Introduction to Argus
A Citrix Server Install

Pedagogical Approach to Argus in the Classroom

In many cases, analysts are charged with evaluating the financial feasibility of various projects or investment opportunities. Depending on the firm and the scope of operations, these can range from relatively simple acquisition decisions to more complex development and portfolio management decisions. There are two major options for modeling such opportunities. First, one can develop and/or input numbers to Excel-based template. Second, one can use a commercial software package such as Argus, merely plugging the numbers into the appropriate input cells.

Each of the two approaches has there advantages and disadvantages which influence the decision as to the appropriate solution. However, in other cases the analyst will be forced to use one of the two approaches. Regardless of the software solution, it is imperative that the analyst understand what drives the underlying model so that it is not a black box into which numbers are randomly plugged until the appropriate solution is obtained. In addition, analysts must be able to apply the models to a variety of situations, many of which are complex or special-purpose and do not fit well into a standard problem set. At the same time, and analyst must be able to review inputs from other parties to a transaction, to verify the validity and reliability of the inputs and the processing. This is especially true in the commercial real estate arena due to the inherent risk in real estate investing, the capital-intensive nature of projects, and the inherent risks associated with the asset class.

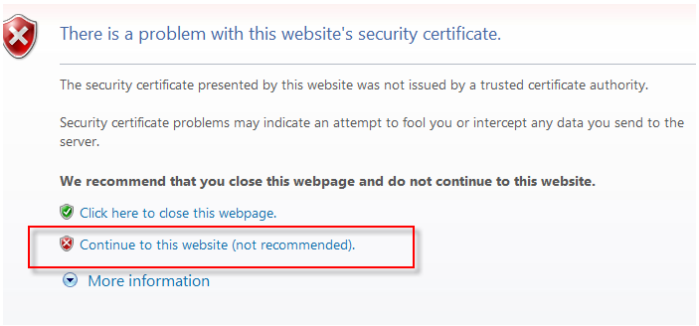
In our approach, we have opted for an integrated solution which begins with basic Frontdoor/Backdoor Models based on annuitized cash flows, transitions to Excel-based Discounted Cash Flows with differential income streams and terminal values, and culminates in Argus modeling to handle more complex elements associated with rent rolls, percentage rents, renewal options, capital investments, and capital structuring. The objective of this tutorial is to introduce Argus modeling which builds on the conceptual understanding and insights garnered from Frontdoor/Backdoor Models and Excel-based DCF models. The tutorial is divided into several sequential parts, to walk through simple applications to more complex modeling.

Part I: Running Argus on Citrix

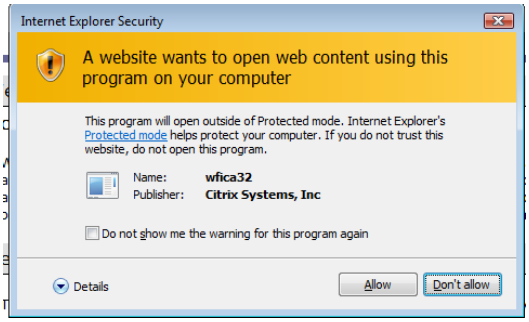
Over the past several years, we have used Argus University Edition in Real Estate Finance and other advanced courses. Students have had several options including use of a limited edition version on many CDs accompanying various texts. To increase access, we worked with Argus to negotiate a limited purchase option that students could use to download a full version of the package and use it on their personal computers. We also installed a network version in the Digital Commons in Gould as well as on other computers in the surrounding lab. While that worked, it had a number of problems including requiring students to work from on one of the installed computers. This year, working with our technology group in CAUP and Eric Gould in particular, we have installed the package on a Citrix Server. The installation was complicated as the application has not really been used in such a context. However, after several delays and reinstallation, we are up and running. That means you can access the package from the Internet, providing you with much greater flexibility. The objective of this tutorial is to help you get up and running Argus on the Citrix server. You are encouraged to explore the package before we get to it in class, although we will be introducing it next week.

Step 1 (a). Connecting to Citrix & Downloading the Client

- Open an internet browser (Internet Explorer or Safari only), and browse to: **https://citrix.caup.washington.edu** (***notice the "S" which indicates secure login***). Add the URL to your Favorites for quick access.
- You can run Citrix through Windows or Mac operating systems. However, you may have to make adjustments depending on your system and security settings. For example, when I loaded it in Internet Explorer, I got the following. You should be able to ignore this message and click on Continue
- NOTE: I tried to install the Citrix Server to Firefox on 2/20/09 and ran into a bug; I suggest copying the URL **https://citrix.caup.washington.edu** and pasting it into Internet Explorer to be safe.



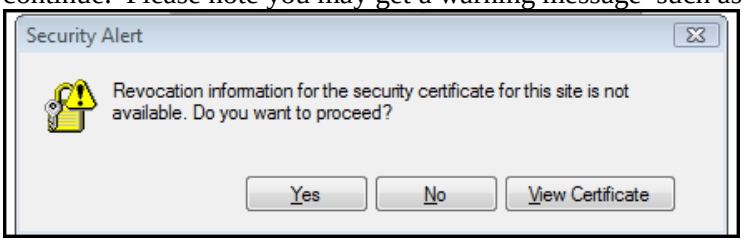
My Browser comes up with:



If this is your first time, after you click Allow, you will have to download the Presentation Server Software as noted below. Look at the bottom of the screen and click to download:

Step 1(b). Install the Citrix Client

If you do not already have it or get the previous warning, you will need to **install the Citrix client from this location**. Click on the link to download and run it. Click on "**RUN**" for both security warnings to install. **Restart the browser afterward** and browse back to **https://citrix.caup.washington.edu** to continue. Please note you may get a warning message such as:



You should be able to Proceed.

If you don't know if you have the Citrix server installed, chances are you don't so follow these steps:

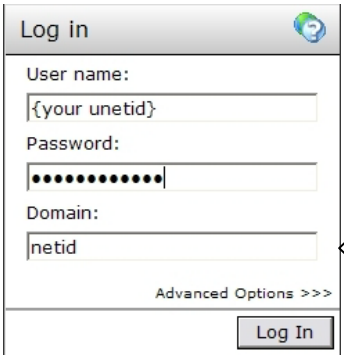
- **Mac** users, when prompted to download, click cancel, then a link to the Citrix Client Download site appears in place of the above picture, click on that link and search the Citrix Client website for your correct download.

- If you receive a message about an application **Certificate**, go ahead and install it.

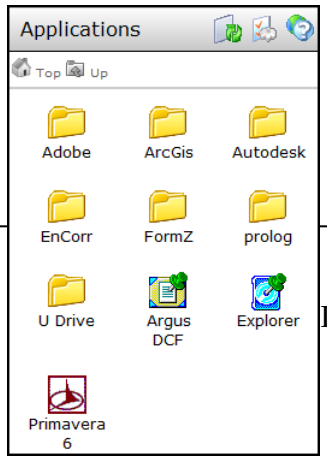
Step 2: Log into Citrix

Overview

- With the client installed, and the browser restarted, **click on this link** **https://citrix.caup.washington.edu** and **log into Citrix with your UW Netid username and password, entering "NETID" as the Domain.**



Make sure you enter the **netid** as the Domain



D.

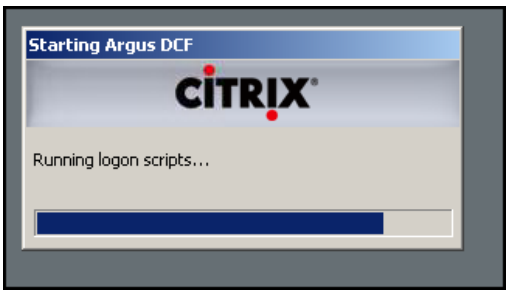
Accessing Argus Citrix

- Upon entering Citrix, you'll see application folders of software you may use. Click on the software folder, and then click on the application you want to use, in this case **Argus.**

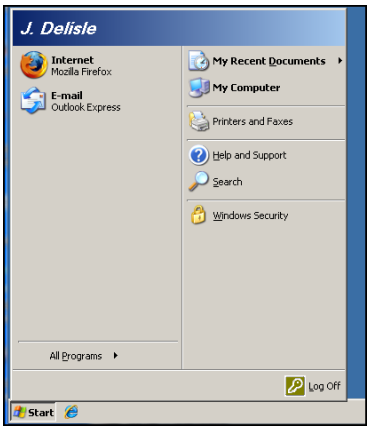
Step 3: Running Argus on Citrix

Overview

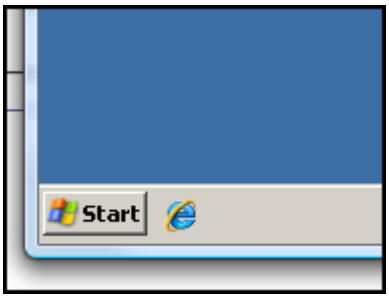
ARGUS must be run from a "terminal desktop", basically a computer in a window. Simply launch Argus from the start menu in the window. It may take some time to initialize the first time and give you something like this:



Now, you should see something like this which is your Access window to Citrix; this is your Citrix "Window."

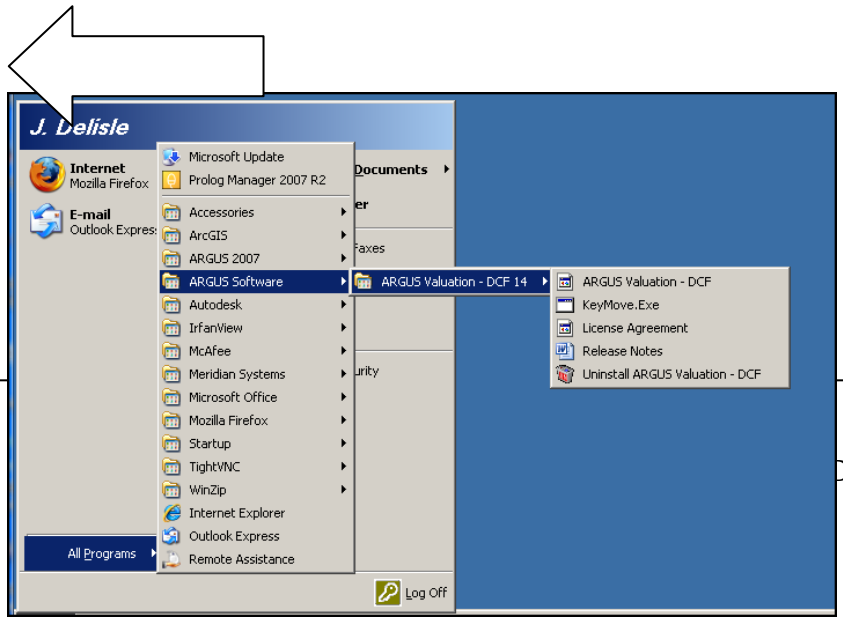


If you have a blank Blue Screen, click on the Start to open it.



This is where the Log Off comes in; it will be on most screens.

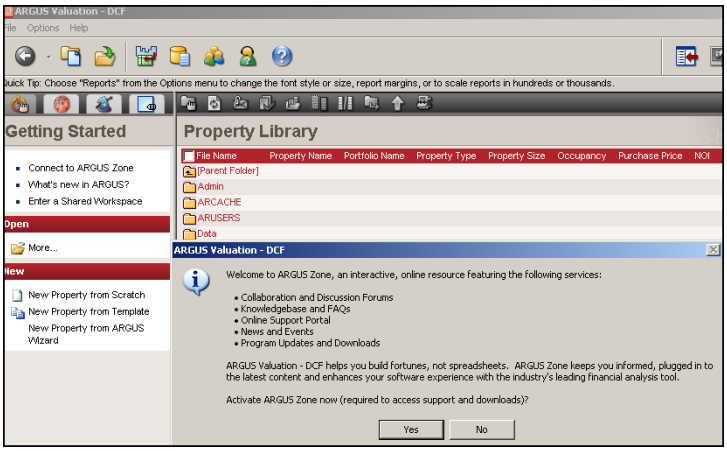
Click on All Programs and you will see ARGUS Software: We are running Argus Valuation



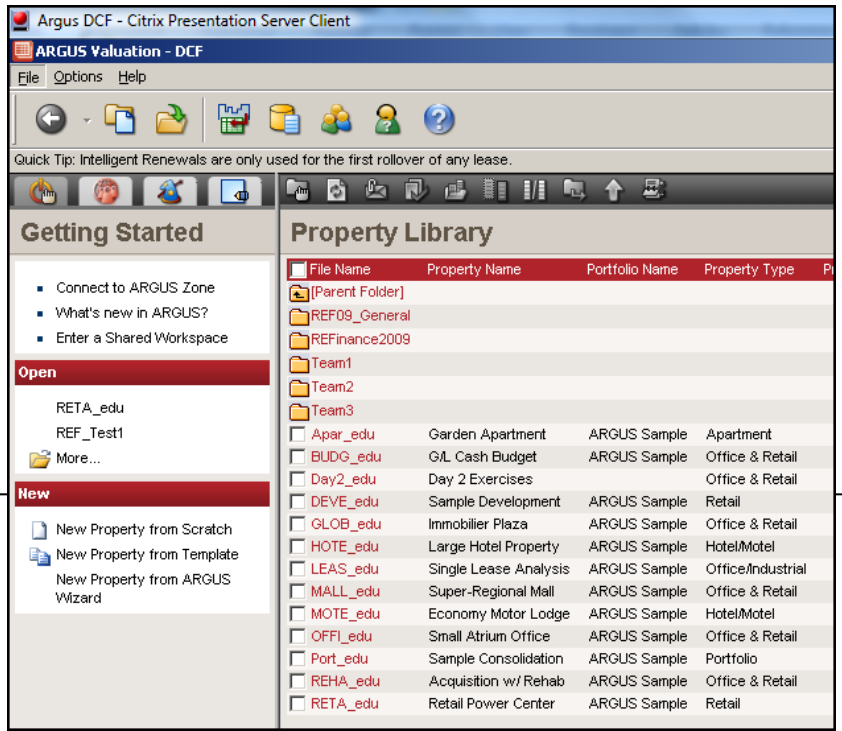
DCF 14, so click on the top of the menu.

When you click on the Argus DCF folder, you will activity the Citrix Service.

At this point, you will get a "Welcome to ARGUS Zone. This is optional; I did not try to Activate it but I think you can later on.



- Please note that you are working in a Citrix Presenter window. As such, if you click on some applications, you may open a new window within that window. To close and get out, make sure to Log-Off so you free up the Site License for others.



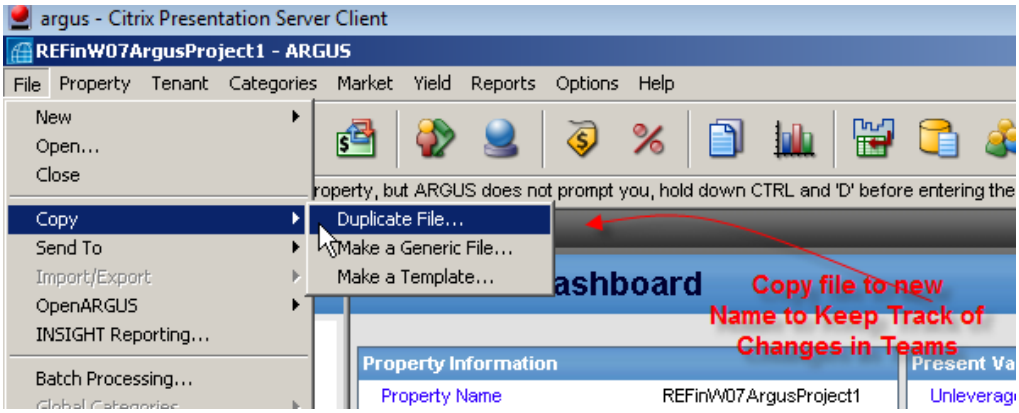
- Also, you may Time-out and have to Log back in; it will take you to your session.

The Folder under "More"

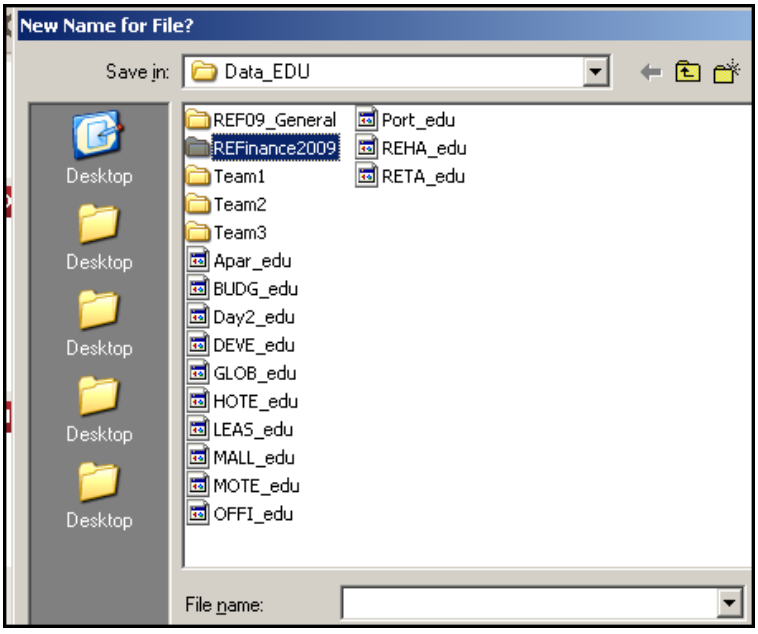
I created a folder for each Team and a REF09_General where we can share files. The other files under the EDU directory are samples from ARGUS.

Note that ARGUS uses Realtime/Live files. That is, if you make a change, the File changes. Therefore, always make a Copy.

To Copy a file, first open it, then File Copy Duplicate File.



Now, just give it a file name and directory. You might want to open the core files and Copy them to your Team Directory using Copy Duplicate file



Note, you will have to fill in a File name.

It will ask if you want to open the File and if so, you are now using the Copied Version. I suggest changing names but keeping the original so you have some lineage.

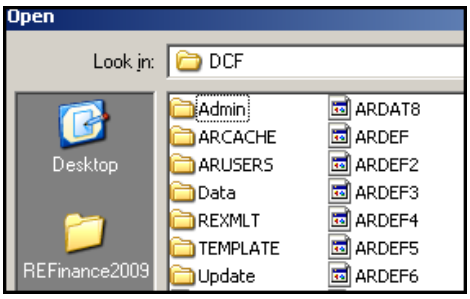
- You may see **Client Files Security**. Simply check **Full Access**, **Never Ask Me Again** and **OK**.

Note that you may still get this message even if you indicate you don't want to be asked again.

Using Argus Files

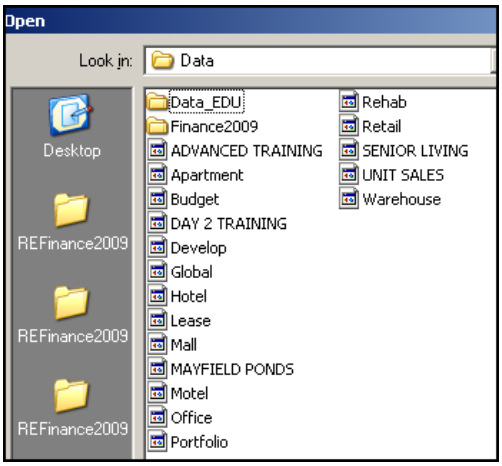
Property Library

Click **File**, then **Open,**

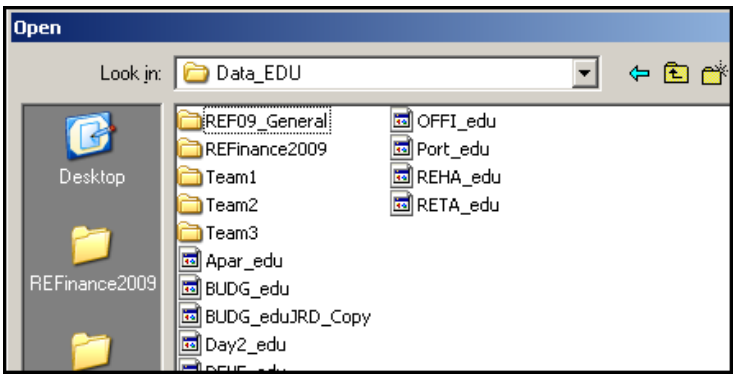


Our files are under DCF-Data. So, click on Data and it will open the following.

Data File Structure. Under Data go to Data_EDU and you will see the following which has your directories that I sent up.



Folders for REF2009



Note that this looks the same as the Windows Explorer so you can navigate up by using the folder navigation. This can be a little tricky, so be careful.

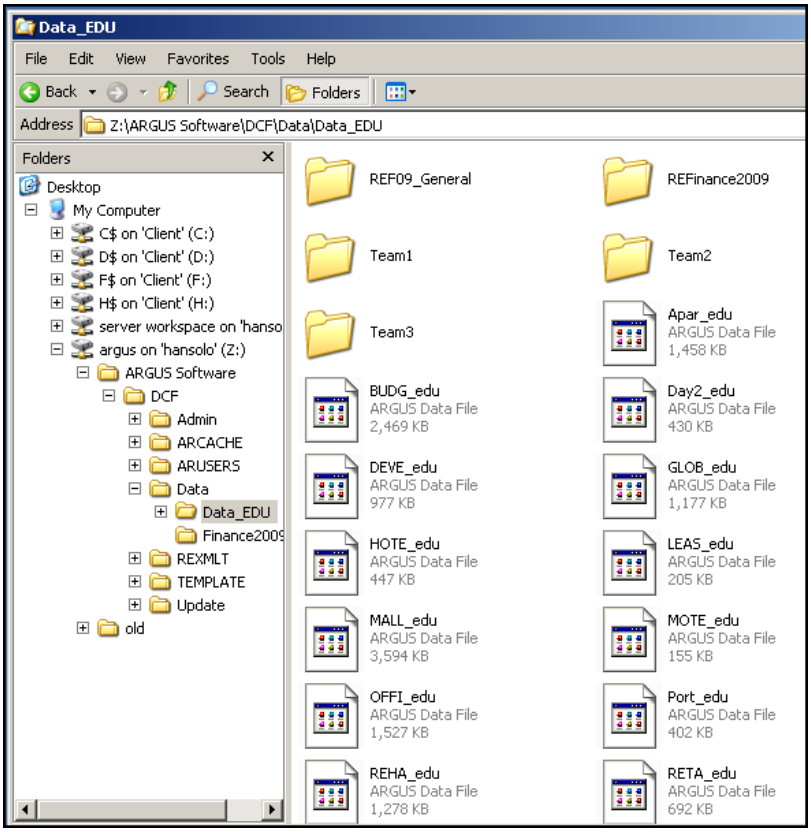
Working with Files

Caveat Redux: Argus uses RealTime Files

That is, when you work on a file, you are working on the original. Any changes made, override the previous file. This can create problems with cumulative changes and file tracking, especially with multiple teams. To avoid issues, when you open a file to work on, before making any changes, copy it

Log/Tracking File

I'd suggest making a Log file -- probably in Excel-- that documents names, who worked on it, what changes were made, how to roll back. When you have a major milestone, put that in a Safe Directory.



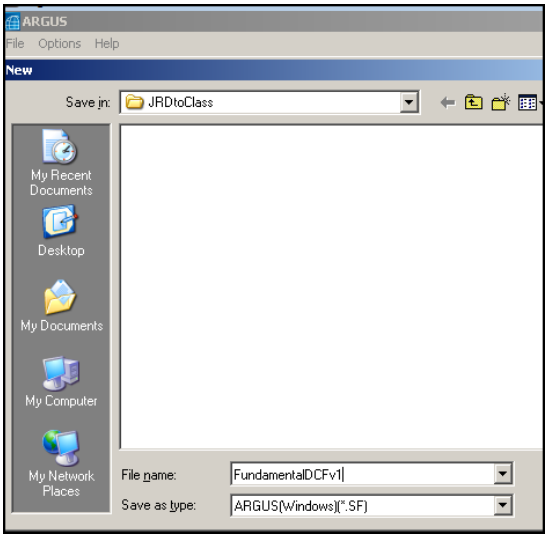
Local Drives. You can work on your hard drive as well, and then put a COPY back to the Shared Team Drive for your teammates to use. To do so, go to START menu in lower left, All Programs, Accessories and Windows Explorer. It may tell you that you don't have permissions but when you click OK it still opens it. Now, you can navigate to the Folder Data, Make a Copy (Right-Click on Folder) and then go to C$ on Client (C) which is your hard drive, use + to navigate to folder and then Right-Click, Paste. It will take a little time depending on what you copies but now you have backups. You can run Argus from your hard drive as well, but it will be slower.

Argus Example: Basic Excel DCF

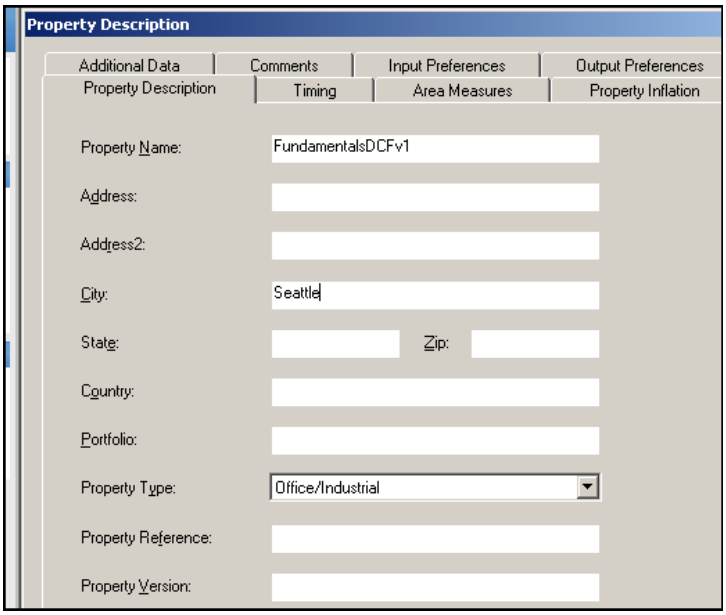
Create a new Argus file

Navigate to the Directory for your Team. Go to the DCF folder and create a New File.

To create your own file, Enter File, New and give it a name. Since you will each create this base file, give it a name that can be tracked. For example, if I was in Team 1, my file name would be: T1_DeLisle_DCFv1. Now, when you modify it, just copy it at the start with a new number (e.g., T1_DeLisle_DCFv2).



At this point, you can enter some Property Description materials. You can change most of them later. However, once you specify Property Type you cannot change it since it pulls some standard templates that are dependent on the property type.



Compile/Create Input Assumptions

Since most developers, investors and other parties actively involved in real estate have multiple scenarios for properties. This is especially true where an investor is seeking to buy a property and trying to make the numbers work, or is trying to establish a reasonable sales price to take to the market. The objective of this example is to show you how to convert the Excel DCF used in lecture to an Argus file.

Component	Data Inputs:	Initial	Rate of Change
Cost	Land Value	$ 435,600	
	Building Value	$ 3,436,567	
	Total Replacement Cost	$ 3,872,167	
Income	Gross Income	$468,557	4.00%
	Vacancy Ratio	10%	
	Expenses	10%	4.00%
	Property Taxes	8%	3.00%
	Reserve Ratio	0%	
Depreciation	Type of Property (1=Res, 2=Comm'l) (if Res, 27.5, if Comm'l=39)	2	
Terminal Value	Terminal Value Method (1=App, 2=Cap)	2	
	Appreciation Rate	2%	
	Exit Cap Rate	10.00%	
Net Terminal Value	Capital Gain Tax Rate on Appreciation	20.00%	
	Capital Gain Tax Rate on Depreciation	25.00%	
	Selling Expense	2.00%	
Mortgage	Loan-to-Value	80.00%	
	Mortgage Interest Rate	7.50%	
	Periodicity (Payments/Year	12	
	Loan term (years)	30	
Equity	Equity discount rate	10.00%	
	Marginal Tax Rate	36.00%	
	Reinvestment rate	6.00%	

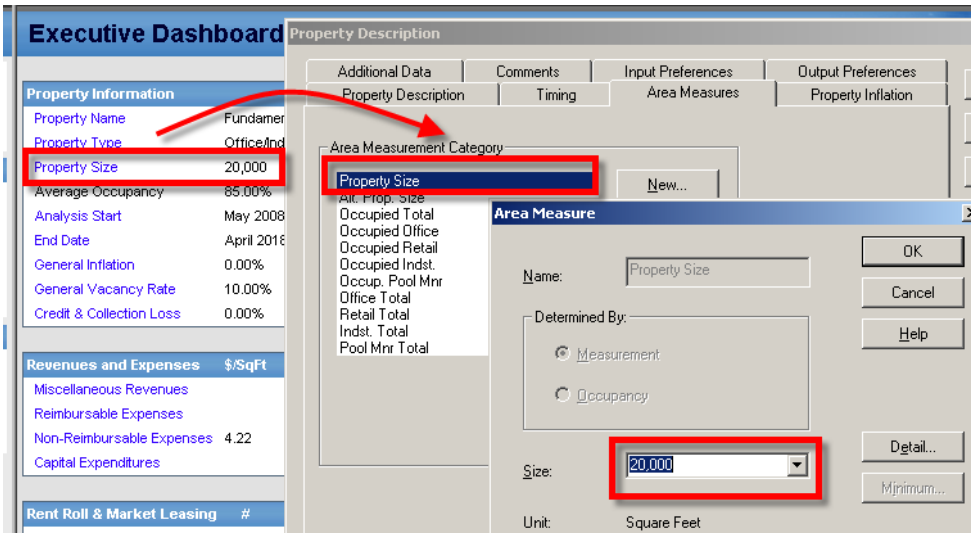
The previous are the basic assumptions we will need. The only other variable is the size which in this case is 20,000 gross square feet. The efficiency of the building is 85% (ratio of rentable to gross) as noted:

20,000	Gross SF
85%	Efficiency
17,000	Net Rentable
$ 27.56	$/nsf

To make sure you understand the numbers and see if they make sense, just divide the Gross Income by the Net Rentable SF and get $27.56/sf which is “reasonable” in the market for a Class B office.

Input Property Size

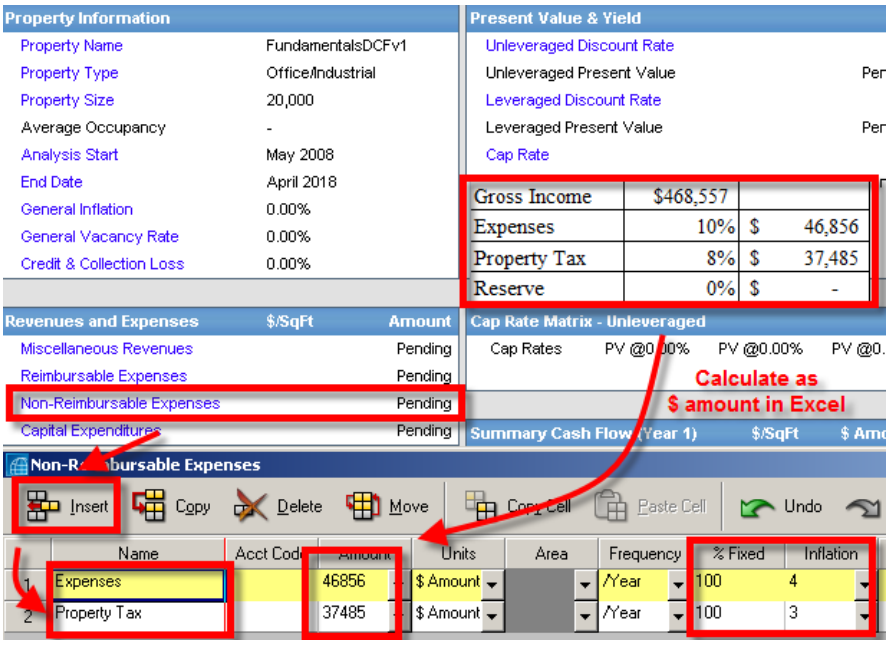
One of the fundamental inputs that will drive rent rolls and vacancy is the property size. To enter, click on the Property Size hyperlink and again on property size under Area



Measurement. Now, enter the 20,000sf for the project.

Input Operating Data

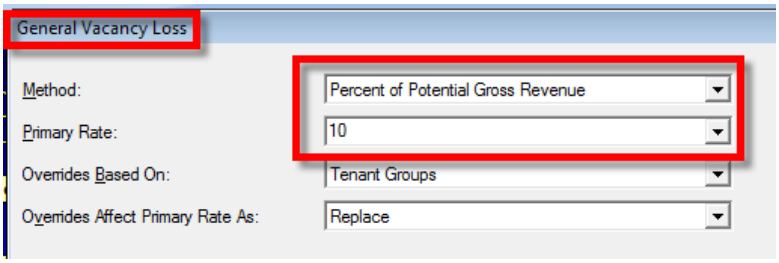
Now let's plug in some operating data. Let's start with Expenses.



In this case, we are going to assume expenses are non-reimbursable. That is, the tenant is not responsible for any. Also, we want them to grow at a rate that may differ from inflation, so we enter them in $/Yr, and treat them as 100% fixed. That is, they do not vary with occupancy. We plug in 4% inflation for expenses, and 3% for taxes.

Now, enter Close which is the button to the bottom left and you will go to the home screen. You must enter "calculate at the bottom of the screen to get it to run the numbers. Now you will see your total expenses.

Now, enter Vacancy for the overall project:



Note that Potential Gross Income is our GI.

Input Rent Roll

In this case, there is one tenant with a simple schedule with Rent increases of 4%/year during the entire holding period. To set this up, you need to work with the conventions in Argus. That is, the lease itself shows at the flat base amount, and then you increase it by an inflation adjustment.

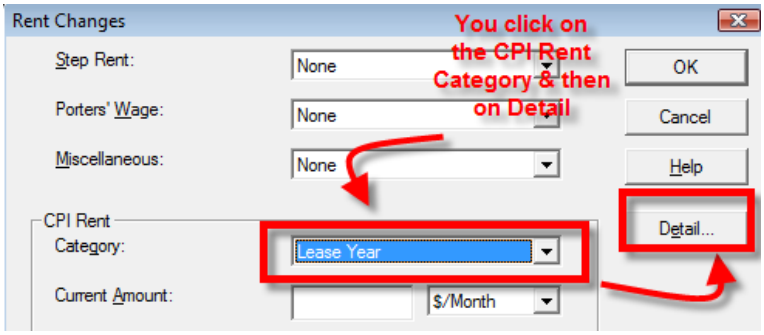
For the Years Ending	Year 1 Dec-2008	Year 2 Dec-2009	Year 3 Dec-2010
Potential Gross Revenue			
Base Rental Revenue	$468,520	$468,520	$468,520
Scheduled Base Rental Revenue	468,520	468,520	468,520
CPI & Other Adjustment Revenue		18,741	38,231
Total Potential Gross Revenue	468,520	487,261	506,751

To set this up, enter your basic data for the lease. In this case, we are calling the Tenant "Master Lease" and have calculated the Base/Min Rent/year per square foot at $27.56 for the 17,000 leasable area (i.e., 85% of the 20,000 gross sf). Make sure you enter the $/SqFt/Yr Unit of Measure. Now, to get the rent to increase annually, you click on the Pull Down arrow to the right of Rent Changes and Indicate Yes.

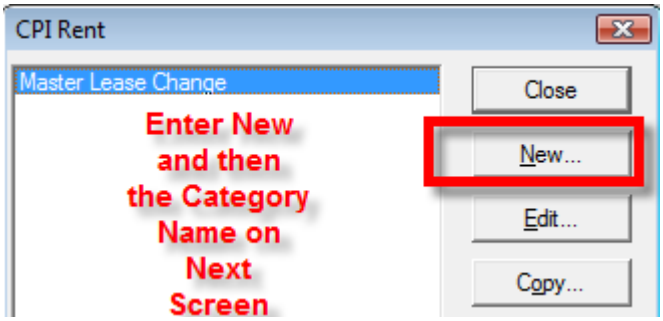
See bottom of this Argus screen and click on Detail

At this point, you must set up the Change using some Inflation or Index category that you create. This is a little tricky, so follow the steps carefully.

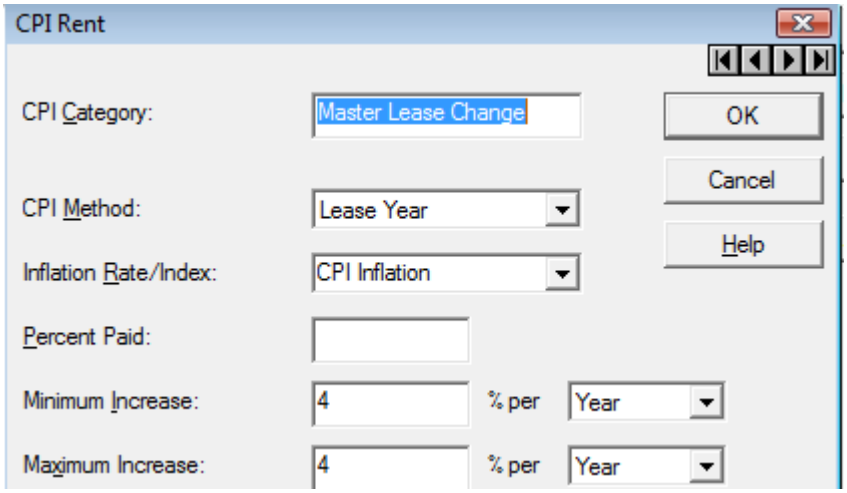
First, click on CPI Rent Category.



Second, create a new Category with your information.



Third, enter the Data



Now, back out of it and you have your rent set up to grow at 4% per year for this tenant. You could make other categories for other tenants or classes and pull them from the drop-down menu later.

To check your inputs and see if you are getting the desired output for each Tenant, go to Reports, Individual Tenant and select the tenant of interest. In this case, we see:

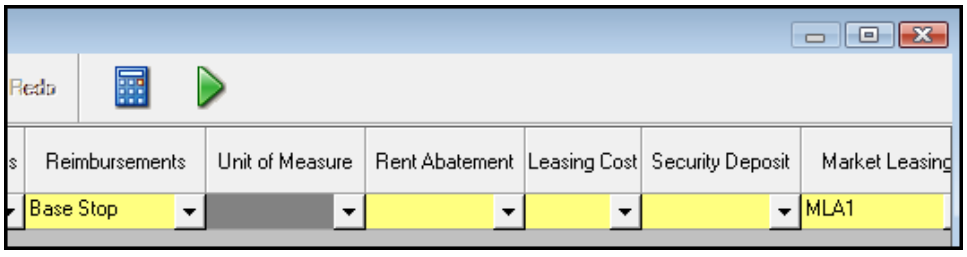
Individual Tenant Cash Flow & Summary
Master Lease, Suite All, 17,000 Square Feet, Market Leasing MLA1

For the Years Ending	Year 1 Dec-2008	Year 2 Dec-2009	Year 3 Dec-2010
Tenant Potential Gross Revenue			
Base Rental Revenue	$468,520	$468,520	$468,520
Absorption & Turnover Vacancy			
Base Rent Abatements			
Scheduled Base Rental Revenue	468,520	468,520	468,520
Base Rental Step Revenue			
Porters' Wage Revenue			
Miscellaneous Rental Revenue			
CPI & Other Adjustment Revenue		18,741	38,231
Parking Revenue			
Retail Sales Percent Revenue			
Expense Reimbursement			
Non-Refundable Deposits			
Earned Interest			
Total Potential Gross Revenue	468,520	487,261	506,751

While simple in this case, the summary info can be helpful when you are tracking expense reimbursement.

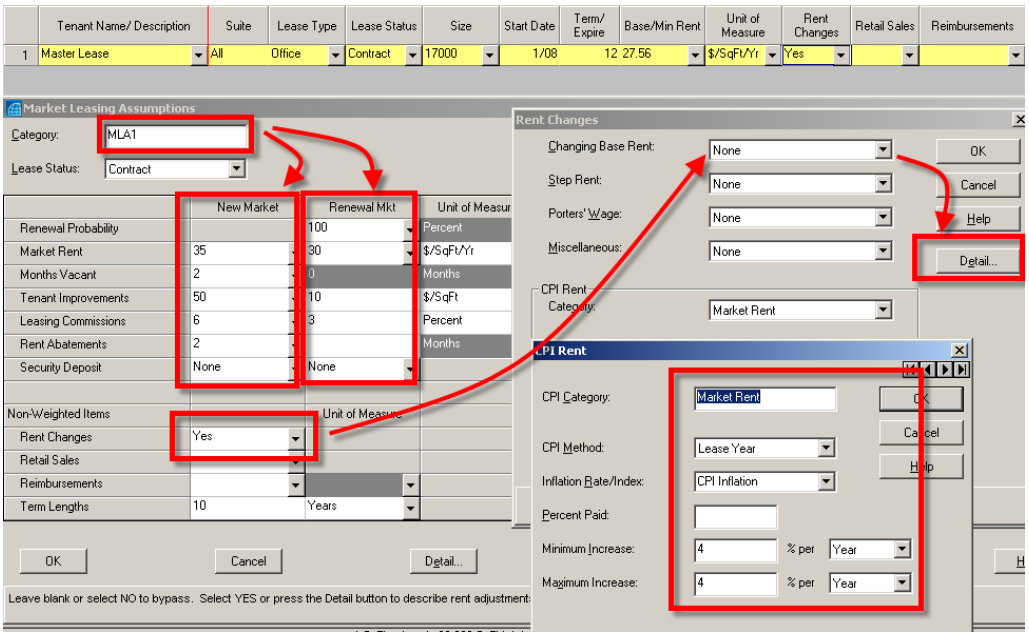
Market Leasing Assumptions

To the far right of the Rent Roll screen are inputs for the Market Leasing Assumptions. You can either click on the category down arrow or just try to close the first tenant. The package will not accept the first tenant unless you input the MLA.



These are the inputs that will be used to handle rent rolls that might occur during the analysis period. Even though you only have one tenant, you must enter Market Leasing Assumptions (MLA). This is so the program can calculate what happens if a lease rolls during the forecast period.

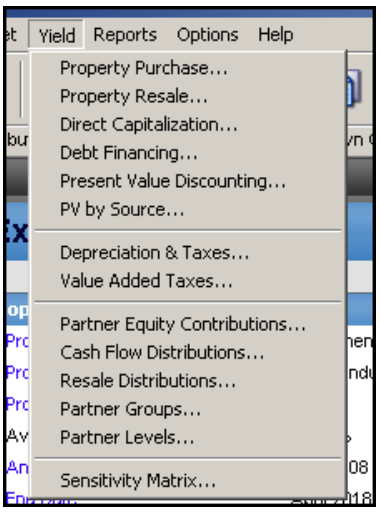
MLA per Tenant Category



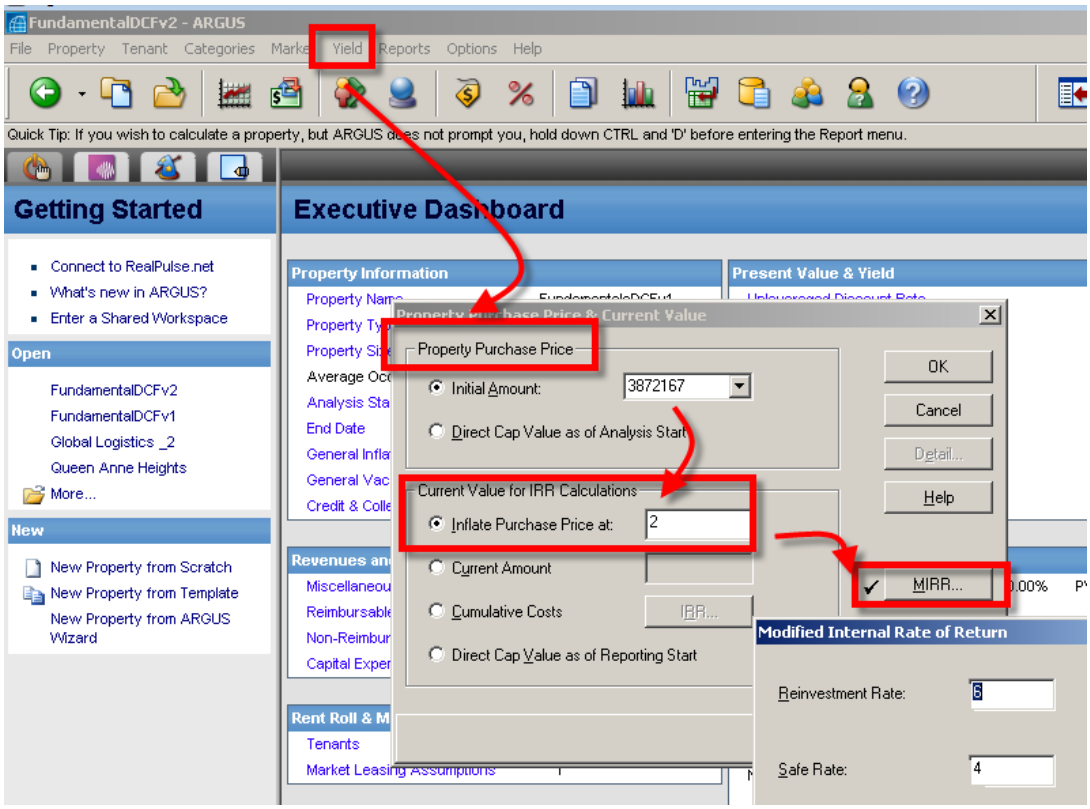
Yield-Related Inputs

Acquisition Price

At this point, you will be entering some basic assumptions that will be used to calculate the "yield" on the project. First, enter acquisition price.

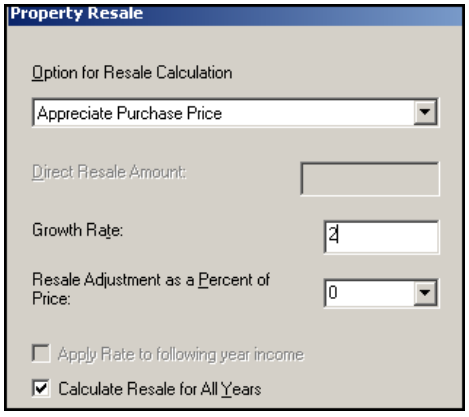


Enter your TRCm (or the value you think will fly in the market) and the Appreciation Rates. Also, your MIRR or reinvestment assumptions if any.



Disposition Price

Enter Resale Assumptions (again, under YIELD tab).



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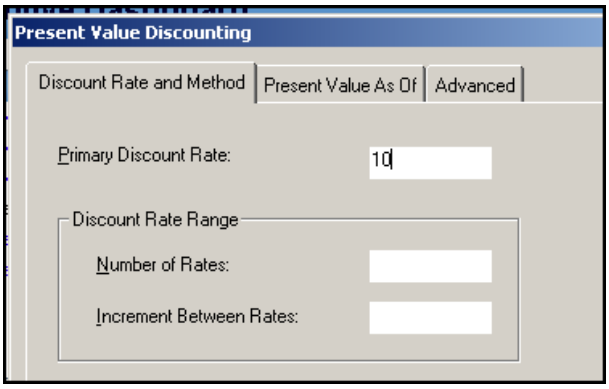
Discount Rate

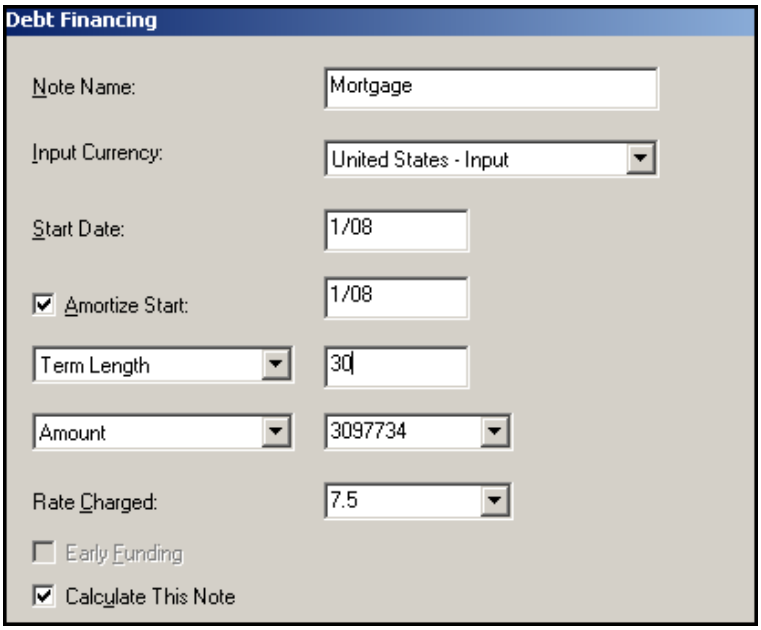
Present Value Discounting (from YIELD).



Mortgage

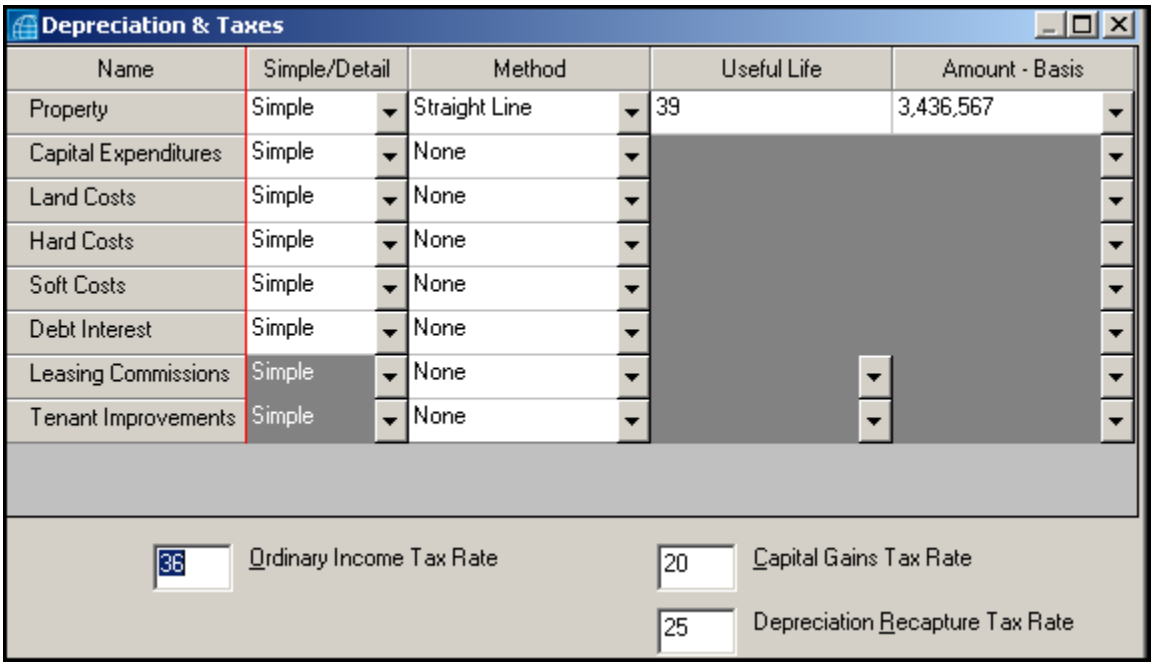
Enter the Mortgage assumptions from your inputs. These numbers should be calculated externally and fed in.

TRCm	$ 3,872,167
LV	80.00%
Initial Principal	$ 3,097,734

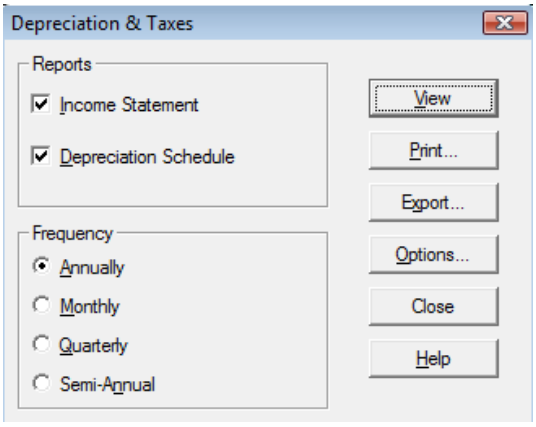


Depreciation and Recapture for Taxes on Sale

To handle depreciation, you will have to provide assumptions. To do this, go to Yield, Depreciation and Taxes and enter your assumptions. Note that the number for the Property Depreciation is the Gross Purchase Price less the land; you do not have to enter land value since it will be calculated. The "Land" category here is for depreciable land improvements.



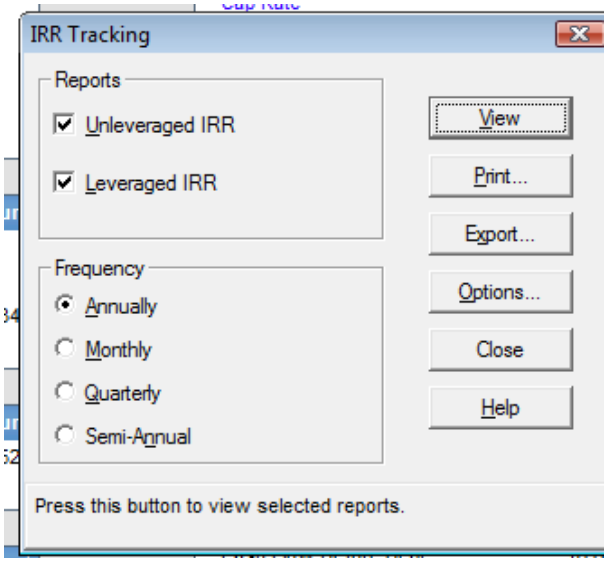
To check, go to Reports and look at the Depreciation Schedule.



Depreciation Schedule

For the Years Ending	Year 1 Apr-2009	Year 2 Apr-2010
Potential Gross Revenue		
Base Rental Revenue	$468,520	$468,520
Base Rent Abatements		
Scheduled Base Rental Revenue	468,520	468,520
Base Rental Step Revenue	28	29
Total Potential Gross Revenue	468,548	468,549
General Vacancy	(46,855)	(46,855)
Effective Gross Revenue	421,693	421,694
Operating Expenses		
Expenses	46,856	48,730
Property Tax	37,485	38,610
Total Operating Expenses	84,341	87,340
Net Operating Income	337,352	334,354
Building Costs	88,117	88,117
Taxable Income	249,235	246,237
Income Tax	89,725	88,645
Income After Taxes	$159,510	$157,592

This is the schedule and, as you see, it properly extracts $88,117/year for depreciation. Note, it calls this deduction "Building Costs" vs. Depreciation, but handles it the same.

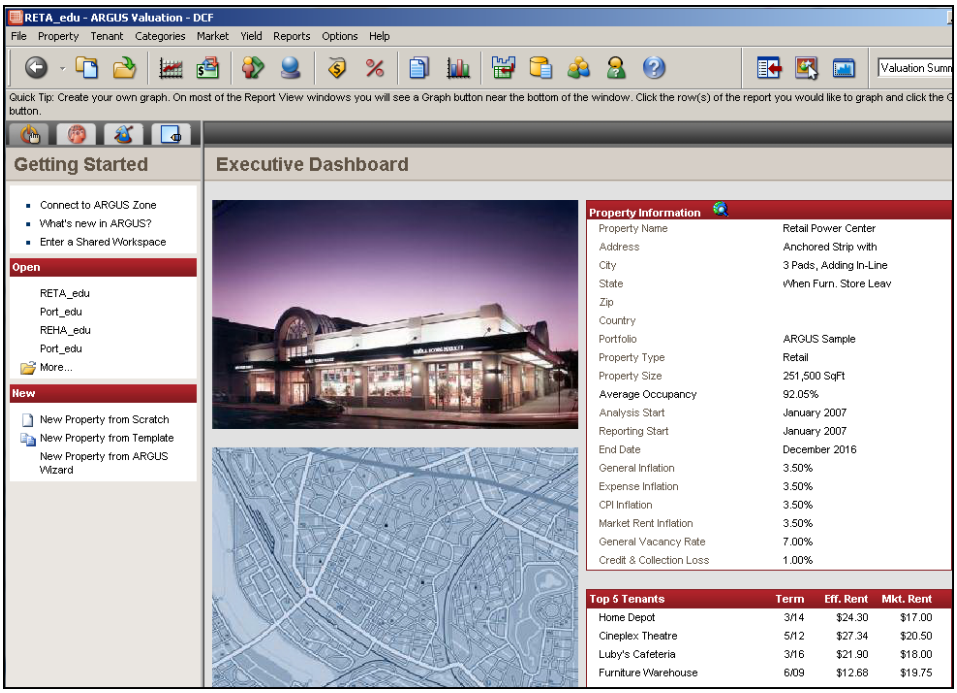


Under Reports, for IRR tracking select the following.

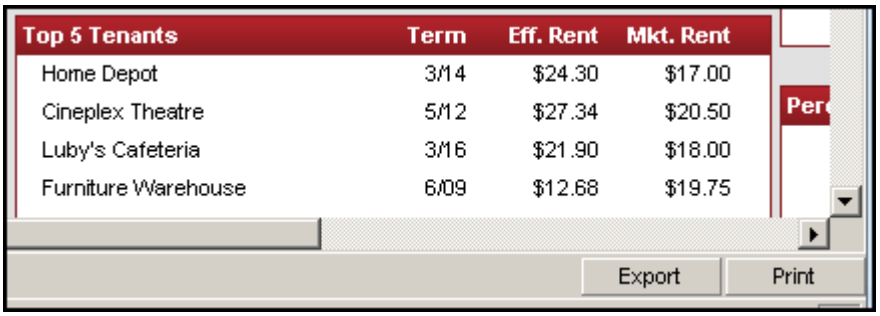
Now, you can look at the reports to understand the numbers.

Exporting to Excel. In the Academic Version 13, ARGUS disabled the Export Function.

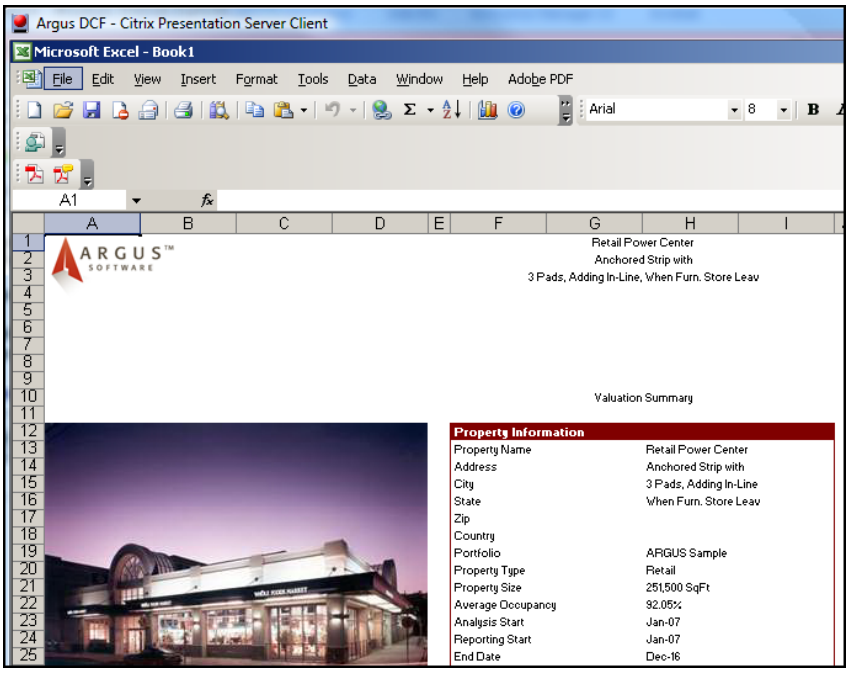
This is the RETA file which is a Power Center.



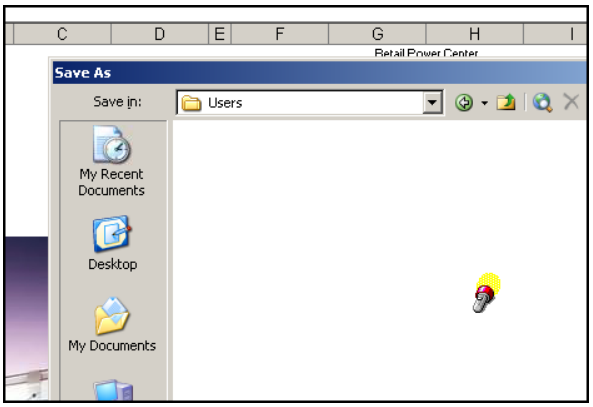
In the lower right, there is an EXPORT button.



When you click on Export, it Processes the Info and extracts the summary data to an Excel file.



Note that it is still in your Citrix Terminal so you can't access it from Excel locally. Now, you can save the file on your hard drive or other location and then open it from Excel. This will be sluggish as noted in the Flashlight



Now, navigate to your personal folder and give the file a name and save it. Note, it won't have a name until you enter it. I'd suggest using the ARGUS file generator as part of the name so you can track it.

Note below that you have two windows open in Citrix. Close each and, use Start Logout to exit.