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Connections 2020-25 Response to AER's Draft Decision

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SA Power Networks

Connections 2020-25 Response to AER's draft decision



SA Power Networks 2020-25 Revised Proposal

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Document Control

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Executive summary

We have forecast net connection capital expenditure to be **\$276.8 million** (real June \$2018) over the next regulatory control period, 2020/21 to 2024/25. This forecast consists of:

- \$430.1 million gross connections capex forecast; and
- **\$153.3** million customer contribution.

Our Original Proposal and the AER Draft Decision

Our capex forecast¹ in our Original Proposal included a forecast of \$198.4 million in net connections capex consisting of \$371.5 million in total gross connection expenditure and \$173.1 million in total contributions.

The AER did not accept our connections capex forecast in its Draft Decision, and included a substitute forecast of our net connections forecast of \$167.6 million (ie \$30.8 million lower than forecast). In determining this substitute amount, the AER:

- reduced our gross connection expenditure forecast to \$340.7 million (or by approximately 9.1% less) to reflect our estimate of our gross connection expenditure for the current regulatory period; but
- accepted our customer contribution forecast as this was already in line with our estimate for the current period.

The AER raised several concerns in rejecting our forecast, which largely related to it not accepting that our gross connections capex, which had been developed for us by BIS Oxford Economics (BISOE), would increase as predicted.

These concerns were broadly that we had not sufficiently explained and supported our methodology, including the suitability and appropriateness of selected economic drivers, their forecast and other assumptions. The AER's concerns were exacerbated by the underlying model, including its inputs and outputs, being on a different basis to our submitted AER RINs (ie Category Analysis and Reset RINs), which meant it was difficult for the AER to reconcile the model to these RINs.

While we accept that we may not have explained and demonstrated our forecast appropriately, and this was in a large part due to it being developed on a different basis to our RINs, we do not believe that our underlying methodology is invalid.

We also do not consider that the AER's reasoning for accepting our connections contribution forecast is consistent with its reasoning for developing its substitute gross connection expenditure forecast, based on its view that both of these should be in line with historical levels.

The contribution amounts for a large portion of our forecast are a direct function of the regulatory WACC as required by the National Energy Customer Framework (NECF) and our Connection Policy 2020-25, which we understand will be accepted by the AER. Given the AER is proposing to reduce our Pre-Tax Real WACC from 4.27% in the current period to 2.63%² in the next regulatory period then the contribution amount as a proportion of the gross connection expenditure must reduce, resulting in an increase in net connections expenditure as a proportion of gross.

¹ Quoted values in real June \$2018, as per AER's draft decision capex model workbook, "AER - SA Power Networks 2020-25 - Draft decision - Capex Model - October 2019.XLSM"

² Calculated value as of November 2019

Our revised connections forecast

We have reapplied our forecasting methodology to develop our forecast for the Revised Proposal³. Key changes to our previous methodology are as follows:

- we have updated our analysis to allow for the latest data, including our actual cost and activity data for 2018/19 and our revised estimate for 2019/20, updated the forecast of Major projects list, and revised economic data;
- we have engaged BISOE to reapply its modelling with the revised data, and provide more detailed explanation and responses to the concerns raised by the AER and its advisors; and
- revised the models and analysis to ensure that it is directly based on the AER's RIN basis and so is fully reconcilable to the RINs.

We believe that this revised modelling and the supporting documents should address the AER's key concerns.

The gross connections forecast represents a 25% increase (see Figure 1) from our estimate for the current period. But on average per annum this represents only an 8% increase over the recent level of activity in 2018/19 and our forecast for 2019/20.

This increase is due largely to a downturn in the SA economy that suppressed connections activity over the first three years of the current period, but returned to more 'normal' levels in 2018/19 (refer to Figure 2). BISOE are forecasting that this level of activity will continue into the next period with a small increase driven by strengthening economic, building and infrastructure activity, with defence and other government projects being key contributors.



Figure 1 Current and next RCP average annual GROSS connection expenditure comparison, \$'000 real June 2018

³ Resulting outputs of historical and forecast gross, contribution and net expenditures can be viewed in Appendix E – Connections expenditure tables, real June \$2018

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Figure 2 Gross connection expenditure, actual and forecast

However, the connection contribution forecast only increases by 14% (see Figure 3) from our estimate for the current period. The reduction in contribution as a proportion of gross capex is due to the reduction in WACC (as noted above). This will reduce the contribution we will receive for medium and major connections (by approximately 10%). It also increases the asset rebates we will pay to real estate developers (by approximately 25%). See **Appendix A** for further detail of the contribution formulations and the correlated impact of WACC.

The historical actual and forecast of contribution performances can be seen in Figure 4 below.



Figure 3 Current and next RCP average annual CONTRIBUTION comparison, \$'000 real June 2018





Therefore, the resulting average net expenditure forecast (see Figure 5), which is simply the difference between gross and contribution, represents an increase of 32% from our estimate for the current period. The resulting historical actual and forecast of net expenditure performances can be seen in Figure 6 below.



Figure 5 Current and next RCP average annual NET connection expenditure comparison, \$'000 real June 2018



Figure 6 Net connection expenditure, actual and forecast

1. Background

1.1 Purpose

We have forecast net connection capital expenditure to be **\$276.8 million** (real June \$2018) over the next regulatory control period, 2020/21 to 2024/25. This forecast consists of:

- \$430.1 million gross connections capex forecast; and
- **\$153.3** million customer contribution.

The purpose of this document is to:

- set out our response to the AER draft decisions (Section 2)
- explain how we have developed our revised connections forecast (Section 3)
- set out our revised connections forecast (Section 3).

This document is supported by a number of other documents, including:

- BIS Oxford Economic Gross customer connection forecasts to 2025/26, November 2019
- BIS Oxford Economic response to EMCa's report, November 2019
- SAPN Connections forecast workbook
- SAPN (revised) Connection Policy for 2020-25

1.2 SA Power Networks' Original Proposal

In our Original Proposal⁴, we forecast \$198.4 million (real June \$2018) in net connections capex. This amount is rolled into the RAB and recovered over time through network distribution charges. This net forecast consists of two components:

- \$371.5 million forecast for gross connections capex; and
- \$173.1 million forecast for capital contributions, which is funded by connecting customers through cash contributions.

To develop these two component forecasts, we classified all connection services into one of four connections categories and developed the gross and contribution forecasts separately for each category. The four categories were:

- Minor customer connections primarily residential and small commercial connection services
- **Medium customer connections** primarily commercial connection services and associated augmentation works if applicable
- **Major customer connections** primarily larger commercial connection services and associated augmentation works if applicable
- **Real estate developments** connection of developments from 3 allotments to larger multi staged developments and associated augmentation works if applicable

We used a different methodology to prepare our gross expenditure and contribution connections forecasts.

⁴ Quoted values in real June \$2018, as per AER's draft decision capex model workbook, "AER - SA Power Networks 2020-25 - Draft decision - Capex Model - October 2019.XLSM"

We engaged BIS Oxford Economics (BISOE) to produce our gross forecast⁵. BISOE used a combination of economic and statistical modelling methods (ie a top-down method using economic drivers to predict movements in connection volumes) and bottom-up analysis (ie based on a summation of known probable projects). The bottom-up method was only used for a portion of the major customer connections categories.

This BISOE forecast was prepared using internal costs and data. We then took this forecast and transformed it to the appropriate basis for input in the Reset RIN.

We developed the contribution forecast. We used contribution rates estimated as the average of the current period (ie the contribution amount as a proportion of the gross amount) to calculate the contribution forecast from the gross forecast. Importantly, however, the historical contribution rates were adjusted to allow for the change in WACC that is proposed for our next regulatory period. The contribution amounts for a large portion of our forecast (covering medium and major connections and asset rebates) are a direct function of the regulatory WACC as required by the NECF and our (revised) Connection Policy 2020-25. The adjustment to the contribution rates to reflect the proposed change in WACC was estimated based upon analysis of a sample of historical projects in these connection categories to determine how the amount of contribution would change from the historical amounts.

As we will discuss below, we have re-forecast our gross connection expenditure and contribution forecasts for our Revised Proposal. The methodology used largely remained the same as for our Original Proposal, including engaging BISOE to reforecast the gross connections forecast. The key differences are:

- the models and analysis are prepared directly on an AER RIN basis and so are fully reconcilable to the RIN data (ie the BISOE forecast of gross connections capex is a direct input to the RIN data); and
- we (and BISOE) have updated the analysis to allow for the latest data, including our actual cost and activity data for 2018/19 and our revised estimate for 2019/20, updated the forecast Major projects list, and revised economic data which is driving the forecasts.

We will discuss our revised model in more detail in Section 3.

1.3 Australian Energy Regulator's draft decision

The AER did not accept our connections capex forecast in its Draft Decision, and included a substitute forecast of our net connections forecast of \$167.6 million⁶. In determining this substitute amount, the AER:

- reduced our gross connection forecast to \$340.7 million (or by approximately 9.1% less) to reflect our estimate at that time of our gross expenditure over the current regulatory period; but
- accepted our customer contribution forecast as this was already in line with our estimate for the current period.

In forming its view, the AER sought advice from an external technical advisor, EMCa, who undertook a review of our forecast and methodology⁷. Based on advice from this review and the AER's analysis, the AER raised several concerns in support of its decision to reject our forecast. These concerns largely related to the AER not accepting that our gross connections capex, which had been developed for us by BISOE, will increase above historical levels as predicted.

⁷ Energy Market Consultants associates, Review of aspects of SA Power Networks' capital expenditure, September 2019, pp 88-90

⁵ BIS Oxford Economic Gross customer connection forecasts to 2025/26, November 2019

⁶ AER's draft decision Attachment 5, p5-40, and capex model workbook, "AER - SA Power Networks 2020-25 - Draft decision - Capex Model - October 2019.XLSM"

These concerns were broadly that we had not sufficiently explained and supported our methodology, including the suitability and appropriateness of selected economic drivers, their forecast and other assumptions. The AER concerns mainly related to our gross connection expenditure forecast for major connections, which was predicted to increase significantly from average levels over the current period.

These concerns were exacerbated by our underlying models, including their inputs and outputs, being on a different basis to the AER's RINs, which meant the AER was unable to reconcile the model to the category analysis and reset RIN data.

While we accept that we may not have explained and demonstrated our forecast sufficiently, and this was in a large part due to it being developed on a different basis to our RIN data, we believe that our underlying methodology (as developed by BISOE) is valid. As noted above, for our Revised Proposal, we have prepared the models and analysis directly on a RIN basis to ensure that it is fully reconcilable to the AER's RIN data.

We also do not consider that the AER's reasoning for accepting our connections contribution forecast is consistent with its reasoning for developing its substitute gross connections forecast, based on its view that both should be in line with historical levels. As we note above, the contribution rates are a direct function of the WACC. Therefore, the contribution rates *must* reduce for the next regulatory period, and as such, even if gross connection expenditure remained at historical levels (which we do not agree it will), the contribution amount would reduce, and so net connection expenditure would increase.

We will discuss our response to the AER's (and EMCa's) specific concerns in more detail in Section 2 and provide a further explanation of our calculations of the connection contribution forecast, including contribution rates and WACC in Section 3.2.

2. Our response to the AER's specific concerns

In rejecting our gross connections forecast and substituting an amount that reflected the average amount over the current period, the AER raised a number of specific concerns⁸. Many of these were directly related to the specific concerns raised by EMCa in its review of our connections forecast⁹.

In this section, we provide our response to these concerns and the AER's substitute forecast.

2.1 Our response to the AER specific concerns supporting its substitute connections forecast

The AER's Draft Decision discussed five concerns it had regard to, which were developed through the EMCa review, which we have summarised:

- 1) Major connections forecast direct access to the top-down model developed by BISOE was not provided
 - a. EMCa was unable to assess the reasonableness of the forecast, including key drivers and assumptions
 - b. It wasn't sufficiently clear how the bottom-up forecast prepared by BISOE was used to support and verify the outcomes from the top-down model
- 2) Major connections forecast BISOE's position that 'Non-residential Commencements' (a driver of the forecast) would remain at approximately current levels through the next regulatory period
 - a. EMCa's view was that BISOE had not demonstrated its views that this position was reasonable stating that other data sources suggest it would not (ABS building approvals, as reported by SA Government, were cited)
- 3) Major connections forecast BISOE's economic drivers of the major connections capex
 - a. EMCa considered that it did not observe any relationship between 'Engineering Construction Work' and major connections capex and BISOE had used the 'Non-residential Commencements' forecast as possibly the only driver of Major Customer Connections capex
- 4) Real estate developments (URD) connections and contribution forecast our forecast assumes the historical levels are appropriate
 - a. EMCa considered that this should reduce to reflect lower after-diversity-maximum-demands (ADMD), stating that our information shows that these had reduced by 1 to 2 kVA and this reduces costs significantly
- 5) RIN reconciliation our submitted RINs and our proposal
 - a. EMCa found a number of discrepancies between our Reset and historical Category Analysis RINs, our proposal and the BIS models, which it was unable to resolve

In addition, the AER raised an additional concern, we have summarised:

- 6) Reset RIN reconciliation the reset RIN and our proposal
 - a. AER did not consider that our adjustments for overheads when converting from the BISOE forecast to our regulatory proposal was correct, as it was inconsistent with the rates used in our capex model

⁸ Attachment 5: Capital expenditure, draft decision SA Power Networks 2020-25, Section A.4, pp 5-41 to 5-42

⁹ Energy Market Consultants Associates, Review of aspects of SA Power Networks' capital expenditure, September 2019, Section 7

The AER key concerns can be grouped into three matters, which we discuss in turn below:

- a) Difficulties in reconciling our forecast to the RINs (ie points 5 and 6 above).
- b) The BISOE forecast of gross major connections, and associated assumptions (ie points 1, 2 and 3 above).
- c) Our forecast of real estate developments (URDs) (ie point 4 above).

a) Difficulties in reconciling our forecast to the RINs

We accept that the basis we used to prepare our original forecast, including the BISOE forecast, has resulted in difficulties for external parties understanding the reconciliation between the underlying forecasts and models to our proposal and AER's RINs.

We are also very concerned that this problem has resulted in a general unease with our forecast that may have resulted in the other concerns raised by the AER having a greater weight than necessary.

Rather than try to further explain and justify the specific concerns raised by the AER, we have instead recast our whole forecasting methodology for our Revised Proposal to ensure it is performed directly on the AER's RIN basis, including the revised modelling of gross connections capex undertaken by BISOE.

This recasting of our forecasting basis should ensure a simple reconciliation of the forecast and models to our proposal and the reset RIN, addressing all the AER's (and its advisor's) concerns on this matter.

b) The BISOE forecast of gross major connections

We do not consider that the AER and EMCa concerns with the BISOE forecast of the gross connections capex for the major connections category are valid. That said, we do accept that these may have arisen due to limitations in how the forecast was explained, which were exacerbated by the discrepancy between BISOE's forecast and our proposal and reset RIN.

As noted above, we re-engaged BISOE to revise their models with the latest data (both our connections data and the latest economic data), and have ensured that the data BISOE is using in its models is fully consistent with the AER'S RINS.

As part of this engagement, BISOE has provided a new report detailing their forecasting method and revised forecast¹⁰. In this document, BISOE has provided detailed explanations of its methodology and underlying assumptions, which we (and BISOE) consider demonstrates that its methodology and assumptions used to produce our gross connections capex forecast are reasonable. In addition, BISOE has produced a separate document¹¹ that responds to the specific concerns raised by EMCa, which the AER has relied on in its draft decision.

In our view (and the view of BISOE), the BISOE November 2019 forecast report and the BISOE Response to the EMCa report fully and extensively address the concerns with the BISOE forecast of major connections capex raised by the AER and EMCa.

The AER should refer to these two BISOE documents for detailed responses to these specific concerns, and the information and rationale supporting the BISOE forecasting methodology and associated assumptions. In summary:

1) Major connections forecast – direct access to the top-down model developed by BISOE was not provided As noted above, the BISOE 2019 forecast report provides a reasonably detailed explanation of the BISOE forecasting methodology and explanation and rationale for its assumptions.

¹⁰ BIS Oxford Economic Gross customer connection forecasts to 2025/26, November 2019

¹¹ BISOE Response to the EMCa's report, November 2019

	a) b)	EMCa was unable to assess the reasonableness of the forecast, including key drivers and assumptions 	BISOE has also provided a response to specific concerns raised by EMCa. In our view, irrespective of whether the underlying models of BISOE are available to the AER (or its advisors), the techniques being applied by BISOE are not so unique to them that a review cannot be conducted. There is sufficient supporting information in the BISOE reports, our available input and output data sets, and the public domain such that we consider a suitably experienced expert can make a reasonable judgement on the validity of the forecasting methodology and its underlying assumptions.
1)	Maj dire mot a) b)	jor connections forecast – ect access to the top-down del developed by BISOE was provided It wasn't sufficiently clear how the bottom-up forecast prepared by BISOE was used to support and verify the outcomes from the top-down model	For the years 1 and 2 (ie 2019/20 and 2020/21), BISOE relies on the 'bottom-up' forecast for 99.0% to 99.5% of the forecast. The bottom- up forecast in turn relies on the summation of detailed estimates from an extensive 'Major Projects List'. This is reasonable as we and BISOE have a good understanding of the specific projects and their cost and likelihood of proceeding. For the years 3 to 7 (2021/22 to 2025/26), BISOE largely rely on its top- down model. For the first two years (2019/20 and 2020/21), where BISOE is substantially relying on the bottom-up analysis, the ratio of Major connection expenditure-to-drivers (13.8) is very close to the historical average (13.7). Therefore, the outcomes of using the bottom-up or top-down approach are close and, in effect, validate each other.
2)	Maj BISO resi driv rem reg reg a)	jor connections forecast – DE's position that 'Non- dential Commencements' (a ver of the forecast) would hain at approximately rent levels through the next ulatory period EMCa's view was that BISOE had not demonstrated its views that this position was reasonable stating that other data sources suggest it would not (SA government building approvals were cited)	We (and BISOE) do not agree with this view and its relevance to the AER rejecting our forecast. BISOE advises in its response that "'Non-residential building approvals' in the current year are no basis on which to forecast commencements in the next 2 to 7 years. Building commencements (and approvals) forecasts beyond the near-term need to be undertaken on the basis of a thorough analysis of demand and supply fundamentals, which BISOE has a long history of doing, supplemented by information gathered about future individual projects from various industry data bases and government announcements. This type of demand-supply analysis and supplementary information formed the basis of the forecasts on which BISOE's non-residential forecasts were done for last years' November 2018 report and indeed again for the recent November 2019 report" ¹² . We (and BISOE) also consider that there was reasonably compelling evidence, at least for the first two years of the next period, given the range of new projects detailed in the major project list, used in the BISOE bottom-up forecast.

Nonetheless, to support this view further, the BISOE 2019 forecast report provides further details of its non-residential building and engineering construction forecasts. Figures 3.12 to 3.18 in this report show BISOE's forecasts by sector and category. BISOE advises that

¹² BISOE response to EMCa's report, November 2019, response #6, pp 4-5

"these forecasts [are] based on an extensive supply-demand analysis and supplementary information. Much of the 'supplementary information on individual projects and government announcements is also provided in the Major Projects List in section 3.4.2" of the report"¹³.

- Major connections forecast BISOE's economic drivers of the major connections capex
 - a) EMCa considered that it did not observe any relationship between 'Engineering Construction Work' and major connections capex and it appeared that BISOE has used the 'Non-residential Commencements' forecast as the key (and possibly) only driver of Major Customer Connections capex.

We (and BISOE) do not agree with this view and consider there was and still is clear evidence that BISOE uses both non-residential building commencements above \$20m (ie individual projects above \$20m in value) **and** engineering construction work done (excluding certain categories) as drivers of its major connection expenditure forecast.

The original BISOE 2018 forecast report, which EMCa had access to, clearly stated that both factors were used. Moreover, in section 3.4.2 of that report, the list of major projects also detailed engineering construction projects that were included. This list was also provided to the AER. Therefore, there was clear evidence available to the AER (and its advisors) that engineering construction was a driver of our major connections capex forecast.

This matter is clearly addressed again in the BISOE 2019 forecast report (sections 3.1.3 and 3.4), with the relevant engineering projects again shown (section 3.4.2).

In the bottom-up analysis of the major projects, BISOE found that around half of the value of the projects identified in 2017/18 and 2018/19 were attributable to engineering construction projects. Accordingly, its model gives equal weighting to the non-residential building commencements (above \$20m) and to the selected engineering construction projects.

As the total value of the selected engineering construction categories were around 3 times the value of the non-residential building commencements (above \$20m) over these two years, BISOE included around a third of the value of selected engineering construction categories in the sum of the drivers which underpinned the model for major connections expenditure.

More generally, an underlying view of the AER and EMCa seems to be that our major connection expenditure forecast was overstated as both the AER and EMCa considered the 2018/19 figure represented a high point and would most likely fall back to the lower levels seen in the first three years of the current period. We understand that this view was a major factor in why the AER and EMCa considered our gross connections forecast should be in line with the average of the current period.

We (and BISOE) disagree with this more general view. We do not consider that the AER or EMCa provided a compelling argument why that was likely to be the case. That said, we accept the onus is on us to demonstrate this. BISOE has provided further information and discussion on this matter in the BISOE November 2019 forecast report and BISOE Response to the EMCa's report. Importantly, BISOE considers that the lower levels in 2016-18 were an "*aberration*" and the increase seen in 2018/19 was a "*return to more normal levels*". It considers this is evidenced by the ratio of major connection expenditure-to-the-drivers in those years, which were exceedingly low. BISOE goes on to state:

 $^{^{\}rm 13}$ BISOE response to EMCa's report, November 2019, response #7, pp 5

"While some of the reason for these low outcomes was a lack of public sector projects in the 2016-18 period, a key reason for the overall volatility of [major connections expenditure] is that the range of projects requiring major connections (i.e. above \$100,000) is that these projects are not homogenous.

There has been a wide variation in the value of [major connections expenditure] and a particularly wide variation in the relevant ratio of [major connections expenditure]-to-drivers. Using a ratio for the forecast period which is close to the historical average - rather than using the very low ratios of FY2016-18 or even the high ratios of FY2009-10 – is a far more prudent approach.

Furthermore, it is necessary to understand that the South Australian economy is growing, it's population is rising and that the total level of construction activity – which are the key drivers of overall (and individual categories of) customer connections expenditure – will also increase over the forecast horizon to 2025/26(chart 1.2 in the November 2019 BISOE report shows overall construction activity). Overall, the average levels of construction activity, population and the state economy will be larger over the 2020 to 2025 period than the average levels of the past 5 years. It is therefore logical that overall customer connections capex (including major CCE) will also be larger, rather than reverting to a previous lower period."

To show this further, BISOE's forecast of building and construction activity (work done) is shown in the figure below, which is provided in the BISOE 2019 forecast report.



c) Our forecast of real estate developments (URDs)

We do not agree with the AER and EMCa that our forecast should be lower because our ADMD is reducing.

Although we agree that the ADMD is reducing by around the amount suggested and that as a general principle this will result in lower costs in the long term, we do not consider that the reduction in ADMD will cause a material difference to our real estate development (URD) forecasts.

Real estate developments are typically contestable in nature (ie primarily constructed by a third party). Our works (and related expenditure) generally comprise of, among other things, non-contestable works such as:

- office administration functions such as issuance of specifications, technical matters and compliances;
- the physical connection and energisation of the contestable extension to the shared distribution network; and
- where applicable, the construction of the shared network augmentation.

Therefore the stated change of ADMD does not have a material effect on the non-contestable works.

It is also important to note that these developments:

- are based on the use of standardised equipment sizes such as cables and distribution transformers. As such, there is not a simple linear trend in connections expenditure with a reducing ADMD. That is, the constructed assets will largely be driven by the expected future customer connection numbers rather than small changes in anticipated ADMD; and
- occur in anticipation of future connections. This also reduces the sensitivity of the assets that are installed with the current ADMD.

2.2 Our view that AER's basis for accepting our contribution forecast was not valid

We strongly disagree with the AER's basis for accepting our contribution forecast. We do not consider that the AER's reasoning on this matter is consistent with its reasoning for developing its substitute gross connections forecast, based on its view that both of these should be in line with historical levels.

The contribution amounts for a large portion of our forecast are a direct function of the regulatory WACC as required by the NECF and our (revised) Connection Policy, which we understand will be accepted by the AER. Given the AER is proposing to reduce our WACC from 4.27% in the current period to 2.63% in the next regulatory period then the contribution amount <u>as a proportion of</u> the gross connection expenditure must reduce.

Therefore, given that the AER considers that our gross connections expenditure will remain at historical levels (which as we have noted above, we do not agree) then the contribution amount must reduce, to reflect the reduced WACC. As such, the resulting net connection expenditure forecast would have to be above historical amounts.

Our calculations suggest that the AER's application of a flat 9.1% reduction to gross expenditure, while leaving contributions at 0% reduction has created a shortfall in net expenditure in each category in the individual connection categories of between 13.2% to 20.6%. Overall the difference is 18.4% equating to \$15.7 million net expenditure shortfall.

To explain further, there are three connection categories where the contributions we receive, or the value of asset rebates, are directly related to the setting of the regulatory WACC at that time:

- The contribution amount for medium and major connections; and
- The contribution amount associated with the asset rebates relating to **Real estate Developments** (URD).

For these connection categories, the contribution amount is defined by the charging methodology that is explicitly defined in our Connection Policy, which we prepare pursuant to the NECF. This charging methodology prescribes the formulations we must apply to calculate the contribution, which directly includes the regulatory WACC parameter. More precisely, the pre-tax real WACC affects the **Incremental Revenue Rebate (IRR)** calculation, which in turn affects the customer contributions.

The effect of this formulation is that if the WACC reduces, then:

- customer contributions for medium and major connections reduce; and
- asset rebates associated with real estate developments (URD) increase.

Therefore, for a given gross connection expenditure amount, the net amount must increase.

We understand that the AER is likely to accept our (revised) Connection Policy 2020-25. Therefore, given this and the fact that the WACC is proposed to reduce significantly in the next regulatory period (ie pre-tax real WACC will decrease from 4.27% to 2.63%), we consider that the AER must also accept that our contribution amount as a proportion of gross connection capex must also reduce.

We have calculated the effect of this proposed change in WACC in preparing our connections forecast. To do this, we sampled a selection a historical connection projects in the current period and calculated the change in the contribution amount. We then used the average across these projects to determine an adjustment factor we should apply to the contribution rates in the current period. The estimated adjustment factors are:

- 89.68% for medium and major connections (ie the contribution amount that nets off the gross will reduce by this amount, resulting from a calculated reduction of 10.32% ie 100% less 10.32%)
- 124.69% for asset rebates (ie the amount that we provide/paid to real estate developments will increase by this amount, resulting from a calculated increase of 24.69% ie 100% plus 24.69%).

We will discuss our methodology for calculating our forecast of connection contributions further in Section 3.2

3. Forecasting methodology and revised forecast

In this section we summarise the forecast methodology that we and BISOE have used to calculate our connections forecast that is provided in our Revised Proposal¹⁴. We also summarise the resulting forecasts in this section and provide a brief discussion of the forecast. The resulting output of our forecasts (and historical performances) can be viewed in detailed in

3.1 Gross connections capex forecast

Methodology

BISOE has prepared our gross connections forecast. As noted in the previous section, this forecast has been prepared directly on the basis of the AER's RIN data. As such, the BISOE forecast forms a direct input to our proposal and we do not consider any further reconciliation is necessary.

The underlying methodology BISOE has applied has not changed from the method it applied for our revised forecast. Similar to the original forecast, it is based around developing individual forecasts of the following connection categories:

- Minor customer connections primarily residential connection services
- **Medium customer connections** primarily commercial connection services and associated augmentation works if applicable
- **Major customer connections** primarily larger commercial connection services and associated augmentation works if applicable
- **Real estate developments** connection of developments from 3 allotments to larger multi staged developments and associated augmentation works if applicable

The key changes are:

- The expenditure basis used as an input to its analysis, which is now directly on an AER RIN basis (as noted above)
- Actual data for 2018/19 has been used and estimates for 2019/20 have been revised
- Revised economic driver forecasts have been used.

Given the methodology has remained the same, the majority of the existing explanations provided in our Original Proposal and the BISOE report that supported our Original Proposal remain valid. Nonetheless, as indicated in the previous section, BISOE has provided a revised report detailing its revised forecast (BISOE 2019 forecast report). As we also noted in the previous section, BISOE has provided additional information and explanation in this revised report to address the AER's concerns.

Given there is a detailed explanation and justification of the methodology in the BISOE 2019 forecast report, we have not provided this here.

In summary however, the methodology BISOE has used to prepare the forecast of gross expenditure for each connection type can be summarised as follows.

Minor connections

The minor connections expenditure model uses a top-down economic and statistical techniques. This model uses various economic drivers and historical data from ABS and our historical minor connection capex data, as follows:

¹⁴ Resulting outputs of historical and forecast gross, contribution and net expenditures can be viewed in Appendix E – Connections expenditure tables, real June \$2018

- total residential connection capex is assumed to be driven primarily by forecasts of new residential building commencements (specifically, detached houses) and residential alterations and additions activity for South Australia;
- small commercial connection activity is assumed to be driven by the real value of non-residential commencements for buildings with an individual value below \$1 million; and
- real estate developments connections capex model is assumed to be driven by total house commencements.

Underpinning the forecasts of residential building and non-residential building activity is the BISOE forecast of South Australian population growth.

Medium Customer Connections

Similar to minor connections, the medium connections expenditure model uses top-down economic and statistical techniques. This model is based on our historical data for this category, historical data from the ABS and BISOE forecasts of the following drivers:

- the real value of non-residential building commencements for projects below \$20 million; and
- the real value of 'other' (or attached) dwelling commencements (ABS Building Activity Catalogue No. 8752.0).

Major Customer Connections

As discussed in the previous section, the forecasts for major connections capex were developed from a combination of bottom-up and top-down methods.

The bottom-up method uses a list of actual major developments prepared by BISOE. This list is then reconciled and combined by BISOE with a similar list that we prepare to form a final list of possible major developments.

Each development on the list is given:

- a likely cost, given its anticipated size (in kVA) and a \$/kVA rate that BISOE estimated from comparable historical projects; and
- a probability of occurring.

The total bottom up expected expenditure forecast for each year is then calculated as the probability weighted sum of all projects in that year. For this weighted sum, any projects with a lower than 50% probability of occurring or where the cost was below \$100,000, are fully excluded.

The top-down model was derived from the forecasts for non-dwelling building commencements (projects above \$20 million) and engineering construction activity (excluding sectors not deemed relevant).

As discussed previously, the 'bottom-up' forecast constitutes 99.0% and 99.5% of the first two years of the forecast (ie 2019/20 and 2020/21). However, the remaining forecast years (2021/22 to 2025/26) largely rely on the top-down model.

This use of the two models is considered reasonable as we and BISOE have a good understanding of the specific projects and their cost and likelihood in the early years, but there is far less certainty on likely developments in the later years. Furthermore, BISOE has determined that the top-down model very closely matches the bottom-up model in the early years, which it considered provides a validation of the reasonableness of both approaches.

Real Estate Developments (URDs)

The URD expenditure model uses a top-down economic and statistical model. The model is based on the residential forecast as per the minor connections model, as URDs lead new housing commencements, using the following drivers:

- lot production in Adelaide, obtained from the Department of Planning, Transport and Infrastructure South Australia and BISOE forecasts; and
- housing commencements in South Australia obtained from the ABS and BISOE forecasts.

Gross connections capex forecast – summarised

Figure 7 below provides a summary of our historical actual and forecast gross connection expenditures from 2008/09 to 2024/25. Figure 8 below provides the average annual gross expenditure comparison and individual connection categories between the current and next regulatory control period.

Figure 7 Gross connection expenditure, actual and forecast



Gross connection expenditure (year ended June, \$2017/18) - Nov 2019



Figure 8 Current and next RCP average annual GROSS connection expenditure comparison, \$'000 real June 2018

Key points, summarised:

- Total customer connections expenditure recovered strongly over 2017/18 and 2018/19, rising 16% and 17% respectively to \$80.9 million. The 2018/19 level is a return to more 'normal' levels of customer connections expenditure, following four years of relatively weak levels.
- Total connections expenditure is forecast to decline -3.5% in 2019/20, with declines across the minor, URD and medium categories more than offsetting a 10% increase in major connections.
- Total connections expenditure is forecast to then rise steadily (cumulatively 18.4%) over the subsequent three years to 2022/23, peaking at \$92.5 million in 2022/23, driven by strengthening economic, building and infrastructure activity, with defence and other government projects key contributors.
- Thereafter, we expect connections expenditure to decline by a cumulative 11% over the three years to 2025/26 as building and construction activity fall back.
- The seven-year average to 2025/26 is predicted to be \$84.3 million, compared with an average of \$67 million over the previous five years to 2018/19.

3.2 Connection contribution forecast

Methodology

We have prepared our connections contribution forecast (ie this is not discussed in the BISOE report). As noted in the previous section, this forecast has been prepared directly on the basis of our reset RIN data. As such, this forecast forms a direct input to our Revised Proposal and we do not consider any further reconciliation is necessary.

The underlying methodology we have applied has not changed from the method we applied for our revised forecast. Similar to the original forecast, it is based around developing individual forecasts of the same four connection categories used for our gross connections forecast. The only notable difference in these categories is that in addition to these four connection categories, we separately calculate a contribution amount for asset rebates (ie this reflects and is associated with SAPN providing a rebate to real estate developers for provision of gifted assets that were contestably constructed). For all four main connection categories, we separately calculate the contribution forecast using the following process:

- 1. We first calculate the *historical average contribution rate* for the first 4 year of the current period (2015/16 to 2018/19), where this parameter is calculated as the average across the 4-year period, being the ((total contribution amount that year / the total gross connection amount that year) -1).
- 2. We calculate a *contribution rate adjustment factor*, which reflects the change in the contribution rate that we calculate will occur in the next regulatory period based on the proposed pre-tax real WACC changes as discussed in the previous section. We will discuss how we have calculated these factors further below.
- 3. We calculate a *forecast average contribution rate*, which reflects the average contribution rate that will apply for the next regulatory period, given the proposed pre-tax real WACC. This is calculated as (*historical average contribution rate x contribution rate adjustment factor*).
- 4. Finally, we calculate the contribution forecast for each as the (total gross connection forecast that year x forecast average contribution rate).

We use a slightly different methodology to calculate the forecast for asset rebates:

- 1. We assume the *current historical asset rebate amount*, based on the actual rebate amount for 2018/19 representing the most recent and reasonable starting basis.
- 2. Similar to the above categories, we calculate a *contribution adjustment factor*, which reflects the change in the contribution amount that we calculate will occur in the next regulatory period based on the proposed pre-tax real WACC changes as discussed in the previous section. We will discuss how we have calculated this factor further below.
- 3. Finally, we calculate the asset rebate amount for each year of the next regulatory period as the (*current historical asset rebate amount x asset rebate adjustment factor*).

We have calculated the contribution adjustment factors by sampling 744 historical connection projects and 434 real estate development projects and recalculating the contribution amount for each project using the proposed pre-tax real WACC. The actual formulations for these calculations as set out in our proposed (revised) Connection Policy, including the relation to the WACC parameter, are detailed in **Appendix A** – **Contribution formulations and WACC**.

The contribution adjustment factors are calculated as the average change across all sampled projects applicable to the connections categories.

For minor connections and contributions for real estate developments, the *contribution rate adjustment factor* is 1 as these contributions tend to be defined amounts that are not calculated through the formulations in our Connection Policy, as these typically consist of standard charges. As such, we expect the contribution rates to largely follow historical levels.

The medium and major connections types use the same formulation within the policy, and so we expect the adjustment for these two categories to be the same. Therefore, we have combined these categories in calculating the adjustment factor.

The Table 1 below summarises the *historical average contribution rate*, the *contribution rate adjustment factor*, and the *forecast average contribution rate* for the four connections categories associated with the gross connection forecast.

Table 1 Calculated contribution adjustment factor due to WACC impact

Category	historical average contribution rate	contribution rate adjustment factor	forecast average contribution rate				
Minor	25%	1	25%				
Medium	29%	0.8968	26%				
Major	70%	0.8968	63%				
Real estate developments	159%	1	159%				

For Asset Rebates, the *contribution adjustment factor* has been calculated as 1.2469 (see **Appendix A** – **Contribution formulations and WACC**). The *current historical asset rebate amount* has been calculated as \$8.7 million per annum and so the annual forecast asset rebate amount is calculated as \$10.8 million.

Contribution forecast - summarised

Figure 9 below provides a summary of our historical actual and forecast contributions from 2008/09 to 2024/25.

Figure 9 Connection contributions, actual and forecast



Customer contribution (year ended June, \$2017/18) - Nov 2019



Figure 10 Current and next RCP average annual CONTRIBUTION comparison, \$'000 real June 2018

The connection contribution forecast only increases by 14% (see Figure 10) from our estimate for the current period. As noted above, the contribution amounts for a large portion of our forecast are a direct function of the regulatory WACC as required by the NECF and our (revised) Connection Policy 2020-25, which has been accepted by the AER. Given the AER is proposing to reduce our WACC from 4.27% in the current period to 2.63%¹⁵ in the next regulatory period, then the contribution amount as a proportion of the gross connection expenditure must reduce. This will reduce the contribution we will receive for medium and major connections (by approximately 10%). It also increases the asset rebates we will pay to real estate developers (by approximately 25%). See **Appendix A** for further detail of the contribution formulations and the correlated impact of WACC.

3.3 Net connection expenditure forecast

The net connection expenditure forecast is simply the annual total gross forecast minus the total contribution forecast. Figure 11 below provides a summary of our historical actual and forecast net connection expenditures from 2008/09 to 2024/25¹⁶.

¹⁵ Calculated value as of November 2019

¹⁶ Importantly, WACC formulations have only been a contributing factor to connection contribution calculations from 1 July 2015 (ie the current regulatory control period), when SAPN fully adopted the National Energy Customer Framework (NECF) and the AER's Connection charge guidelines for electricity retail customers.











As noted above, the contribution amounts for a large portion of our forecast are a direct function of the regulatory WACC as required by the NECF and our (revised) Connection Policy, which we understand will be accepted by the AER. Given the AER is proposing to reduce our WACC from 4.27% in the current period to 2.63% in the next regulatory period then the contribution amount as a proportion of the gross connection expenditure must reduce, resulting in an increase in net connections expenditure as a proportion of gross. Overall, this represent an annual average increase of 32% from our estimate for the current period.

Appendices

- Appendix A Contribution formulations and WACC
- Appendix B SA Power Networks (revised) Connection Policy 2020 25
- Appendix C BIS Oxford Economic Gross customer connection forecasts to 2025/26, November 2019
- Appendix D BIS Oxford Economic response to EMCa's report, November 2019
- Appendix E Connections Expenditure tables

Appendix A – Contribution formulations and WACC

Each connection category is volume driven and subject to economic drivers, capacity requested and gross expenditure influenced by location of works are required and the capability of the existing local network to supply that capacity. Then consistent pricing methodologies for each individual connection are applied to determine an individual customers contributions.

Contributions are either standard charges (for minor connections predominately) for basic connection services or for all other connections they are determined for each individual request as a negotiated connection services (medium, major and real estate developments) as per our charging methodology. This is detailed in the to be approved National Energy Customer Framework compliant Connection Policy 2020 to 2025.

Customer charging principles, as outlined in our proposed Connection Policy are forecast to continue in 2020-2025, similar to those that are currently applied in 2015-2020. This is simplistically a customer contribution that incorporates total cost of the project <u>plus</u> an augmentation charge (for contribution to upgrading the upstream network) <u>minus</u> a rebate.

The calculation of the rebate, termed Incremental Revenue Rebate (IRR), is based on a calculated proportion of the additional revenue received over a defined period in net-present value (NPV) terms. The calculation of the rebate (IRR) is inversely proportional to the WACC, which means that if the WACC decreases, the IRR increases. If the IRR increases, then the customer contribution decreases. Therefore, as the WACC in the next regulatory is set to decrease, forecast customer contributions will also decrease and as such the net connection expenditure (as a proportion of gross expenditure) must increase.

Calculations of a test sample of projects showed an expected <u>decrease</u> in Customer Contributions for the Major and Medium Customer categories in the order of 10%.

SA Power Networks Connection Policy, which was implemented in July 2015, is forecast to continue with the same principles of customer charging:

CP = ICCS + ICSN - IRR, where

- **CP** = Customer Payment
- ICCS = Incremental Cost Customer Specific, including cost of extension assets, connection of those assets to the distribution network, associated administration, project management, design, easements, and payments to any upstream customers (pioneer scheme).
- **ICSN** = Incremental Cost Shared Network, which is the Augmentation Charge as outlined in the Connection Policy (\$/kVA).
- IRR = Incremental Revenue Rebate.

The calculation of the Incremental Revenue Rebate (IRR) is based on the additional incremental revenue we calculate as a 30-year NPV for residential and 15-year NPV for non-residential. To simplify the understanding of this calculation, a 'Rebate Multiplier' is determined which is multiplied by the additional DUoS charges resulting from the customer's additional load requirements.

The multiplier is dependent on the O&M and WACC figures, the take-up rate for the customer or development, the amount of embedded generation (solar panels generally), the tariff type and what parts of the network the customer contributed to (via augmentation or connection/extension charges). The formula is as follows:-

IRR = Annual DUoS estimate X Rebate Multiplier

$$Rebate Multiplier = \sum_{i}^{n} Revenue Share_{i} \ x \ O\&M \ x \ NPV$$

Where:

- n is all applicable assets used for the connection
- Revenue Share is the percentage of revenue that the asset contributes towards the overall revenue based on the tariff selected
- O&M is the operation and maintenance factor (1 O&M)
- NPV is the Net Present Value multiplier

When calculating the Incremental Revenue Rebate, the Net Present Value is determined over:

- 30 years for Residential customers
- 15 years for Non-Residential customers

The Net Present Value multiplier is determined using the following formula:

NPV =
$$\sum_{j}^{n} \frac{R}{(1+WACC)^{j}}$$

Where:

- NPV is the Net Present Value multiplier (ie The Net Present Value of \$1)
- WACC is the Pre-Tax Real Weighted Average Cost of Capital
- n is the total number of years to determine the NPV over (ie 15 or 30 as outlined above)
- j is the year being calculated (year 1, year 2, year 3 etc)
- R is the take-up rate for the year specified by j

We have developed a calculator to determine the IRR. Each year the variable figures are administratively adjusted in the calculator, which include the change in tariffs and the Pre-Tax Real WACC.

A sample of customer projects was used to estimate the impact of the reduction of WACC on Customer Contributions. The average increases to IRR were derived using test calculations in the IRR calculator for the different customer types and corresponding NPV periods (30 years for residential and 15 years for commercial).

A sample of 744 Commercial projects (Medium / Major Projects) and 434 Real Estate Development (URD) projects were tested for the impact of WACC on IRR and Customer Contributions as documented in the following tables.

Note that for Commercial (Medium / Major Projects), rebates are netted with the expenditure on projects, hence the forecast of Customer Contributions for Medium / Major Projects will be affected. However, for Real Estate Developments, rebates are paid after project completion as these are typically contestable projects, and the forecast of 'Asset Rebates' will be affected.

Table 2 - Impact on IRR

Customer Type	No. of Projects Sampled	IRR WACC @ 4.27%	IRR WACC@ 2.63%	Total \$ Impact on IRR	Percentage Impact on IRR
Commercial (Medium / Major Projects)	744	\$17.4 million	\$19.8 million	\$2.4 million	14%
Real Estate Developments (URDs)	434	\$7.7 million	\$9.6 million	\$1.9 million	25%

Table 3 - Impact on Customer Contributions

Customer Type	No. of Projects Sampled	Total Customer Contribution WACC @ 4.27%	Total Customer Contribution WACC@ 2.63%	Total \$ Impact on Customer Contribution	Percentage Impact on Customer Contribution
Commercial (Medium / Major Projects)	744	\$20.3 million	\$18.2 million	-\$2.1 million	-10%

Table 3 - Impact on Asset Rebates

Customer Type	No. of Projects Sampled	IRR WACC @ 4.27%	IRR WACC@ 2.63%	Total \$ Impact on Asset Rebates	Percentage Impact on Asset Rebates
Real Estate Developments (URDs)	434	\$7.7 million	\$9.6 million	\$1.9 million	25%

Key Points regarding the impact of the reduction in WACC from 2015-20 to 2020-25:

- Expected to increase IRR for Medium and Major Customers by approximately 14%, which results in a 10% **reduction** in Customer Contributions for the Medium and Major Customer categories.
- Expected to increase IRR for Developers (URDs) by approximately 25%, which results in a 25% increase in Asset Rebates.

Obviously, the reduction in contributions will increase further if the WACC decreases further.

Appendix B – SA Power Networks Connection Policy 2020 – 25

See Attachment 16 of our Revised Proposal.

Appendix C – BIS Oxford Economic Gross customer connection forecasts to 2025/26, November 2019

See Supporting Document 5.12 of our Revised Proposal.

Appendix D – BIS Oxford Economic response to EMCa's report, November 2019

See Supporting Document 5.13 of our Revised Proposal.

Appendix E – Connections expenditure tables, real June \$2018

Source: SA Power Networks, BIS Oxford Economics November 2019

	Year Ended June	Minor Customer Contribution	Minor Net Capital Expenditure	Minor Gross Expenditure	URD Customer Contribution	URD Net Capital Expenditure	URD Gross Expenditure	Medium Customer Contribution	Medium Net Capital Expenditure	Medium Gross Expenditure	Major Customer Contribution	Major Net Capital Expenditure	Major Gross Expenditure	Total (Connect Expenditu All Projec	Customer ure ts	ner Total Custome Contribution All Projects		r Total Net Capita Expenditure	
		(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)	%CH	(\$'000)	%CH	(\$'000)	%СН
	2009	3,496	11,527	15,023	8,463	716	9,180	33,807	6,324	40,131	43,083	3,488	46,571	110,904		88,848		22,056	
	2010	3,155	12,825	15,980	6,519	-1,018	5,501	28,836	8,489	37,326	73,604	12,711	60,894	119,700	7.9%	112,115	26.2%	7,586	-65.6%
	2011	2,646	10,444	13,090	3,016	2,420	5,435	22,894	6,095	28,989	43,906	5,800	38,106	85,620	-28.5%	72,461	-35.4%	13,158	73.5%
	2012	2,107	10,318	12,425	5,023	-717	4,306	14,652	10,953	25,604	25,408	9,836	35,244	77,580	-9.4%	47,190	-34.9%	30,390	131.0%
	2013	1,687	11,696	13,383	1,095	4090	5,185	10,462	15,451	25,913	24,957	10,804	35,762	80,243	3.4%	38,201	-19.0%	42,041	38.3%
actuals	2014	2,114	13,550	15,665	1,971	2,588	4,559	13,613	8,896	22,509	27,804	7,363	35,167	77,899	-2.9%	45,503	19.1%	32,397	-22.9%
	2015	2,300	12,930	15,230	4,909	442	5,351	11,453	11,811	23,265	13,815	9,979	23,794	67,640	-13.2%	32,478	-28.6%	35,162	8.5%
	2016	5,730	14,490	20,221	2,874	2,080	4,954	7,020	11,654	18,674	9,478	4,249	13,727	57,576	-14.9%	25,102	-22.7%	32,474	-7.6%
	2017	4,854	14,559	19,413	155	4,732	4,887	6,389	13,446	19,835	10,139	5,065	15,204	59,340	3.1%	21,537	-14.2%	37,803	16.4%
	2018	3,235	15,753	18,989	1,403	3,868	5,271	5,874	20,890	26,764	12,228	5,722	17,950	68,973	16.2%	22,740	5.6%	46,233	22.3%
	2019	6,099	15,503	21,602	-758	5,492	4,734	5,809	19,714	25,523	22,254	6,816	29,070	80,930	17.3%	33,404	46.9%	47,525	2.8%
	2020	4,319	13,200	17,519	-1,497	6,054	4,557	6,874	17,138	24,012	22,437	9,569	32,006	78,094	-3.5%	32,132	-3.8%	45,962	-3.3%
	2021	4,793	14,647	19,440	-2,447	7,764	5,317	6,648	19,247	25,895	20,464	12,086	32,550	83,202	6.5%	29,457	-8.3%	53,744	16.9%
	2022	5,233	15,993	21,226	-1,643	7,467	5,823	7,098	20,551	27,649	19,292	11,394	30,685	85,383	2.6%	29,980	1.8%	55,404	3.1%
forecast	2023	5,357	16,371	21,728	-1,108	7,268	6,161	7,276	21,066	28,342	22,777	13,452	36,229	92,460	8.3%	34,303	14.4%	58,158	5.0%
	2024	5,124	15,659	20,782	-1,643	7,467	5,823	7,133	20,652	27,785	20,179	11,918	32,097	86,487	-6.5%	30,792	-10.2%	55,695	-4.2%
	2025	4,662	14,247	18,909	-2,546	7,801	5,255	6,921	20,038	26,959	19,751	11,665	31,416	82,539	-4.6%	28,788	-6.5%	53,750	-3.5%