

September 2021



# How does the model work?

A guide on how to use the True-up calculator

# The Model

- The model can be found on our website in the regulatory policy – WACC section.
- These slides will show you what you'll need to put into the model.

The screenshot shows a website page titled "WACC" under the "Regulatory policy" section. On the left is a navigation menu with items: Current reviews, Completed reviews, IPART submissions to external reviews, Regulatory policy, WACC (highlighted), Market Update, IPART cost building block and pricing model, Financeability tests, IPART Regulation 2017, Legislation, and Papers & reports. The main content area contains an introductory paragraph about WACC, a paragraph explaining the consequences of setting WACC too high or too low, a paragraph about the 2018 WACC method, and a list of tools and information sources. The list includes: "Our WACC model spreadsheet", "A bi-annual update of market data used to calculate WACC in February and August of each year.", "Our Uncertainty Index model", and "Our True-up calculator". A red box highlights the "Our True-up calculator" link, with a red arrow pointing to it.

## WACC

[< Regulatory policy](#)

- Current reviews
- Completed reviews
- IPART submissions to external reviews
- Regulatory policy
- WACC**
- Market Update
- IPART cost building block and pricing model
- Financeability tests
- IPART Regulation 2017
- Legislation
- Papers & reports

The weighted average cost of capital (WACC) is a key input for calculating the revenue requirements and setting prices for many of the businesses we regulate. The WACC is the weighted average of debt and equity costs required for a benchmark efficient business to invest in necessary infrastructure.

If we set the WACC too high, customers would pay too much and the regulated business could be encouraged to over-invest. If we set it too low, the business' financial viability could suffer, and it may under-invest. Neither outcome is in the long-term interest of customers.

We use a standard method to determine the WACC in our pricing reviews – [the 2018 WACC method](#).

In addition, we publish a number of tools and information sources to assist stakeholders in replicating our WACC decisions. These include:

- [Our WACC model spreadsheet](#)
- [A bi-annual update of market data](#) used to calculate WACC in February and August of each year.
- [Our Uncertainty Index model](#)
- [Our True-up calculator](#)

# The Model

- The model follows the standard IPART model colour scheme
- Blue cells are the only cells that require input from the user
- The model comes with some default values put in as an example, but you will need to replace these with your correct agency values

The screenshot displays an Excel spreadsheet with the following content:

- True-up Calculator**
- MODELLER:** Edward Jenkins  
email: [Edward\\_jenkins@ipart.nsw.gov.au](mailto:Edward_jenkins@ipart.nsw.gov.au)
- WHAT IS THE PURPOSE OF MODEL?**  
This model estimates the value of a businesses true-up at the end of its regulatory period due to annual updating of the cost of debt.
- HOW DOES THE MODEL WORK?**  
The user will need to input the regulator period parameters and business agency inputs on the "Agency inputs & final output" worksheet. Once these inputs are entered the final True-up value will be shown in Table 1.4 of that worksheet. All calculations are performed on the "True up calculations" worksheet, the user will not need to do anything to this worksheet.
- COLOUR CODE**  
This model uses standard IPART colour coding:
  - Blue cells indicate inputs
  - Light blue cells indicate inputs with default values  
default values are shown in *italics* next to or below the light blue cells
  - Blue font indicates IPART hard-coded values used that should not be changed
- Key outputs**
  - Pink font indicates calculation checks
  - Red indicates assumptions made in calculations
  - Red double line means formula changes across row

# The Model

- Everything that the user needs can be found on the Agency inputs & final output worksheet

The screenshot shows an Excel spreadsheet with the following content:

- True-up Calculator**
- MODELLER:** Edward Jenkins  
email: [Edward\\_jenkins@ipart.nsw.gov.au](mailto:Edward_jenkins@ipart.nsw.gov.au)
- WHAT IS THE PURPOSE OF MODEL?**  
This model estimates the value of a businesses true-up at the end of its regulatory period due to annual updating of the cost of debt.
- HOW DOES THE MODEL WORK?**  
The user will need to input the regulator period parameters and business agency inputs on the "Agency inputs & final output" worksheet. Once these inputs are entered the final True-up value will be shown in Table 1.4 of that worksheet. All calculations are performed on the "True up calculations" worksheet, the user will not need to do anything to this worksheet.
- COLOUR CODE**  
This model uses standard IPART colour coding:
  - Blue cells indicate inputs
  - Light blue cells indicate inputs with default values  
default values are shown in *italics* next to or below the light blue cells
  - Blue font indicates IPART hard-coded values used that should not be changed
- Key outputs**
  - Pink font indicates calculation checks
  - Red indicates assumptions made in calculations
  - Red double line means formula changes across row

The spreadsheet interface shows tabs for 'Cover', 'Agency inputs & final output', and 'True up calculations'. A red arrow points to the 'Agency inputs & final output' tab, which is highlighted with a red box.

# Model inputs



**DATA  
INPUT**

# Determination details

- The first table contains all the non-financial details of the determination that you will need to input.

	A	B	C	D	E	F	G	H
1								
2		<b>1 - AGENCY INPUTS &amp; FINAL OUTPUT</b>						
3		<i>Note: This worksheet contains the agency inputs and true-up output.</i>						
4								
5		<b>Tables</b>						<b>Row</b>
6	1	Table 1.1 - Regulatory period inputs						11
7	2	Table 1.2 - Asset inputs						23
8	3	Table 1.3 - WACC parameter inputs						41
9	4	Table 1.4 - Outputs						68
10								
11		<b>Table 1.1 - Regulatory period inputs</b>						
12		<i>Note: Input agency information in this table.</i>						
13								
14		Start of regulatory period	Date			01-July-2020		
15		Dollar denomination of model	\$FY			2019-20		
16		All financial inputs must be in real \$				\$2019-20		
17								
18		Length of regulatory period	years			4.00		
19								
20		Determined post-tax real WACC	%			4.7%		
21								
22								

# Determination details

- First you'll need to fill out the start date for your determination.
- This will set the dollar denomination of the model.

	A	B	C	D	E	F	G	H
1	<b>1 - AGENCY INPUTS &amp; FINAL OUTPUT</b>							
2	<i>Note: This worksheet contains the agency inputs and true-up output.</i>							
3	<b>Tables</b>							<b>Row</b>
4	1	Table 1.1 - Regulatory period inputs						11
5	2	Table 1.2 - Asset inputs						23
6	3	Table 1.3 - WACC parameter inputs						41
7	4	Table 1.4 - Outputs						68
8	<b>Table 1.1 - Regulatory period inputs</b>							
9	<i>Note: Input agency information in this table.</i>							
10	4	Start of regulatory period	Date	01-July-2020				
11	5	Dollar denomination of model	\$FY	2019-20				
12	6	All financial inputs must be in real \$		\$2019-20				
13	8	Length of regulatory period	years	4.00				
14	9	Determined post-tax real WACC	%	4.7%				

# Determination details

- Then you'll need to set the regulatory period length.
- This is a free entry cell, however you will need to put in an integer between one and ten to get a meaningful result. The model is not equipped to deal with partial periods and only runs for 10-years.

The screenshot shows an Excel spreadsheet with the following content:

Tables	Row
1 Table 1.1 - Regulatory period inputs	11
2 Table 1.2 - Asset inputs	23
3 Table 1.3 - WACC parameter inputs	41
4 Table 1.4 - Outputs	68

  

Table 1.1 - Regulatory period inputs		
Note: Input agency information in this table.		
Start of regulatory period	Date	01-July-2020
Dollar denomination of model	\$FY	2019-20
All financial inputs must be in real \$ \$2019-20		
Length of regulatory period	years	4.00
Determined post-tax real WACC	%	4.7%



# Determination details

- Finally you will need to enter the post-tax real WACC that was set at the time of the determination.

	A	B	C	D	E	F	G	H
1								
2		<b>1 - AGENCY INPUTS &amp; FINAL OUTPUT</b>						
3		<i>Note: This worksheet contains the agency inputs and true-up output.</i>						
4								
5		<b>Tables</b>						<b>Row</b>
6	1	Table 1.1 - Regulatory period inputs						11
7	2	Table 1.2 - Asset inputs						23
8	3	Table 1.3 - WACC parameter inputs						41
9	4	Table 1.4 - Outputs						68
10								
11		<b>Table 1.1 - Regulatory period inputs</b>						
12		<i>Note: Input agency information in this table.</i>						
13								
14	4	Start of regulatory period	Date			01-July-2020		
15	5	Dollar denomination of model	\$FY			2019-20		
16	6	All financial inputs must be in real \$				\$2019-20		
17	7							
18	8	Length of regulatory period	years			4.00		
19	9	Determined post-tax real WACC	%			4.7%		
20								
21								
22								

# Asset value inputs

- Once you've put in the determination details you'll then need to fill out the asset values for the agency over the determination into Table 1.2.

**Table 1.2 - Asset inputs**  
*Note: These values should be found in the return on RAB and return on working capital worksheets of the review building block model.*

Year ending 30 Jun	Units	2020	2021	2022	2023	2024
		\$2019-20	\$2019-20	\$2019-20	\$2019-20	\$
<b>Asset values</b>						
Opening RAB	\$'000	95,000	95,000	95,000	95,000	
capital expenditure	\$'000	10,010	10,010	10,010	10,010	
cash capital contributions	\$'000	10	10	10	10	
disposals	\$'000	0	0	0	0	
depreciation	\$'000	10,000	10,000	10,000	10,000	
indexation	\$'000	0	0	0	0	
Closing RAB	\$'000	95,000	95,000	95,000	95,000	
Value of Fixed RAB on which year end return is given		100,000	100,000	100,000	100,000	
Other asset included in true-up	\$'000					
Total asset values	\$'000	100,000	100,000	100,000	100,000	

# Asset value inputs

- First you will need to put in the RAB values for the determination.
- These can be found in the return on RAB worksheet of the building block model, or in the RAB chapter of the review final report.

**Table 1.2 - Asset inputs**  
*Note: These values should be found in the return on RAB and return on working capital worksheets of the review building block model.*

Year ending 30 Jun	Units	2020	2021	2022	2023	2024
		\$2019-20	\$2019-20	\$2019-20	\$2019-20	\$2019-20
<b>Asset values</b>						
Opening RAB	\$'000	95,000	95,000	95,000	95,000	95,000
capital expenditure	\$'000	10,010	10,010	10,010	10,010	10,010
cash capital contributions	\$'000	10	10	10	10	10
disposals	\$'000	0	0	0	0	0
depreciation	\$'000	10,000	10,000	10,000	10,000	10,000
indexation	\$'000	0	0	0	0	0
Closing RAB	\$'000	95,000	95,000	95,000	95,000	95,000
Value of Fixed RAB on which year end return is given		100,000	100,000	100,000	100,000	100,000
Other asset included in true-up	\$'000					
Total asset values	\$'000	100,000	100,000	100,000	100,000	100,000

# Asset value inputs

- Then you will input any other assets included in the return on assets calculation that are not part of the formal RAB calculation.

**Table 1.2 - Asset inputs**  
*Note: These values should be found in the return on RAB and return on working capital worksheets of the review building block model.*

Year ending 30 Jun	Units	2020	2021	2022	2023	2024
			\$2019-20	\$2019-20	\$2019-20	\$2019-20
<b>Asset values</b>						
Opening RAB	\$'000		95,000	95,000	95,000	95,000
capital expenditure	\$'000		10,010	10,010	10,010	10,010
cash capital contributions	\$'000		10	10	10	10
disposals	\$'000		0	0	0	0
depreciation	\$'000		10,000	10,000	10,000	10,000
indexation	\$'000		0	0	0	0
Closing RAB	\$'000		95,000	95,000	95,000	95,000
Value of Fixed RAB on which year end return is given			100,000	100,000	100,000	100,000
Other asset included in true-up	\$'000					
Total asset values	\$'000		100,000	100,000	100,000	100,000

# WACC inputs

- After you've filled out the asset values you will then need to put the WACC parameter inputs into Table 1.3.

**Table 1.3 - WACC parameter inputs**

*Note: WACC parameters column G should be those that go into making the determined WACC for the review.*

Year ending 30 Jun	Units	2021	2022	2023	2024	20
<b>Current Data</b>						
Nominal risk free rate	%	2.1%	2.0%	1.9%	1.8%	
Inflation	%	2.3%	2.3%	2.3%	2.3%	
Implied Debt Margin	%	2.3%	2.2%	2.1%	2.0%	
MRP	%	8.8%				
Debt funding	%	60.0%				
Equity Funding	%	40.0%				
Gamma	#	0.25				
Corporate tax rate	%	30.0%				
Equity Beta	#	1.00				
<b>Long Term averages</b>						
Nominal risk free rate	%	3.2%	3.1%	3.0%	2.9%	
Inflation	%	2.3%	2.3%	2.3%	2.3%	
Implied Debt Margin	%	2.7%	2.6%	2.5%	2.4%	
MRP	%	6.0%				
Debt funding	%	60.0%				
Equity Funding	%	40.0%				
Gamma	#	0.25				
Corporate tax rate	%	30.0%				
Equity Beta	#	1.00				

# WACC inputs

- The first column of inputs is where the determined WACC parameters should go.
- These parameters are in the WACC appendix of the final report of each pricing review. These values do not update throughout the review.
- These will be used to set the baseline for the determined cost of debt and determination WACC.

**Table 1.3 - WACC parameter inputs**

*Note: WACC parameters column G should be those that go into making the determined WACC for the review.*

Year ending 30 Jun	Units	2021	2022	2023	2024	20
<b>Current Data</b>						
Nominal risk free rate	%	2.1%	2.0%	1.9%	1.8%	
Inflation	%	2.3%	2.3%	2.3%	2.3%	
Implied Debt Margin	%	2.3%	2.2%	2.1%	2.0%	
MRP	%	8.8%				
Debt funding	%	60.0%				
Equity Funding	%	40.0%				
Gamma	#	0.25				
Corporate tax rate	%	30.0%				
Equity Beta	#	1.00				
<b>Long Term averages</b>						
Nominal risk free rate	%	3.2%	3.1%	3.0%	2.9%	
Inflation	%	2.3%	2.3%	2.3%	2.3%	
Implied Debt Margin	%	2.7%	2.6%	2.5%	2.4%	
MRP	%	6.0%				
Debt funding	%	60.0%				
Equity Funding	%	40.0%				
Gamma	#	0.25				
Corporate tax rate	%	30.0%				
Equity Beta	#	1.00				

# WACC inputs

The rows for the **actual** risk free rate and implied debt margin will need to be filled out with the actual values from throughout the determination.

The risk free rate and implied debt margin are the based on the trailing average for that year. These are not the values of the individual tranches. You will need to calculate the value of the trailing average in each year of the determination and input that here.

Table 1.3 - WACC parameter inputs

Note: WACC parameters column G should be those that go into making the determined WACC for the review.

Year ending 30 Jun	Units	2021	2022	2023	2024	20
<b>Current Data</b>						
Nominal risk free rate	%	2.1%	2.0%	1.9%	1.8%	
Inflation	%	2.3%	2.3%	2.3%	2.3%	
Implied Debt Margin	%	2.3%	2.2%	2.1%	2.0%	
MRP	%	8.8%				
Debt funding	%	60.0%				
Equity Funding	%	40.0%				
Gamma	#	0.25				
Corporate tax rate	%	30.0%				
Equity Beta	#	1.00				
<b>Long Term averages</b>						
Nominal risk free rate	%	3.2%	3.1%	3.0%	2.9%	
Inflation	%	2.3%	2.3%	2.3%	2.3%	
Implied Debt Margin	%	2.7%	2.6%	2.5%	2.4%	
MRP	%	6.0%				
Debt funding	%	60.0%				
Equity Funding	%	40.0%				
Gamma	#	0.25				
Corporate tax rate	%	30.0%				
Equity Beta	#	1.00				

# WACC inputs

- The forecast inflation values are shown in the table, however we do not update the forecast inflation values for the true-up.

**Table 1.3 - WACC parameter inputs**

*Note: WACC parameters column G should be those that go into making the determined WACC for the review.*

Year ending 30 Jun	Units	2021	2022	2023	2024	20
<b>Current Data</b>						
Nominal risk free rate	%	2.1%	2.0%	1.9%	1.8%	
Inflation	%	2.3%	<del>2.3%</del>	<del>2.3%</del>	<del>2.3%</del>	
Implied Debt Margin	%	2.3%	2.2%	2.1%	2.0%	
MRP	%	8.8%				
Debt funding	%	60.0%				
Equity Funding	%	40.0%				
Gamma	#	0.25				
Corporate tax rate	%	30.0%				
Equity Beta	#	1.00				
<b>Long Term averages</b>						
Nominal risk free rate	%	3.2%	3.1%	3.0%	2.9%	
Inflation	%	2.3%	<del>2.3%</del>	<del>2.3%</del>	<del>2.3%</del>	
Implied Debt Margin	%	2.7%	2.6%	2.5%	2.4%	
MRP	%	6.0%				
Debt funding	%	60.0%				
Equity Funding	%	40.0%				
Gamma	#	0.25				
Corporate tax rate	%	30.0%				
Equity Beta	#	1.00				



# Final outputs

Finally, once you've put everything into Tables 1.1 to 1.3 then Table 1.4 will show the value of the true-up.

- The true-up will be given based on changes in the real cost of debt and nominal cost of debt (for agencies that are regulated under a nominal WACC).
- And Both estimates are in the dollar denomination of the determination.

**Table 1.4 - Outputs**  
*Note: This is the value of the regulatory true-up.*

		<i>\$2019-20</i>
Value of True-up (real)	\$'000	<b>-752.96</b>
Value of True-up (nominal)	\$'000	<b>-781.02</b>