial year (ie, the year it was sold)?

In our application of the 2012 Methodology Paper, we decided to recognise gains and losses in the year the REC was accrued (ie, not necessarily the year the gains or losses were realised). Our reasons for this include:

- This approach is consistent with the way the core band is calculated in the 2012 Methodology Paper (ie, 5% of the value of **total contracted** electricity and RECs).
- None of the RECs accrued over the application period were unsold by the time we applied the 2012 EAM as part of the 2017 SDP price review.

For the Draft 2017 Methodology Paper, we have decided to recognise gains and losses on the sale of RECs in the year they are realised (ie, not necessarily the year they were accrued). Our reasons for this are:

- Under the 2012 approach, there is a risk that some RECs accrued during the application period will be unsold and remain in SDP's bank in the review year when we apply the EAM. This would create a complicated situation to adjust for at the next price review (ie, we would have to effectively re-open the previous application period, recalculate allowances, and make corresponding adjustments to future EAM allowances to take account of these RECs).
- Recognising gains and losses before they are actually realised means that customers will be paying financing costs for eventual losses (and receiving financing costs for eventual gains) before these losses (and gains) have materialised. We consider it more appropriate that gains and losses are recognised in the year they are realised and that financing costs apply from this point in time.

## B.3 We are clarifying our approach to financing costs

We have made a draft decision to:

3 Clarify the method used to apply financing costs to EAM allowances.

50 IPART, *Review of water prices for Sydney Desalination Plant Pty Limited from 1 July 2017 – Issues Paper*, August 2016, p 68.

The 2012 Methodology Paper states that we will allow for the time value of money by applying an interest rate to increase the amounts eligible for pass-through at the end of each year. The interest rate we referred to was the average of the corporate bond yield (with 1 to 5 years to maturity; BBB bond credit rating) at the end of each quarter of the year as published by the Reserve Bank of Australia.[51]

In our Issues Paper, we noted that the RBA had discontinued this data series. As a substitute for the discontinued series, and to account for financing costs, we proposed to use either the RBA's:

- "non-financial corporate BBB-rated bonds – yield – 3 year target tenor", or
- "non-financial corporate BBB-rated bonds – yield – 5 year target tenor".[52]

We considered the 3-year series appeared to provide a better match for the original (discontinued) series, and provided an indicative average of the timeframe over which holding costs need to be calculated.[53]

SDP stated that, conceptually, what is required is an interest rate that matches the time between the incurrence of the cost and the end of the determination period.[54] Thus, a different rate would be applied, depending on when the cost was incurred. Nonetheless, SDP expressed support for our proposal that the 3-year series should be adopted as the financing rate for calculating cost pass-through amounts under the EAM, given the:[55]

- relatively small time periods involved over a determination lend itself practically to using a single rate for all costs (and benefits), and
- 3-year rate would best match the average time period – assuming that the relevant costs are incurred uniformly throughout the determination period.

We have decided to maintain the application of financing costs. However, financing costs will now apply from the year a gain or loss is realised (not necessarily the year in which RECs are accrued).

We have also decided to refer to the RBA's series "non-financial corporate BBB-rated bonds – yield – 3 year target tenor" as the reference rate. This aligns with SDP's view and our preference in the Issues Paper. If this series is discontinued before a future application of the EAM, we will identify a similar substitute series as the reference rate.

51 IPART, *Sydney Desalination Plant – Efficiency and Energy Adjustment Mechanisms - Methodology Paper*, April 2012, p 25,

52 Reserve Bank of Australia, http://www.rba.gov.au/statistics/tables/#interest-rates, Aggregate Measures of Australian Corporate Bond Spreads and Yields – F3, accessed 22 February 2016.

53 IPART, *Review of water prices for Sydney Desalination Plant Pty Limited from 1 July 2017 – Issues Paper*, August 2016, p 69.

54 SDP pricing proposal to IPART, October 2016, p 48.

55 SDP pricing proposal to IPART, October 2016, p 48.

## B.4 We will review the prudence of SDP's energy trading policy and activity

We have made a draft decision to:

4 Modify our prudence test of SDP's energy trading policy and activity from a test of "no manifest imprudence" to a test of "the prudence of SDP's energy trading policy and activity".

We agree with Sydney Water's submission that the 2012 Methodology Paper test of "no manifest imprudence" sets a standard that does not provide adequate incentives.[56]

Going forward, the approach that we would take in assessing the prudence of SDP's energy would be similar to that in assessing the prudence of capital expenditure. In this case, we would engage consultants to review:

- the prudence of SDP's energy policy, and
- the prudence of how this policy was executed (ie, the sale of surplus energy), given information available at the time.

## B.5 We have decided not to extend the EAM to partial production

We have made a draft decision to:

5 Not extend the EAM to partial production. This is consistent with the Terms of Reference.

In our Issues Paper, we noted that there may be a need to consider how the EAM interacts with SDP's incentives to operate given the 2012 EAM applies only in shutdown and restart modes. In particular, we noted that if the EAM does not apply when the plant is producing desalinated water outside the 70/80 rule, SDP may at times have an incentive to remain in shutdown mode.[57]

SDP noted that this is the most significant issue with the EAM and proposed that we extend the EAM to partial modes of production so that it does not face the potential perverse incentive of remaining in shutdown (ie, to continue to enjoy the benefits of the EAM), rather than entering partial production (ie, giving up the benefits of the EAM when it moves into production mode).[58]

Under the Terms of Reference, the scope of EAM does not extend to a plant production mode. Therefore, our draft decision not to extend the EAM to partial production is by reference to the Terms of Reference.

56 Sydney Water, Response to IPART Issues Paper, November 2016, p 46.
57 IPART, *Review of water prices for Sydney Desalination Plant Pty Limited from 1 July 2017 – Issues Paper*, August 2016, p 72.
58 SDP pricing proposal to IPART, October 2016, pp 48-49.

# C Review of 2012 Efficiency Carryover Mechanism

This appendix outlines how we have updated, improved, and clarified the design of the Efficiency Carryover Mechanism (ECM). It discusses the issues we considered in making these changes (and are still open to considering) and responds to stakeholder views on these issues.

## C.1 The ECM should continue to focus on efficiency savings

We have made a draft decision to:

6 Maintain the current approach of including efficiency savings, net of efficiency losses, for four years following the year they are achieved (ie, five years total).

In its pricing proposal, SDP proposed that we allow both over and underspends (both temporary and permanent) to carryover and be shared with customers.[59]

We do not support SDP's proposal for the following reasons:

- We consider the proposal is inconsistent with our understanding of the Terms of Reference, which requires efficiency savings, net of efficiency losses, to be carried over by SDP for a period of time before being passed on to customers. We do not accept that this includes negative efficiency savings (ie, efficiency losses).
- There is a risk under a symmetric carryover mechanism that the role of the expenditure review is weakened and that inefficient costs are shared with customers. This risk was highlighted in Sydney Water's response to our Issues Paper where it said "Sydney Water agrees that efficiency losses should never be passed through to customers".[60]

## C.2 Treatment of mode-specific savings

We have made a draft decision to:

7 Maintain the current treatment of mode specific efficiency savings (ie, held for up to five years, within a consecutive five year period, while SDP is in that specific mode).

SDP has proposed that we amend the efficiency mechanism to allow mode specific savings to be held for five years, while SDP is in that specific mode, whether or not these five years are consecutive.[61] SDP considers that its proposal:

- would acknowledge that it does not know *ex ante* (ie, before the fact), and cannot control, the duration of a mode

59 SDP pricing proposal to IPART, October 2016, p 33.
60 Sydney Water submission to IPART Issues Paper, November 2016, p 7 and 49.
61 SDP pricing proposal to IPART, October 2016, p 33.

- would help to narrow the range of sharing ratios which apply in practice, which would strengthen the incentive properties of the mechanism, [62] and
- would be more consistent with the intent of the Terms of Reference.

At the Public Hearing, SDP said that it supports the continuation of the ECM as it represents something very close to best practice regulation. SDP said that the ECM is complicated by its mode-dependent pricing structure and, as a result, the incentives under the 2012 ECM are weaker than perhaps IPART had initially intended. SDP reiterated its proposal that it be allowed to hold over mode-specific savings until it re-enters that specific mode so that it can retain the saving for the full five years.[63]

In response to our Issues Paper and SDP's proposal, Sydney Water noted that SDP's proposed approach is not unreasonable in theory, however in practice it could result in holding periods spanning over decades which could reduce SDP's incentive to look for efficiency savings and would potentially bind future Tribunals.[64] To overcome these issues, Sydney Water proposed a more generous amendment to the ECM that would allow mode specific savings to be retained for five consecutive years even if SDP is not in that specific mode.[65]

### C.2.1 SDP should retain mode-specific savings for up to five years, while in that mode, within a five-year period

We have decided to retain the 2012 Methodology Paper approach of allowing mode specific savings to be retained by SDP for up to five years, while SDP is in that mode, during a consecutive five year window. Our reasons for this are:

- It is consistent with the Terms of Reference.
- It means that savings are not carried over for an indefinite period until SDP re-enters a specific mode.
- It means the relative incentive strength for general as opposed to mode-specific savings is proportional to the relative value of general as opposed to mode-specific savings.
  - It therefore does not over-incentivise mode-specific savings relative to general savings (compared to SDP and Sydney Water's proposals).
  - This is important given that in the long term, there appears to be greater scope for general efficiency savings than for mode-specific savings.
  - Our approach should encourage SDP to efficiently allocate resources between the search for mode-specific efficiency savings and the search for general efficiency savings.

The following sections step through the analysis supporting these findings.

62 That is, unlike the 2012 approach where SDP is able to retain mode-specific savings for somewhere between one and five years depending on how long it remains in that specific mode, under SDP's proposal, it would be guaranteed to retain the mode-specific saving for five years whether or not they are consecutive.
63 IPART, SDP public hearing transcript, 8 December 2016, p 66.
64 Sydney Water submission to IPART Issues Paper, November 2016, p 32.
65 Sydney Water submission to IPART Issues Paper, November 2016, p 32.

### C.2.2 SDP's proposal could result in savings being carried forward for an indefinite period until SDP re-enters the relevant mode

As an extreme example, consider the case of mode specific efficiency savings related to transition to plant operation mode. If these efficiency savings were retained for five non-consecutive years (ie, transitions to restart), it could be a very long time before customers see any benefit from these savings. In addition, this approach could be seen to bind a future Tribunal (or Tribunals) to a greater extent than the approach taken by the 2012 ECM, which is contained to two determination periods.

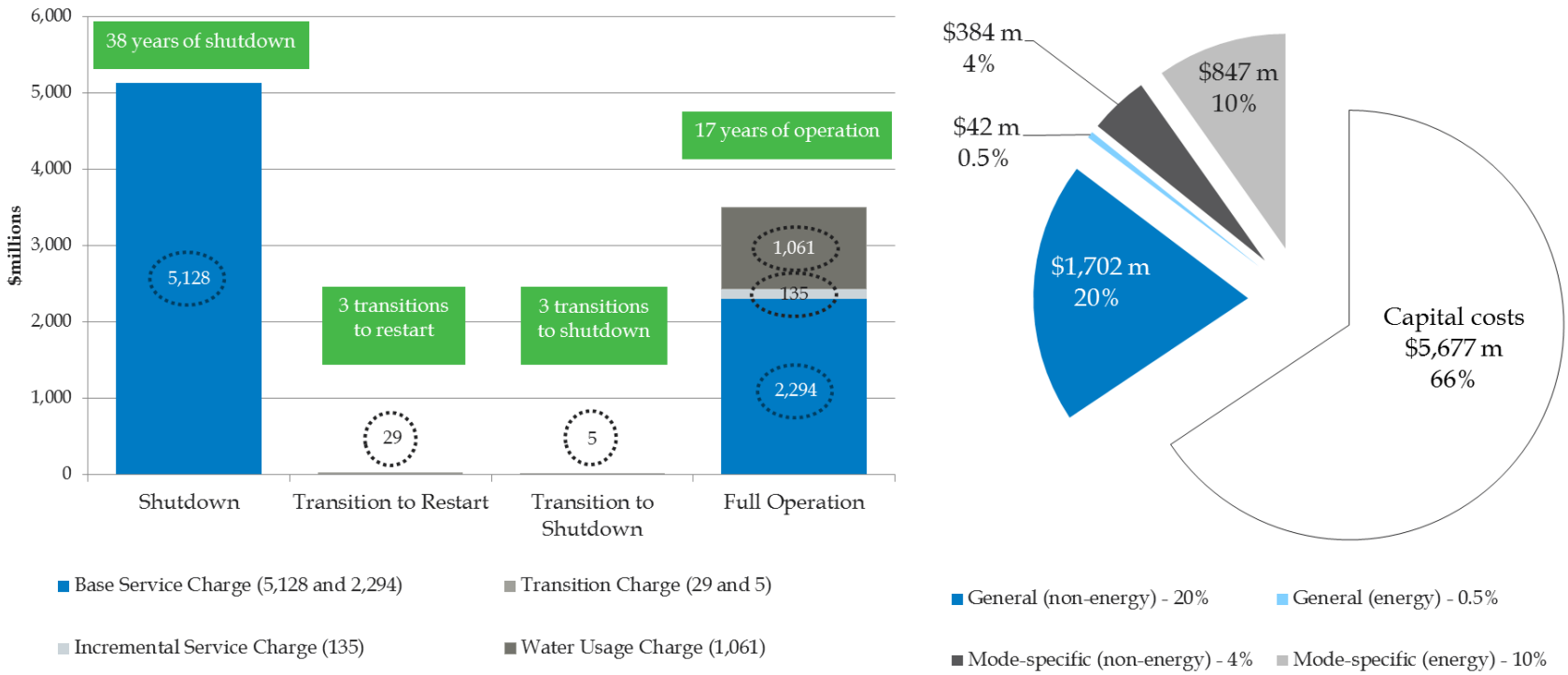
### C.2.3 There is greater scope for general savings than mode-specific savings

It is important to note that over the long term, there appears to be greater scope for general savings than there is for mode-specific savings. This is illustrated in Figure C.1. The key findings illustrated in Figure C.1 are that over the long run:

- the scope for general efficiency savings covers 20% of SDP's costs, and
- the scope for mode-specific efficiency savings covers from 4% to 14% of SDP's costs.

These findings demonstrate why it is important that we do not over-incentivise mode-specific savings relative to general savings.

**Figure C.1 Estimating components of SDP's total costs over the long term based on IPART charges for 2017-18**




**Note:** This analysis excludes capital costs relating to pipeline, membranes, additional pump, and skid test unit.

**Data source:** IPART analysis using IPART charges for 2017-18. Dam level analysis is based on Figure 2.4 from SDP pricing proposal to IPART, October 2016, p 9.

- Applying the 70/80 rule to the last 55 years of dam level data (ie, since coming out of drought in 1962) shows that there were three droughts over this period. SDP would have been in shutdown for 38 years (69% of the time), it would have transitioned to restart/shutdown three times each, and it would have been in operation for 17 years (31% of the time).
- Over the long term, general operating costs make up 20% of SDPs total costs while mode-specific operating costs make up 14% of SDP's total costs. Of this 14%, 10% relates to energy costs. We note that energy prices are excluded from the ECM.

### C.2.4 General savings are more valuable than mode-specific savings

General savings (which occur all the time) are more valuable than mode-specific savings (which occur only some of the time).

Mode-specific savings only occur when SDP is in that specific mode. Most of the mode-specific costs are associated with operation mode. Operation mode is only expected to occur about 30% of the time (ie, roughly 17 years out of the last 55).[66]

Therefore, as a general rule of thumb, a $1 mode-specific saving achieved in operation mode (which occurs around 30% of the time) is only worth about 30% of the value of a $1 general saving (which occurs 100% of the time).

### C.2.5 The 2012 ECM provides an incentive strength that is proportionate to the value of the efficiency saving

For general savings, assuming a 5% discount rate, the 2012 ECM allows SDP to retain 22% of the general saving (years 1 to 5) and customers receive the remaining 78% of the general saving through lower prices (years 6 into perpetuity).

For mode-specific savings, assuming a 5% discount rate, the 2012 ECM allows SDP to retain between 16% and 46% of the mode specific saving:

- If SDP retains the mode-specific saving for 1 year, it will retain 16% of the saving.
- If SDP retains the mode-specific saving for 5 years, it will retain 46% of the saving.

Under the 2012 ECM, SDP will expect to retain somewhere between 16% and 46% of mode-specific savings. Given the uncertainty involved relating to how long SDP will remain in a specific mode after it has achieved an efficiency saving, it is reasonable to expect on average that SDP would retain a share of mode-specific savings that is close to the share of general savings it retains (ie, 22%).

### C.2.6 SDP's proposed approach would over incentivise mode-specific savings relative to general savings

SDP's proposal would guarantee it retains mode-specific savings for five years whether or not these years are consecutive. For example, assuming SDP is in operation for the first year and a half of every five year determination period (ie, 30% of the time), then under SDP's proposal:

- SDP would retain 22% of general savings and 55% of mode-specific savings.
- Customers would not receive any of this benefit until 16 years after the mode-specific saving is achieved.

Assuming the same hypothetical situation outlined above, Sydney Water's proposal would guarantee SDP retain mode-specific savings for five years whether or not it remains in that

66 SDP pricing proposal to IPART, October 2016, p 9 (based on Figure 2.4).

specific mode. Under Sydney Water's proposal, SDP would retain 22% of general savings and 59% of mode-specific savings.

### C.2.7 It is important that we do not over-incentives mode-specific efficiency saving at the expense of general efficiency savings

If mode-specific savings are over-incentivised relative to general savings (as is the case under SDP and Sydney Water's proposals), and if there is a budget constraint (whether this is a funding constraint, management time constraint, consulting budget constraint, etc), so that not every potential efficiency saving can be pursued, SDP could have an incentive to over-invest in mode specific savings relative to general savings. Ultimately, over-incentivising mode-specific savings relative to general savings could result in welfare losses for SDP's customers.

## C.3 Adopting aspects of the ECM we applied to other IPART regulated water businesses

We have made a draft decision to:

8 Adopt aspects of the ECM we applied to other IPART regulated water businesses, including:

- Removing the requirement that in order to be carried over, efficiency savings must be the result of a 'management initiative'.
- Shifting the ECM application period to use the five most recent years of actual data.
- Adding a claw-back to ensure savings are held by SDP for a maximum of five years.

In our Issues Paper, we asked whether we should move to adopt the ECM that we developed during our 2015-16 water pricing reviews (ie, Sydney Water, Hunter Water and WaterNSW).[67] Our Final Report for the 2016 Sydney Water provides a detailed overview and analysis of the ECM we developed during our 2015-16 water pricing reviews.[68]

### C.3.1 We have modified the definition of 'efficiency saving'

The 2012 Methodology Paper includes a requirement that efficiency savings must be the result of 'management initiative'. This requirement is subjective and unlikely to have much benefit in practice.

Consistent with the ECMs put in place for the other water utilities we regulate, SDP's ECM should include any permanent cost reductions that SDP commits to. We consider the real benefit of the ECM is to challenge the business to identify cost savings (regardless of their source) and commit to making these savings permanent for the long term benefit of customers. That is, under our draft 2017 methodology, the business would apply for a carryover if it is confident that the efficiency saving is in fact permanent. The business

67 IPART, *Review of water prices for Sydney Desalination Plant Pty Limited from 1 July 2017 – Issues Paper*, August 2016, p 76.

68 IPART, *Review of prices for Sydney Water Corporation from 1 July 2016 to June 2020 – Final Report*, June 2016, Chapter 3.

would not need to demonstrate whether the efficiency savings it is as a result of management initiative.

### C.3.2 We have lagged the application period by one year

Currently, the 2012 ECM applies to each five year determination period. However, when the methodology is applied at a price review, we do not have actual data for the last year of the determination period. Under the 2012 ECM methodology, estimates for the final year of the determination period are therefore required.[69]

Again, to be consistent with the ECMs put in place for the other water utilities we regulate, we have decided to lag the 2017 ECM application period by one year. In SDP's case it would apply to the last five years of actual data (ie, the last year of the previous determination period and the first four years of the current determination period).

This means at the next price review, the ECM would apply to the last year of the 2012 determination (2016-17). In principle, new incentives should not be applied retrospectively. However, in this instance we consider there is a strong case to include 2016-17 in the ECM to ensure SDP retains efficiency savings for a maximum of five years consistent with the Terms of Reference (discussed in the next section).

For clarity, we are lagging the application period by one year. We are not proposing to change the number of years that savings can be retained by SDP as specified by the Terms of Reference (this is still 5 years).

### C.3.3 We have added a clawback feature to ensure savings are retained by SDP for a maximum of five years

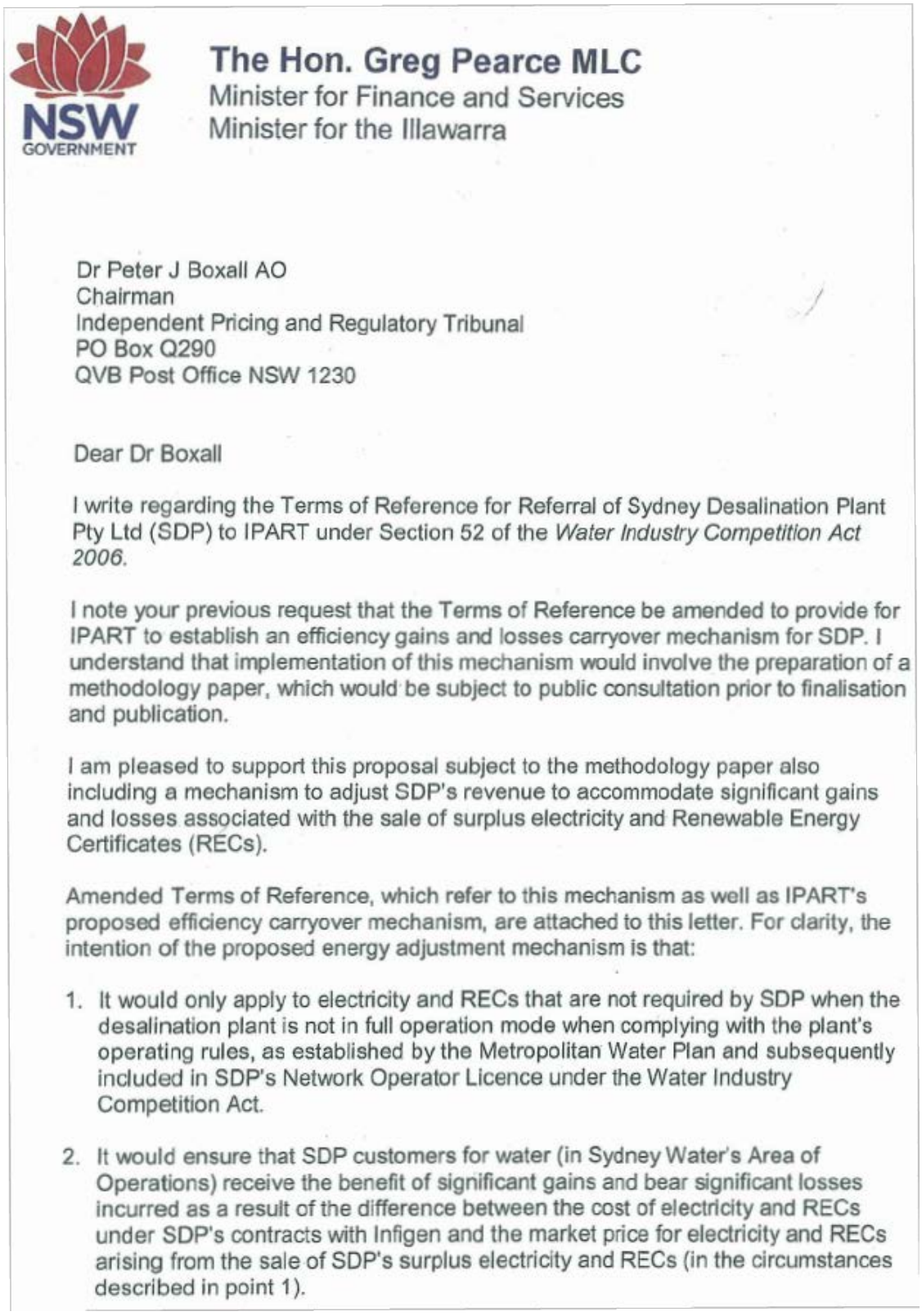
The 2012 ECM methodology effectively allows for efficiency savings to be held for up to six years. That is, if SDP makes an efficiency saving in the last year of the current determination period (2016-17) and we set prices for the 2017 determination period without this information, SDP could retain the saving for six years (ie, 2016-17 plus the full five years of the 2017 determination period).

We are correcting for this by adding a clawback feature to the 2017 ECM. In the example above, the 6th year of benefit retained by SDP in the last year of the 2017 determination period would be inflated by the time value of money (consistent with our application of financing costs under EAM) and returned to customers (through the base service charge) in the first year of the 2022 determination period.

This feature is consistent with the clawback feature we included in the ECM established for the other water utilities we regulate.

69 IPART, *Sydney Desalination Plant – Efficiency and Energy Adjustment Mechanisms - Methodology Paper*, April 2012, p 27.

# D Terms of Reference



**The Hon. Greg Pearce MLC**
Minister for Finance and Services
Minister for the Illawarra

Dr Peter J Boxall AO
Chairman
Independent Pricing and Regulatory Tribunal
PO Box Q290
QVB Post Office NSW 1230

Dear Dr Boxall

I write regarding the Terms of Reference for Referral of Sydney Desalination Plant Pty Ltd (SDP) to IPART under Section 52 of the *Water Industry Competition Act 2006*.

I note your previous request that the Terms of Reference be amended to provide for IPART to establish an efficiency gains and losses carryover mechanism for SDP. I understand that implementation of this mechanism would involve the preparation of a methodology paper, which would be subject to public consultation prior to finalisation and publication.

I am pleased to support this proposal subject to the methodology paper also including a mechanism to adjust SDP's revenue to accommodate significant gains and losses associated with the sale of surplus electricity and Renewable Energy Certificates (RECs).

Amended Terms of Reference, which refer to this mechanism as well as IPART's proposed efficiency carryover mechanism, are attached to this letter. For clarity, the intention of the proposed energy adjustment mechanism is that:

1. It would only apply to electricity and RECs that are not required by SDP when the desalination plant is not in full operation mode when complying with the plant's operating rules, as established by the Metropolitan Water Plan and subsequently included in SDP's Network Operator Licence under the Water Industry Competition Act.

2. It would ensure that SDP customers for water (in Sydney Water's Area of Operations) receive the benefit of significant gains and bear significant losses incurred as a result of the difference between the cost of electricity and RECs under SDP's contracts with Infigen and the market price for electricity and RECs arising from the sale of SDP's surplus electricity and RECs (in the circumstances described in point 1).

3. For electricity, the mechanism would mirror the 'Calculation of Shortfall Adjustment' in SDP's Electricity Supply Agreement with Infigen, with the 'market price' defined as the half-hourly spot price and/or the price of a contracted 'available block'.

4. For RECs, the 'market price' would be the price shown in the Nextgen Greenroom Report, or another equivalent report.

I understand that IPART's intention is to publish its draft methodology paper in the near future, with the final paper due to be published by May 2012.

Yours sincerely

**Greg Pearce MLC**
**Minister for Finance and Services**
**Minister for the Illawarra**

16 Febry 2012

**Terms of Reference for Referral of Sydney Desalination Plant Pty Limited to IPART under Section**

**52 of the Water Industry Competition Act**

## Background

On 29 June 2010 Sydney Desalination Plant Pty Limited (SDP) was granted a network operator licence in relation to the *desalination plant*. The Minister for Finance and Services has, under section 51 of the Water Industry Competition Act 2006, declared that SDP is a monopoly supplier in relation to the *water supply services* it provides under its network operator licence.

SDP is the only supplier of non-rainfall dependant drinking water in New South Wales. Currently, the primary purchaser of drinking water supplied from the desalination plant is Sydney Water Corporation. Sydney Water Corporation purchases bulk water from two main sources, the Sydney Catchment Authority and, since its commissioning, the *desalination plant*.

The *desalination plant* is a key element in Sydney's water security plan. Under its network operator licence, the *desalination plant* is required to maximise water production when dam storage levels in Sydney are below a prescribed threshold. Prices set by the Independent Pricing and Regulatory Tribunal (IPART) should therefore reflect the water supply services provided by SDP set out below:

(a) the supply of non-rainfall dependant drinking water to purchasers; and

(b) the making available of the *desalination plant* to supply non-rainfall dependant drinking water.

## Matters for consideration - pricing principles

Unless indicated otherwise each *price determination* is to be consistent with the following pricing principles:

1. Maximum prices should be set so that expected revenue generated will recover the efficient costs of providing the services described at (a) and (b) above over the life of the assets. Costs include operating costs, a return on the assets and return of assets (depreciation).

2. In calculating the return on invested assets:

   i. The rate of return (or Weighted Average Cost of Capital) should reflect the commercial risks faced by the asset owner in providing the services.

   ii. IPART should determine an appropriate opening asset value.

3. Return of assets (depreciation) is to reflect the economic lives of the assets.

4. The structure of prices should encourage SDP to be financially indifferent as to whether or not it supplies water. As such the structure of prices should comprise separate charges for the different water supply services described at (a) and (b) above.

5. The amount of any adjustments under the mechanisms in principle 8 should each be separately quantified and published by IPART.

6. The charges for water supply services in (b) above should be a periodic payment and should reflect fixed costs including, return on assets, return of assets, and the fixed component of operating costs. SDP is to be entitled to charge for providing the water supply services in (b) above irrespective of levels of water in dam storages servicing Sydney or availability of water from other sources.

7. The charges for water supply services in (a) above should reflect all efficient costs that vary with output, including variable energy, labour costs, and maintenance costs.

8. For each *price determination* other than the first price determination:

   i. SDP should be allowed to carryover demonstrated efficiency savings, net of efficiency losses, in operating expenditure in providing the water supply services specified at (a) and (b) above for a period of 4 years following the year in which the efficiency saving was achieved.

   ii. In calculating the notional revenue requirement, IPART should determine the demonstrated efficiency savings and treatment of energy gains or losses in accordance with the Methodology Paper; and

   iii. A mechanism(s) is required to allocate the costs or benefits to SDP customers (in Sydney Waters area of operation) of actual gains or losses beyond a core band that result from the difference between SDP's costs of electricity and RECs under its contracts with Infigen and revenues from the sale of surplus electricity and RECs. The mechanism would only operate at times when:

   - the desalination is in Shutdown or in a Restart Period; and
   - SDP complied with its requirements to maintain and operate the desalination plant under clause A2 of its network operator licence.

9. Any other matters that IPART may consider relevant

**Methodology Paper**

IPART must publish on its website a methodology paper setting out its approach to implementing pricing principle 8 above **(Methodology Paper)** IPART may update the Methodology Paper from time to time.

**Timing**

The determination period is to cover the period to 30 June 2017.

For each successive price determination period, IPART is to make the price determination before the expiry of the current determination period.

# Glossary

| | |
|---|---|
| 2012 determination period | The period 1 July 2012 to 30 June 2017 |
| 2012 ECM | The Efficiency Adjustment Mechanism outlined in the 2012 Methodology Paper |
| 2012 EAM | The Energy Adjustment Mechanism outlined in the 2012 Methodology Paper |
| 2012 Methodology Paper | The Methodology Paper published in April 2012 |
| 2017 determination period | The period 1 July 2017 to 30 June 2022 |
| 2017 ECM | The Efficiency Carryover Mechanism outlined in the 2017 Methodology Paper |
| 2017 EAM | The Energy Adjustment Mechanism outlined in the 2017 Methodology Paper |
| 2017 Methodology Paper | The Methodology Paper to be finalised and published on our website in 2017 |
| Adjustment period | The determination period immediately following the review year |
| AEMO | Australian Energy Market Operator |
| Application period | The five year period immediately preceding the review year |
| Carryover period | The first three years of the determination period immediately following the review year |
| Determination period | The period over which IPART sets maximum prices |
| General saving | Efficiency savings that apply in all modes of operation |
| Hunter Water | Hunter Water Corporation |
| Infigen | Infigen Energy Limited |
| LGC | Large scale generation certificates |
| LRMC | Long run marginal cost |
| Mode-specific saving | Efficiency savings that only apply in a specific mode of operation |
| Review year | The year in which IPART reviews and sets prices for the next determination period |
| RBA | The Reserve Bank of Australia |

| | |
|---|---|
| REC | Renewable energy certificate |
| SDP | Sydney Desalination Plant Pty Ltd |
| Sydney Water | Sydney Water Corporation |
| WIC Act | Water Industry Competition Act |