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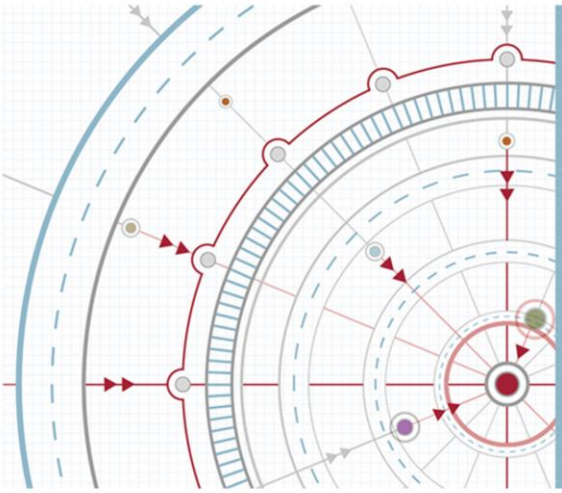

IASB Meeting—July 2018

Rate-regulated Activities: Measurement

Important Note:

The notes to these slides form an integral part of the presentation. Please print in colour.

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Project	**Rate-regulated Activities**		
Paper topic	Measurement		
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Objectives of the session

1. To continue to discuss aspects of the measurement of regulatory assets, including how to:
   a) estimate future cash flows;
   b) establish the discount rate to be used at initial recognition and subsequently; and
   c) account for changes in estimates of future cash flows.
2. To discuss how to measure regulatory liabilities.

In these slides there are aspects of the measurement for which we are planning to develop disclosure requirements to help users understand their impact in the financial statements. Although we have not developed those requirements yet, we have highlighted these instances with the following heptagon 

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Appendix 1 includes a summary of possible disclosure items arising from measurement issues identified to date.

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The staff recommendations for the Board and questions are on **slides 15, 29-30, 36, 40 and 46**.

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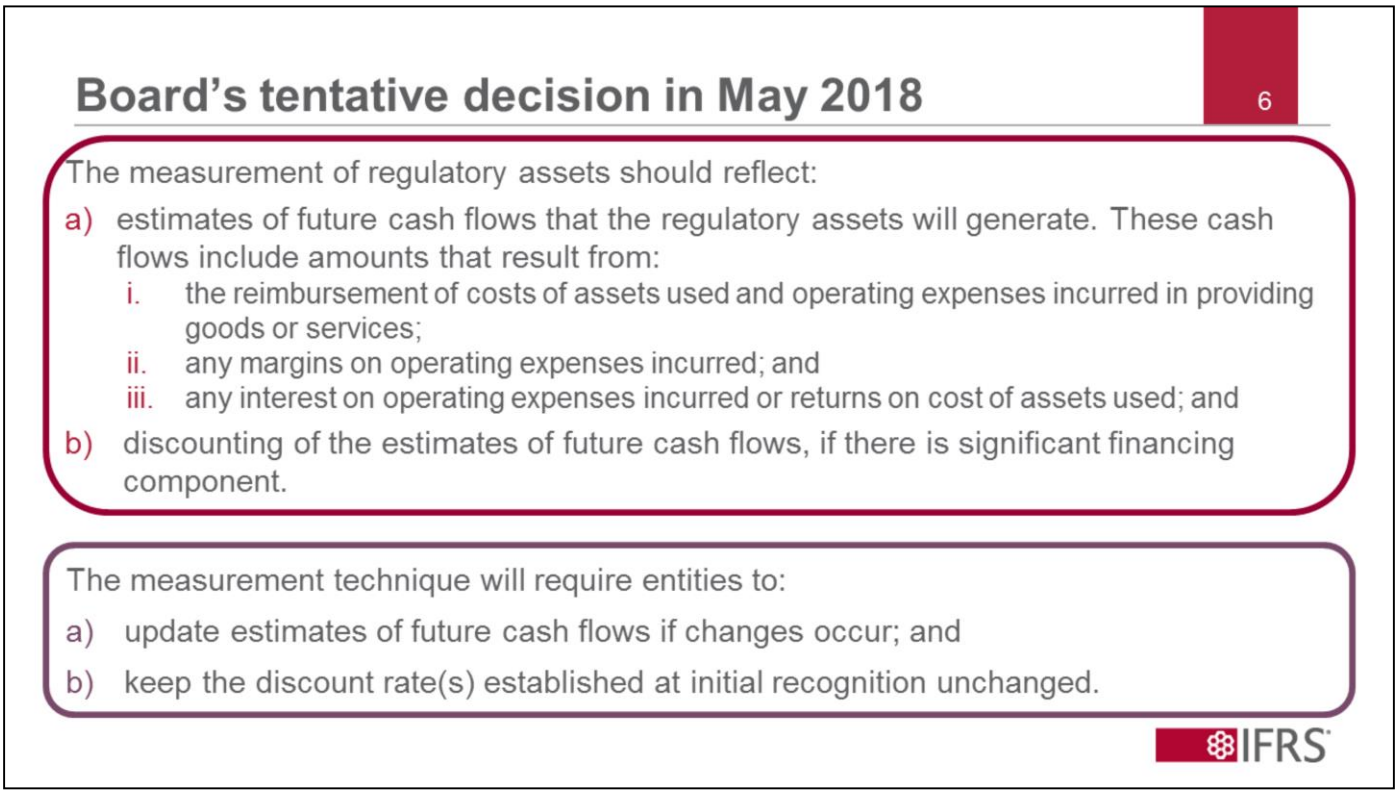
Measurement—
the Board's tentative decisions so far



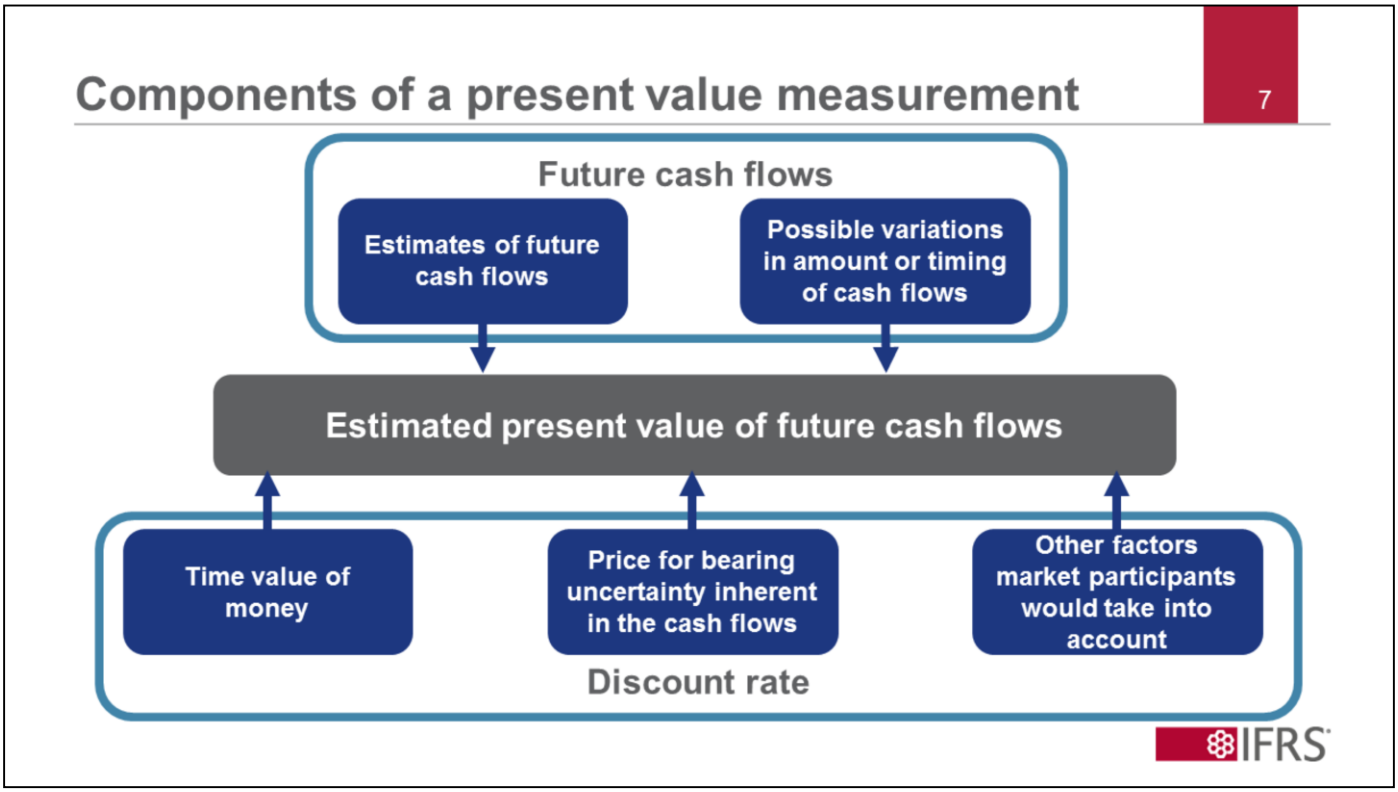
In its May 2018 meeting, the Board discussed **whether** regulatory assets should be measured on a basis that uses:

- a cash-flow-based measurement technique;
- discounting when there is a significant financing component; and
- updated estimates of future cash flows.

As a result of the Board's tentative decisions, any regulatory asset recognised in the financial statements will be measured at the present value of the estimated future cash flows to be received from the regulatory asset.

At this meeting, we discuss **how** to:

- estimate future cash flows;
- establish the discount rate to be used at initial recognition and subsequently; and
- account for changes in the estimates of future cash flows.



A present value measure is made up of two components—the estimated future cash flows (or stream of cash flows) and the discount rate. The *Conceptual Framework* and some IFRS Standards, for example IAS 36 *Impairment of Assets* and IFRS 13 *Fair Value Measurement*, list the factors to be reflected when using a cash-flow-based measurement technique to determine the present value measure of an asset. Those factors are summarised on this slide.

Some factors could be reflected in either the estimation of the future cash flows or in the calculation of the discount rate.* Based on our understanding of the operation of regulatory agreements, we assume that the factors will be reflected in each component as shown in the slide. We consider the estimation of future cash flows and possible variations in those cash flows in **slides 8-15** and consider the determination of a reasonable discount rate in **slides 16-30**.

*When measuring an asset using a cash-flow-based measurement technique, it is important that the interest/return rate used to discount the cash flows should reflect assumptions that are consistent with the assumptions inherent in the estimated cash flows. Otherwise, the effects of some assumptions will be double-counted or ignored.

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Estimating future cash flows

Content

Conceptual Framework and other IFRS literature

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The *Conceptual Framework* highlights that possible variations in the amount or timing of future cash flows are considered when selecting a single amount from within a range of possible cash flows. The amount that provides the most relevant information is usually one from within the central part of the range, for example:

Method	Estimated amount	Features
Expected value (statistical mean)	Is the sum of probability-weighted amounts in a range of possible cash inflows arising from an asset.	The expected value is not intended to predict the ultimate cash inflow—it reflects the entire range of outcomes, giving more weight to outcomes that are more likely.
Most likely amount (statistical mode)	Is the single most likely ultimate inflow in a range of possible cash inflows arising from an asset.	This method may be preferred to the expected value method to better predict the future stream of cash flows if the possible outcomes are binary or are concentrated on one outcome (ie one stream of cash flows).

Some IFRS Standards require entities to apply judgement when assessing which method better predicts the amount of future cash flows arising from an asset.

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When measuring assets (or liabilities) by reference to estimates of uncertain future cash flows, the following IFRS Standards require the use of either the most likely amount or the expected value:

- IFRS 15 *Revenue from Contracts with Customers* (paragraph 53) when predicting the amount of variable consideration to be included in the calculation of the transaction price in a revenue contract; and
- IFRIC 23 *Uncertainty over Income Tax Treatments* (paragraph 11) when predicting the resolution of an uncertainty over a tax treatment. In addition, paragraph 6 of IFRIC 23 requires an entity to determine whether to consider each uncertain tax treatment separately or together with one or more other uncertain tax treatments based on which approach better predicts the resolution of the uncertainty.

Slide 11 summarises the expected level of uncertainty about the amount and timing of future cash flows resulting from various types of timing differences discussed by the Board when looking at proposed recognition criteria for the model (see Agenda Paper 9C *Recognition*, March 2018 (AP9C March 2018)). During that meeting, the Board considered evidence suggesting that entities will typically be able to make a reasonable estimate of the amount that best predicts the amount of future cash flows arising from most timing differences. This view is supported by feedback given by members of the Consultative Group for Rate Regulation (CGRR) in October 2017 (see Agenda Paper 9A for the Board's December 2017 meeting). That feedback suggests that, for most timing differences, estimating future cash flows using the most likely amount method will be appropriate. However, there may be some cases, depending on facts and circumstances, when estimating cash flows by considering possible scenarios and applying weighted probability to each scenario may be more appropriate.

As a result, we see no compelling reason to propose a different treatment for estimating future cash flows than the requirements in IFRS 15 and IFRIC 23. Consequently, we recommend that entities:

(a) estimate future cash flows using either the most likely outcome method or the expected value method, depending on which method an entity concludes will better predict the amount and timing of the cash flows arising from a specific timing difference; and

(b) apply the same method for estimating future cash flows consistently from the origination through reversal of the timing difference to promote consistency and understandability of the resulting information.

Timing differences and cash flow profiles

Frequency

Timing differences	Cash flow profiles
1. Automatic rate adjustments: eg input cost variances	The amount and timing of the future rate adjustment is a matter of fact. Consequently, there is little or no uncertainty about the future cash inflows.
2. Timing differences mentioned explicitly in the regulatory agreement but judgement is needed to estimate the effect on future rates: eg incentive rewards	The parameters for estimating the amount and timing of the future rate adjustment are established in the regulatory agreement. Consequently, estimating the future cash inflows is not necessarily more complex than carrying out other estimates required in IFRS Standards.
3. Timing differences not mentioned explicitly in the regulatory agreement but meet recognition criteria of the model: eg consequences of a major storm	These timing differences relate mainly to unexpected or one-off events. Consequently, the entity may have less evidence and need to apply greater judgement to predict the outcome of the rate determination and estimate the amount and timing of any resulting future cash inflows.

Uncertainty

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The nature of the timing differences will have a direct effect on the risk profile of the cash flows that they will generate. In March 2018, the Board tentatively decided to set a recognition threshold in cases of existence uncertainty. Consequently, before recognising a regulatory asset in its financial statements, an entity must determine that it is more likely than not that the timing difference gives the entity a right to increase the future rate as a result of the past activity or event that generated the timing difference. Once that recognition threshold is passed, the entity must then estimate the amount of future cash flows to arise from that right.

In the majority of cases, timing differences relate to **automatic rate adjustments** that are mentioned explicitly in the regulatory agreement and the amount to be included in the rate-adjustment mechanism is a matter of fact. Consequently, the amounts are not subject to estimation. An example of such timing differences are price variances between estimated and actual allowable input costs that the regulatory agreement specifies will flow through to customers. Typically, the rate increase (or decrease) resulting from any positive (or negative) price variance is announced in period n+1 and applies in period n+2, with 'n' being the period in which the timing difference arises: the duration of the period n is typically one year or less.

Some timing differences are **mentioned explicitly in the regulatory agreement** but judgement may be needed to estimate the resulting rate adjustment. For example, the entity may be able to earn an incentive reward for exceeding a performance target but the amount of the reward is variable within a range of amounts and the period during which the incentive is assessed extends beyond the entity's financial reporting date. Consequently, the entity needs to assess whether it will exceed the performance target and, if so, by how much in order to estimate the amount of the reward that reflects performance during the reporting period.

Timing differences **not mentioned explicitly in the regulatory agreement**, eg those that arise as a result of unanticipated events, such as a major storm that results in the entity incurring significant repair costs that were not included in the budgets/forecasts used to support the previous rate determination. In this case, the entity must first assess whether it is more likely than not that the regulatory agreement gives the entity a right to include the unanticipated costs in future rates. If so, the entity would recognise a regulatory asset in its financial statements and would need to estimate how much of the additional cost will be included in the calculation of the future rate(s).

Estimating cash flows—Example

In CU millions (CU m)	Scenario probability	Cash flows: Year X1	Cash flows: Year X2	Total	% recovery of actual expenses incurred
Actual operating expenses incurred				1,640	
Rate change request submitted		760	880	1,640	100%
Scenario 1	5%	500	700	1,200	73%
Scenario 2	10%	640	750	1,390	85%
Scenario 3 (most likely)	80%	720	840	1,560	95%
Scenario 4	5%	760	880	1,640	100%
Expected cash flows		703	826	1,529	93%

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The following fact pattern is used as an example to illustrate how an entity could derive its estimates of future cash inflows arising from a regulatory asset.

The regulatory agreement established that Entity A is entitled to include an estimate of its reasonable repair costs in the calculation of the rate chargeable to customers each period. Variances of + / - five per cent of the estimated amount will be included in the rate-adjustment mechanism. The resulting increase (or decrease) in the rate will apply in the period n+2, where n is the period in which the variance arises.

During year X0, a severe storm occurs causing damage to the infrastructure used to deliver services to customers. As a result, Entity A incurs repair costs of CU1,640m above the five per cent variance explicitly allowed in the regulatory agreement. Entity A submits a rate change request during year X0, asking for the full CU1,640m amount of the excess variance to be included in the rate for the three year period X1–X2.

On the basis of the entity's past experience, together with tentative indications obtained from discussions with the rate regulator, Entity A concludes that it is more likely than not that the storm damage repair costs will be included in the calculation of the future rate over the next three years. Consequently, the entity concludes that the timing difference meets the criterion for recognition using the model. Entity A considers that Scenarios 1–4 shown in the table above represent the reasonably possible outcomes to be considered for estimating the expected future cash flows.

The rate regulator's final determination is still outstanding when Entity A finalises its financial statements for year X0. Entity would need to use judgement to decide whether reporting information using the most likely amount or the expected value is likely to enable users to better predict the future stream of cash flows resulting from the regulatory asset. **Slides 13 and 14** illustrate how Entity A could account for the regulatory asset at the end of year X0, reporting either the most likely amount of CU1,560m or the expected value of CU1,529m.

Accounting for the regulatory asset—most likely amount

Cash flows discounted using 3% discount rate				
In CU (m)	**Year X0**	**Year X1**	**Year X2**	**Total**
Revenue (Timing difference reversal plus interest)	**0**	**767**	**865**	**1,632**
Regulatory income / (expense) (timing difference)	1,560	(720)	(840)	**0**
Operating expenses	(1,640)	0	0	**(1,640)**
Profit / (loss)	**(80)**	**47**	**25**	**(8)**
Regulatory interest included in revenue (3% on opening balance of regulatory asset)	0	47	25	**72**
Regulatory asset (origination + interest - revenue)	1,560	840	0	**-**

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For the year-ended X0, Entity A assumes that the regulator will:

(a) allow recovery of the regulatory asset over 2 years, ie during years X1–X2; and

(b) give the entity 3% interest on the outstanding balance of the regulatory asset at the start of each year.

In this example, Entity A concludes that the most likely amount of estimated future cash flows, ie Scenario 3, rather than the expected value of those cash flows, provides more useful information to users of its financial statements. As a result, Entity A recognises a regulatory asset of CU1,560m in its statement of financial position, measured on the basis of the most likely amount of the future cash flows that will arise from the regulatory asset. This means that the statement of financial performance of Entity A in year X0 includes:

a) no revenue relating to the unanticipated storm repair cost variance because the amount was not anticipated or included in the rate charged to customers in the period;

b) the actual unanticipated additional repair costs of CU1,640m incurred when Entity A repaired the storm damage; and

c) regulatory income amounting to CU1,560m reflecting Entity A's estimate of the present value of the amount that will be included in future rates.

The loss of CU80m in year X0 represents the amount of repair costs incurred that Entity A considers will be disallowed and so will not be compensated for through the future rate(s). The profit recognised in each year X1-X2 is the 3% interest income provided to Entity A through the rate to compensate the entity for the time lag between the origination of the timing difference and its reversal.

Note: This example assumes that the interest rate of 3% is a reasonable rate to use for discounting the estimated future cash flows. The appropriateness of this assumption is considered in **slides 22-26**.

Accounting for the regulatory asset—expected value

Cash flows discounted using 3% discount rate				
In CU (m)	Year X0	Year X1	Year X2	Total
Revenue (Timing difference reversal plus interest)	0	749	851	1,600
Regulatory income / (expense) (timing difference)	1,529	(703)	(826)	0
Operating expenses	(1,640)	0	0	(1,640)
Profit / (loss)	**(111)**	**46**	**25**	**(40)**
Regulatory interest included in revenue (3% on opening balance of regulatory asset)	0	46	25	71
Regulatory asset (origination + interest - revenue)	1,529	826	0	-

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For the year-ended X0, Entity A assumes that the regulator will:

(a) allow recovery of the regulatory asset over 2 years, ie during years X1–X2; and

(b) give the entity 3% interest on the outstanding balance of the regulatory asset at the start of each year.

In this example, Entity A concludes that the expected value of estimated future cash flows, rather than the most likely amount of those cash flows, provides more useful information to users of its financial statements. As a result, Entity A recognises a regulatory asset of CU1,529m in its statement of financial position, measured on the basis of the expected value of the future cash flows that will arise from the regulatory asset. This means that the statement of financial performance of Entity A in year X0 includes:

a) no revenue relating to the unanticipated storm repair cost variance because the amount was not anticipated or included in the rate charged to customers in the period;

b) the actual unanticipated additional repair costs of CU1,640m incurred when Entity A repaired the storm damage; and

c) regulatory income amounting to CU1,529m reflecting Entity A's estimate of the present value of the amount that will be included in future rates.

The loss of CU111m in year X0 represents the amount of repair costs incurred that Entity A considers will be disallowed and so will not be compensated for through the future rate(s), using the weighted-average of the possible scenarios set out in the table on **slide 13**. The profit recognised in each year X1-X2 is the 3% interest income provided to Entity A through the rate to compensate the entity for the time lag between the origination of the timing difference and its reversal.

Note: This example assumes that the interest rate of 3% is a reasonable rate to use for discounting the estimated future cash flows. The appropriateness of this assumption is considered in **slides 22-26**.

Recommendations and question for the Board

1. For each regulatory asset recognised, an entity should:
   a) estimate future cash flows using **either** the most likely outcome method **or** the expected value method, depending on which method the entity concludes will better predict the amount and timing of the cash flows arising from a particular timing difference; and
   b) apply the same method consistently from the origination through reversal of the timing difference.

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2. An entity should determine whether to consider the outcome of each timing difference separately or together with one or more other timing differences based on which approach better predicts the amount and timing of the resulting future cash flows.

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Question for the Board:
1. Does the Board agree with the recommendations in 1 and 2 above?

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Significant financing component and discount rate

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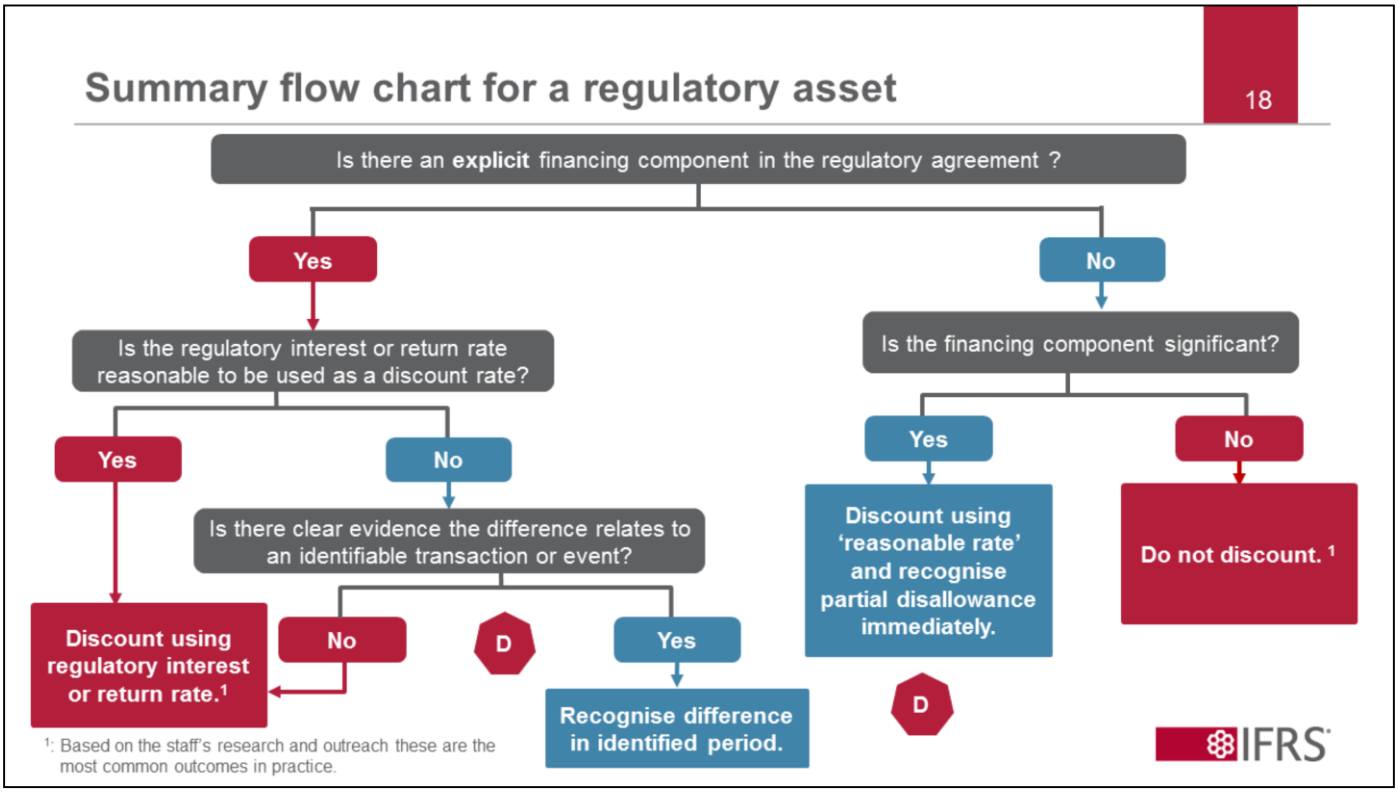
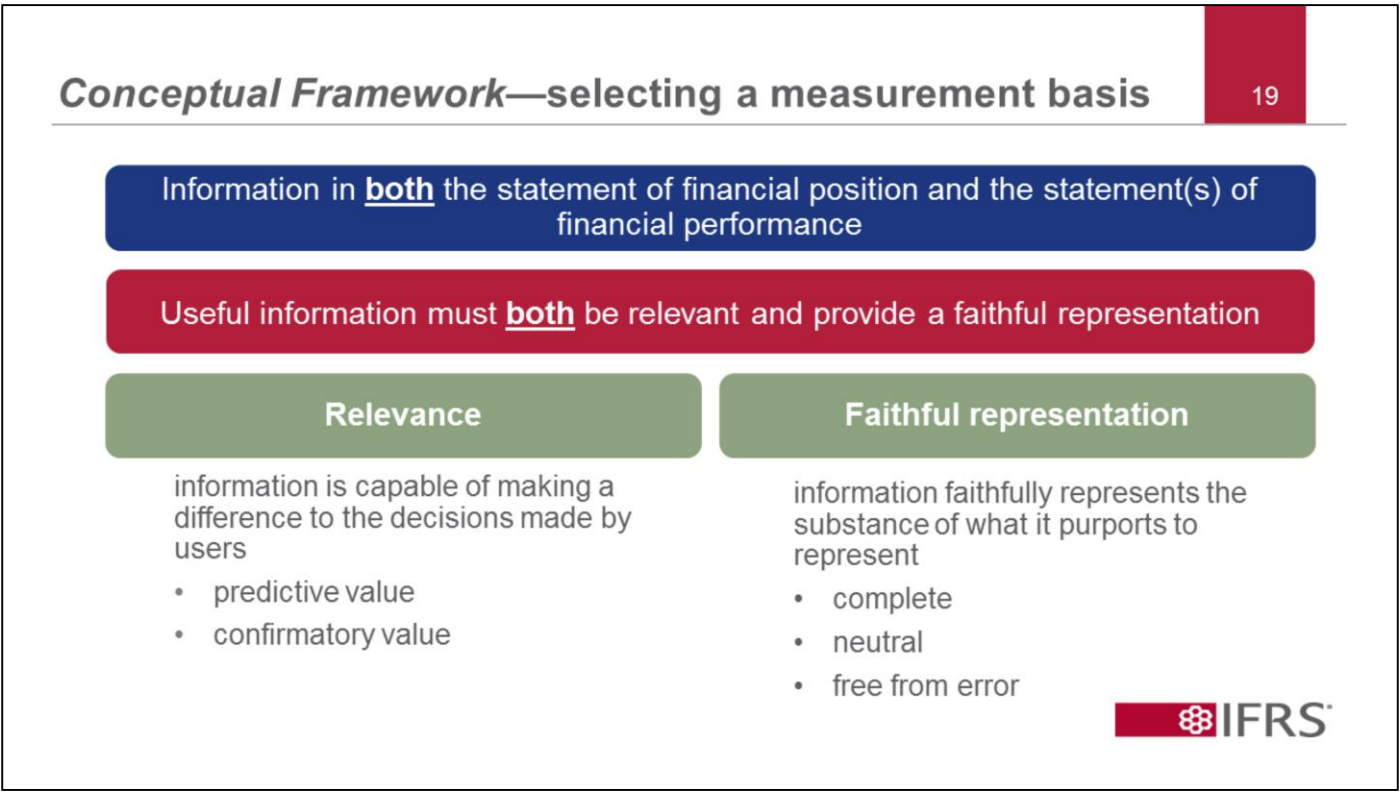


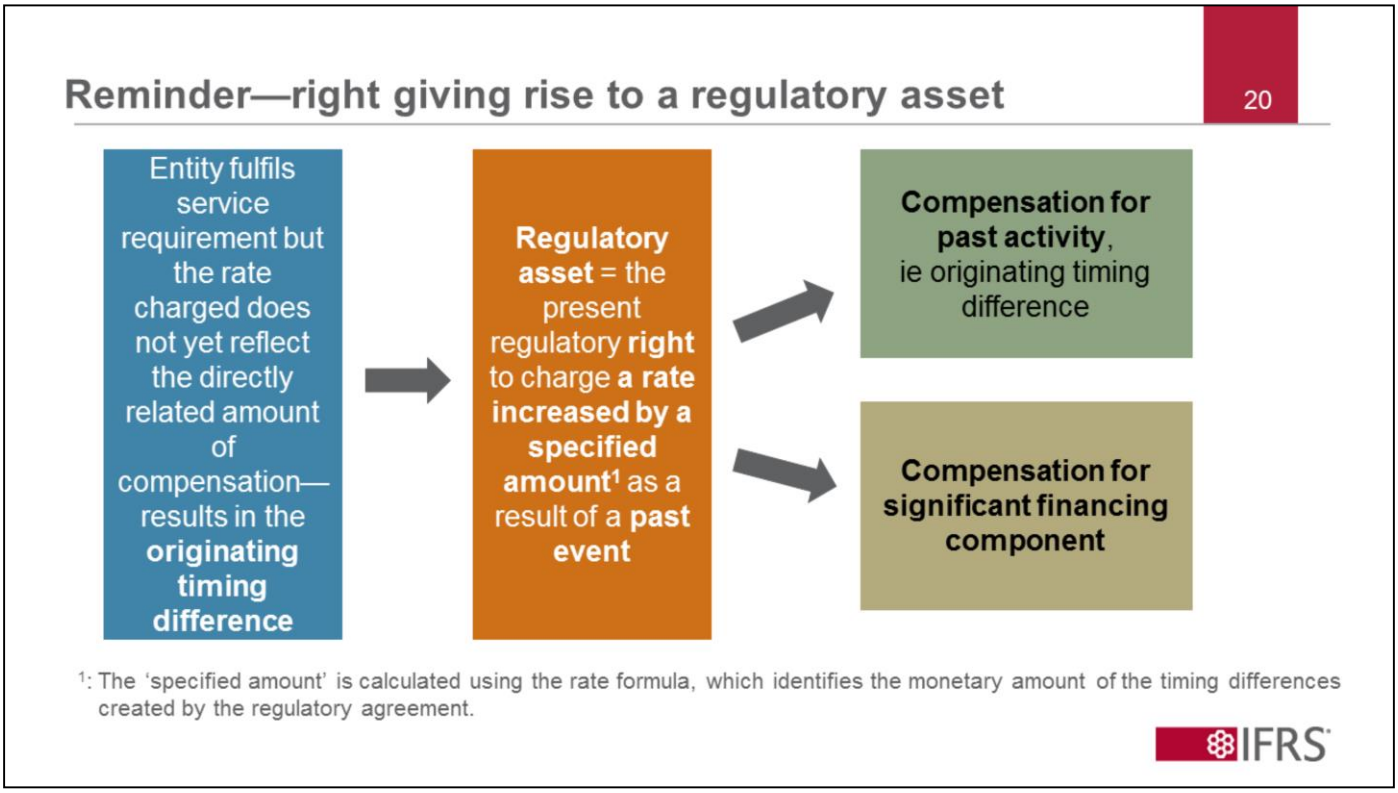
This slide summarises the questions raised by our analysis in **slides 19-28** and our recommendations, which are outlined in **slides 29-30**.



In developing the model, we have been focused on providing users of financial statements with useful information about the timing differences created when an entity carries out a rate-regulated activity (activity) to fulfil its service requirements in a different period to the period when amounts related to that activity are included in the rate(s) charged to customers. Recognising those rights and obligations as regulatory assets and regulatory liabilities:

- gives users of financial statements a more complete picture of the effects of defined rate regulation on an entity's financial performance during the period; and
- avoids creating artificial fluctuations in net profit caused by revenue and directly related expenses being recognised in different periods.

In the Board's May 2018 meeting, we discussed an analysis of the characteristics of regulatory assets. Our recommendation for the measurement technique to be used for regulatory assets was based on that analysis, together with the guidance in the *Conceptual Framework* for selecting a measurement basis. The Board's tentative decisions about the proposed measurement technique are summarised on **slide 6**.



When establishing the unit of account for the model (Board Agenda Paper 9A, February 2018), we identified the regulatory asset was the right to increase the future rate as a result of a past event. The past event is the carrying out of an activity to fulfil a service requirement for which the rate does not include the relevant amount of compensation. To compensate the entity fully for that activity, the regulatory agreement typically increases the rate to at least cover:

- the amount of the originating timing difference; plus
- compensation for the financing component, when that financing component is significant.

Users of financial statements have told us that they are particularly interested in information that helps them identify these originating timing differences and their effects in profit or loss in the periods when the timing difference originates and reverses. This information helps users to distinguish between:

- fluctuations in revenue (or related expenses) for which the rate-adjustment mechanism provides compensation; and
- fluctuations in revenue (or related expenses) for which there is no compensation.

Faithful representation—financial performance

This table summarises when any return/ margin/ interest provided by the regulatory agreement on a specified activity or event would be recognised in profit or loss, as illustrated in Agenda Paper 9B discussed in the Board's May 2018 meeting.

Basis for return/ margin/ interest	When return/ margin/ interest is recognised in profit or loss	Example in Agenda Paper 9B, May 2018
Return on amounts invested in PPE and other assets used in providing rate-regulated goods or services	Period(s) over which amounts are invested in assets being used.	Initial fact pattern and example 1, slides 26 and 28-29.
Margin on (cost of) activities carried out	Period in which the activity is carried out.	Example 2, slides 30-32.
Interest/ return to compensate for the effects of time	Period(s) over which the timing difference is outstanding.	Examples 1A, 2A and 3, slides 34-39.

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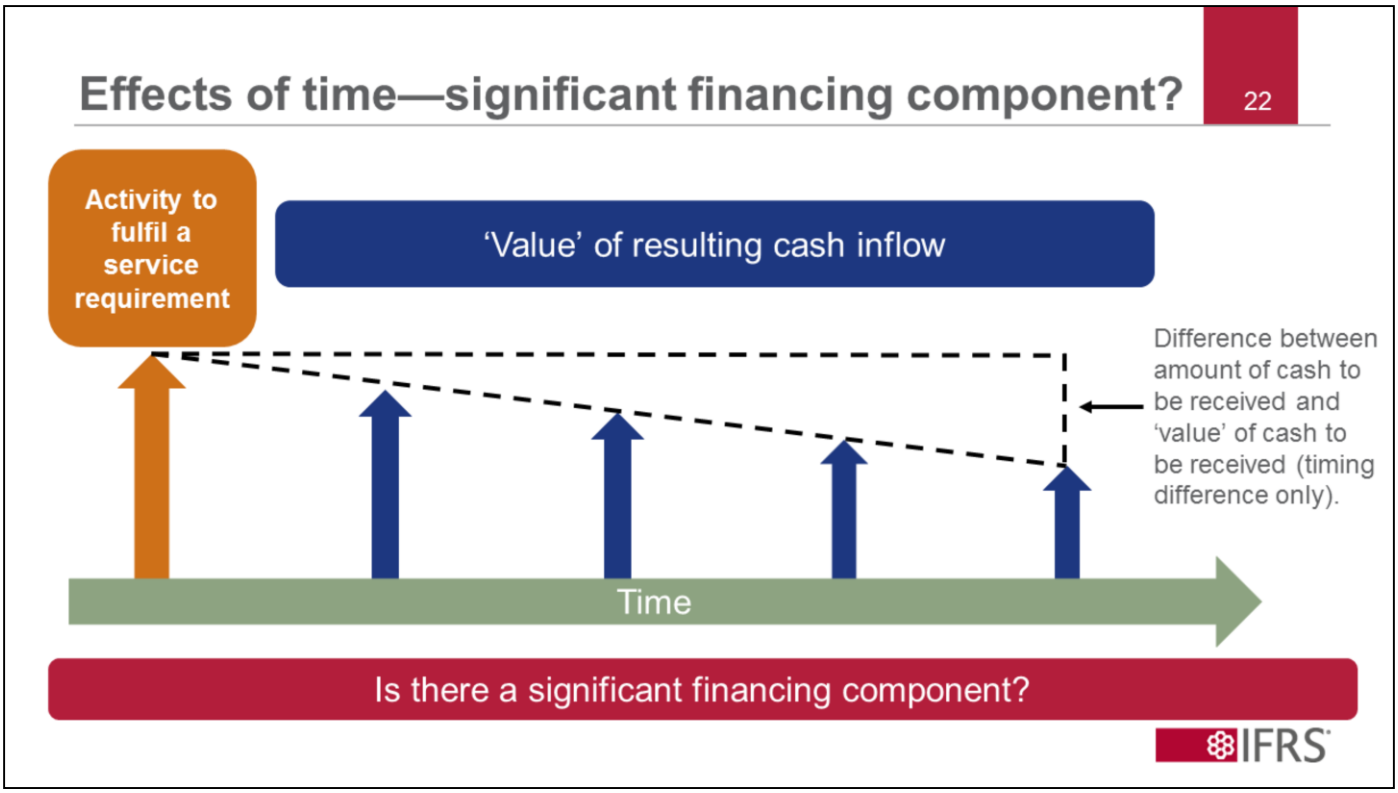
Our analysis in May 2018 focused on the identifying the activity or event for which the regulatory agreement provides a return/ margin/ interest rate. That focus enabled us:

- to show when any return/ margin/ interest provided by the regulatory agreement on that activity would be recognised in profit or loss in the absence of any timing differences; and
- to show that the period in which the return/ margin/ interest on the specified activity is not changed by the timing difference, when the timing difference is compensated through the rate-adjustment mechanism.

The examples used to illustrate our analysis assumed that when there was a significant financing component, the interest/ return rate provided by the regulatory agreement was a '**reasonable**' interest/ return rate to compensate the entity for the effects of time. Consequently, that regulatory interest/ return rate was also assumed to be reasonable to use for discounting the estimates of future cash flows when measuring the regulatory asset. As a result of using these assumptions, the compensation for the financing component was reflected in profit or loss over the period during which the timing difference was outstanding.

We continue our analysis here by looking in more detail at the substance of the regulatory agreement and how the regulatory agreement compensates the entity for the financing component to help us assess what is meant by a 'reasonable' discount rate.

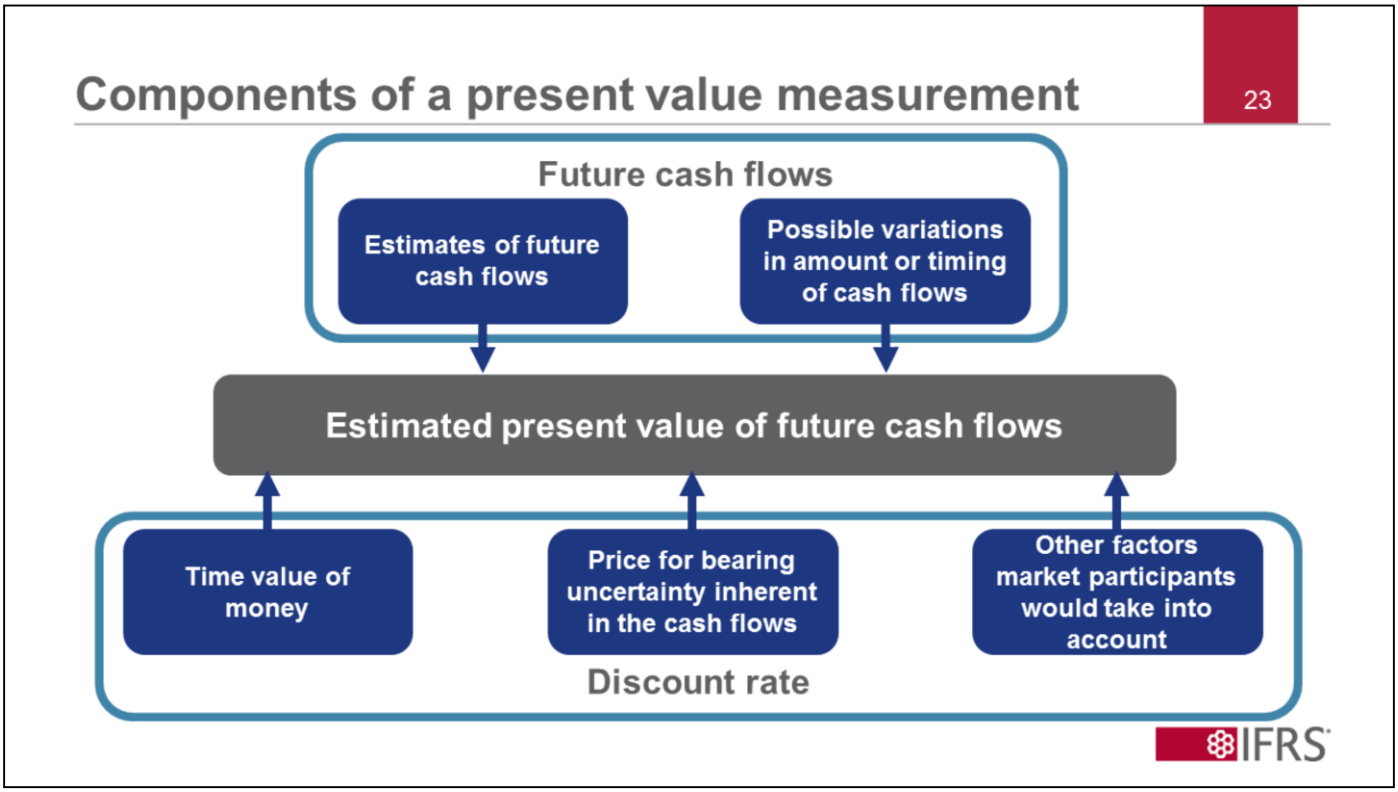


The concept of the time value of money is a core principle of finance. This principle holds that a specified amount of cash at the present time does not have the same value as the same amount of cash at a future date. Because the rate-adjustment mechanism results in **timing differences** between when the entity fulfils a service requirement and when the entity subsequently includes the related amount in the rate charged to customers, there is a financing component in the rate-adjustment mechanism. In May 2018, the Board tentatively decided (**slide 6**) that the measurement of a regulatory asset should reflect discounting of the estimates of future cash flows, **if** there is significant financing component. As a result, the regulatory asset will be measured at the present value of the estimated future cash flows arising from that asset.

In most cases, a significant financing component is evidenced by the regulatory agreement establishing an explicit interest/ return rate to compensate the entity for the financing component. When the regulatory agreement does not establish an interest/return rate to be applied to the timing difference, an entity may need to use judgement to determine, based on its particular facts and circumstances, whether the financing component is significant. The financing component may not be significant when, for example, there is a short time between the origination and reversal of the timing difference or when the prevailing market interest rates are low.

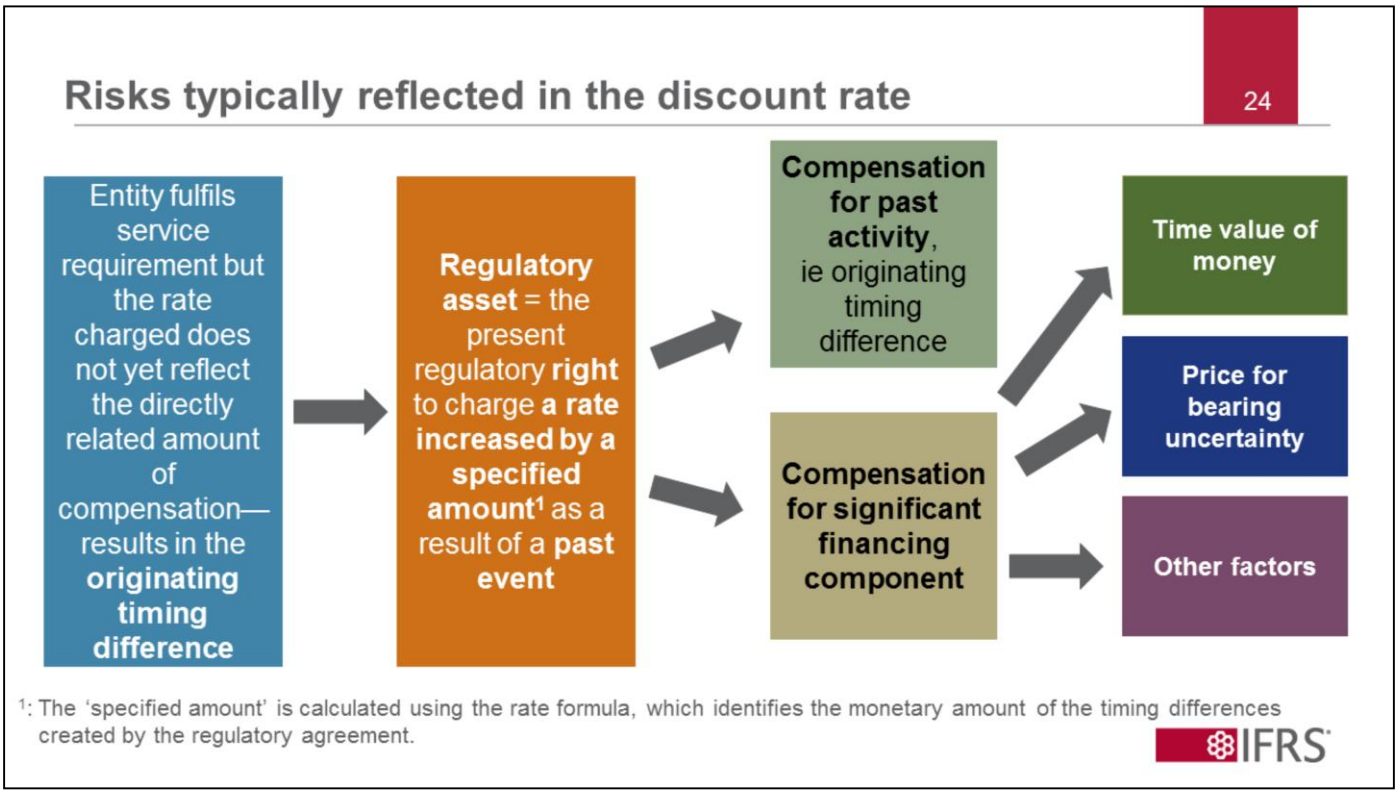
In other cases, the regulatory agreement may not need to establish an explicit interest/ return rate to compensate the entity for the financing component of a timing difference. Such cases arise when, for example, the regulatory agreement includes a specified allowable expense in the rate on a cash basis but the entity reports, in its statement of financial position, a provision for that allowable expense (for example, a provision for pension costs or for decommissioning costs).

Because the provision is measured at the present value of the estimated related future cash outflows, the resulting regulatory asset is already measured at a present value amount.



This slide replicates **slide 7**. As noted on that slide, we address the estimation of future cash flows and possible variations in those cash flows elsewhere in this slide deck (**slides 8-15**).

In this section, we focus on the question about what discount rate an entity should use when reflecting the significant financing component in the measurement of regulatory assets. To answer this question, it is important to understand the risks inherent in the cash flows arising from the regulatory asset.



Time value of money

The time value of money is typically represented by the interest/ return rate on risk-free monetary assets that have maturity dates of durations that are comparable to the period covered by the cash inflows arising from regulatory assets.

Price for bearing uncertainty

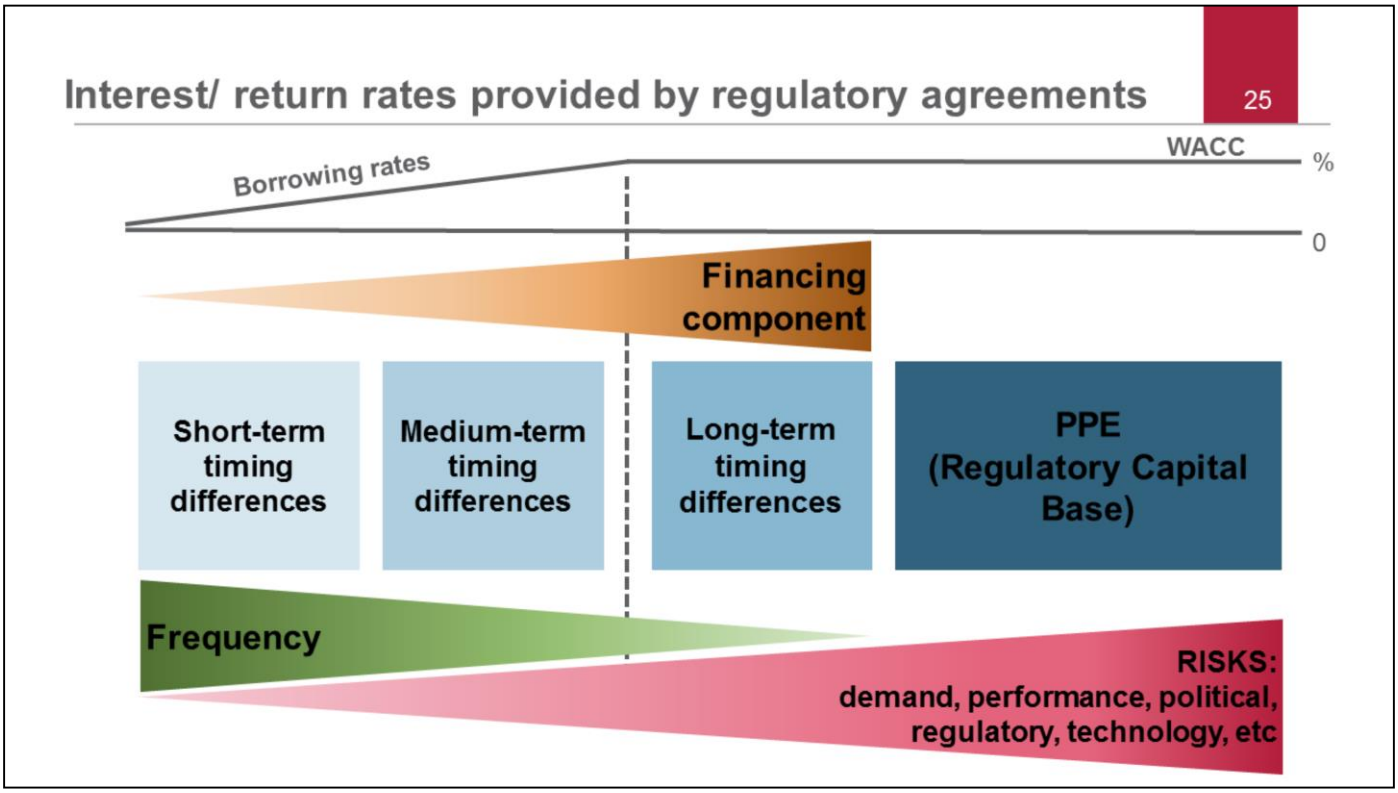
Normally, when considering the price for bearing uncertainty inherent in the cash inflows arising from a financing transaction, we would look at the risks inherent in collecting the future cash inflows from that transaction. Consequently, the main risk considered typically is the borrower's credit risk. In a defined rate regulation environment, the 'borrower' is the entity's customers. We have previously highlighted that the regulatory agreement protects the entity's financial viability by including bad debt expenses in the allowable costs included in the rate, which passes much of the credit risk to customers.

Normally in a financing transaction, the lender has an unconditional right to collect the cash inflows resulting from the asset. However, a regulatory asset does not give the entity an unconditional right to receive cash inflows. Instead, the entity has an unconditional right to include the monetary amount of the timing difference in the future rate(s) to be charged to customers. As a result, the cash inflows that ultimately result from a regulatory asset are subject to demand risk, ie the risk that the quantity of goods or services demanded by future customers might not be sufficient to enable the entity to bill the entire timing difference. Again, we have previously highlighted that the nature of the environment in which defined rate regulation operates, such risk is typically low.

In most transactions entered into between two parties, we assume that both parties act in their economic best interest. In a typical financing transaction, this means that the interest rate is set at a level that is comparable to the rate the borrower could obtain from an alternative source and the lender is able to make a reasonable lender's return. Consequently, if the interest/ return rate for a regulatory asset was set based on the same factors as a typical financing transaction, the interest/ return rate would be expected to be determined primarily on the time value of money and price for bearing uncertainty. In the low risk environment of defined rate regulation, the interest/ return rate may be expected to be close to (but not equal to) a risk-free rate.

Other factors

Long-term timing differences attract a higher interest/ return rate than short- and medium-term timing differences. That higher rate is commonly based on the regulator's estimate of the entity's weighted average cost of capital (WACC). In a financing transaction between two independent parties, the 'other factors' market participants would take into account when establishing an interest/ return rate typically focus on liquidity risk. However, in the case of the regulatory agreement, the regulator's estimate of the WACC takes into account a much wider range of factors, including the regulatory objectives (**slide 50-53**).

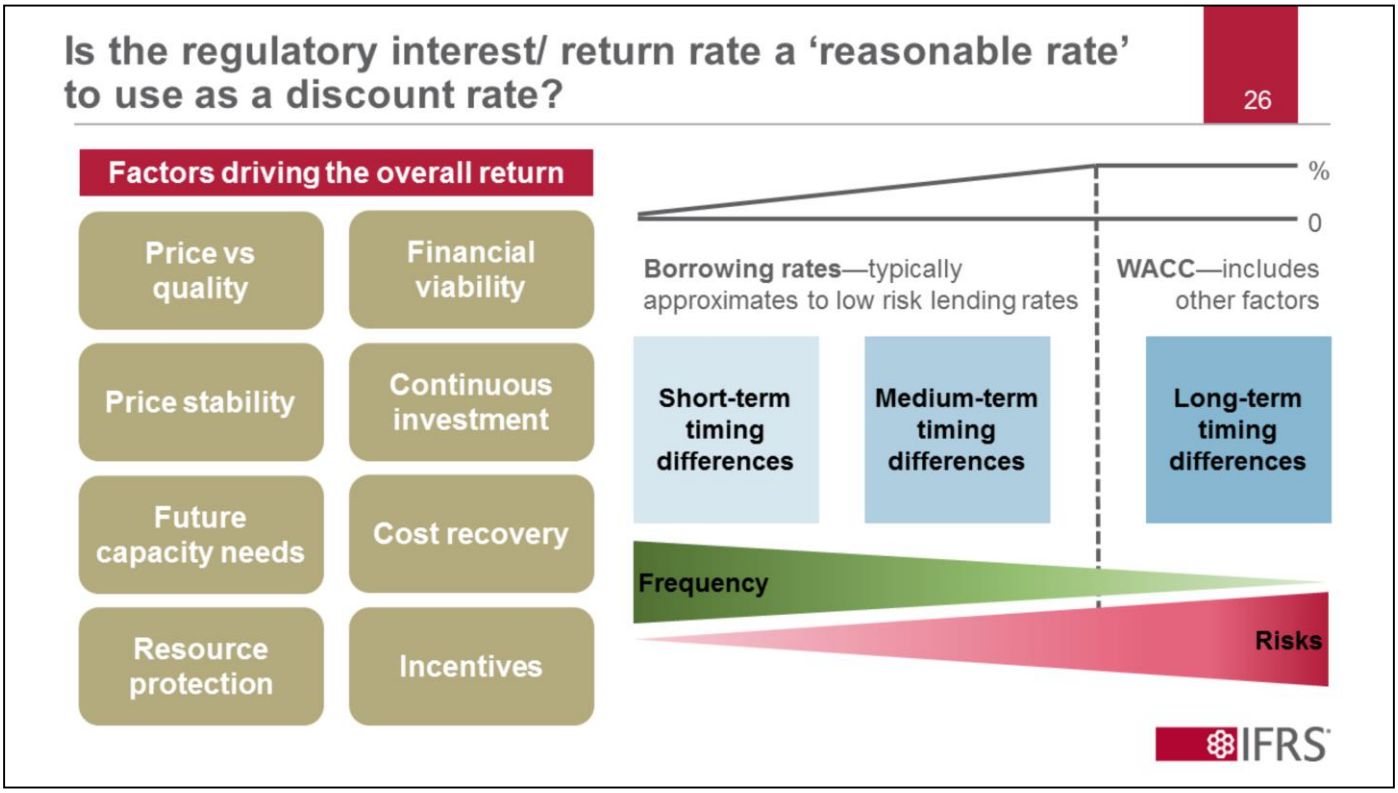


Rate-regulated activities are typically capital intensive and so entities need to raise long-term funding from both debt and equity finance providers to invest in the long-lived infrastructure assets used in the business. As noted in **slides 50-53**, regulatory agreements typically use a weighted average cost of capital (WACC) to establish the allowable return on the regulatory carrying amount of assets used in providing regulated services (ie the regulatory capital base—RCB). The WACC represents the regulator's estimation of the risks and other factors that debt and equity providers would take into account when deciding whether to provide long-term funding to the entity and if so, what interest/ return rate they would expect in exchange for providing that funding. Consequently, the risk factors included in establishing the WACC include a variety of entity-wide risks that affect the entity's ability to raise funding for its activities, rather than the risks specific to the individual assets held by the entity.

The depreciation of the RCB and the return on the RCB are both included in the rate charged to customers. When the regulatory carrying amount of the RCB is the same as the IFRS carrying amount, there are no timing differences to account for using the model. Consequently, the WACC return is reflected in profit or loss as a period income, over the useful economic life of the assets.

When timing differences arise, we observe that, in most cases, the regulatory agreement compensates (or charges) the entity as follows:

- **long-term timing differences**—these are included in the RCB and compensated with the same WACC return as applied to the other assets within the RCB; and
- **short- or medium-term timing differences**—these are tracked separately and are compensated with interest rates that are either close to corporate borrowing rates for financial instruments with similar maturities or rates that reflect the entity's incremental borrowing rate.



Short- or medium-term timing differences

Although the regulatory interest/ return rates for short- and medium-term timing differences are based on approximations to the entity's **borrowing rate** instead of a rate applicable to the specific cash flows, we consider this to be a reasonable approximation. As we have already highlighted, the cash flows resulting from short- and medium-term regulatory assets are relatively low risk and, as a result, attract a relatively low risk premium. Entities subject to defined rate regulation are typically classified as low risk with strong credit ratings. As a result, they typically attract commensurately low borrowing rates when obtaining short- and medium-term debt finance. Consequently, the difference between the regulatory interest/ return rate based on an approximation to the entity's borrowing rate is unlikely to be significantly different to a lending rate calculated based on the uncertainties associated with the cash inflows resulting from a regulatory asset.

Long-term timing differences

The regulatory agreement determines the overall return that an entity is able to earn on its rate-regulated activities. That overall return aims to encourage the regulated entity to achieve the regulatory objectives of balancing the needs of both current and future customers to be able to obtain the regulated goods or services at stable and affordable prices (**slide 51**). The overall return is typically achieved by establishing a rate chargeable to customers that enables the entity both:

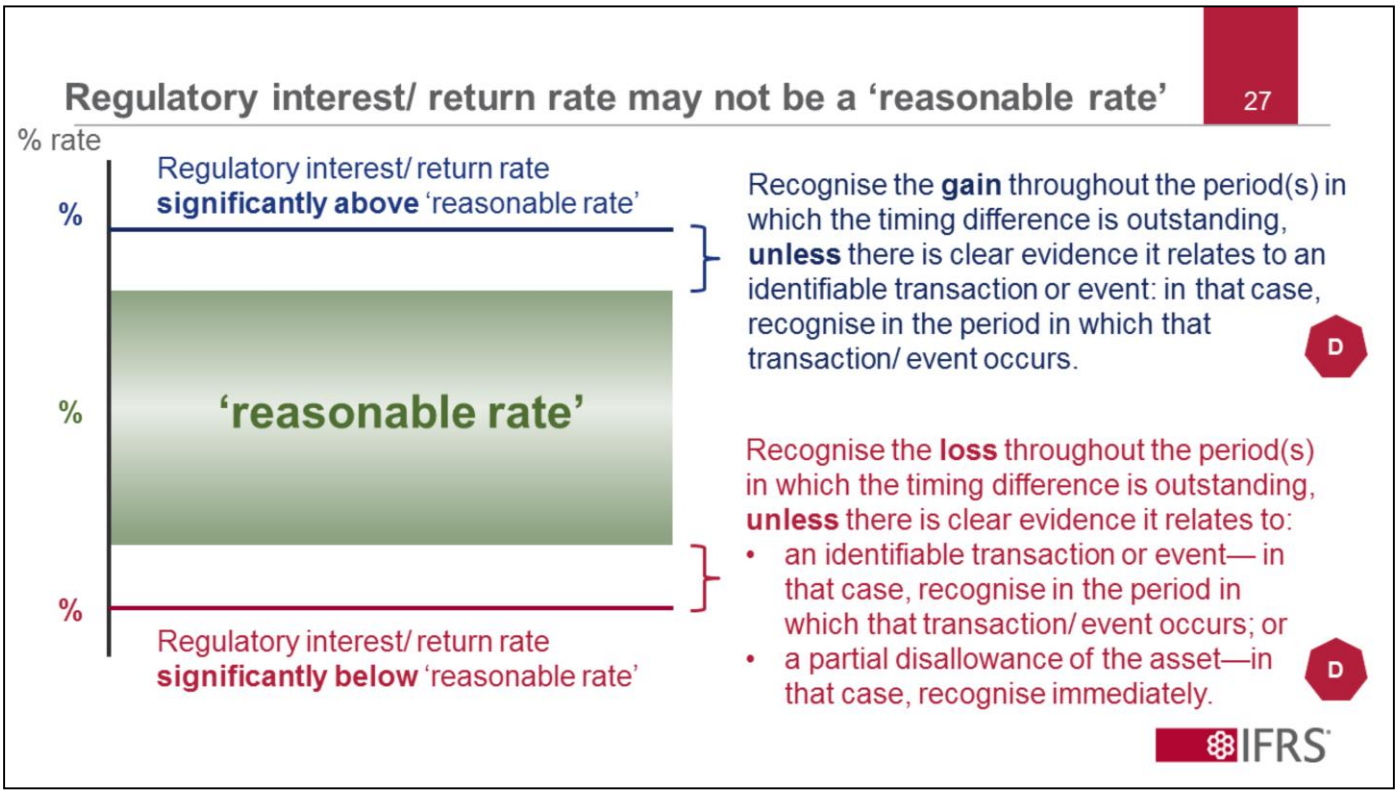
- to recover the cost of assets used and operating expenses incurred in providing regulated services; and
- to earn a return on the amounts invested in assets used in providing regulated services.

The WACC used to provide the return on the cost of assets used in providing regulated services includes amounts intended to encourage and support the entity's ongoing activities to achieve the regulatory objectives. The WACC earned on those assets is recognised over time as the balance of the amount invested in those assets is outstanding.

By using the same WACC return for long-term timing differences, the regulatory agreement creates the following rights for the entity:

- the **right to compensation** for the time value of money and for costs of bearing uncertainty in the cash flows related to the timing difference; and
- the **additional right** to earn a return on the amount invested in providing regulated services to customers. In this case, the service includes providing financing to customers during the period in which the timing difference is outstanding. The rate of return provided reflects various factors that are consistent with the regulatory objectives (**slides 50-53**), including incentivising continuous investment and protecting the financial viability of the entity.

Consequently, we consider the additional interest/ return included in the WACC compensates the entity for factors other than the effects of time and risk associated with the timing difference. Those factors typically relate to the ongoing regulated activities of the entity and the overall return the entity has an opportunity to earn through the regulatory agreement. As a result, we consider it appropriate to recognise the additional interest/ return over the period the timing difference is outstanding, unless there is clear evidence that it relates to a past transaction or event.



As noted on the previous slide, we consider that the regulated interest/ return rate is a '**reasonable rate**' to use to discount the estimated future cash flows arising from a regulatory asset when that rate:

- for short- or medium-term timing differences, is a reasonable approximation to the entity's borrowing rate; or
- for long-term timing differences, is the same as the WACC or other return rate applicable to PPE and other assets within the RCB.

In rare cases the interest/ return rate applied to a particular regulatory asset may be significantly higher or significantly lower than a reasonable rate. In such cases, an entity would need to exercise judgment to assess whether the excess compensation resulting from the higher rate or the deficit of compensation resulting from the lower rate can be identified as resulting from an identifiable event or regulatory decision, such as a performance related reward or a penalty.

If the entity has clear evidence that the excess/ deficit in the compensation results from such an identifiable event or decision, we suggest the model should require the entity to recognise the excess or deficit in profit or loss in the period in which the identifiable event or decision occurs, for example, in the period the related performance target was met or failed.

If the amount of the excess or deficit cannot be measured directly, the entity should instead measure it indirectly as the difference between:

- the amount of the originating timing difference; and
- the present value of the regulatory asset, measured by discounting the future cash flows expected to result from the originating timing difference using a 'reasonable rate'.

If the entity does not have clear evidence that the excess or shortfall in the interest/ return rate is being provided as reward or penalty for an identifiable event or decision, we recommend the resulting gain or loss is recognised over the period in which the timing difference is outstanding by using the regulatory interest/ return rate to discount the estimated future cash flows.

However, an exception to recognising a loss over time may be needed when the interest/ return rate is not expected to adequately compensate the entity for the amount of the originating timing difference: this will be the case when the regulatory interest/ return rate is below the rate needed to compensate the entity for the time value of money and for costs of bearing uncertainty in the cash flows related to the timing difference. In such cases, the amount of the originating timing difference will not be reimbursed through the rate(s) and, in effect, is being partially disallowed.

Example—regulatory rate significantly below a 'reasonable rate'

28

Cash flows discounted using 5.7% discount rate				
In CU	**Year X1**	**Year X2**	**Year X3**	**Total**
Revenue	0	50	50	**100**
Regulatory income (expense)	92	(44.7)	(47.3)	**(0)**
Operating expenses	(100)	0	0	**(100)**
Profit	**(8)**	**5.3**	**2.7**	**0**
Regulatory interest included in revenue (5.7% on opening balance of regulatory asset)	0	5.3	2.7	**8**
Regulatory asset (origination – disallowance + interest – revenue)	92	47.3	0	**-**

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The regulatory agreement established that Entity A is entitled to include an estimate of its reasonable repair costs in the calculation of the rate chargeable to customers each period. During year X1, Entity A incurs an allowable repair cost variance of CU100, which will be included in the rate in two equal instalments of CU50 in years X2 and X3.

The regulatory agreement does not provide any interest to be charged on the outstanding amount of this timing difference. However, the regulatory agreement provides interest at 5.7% on other regulatory assets to be included in the rate over the same two-year period. The interest rate reflects a risk-free borrowing rate of 5.5% plus a risk premium.

In this example, we assume 5.7% is a 'reasonable rate' to use to discount the future cash flows arising from the regulatory asset.

At 31 December 20X1, the present value of the future cash flows that will result from the regulatory asset is CU92. The undiscounted amount of the originating timing difference is CU100, which means that CU8 or the cost variance that gave rise to the regulatory asset has, effectively, been disallowed and will not be recovered through the rate. This disallowance of CU8 is recognised in profit or loss immediately. Entity A then recognises regulatory interest income on the allowable balance during years X2 and X3.

Recommendations and question for the Board (1/2)

We recommend that:

1. If the regulatory agreement does not provide explicit compensation for the effects of time between origination and reversal of a timing difference, an entity uses judgement to determine, based on its particular facts and circumstances, whether the financing component of the timing difference is significant.
2. When the financing component is significant, an entity should measure the regulatory asset by discounting estimated future cash flows using the interest/ return rate established by the regulatory agreement for those cash flows **unless**:
   a) there is clear evidence to show that the regulatory interest/ return rate is set at a level that provides an excess or deficit in compensation because of an identifiable transaction or event; or
   b) the regulatory asset is not fully recoverable.

D

IFRS

Recommendations and question for the Board (2/2)

3. We recommend that when the entity has clear evidence that the excess/ deficit in compensation arising from a regulatory interest/ return rate that is set significantly above or below a 'reasonable rate' results from an identifiable event or decision, including a partial disallowance, the entity should:
   a) measure the excess/ deficit directly, if that value can be measured by reference to the identifiable event or decision; or
   b) measure the excess/ deficit indirectly as the difference between:
      i. the amount of the originating timing difference; and
      ii. the present value of the regulatory asset, measured by discounting the future cash flows expected to result from the originating timing difference using a 'reasonable rate'.
   c) recognise the excess or deficit in profit or loss:
      i. for a partial disallowance—immediately; and
      ii. for other events or decisions—in the period in which the identifiable event or decision occurs.

D

Question for the Board:

2. Does the Board agree with the three recommendations in this and the previous slide?

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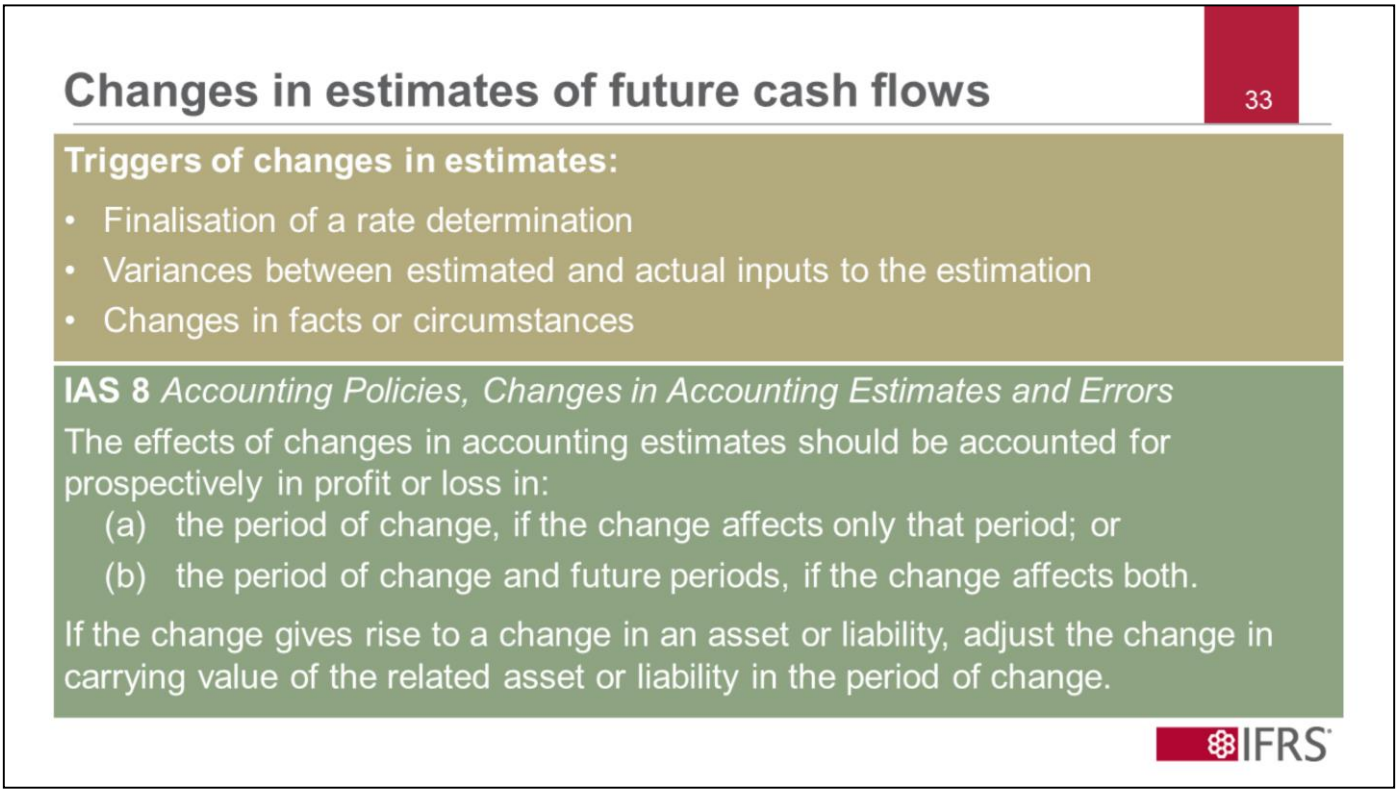
Changes in estimated cash flows, including changes caused by changes in the discount rate

Changes in estimated cash flows content

32

IFRS



Although evidence gathered through the project suggests that uncertainty about the amount or timing of any inflows or outflows of economic benefits resulting from regulatory assets or regulatory liabilities (ie outcome uncertainty) is typically low, changes in the estimates of future cash flows could occur for various reasons, such as:

(a) completing a rate review after finalising the financial statements—although entities can commonly obtain preliminary (non-binding) views from the regulator to help them assess the probable outcome of a rate review, the final amount and timing of reversal of an approved timing difference may differ from estimates;

(b) variances between actual and estimated individual inputs used in the forecasts of the cash flows (for example, bad debts or sales volumes). In many cases, such changes would likely only have an impact on timing of cash inflows, not the amount. This is because the regulatory agreement typically offers entities some protection from such variances by establishing further rate adjustments for any shortfall/excess between estimated and actual amounts; and

(c) other changes in facts and circumstances or new information that, depending on the circumstances, can result in the reassessment of a judgement or estimate.

As noted on the slide, IAS 8 *Accounting Policies, Changes in Accounting Estimates and Errors* sets out the requirements for accounting for changes in estimates. We have not identified any reasons why changes in estimated amounts used in the measurement of regulatory assets and related future cash flows arising from those assets should be accounted for differently from other changes in accounting estimates. Consequently, we recommend the model adopts the treatment required by IAS 8.

Examples 1A and 1B in **slides 34 and 35** are based on the example described in **slides 13** and consider changes in the amount and timing of the estimates of future cash flows arising when the rate determination is finalised during year X1.

Example 1A—Accounting for changes in estimates (amount)

Cash flows discounted using 3% discount rate				
In CU (m)	Year X0	Year X1	Year X2	Total
Revenue (Timing difference reversal plus interest)	0	777	896	1,673
Regulatory income (timing difference origination)	1,560	40		1,600
Regulatory expense (timing difference reversal)		(730)	(870)	(1,600)
Operating expenses	(1,640)	0	0	(1,640)
Profit / (loss)	**(80)**	**87**	**26**	**33**
Regulatory interest included in revenue	0	47	26	73
Regulatory asset (origination + interest - revenue)	1,560	870	0	-

IFRS

Early in year X1, Entity A receives the final rate determination confirming the amount and recovery period of the timing difference resulting from repairing the storm damage. The rate determination confirms that:

a) Entity A can recover CU1,600m of the CU1,640m repair costs incurred when it repaired the damage caused by the storm (ie the final approved amount is CU40m higher than the amount initially estimated);
b) Entity A will recover CU1,600m by increasing the rate charged to customers from 1 April X1 until 31 December X2; and
c) Entity A will be compensated for the effects of time by including in the rate charged to customers 3% interest on the outstanding balance of the regulatory asset at the beginning of each year.

At the end of year X1, the statement of financial performance of Entity A reflects:

a) revenue of CU777m consisting of the actual reversal of CU730m billed during the year and interest of CU47m also billed during the year (3% on CU1,600m, which is the outstanding balance of the regulatory asset at the start of X1 of CU1,560m plus the additional CU40m that the regulator allows in the final rate determination);

b) regulatory income for the additional CU40m storm damage repair costs incurred in year X0 that was not included in Entity A's initial estimate but the regulator allows in the final rate determination; and

c) regulatory expense of CU730m for the amount reversed through the rate during X1 of the regulatory asset recognised in X0.

Note: This example assumes that the interest rate of 3% is a reasonable rate to use for discounting the estimated future cash flows.

Example 1B—Accounting for changes in estimates (timing)

35

Cash flows discounted using 3% discount rate					
In CU (m)	Year X0	Year X1	Year X2	Year X3	Total
Revenue (Timing difference reversal plus interest)	0	537	567	551	1,655
Regulatory income (timing difference origination)	1,560				1,560
Regulatory expense (timing difference reversal)		(490)	(535)	(535)	(1,560)
Operating expenses	(1,640)	0	0	0	(1,640)
Profit / (loss)	**(80)**	**47**	**32**	**16**	**15**
Regulatory interest included in revenue	0	47	32	16	95
Regulatory asset (origination + interest - revenue)	1,560	1,070	535	0	-

IFRS

Early in year X1, Entity A receives the final rate determination confirming the amount and recovery period of the timing difference resulting from repairing the storm damage. The rate determination confirms that:

a) Entity A can recover CU1,560m of the CU1,640m repair costs incurred when it repaired the damage caused by the storm (ie the regulator approves 100% of the entity's estimated amount at the end of Year X0);
b) Entity A will not recover the CU1,560m in two years as initially estimated but in three years by increasing the rate charged to customers from 1 April X1 until 31 December X3; and
c) Entity A will be compensated for the effects of time by including in the rate charged to customers 3% interest on the outstanding balance of the regulatory asset at the beginning of each year.

At the end of year X1, the statement of financial performance of Entity A reflects:

a) revenue of CU537m consisting of the actual reversal of CU490m billed during the year and interest of CU47m also billed during the year (3% on CU1,560m, which is the outstanding balance of the regulatory asset at the start of X1); and

b) regulatory expense of CU490m for the amount reversed through the rate during X1 of the regulatory asset recognised in X0.

Although the regulatory determination slows the timing of the cash inflows, no loss is recognised in year X1 because the entity is being compensated for the time delay.

Note: This example assumes that the interest rate of 3% is a reasonable rate to use for discounting the estimated future cash flows.

Recommendations and question for the Board

We recommend the model should adopt the treatment required by IAS 8 to account for changes in estimated future cash flows. This means:

a) The effects of changes in estimates of future cash flows should be accounted for prospectively in profit or loss in:
   i. the period of change, if the change affects only that period; or
   ii. the period of change and future periods, if the change affects both.

b) If the change gives rise to a change in a regulatory asset or regulatory liability, adjust the change in carrying value of the related asset or liability in the period of change.

D

Question for the Board:
3. Does the Board agree with the recommendation above?

IFRS

Changes in interest or return rates

37

- Interest/ return rates provided by regulatory agreements for timing differences of varying lengths typically compensate the entity for additional funding costs suffered because of the rate-setting mechanism (**slide 25**).
- Rate regulators typically establish procedures or policies to update periodically the interest/ return rates to reflect changes in underlying market rates.
- New rates apply prospectively to both old and new regulatory assets and regulatory liabilities.
- Changes in the interest/ return rates affect both the estimates of future cash flows and the discount rate.
- Re-estimating future interest/ return income normally would have no significant effect on the carrying amount of the regulatory asset—as illustrated in the following **slides 38 and 39**.

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The measurement technique proposed for the model calculates a present value measure of the carrying amount of a regulatory asset, by discounting the estimated future cash flows using a discount rate established at initial recognition of the regulatory asset. The present value measure is updated to reflect changes in estimated cash flows but the discount rate established at initial recognition is not updated to reflect changes in market rates (**slide 6**).

However, when the regulatory agreement periodically resets the regulatory interest/ return rate to reflect changes in market rates, the new rate changes the estimates of future cash flows. The revised rate applies prospectively to the outstanding balance of the regulatory asset when the rate is reset. Consequently, the discount rate used to measure the outstanding regulatory asset balance should also be changed to reflect the revised regulatory interest/ return rate to avoid creating an artificial gain or loss at the date of change.

Example: Changes in the interest/ return rates—measurement prior to change in rate

Statement of financial performance—8% interest/ return rate							
In CU (m)	Year X1	Year X2	Year X3	Year X4	Year X5	Year X6	Total
Revenue (reversal of timing difference + 8% interest/ return on opening timing difference balance)	-	28.0	26.4	24.8	23.2	21.6	**124.0**
Regulatory income / (expense) (timing difference)	100.0	(20.0)	(20.0)	(20.0)	(20.0)	(20.0)	-
Operating expenses	(100.0)	-	-	-	-	-	**(100.0)**
Profit / (loss)	**0.0**	**8.0**	**6.4**	**4.8**	**3.2**	**1.6**	**24.0**
Regulatory interest income included in revenue	-	8.0	6.4	4.8	3.2	1.6	**24.0**
Regulatory asset at end of year	100.0	80.00	60.0	40.0	20.0	-	-

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During year X1, a timing difference arises when Entity B carries out repairs following a major storm. As a result, Entity B incurs allowable costs of CU100 million that were not included in the rate for year X1. The regulatory agreement establishes the following:

- the timing difference will be reversed by including CU20 million in the rate each year for the next 5 years; ie years X2-X6;
- no margin is earned on allowable operating costs; ie the repair costs are passed through to the rate at the amount of CU100 million; and
- interest/ return of 8% on the outstanding balance of the timing difference at the beginning of the year end is included in the rate charged during the year; ie the entity is able to bill the return on the outstanding balance of the timing difference within the same period the return arises.

Discounting the estimated future cash flows using 8% as a discount rate results in the year-end present value measures for the regulatory asset shown at the bottom of the slide.

The slide shows only the amounts relating to the timing difference.

Note: This example assumes that the interest rate of 8% is a reasonable rate to use for discounting the estimated future cash flows.

Example: Changes in the interest/ return rates—measurement after the change in rate

Statement of financial performance—8% interest/ return rate (X1-X3) and 6.5% (X4-X6)							
In CU (m)	Year X1	Year X2	Year X3	Year X4	Year X5	Year X6	Total
Revenue (reversal of timing difference + 8% interest/ return on opening timing difference balance)	-	28.0	26.4	23.9	22.6	21.3	122.2
Regulatory income / (expense) (timing difference)	100.0	(20.0)	(20.0)	(20.0)	(20.0)	(20.0)	-
Operating expenses	(100.0)	-	-	-	-	-	(100.0)
Profit / (loss)	**0.0**	**8.0**	**6.4**	**3.9**	**2.6**	**1.3**	**22.2**
Regulatory interest income included in revenue	-	8.0	6.4	3.9	2.6	1.3	22.2
Regulatory asset at end of year	100.0	80.00	60.0	40.0	20.0	-	-

IFRS

During year X3, the regulatory agreement resets to 6.5% the interest/ return rate for the remaining balance of the timing difference during the next 3 years. The new rate is to be applied from 1 January X4. The amounts charged to customers through the rate during years X1-X3 are unchanged from the estimated amounts in the previous slide.

During years X4-X6, the interest/ return that will be earned on the remaining balance of the regulatory asset will be lower than originally estimated because the regulatory interest/ return rate established by the regulatory agreement has been reduced to reflect a change in market rates. The 6.5% rate is still assumed to be a reasonable rate to use for discounting the estimated future cash flows. Discounting the estimated future cash flows using the 6.5% as a discount rate for the applicable years X4-X6 results in the year-end present value measures for the regulatory asset shown at the bottom of the slide.

The table shows that the change in estimated future cash flows plus the change in discount rate does not have an effect on the present value measure of the regulatory asset when the timing of the cash flows coincides with the timing of the change in interest/ return rate. However, the change in the interest/ return rate does have an effect on the revenue the entity is entitled to bill during years X4-X6. This has an equivalent effect on the amount of profit reported in each period.

Recommendation and question for the Board

When the regulator changes the interest or return rates used to compensate the entity for the period between the origination and reversal of timing differences, the entity should:

(a) measure the outstanding regulatory asset balance using the revised interest or return rate to discount the estimated future cash flows; and

(b) recognise any resulting change in the carrying amount of the regulatory asset in the period of change.

Question for the Board

4. Does the Board agree with the recommendation above?

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Measurement of regulatory liabilities

Content

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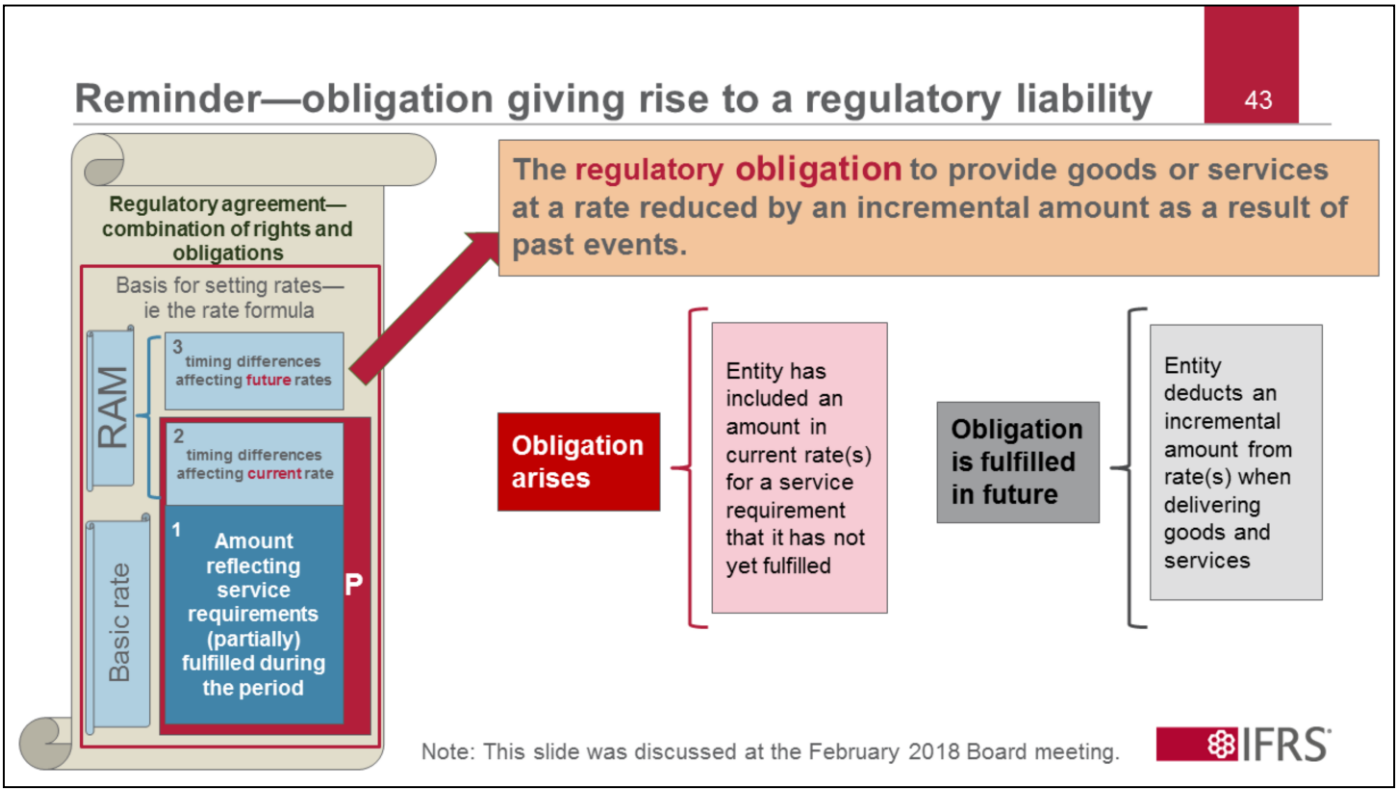


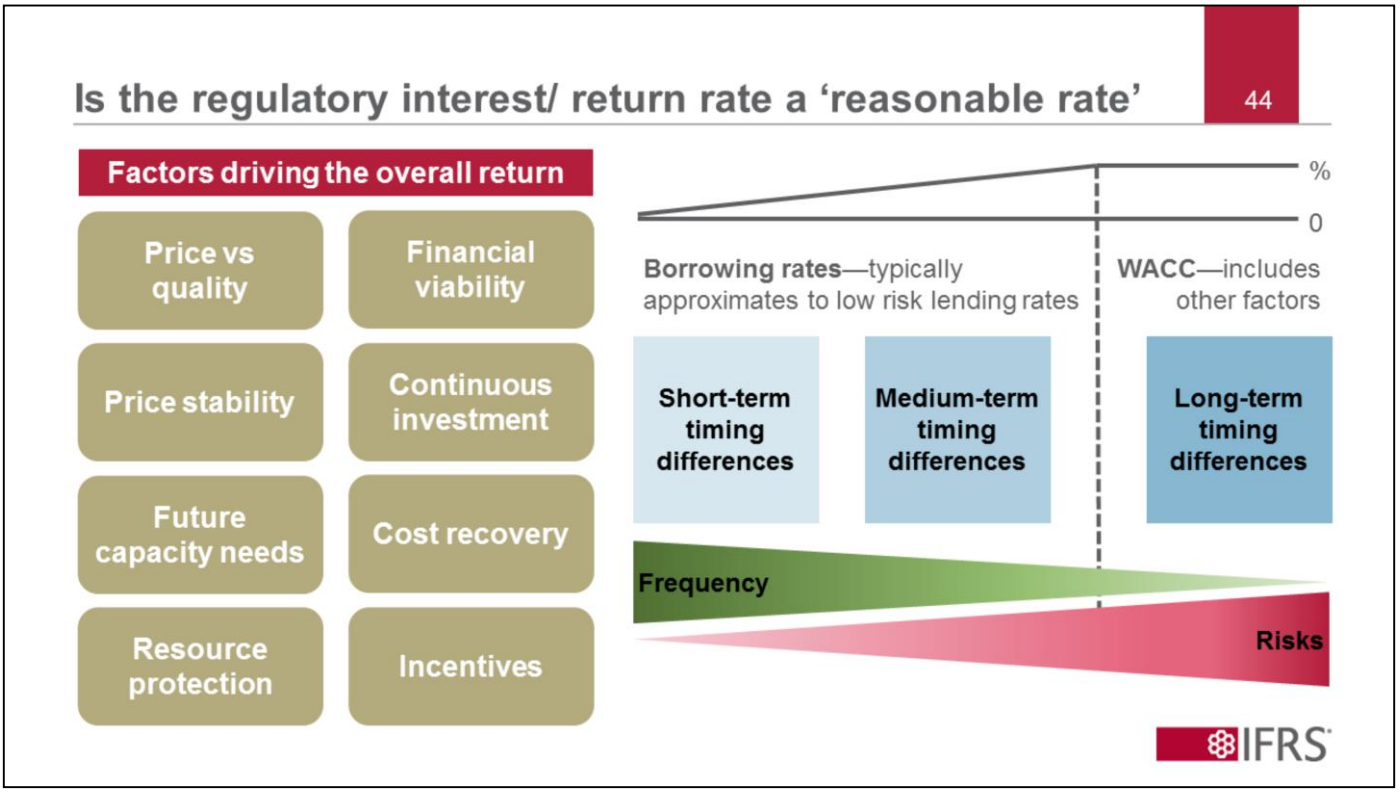
The regulatory agreement establishes the service requirements the entity is obliged to fulfil. The regulatory agreement also sets out the rate formula that establishes **how much** compensation the entity is entitled to include in the regulated rate (rate) **in exchange** for fulfilling its service requirements**,** and establishes **when** the compensation is to be included in the rate(s). Consequently, the rate formula creates a direct and specific **cause-and-effect** relationship between a rate-regulated activity and amounts included in the rate(s).

Regulatory liabilities arise when an entity carries out an activity to fulfil its regulatory service requirements in a later period than the period in which the entity charges customers for that activity through the rate(s). Regulatory liabilities could arise from a variety of past transactions, activities or events, such as the entity having:

- received amounts from customers in advance of carrying out activities and incurring the allowable expenses that those amounts are intended to compensate it for;
- incurred a lower amount of actual allowable expenses than the estimated amount already included in the rate (ie a chargeable estimation variance); or
- failed to meet a target (eg for timing or quality of performance) so that a penalty is imposed.

The regulatory obligations arising from the past events above are fulfilled as the entity fulfils service requirements by delivering goods and services and charges a rate(s) reduced by the incremental amount already included in the rate(s) in earlier periods. Consequently, the rate charged for delivering those goods and services is less than the amount that reflects the service requirements fulfilled during that period. In effect, the entity gives customers a rebate in the rate(s) charged when those goods and services are delivered because:

- the entity has already charged customers an amount for those goods and services and, as a result, the entity cannot charge customers that amount again when those goods and services are delivered; or
- if the entity fails to fulfil the service requirements for which the incremental amount has already been included in the rate, the entity cannot retain that amount and is obliged to deduct it from rate(s) charged to customers when delivering other goods and services in the future.



Short- or medium-term timing differences

As noted on **slide 24**, when considering the price for bearing uncertainty inherent in the cash inflows arising from a financing transaction, we would look at the risks inherent in collecting the future cash inflows from that transaction. Consequently, the main risk considered typically is the borrower's credit risk. In the case of a regulatory liability, the 'borrower' is the entity and, as highlighted on **slide 26**, entities subject to defined rate regulation are typically classified as low risk with strong credit ratings. As a result, they typically attract relatively low borrowing rates when obtaining short- and medium-term debt finance.

We observe that the regulatory interest/ return rate charged on regulatory liabilities arising from short- or medium-term timing differences are typically either close to corporate borrowing rates for financial instruments with similar maturities or rates that reflect the entity's incremental borrowing rate (**slide 25**). In such cases, the regulatory interest/ return rate is a reasonable rate to reflect the risks associated with the financing component of the regulatory liability.

Long-term timing differences

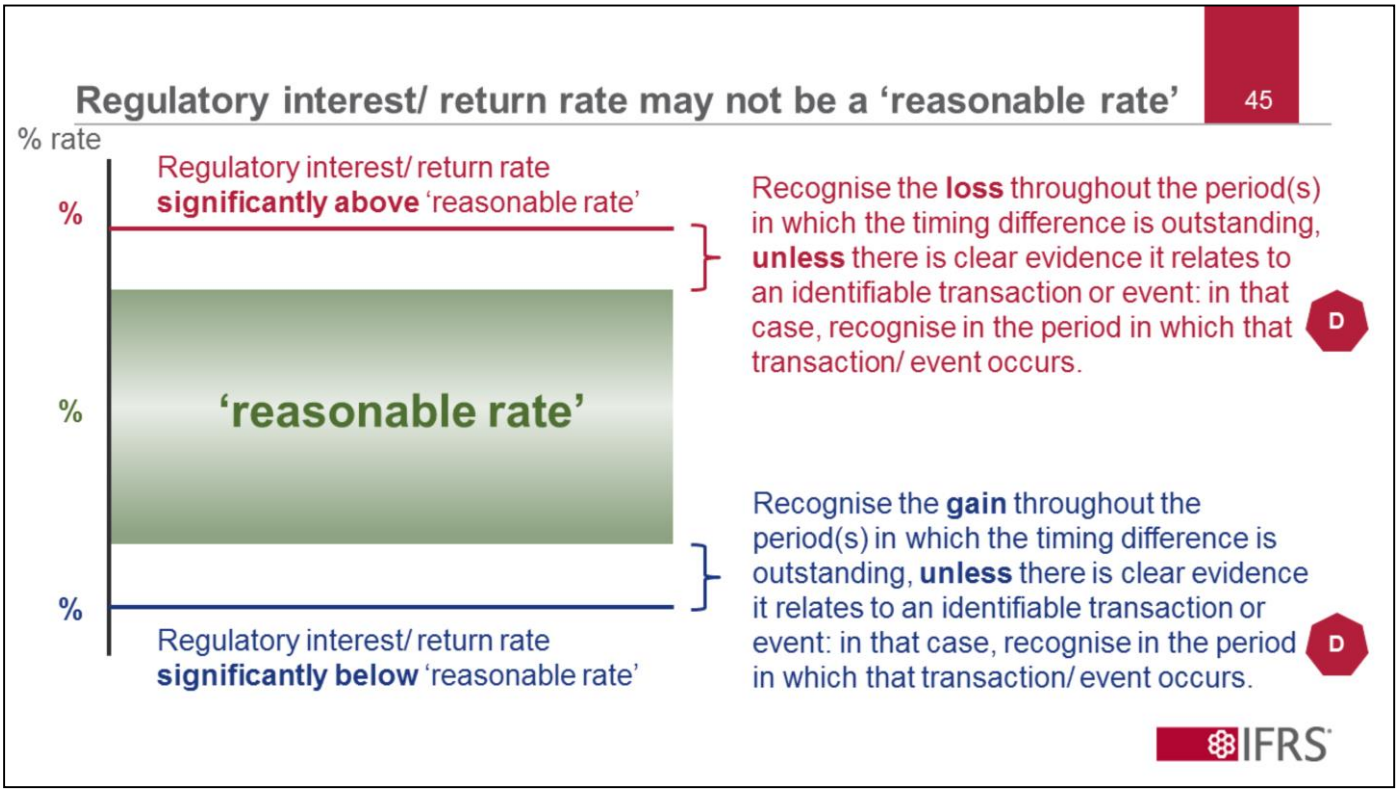
As noted on **slide 25**, long-term timing differences are included within the RCB and the same WACC return is applied to those timing differences as to other components of the RCB.

As noted on **slide 26**, the WACC used to provide the return on the cost of assets used in providing regulated services includes amounts intended to encourage and support the entity's ongoing activities to achieve the regulatory objectives. The WACC earned on those assets is recognised over time as those assets are used.

By using the same WACC return for long-term regulatory liabilities, we consider the regulatory agreement creates the following obligations for the entity:

- the **obligation to compensate** customers for the time value of money and costs of bearing uncertainty in the related cash flows; and
- the **additional obligation** to continue to support the regulatory objectives to maintain or improve the quality of current as well as future services. The entity is entitled to charge customers for those services a rate reflecting various factors that are consistent with the regulatory objectives (**slides 50-53**).

Consequently, we consider the additional interest/ return included in the WACC charges the entity for factors other than the effects of time and risk associated with the timing difference. Those factors typically relate to the ongoing regulated activities of the entity and the overall return the entity has an opportunity to earn through the regulatory agreement. As a result, we consider it appropriate to recognise the additional interest/ return over the period the timing difference is outstanding, unless there is clear evidence that it relates to a past transaction or event.



As noted on the previous slide, we consider that the regulated interest/ return rate is a 'reasonable rate' to use to discount the estimated future cash flows arising from a regulatory liability when that rate:

- for short- or medium-term timing differences, is a reasonable approximation to the entity's borrowing rate; or
- for long-term timing differences, is the same as the WACC or other return rate applicable to PPE and other assets within the RCB.

In some rare cases the interest/ return rate applied to a particular regulatory liability may be significantly lower or significantly higher than a reasonable rate. In such cases, an entity would need to exercise judgment to assess whether the excess compensation resulting from the lower rate or the deficit of compensation resulting from the higher rate can be identified as resulting from an identifiable event or regulatory decision, such as a performance related reward or a penalty.

If the entity has clear evidence that the excess/ deficit in the compensation results from such an identifiable event or decision, we recommend the model should require the entity to recognise the excess or deficit in profit or loss in the period in which the identifiable event or decision occurs, in the same way as outlined in **slide 27** when the same situation arises for a regulatory asset.

If the entity does not have clear evidence that the excess or shortfall in the interest/ return rate is being provided as reward or penalty for an identifiable event or decision, we recommend the resulting gain or loss is recognised over the period in which the timing difference is outstanding by using the regulatory interest/ return rate to discount the estimated future cash flows. This again is consistent with our recommendation for when the same situation arises with a regulatory asset.

Recommendation and question for the Board

We have not identified issues that would require regulatory liabilities to be measured on a different basis than regulatory assets. Consequently, we recommend the model should apply the same measurement requirements for regulatory liabilities as for regulatory assets.

Question for the Board
5. Does the Board agree with the recommendation above?

IFRS

Appendix 1—initial disclosure inventory relating to measurement

Initial disclosure inventory (1/2) D

Estimating future cash flows

1. Method (ie most likely amount or expected value) used for estimating future cash flows arising from regulatory assets and regulatory liabilities.

2. Instances when estimates of future cash flows have been prepared by grouping different timing differences.

Significant financing component

1. The regulatory interest/ return given on regulatory assets or charged on regulatory liabilities.

2. Instances when the regulatory interest or return given/charged is assessed as not being 'reasonable'. Disclosure of the corresponding accounting and rationale used by the entity.

3. Instances when there is no explicit financing component in the regulatory agreement, but the entity concludes the financing component is significant. Disclosure of the corresponding accounting and rationale used by the entity.

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At a future meeting, the staff will bring a detailed paper to the Board on presentation and disclosure.

Initial disclosure inventory (2/2) D

Changes in estimated cash flows

1. Reasons for changes in estimates of future cash flows and the corresponding effects in the entity's financial statements.

2. Changes in the regulatory interest/ return rates and effects in the entity's financial statements.

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Appendix 2—reminder of the rate-setting mechanism

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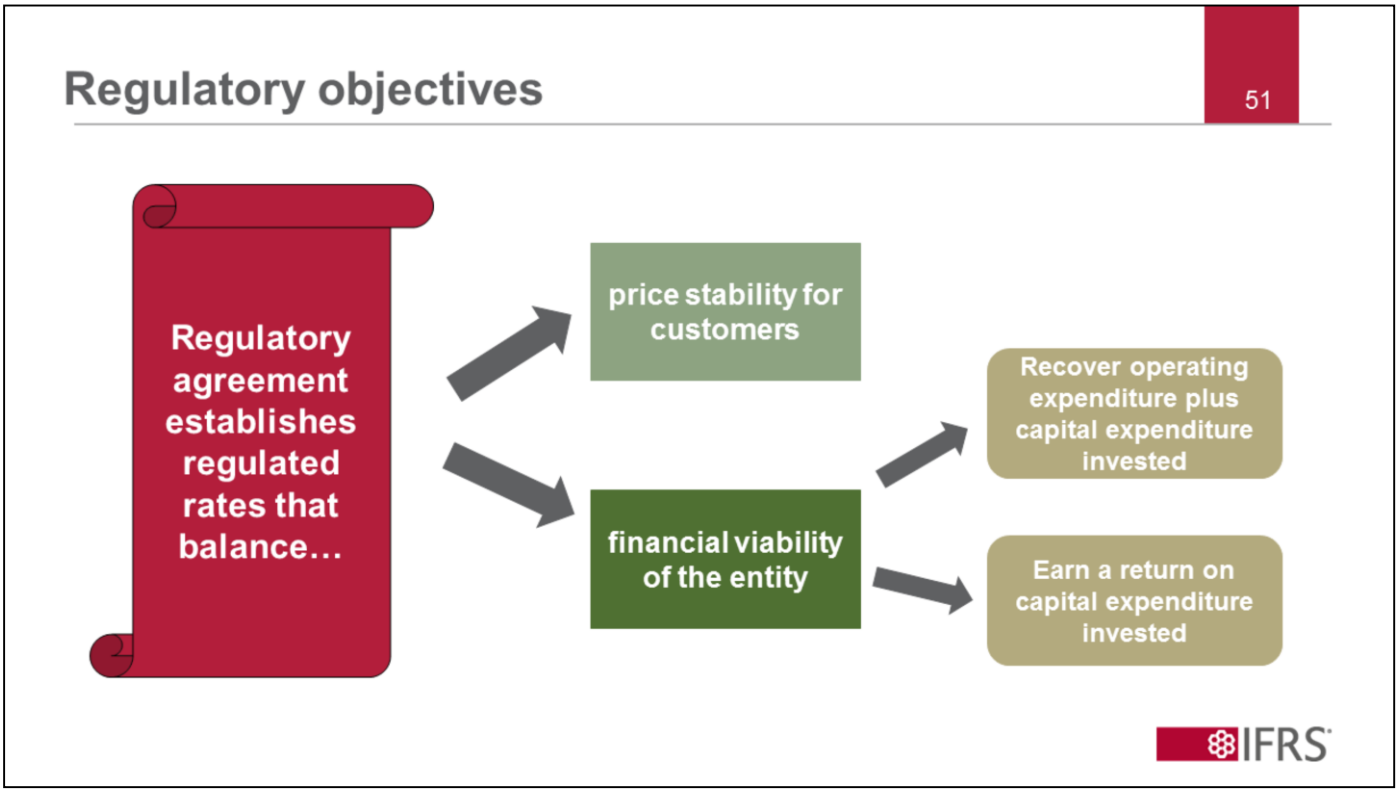
Much of the information in the following slides was included as background information for the analysis discussed by the Board in May 2018 in Agenda paper 9B Measurement. The information is also relevant for the analysis presented in this paper. Consequently, we provide it again here for convenience.



We have identified previously that the nature of the goods and services is such that the rate regulator (regulator) has objectives to protect customers by ensuring:

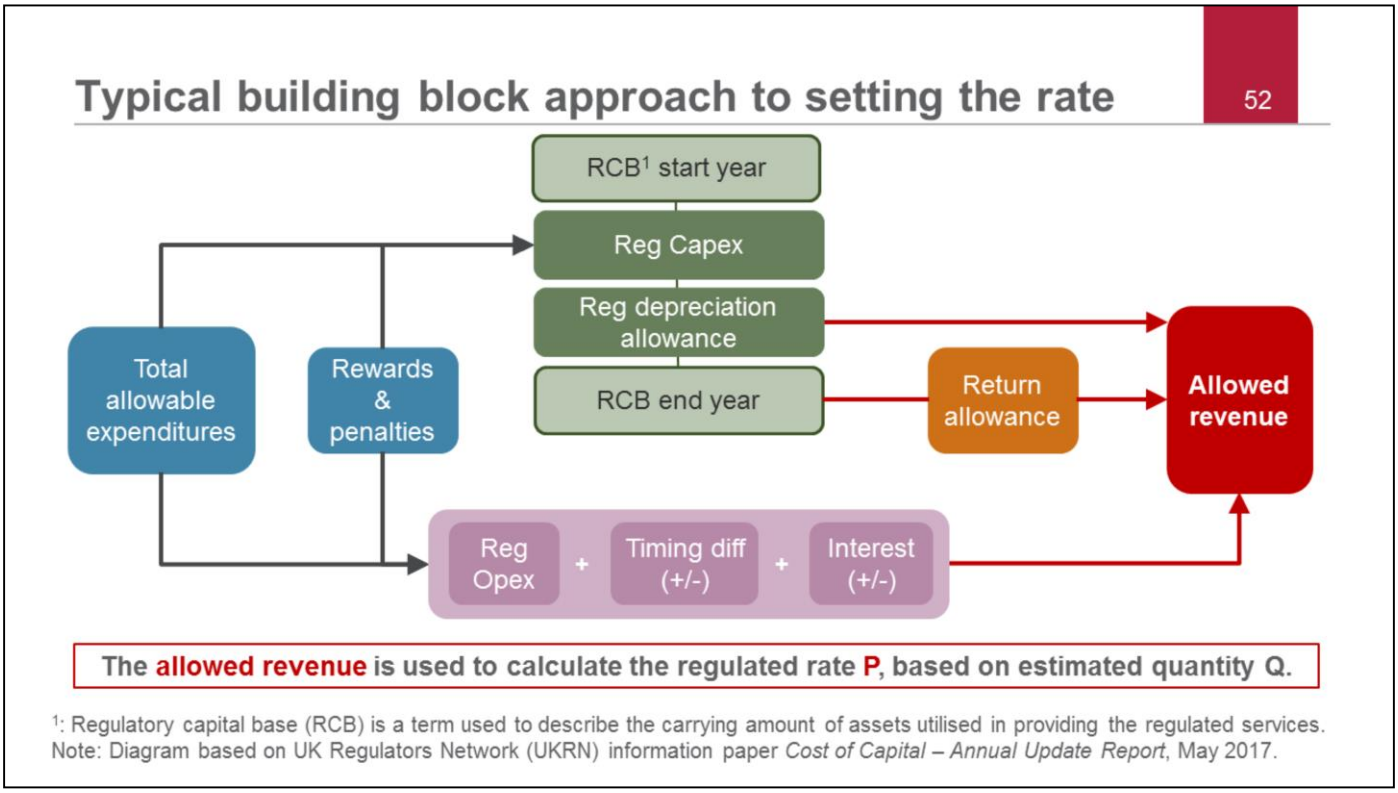
- quality, quantity and availability of supply (done through establishing service requirements in the regulatory agreement); and
- stability and affordability of pricing (done through price controls, ie the basis for setting rates established by the regulatory agreement).

In addition, the regulator aims to ensure the rate established by the regulatory agreement supports the entity's financial viability by enabling it to charge customers rates that provide the entity with an adequate amount of compensation in exchange for fulfilling the service requirements established by the regulatory agreement. Protecting the entity's financial viability is important for the well-being of customers because it facilitates continuing investment in the infrastructure and other resources used to supply the rate-regulated goods and services.

Many entities subject to defined rate regulation operate in capital intensive industries requiring continuous investment in infrastructure necessary to support the continued delivery of rate-regulated services to customers. Consequently, the basis for setting the rate(s) needs to give providers of both debt and equity capital to the entity confidence that the entity will be able to:

- to recover the cost **of** assets used and operating expenses incurred in providing regulated services; and
- to earn a return **on** the amounts invested in assets used in providing regulated services.

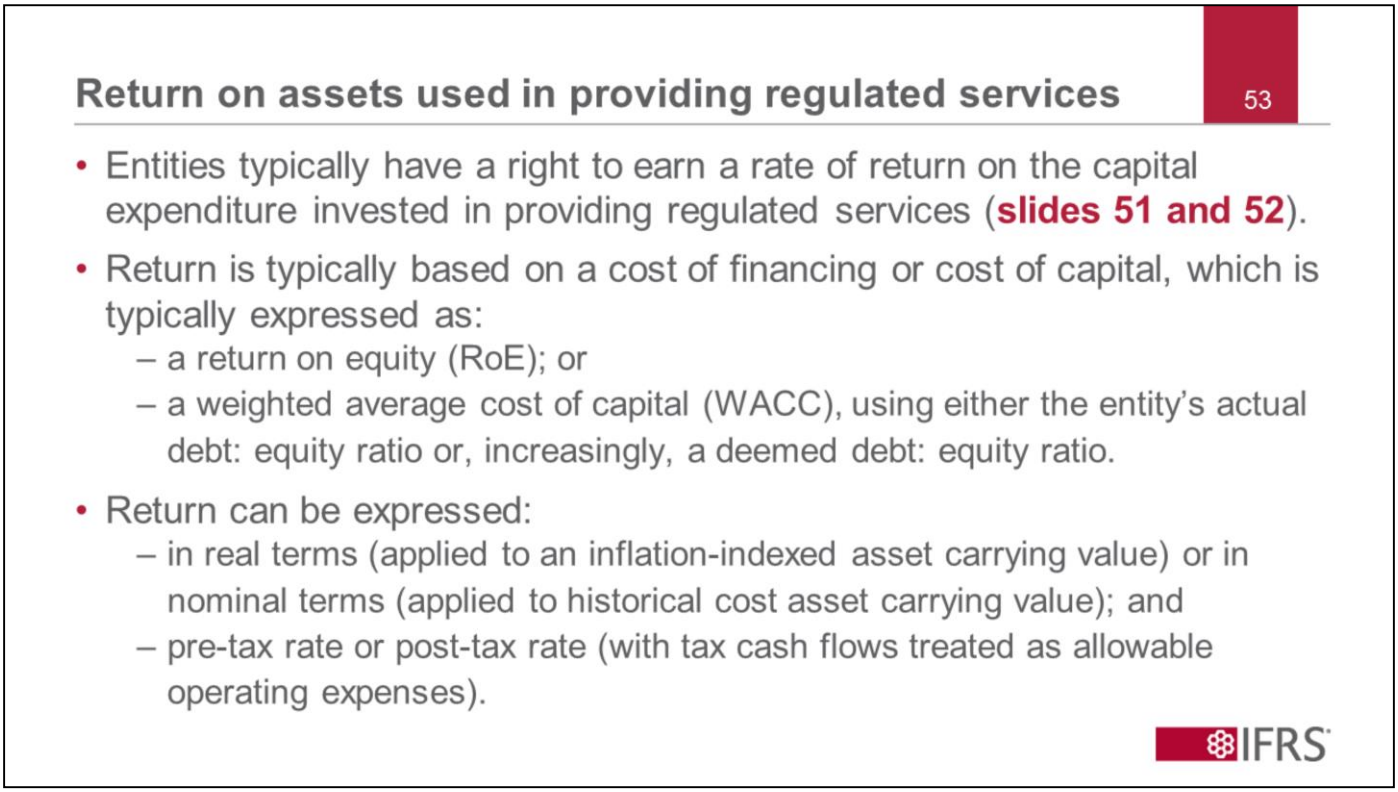
The return needs to be sufficient to cover both borrowing costs and the return on equity required by investors in the entity.



As discussed in Agenda Paper 9B for the Board's May 2018 meeting, the rate formula typically calculates the rate(s) using a 'building block' approach. This approach identifies:

- the total expenditure that the entity is allowed to include within the regulated rate—such expenditure is then treated as:
  - 'regulatory operating expenditure' (reg opex), intended to pass through into the rate in the same period as the expenses are incurred with typically no interest rate or margin applied; and
  - 'regulatory capital expenditure' (reg capex), intended to pass through into the rate over a longer period together with an allowed return on the capital expenditure invested in providing regulated services.
- any incentive rewards earned or penalties incurred, which are commonly passed through 'opex' but may also be passed through 'capex'.

However, not all allowable operating expenditures, penalties or rewards pass through into the rate in the same period in which the expenditure or penalty is incurred or reward earned. This leads to the timing differences the model being developed in this project is being designed to account for.



The allowed return for entities subject to defined rate regulation regimes around the world is most commonly based on a return on the capital expenditure invested in providing regulated services. This return reflects a cost of financing, which is typically expressed as RoE or WACC. For both, estimated 'cost of equity' is a key input, reflecting the return that providers of equity capital require to continue investing in the entity.

Cost of financing (expressed either as RoE or WACC) is one of the most important inputs that regulators (and entities) have to estimate. Consequently, how best to calculate the most appropriate cost of financing for rate regulated industries has been extensively debated but no single methodology has been adopted. However, when trying to assess the reasonableness of the rate calculated, many regulators benchmark results—typically with other regulators within the same country, although sometimes with regulators in other countries and with other sectors.

Various methods are used by regulators to calculate the allowed return. The most common method uses the capital asset pricing model (CAPM) to derive the cost of equity and from there to find a WACC, using either the entity's actual debt: equity ratio or, increasingly, a deemed debt: equity ratio. The increasing use of a deemed debt: equity ratio reflects some regulators' concerns about financial capital structures that over-rely on debt, which may risk the financial sustainability of regulated entities.

Typically, the inputs used to determine the return on assets used to deliver regulated services reflect various factors, including the length of the time lag between investment in the assets and the period when the amount invested is recovered by being included in the rate charged to customers. Other factors reflected include the time value of money, regulatory objectives and various risks that providers to the entity of debt and equity finance are expected to take into account when providing finance.

Regulators have typically established procedures or policies to update periodically the interest/ return rates. When this happens, the new rates apply to both old and new regulatory assets and regulatory liabilities (see **slide 37**).

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