

Excess Crude	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
2010	0	0	1,622,471,432	0	2,624,734,437	608,153,459	1,905,458,195	390,255,841	217,560,850	496,877,936
2011	634,292,398	0	1,520,930,117	1,413,861,220	628,347,000	228,405,334	192,922,301	2,492,267,601	749,417,682	2,573,066,632
2012	634,765,669	2,044,516,530	1,020,112,844	0	2,350,462,827	157,378,956	0	2,045,070,187	171,204,556	0
2013	111,083,842	78,235,384	55,427,407	51,911,251	713,443,275	1,127,393,824	3,932,494,988	113,864,494	0	755,885,087
2014	1,348,225,602	1,407,153,736	2,242,590,961	450,232,905	506,941,430	358,386,244	358,386,244	1,616,571,557	539,808,046	448,410,180
2015	1,429,227,903	382,918,909	2,644,067,523	1,210,594,327	1,428,196,863	1,196,090,048	996,941,284	357,216,791	876,270,138	357,216,791
2010	0.00%	0.00%	18.65%	0.00%	30.18%	6.99%	21.91%	4.49%	2.50%	5.71%
2011	5.38%	0.00%	12.89%	11.98%	5.32%	1.94%	1.63%	21.12%	6.35%	21.80%
2012	6.53%	21.04%	10.50%	0.00%	24.19%	1.62%	0.00%	21.04%	1.76%	0.00%
2013	0.96%	0.67%	0.48%	0.45%	6.13%	9.69%	33.81%	0.98%	0.00%	6.50%
2014	9.24%	9.65%	15.37%	3.09%	3.47%	2.46%	2.46%	11.08%	3.70%	3.07%
2015	11.30%	3.03%	20.90%	9.57%	11.29%	9.46%	7.88%	2.82%	6.93%	2.82%
Average Flow (6-Year MA X)	5.53%	3.34%	14.35%	3.28%	11.73%	5.21%	8.47%	9.86%	3.58%	4.53%
Normalised MA	6.48%	3.91%	16.83%	3.84%	13.76%	6.11%	9.93%	11.56%	4.20%	5.31%
<b>NOTE - the flow below is against 1. Profile Based on Historic</b>										
2016 Budget Monthly	647,947,391	391,211,397	1,682,950,761	384,102,622	1,375,882,085	610,897,928	993,145,077	1,156,024,077	419,595,883	530,853,157
2016 Budget Cumulative	647,947,391	1,039,158,788	2,722,109,549	3,106,212,170	4,482,094,256	5,092,992,184	6,086,137,261	7,242,161,338	7,661,757,221	8,192,610,378
2016 Actual Monthly	354,900,313	354,900,313	354,900,313	354,900,313	243,709,519	1,502,041,577	803,573,993			
2016 Actual Cumulative	354,900,313	709,800,626	1,064,700,940	1,419,601,253	1,663,310,772	3,165,352,349	3,968,926,342	3,968,926,342	3,968,926,342	3,968,926,342
<b>NOTE - the performance assessment below is against 1. Profile Based on Historic</b>										
Performance Monthly	-293,047,078	-36,311,083	-1,328,050,448	-29,202,308	-1,132,172,566	891,143,649	-189,571,084	-	-	-
Performance Cumulative	-293,047,078	-329,358,161	-1,657,408,609	-1,686,610,918	-2,818,783,484	-1,927,639,835	-2,117,210,919	-	-	-
Performance Monthly	54.8%	90.7%	21.1%	92.4%	17.7%	245.9%	80.9%	-	-	-
Performance Cumulative	54.8%	68.3%	39.1%	45.7%	37.1%	62.2%	65.2%	-	-	-
Re-Estimation of IGR base on flows so far										
6,521,256,704.35										
Actual vs Forecast	65.21%									
Actual vs Full Year Budget	39.69%									
Notes:										
Cell Range B2:M7 requires historical data (actual)										
	Performance 100% or better									
	Performance between 80% and 100%									

# Cash Planning Model (Revenue and Expenditure Profiling)





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## Section 1. Introduction and Rationale

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This document, in conjunction with the Microsoft Excel Tool (Cash Planning Tool), provides a comprehensive framework for preparing monthly revenue and expenditure forecasts and tracking revenue performance. It is based on Technical Assistance provided to State Governments under the DFID SPARC programme. \*

The Guide is broken into the following main sections:

1. Introduction and Rationale - In this first section, a rationale is provided for using the Revenue Profiling Model, and the key functionality is explained;
2. Structure of Model - the model has been developed in MS Excel. In this section, a description is given of the worksheets in the overall workbook, and how to use the model;
3. Expenditure Profiling - provides step-by-step guidance on preparing the initial expenditure profile;
4. Revenue Profiling - provides step-by-step guidance on preparing the initial revenue profile, and tracking in-year revenue performance;
5. Cash Planning - provides guidance on how to compare the revenue and expenditure profiles, and potential options for periods of short-fall or surplus.

The MS Excel templates to accompany this guide are:

- Cash Planning Tool v1
- Cash Planning Tool v1 Example for Wazobia State

### Rationale

Many Nigerian state governments are not pro-active in managing their cash, which results in short-comings in the budget release system affecting the predictability in the flow of funds to the MDAs to enable them plan the execution of their budgets. MDAs do not have information as to when and how much will be released to them by the treasury.

Timely and reliable information to MDAs on availability of funds is very important for an effective budget execution. In Nigeria the practice of release of funds to MDAs varies.

Depending on the state, fund release could be quarterly or monthly. At the Federal Government level, funds are released quarterly to MDAs through the issuance of warrants. However, in many states, the system can be as simple as the Governor approving cash releases based on a list of amounts against expenditure heads prepared by the Treasury at the end of the month.

Such list may not necessarily reflect the budget priorities or the full commitments on ground. Generally, in most states there is no established cash planning system at the Treasury that forecasts with any predictability the cash flow for financing the budget.

Greater predictability can be achieved through effective planning, monitoring, and managing of cash flows - i.e. accurate forecast of cash availability and the profiling of the revenue and expenditure budgets. With such a system in place, surplus and shortfalls in cash can be identified and better managed, and the budget delivered in a more effective and efficient way.

It is also a key requirement in the Fiscal Responsibility legislations of the Federal and some states that a cash-plan is prepared as soon as the budget has been passed.

To this end, SPARC has supported the production of "Revenue Profiling" and "Expenditure Profiling" models - collectively referred to as Budget Profiling, that can be used by state (or local) governments to assist in cash planning. The model was first conceived in 2010, and has subsequently been tried and tested in several states, with feedback and comments used to improve the model. In several states supported by SPARC, the use of the model has been institutionalised within the Cash Management Committees (Revenue Profiling and Cash Planning specifically) who are responsible for preparing the annual cash plan.

## Section 2. MS Excel Model Structure

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### Summary of Functionality

The models supporting revenue and expenditure profiling have two main purposes:

1. Providing a monthly profile of Revenue (Recurrent and Capital Receipts) and Expenditure (Personnel, Overheads and Capital) as the basis for the cash in and out flow; and
2. Providing a basis for in-year Revenue Budget performance tracking and re-forecast.

### Initial Revenue Profile

The initial revenue profile shows the in-flow of revenues (recurrent and capital) on a monthly basis for the budgeted revenue figures and statistical trends for historic recurrent revenue items.

As above, this should be compared to the expenditure profile and remedies (borrowing, investing or saving) during periods of deficit or surplus.

### Initial Expenditure Profile

The initial expenditure profile shows out-flow of cash on recurrent and capital expenditure on a monthly basis for the budgeted expenditure, based on prior trend of expenditure for recurrent, and based on capital project work-plans for capital expenditure.

### Cash Plan

As noted above, the initial revenue and expenditure profiles should be compared and remedies (borrowing, investing or saving, shifting of expenditure) proposed during periods of deficit or surplus.

### In-Year Performance Assessment and Re-Forecast

The model can also be used to assess in-year performance and make adjustments to the cash-flow forecast at the appropriate time. As actual monthly data is entered, the model will show the performance (both monthly and cumulative year-to-date) as a percentage of the projected revenue inflow, and by value. The performance will be highlighted using a RAG (red, amber green) system, specifically cells in which the performance data is shown will be highlighted **green if performance is 100% or better, amber if performance is between 90-100%, or red if it is less than 90%** (worksheets 3.1-3.4). This provides clear visual indicators.

The model also provides an estimated "re-forecast" based on the current cumulative performance level so that states can identify potential short-falls in their budget at an early stage in the budget year and take necessary action to adjust expenditure. For example, if a revenue item is budgeted at NGN 10 billion and current cumulative performance is at 90% of the projected accumulation, then the reforecast would be for NGN 9 billion.

## Structure of MS Excel Model

A summary of the structure of the MS Excel model is provided in the table below.

*Table 1: MS Excel Model - Summary of Worksheets*

Sheet	Summary Description	Data Entry	Output*
1.0 Cash Plan	Provides a summary of monthly cash in-flows and outflows, and also captures the base metric regarding the name of the state / local government and the fiscal year.	x	x
1.1 Closing Balances Graph	Shows data from 1.0 in the form of a line chart for closing balances by month.		x
1.2 Cash Flow Graph	Shows data from 1.0 in the form of a bar chart for cash in and out flows by month.		x
2.0 Expenditure Outflow Summary	Summarises expenditure (cash outflow) by month for each of the main economic classifications, and by MDA (administrative classification).	x	x
2.1 Classification	Captures the Administrative and Economic Classification of the State / Local Government Accounts.	x	
2.2 Standard Profiles	Contains a list of "standard profiles" that can be used to profile recurrent expenditure, and also offers the user the ability to create their own profiles.	x	
2.3 Recurrent Exp. Profile	The main sheet where the user enters and profiles their recurrent expenditure by economic item by MDA (administrative unit).	x	
2.4 Capital Expenditure Profile	The main sheet where the user enters and profiles their recurrent expenditure by project by MDA (administrative unit) using the "standard profiles".	x	

3.0 Revenue Inflow Summary	Captures budget data for all revenue items (recurrent and capital), allows users to profile capital receipts and shows the profiles for recurrent revenues which are generated from sheets 3.1-3.4.	x	
3.1 SA Data	Captures historical Statutory Allocation data and in-year revenue performance. It also generates the profile of Statutory Allocation based on the annual budgeted figure.	x	x
3.2 VAT Data	Captures historical VAT data and in-year revenue performance. It also generates the profile of VAT based on the annual budgeted figure.	x	x
3.3 IGR Data	Captures historical IGR data and in-year revenue performance. It also generates the profile of IGR based on the annual budgeted figure.	x	x
3.4 EC Data	Captures historical Excess Crude data and in-year revenue performance. It also generates the profile of Excess Crude based on the annual budgeted figure.	x	x
4.0 Rev. Performance Summary	Summarises the performance of the recurrent revenue items against budgeted including a bar graph of performance to date and full year projection.		x

All sheets in the MS Excel model are protected, only cells where users are intended to enter information are unlocked. Cells where users should enter information are coloured blue.

If pasting data into this MS Excel workbook from another source, always paste special as unformatted text so that the conditional formatted (where used) is not compromised.

The password for unprotected the worksheets is SPARC. ✱

For ease of reference, from this point forward in the guide the worksheets will simply be referred to by their numerical title (e.g. 4.0).

## Section 3. Expenditure Profiling

### Entering Base Data

State / Local Government and Year - Initial information requirement is for the state or local government to be selected, as well as the fiscal year that the profile is being prepared for, in cells B2:B3 worksheet 1.0 as per the screen shot in Figure 1 below.

Figure 1: Base Data (worksheet 1.0)

	A	B
1	<b>Summary Data</b>	
2	Type Name of State or Local Government	
3	Year	

**Budget Classification** - The next and most significant job is to load the administrative and economic classifications into sheet 2.1. This is necessary so that the profile can be summarised by main economic item (Personnel, Overheads, Capital and Others) and by administrative unit, and since the descriptions of the economic items will help those profiling to understand the nature of the expenditure.

For the Administrative Classification, the numerical code and description should be entered into columns A and B in sheet 2.1 respectively. For Economic Classification, again the numerical code and description should be entered in columns D and E respectively, as well as whether they are Personnel, Overhead, Capital or Other expenditures (in column F, which is a drop down). Revenue side economic codes do not need to be entered. This is shown in Figure 2 below.

Figure 2: Budget Classification Entry Worksheet (2.1)

	A	B	C	D	E	F
	Administrative Classification	Administrative Description		Economic Classification	Economic Description	Economic Type
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Although loading the Budget Classification could be time consuming, it only has to be done once and can then be used in subsequent years (assuming the coding doesn't change).

2,000 rows have been included for the economic and administrative classifications (allowing for up to 2,000 items in each) - if more are needed, the user should unprotect the worksheet, copy row 2,000 and paste immediately above.



**Standard Profiles** - The standard profiles worksheet (2.2) provides the profiles (percentage expenditure per month) that are to be applied to the recurrent expenditure items. Standard profiles can be entered before the profiling starts in order to assist MDAs. The profile title should be entered into column B and then the percentage of expenditure each month for January to December should be entered in columns C:N respectively. Column O provides a check-sum to ensure that the monthly profiles add up to 100%. Color coding (green / red) is used to highlight whether the additions of the months equals 100% or not. This is shown in Figure 3 below.

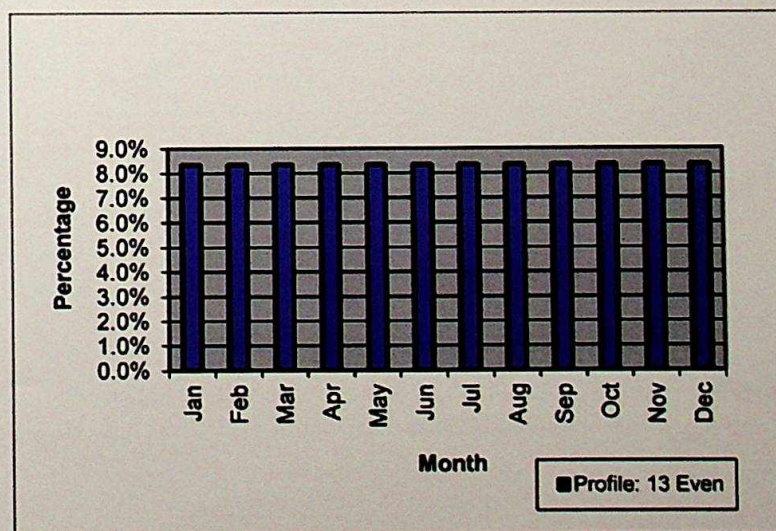
*Figure 3: Standard Profiles Worksheet (2.2)*

	A	B	C	D	E	F
	Administrative Classification	Administrative Description		Economic Classification	Economic Description	Economic Type
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

100 rows have been included for standard profiles (the first 13 are already allocated to each month (1-12) and to even across the year. If more rows are needed, the user should unprotect the worksheet, copy row 101 and paste immediately above row 102.

Graphs have also been produced but only for standard profile 13-30. The user can create more graphs if desired. An example, for Profile 13 (even across the year) is presented in Figure 4 below.

*Figure 4: Standard Profile Graph*



**Loading Expenditure Budget Data** – the recurrent and capital expenditure budgets should be loaded into worksheets 2.3 and 2.4 respectively.

For the recurrent expenditure (worksheet 2.3), the following information is needed for each line item:

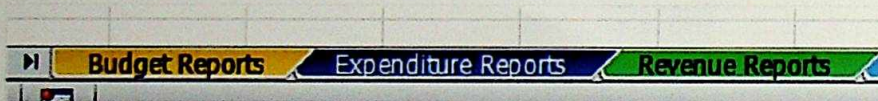
1. **Administrative Code (Column A)** – this has been set-up as a drop down, but if the code matches the codes entered as per Figure 2 above, a simple copy from the source and paste into this column will work.
2. **Economic Code (Column C)** – as above this is a drop down, and will also work as above regarding copy and pasting.
3. **Approved Estimate (Column F)** – this should be the budget provision for this economic item for the selected administrative unit (MDA).

If the format of the source data is in three adjacent columns (i.e. Administrative Code, Economic Code, and Approved Estimate) or can be manipulated to this presentation, then the columns in worksheet 2.3 can be rearranged. This can be done simply by unprotecting the worksheet, cutting each of columns C and F and placing them adjacent to column A.

If the Expenditure Profiling is to be managed / completed centrally (i.e. by MoF or MoPB/ equivalent) then consideration should be given to grouping line items by economic classification. If profiling is going to be completed by MDAs, the line items should be grouped by Administrative Classification. This should be done before the data is imported into the model.

The columns for initial budget data (recurrent expenditure) entry in sheet 2.3 are presented in Figure 5 below.

*Figure 5: Recurrent Expenditure (2.3)*



10,000 rows have been included for recurrent expenditure items. If more rows are needed, the user should unprotect the worksheet, copy row 10,000 and paste immediately above row 10,000.

For the capital expenditure (worksheet 2.4), the following information is needed for each line item:

1. Administrative Code (Column A) - this has been set-up as a drop down, but if the code matches the codes entered as per Figure 2 above, a simple copy from the source and paste into this column will work.
2. Programme Code (Column C) - this is free form and can be entered directly from the budget;
3. Description of Project (Column D) - this is a short narrative description; and
4. Approved Estimate (Column F) - this should be the budget provision for this project for the fiscal year concerned.

If the format of the source data is three adjacent columns (i.e. Administrative Code, Programme Classification, Project Description, and Approved Estimate) or can be manipulated to this presentation, then the columns in worksheet 2.4 can be rearranged. This can done simply by unprotecting the worksheet, cutting each of columns C, D and F and placing them adjacent to column A.

The columns for initial budget data (Capital expenditure) entry in worksheet 2.4 are presented in Figure 6 below.

*Figure 6: Capital Expenditure (2.4)*

	A	B	C	D	E
	Administrative Code	Administrative Description	Programme Code / Classification	Description	Approved Estimate
1					
2		#N/A			
3		#N/A			
4		#N/A			
5		#N/A			
6		#N/A			
7		#N/A			
8		#N/A			
9		#N/A			
10		#N/A			
11		#N/A			
12		#N/A			
13		#N/A			
14		#N/A			
15		#N/A			
16		#N/A			
17		#N/A			
18		#N/A			
19		#N/A			
20		#N/A			
21		#N/A			
22		#N/A			

2,000 rows have been included for capital projects. If more rows are needed, the user should unprotect the worksheet, copy row 2,000 and paste immediately above row 2,000.

## Initial Expenditure Profile

Once the initial population is complete, the process for preparing the expenditure profile should involve all MDAs.

**Recurrent Expenditure** - For each recurrent expenditure item (economic codes for personnel and overheads) in worksheet 2.3, a decision has to be made on how much to profile, and how to profile - either manually entering the figures into the columns for the relevant months, or using the standard profile.

If using the standard profiles and if the expenditure is going to be in a single month, the month (Number 1-12) should be entered into column I (Profile Code). If using a standard profile, the standard profile should be prepared in sheet 2.2 (see Figure 3 above, if an applicable standard profile does not already exist) in the next available line (and given a description), and the corresponding code (in column A in worksheet 2.2) should be entered in column I in worksheet 2.3.

If manually entering figures, the existing formulas in columns K:V can be overwritten, and the check-sum should be used to ensure the appropriate total budget have been profiled. The worksheet would need to be unprotected to do this. It is advised that, wherever possible, the standard profiles are used.

This should be repeated for all line items in the expenditure profile.

The worksheet is shown in Figure 7 below.

**Capital Expenditure** - For capital expenditure, the above manual profile is the only option, and should be applied to all capital projects.

The first step for Capital Project is to decide how much to profile (up to 100%) which should be entered into Column F for each project. Then the manual profile should be entered by month in columns H:S for January to December respectively. A check-sum, coloured coded green or red, is provided in column U to show if the full amount has been profiled, then balance left to profile is shown in column V.

The worksheet is shown in Figure 8 below.

*Figure 7: Recurrent Expenditure Profile (Sheet 2.3)*

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	
Administrative Code	Administrative Description	Economic Code	Economic Description	Expenditure Type	Approved Estimate	% to be Profiled	Value to be Profiled	Profile Code	Profile Description	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Period Total	Check-Sum	
20001	General House	10011	Salaries	Personnel	1,600,000	100%	1,600,000	13	Even	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	1,600,000
3																								
4																								
5																								
6																								
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Figure 8: Capital Expenditure Profile (Sheet 2.4)

Administrative Code	Administrative Description	Programme Code / Classification	Description	Approved Estimate	No to be Profiled	Values to be Profiled	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Portford Funds	Other Funds	Balance Brought In
2001	Students House		Purchase of vehicle	100,000,000	100%	100,000,000															

Summary Profile

A summary profile is provided in worksheet 2.0 as shown in Figure 9 below. It tallies total expenditure by the four main economic classifications (Personnel, Overheads, Capital and Other) and there are drop down choices in rows 9 and 11 that can be used to show the total profile by MDA (total expenditure) or by Economic Classification (this will not show capital) respectively.

Figure 9: Summary Cash Outflow (Expenditure) (Sheet 2.0)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Portford Funds	Total
Total Personnel	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	0	1,000,000
Total Overhead	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Capital	0	0	0	0	0	50,000,000	0	0	50,000,000	0	0	0	0	100,000,000
Total Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Expenditure	83,333	83,333	83,333	83,333	83,333	50,000,000	83,333	83,333	50,000,000	83,333	83,333	83,333	0	101,000,000
Summary by MDA:	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Portford Funds	Total
21001 Governors House	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	0	1,000,000
Summary by Economic Res:	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Portford Funds	Total
11001 Salaries	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	83,333	0	1,000,000

## Section 4. Revenue Profiling

### Functionality

The Revenue Profiling functionality is found in worksheets 3.0 to 4.0 in the MS Excel model. This section of the guide includes:

1. Key Calculations Methods - this provides a description of the basis of the forecasting, and also information on other MS Excel based manipulations; and
2. Structure of Model, and Using the Model - the model has been developed in MS Excel. In this section, a description is given of the worksheets in the overall workbook, and how to use the model.

In addition, a detailed manual has also been produced giving step-by-step instructions/notes on how the model was constructed. This can be accessed separately from the SPARC Resource Centre or the PFM Suite tab on [www.sparc-nigeria.com](http://www.sparc-nigeria.com).



### Key Calculations/Manipulation Methods

These sub-sections below provide a brief summary of the calculation methods used and manipulations of MS Excel to develop the model. More detailed information on the construction of the spreadsheet can be found in the SPARC Guide to Building Forecasting Techniques.



#### Moving Average

Moving Averages can be used to forecast flow rates for annual revenue based on observed historic flow rates. The basic principles behind moving averages can be split into the two components:

1. Moving - when forecasting a variable for multiple time periods, this refers to the rolling forward of the average used for the forecast;
2. Average - refers to using more than one piece of data to forecast.

The Revenue Profiling model uses a six-year moving average excluding outliers. This means that the model uses flow percentage from four of the six preceding year's observations, with the exclusion of the highest and lowest observations. This principle of excluding outliers is to remove "random effects".

An example is shown in the table below.

*Table 2: Example of Moving Average Excluding Outliers*

Year	Historical Flow Percentage for February	Used in Moving Average Calculation
2008	10.2%	10.2%
2009	8.5%	8.5%
2010	7.0%	7.0%
2011	12.1%	Excluded (highest observation)
2012	8.3%	6.3%
2013	5.8%	Excluded (lowest observation)
<b>6 Year Moving Average Excluding Outliers</b>		<b>9.0%</b>

**Normalising the Moving Average** - Because outliers are being removed, the resultant cumulative annual flow rate may not sum to exactly 100%. For this reason, we have to divide the monthly flow rates by the cumulative sum to normalise the flow to 100%. For example, the following is used as an illustration:

*Table 3: Example of Normalising Flow Percentages*

Year	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
2009	20%	23%	30%	25%	98%
2010	22%	20%	22%	36%	100%
2011	18%	25%	26%	32%	101%
2012	27%	29%	24%	21%	101%
2013	28%	21%	21%	30%	100%
5 Year MA X-Outliers	23%	23%	24%	29%	99%
Normalised MA	23.23%	23.23%	24.24%	29.29%	100%

### Other Excel Manipulations

**Conditional Formatting** - Conditional formatting is used in all of the data based worksheets in the model to adjust the appearance of cells depending on the value in the cell, or in other cells. For example, this is used to highlight the revenue performance data in sheets 3.1 to 3.4, highlighting them red, amber or green depending on the level of performance.

It is also used to adjust the background colour of cells to define whether or not they need data entering into them.

**"IF" Statements** - "IF" Statements allow for a cell to contain different data depending on one or more conditions set in the statement. This is an intermediate excel manipulation.

They are used to determine which trend is entered in for Excess Crude in the Summary Revenue Profile sheet depending on the user's selection from a drop down box.

They can also be combined with summation formula to create "SUMIF" which will sum a series of data dependent on a specific condition contained within the formula. This is used as part of the reforecast estimates to identify how many months of actual performance data have been entered.

**Hidden Data** - Data that is used as part of calculations, or as part of generating graphs, is hidden within the spreadsheet so as not to clutter the user's view. This is achieved either by hiding rows or columns, or by adjusting the text colour to white (the same colour as the cell background), and protecting the cells/rows/columns so they cannot accidentally be interfered with.

**Graphs** - Numerous graphs have been prepared and are automatically populated once the data is entered into the various worksheets. The generation of graphs has been based on the following key principles:

- Graphs are produced in 2-D not 3-D (looks more professional);
- Graphs are always located as separate worksheets, not embedded in an existing worksheet (so that they are bigger and easier to locate and view);
- Data tables are included, which negates the need for a separate legend key (this is so the user can view the information both graphically and numerically in the same place);
- The graphs are titled, as are the axes; and
- For line graphs with more than one line, secondary x-axes are used (this is because the two lines are on different scales)

## Structure of Revenue Profiling worksheets and their Use

**Structure** - As noted above, the revenue profile is prepared in worksheets 3.0-3.4. In general, cells highlighted blue require data (historic, budget or actual) to be entered.

Grey tabs (sheets) are for data entered and viewing data based information, pink tabs are graphs.

All cells in all sheets are locked for editing with the exception of those that require data entering. The password for unlocking the workbook is SPARC.



**Revenue Profile Summary Sheet** - The summary sheet (3.0) provides the identification of the budget year for which the profile is being prepared and a summary of the revenue profile for the entire revenue budget.

It is split into opening balance, recurrent revenue items (for which the profiles are generated in subsequent sheets and brought in in summarised format), non-discretionary capital receipts (those which must be spent on a specific project or programme, e.g. World Bank Fadama loans), and discretionary capital receipts (e.g. return on state investments).

It provides the cells into which the capital receipts need to be manually profiled.

It then provides totals for the whole of the revenue budget (monthly and cumulative) and then sub-divided into total discretionary and total non-discretionary (again, monthly and cumulative).

A screen shot of the Summary sheet is show below.

Figure 10: Summary Profile (worksheet 3.0) (NB Months April-June hidden)

	A	C	D	E	F	G	K	L	M	N	O	P	Q	R
1	Wazobia State Revenue Inflow Summary - 2016													
2	Revenue Item	Budget	Revised Estimation	Jan	Feb	Mar	Jul	Aug	Sep	Oct	Nov	Dec	Yrly Revenue	Yrly
3	Budget Year	2016	2016											
4	Treasury Opening Balance	5,500,000,000	5,500,000,000											5,500,000,000
5	Recurrent Revenue Items													
6	Statutory Allocation	45,000,000,000		1,750,000,000	1,750,000,000	1,750,000,000	1,750,000,000	1,750,000,000	1,750,000,000	1,750,000,000	1,750,000,000	1,750,000,000	1,750,000,000	17,500,000,000
7	VAT	20,000,000,000		787,276,110	875,713,152	875,713,152	1,751,426,304	1,751,426,304	1,751,426,304	1,751,426,304	1,751,426,304	1,751,426,304	1,751,426,304	17,514,263,040
8	IGR	22,000,000,000		878,175,000	878,175,000	878,175,000	1,756,350,000	1,756,350,000	1,756,350,000	1,756,350,000	1,756,350,000	1,756,350,000	1,756,350,000	17,563,500,000
9	Excess Crude	10,000,000,000		447,967,391	361,211,937	1,482,950,761	993,745,072	1,136,624,672	419,585,863	533,653,157	990,656,376	618,783,245	6,187,832,450	
10	Non-Discretionary Capital Receipts													
11	External Loans	2,000,000,000				1,000,000,000			1,000,000,000					2,000,000,000
12	Internal Loans	2,000,000,000				2,700,000,000								2,700,000,000
13	Grants	2,000,000,000							1,000,000,000					1,000,000,000
14	Other Capital													
15	Discretionary Capital Receipts													
16	External Loans													
17	Internal Loans													
18	Grants													
19	Other Capital	2,000,000,000												2,000,000,000
20	Total Receipts	66,000,000,000		6,861,104,510	5,417,134,470	10,970,936,537	6,506,946,827	6,875,331,225	10,142,876,557	6,013,779,731	6,618,746,657	6,488,103,125	61,144,114,125	
21	Total Discretionary Revenue	6,861,104,510		12,019,278,980	10,970,936,537	24,217,438,799	33,117,799,923	33,217,799,923	39,879,799,491	65,893,579,223	72,511,816,875	70,000,000,000	61,144,114,125	
22	Total Non-Discretionary	11,400,000,000		0	0	1,750,000,000	0	0	6,000,000,000	0	0	0	11,400,000,000	
23	Total Discretionary Non-Discretionary	0		0	0	3,750,000,000	7,400,000,000	7,400,000,000	11,400,000,000	11,400,000,000	11,400,000,000	11,400,000,000	11,400,000,000	
24	Total Discretionary	11,400,000,000		12,019,278,980	10,970,936,537	24,217,438,799	33,117,799,923	33,217,799,923	39,879,799,491	65,893,579,223	72,511,816,875	70,000,000,000	61,144,114,125	
25	Total Discretionary	11,400,000,000		12,019,278,980	10,970,936,537	24,217,438,799	33,117,799,923	33,217,799,923	39,879,799,491	65,893,579,223	72,511,816,875	70,000,000,000	61,144,114,125	
26	Total Discretionary	11,400,000,000		12,019,278,980	10,970,936,537	24,217,438,799	33,117,799,923	33,217,799,923	39,879,799,491	65,893,579,223	72,511,816,875	70,000,000,000	61,144,114,125	
27	Total Discretionary	11,400,000,000		12,019,278,980	10,970,936,537	24,217,438,799	33,117,799,923	33,217,799,923	39,879,799,491	65,893,579,223	72,511,816,875	70,000,000,000	61,144,114,125	
28	Total Discretionary	11,400,000,000		12,019,278,980	10,970,936,537	24,217,438,799	33,117,799,923	33,217,799,923	39,879,799,491	65,893,579,223	72,511,816,875	70,000,000,000	61,144,114,125	
29														
30	1. Original Budget	***Original or Revised Budget												
31	2. From April 2016	***Statutory Allocation Base												
32	3. From Budget on Budget	***Excess Crude Base												
33	Notes:													
34	35. Statutory Allocation, VAT, IGR and Excess Crude brought forward from worksheets													
36	36. Enter Treasury Opening Balance in cell B4													
37	37. Enter Capital Receipts in rows 11 to 19													
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														
49														

**Recurrent Revenue Items** - There is a worksheet for each of the major recurrent revenue heads (Statutory Allocation, VAT, IGR and Excess Crude) - four in total. They are titled 3.1-3.4 with a description of the revenue item.<sup>1</sup>

These worksheets are used to enter historical data (for six years), the moving average flow rates are calculated (automatically) and the estimation of flow for the given budget year is calculated. These sheets also present the revenue performance (both monthly flow and cumulative flow) and the re-forecast.

Below is a screen shot for a recurrent revenue item.

<sup>1</sup> SA - Statutory Allocation, EC - Excess Crude



Figure 11: Profile Sheet for Recurrent Revenue Item (worksheets 3.1-3.4)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2010	443,278,139	426,314,679	452,897,981	453,168,490	295,821,218	413,803,893	411,237,179	399,202,876	356,221,283	429,837,650	452,408,191	615,945,538	5,078,243,376
2011	292,473,531	372,373,188	482,245,723	432,424,027	271,225,419	512,511,320	490,818,392	529,442,149	485,548,081	482,683,819	498,327,282	478,728,388	5,768,913,584
2012	357,244,873	899,432,802	688,678,899	843,314,071	882,847,248	334,138,778	883,443,167	872,689,838	813,788,028	881,689,884	688,889,488	378,144,888	7,183,889,088
2013	467,287,821	715,357,618	718,288,582	892,692,571	841,527,423	728,661,657	726,892,125	881,258,243	785,111,389	871,361,591	729,463,228	313,622,388	8,882,260,888
2014	648,053,443	861,348,823	723,647,880	648,053,443	673,261,962	718,695,781	707,200,859	638,889,291	738,718,888	678,881,194	788,894,327	788,894,327	8,122,288,287
2015	664,238,993	843,614,727	727,486,444	801,484,058	833,656,827	928,624,548	626,321,223	826,182,819	867,134,526	782,314,847	767,238,651	1,881,472,848	9,582,888,887
2010	7.42%	7.11%	8.32%	7.99%	5.29%	8.92%	7.72%	10.04%	7.28%	7.02%	10.92%	13.51%	
2011	6.89%	10.02%	7.24%	7.98%	6.52%	9.96%	8.69%	9.99%	8.31%	8.19%	8.72%	8.54%	
2012	7.29%	8.37%	8.46%	8.81%	6.23%	7.42%	8.37%	7.99%	8.56%	7.62%	8.31%	8.89%	
2013	7.17%	7.99%	7.94%	7.89%	7.69%	8.07%	8.14%	8.61%	8.67%	8.42%	8.06%	7.77%	
2014	7.89%	7.33%	8.83%	7.89%	8.24%	8.29%	8.41%	7.46%	8.85%	7.77%	8.37%	8.88%	
2015	6.83%	8.81%	8.29%	8.32%	8.64%	8.49%	8.40%	8.09%	8.66%	7.97%	8.61%	11.88%	
Average Flow (6-Year MA %)	7.57%	8.17%	8.29%	8.69%	7.66%	8.49%	8.40%	8.54%	8.86%	7.97%	8.26%	8.32%	88,993,887
Normalised MA	7.82%	8.21%	8.29%	8.29%	8.29%	8.49%	8.49%	8.52%	8.52%	8.52%	8.52%	8.52%	100.00%
2016 Budget Monthly	918,121,009	885,203,922	881,590,255	1,051,689,081	926,836,129	1,218,751,887	1,617,943,184	1,634,626,827	1,824,381,211	884,286,122	1,081,154,421	1,688,199,048	13,888,888,888
2016 Budget Cumulative	918,121,009	1,803,324,931	2,684,915,186	3,736,604,267	4,663,440,396	5,882,192,283	7,500,135,467	9,134,762,294	10,959,143,505	11,843,429,627	13,924,584,048	15,612,783,096	13,888,888,888
2016 Actual Monthly	1,008,000,000	750,000,000	850,000,000	900,000,000	750,000,000	1,180,000,000	875,000,000						6,725,000,000
2016 Actual Cumulative	1,008,000,000	1,758,000,000	2,608,000,000	3,508,000,000	4,258,000,000	5,438,000,000	6,313,000,000	6,725,000,000	6,725,000,000	6,725,000,000	6,725,000,000	6,725,000,000	6,725,000,000
Performance Monthly	81.87%	84.74%	96.56%	85.56%	80.92%	97.00%	53.50%						
Performance Cumulative	81.87%	84.74%	96.56%	85.56%	80.92%	97.00%	53.50%						
Performance Monthly	108.90%	84.74%	96.56%	85.56%	80.92%	97.00%	53.50%						
Performance Cumulative	108.90%	84.74%	96.56%	85.56%	80.92%	97.00%	53.50%						

Data Requirements

Historical Data - The model requires six years of historical monthly in-flow data for Statutory Allocation, VAT, IGR and Excess Crude (including SURE-P, NNPC Refunds, Exchange rate gains and all other Augmentations). If the Revenue Profile is being prepared for 2016, then the data that is required would be for 2010-2015 inclusive.

The sources of the data would be:

- Statutory Allocation, VAT and Excess Crude - either the monthly FAAC pack that is distributed to states at the monthly FAAC meetings, or from the summary FAAC information that is posted on the Federal Ministry of Finance website ([www.fmf.gov.ng](http://www.fmf.gov.ng))<sup>2</sup>.
- IGR - Usually from the Treasury or Department of Final Accounts (or in some cases BIR if they collate holistic figures for IGR) of the state.

Data must be entered accurately and cross-checked. Inaccurate data entry will cause the model to produce spurious results rendering it of little use.

Budget Data - The model requires the budgeted figures, for the budget year that is being profiled, for the major revenue and capital receipt heads. The recurrent revenue items are:

- Statutory Allocation;
- VAT;
- IGR; and
- Excess Crude.

The capital receipts should be separated into discretionary and non-discretionary for the following major heads:

- Grants;
- Loans; and
- Other Miscellaneous Capital.

If users want to include additional capital items, the summary sheet must be adjusted to include additional rows.

<sup>2</sup> It should be noted that the Federal Ministry of Finance website is usually at least 3 months late in posting the FAAC data.

**In-Year Performance Data** - In order to use the model for in-year performance and re-forecasting, actual data should be entered during the implementation of the budget for the four recurrent revenue items. The sources of the in-year data are likely to be the same as for the historical prior year data (i.e. FAAC pack, Treasury/Final Accounts departments and possibly BIR). This data should be entered as soon as it is available.

### Preparing Revenue Profile

**Population of the Model** - The first time use of the model will require the historical data as noted above to be entered into sheets 3.1-3.4. If the model is being used for a subsequent year, the data that is already entered can be shifted into the correct cells once the budget year has been changed (for example, if the model is being used for 2015 budget, and was previously used for the 2014 budget, the historical data for the years 2009-2013 will still be relevant, and will just need shifting into the correct rows). The historical data is entered in cells B2:M7 on each of the four sheets.

Finally, the budget data for the headline revenue items must be entered into column C on the sheet "3.0. Revenue Profile Summary". This will come from the Budget Book or other sources.

The recurrent revenue items will be the same for all States (Statutory Allocation, VAT, IGR and Excess Crude). If for any reason another recurrent revenue item is required, the work-book will need modification - relatively complicated modification (creation of a similar sheet to those for 3.1-3.4, and pointing of the summary sheet to the relevant new sheet).

In the Revenue Profile Summary sheet, the capital receipts are split into discretionary and non-discretionary, and are itemised as Grants, Loans and Other Capital. If any other items need to be entered, copy a row of one of the existing items and paste it below, altering the title of the item. Check that the total row (currently row 21) is tallying the correct rows.

**Initial Revenue Profile** - Once the initial population is complete, the revenue profile for all recurrent items will appear in the Revenue Profile Summary sheet.

For statutory allocation, the user must choose the profiling basis (by selecting from the drop down box in cell A31) on worksheet 3.0. The options for statutory allocation are:

1. Even across the year - this takes the budgeted figure and divides it by 12, with 1/12 forecast in each month; or
2. Based on Historical Flows - this uses the same forecasting technique as used for the other recurrent revenue items, i.e. using the historical flow of excess crude as the basis for forecasting when it will be realised.

For excess crude, the user must choose the profiling basis (by selecting from the drop down box in cell A32) on the summary sheet. The options for excess crude are:

1. Based on Historical Flows - this uses the same forecasting technique as used for the other recurrent revenue items, i.e. using the historical flow of excess crude as the basis for forecasting when it will be realised;
2. Even across the year - this takes the budgeted figure and divides it by 12, with 1/12 forecast in each month
3. Even across the last six months of the year - this takes the budgeted figure and divides it by six, with 1/6 forecast each of months July to December inclusive;
4. Evenly at the end of each quarter - this takes the budgeted figure and divides it by four, with 1/4 forecast for each of months March, June, September and December; or
5. Parked - this means that excess crude is not forecast to be received in any month and will be accumulated un-allocated over the course of the year (potentially for utilisation the following year).

Options 1 and 2 above are relatively risky because of the uncertainty with Excess Crude receipts. Option 5 is safest.

Finally, the capital receipts must be profiled manually. The rows in which capital receipts have been entered as being non-zero will automatically be highlighted to blue indicating that estimates need to be entered. There is a check-sum after the final column which will indicate, by highlighting itself green or red depending on whether the correct amount has been profiled in totality or not.

This should be based on knowledge of the drawn down period of the funds for discretionary capital receipts (or, loans could be used as a balancing item to ensure the expenditure profile can be financed). For non-discretionary capital receipts, the timing of the flow should be based on the expenditure profile for the items that the funds have been earmarked for.

Once this data has been entered, the Revenue Profile is complete and can be compared to the expenditure profile and, if necessary, to be adjusted accordingly.

**In-Year Performance Assessment** - For each of the four recurrent revenue items, the model can use in-year monthly revenue data to assess performance against budget. In each of the sheets 3.1-3.4, actual revenue data should be entered in row 21 for the corresponding recurrent revenue items. The model will automatically calculate the cumulative year to date.

It should be noted that for statutory allocation and excess crude, the performance assessment (and reforecast below) is based on the flow basis chosen in the summary sheet.

If the user wants to use the re-forecast figure as the basis of producing an updated profile, the value should be entered back into the cell for the budget in worksheet 3.0<sup>3</sup> in Column D, first selected "Revised Budget" from the drop-down in cell A30. It is suggested that at least three months of actual data is entered before re-forecasts are made.

### Performance Summary Sheet

This is the sheet that automatically consolidates the cumulative actual monthly and full year performance of recurrent revenue in sheets 3.1-3.4 against the budget. Column D is the summary of cumulative Actual revenue to date in row 22 of sheets 3.1-3.4 of the model. Column F is the summary of the cumulative actual revenue collected as a percentage of total budgeted revenue (Column D as a percentage of Column C). Column G is the summary of each re-forecast revenue in Cell A31 of sheets 3.1-3.4 of the model. Column H shows Forecast Full Year revenue as a percentage of budgeted revenue (Column G as a percentage of Column C). Lastly, Column J shows forecast full year deficit or surplus.

This is shown in Figure 12 below.

Figure 12: Revenue Performance Summary (Worksheet 4.0)

State	2016 Budget	2016 Receipts (Actual) to Date	Includes data up to (Inclusive):	% of Budget Collected to Date	Forecast Full Year	Forecast Full-Year as % of Budget	Forecast Short-Fall / Surplus	Receipts to date and Full Year Forecast					
								25%	50%	75%	100%	125%	
<b>Wazobia State</b>													
Statutory Allocation	45,000,000,000	25,077,156,791	July	57.9%	44,703,697,356	99.3%	256,302,644						
VAT	10,000,000,000	5,728,585,407	July	57.3%	10,246,345,917	102.5%	246,345,917						
IGR	12,000,000,000	6,225,000,000	July	51.9%	10,002,075,119	98.0%	30,377,924,893						
Excess Crude (EC)	10,000,000,000	3,968,926,342	July	39.7%	6,521,256,704	65.2%	3,478,733,296						
<b>Wazobia State Total Recurrent Rev</b>	<b>77,000,000,000</b>	<b>41,999,668,539</b>		<b>54.5%</b>	<b>72,273,179,097</b>	<b>93.9%</b>	<b>-4,274,820,503</b>						
<b>Performance 95% or better</b> <b>Performance between 85% and 95%</b> <b>Performance between 75% and 85%</b> <b>Performance less than 70%</b>													

<sup>3</sup> This can be achieved by copying the cell content for the reforecast figure, and using paste special – value to paste it into the budget cell in sheet 3.0.

## Section 5. Cash Planning

The model provides both graphical and numerical representations of the cash positions in the form of monthly closing Balances (sheet 1.1, see Figure 13 below), monthly summary cash in and out flows (worksheet 1.2, see Figure 14 below) and the numerical versions showing opening balances, total in and out flows, monthly net cash flow and closing balances (worksheet 1.0, see Figure 15 below).

Figure 13: Cash Flow Graph - Closing Balances (Sheet 1.1)

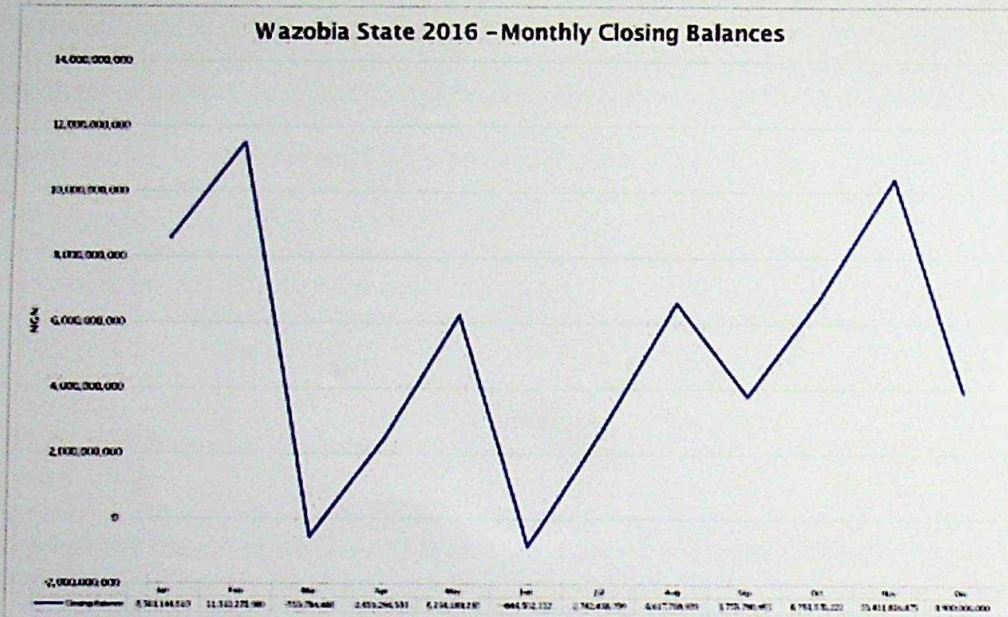
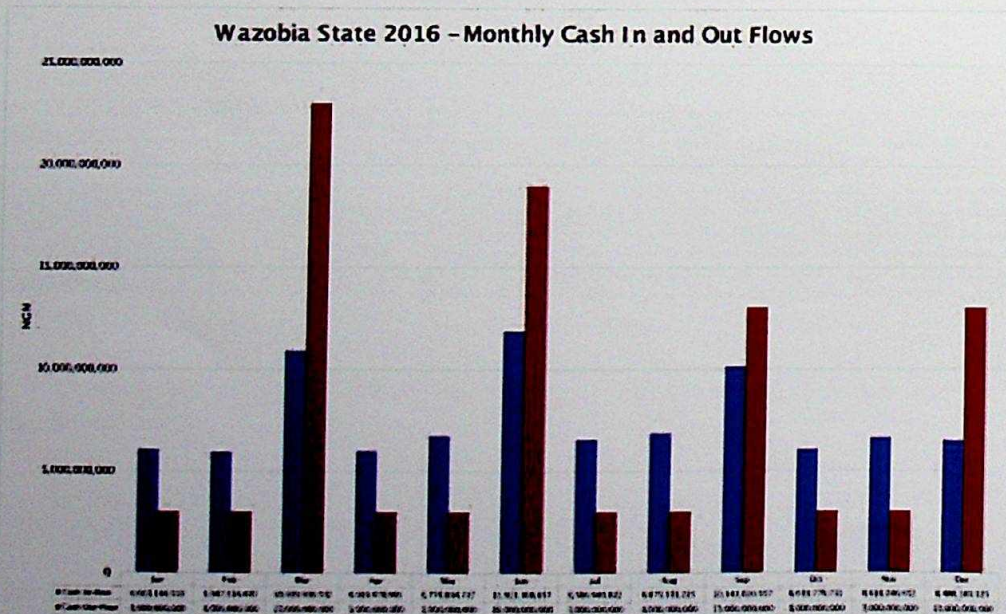


Figure 14: Cash Flow Graph - Monthly Cash Inflow and Outflow (Sheet 1.2)



Once the Expenditure and Revenue profiles have been completed, months of positive and negative closing balance should be identified and remedies agreed upon.

**Significant Cash Surpluses** - In periods of significant cash surplus, government could consider two options:

1. Invest funds in interest bearing assets; or
2. Bring forward some capital expenditure items to earlier in the year.

**Cash Deficits** - Conversely, if periods of deficit are forecast based on the initial cash plan, the two options are:

1. Short-term borrowing (e.g. overdrafts) to cover the period of deficit - however the costs of borrowing must factored in; or
2. Delay some items of expenditure - most likely capital expenditure.

The cash plan should also be monitored in-year. The sections above describe how revenue performance can be used to re-forecast full-year receipts, this information can be used to update the cash plan and make adjustments as described above.

*Figure 15: Online Monthly FAAC Data - Summary Sheet for Non-Mineral Revenues*

Wazolota State 2016 Cash Flow							
Description	Total	Jan	Feb	Mar	Oct	Nov	Dec
	=N=	=N=	=N=	=N=	=N=	=N=	=N=
Opening Balance		5,500,000,000	8,563,144,510	11,510,278,980	3,759,790,491	6,793,570,222	10,411,816,875
Total Revenue (Cash Inflow)	90,400,000,000	6,063,144,510	5,947,134,470	10,929,936,532	6,033,779,731	6,618,246,652	6,488,183,125
Total Expenditure (Cash Outflow)	92,000,000,000	3,000,000,000	3,000,000,000	23,000,000,000	3,000,000,000	3,000,000,000	13,000,000,000
Cash Surplus/(Deficit)		3,063,144,510	2,947,134,470	12,070,063,168	3,033,779,731	3,618,246,652	6,511,816,875
Closing Balance		8,563,144,510	11,510,278,980	559,784,188	6,793,570,222	10,411,816,875	3,900,000,000

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