THE STRATEGIC FINANCIAL PROJECTOR

A Training Guide

Uses
Structure
Calculation Logic
Running the SFP
Setting the SFP Up
Modifying the SFP

Version 9.0
September 2005

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Part 1. Introducing the SFP

1.1 Introduction and a Strategic Story

The Strategic Financial Projector (**SFP**) is a complex spreadsheet that will produce *financial projections* for Institutions of Higher Education (IHEs) with easy examination of the economic implications of *strategic alternatives*. Trends are shown graphically and in projected financial statements. *The **SFP** can help you link strategic planning and budgeting.*

> **A Strategic Story**
>
> Julie Prince, CFO of Coldwater College, sat at the long, brightly polished, mahogany board table along with her college's finance committee. In front of her was her new tablet computer tied to the overhead and running the **SFP** (Strategic Financial Projector). A large chart was in a corner of the screen. President Anne Devereaux stood next to the screen with a laser pointer in her best blue, "I'm-here-to-ask-for-money," suit. She was explaining, "As you can see, we begin the new science building in 2007 causing a small decline in cash. Our liquidity ratio falls as does our available assets ratio at the time the higher debt service kicks in. Fortunately, as the projection shows, by 2012 we are back to the strong financial position projected for 2006."
>
> Referring to his planning assumptions sheet, Tom Murphy, head of the development committee and retired investment banker, asked: "What happens if we don't raise the projected $9 million in gifts for the new $14 million building? What if we only raise $4 million?"
>
> On the screen in the control panel next to the graph, Julie spun to the bond issue primary planning variables and toggled the amount issued up by $5 million and then she spun to the gift expectation bumps and toggled the one for 2007 down by $5 million. The graph of projected financial ratios, cash position and the change in the unrestricted fund balance dipped down beginning in 2007. President Devereaux replied, "Well, it looks like we don't recover our pre-building financial health until 2015. The higher debt service makes it more difficult on the college."
>
> "What I want to know…" Bill McSwifton, Vice President of Marketing for Beasly Foods, began in his usual challenging manner, "is what happens if we don't make those terrific enrollment goals. Our enrollment has been level for three years. I think you should pull out the 0.5% annual freshman cohort growth and the 5% jump in the freshman cohort in the year when the new building opens."
>
> Julie looked up at the president who gave a quick affirmative nod. Julie toggled bonds and gifts back, then she spun to the enrollment growth planning variable and toggled it down to zero. She quickly spun to the project variable controlling the enrollment response to the construction project and toggled it down to zero. The lines on the graph indicating the annual the surplus/deficit figure, cash position and the three financial health indicators all tilted steeply down. "Well, then we shouldn't start the building," the president began. "Julie, show us why. But I want to tell you what we have done in our recruiting area that makes me think enrollment gain is likely, and going ahead with the project is the best strategy for the college."

<u>Financial Statements</u>

Financial statements are projected over fourteen years with **SFP**. The first fiscal year is labeled "Actual" and should reflect the most recent actual results available, audited or unaudited, but complete. The second fiscal year is labeled "Budget" and should reflect the budget for the current year, that is, the year after the last completed year. The next twelve columns show the projections for each of the following twelve fiscal years. The user may change the number of years.

This version of the **SFP** projects three parts of the financial statement: A Statement of Activities and Changes in Net Assets, A Statement of Financial Position, and Statements of Cash Flows (indirect and direct). The activities statement is given in four formats: budget (an internal document), unallocated (before allocation of expensed net assets released from restriction, facilities, depreciation, and interest expense) partially allocated (only expensed net assets released from restriction), and formal (after allocations).

<u>Ratios</u>

A series of financial ratios are calculated from the projected financial statements, including the liquidity ratio and the net available assets ratio. The spreadsheet can be easily modified to calculate any other ratios requested by lenders, accrediting commissions, or bond rating agencies. New projected ratios may be built from any data normally found in financial statements, as well as projected enrollments, new student counts, and faculty and staff counts.

Testing Strategic Options—Rates of Change

The great strength of the **SFP**, however, is that it allows you to easily test strategic alternatives. What if we hire more faculty? What if we increase salaries? What happens if we control benefit costs? What happens if we refinance our bonds in 2010? Base levels, growth rates, and "bumps" for new student matriculation, retention, tuition rates, investment returns, contributions, inflation, numbers of staff, salary increase rates, benefit rates, growth rates for non-personnel purchases, bad debt provisions, and changing interest rates, among many model possibilities, all can be easily manipulated. An increase in the number of student services staff in the budget year, for example, affects all future years because of the increase to the base. Although the growth rate for each of these strategic variables is applied uniformly during the projection, the SFP allows base adjustments in any user-specified year of the projection. These are the "bumps."

Testing Strategic Options—Individual College or School Plans

Version 9.0 of the SFP comes with tabs for 10 separate academic units. Little effort is required to reduce or increase the number. If enrollment, retention, faculty pay, class size, or graduation trends vary greatly between more than two academic entities, like liberal arts, business, and law schools, each may be given a separate data section. The financial contribution of each school can be monitored. Thus, the SFP can replicate a liberal arts school with level enrollments, a business school with growing enrollments, and a law school with falling enrollments and higher faculty salaries.

Testing Strategic Options—Capital Projects and Bond Issues

The user may also initiate 14 (or more with modification) capital projects and 10 (or more with modification) bond issues over the course of the projection. As Julie demonstrated in the sidebar story, the strategy to construct a science building is a typical project. The user specifies the year the project begins, the length of construction, the square footage, the cost per square foot, land costs, required staff additions for operation, and required non-staff costs (per square foot) during operation. Depreciable equipment can be part of the project (or all of it). Equipment with differing depreciable lives can be factored in as well. The user can also initiate a bump in new enrollments or an increase to residence hall and food service utilization upon project completion (for residence hall construction projects, for example).

The model's capital project section can be used not only for construction and renovations projects but to simulate major equipment or software acquisitions, plant staff additions, deferred maintenance projects, and land purchases as well. By using the **SFP** a full series of planned, strategic capital projects can be added, adjusted, re-scheduled, or cancelled in a search for minimum financial disruption.

The strategic use of bond issues and bond refinancing can also be tested in the SFP.

Testing Strategic Options—Key Ratios

The **SFP** displays the financial effects of strategic policy and environmental shifts. The user may change the student to faculty ratio (manifest as average class size) in the model's budget year and may also apply a growth rate and/or bump the average class size. Other adjustable key ratios include the proportion of courses taught by adjuncts, the proportion of costs (and staff numbers) in a functional area that vary with enrollment, first-year student retention rates, first-year transfer student retention rates, continuing student retention rates, and graduation rates.

1.2 Why Use the SFP?

Promote Strategic Development

Imagine this CFO soliloquy: "What if we undertake this strategy to increase quality? [The CFO then adjusts a model parameter.] Hmm, we can't have deficits like that. How much in gifts would we need to avoid the deficits? [Another adjustment.] Hmm, maybe we should move more slowly toward that quality goal." The **SFP** pushes forward the refinement of strategic ideas and pushes back on those ideas that impair financial viability. Visions can be solidified.

Constrain Budgets Within Strategic Guidelines

The **SFP** is the key to linking planning and budgeting. It constrains strategic ideas to be financially realistic, and it demonstrates how the budget must conform to the strategic projection. The interaction between strategic development and the **SFP** will yield a strategy that keeps the IHE in good financial condition. The strategic implementation plan that achieves financial viability on the SFP is expressed in terms of revenue achievement, project timing, and expense limitation. These are the factors that guide the budget.

Elevate Strategic and Financial Thinking

The **SFP** raises the level of the debate surrounding strategic/financial options. By connecting strategies to their financial implications, stakeholders' natural protective stances will become more balanced. Normally the faculty asks only for higher salaries and students for lower tuitions. When they are allowed to see options tested on the **SFP,** each is forced to confront the inherent trade-offs facing any IHE. Still, faculty want higher salaries but not so high as to make tuition outrageous, while students want lower tuitions, but not so low as to depress faculty salaries. Values are not erased, but they are shaded as the cost of trade-offs becomes more apparent.

Build Confidence

The **SFP** builds powerful stakeholder confidence in the sophistication of IHE decision makers. Trustees, lenders, accreditation teams and government agency decision makers are usually familiar with the careful testing by for-profit corporations of strategic options showing pro forma financial projections. These groups often express disappointment when the future is seen from the back of an envelope—a guess and a wish. Using the **SFP** gives them new confidence in the IHE's strategic and financial administration.

1.3 The SFP and Strategies

Financial Projection

A financial projection like that produced by **SFP** begins with existing information on the IHE's current financial position along with measures of inflow and outflow. The **SFP** then applies user-supplied growth rates, special corrections and interaction effects to re-compute year-by-year the IHE's future financial position. The given starting data is driven into the future. Enrollment growth rates drive new enrollment levels. Tuition price growth rates drive projected tuitions. Enrollment and tuition changes drive tuition revenue. Tuition revenue drives surpluses and cash positions. Surpluses and cash positions drive financial viability ratios.

What the **SFP** Can Do

Many strategic ideas, directions and priorities have direct financial implications. A priority to bring **faculty pay** into the top salary quartile within six years *requires* that funds be added to faculty salaries. **Quality-seeking strategies** might include goals to **reduce average class size** or to **reduce adjunct teaching.** Both strategies have direct financial implications because full-time faculty must be hired to meet the goals. A growth strategy **to increase enrollment** has both increased revenue and increased cost implications. A strategic priority for a new academic building or residence hall also has financial implications. The **SFP** shows the financial impact of each of these strategies. The **SFP** can also be configured to show the impact of environmental variables, like inflation and the enrollment response to tuition increases.

What the **SFP** Cannot Do

Financial models like the **SFP** run on numbers and arithmetic. The quantifiable strategies above can be modeled. The strategy, "to become the best liberal arts college in the west," with no specific implementation design cannot be projected with a financial model. A strategy to "improve our image" cannot be financially projected. Although the cost might be added to the projection at the proper points, the full financial impact, both of gains and expenses, cannot be easily computed. In general, a financial model cannot evaluate strategic ideas lacking implementation plans.

Providing higher quality education by decreasing class sizes and investing in academic support paid for with higher tuitions is a strategy. Increasing enrollment by investing in student services, building classrooms and residence halls, financed with the bonds supported by increased tuition revenue and residence hall fees is a strategy. Adding a secretary to the English department is not a strategy. Strategies can be defined as the broad ways a college or university chooses to meet the challenges of the environment. Strategies are not the details of budget allocation.

Real, future human behavior cannot be projected. (That's why the **SFP** is called a projection, not a forecast.) Will students still apply if the tuition is increased? A projection model cannot answer that. In five years will residence hall living be as popular as it is today? A projection model doesn't know the answer. A projection model can tell you what finances will look like **IF** the students continue to apply or what they will look like **IF** students do not apply at the same rates. A projection model can tell you what the finances will look like **IF** students do not fill the new dorm. A projection model cannot tell you whether the stock market will go up or down, only what the financial impact will be **IF** returns are good…or bad.

Asking "What if?"

"*What if?*" is the question that the **SFP** answers. *What if* we build the residence hall in 2007? *What if* we can raise $6 million for the $10 million academic building? *What if* we try a strategy of keeping the freshman cohort at the same level for the next five years? *What if* student enrollment declines 1% for every 2% net tuition increase over inflation? This financial projection model has been built to answer these and many more strategic "*What if?*" questions.

Part 2. Using the SFP

2.1 SFP's Basic Structure

The spreadsheet contains 41 tabs (also called sheets or worksheets in a workbook). Transfer among the tabs is assisted by pushbuttons on each sheet. The menu tab (pink) can be reached by clicking on the Menu pushbutton on any sheet in the workbook. The menu tab provides pushbutton access to all 40 other tabs. Many tabs also have pushbuttons for transfer to a closely related tab. The number of tabs may be reduced (by as many as 18) if the user wishes to model fewer than ten academic units (e.g., schools or colleges). The remaining 40 tabs consist of 16 data input tabs (red), 15 calculation tabs (green), six financial statement tabs (blue), the quick-input/graphical-display or "What If?" tab (yellow), a full-sheet graph tab (turquoise), and a tab for a handout listing assumptions (gray).

The What If? Tab

The What If? tab features a five-line graph of user-defined display variables, which include, for example, enrollment, operating revenue, cash position, reserve position, liquidity, surplus/deficit levels, and the available net assets ratio. Any variable that has values over the years of the projection may be graphed. The user interactively chooses the variables to display, each variable's scale and the years over which to display the values. Strategic variables and bumps may be reset on this tab with up/down arrows or automatically changed by initiating a pushbutton goal search to reach a desired level for a graph variable. Thus, a user may watch the graph change as enrollment growth is increased, salary growth is quickened, a project start date is shifted, or the size of a construction project is increased. Any input variable on the input tabs can be linked to a variable shown on the What If? page.

Financial Statement Tabs

Each of the four blue spreadsheet tabs has a single financial statement on it: a Statement of Financial Position (StmtNetAssets), an audit-format (fully allocated) Statement of Activities and Changes in Net Assets (StmtRevExp), a Statement of Activities and Changes in Net Assets before audit statement allocations (StmtRevExp (unal)), an activities statement in institutional budget format (Budget), a Statement of Cash Flows (Cashflow) by the indirect method, and a Statement of Cash Flows by the direct method (DCashflow). Each statement presents 14 fiscal years of results: the Actual year, the Budget year and twelve fiscal years of projections.

Input Tabs

Data entry and links to the What If? data tabs are found on the spreadsheets of the four sets of red tabs. The sets are for 1) the ten enrollment, revenue and expense projections by division (S1Data through S10Data), 2) the basic financial projection (FinData), 3) investments and contributions (InvData), 4) bond issues (BondData), and 5) capital projects (ProjectData). All actual fiscal year, budget fiscal year, growth rates, "bumps," revenue and expense allocations, bond issue specifications, and project specifications are entered into the model on these tabs (with the exception of those cells linked to the What If? tab—to prevent confusion linked cells are highlighted in yellow). There is also a tab that contains data used in the What If? tab (Dat) and a tab that holds the data used to build the graph (GData). These tabs are the links to the other tabs that allow the user to change strategic variables on the What If? tab and the What If? tab to display graphs.

Calculation Tabs

The spreadsheets found on the green calculation tabs for each of the ten divisions (schools, colleges, or experiments, for example) (S1, for the first division) each have six user-named streams of enrollment, for example, undergraduate/masters/doctoral split into two tuition categories, like out-of-state and in-state (or, for-credit and audit). In the **SFP** each stream's enrollment is projected by annual additions of first-year student cohorts, transfer cohorts, retained and not-graduating continuing students, retained first-year new students, and retained first-year transfers. The cohorts of any of the six first-year new student enrollment streams may be increased from the Project tab in the year after project completion. These tabs also project each division's faculty salaries, instructional costs based on user-defined average class size and student load, and any direct divisional costs for academic support and student services. The user may also assign indirect costs to each division as percentages of central function expenses.

The totals from all the divisions are created on the combined tab (Combo).

The spreadsheet on the financial calculation tab (Financial) calculates changes in revenues, expenses, balance sheet items and creates the projected financial statements. The financial tab is the heart of the **SFP**. Ratios are calculated at the bottom of this tab. Residence hall and meal plan counts are also projected on this sheet with any increases sent from the project tab.

The spreadsheet on the investments and gifts calculation tab (Inv) tracks investment pools, adding earnings, contributions, and transfers (+/-), and subtracting endowment payout. Contributions by restriction with their receivables and cash realizations are also tracked on this spreadsheet.

The spreadsheet on the bond calculation tab (Bonds) makes projections of changes to existing, listed bonds and initiates and projects forward any new bond issues found on the bond input tab.

The spreadsheet on the project calculation tab (Projects) holds the calculations for project-by-project addition of capital acquisitions (construction, renovation, land, and equipment), facilities maintenance cost changes, and depreciation of the added fixed assets. Each project begins in a user-defined fiscal year and continues through user-defined years of construction. Depreciation and any additions to enrollment or residency continue thereafter.

Graph Tab

The graph from the What If? tab may be viewed in full-screen mode on this tab (Graph).

Handout Tab

The user may choose a set of strategic variables and “bumps” to display and print as a handout to inform an audience of the initial assumptions used in the projection (Settings).

2.2 How to Use the SFP

Warning: Check the page count before printing the entire model automatically.

Running from the What If? Tab

A sample set up for the What If? tab is shown below in Figure One.

Pick graph lines. In the lower right quadrant of the What If? tab shown in Figure One, the user sets up the graph and accesses the navigation and tab display buttons. Because the display is "busy," the user may during presentations cover over either the lower-left section for setting "bumps" (by pressing the "PPVs" button), cover over the upper-left two-thirds, the section for setting PPVs (by pressing the "Bumps" button), or uncover both (by pressing the "All" button). Pressing "Graph" brings up the full-screen graph display tab. Pressing "Menu" moves the user back to the tab of navigation buttons.

To set the display, follow these steps:

1. Choose the first year of the display by spinning up or down and clicking on the chosen fiscal year in the "First Year:" box.
2. Choose the final year of the display by spinning up or down and clicking on the chosen fiscal year in the "Final Year:" box.
3. Press the "Change" button.
4. Choose each of the five graphed variables by spinning up or down in each "Pick Graph Lines" boxes.
5. Set the scale for each of the lines by spinning each line's scale box. Spinning up raises the size of the numbers being graphed. Spinning down lowers the size. A scale of a "Million" divides all numbers in the projection of that variable by one million before graphing them. A scale of a "Millionth" multiplies all numbers in the projection of that variable by one million before graphing them.

Set a Primary Planning Variable (PPV). The initial set-up of the model includes What If? tab access to a large number of growth rates, bond issue and project variables. In a later section, the process of setting up links to additional variables will be described. The user may either directly manipulate a PPV or may let the model set the PPV to hit a target set for a given year for a given graph variable. If the user hit the "Try It" button with the variables as set in Figure One, the model would try to find the value for the undergraduate tuition growth rate that would set the student aid ratio in 2012 to 20%. Follow these steps to change a PPV from the What If? tab during a presentation.

Direct manipulation:

1. Choose a group of PPVs in which the intended PPV is located by spinning up or down and clicking on your choice in the "1. Choose PPV Group:" box. Bond issue and project variables are kept separate from growth variables.
2. Choose the PPV within that group that you wish to manipulate by spinning up or down and clicking on your choice in the "2. Choose variable:" box.
3. The current value of that PPV will be displayed in the "3. Spin to a new value:" box.
4. Change the value in that box by clicking up or down on the coarse or fine rocker arms. Not all variables have fine adjustments (year of bond issuance, for example, does not). The digit to be manipulated by each rocker arm is set in the Dat tab on the line where the variable is linked.

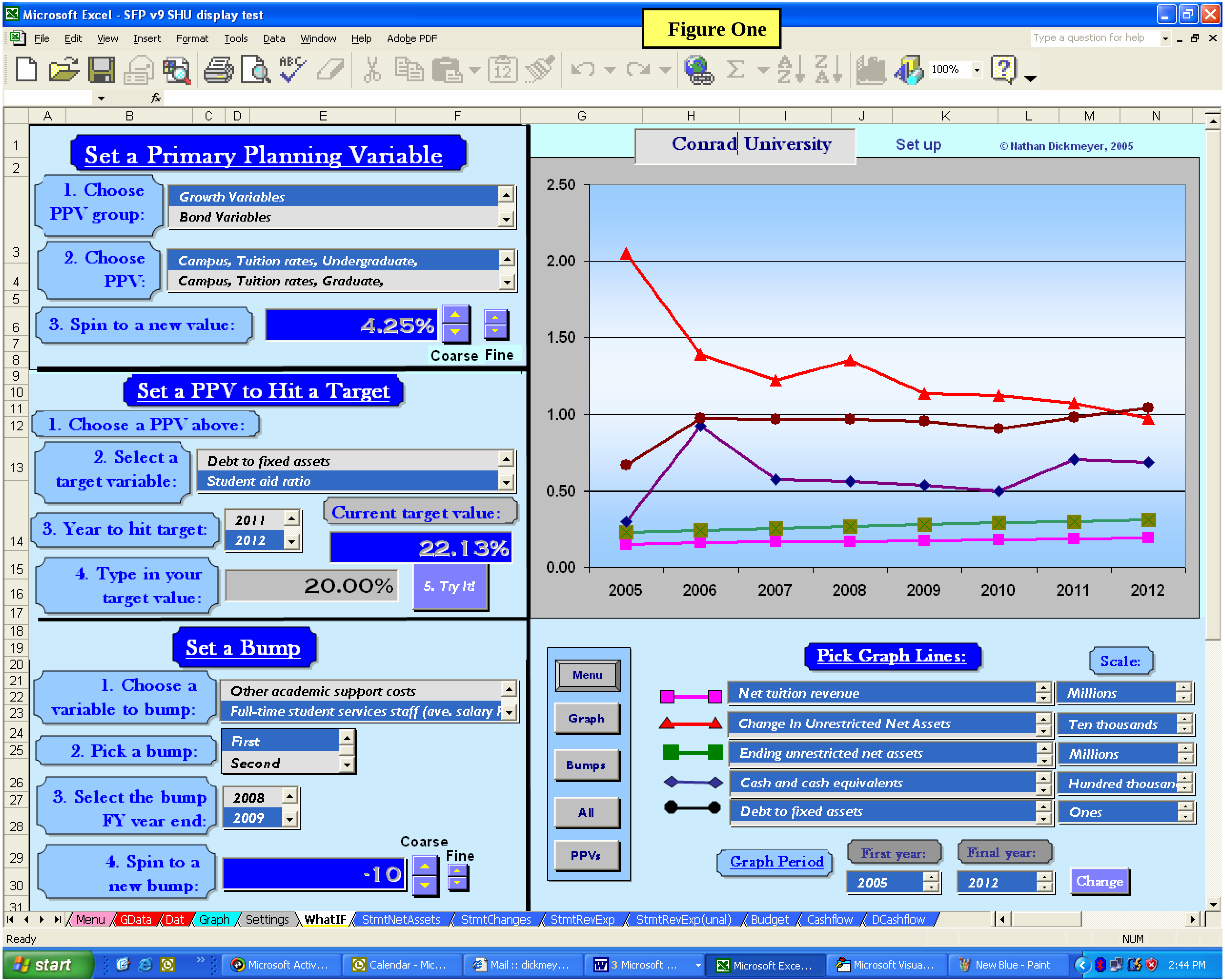
Goal-seeking changes:

1. Choose the PPV as in steps 1. and 2. above.
2. In the "Set PPV to Hit a Target" section in the middle left of this display, spin to the graph variable that you wish to target (these are the same variables that are available for choice as graph lines in the lower-right quadrant). Click up or down in the "3. Select a Target Variable:" box and click on your choice. The chosen variable does NOT have to be currently displayed on the graph.
3. Choose the year in which you wish to set the target by spinning up or down and clicking on the chosen year in the "3. Year to hit target:" box.
4. Type the number that you would like the target variable to hit in the chosen year in the "4. Type in your target value" box. You may type in a variety of formats: .1 and 10% are both recognized as 10% and 1,000 and 1000 (with and without commas) are both recognized as one thousand.
5. The current value of the target variable will be displayed in the "Current target value" box. This is also a way to find and display the value of a graph variable for a given year.

6. Press the “Try It” button. The PPV level shown in the “4. Spin to a new value:” box in the upper-right quadrant will change to the value necessary to reach the target (sometimes the button needs to be pushed twice). If the PPV cannot be changed to hit the target a message is displayed and the PPV remains unchanged.

Set a bump. In the lower-left section of the display the user may adjust the base of a planning variable in any year of the projection. Some variables are set for three possible base changes. Others are set for six or twelve. These bumps may be used to boost spending during a particular year, say in student services to simulate a recruiting initiative. They may also be used to add staff in a year, change the first-year cohort size of a given type of student in a given division, or change the level of contributions in a particular year. These changes are additions or subtractions made after the growth rate is applied. Figure one shows that there will be a reduction of ten in the number of student services staff in 2009. Like the PPVs, bumps are set up for What If? tab manipulation on the Dat tab. The steps for changing the level of a bump are:

1. Spin up or down and click on the selection in the “1. Choose a variable to bump:” box.
2. Pick one of the available bumps for that variable to manipulate. Most variables are set to take three different bumps. Spin up or down and click on the choice in the “2. Pick a bump:” box.
3. Set the fiscal year for the bump to be applied by spinning up or down and clicking on the choice in the “3. Select the bump FY year end:” box.
4. Use the coarse and fine rocker arms to change the bump shown in the “4. Spin to a new bump:” box.


Microsoft Excel - SFP v9 SHU display test
Set a Primary Planning Variable
1. Choose PPV group:
Growth Variables
Bond Variables
2. Choose PPV:
Campus, Tuition rates, Undergraduate,
Campus, Tuition rates, Graduate,
3. Spin to a new value:
4.25%
Coarse Fine
Set a PPV to Hit a Target
1. Choose a PPV above:
2. Select a target variable:
Debt to fixed assets
Student aid ratio
3. Year to hit target:
2011
2012
Current target value:
22.13%
4. Type in your target value:
20.00%
5. Try It!
Set a Bump
1. Choose a variable to bump:
Other academic support costs
Full-time student services staff (ave. salary
2. Pick a bump:
First
Second
3. Select the bump FY year end:
2008
2009
4. Spin to a new bump:
-10
Coarse
Fine
Conrad University
Set up
© Nathan Dickmeyer, 2005
2.50
2.00
1.50
1.00
0.50
0.00
2005
2006
2007
2008
2009
2010
2011
2012
Menu
Graph
Bumps
All
PPVs
Pick Graph Lines:
Scale:
Net tuition revenue
Millions
Change In Unrestricted Net Assets
Ten thousands
Ending unrestricted net assets
Millions
Cash and cash equivalents
Hundred thousan
Debt to fixed assets
Ones
Graph Period
First year:
Final year:
2005
2012
Change
Menu
GData
Dat
Graph
Settings
WhatIF
StmtNetAssets
StmtChanges
StmtRevExp
StmtRevExp(unal)
Budget
Cashflow
DCashflow
Ready
NUM
start
2:44 PM
Figure One

Changing Input Data on the Data Tabs

All formulas and headings are password protected. Protected cells are generally shaded green. Input cells are white (or highlighted in a non-green color to indicate non-standard handling). The password is supplied with the model. Keep the worksheets password protected during data entry to prevent accidental erasure of formulas or headings.

Run data. The name of the institution, the names of the divisions, the name of the projection run, and the names of categories of students are all specified only once at the top of the FinData tab. The end year of the Actual fiscal year (for example, the 2005 of FY 2004/05) is also specified. Whenever the beginning FY is changed in this initial cell all headings that indicate years change as well. Even the headings for the first two years and those thereafter, "Actual," "Budget," and "Projected" can be re-set in that single location.

Data tabs. Shown below in Figure 2 are rows 4, and 60 through 63 and columns A through I of the tab, S1Data. Not included are columns J through L which contain space for two more "bumps." (Bump A, called "Parameter Addition A" and its designated "bump-year" are shown; "bumps" B and C are not.) Grey cells indicate that normally data is placed in these cells, but not for this row. Green cells are headers, calculations or spaces and are protected. White cells are available for input. Yellow cells are linked to the What If? tab. Because of the potential size and complexities of a number of variables, more "bumps" are allowed for them.

Figure Two

	A	B	C	D	E	F	G	H	I
4		Actual FY 03/04	Budget FY 04/05	Linked Rate of Projected Change	Rate of Projected Change	Link Row	Link Offset (+/-)	Parameter Addition A	EOY FY for A (like 2002)
60	Tuition rates								
61	Undergraduate, In-state	21,530	22,490	3.7%	3.7%			1,000	2008
62	Masters, In-state	25,010	25,500	3.7%	4.0%	61			
63	Doctoral, In-state	17,000	18,000	2.7%	4.0%	61	-1.0%		

In this example, FY 03/04 is the most recent fiscal year for which audited financial statements are available. The Undergraduate, in-state (one of the three-by-two, user-chosen, enrollment categories) tuition rate has been input as $21,530 for FY 03/04. In general, while the actual fiscal year figures are necessary for the display of financial statements, the data in the "Actual" column is not used for the projection, except for initiating the cash flow calculations. The base of the projection is given in the "Budget" column. Row 61 shows that the budgeted Undergraduate, In-state tuition rate for FY 2004/05 is $22,490. Both actual and budget amounts are entered directly. The user has placed 3.7% in the "Rate of Projected Change" cell for this row (by setting this growth rate on the What If? tab). In this case, this budgeted tuition rate will escalate by 3.7% per year. This tuition rate will be 3.7% larger in FY 2005/06, for example. Note that this row also has a "Parameter Addition A" bump of 1,000 that is added in FY 2007/08 (the column "EOY FY for A (like 2002)" has been set to 2008). After adding the 3.7% increase from 2006/07 to create the tuition rate for 2007/08, the model will raise the base by another $1,000. Two other "bumps" are allowed. There can be negative "bumps" as well. Each bump raises (or lowers) the base once for the year specified. The bump remains part of the base in future years, but these years are not "re-bumped" unless another bump is specified. If two bumps are specified for a single year, the model ignores the first.

Note that on the next row, even though the user put in 4.0% for the rate of projected change, the model is going to use 3.7% as indicated in the column labeled "Linked Rate of Projected Change," (column D—the final growth rate used is always shown in column D). This is because the "61" in the "Link Row" column means that the growth rate for Masters, In-state tuition (row 62) is linked to the growth rate of row 61, Undergraduate, In-state tuition. Links may be made to any row's growth rate on this tab. The user may also link to a growth rate on another input tab (like ProjectData when in FinData). To do this a row must be added at the bottom of the input tab. A spreadsheet linked formula should be put in column E of this new row. (For example, if cell E161 of tab S2Data had the formula =S1Data!D61 and the link-row column (F) of row 61 in S2Data had a 161 in it, the tuition rate growth of the second division in row 61 would be set to the same value as the tuition rate growth of the first division.) Thus, since the growth rate of Undergrad, In-state (row 61) tuition has been linked to a Primary Planning Variable on the What If? tab (designated by shading the cell yellow), whenever the user tries a new value in the What If? tab, the growth rate in row 62 will also change. They are all linked. (Be careful when adding or deleting rows while modifying the model. The link numbering does not change automatically when rows are renumbered.)

The final variation on this is shown in row 63, "Doctoral, In-state." Here an offset to the link is given. The offset is added to or subtracted from the growth rate indicated in the link. In column G, "Link Offset (+/-)", for row 63 (which is linked to row 61) a -1.0% has been put in. The linked 3.7% of row 61 is thus adjusted down by -1.0 (subtracted as one percentage point) to the 2.7% as shown in the column D. The value in column D, "Linked Rate of Projected Change," is a formula, is protected, and is the growth rate that the model will finally use. Thus, if you want staff salaries to grow one percentage point above inflation, use an offset of +1.0% and link the staff salary growth rate to the inflation growth rate. Ninety-five percent of all variables are input in this growth-rate-link-offset-bump format. Variations are described below.

Row 19 of FinData, "Other costs inflation rate" is a row to be used as a link only. By putting a 19 in a row in the "Link Row" column of FinData, the variable in that row will grow by the user-specified "inflation" rate given in row 19. In this example, the expense growth rates of several central non-personnel costs are linked to this row. The user may thus test the effect of different rates of inflation. The inflation rate from FinData is also carried into the calculation sheets of the divisions. It is employed when the user indicates that enrollments should change when net tuition and fee prices change at rates other than inflation (elasticity). This inflation rate may also be tied, with or without an offset, to tuition or contribution growth. In the base model, the inflation rate is linked through row 172 in the division data sheets and row 241 in the investments and contributions data sheet.

Inputting data for projects. Below in Figure Three, the input section for one of fourteen possible projects is shown.

Figure Three (A)

Construction Project Parameters	
Name of project	Science Renovation
Square feet	50,000
Land cost	-
Construction cost/sq. ft.	250
Building depreciation life, years	50.0
Percent of construction cost to be residual	0.0%
Date of construction start (EOFY)	2009
Years of construction	2
Annual construction escalation	0.0%
Annual equipment escalation	0.0%
Added full-time Facilities staff at 1st year of operation	1.0
Added part-time Facilities staff (fte) at 1st year of operation	-
Added Facilities other expense at 1st year of operation (per square foot)	02.50

Figure Three (B)

Project equipment leases or purchases, grouped by life	Life	Current Cost	Residual %	Calculated annual depreciation	Calculated final dep. year
Equipment group A	10	1,000,000		100,000	2018
Equipment group B				-	2008
Equipment group C				-	2008
Equipment group D				-	2008
Equipment group E				-	2008

Figure Three (C)

Additional enrollment from projects, starting upon completion of project	Additional enrollment beginning:				
Science Renovation	**2012**				
	Liberal Arts	Crossword College	Dentistry	Architecture	Nursing
Division numbers:	**1**	**2**	**3**	**4**	**5**
	Social Work	Divinity	Medicine	Business	Law
Division numbers:	**6**	**7**	**8**	**9**	**10**

	One-time additions to new student cohort base
Undergraduate, In-state	20
Masters, In-state	
Doctoral, In-state	
Undergraduate, Out-of-State	
Masters, Out-of-State	
Doctoral, Out-of-State	
Auxiliaries	
Additional residential students	0
Additional board plans	0

Indicate the division numbers to receive new students

Division #'s:	1	2	

The project is user-titled as Science Renovations with a total cost of $13,500,000: $0 for land, $12,500,000 for construction (50,000 square feet at $250/square foot), and $1,000,000 for 10-year life equipment in Figure Three (B). The building will be depreciated over 50 years. Construction will start in 2009 and will last for two years. The estimates are in today's dollars and both construction and equipment costs are not expected to increase (but such a percentage could be set for each).

In 2012 when the project completes, one full-time and no part-time facilities staff members will be added as will $2.50 in added facilities, non-personnel costs per square foot of the building (for example, utilities, cleaning supplies, etc.). In 2012, one (out of five possible) type of equipment is to be installed in the building: $1,000,000 worth of 10-year life equipment. This equipment will be depreciated over ten years, down to zero (0% residual). Also in 2012, (see Figure Three (C)) 20 new first-year students will be attracted by this project (hypothetically). These students are added to the base of the new student cohort and, as such, are subject to the new student cohort growth rate for the years after 2012. The user has chosen two divisions, Liberal Arts and Crossword College, to receive the benefit of this jump in the new student cohort. Both will get 20 new students. Three divisions at most may be affected. Each indicated division will receive the jump indicated for each of the six student types. No students are added to the residence halls or to dining hall rolls in this example. The size, cost, start date of construction, length of the project, the cost of the equipment, life of the equipment, the number of added students, and the number of added residential students are linked to cells on the What If? tab.

The last project (14) is reserved for the special input of major deferred-maintenance projects with large variations of capital expenditure each year.

The input of bond data. Bond information is entered in two sections of the tab BondData, one for existing bonds and the other for new issues. The debt service for existing bonds may be entered manually (method 1 shown in Figure Four (A)) for all fourteen years of the projection or the spreadsheet will calculate mortgage-type, level payments (method 2 shown in Figure Four (B)). In addition to the 14 years of debt service with the manual method, the remaining principal and whether the bond is for facilities or not (used only in certain accounting systems that differentiate unrestricted net assets into operating and capital funds) must also be entered. Cells are shaded tan (not white) to indicate that data in that cell may or may not be used, depending on the entry method chosen.

When the level payment method (2) is selected, note that the schedule headings disappear and interest and life (remaining) are now requested. In this method only debt service for the Actual and Budget years is directly input. Level debt service is then calculated for the remaining years. Up to ten existing bond debt schedules may be entered.

The third spreadsheet section shown below, Figure Four(C), shows the data requested for a new issue. The bond shown is "Refinance I," a $5,000,000, 3.5%, 15-year bond to be issued in 2009 with $75,000 in costs that may be added to the bond and $25,000 that may not be capitalized. Up to ten new issues may be entered. All variables are linked to and input from the What If? tab, except the name of the issue and the facility bond indicator.

Existing bond input using a schedule.

Figure Four (A)

Initial Bond Data	**Actual**	**Budget**		
Bonds outstanding in first year				
Name of Bond	**Dorm Auth. A**			
Facility bond=1, non-facility=0	1			
Payment Schedule =1, level payment = 2	1			
Complete this section	**FY 03/04**	**FY 04/05**	**FY 05/06**	**FY 06/07**
Principal schedule--$s	200,000	200,000	200,000	100,000
Interest schedule--$s	180,000	171,000	162,000	153,000
	FY 03/04			
Outstanding liability (End of FY)	4,000,000			

Out 14 yrs.

Existing bond input using equal payment method.

Figure Four (B)

Initial Bond Data	**Actual**	**Budget**	
Bonds outstanding in first year			
Name of Bond	**Dorm Auth. A**		
Facility bond=1, non-facility=0	1		
Payment Schedule =1, level payment = 2	2		
Actual & Budget Only	**FY 03/04**	**FY 04/05**	
Principal payments	89,756	93,975	
Interest payments	180,000	175,961	
	FY 03/04		
Outstanding liability (End of FY)	4,000,000		
Interest rate	4.5%		
Remaining life (beginning FY 03/04)	25		

New Bonds

Figure Four (C)

Bonds to be issued (excluding project bonds)	
Name of Bond	**Refinance I**
Facility bond=1, non-facility=0	0
Fiscal year end of issuance	2009
Repayment years	15
Principal	5,000,000
Interest rate	3.5%
Capitalizable issuance costs	75,000
Non-capitalizable issuance costs	25,000

Examining the Financial Projection.

Once the user has completed entering data into the **SFP,** the model calculates and projects revenues and expenditures and arrives at the fund balance changes for unrestricted, temporarily restricted and permanently restricted funds one year at a time. All assets are then projected, except cash. All liabilities are projected, except the line of credit (LOC) draw. New, end-of-year net asset levels are calculated using the net asset change results from the income and expense projections. Liabilities (except any LOC draw down) plus fund balances are subtracted from assets (except cash). If the result of this subtraction is positive, the institution has cash. If the result is negative, the institution has no cash and must draw on the LOC. The model consolidates bank overdrafts at the end of the fiscal year into an assumed LOC draw. Overdrafts are not covered by drawing down available investments until the next fiscal year (because spreadsheet procedures forbid calculation interdependence.)

The activity statements are in a function format. For the educational and general functions, an approximation of an item expense display can be found below the full functional statement display on the StmtRevExp(unal) tab. The item lists expenses by salaries, benefits, and other expenses for instruction, research, academic support, student services, institutional support and facilities combined. These figures are used in the direct format of the cash flow statement.

The Budget tab uses information from other tabs. No calculations on the Budget tab are used elsewhere. This gives the user complete freedom to alter this statement to fit any format.

The cash flow statement using the indirect method on the tab "Cashflow" then analyzes cash flows from operations and from changes to balance sheet items. The ending cash number is independently derived on this sheet. If it does not match balance sheet cash, an error message appears at the top, left of the balance sheet. This can happen if the user has added a balance sheet category, but neglected to add the change in that category to the cash flow calculation. The cash flow report by the direct method is derived from the indirect method statement and the revenues and expenses on the unallocated activity statement.

Declining unrestricted net asset positions indicate that the model is projecting more expenses than revenues. Declining cash balances (and/or increasing LOC draws) indicate that the institution is using more cash than it is drawing in. These trends often track together, but under certain conditions can progress in different directions. The institution could be increasing net assets, but, for example, when a large capital project is not financed, cash may disappear.

All data and calculations from Projects and Bonds are included in the figures in the financial statements.

What the **SFP** Does Not Do!

The **SFP** does not see into the future. If all the assumptions used in the data and construction of the model are correct, then the future should match the projection. Nevertheless, the model cannot distinguish a good assumption from a bad one.

The **SFP** does not produce full budget allocations. The Student Services budget is broken down (within the model, but not displayed in financial statements), for example, no finer than full-time salaries, part-time salaries, benefits and non-personnel costs. Individual salaries or even distinctions between supplies and services are not tracked.

The **SFP** cannot track assets other than cash. Equipment depreciation schedules are very approximate in the model. Most projected balance sheet items are projected with heuristics, not inventories (bonds are a clear exception).

The **SFP** does not mirror any randomness. If the user says that investments will return 9%, they will return 9% in the model. There is no "plus or minus." The **SFP** cannot do stochastic forecasting. "Plus" runs and "minus" runs may, however, be individually examined.

2.3 The Calculation Logic of the SFP

In this section we look at some of the "construction methods" used in the model.

Full-time Equivalents (FTE)

Three different full-time equivalent concepts are important in the **SFP**: financial, academic, and faculty and staff salary.

Financial full-time equivalents. The financial full-time equivalent is a measure of the number of full tuitions billed. Enrollments are projected by headcount. Dividing annual tuition and fee revenue by the product of the fall headcount and the annual full-time tuition rate gives the conversion rate for making headcounts into financial full-time equivalents. If tuition and fee revenue is $10,000,000, annual tuition is $20,000 and fall headcount is 557, the conversion factor is .8977. Each "counted head" in the fall yields 0.8977 of a full tuition ($17,953.32, not $20,000). This conversion rate will tend to be less than one when much of the IHE's enrollment is part-time. It can be greater than one when there is significant summer instruction. All conversion rates are " regular variables." That is, they are given actual and budget amounts by the user, and they may be given growth rates, links and "bumps." The term "regular variable" will be used in this context.

Academic full-time equivalents. This conversion factor takes headcount and transforms it into the annual number of average, normal full course loads taken by students. The given class size and the number of "full loads" of instruction necessary (and average faculty teaching load) determine the necessary number of faculty. If at an institution a fall headcount of 557 generates 4,730 "regular-size" course enrollments in the fall and spring, and a full load over both semesters is normally 10 courses, then there are 473 academic FTE's for which we need instruction. The conversion factor that takes headcount to academic FTE is 0.85. ("Regular size" could be three credits, if the academic year faculty load of, for example, six courses means six *three-credit* courses. To get "regular size" course enrollments the total number of fall plus spring student credit hours generated would be divided by the "regular size" (in credits) of a course. For example, 14,190 student credit hours of variously-sized courses divided by three gives us 4,730 "regular size" course enrollments.)

While enrollments, tuition rates, fee rates, and scholarship levels can be tracked through the six student types (in the example, undergraduate, masters and doctoral by in-state and out-of-state), all course load information is tracked only by the first three. Course taking behavior is not differentiated by the two tuition level groups (labeled in this example as in-state and out-of-state).

Salary unit full-time equivalents. The model is driven by average salaries. Staff salaries (separate for full-time and part-time) are included in the expense calculations for the major functional areas: instruction, academic support, student services, institutional support, and facilities. The user must input the number of staff salary equivalents in each function. Regardless of whether average salaries are, in fact, greater for institutional support than student services, the model is driven by a single average salary for each personnel category. If the user enters $40,000 as the average staff salary and has $2,000,000 full-time staff salaries in the facilities area, then the user should enter 50 for the number of full-time staff, even if, in fact, there are 40 staff members in facilities. The growth rate of all full-time staff salaries is used as a primary planning variable. This is normally an IHE's strategic decision factor, not the growth rate for facilities salaries alone.

Likewise, if your strategic plan calls for the addition in 2009 of a $150,000 vice presidential salary in institutional support, and the average salary at that time is $47,000, then the bump for the salary unit headcount must be 3.19. It takes a lot of salary FTE's to make a VP.

Enrollment

The continuing student. Each projected fiscal year's group of continuing students in a division is computed with last year's continuing students as a base less those that graduate, less those that drop out (one minus the retention rate is the multiplier), plus last year's new students. The graduation rate is a percentage of the previous year's continuing students, including the future drop outs. The retention factor is applied to the number of continuing students after those who graduate are subtracted.

Separately for the six major categories of students, for example undergraduate, masters and doctoral by in-state and out-of-state, three retention rates are used: first-year freshman retention, first-year transfer retention, and continuing student retention. Finances are driven by fall enrollment. The number of continuing students in each year after the budget year is thus a computed variable and no rates of change may be entered for it. The growth in the number of continuing students is determined by retention, initial new student and transfer cohort sizes, and graduation class size. Although not built with as much sophistication as models dedicated to enrollment forecasting, enrollments in this model can be made, using the variables available, to mirror an institution's more sophisticated predictions.

Tuition increase response. The user may set a coefficient (normally from 0% to 100%) that determines the impact on enrollments when net tuition and fees change at a rate different than inflation. The number of new and the number of continuing students are affected by this factor. Each enrollment group's individual net tuition rate is calculated independently. The per-student fee is added to the per-student tuition for that category of student and then reduced by the average scholarship. Rate of change in this net tuition and fee number is used to determine impact. The inflation rate is subtracted from the rate of increase of net tuition and fees each year. The amount of deviation from inflation is then multiplied by the coefficient and applied to the calculated number of new and continuing students. If the coefficient is zero, no rate of tuition increase will affect enrollment change. If the factor is 50% and net tuition and fees increase 2% above the rate of inflation, computed enrollment will be decreased by 1%.

Enrollment totals. Headcount enrollment for each category (in-state undergraduate, in-state masters, etc.) is the sum of fall first-year students (including those added by projects), fall first-year transfers, and continuing students.

Residence and dining hall students. These two counts grow in separate streams. New on-campus students from strategic projects are simply added to the two streams at the appropriate fiscal year (project completion).

Financial Calculations

Most variables are regular--projected from the budget year forward using the rate of change, link, and "bumps" that the user enters for that variable. The revenue lines "Grants and contracts" and "Other sources" are two examples. All lines in calculation sheets that expand regular variables consist of budget, actual, growth rates, and bumps. A calculation row that expands a data line into a three-bump line with 14 years of information begins with three cells that link back to the corresponding data cells. For Finance line 21 the label is carried forward from line 21 of FinData with =FinData!A21. Using a similar formula for the B and C columns brings the Actual and Budget amounts onto the calculation tab. The formulas for the next twelve years are all similar. In column D for the year after the budget year, the amount in C is multiplied by one plus the growth rate found in column D on the data sheet. Three nested "if" statements can add to this amount if the year in the column matches the year of one of the "bumps." Six-bump formulas are much longer with six nested "if" statements.

Tuition revenue. Gross tuition revenue was discussed above as the product of fall headcount, the financial FTE conversion factor and the tuition rate for each category. Fees are added and computed using a regular variable, the average fee per student headcount for each category. Total unrestricted fund scholarships are then deducted. For each category total unrestricted fund scholarships are determined as the proportion of students receiving scholarships (the first factor, a regular variable), times the headcount number of students in that category, multiplied by the average scholarship as a percentage of the tuition rate (the second factor, also a regular variable), times the tuition rate.

For example, the equivalent of 70% of fall undergraduate, in-state, liberal arts students (the first factor) could receive institutionally-funded scholarships worth, on average, 20% of a full-time, undergraduate, in-state, liberal arts tuition (the second factor). Thus, it is possible to have a growing proportion of students of a growing enrollment total receiving scholarships in an amount that is a growing average proportion of a growing tuition rate.

Investments. Long-term investments, including endowments and trusts, are tracked in five investment pools (named by the user), each shared among the three net asset classifications (unrestricted, temporarily restricted, and permanently restricted). There are thus 15 investment categories. Each of the 15 categories can be designated as part of the endowment payout calculation, available for payout withdrawal, and/or available to cover cash shortfalls. For example, one of the five funds could be named, "Pooled." The permanently restricted pooled category could be part of the calculation for payout, included in the actual payout withdrawal, but not available to cover cash shortfalls. Another fund might be named "Real Estate." The permanently restricted/Real Estate category can be set as part of the base used for calculating the amount of endowment payout, but, because of low liquidity, excluded from the payout draw down (causing other funds to be drawn down at a rate above the calculated payout rate). Temporarily restricted categories, however, cannot be used for endowment or cash shortage coverage in the model. IHE's also do not generally allow permanently restricted funds to cover cash shortfalls, but it is possible to set the model up to do so.

The amount of investment in each category is initially set in the base year as a series of percentages (forced to add to 100%) of the total long-term investments on the balance sheet for that year. Regular variables are used to determine the total return for each investment pool and the appreciation portion of that return. For example, the "Real estate" pool has the same total return whether the assets are in unrestricted, temporarily restricted or permanently restricted categories.

Regular variables can be used to manually allow the **transfer of funds** into and out of each category. A transfer out with no corresponding transfer in or the opposite cause changes to cash levels. In the base model, the third pool of the temporarily restricted group is set to automatically transfer out the amount of net assets released from restrictions as calculated in the model, up to the total amount estimated to be available in the category. Manual transfers and cash shortfall coverage do not change the net asset position in any restriction category. Offsetting interfund obligations would be created with a transfer. These are not, however, shown in the model's financial statements.

The **payout** percentage is a regular variable and is applied to a rolling average of a user-set number of years (one to five) of the value of the endowment. The value is computed as the sum of the categories designated as used in the endowment payout calculation. The current year value of the endowment is estimated for the final year of the rolling average. (It cannot be precisely calculated until the size of the payout is set.) The full amount of the payout is withdrawn proportional to the size of the categories of only those categories designated as available for payout withdrawal.

Cash shortfall coverage is triggered when the previous year ends showing a liability on the line of credit. The user limits the amount withdrawn from investments for coverage by setting two parameters: a proportion of the amount owed on the LOC and a proportion of investments available from the previous year to cover shortfalls. Eligible investments are never drawn below zero. Cash withdrawal to cover overages is proportional to the investment size of the category. The total amount available for cash coverage is calculated for each year, and, if coverage is necessary, the proportion due from each designated category is set and deducted.

The user may also set a sweep level. When cash levels rise above this level, the excess amount is spread among investment categories (only those designated as eligible for cash shortfall coverage) the next year in proportion to the size of the investment in each category. If there are no investments in any eligible category, the model will be unable to spread a **cash excess**.

Regular variables are set by the user to apportion the cash collected on temporarily restricted and permanently restricted contributions. Each of these two restrictions force the total of **contributions** spread among their five pools to add to 100%. Unrestricted contributions do not add to investments directly. Only cash is increased by default.

In the base model the fourth pool is labeled **"Trusts."** The appreciation of the permanently restricted trusts pool is removed from total return earnings and shown on the operating statement as an increase to permanently restricted net assets. The user may wish to "hardwire" this category's transfer-out amount to the amount of non-appreciation earnings for the category. The base model does not do this. The total **return** of all pools in the **temporarily restricted** group is withdrawn from earnings and shown as an increase to temporarily restricted net assets.

<u>Contributions.</u> Contributions are computed in three streams: unrestricted, temporarily restricted, and permanently restricted. New contributions and continuing contributions receivable (gross, discount, bad debt reserve, and net) are tracked by restriction category. Contribution revenue (after deducting the portion of the new contributions receivable that has been discounted), bad debt expense (as a result of any necessary increase to the contribution receivable reserve for bad debt), and cash collected (the sum of receivables realized and current cash contributions tendered) are tracked by restriction category. The discount proportion and the percentage of the discounted new contribution stream that will be bad debt are regular variables. The user may withdraw a portion of new contributions from the cash stream by designating the proportion as "in kind."

A regular ("six-bump") variable designates the realization schedule of the existing contribution receivable in the base year. Receivables are realized net of the bad debt discount in proportion to the receipt rate. The level of discount in a receivable declines in proportion to the gross receivable as contributions are realized. Contribution receivables are realized as net *plus discount* and as cash collections in the year the cash is received. The portion of the cash collected on a receivable that represents the formerly discounted amount is recognized as contributions revenue in the year the cash is received. Revenue is recognized in the year of the contribution pledge net of the discount.

A regular variable designates the proportion of new gifts that become receivable. This portion of the contribution does not add to cash flow in the year of the pledge. A regular variable sets the proportion of contributions that become receivable that should be discounted and the proportion that should be reserved for bad debts. Each amount that is added to the reserve is also added to that year’s bad debt expense. All bad debt expense is added to Institutional Support non-personnel expense. The bad debt set aside is assumed to be accurate and verified the next year. Thus, the reserve increases by the amount of new bad debt added and decreases by the previous year’s bad debt expense. Gross contributions receivable are also decreased by the previous year’s bad debt expense. Bad debts are thus determined and written off as receivables in the year following their contribution. The balance sheet is not classified and all contributions receivable are recognized together.

Faculty member counts. Student fall headcount is converted into a corresponding academic FTE count. Average class size and the normal student course load is used to convert this number into the number of courses requiring instructors. The percentage of courses taught by adjuncts and the regular, average full-time teaching load of full-time faculty determines the number of full-time faculty and the number of courses taught by part-time faculty (faculty paid on a per-course basis) required by the model. This determines the amount of faculty salaries and benefits to be charged to instruction. Each enrollment type may have its own factors, or the factors for different types may be linked.

The response of expenses to enrollment shifts. As enrollment increases, not only must more faculty members be added (unless average class size is made to increase), more staff and other expenses must be added as well. During data input the user is asked to indicate the proportion of full-time staff, part-time staff and non-personnel costs that will increase in lock-step with an enrollment increase in each functional area. Each functional area has a separate enrollment change response multiplier. Each function has single multiplier that is used with all three line items: full-time staff, part-time staff, and non-personnel costs. This proportion is also applied when enrollment decreases. If in the budget year there are 40 student service staff (or average staff salary equivalents) and the user believes that 50% of student service costs are dedicated to maintaining face-to-face student interactions (financial aid counselors, for example), then an enrollment increase of 5% would cause one more staff member to be added to this function in the year of the enrollment increase (50% x 5% x 40). The marginal response proportion is set only for the budget year. The actual proportion will change if enrollment grows at a different rate than costs increase. The “fixed” stream grows at its specified growth rates (for numbers of staff in that function and for salary increases, for example). The marginal response stream grows at the salary growth rate and at the enrollment growth rate.

Auxiliary income and other auxiliary expense have user-specified components that grow with enrollment. Residence and dining hall expenses both have components that vary with the number of students in each category and fixed components (with each growing at independent, user-specified rates).

Allocations. There are four expense allocations: net assets released from restriction, facilities expenses, depreciation expenses, and interest expense. The user may specify allocation percentages to the various financial statement functions (except one percentage in each allocation set that is reserved to make the total come to 100%). Net assets released from restriction may also be allocated to scholarships and to a non-expense category used for capital purchases with temporarily restricted funds. The allocation percentages are variables and may have rates of change, links and bumps as previously defined for variables. Allocations proportions that exceed 100% (that is, would force a negative percentage in the one computed proportion) cause an error message and must be fixed before the model will compute.

The Statement of Activities and Changes in Net Assets (unallocated) has line items for each of the four expense allocations. The formal, “allocated” version of that statement is presented with all four items allocated, of course.

Accounts receivable and bad debt reserve and expense. The end of year student account receivable amount is determined as a regular variable percentage of the ending year’s net tuition revenues. More tuition “sold” means more will be owed at the end of the year. Another variable percentage is multiplied by the account receivable level to determine the size of the reserve for bad debts for the previous year’s tuition billing. This reserve is adjusted by the amount of written-off accounts collected. A third variable percentage is also multiplied by the account receivable amount to determine the amount for the written-off debt that has been collected. This reduces the necessary size of the reserve and the resulting bad debts expense. The proportion of reserves that are used (expensed) each year is set by the variable "Caution Factor" which determines how much more has been reserved than will be needed.

Net assets released from restriction. This is calculated as a variable percentage of the previous year's temporarily restricted net asset balance. The entire amount might not be allocated to expenses, however. Some may be released for capital purposes. The model does not directly connect net assets released for capital with project capital acquisitions. A variable percentage is used to separate the expensed portion from the full, revenue portion (combining expensed and capital).

Fixed assets. Land can only be acquired or sold through a project. Project buildings and equipment cannot be decommissioned (removed), although the user may bump existing fixed asset removals to simulate this.

Buildings and equipment are tracked separately. The projection separately tracks project and non-project buildings and equipment as well. Project buildings and equipment have their own acquisition and depreciation streams. Non-project buildings and equipment require that annual acquisitions, depreciation, removals at cost, and removals at depreciated value be tracked in bulk. In the same way that a user has a choice with bonds, the user may chose to set up these tracks with a 14-year schedule or as variables where rates of change (and links and "bumps") are applied to the budget year amount for each. The user may choose two different methods for building and equipment tracking. Non-project buildings could be acquired, depreciated, and removed on a schedule, while those levels for equipment may be projected with regular variables.

Acquisitions add to fixed asset cost. Depreciation adds to accumulated depreciation. The difference is the net asset value. Removal at cost decreases fixed assets at cost. Removals with remaining value add to other expenses. Removal cost less removal value is subtracted from accumulated depreciation.

Cash flow. Cash flow calculations are straight-forward. The change in net assets is adjusted for non-cash items, like depreciation. Changes in balance sheet items add adjustments. An adjustment is made when short-term LOC borrowing is reduced. Increases in short-term LOC borrowing are effectively cash restorations (to bring cash to zero). If cash were also adjusted by increases in short-term borrowing, double counting would occur. The restatement into a direct method cash flow requires adjusting various revenues and expenses by balance sheet items to find the impact of each on cash. For example, cash tuition is tuition revenue adjusted by accounts receivable changes and by deferred revenue. In the lower portion of the direct cash flow statement, the change in net assets from operating activities is adjusted by non-cash activities and excluded items like depreciation and investment income (when investment income is listed in the non-operating section) and then adjusted by balance sheet changes to reconcile to the "Net cash used in activities" figure calculated by direct activities above.

2.4 Setting SFP Financial Statements to Match Actual and Budget Statements

Targeting and Adjusting

The Goal Seek feature of the spreadsheet must be used to set parameters so that financial statement amounts correctly match statements from the accounting and budgeting systems of the IHE for the "actual" year. For example, suppose that we want to set scholarships for the actual year to $1,234,565. At this point we should have finished setting headcount enrollment and financial FTE conversion rates such that gross tuition revenue is correct. We know the tuition rate and we know that 70% of students have scholarships. (This example is purposely one of the most complex possible.) Suppose that in the **SFP**, in the Liberal Arts Division the average award for undergraduate, in-state students in the "actual" year has been put in as 40% of the tuition rate (line 82 on the data tab for the school of Liberal Arts, in this case S1Data), and the total spent for scholarships in all division is now computed at $1,250,000 (line 280 on the Combo tab). We want to adjust the 40% to the actual average that will create the $1,234,565 that we want for scholarships. We believe that the change is small enough that only this one parameter should be adjusted. Larger changes may require iterations of this process to adjust several parameters.

We click on the total scholarship cell in the adjusted activities statement with the -1,250,000 showing in it. We click Tools from the heading menu and then Goal seek. We tab past the first line of entry in the box because it knows which cell we want to target (the one we just clicked on, which is highlighted). In the second line we type in our target amount, -1,234,565. (Don't forget the minus sign when trying to target a negative number!) We tab to the third line and then we click on the cell that we want changed to give us this number. We have to change **SFP** tabs here and go from the StmtRevExp tab to the S1Data tab. We then go down the Actual column until we get to the row for the average scholarship award (82 in this case). We click on the cell in column B of line 82, then hit OK. If we like the results, we hit OK again. We now have the number $1,234,565 in our scholarship amount. The percentage of tuition used to calculate the average scholarship has been lowered by goal setting to 49.9%. When using Goal seek, remember that the target cell must contain a formula and the cell that you want adjusted (in the third line) must contain a value. Also, the results produced by the target formula must depend on the entry in the cell to be adjusted, no matter how distant the connection. Remember that the StmtRevExp scholarship amount may also include an allocated amount from assets released from restriction. If you wish to first match the unrestricted scholarship total use the unallocated activities statement scholarship amount as the target.

Steps to Make **SFP** Match Your Financials

Follow the steps below, using the adjustment procedure above, to make the **SFP** financial statements equivalent to accounting and budget reports. **In general, each step will need to be done for both the actual year and the budget year.**

1. Set fall headcounts for actual and budget in EnrolData. This requires setting the actual year continuing students and the actual and budget new student and transfer cohorts for each enrollment/tuition rate category. Setting the budget year requires adjusting the graduation and retention percentages in the actual year such that the budget total enrollment (target) in each category is correct for each division.
2. Put in tuition rates. Set gross tuition revenue by adjusting financial FTE conversion ratios for each division.
3. Put in net assets released from restriction.
4. Determine the percentage of net assets that are not expensed and the percentage used for scholarships and begin the allocation table.
5. Put in the net assets released from restriction allocation percentages for each functional area. Adjust each percentage such that expenses from restricted funds (before the accounting transfer to unrestricted) by function match. The total of these expenditures must match the amount released and expensed. In this distribution the Instruction allocation percentage is calculated to make the allocation percentage add to 100%.
6. Put in % of each type of student with scholarships. Get each scholarship total by adjusting the average scholarship. Adjust the financial statement scholarship total by adjusting these percentages for the types and divisions.
7. Get student fee revenues by adjusting the average fee per student.

8. Adjust any of the above as necessary to get net tuition and fee revenue correct.
9. Get appropriation revenue by adjusting appropriation per student, per degree, and lump sum for the institution as a whole on the FinData tab.
10. On the InvData tab put in the amount of long-term investments (the asset value) from financial statements for the beginning of the year ("BOY") of the fiscal year *before* the actual/base year, BOY for the actual/base year, and for the end of year ("EOY") of the actual year.
11. Name the five investment pools and use percentages to distribute the actual long-term investments among the 15 categories (the 15th forces the total to 100% and is not input).
12. Indicate with a 1 the categories to use to calculate endowment payout, the ones from which to withdraw payout, and the ones from which to draw cash overage coverage (and to receive "swept" cash).
13. Set the total return value for the sum of all investment pools for the actual year. Set the values for the portions of that value for the actual year, which are unrestricted investment income, temporarily restricted investments total return, endowment total return, restricted trusts total return, and restricted trusts appreciation.
14. Set each pool's expected total return rate and the portion of return expected to be appreciation7 for the budget year.
15. Set the payout rate (a percentage of a rolling average ending value for endowment investment pools) and the number of years to use in the rolling average. Put in the payout amount directly for the actual and budget years.
16. Set the two limits on draws from investments to cover cash shortfalls (% of shortfall from previous year and % of available coverage investments from the previous year—these may exceed 100%). Set the cash sweep level (one-year delay). Set the actual movements to/from cash to/from investments for the actual and budget years.
17. Set the distribution of temporarily restricted and permanently restricted contributions (cash collected) among pools. (The fifth pool is forced to make the total = 100%.)
18. Put in the manual transfers from/to pools. Be careful not to force the pools to negative positions. A one-sided transfer may be needed when you are matching the investment cash flows.
19. By restriction category:
    a. Set the gross level of contributions receivable,
    b. Set bad debt reserves,
    c. Set present value receivable discount for the actual year, and
    d. Use the regular variable (six-bump) to set the contribution receivable collection schedule for the existing, actual year receivable. You will be bumping up and down the percentage of original receivable that is realized in each year. If the total amount is to be realized in the 13 years after the actual, the sum of the percentages after bumping should be 100%.
20. Set the actual year contributions stream for each restriction category. Set the actual year contributions receivables, discounts, and bad debt reserves.
21. For each restriction:
    a. Set regular variables for the % of the annual contribution to be collected later,
    b. Set the % of the open contributions receivable that will be collected each year,
    c. Set the discount rate to use for the additions to the receivable,
    d. Set the % of discounted receivable additions that will not be collected, and
    e. Set the % of contributions that are in-kind (not liquid).
22. In FinData put in Other earnings.
23. In FinData
    a. Put in number of paying residents and meal plans.

b. Set residence hall revenue by adjusting the average residence fee.

c. Set dining revenue by adjusting the average meal plan fee.

d. Adjust total auxiliaries by adjusting Other auxiliary income.

24. In FinData

a. Put in the average salaries for full-time faculty,

b. Put in the part-time faculty average salary (per course),

c. Put in the full-time staff member average salary,

d. Put in the average part-time staff member salary,

e. Put in then put in a full-time benefit expense rate, and

f. Put in a part-time benefit expense rate as a percentage of salary. Staff salary averages should be computed across all functions and divisions. The benefit rates are applied to both faculty and staff salaries.

25. Put in average full-time faculty member salary and average adjunct salary per course for each division (in S1Data, S2Data, etc.).

26. By student level (three types) for each division:

a. Put in the average student annual course load,

b. Put in the average class size,

c. Put in the percentage of courses taught by full-time faculty,

d. Put in the average number of courses in a full-time faculty member's annual course load. Many factors will be identical across types.

e. Put in the academic fte conversion numbers by type. Adjust this number to get the total annual number of sections taught. (This can be found in the base model of 9.0 by adding lines 229 and 234 in S1 to get the first division's annual section count for undergraduates.) Faculty requirements to teach needed section numbers are computed separately for all types. Any of these numbers may be adjusted to get the total faculty salary expense correct. The best adjusting variable is the average number of courses in a full-time faculty member's annual course load, because faculty released time tends to make the actual average load lower than the official load, and

f. Enter for each type in each division the average salary paid to a part-time faculty member for a course. Total part-time faculty salary expense may be adjusted by adjusting average part-time faculty salary per course, unless the ratio between full-time and part-time salary expenses is off. When the ratio is off, the percentage of courses taught by full-time should be adjusted first.

27. Adjust the number of average salary FTEs for instruction staff (non-faculty) for full-time and part-time by division until total instruction salary costs are correct for that function.

28. Adjust the total Other (non-personnel) instruction costs by division until the instruction expense totals for the actual and budget years match the paper statement amounts before allocations.

29. Enter Research and Public Service expenditures.

30. Academic support, student services, operations and maintenance, and institutional support are all matched to an IHE's "paper" reports in the same manner (except for the addition of bad debt expense in institutional support).

a. Adjust the number of full-time and part-time staff average salary FTEs until salary totals for each function are correct.

b. Adjust Other expenses for each function such that total expenses for the function match results before allocations.

31. Institutional support also includes bad debts expense.

   a. Adjust the ratios that are multiplied by net tuition and contributions to get the proper accounts receivable numbers before deducting the reserves for bad debts.

   b. Adjust the ratios that are multiplied by the two accounts receivable to get the proper amounts for collections of write-offs.

   c. Adjust the ratios that are multiplied by the accounts receivable to get the proper amounts for the bad debts reserves. Accounts receivable bad debts expense is derived from this using the caution factors.

32. Bad debts expense is the sum of the expenses from student accounts and contributions receivable. This sum is added to the institutional support expenditure total. Now adjust other institutional support expenditures to get the proper total before allocation.

33. Put in the allocation table for both years for facilities. Instruction is calculated to force the total allocation to 100%.

34. Go to the BondData tab:

   a. Enter existing bond actual and budgeted debt service,

   b. Enter the actual year outstanding amounts by bond.

   c. Adjust interest payments among the bonds such that total interest expense is correct.

   d. Adjust the bonds outstanding amount among the bonds such that actual total long-term debt on the balance sheet is correct.

   e. Adjust the actual FY principal payments such that the budget FY total long-term debt is correct. Note that the first projected year's total principal payment can be split from total long-term debt for the previous year and listed as a current liability. The sum of those two amounts should equal the amount outstanding. If there was an unrestricted net asset deficit in the actual year, interest on the assumed short-term loan will be charged at the rate the user puts in for the budget year. Short-term borrowing interest will make it necessary to adjust total interest expense to match actual and budget again.

35. Enter directly Residence hall expenses, food service expenses, other auxiliaries and other expenses. Set them to match auxiliary totals before allocations (depreciation and interest expense are likely to be allocated to auxiliary expenses).

36. Go to the fixed asset section at the end of FinData and put in actual and budget non-project depreciation. Project depreciation is unlikely, but possible if projects start and complete construction (0 years of construction) in the actual year (unlikely) or the budget year.

37. Set up the allocation table for depreciation.

38. Set up the allocation table for interest. Adjustments to allocation percentages must be done to convert the unallocated amounts to the proper allocated amounts. The user should use the values on the formal (after allocations) activities statement as targets for adjustments at this point.

39. Put in beginning net assets for unrestricted, temporarily restricted and permanently restricted for the start of the actual year. Also put in actual year changes to temporarily restricted net assets. Both the informal and the formal **Statement of Activities and Changes in Net Assets** should match their paper counterparts at this point.

40. Put in values for other receivables and notes. Most institutions do not develop pro forma balance sheets for budget years to use as a match. Budget year assets and liabilities should be reasonable and make a good base for projections.

41. Put in percentages of prepaid expenses of total unallocated operating expenses such that actual and budget year prepaid expenses match paper statements.

42. Put in a budget and expense existing prepaid bond expense to match paper statements. Projects and bond issues will add to that amount as fees are capitalized, then reduced as each is expensed.

43. Put in Land cost, Building and equipment cost, and Accumulated depreciation (using either the schedule or rate of change method) such that if any project land, building or equipment comes on line during those years (not likely), the fixed asset totals match.
44. Adjust the percentage variable that is multiplied by the total unallocated operating expense figure to get targeted accounts payable numbers.
45. Adjust the two percentage variables that are multiplied by net tuition revenue to get the liability amounts for deferred revenue and student credit balances, and US government grants refundable.
46. Put in the postretirement and deferred compensation liabilities.
47. Put in split-interest agreements payable.
48. For presentation purposes put in actual year missing cash flow figures (these do not affect any calculations).

At this point the balance sheet should be correct and matched to the cash flow statements.

The next steps require putting in growth rates, bumps, interaction factors, future bond data and future capital project data in a way that emulates strategic plans.

Updating the SFP

At the end of a fiscal year when financial statements have been completed, the model may be updated. The **SFP** has no automatic roll-forward feature. All the steps above must be completed each year. While copy and paste is possible, rarely do ending actual financial figures equal their original budgeted amounts. Projects that have completed need to be zeroed out. Their impact should now be reflected in the actual data for enrollments and finance.

2.5 Modifying the SFP

Before modifying the model (beyond entering requested data) call Dickmeyer Consulting, LLC. What may take you many hours and add gray hair may be simple for DC, LLC.

Modifying the What If? tab

Adding new PPVs. The table of PPVs that are accessed on the What If? tab is kept in column A through K of the Dat tab. The rows designated for growth rates are 2 through 101, for bond variables 102 through 201, and for project variables are 202 through 401. Entries to the columns are as follows:

A: (PPV) Line Name. This is what will appear in the PPV (2. Choose Variable) spin box. Usually this is linked to the row in the spreadsheets where you will put the link. For example, row 10 in the base model shows Full-time benefit rate because it has the formula =FinData!$A$79. (Remember, this is the *growth rate* of the benefit rate.) For some variables you may wish to combine labels to gain specificity. For example, the A column in row 202 shows S&T renovation: Square Feet because it has the formula: =ProjectData!B5&": "&ProjectData!A6. B5 contains the name of the project. It is separated from the input line for the size of the project with the label in A6 with a colon and a space.

B: PPV. This is the cell where the spreadsheet puts the computed value of the result of any spins with the rocker arms: coarse or fine. It is linked to a yellow-highlighted cell (in this case ProjectData!B6) by a formula in the linked, highlighted cell of: =Dat!B202. You may create this link by copying B202, then selecting cell B6 on the ProjectData tab, and then clicking Paste Special and then Paste Link. When you set up a new PPV for What If! use you may put an initial value in column B or leave it blank. If you leave it blank, you will need to spin to your initial value.

C: Min. and D. Max. Although we will be setting variables up to increment at any digit, like millions or tenths of a percent, the up/down arrows of the rocker arms only change in integers. They cannot go beyond the range of from about -40,000 to 40,000. You can use these to constrain a PPV. For example, the model can constrain the start year of a project to only those years available. (The first year of a projection is stored in L2 and the final year in M2 on the Dat tab so that you can set the Min and Max to react to a change in base fiscal year.) If you do not really have a minimum or maximum in mind, you can just put in -10,000 and 10,000. Remember, however, that if your coarse increment is millions, you've just set the maximum to 10,000 millions or ten billion. Fortunately, it would take someone awhile to click 10,000 times. The number of years in a bond payback period could be set to a minimum of 0 and a maximum of 100. It is not in the base model.

If you type a number in column B that exceeds the Min or Max and then try to access that variable from the What If? tab (by spinning to it, for example, in the Set Primary Planning Variable section of What If?), you will get an error message saying that it "Could not set the value property", the program will freeze and put you in Visual Basic. You will have to correct this and reset visual basic to proceed. Click "debug" on the error message to enter Visual Basic. While in Visual Basic, click on the Excel symbol in the upper left to get back to the spreadsheet. Make your correction in the B column of the Dat tab (or change the Min or Max of the offending PPV). Then go back to Visual Basic. (It will show as a running program at the very bottom of your screen.) You need to reset Visual Basic to get rid of the offending values by clicking on the square box on the standard Tool bar. (It should be just to the left of the triangle-pencil-ruler symbol.) You may then close the Visual Basic and resume your work on the spreadsheet. Thus, if you constrain a value, make sure that column B starts off within the constraints. (This will also be true of the bumps.) A blank when the range is -10,000 to 10,000 is treated as zero and works fine.

E. Coarse Increment. This is the number that changes the integer "rocker-click" into a digit change at the place where you want it. It must be a power of 10. That power determines which digit changes in the PPV when you hit the coarse rocker arm. If it is 1, the PPV increments by 1. If it is 1,000,000 the PPV increments by one million. If it is .001, the PPV increments by one-tenth of a percent. This is set for the convenience of the user. If large changes are likely to be in the millions, set it for a million. If you set it at one, you will force the user to hit the clicker 1 million times to go up by 1 million.

F. Fine Tune. This determines whether the "Fine" rocker arm will be active. A "1" makes it active and a "0" deactivates it. If you are changing years only from 2005 to 2018, set the Coarse arm for one's and de-activate the fine arm (you don't want tenth's of a year, for example).

G. Start Point. This is a formula. The user should not overwrite the cells in this column. It calculates the integer that the coarse rocker arm should start at. If the value begins at 123,456,000 and the increment is set to millions, the Start Point in this column will be 123. That's the number of millions. Examples are shown in Figure Five below.

H. Fine Offset. This sets the increment for the fine rocker arm. Putting in .01 makes the fine increment the digit two to the right of the coarse increment. If the coarse increment is millions, then .01 makes ten thousands the fine increment. .001 puts the fine increment three digits to the right of the coarse increment. .1 puts the fine increment one digit to the right of the coarse increment.

I. Fine Start. This is another calculated column. Do not overwrite it. It tells the program the integer at which the fine clicker should start. Examples are given in Figure Five below.

J. Fin Min. and K. Fine Max. The same rules apply as for the coarse minimum and maximum. Nevertheless, you should probably never really constrain this value any more than -10,000 to 10,000. Note that -100 to 100 would be too small a range for an offset of .001. The fine rocker for an offset of .001 could go to 1,000.

Figure Five

File Edit View Insert Format Tools Data Window Help Adobe PDF

	A	B	C	D	E	F	G	H	I	J	K
1	(PPV) LineName	PPV	Min	Max	Coarse Increment	FineTune =1	StartPoint	Fine Offset	FineStart	Fine Min.	Fine Max.
2	Growth rate set up: coarse @ .1%, fine @ .01%	3.00%	-10000	10000	0.001	1	30	0.1	0	-100	100
3	Year: coarse @ 1, no fine	2012	2005	2018	1	0	2012	0.1	0	-100	100
4		note: first & last yrs. in:	L2	M2							
5	Small # (yrs of bond, person count, etc.): coarse @ 1, no f	30	-10000	10000	1	0	30	0.01	0	-1000	1000
6	Coarse @ tens, fine @ tenths	345	-10000	10000	10	1	34	0.01	50	-1000	1000
7	Coarse @ tens, fine @ 1	123	-10000	10000	10	1	12	0.01	30	-1000	1000
8	Coarse @ 1,000, fine @ 10	12,345	-10000	10000	1000	1	12	0.001	345	-1000	1000
9	Coarse @ 1,000, fine @ 1	280,004	-10000	10000	1000	1	280	0.001	4	-1000	1000
10	Coarse @ 100,000, fine @ 10,000	28,230,000	-10000	10000	100000	1	282	0.01	30	-1000	1000
11	Coarse @ 1,000,000, fine @ 100,000	28,100,000	-10000	10000	1000000	1	28	0.01	10	-1000	1000

Adding new bumps. New bumps begin with the name in column N. The convention is the same as for PPVs. In Figure Six the first bump, "Full-time staff average salary," is set by the linking formula: =FinData!A78. The Min (column O), Max (P), Coarse Increment (Q), Fine Tune =1 (R), Fine Offset (S), Fine Min. (T), Fine Max. (U) and Number of Bumps (V) set up each bump for What If? Use these to set the increments for the rockers. They apply to all bumps for the variable on that line.

Column V should contain the number of bumps set on the data page for that variable. Most have three, but some are six or twelve. Column W is a formula and should not be overwritten. It names a range used in this set up. The value of the first bump (parameter A) is set in Column X and its year in column Y. The second is set in column AB with its year in column AC. Four columns are need for each bump. The only reason that a user would want to put a value in a bump value column (like X) is to avoid doing a lot of toggling to set an initial value. Nevertheless, best practice would be to always toggle, never input. Never do anything beyond column V.

There are 100 lines set aside for bumps linked to the What If! tab. As with the PPV's the links are set on the data tabs. For line 2 on Figure Six, the link is set with the formula =Dat!X2 in the yellow-highlighted cell H78 (the staff salary row) in the FinData tab. Also in the FinData tab cell I78 is yellow and has the formula =Dat!Y2. These two formulas connect values and the year put in for this bump (the first bump for Full-time staff average salary) to Parameter A and the year for Parameter A for this variable. The year is automatically constrained to be a projection year.

Figure Six

N1 fx BumpNames

	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1	BumpNames	Min	Max	Coarse Increment	FineTune =1	Fine Offset	Fine Min.	Fine Max.	Number of Bumps	Bump Number Name	1.A Bump	A Year	A Coarse Start	A Fine Start	2.B Bump
2	Full-time staff average salary	-10000	10000	1	1	0.010	(100)	100	3	BumpN3	-	2008	-	-	0.00%

Adding new graphable lines. Graph lines that are choices on the What If? tab are set up on the GData tab. The set up is simple. Choose a line labeled "No line." (The lines that are like "Ratio 325" are already linked to the very bottom of the Financial tab. Calculations put on these lines in the Financial tab will be automatically set up for graph selection.) The links go in the cells of the GData tab. Column A gets a formula that provides a label. The formula on line 22, =StmtNetAssets!A8 gives the label "Cash and cash equivalents. The formula =='StmtRevExp(unal)'!$B$69 gives the label "Ending unrestricted net assets" on line 14. Not all labels in the financial statements are in column A. (The function PROPER causes only the first letter of a word to be capitalized.) Some labels have been constructed from two data labels to add division names, etc.

Then just link the first year cell in column B of GData to the first year value of a projection line (not a data input line). The B column cell for ending unrestricted net assets has =StmtNetAssets!E78. This is ending unrestsricted net assets for the actual/base year. This cell is then copied to the right for the next 13 years. Green tabs (computations) all have the first year in the B column. Blue financial statement tabs begin with the E column, except the net assets statement (F), the indirect cash flow (B), and the direct cash flow (D). There are 100 rows for graph variables. (This limit is set by an array definition. To set aside more space for any of these set up variables, the named arrays would need to be redefined.)

Saving graphs. Click within the chart, but on the background, such that the whole chart is selected (the little squares should be in the corners of the full chart). Edit, Copy, Open a new worksheet, and paste. Then, Edit, Links, Break link, and confirm break link. If you do not break the link, the chart will change with every new run. It will not be saved in the form that you wish. Save the new worksheet. You can build up a set of graphs on this worksheet like this, one to a tab.

Adding ratios

New calculations for financial viability ratios and other tests can be added to the bottom of the Financial tab. The label is put into column A. The test equation for the actual year goes into column B, and so on. The equation should be built from the data available from that year. Data on the Financial tab do not need a tab name. They have the format, B21. If another tab's data is to be used the format is TABNAME!B21, like S1!B21. The B cell may be copied and pasted across. (Make sure there are no dollar signs in the formula before you copy the B cell across.) Lines labeled like "Ratio 325" are already linked to the graph.

Adding "bumps" to a variable

Correspondence. To make cutting and pasting easier, each data row is expanded on the corresponding row on the calculation page. The data in on line 21 of FinData is expanded into 14 years of data on line 21 of the Financial tab. On the divisional tabs, all expansions are done first on the calculation tabs, then calculations, as necessary, are done below. The efficiency of the Combo tab rests on its exact correspondence to all of the division calculation tabs.

Bumps. Most variables allow three bumps. The equation used is of the form:

=E21*(1+FinData!$D21)+IF(F$2=FinData!$I21,FinData!$H21,IF(F$2=FinData!$K21,FinData!$J21,
IF(F$2=FinData!$M21,FinData!$L21,0)))

This equation is found in F21 on the Financial tab. The data for this row apparently comes from row 21 of FinData. The equation says that the previous cell (E21) is multiplied by the growth rate (1+the growth rate found on FinData at D21). Then there are three embedded "If" statements. The years for the three bumps are found on the FinData tab at row 21 at columns, I, K and E. The "If" statements test to see whether any of the bump years match the year for the cell, found in F2 above. If one does, then its value, either from columns H, J or L in row 21 of FinData, is added to the "grown" result from the previous year.

To add another bump, the bump must be put in column N and the year of the bump in column O of row 21 in FinData. Then in the equation above another "If" is embedded before the zero, as:

IF(F$2=FinData!$O21,FinData!$N21, and a final closing parenthesis added (note the comma at the end of the insertion is part of the insertion). The $ signs allow the altered formula to be copied across all projected years for the variable. Because of correspondence, any expansion that has already been set up with more than three "bumps" may be copied over one with three bumps on the same calculation tab.

Removing divisions

If a user does not need all ten divisions for schools and colleges and wishes to save space and shorten save-time, the extra data and calculation sheets for the unwanted divisions may be deleted from the Edit command on the top menu. First, however, the user should alter the formulas on the Combo tab. Fortunately, the user only needs to alter the formula in B8 and copying it across the row and then copying the row into every line with calculations. The formula in B8 is:

='S1'!B8+'S2'!B8+'S3'!B8+'S4'!B8+'S5'!B8+'S6'!B8+'S7'!B8+'S8'!B8+'S9'!B8+'S10'!B8

The tenth division may be removed by deleting the +'S10'!B8 from the formula, for example. Then the data and calculations from the tenth division may be removed by deleting those worksheets. The transfer buttons for that division may also be highlighted with a right click and then deleted. If a name is not entered on FinData for that division, the menu will be blank at that location. Deleting one division saves about 400k.

Adding more years; fewer years

Copying the last column of the projection and pasting it as many times as necessary in columns to the right on all the green and blue tabs should do the trick. Any input from red tabs that is done with a schedule will require that the far right cells of those rows be copied and pasted to the right as well. Financial Statement print specifications will need to be changed. The formula on the Dat tab that looks for the last year will need to be redirect. That formula is in cell M2. The graph calculations may also have added columns copied and pasted.

The only data tabs that will need extension are the BondData tab (to allow more years of scheduled data), the ProjectData (only to allow more years of deferred maintenance projects), and FinData (to allow more years for scheduled prepaid bond expense and the fixed asset schedule). On the project and financial data tabs, only extend those lines that are needed. Don't extend lines with six and twelve bump inputs. Only extend the lines if you intend to use those data schedules.

The smartest way to reduce the length of the projection is to highlight and hide (click on the window option in the top spreadsheet menu, then click hide) all unwanted columns on the blue tabs.

More projects, bonds or investment pools

Projects and bonds. While adding more bond or project data sections and replicating the calculations is feasible, there are several challenges. Copying and pasting formulas will not work unless the number of rows between the red tab first line of copied data and the next line of new pasted data is the same as the number of rows between the first line on the green tab of a project's (or bond's) copied formulas and the first line of the pasted formulas. The copied formulas make relative changes. If the formula is pasted 25 lines down, it will look for data 25 lines down. The current spacing on Project allows this. All the summation formulas at the end (bottom) of the Bond and Project tabs will need updating to include the new bond and project results as well. The rather horrendous search for new students from projects at the end of every division calculation tab will need an added term for each type of student.

Investment pools. Increasing the number of investment pools above five can be accomplished by making a number of line insertions on the InvData and Inv tabs. At the points described below, the insertions should be made between the same two existing pools (and not above the first or below the fifth). Make a single insertion on the InvData tab and then make the corresponding insertion on the Inv tab. This will retain correspondence. All insertions should be made by copying the line above the insertion point for an existing pool, highlighting the line below this one, and then clicking "Insert" on the top menu and then "Copied cells." Make the three insertions for initial data set up and pool size calculations (between lines 12 and 28) after all other lines are inserted.

Inset a line for the new pool's total return rate and a line for the proportion of return that is appreciation. Insert one line each for temporarily restricted and permanently restricted gift receipt percentage distributions. Insert one line each for the three restriction categories for both manual transfers in and manual transfers out. On transfers out, do not copy the line for the third pool that has the hard-wired transfers. Copy another line for temporarily restricted, but insert it appropriately.

Finally, insert a line for each of the three restriction categories to set up the pool name, its % of initial total investments, endowment calculation treatment, endowment take down treatment and cash shortfall coverage treatment.

No change to calculations should be necessary because all calculations for the pools run off of either SUM or SUMPRODUCT calculation functions. Insertions will automatically widen the spread of the ranges used in these functions.

Overwriting formulas

This is very dangerous. In most cases the model will still work, but it will no longer be responsive to changes. If you paste a number over the tuition revenue formula, for example, changing enrollments will no longer change revenue.

Replacing lines on financial statements or re-wording

In many cases the wording on a financial statement is taken from a key input variable. In other cases, the wording is part of the financial statement. Although all instances of the wording may be changed, the change cannot cause the line to switch categories. For example, pre-paid bond expenses can only be pre-paid bond expenses, but Grants and Appropriations Receivable may be any non-student receivable. It is a simple variable. If the any line, for example, the pre-paid bond expenses line, does not show up in your statement, it is best just to hide the offending lines (and make sure that you don't capitalize any bond issue expenses). Hiding is preferable to deleting to prevent reference errors, which are very possible in the cash flow statements.

Adding new lines for new variables, rather than replacing existing titles requires adding a data input section, a calculation section, and display lines. Balance sheet additions will probably require added calculations in the cash flow statement. Variables that must interact with other variables are extremely difficult to add without broad familiarity with the spreadsheet.

Adding new variables to the divisions must be done with care. To allow easier copying, any added line to one division calculation tab should also be added to all other calculation tabs, to all division data tabs (unless the calculation occurs lower than the expansion section), and the Combo tab. If this is not done, correspondence is broken and expansion lines can no longer be easily copied. Copies to a set of identically formatted tabs may be accomplished by holding down on the shift button and clicking each tab.

No Guarantees

You *will* find mistakes in this spreadsheet. It is too complex a work for me to be perfect. Let me know what you find.

The financial projections are not a glimpse of the future. The future will remain unknown. The projections are mathematical results.

You can still make unlucky decisions. Despite this amazing financial projection, things happen.

Good luck.

2.7 Working Definitions

Bump	An adjustment to the base value (it continues as part of the base, not like a one-time-only adjustment) of a variable. Bumps have "bump years" that specify the fiscal year (by the end year, like 2007 is the end year of FY 2006/07) in which the bump is to be applied.
Cell	A cell is a location on a spreadsheet specified by a column letter and a row number. For example, B3 is the location on a spreadsheet in the second column and third row.
Functions	Instruction, Academic support, Student Services, Institutional support, Facilities, and Auxiliaries are the primary functions shown in a statement of activities.
Link	A cell on a worksheet is linked to another if the formula in it points to that other cell. If cell B24 contains the formula =C24, then whatever is typed into cell C24 is also displayed in B24. If, however, you type the number 465 (or any other) into cell B24, that's what it will display, not what is in C24. This happens because you would have erased the link, =C24, by overtyping the formula. To link from one tab to another add the tab name and an exclamation point before the cell reference, for example, =FinData!B24 points to cell B24 on the FinData tab. The **SFP** also makes use of the indirect function allowing the pointer to be calculated.
Tab	Any workbook may be divided into sheets. Each sheet can be examined by clicking on its tab, found at the bottom of the display and looking like a folder tab. Each sheet has two dimensions, rows and columns. A workbook with multiple sheets adds a third dimension, layers of sheets. The term tab is used here because the visual clue to find each sheet is a colored tab.
Regular Variable	When describing a value to be inputted into the model, regular variables are the ones that may have rates of change, be linked to other rates of change, have these linked rates adjusted, and be bumped by up to three amounts in three years.

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