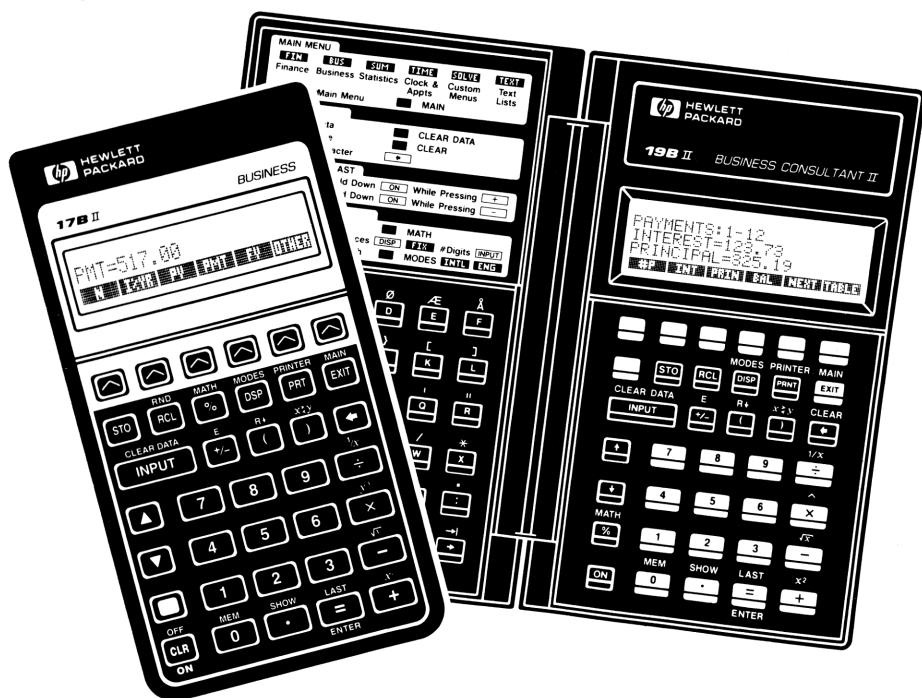


INCOME PROJECTION CASH FLOW ANALYSIS of investment real estate

A program for the HP 17BII and HP 19BII
financial calculator

By Edric Cane, Ph.D., Realtor®



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**VERSION 2.0
INCOME PROJECTION
VERSION 3.0**

THIS IS VERSION 2.0 OF THE PROGRAM

It is compatible with these models:

HP 17B
HP 17BII
HP 19B
HP 19BII

KEYING IN THE PROGRAM

THE PROGRAM MUST BE KEYED IN
before it can be used. This is a one-time procedure. See page 23.

Edric Cane and Edric Cane Seminars make no representation other than good faith in respect to the fitness of this program and documentation to meet the needs and requirements of the user. The user assumes all responsibility for the uses he makes of the numbers provided by the program, as well as for the accuracy and correctness of the numbers themselves and their appropriateness for his purpose.

REGISTERED OWNER

The right to key this program into their calculator and to use the program is given to individuals who purchase the documentation from a dealer or from Edric Cane Seminars, and to registered owners. There are many benefits to being a registered owner.

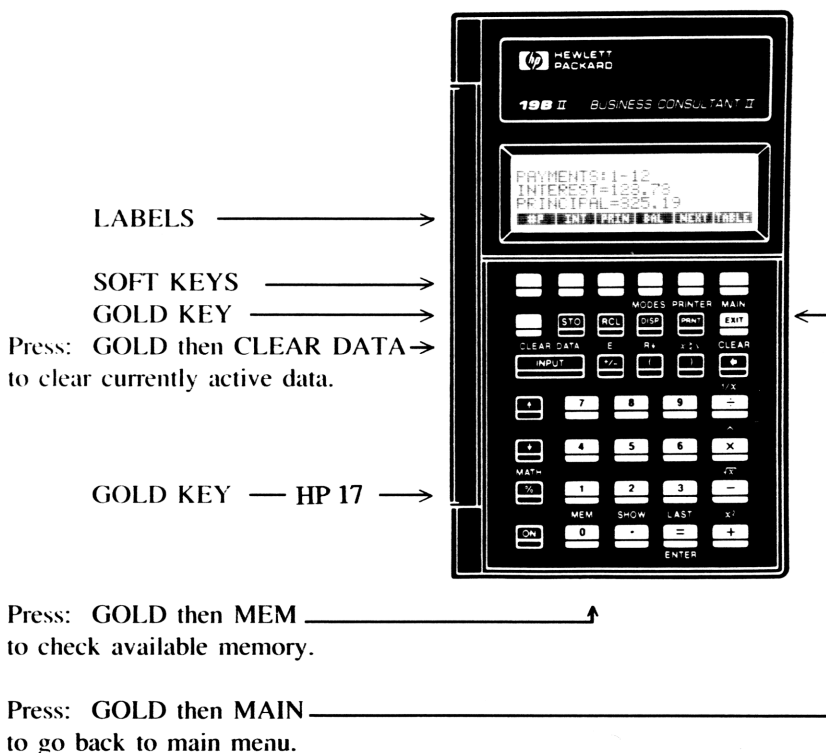
You become a registered owner:

- 1) By buying this documentation from a dealer or from Edric Cane Seminars (List price: \$25.00) and mailing back the original registration form to **EDRIC CANE SEMINARS**.
- 2) If you have access to the documentation through a colleague and do not need your own copy, you become a registered owner and acquire the right to use the program by sending \$20.00 to **EDRIC CANE SEMINARS**. Include your name, address, phone number and program name.

When registering the program, please include the name and address of the person who referred the program to you, as I want to express my appreciation. (See opposite page 1 for details.)

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This material is for the private use of the purchaser/registered owner. It cannot be duplicated by any means other than when the program is keyed into the purchaser's/registered owner's own calculator for his/her own use.



A great variety of labels can be made to appear in the display. On the next pages, we discuss labels created by the program. They do not exist until the program is keyed in.

**TWO WAYS TO MAKE MONEY
WITH THIS PROGRAM**

First, I hope it helps you buy that property, make that deal, and get that commission.

Secondly, **I WILL SEND YOU \$5.00** for every person who buys the program directly from me or sends me the user/registration fee, and gives me your name and address as the registered owner responsible for his/her buying the program.

This offer applies to **INCOME PROJECTION/CASH FLOW ANALYSIS** and to **INCOME PROPERTY APPRAISER**, and means \$10.00 for you if both programs are purchased. Registered owners may be advised of future programs to which this offer may also apply.

YOU CAN GET \$10.00 for everyone in your office, marketing group, and organization, for anyone reading your article, taking your class, or taking the same class as you.



EDRIC CANE

COMMON SENSE CONDITIONS:

The buyer making the reference is sole judge of who, if anyone, benefits from his purchase. The reference must be made at the time of purchase and provide a complete address. The recipient must be a registered owner of the particular program at the time of purchase. This offer can be changed or discontinued. You cannot name yourself as reference for your own purchase.

INCOME PROJECTION/CASH FLOW ANALYSIS

A program for the HP 17BII and HP 19BII. Also for the HP 17B and HP 19B.

By Edric Cane, Ph.D., Realtor.®

This program puts a specialized spreadsheet in your calculator. It provides a convenient means of projecting income and expenses on investment properties for any number of years. For each successive year, it provides the changing values of income and expenses, Net Operating Income, before and after tax cash flow, vacancy projection, yearly interest, annual debt service, taxable income, tax liability, etc. In all, 20 values are calculated or updated at the press of a single key.

INCOME PROJECTION can be used to quickly and efficiently fill in Cash Flow Analysis forms such as the one prepared by the Commercial-Investment Real Estate Council of the National Association of Realtors® and used in its CCIM series of courses. It can also be used as a means of getting the bottom line and intermediate values without having to use the form. What is normally a tedious process becomes easy. It can be done in the field. Numbers can be retrieved from the calculator alone, or sent to the printer for a hard copy.

INCOME PROJECTION also allows for key ratios to be changed at any point in time. You may want a vacancy factor of 12% for the first two years as units are being renovated, and of 6% for the years that follow. You may want rents to increase by 10% for each of the first three years as you catch up with the market, and then to go back down to a 5% yearly increase. You may want to project cash flow based on interest rates that increase yearly for the first few years. Making these changes is a natural part of using this program.

The numbers obtained from the program may then be combined with data on the amount initially invested (downpayment and buying costs) and on the money realized from the sale of the property, making it possible to calculate an Internal Rate of Return (IRR) on the projection. This is done using the built-in financial functions of the calculator.

USING THE PROGRAM

Once keyed in, the program may be used over and over for years. Using the program, each time, is a two stage process:

- 1) **INPUT STAGE:** You key in data as prompted by the calculator.
- 2) **OUTPUT STAGE:** The calculator computes, and you retrieve the changing values for each successive year.

LABELS AND SOFT KEYS

The calculator deals in numbers. These numbers can change, so we call them **VARIABLES**. To identify the meaning of a variable it is given a name which appears on a **LABEL** in the display. The six blank keys just below the display are called **SOFT KEYS**. They acquire the meaning defined by the label just above them in the display.

For instance, **GROSS RENTAL INCOME** is a variable. It has a label called **RENT** that appears in the display. This label gives its meaning to the blank key directly under the word **RENT**.

There is also a memory, or a box, inside the calculator named **RENT**. This is the box where the dollar value of the gross rental income is kept, where it can be changed by the user or by the program, and from where it can be retrieved.

To tell the calculator that gross rental income is \$130,000, press:

130000

RENT

This puts 130,000 in the box called **RENT**.

To check gross rental income after it has been increased by the program according to projection specifications, use the recall key (**RCL**) and press:

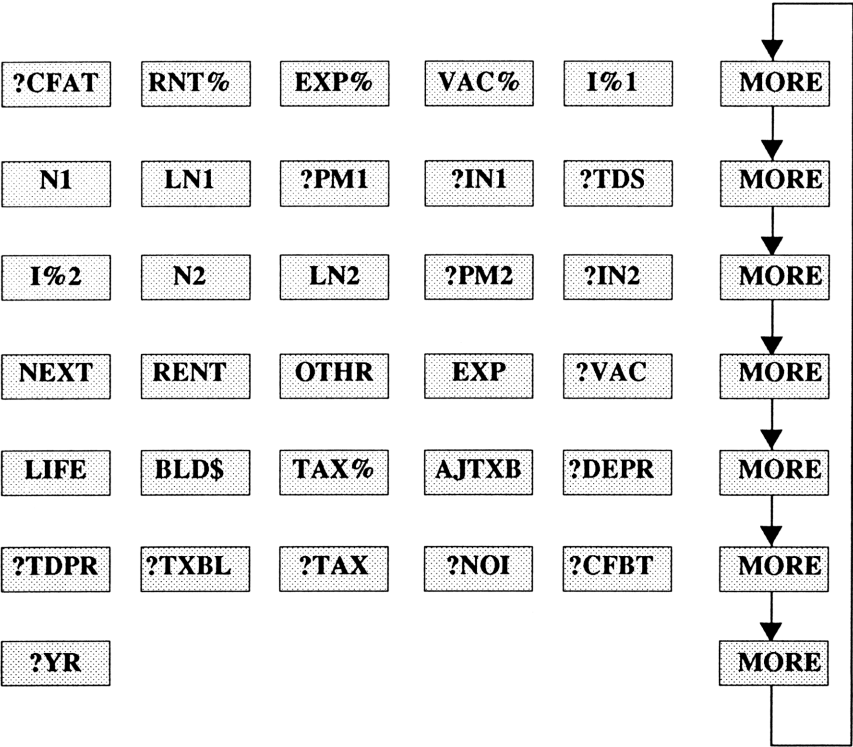
RCL

RENT

This duplicates in the display the value stored in the **RENT** memory.

THE MENU LABELS

In the display, labels come on different levels. Pressing MORE brings you to the next lower level until you reach the bottom level, at which time MORE brings you back to the first level.



HP 17: The last letter of some long labels does not appear in the display. Instead of ?CFAT and ?CFBT you see ?CFA and ?CFB.

MENU LABELS: DEFINITIONS

MENU LEVEL 1

?CFAT	CASH FLOW AFTER TAX.		Output
RNT%	RENT INCREASE. Annual rate of increase on RENTAL and OTHER INCOME.	Input	
EXP%	EXPENSE INCREASE. Annual rate of increase on OPERATING EXPENSES.	Input	
VAC%	VACANCY RATE. Vacancy and Credit loss as a percentage of RENT (not OTHR).	Input	
I%1	Loan 1: ANNUAL INTEREST RATE.	Input	

MENU LEVEL 2

N1	Loan 1: TERM OR REMAINING TERM in years.	Input	Output
LN1	Loan 1: AMOUNT or REMAINING BALANCE.	Input	Output
?PM1	Loan 1: MONTHLY PAYMENT.		Output
?IN1	Loan 1: INTEREST AMOUNT for the year.		Output
?TDS	TOTAL ANNUAL DEBT SERVICE on loans 1 & 2.		Output

MENU LEVEL 3

I%2	Loan 2: ANNUAL INTEREST RATE.	Input	
N2	Loan 2: TERM OR REMAINING TERM in years.	Input	Output
LN2	Loan 2: AMOUNT or REMAINING BALANCE.	Input	Output
?PM2	Loan 2: MONTHLY PAYMENT.		Output
?IN2	Loan 2: INTEREST AMOUNT for the year.		Output

MENU LEVEL 4

NEXT	NEXT YEAR SWITCH (See below).	Input	
RENT	GROSS SCHEDULED RENTAL INCOME.	Input	Output
OTHR	OTHER INCOME.	Input	Output
EXP	OPERATING EXPENSES.	Input	Output
?VAC	VACANCY AMOUNT.		Output

MENU LEVEL 5

LIFE	LIFE of depreciable asset (See below).	Input	
BLD\$	BUILDING. Dollar value of depreciable asset.	Input	
TAX%	Marginal TAX RATE of investor.	Input	
AJTXB	ADJUSTMENT TO TAXABLE INCOME.	Input	
?DEPR	DEPRECIATION (cost recovery) for the year.		Output

MENU LEVEL 6

?TDPR	TOTAL DEPRECIATION to date.		Output
?TXBL	TAXABLE INCOME resulting from investment.		Output
?TAX	Amount of income TAX due to investment.		Output
?NOI	NET OPERATING INCOME (NOI).		Output
?CFBT	CASH FLOW BEFORE TAX.		Output

MENU LEVEL 7

?YR	YEAR of projection.		Output
------------	---------------------	--	--------

MENU LABELS: SPECIAL FEATURES

GOLD

CLEAR DATA

Program labels are showing and you are ready to key in data. Pressing **GOLD CLEAR DATA** is an important first step that clears leftover data from previous calculations and resets counters.

?CFAT

Like all other labels that begin with a question mark, you ignore ?CFAT at the input stage.

However, it is a very special output label: it is the only value that you directly calculate. All other values are recalled or sent to the printer after they have been automatically calculated or updated by pressing ?CFAT.

To calculate all the values for the first 5 years, just press ?CFAT 5 times, or 15 times for the first 15 years.

If you press any other label as a question, you get back the number already in memory or the message: **SOLUTION NOT FOUND.**

RNT%

EXP%

VAC%

I%1

These essential rates are all on the top menu level for a reason. It makes it extremely convenient to change any one of them at any point in time during the projection.

For instance, to change the vacancy rate on an apartment house from 15% to 6% after two years, once all the upgrading of individual units has been completed, just press 6 in VAC% before pressing ?CFAT for year 3. The new vacancy rate takes over from then on.

To Project an increase in interest rate from 8% to 9% for the second year of an Adjustable Rate Mortgage keyed in as loan 1, just press 9 in I%1 just before pressing ?CFAT to update the projection for year 2. The program automatically recalculates the new payment amount based on the remaining balance and the remaining term of the loan at the end of year 1. Of course, interest amount and total debt service are also adjusted. Further increases or decreases can be implement for each year of the projection.

Because of this feature, the program can be used to follow an adjustable rate mortgage through an annual rate change scenario. Just key in loan 1 data, leaving all other values blank.

I%1	N1	LN1
I%2	N2	LN2

Term and loan amount are automatically updated to reflect the remaining term and the remaining balance of the loan at the end of the current year.

For an interest-only loan, key in a long term, but not too long. 999 years does the job very well.

As with all input values, it is possible to manually change the rate, the remaining term, or the loan amount at any point in time. For instance, there could be a paydown or a payoff on a loan in year 3, a refinancing to a different loan amount at a different rate, or simply a change from interest-only to an amortized term.

NEXT

You normally ignore NEXT.

When you key in \$100,000 for RENT and a 5% annual rate of increase in RNT%, you normally expect year 1 rental income to be \$100,000 and year 2 to be \$105,000. This is achieved by ignoring NEXT at all stages of the projection process.

If instead you key 1 in NEXT at the INPUT stage, you are telling the calculator that you want the 5% increase to apply to year 1. You then get rental income of \$105,000 for year 1 and \$110,250 for year 2. OTHER INCOME and EXPENSES are also increased beginning with year 1.

OTHR

VAC%

Other income is affected by the rental increase ratio keyed into RNT%, but VACANCY does not take OTHR into account and is based solely on RENT.

To apply the vacancy and credit loss ratio to both rental and other income, key the sum of these two values in RENT and make sure you have 0 in OTHR.

LIFE

BLD\$

?DEPR

?TDPR

The program continues depreciation even after the term specified by LIFE. So a projection pursued beyond the number of years keyed into LIFE ceases to be accurate unless the value keyed into BLD\$ is replaced with 0 at that particular time and adjustments are made for partial years.

REMINDERS

GROSS SCHEDULED RENTAL INCOME (RENT) is the income that could be expected from rents before any allowance for vacancy and credit loss, operating expenses, and payments on the loans.

TOTAL DEBT SERVICE (?TDS) is the total amount due each year on the loans (principal and interest).

OPERATING EXPENSES (EXP) does NOT include debt service. It is what the property costs to operate, not to finance.

NET OPERATING INCOME (?NOI) is what is left of the income (as adjusted for vacancy, credit loss, and non-rental income) after paying for operating expenses. It is the estimate of what the owner would earn if he owned the property free and clear. If there are loans on the property, Net Operating Income is used first to pay the debt service on the loans.

What is left of NOI after paying for the debt service is Cash Flow Before Tax (?CFBT). After paying income tax on the income provided by the property, what is left of Cash Flow Before Tax is Cash Flow After Tax (?CFAT).

Net Operating Income (?NOI) is a dollar amount. When expressed as a percentage of the purchase price, NOI is known as the Cap rate, capitalization rate, or overall rate. It measures the immediate return to the investor who buys the property all cash. Of course, here, we are not directly concerned with the purchase price and the Cap. rate.

DIFFICULTY IN ASSESSING TAX LIABILITY OR BENEFITS

To properly assess the tax liability or benefits that result from an investment requires knowing much more about the property and the buyers than just their marginal tax rate. It probably requires consulting with their accountant. And yet the program does not consult with the accountant. The mathematical framework provided by the program should not be allowed to give the impression that there is a generic tax consequence that applies to all. Users of the program should make it a point to consciously retain full responsibility for the appropriateness of that framework to their purpose. This is particularly important when the numbers result in a negative tax.

When it is not appropriate to speculate on tax consequences, then we may want to look at Cash Flow Before Tax. CFBT can be calculated directly by pressing ?CFAT if we key in a marginal tax rate of 0% or by recalling ?CFBT.

BASIC MATHEMATICAL RELATIONSHIPS

INCOME PROJECTION blends together mathematical calculations that move in two different directions: horizontally and vertically.

The horizontal motion adjusts values as they change from year to year: Rental income and other income increase each year by a given percentage, as do operating expenses. The amount of interest on amortized loans also changes.

The vertical motion considers each year separately and performs computations on the values as adjusted for that particular year. It implements the following arithmetic:

GROSS RENTAL INCOME	RENT
+ OTHER INCOME	+ OTHR
- VACANCY	- ?VAC
- OPERATING EXPENSE	- EXP
= NET OPERATING INCOME	= ?NOI
NET OPERATING INCOME	?NOI
- TOTAL DEBT SERVICE	- ?TDS
= CASH FLOW BEFORE TAX	= ?CFBT
CASH FLOW BEFORE TAX	?CFBT
- TAX LIABILITY	- ?TAX ←
= CASH FLOW AFTER TAX	= ?CFAT

TAX CONSIDERATIONS:

NET OPERATING INCOME	?NOI
- INTEREST PAYMENT loan 1	- ?IN1
loan 2	- ?IN2
- COST RECOVERY (DEPRECIATION)	- ?DEPR
- ADJUSTMENT TO TAXABLE INCOME	- AJTXB
= TAXABLE INCOME	= ?TXBL
TAXABLE INCOME	?TXBL
x MARGINAL TAX RATE OF INVESTOR	x TAX% x .01
= TAX LIABILITY DUE TO INVESTMENT	= ?TAX

SAMPLE PROBLEM

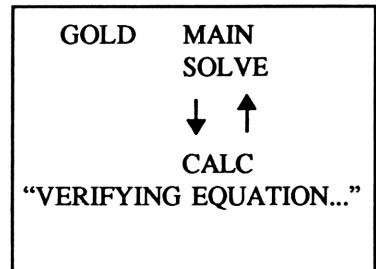
Establish a 5-year income and cash flow analysis projection for an apartment unit based on the following data for the first year of the investment:

Gross Rental Income (GRI):	\$140,000
Other Income:	\$8,000
Increase in GRI and Other income:	5% per year
Vacancy factor as % of GRI:	8%
Operating expenses:	\$50,000
Increase in operating expense:	4% per year
Life of improvements for cost recovery (depreciation) purposes:	27.5 years
Value of improvements subject to depreciation:	\$750,000
Marginal tax rate of investor:	28%
Loan 1	
Amount:	\$700,000
Interest:	10%
Term:	30 years
Loan 2	
Amount:	\$150,000
Interest:	12%
Term:	25 years
Amortization of loan points:	\$200

The following assumes that the program has already been keyed in.

SELECT AND ACTIVATE THE PROGRAM:

Go back to MAIN MENU:
Select SOLVE option:
Press up and down arrows as needed
to select INCOME.PROJECTION:
Press CALC to activate the program:
The display shows:
You should be on level 1 of the menu.



INPUT STAGE

Clear previous data, reset counters:

Yearly increase in rental income:

Yearly increase in expenses:

Vacancy rate:

Loan 1: Annual interest rate:

Term:

Amount:

Loan 2: Annual interest rate:

Term:

Amount:

Gross rental income:

Other income:

Operating expenses:

Life of depreciable asset:

Value of depreciable asset:

Marginal tax rate:

Adjustment to taxable income:

GOLD	CLEAR DATA
5	RNT%
4	EXP%
8	VAC%
10	I%1 MORE
30	N1
700000	LN1 MORE
12	I%2
25	N2
150000	LN2 MORE
140000	RENT
8000	OTHR
50000	EXP MORE
27.5	LIFE
750000	BLD\$
28	TAX%
200	AJTXB MORE
	MORE
	MORE

It makes sense to key data in order but this is not a requirement of the program.

To correct a value incorrectly keyed in, just overwrite with the correct data.

OUTPUT STAGE

At this stage, pressing ?CFAT calculates Cash Flow After Tax and updates all the other values for each successive year.

By pressing ?CFAT 5 times or 25 times we get Cash Flow After Tax for the first 5 or 25 years. At each stage the twenty other values can either be recalled or sent to the printer.

SENDING THE COMPLETE LIST TO THE PRINTER

The most comprehensive procedure consists in sending all the numbers systematically to the printer at each stage of the process. Let's do this, beginning with the list of raw data that has just been keyed in:

DATA to printer:		GOLD PRINTER LIST
YEAR 1:	?CFAT	GOLD PRINTER LIST
YEAR 2:	?CFAT	GOLD PRINTER LIST
YEAR 3:	?CFAT	GOLD PRINTER LIST
Etc.		

PRINTER OUTPUT for the first three years:

DATA

YEAR 1

?CEAT= 0.00
RNT%= 5.00
EXP%= 4.00
VAC%= 8.00
IX1= 10.00
N1= 30.00
LN1= 700,000.00
?PM1= 0.00
?IN1= 0.00
?TDS= 0.00
IX2= 12.00
N2= 25.00
LN2= 150,000.00
?PM2= 0.00
?IN2= 0.00
NEXT= 0.00
RENT= 140,000.00
OTHR= 8,000.00
EXP= 50,000.00
?VAC= 0.00
LIFE= 27.50
BLD\$= 750,000.00
TAX%= 28.00
AJTXB= 200.00
?DEPR= 0.00
?TDPR= 0.00
?TXBL= 0.00
?TAX= 0.00
?NOI= 0.00
?CFBT= 0.00
?YR= 0.00

?CFAT= 1,771.84
RNT%= 5.00
EXP%= 4.00
VAC%= 8.00
IX1= 10.00
N1= 29.00
LN1= 696,108.85
?PM1= 6,143.00
?IN1= 69,824.86
?TDS= 92,674.05
IX2= 12.00
N2= 24.00
LN2= 148,987.48
?PM2= 1,579.84
?IN2= 17,945.51
NEXT= 0.00
RENT= 140,000.00
OTHR= 8,000.00
EXP= 50,000.00
?VAC= 11,200.00
LIFE= 27.50
BLD\$= 750,000.00
TAX%= 28.00
AJTXB= 200.00
?DEPR= 26,136.36
?TDPR= 26,136.36
?TXBL= -27,306.74
?TAX= -7,645.89
?NOI= 86,800.00
?CFBT= -5,874.05
?YR= 1.00

Note how the values initially keyed in for rental and other income and for operating expenses are adjusted by the program for each successive year. The balance on the loans and the remaining terms of the loans are also adjusted.

YEAR 2

?CFAT=	5,424.78
RNT%=	5.00
EXP%=	4.00
VAC%=	8.00
I%1=	10.00
N1=	28.00
LN1=	691,810.25
?PM1=	6,143.00
?IN1=	69,417.41
?TDS=	92,674.05
I%2=	12.00
N2=	23.00
LN2=	147,846.54
?PM2=	1,579.84
?IN2=	17,817.10
NEXT=	1.00
RENT=	147,000.00
OTHR=	8,400.00
EXP=	52,000.00
?VAC=	11,760.00
LIFE=	27.50
BLD\$=	750,000.00
TAX%=	28.00
AJTXB=	200.00
?DEPR=	27,272.73
?TDPR=	53,409.09
?TXBL=	-23,067.23
?TAX=	-6,458.83
?NOI=	91,640.00
?CFBT=	-1,034.05
?YR=	2.00

YEAR 3

?CFAT=	8,931.67
RNT%=	5.00
EXP%=	4.00
VAC%=	8.00
I%1=	10.00
N1=	27.00
LN1=	687,061.52
?PM1=	6,143.00
?IN1=	68,967.29
?TDS=	92,674.05
I%2=	12.00
N2=	22.00
LN2=	146,560.91
?PM2=	1,579.84
?IN2=	17,672.40
NEXT=	1.00
RENT=	154,350.00
OTHR=	8,820.00
EXP=	54,080.00
?VAC=	12,348.00
LIFE=	27.50
BLD\$=	750,000.00
TAX%=	28.00
AJTXB=	200.00
?DEPR=	27,272.73
?TDPR=	80,681.82
?TXBL=	-17,370.41
?TAX=	-4,863.72
?NOI=	96,742.00
?CFBT=	4,067.95
?YR=	3.00

INSTEAD of the previous procedure, we could just update for each successive year and send ?CFAT only to the printer:

Year 1:	?CFAT	PRNT
Year 2:	?CFAT	PRNT
Year 3:	?CFAT	PRNT
Year 4:	?CFAT	PRNT
Year 5:	?CFAT	PRNT

PRINTOUT

1,771.84	***
5,424.78	***
8,931.67	***
12,618.87	***
16,494.89	***

WHEN CHECKING THE PROGRAM.

The first time around, when running the program to check that it has been keyed in correctly and provides correct answers, you might also want to check the two options built into the program. To do so, key the data in once again as above, except for LIFE that should now be keyed in as a negative number (27.5 +/- LIFE), and for NEXT where you would key in 1 instead of leaving it blank. The answers for years 1 to 5 should be:

5,574.82	***
9,098.22	***
12,803.76	***
16,700.14	***
20,796.41	***

The calculations now use a full year of depreciation for year 1 instead of 11.5 months only, and the income and expense increase ratios apply immediately to year 1 instead of taking effect only with year 2.

WITHOUT A PRINTER

Without the printer, we may update for each successive year and recall all the values, or just selected values as desired. For instance, with the initial data just keyed in:

Year 1: CFAT:	?CFAT	MORE	MORE	MORE
			MORE	MORE
NOI:	RCL ?NOI			
CFBT:	RCL ?CFBT	MORE	MORE	
Year 2: CFAT:	?CFAT	Etc.		

We may repeat the process for each successive year. Clearly, the bulk of information provided by the program makes the printer a convenient addition.

MODIFYING THE PROGRAM ITSELF

For quick access to two or three important variables such as ?NOI and ?CFBT without a printer, it is possible to EDIT THE PROGRAM ITSELF and bring the chosen labels up to the top menu level. This is done by squeezing those labels in after the first parenthesis, before RNT%, in the program itself.

With ?NOI and ?CFBT as the chosen labels, you would then have at the beginning of the program:

INCOME.PROJECTION/CANE:?(?NOI+?CFBT+RNT%+ etc.

You could then update for each successive year and recall NOI and CFBT without ever leaving the top menu level.

INCOME PROJECTION/CASH FLOW ANALYSIS

VERSION 3.0

KEYING IN THE PROGRAM

NOTE

We call **PROGRAM** what HP in its documentation and the calculator itself in its display call 'EQUATION". The reason is that the complexity of **INCOME PROJECTION** goes beyond what is normally referred to as an equation.

17B and 19B MODELS

INCOME PROJECTION (Version 3.0) is the same program and works in the same convenient manner with both HP 17 and HP 19 series of calculators. The only significant difference is in the very process of keying in the program the first time around.

IF YOU HAVE THE HP 17B or HP 17BII

THE BAD NEWS

Keying in and editing a program is more time-consuming on the HP 17 than on the HP 19 models. The reason is that reaching a particular letter or symbol may require 2 or more keystrokes, instead of 1 for the HP 19.

THE GOOD NEWS

With the HP 17 models, you do not need to key the program in in one sitting. You may press INPUT to save an incomplete or incorrect program, exit to other parts of the calculator, and come back to the program another day to complete or to correct.

IF YOU HAVE THE HP 19B or HP 19BII

On the HP 19 models you cannot save an invalid equation. You can only turn the calculator off and come back to correct or complete the program at a later time. You lose your incomplete or invalid program if you press EXIT.

MEMORY REQUIREMENTS

On first using the calculator, you are not concerned with managing memory. But as you key in lists and multiple programs, memory becomes an important consideration.

ADVICE: If you are going to use HP SOLVE extensively, don't use the calculator for long lists of names and telephone numbers. These lists have a way of growing and take up space that can be used for more important functions.

To check available memory, press: **GOLD MEM.**

Like computer programs that can be stored on hard disk, activated in RAM, and still need extra RAM memory for the files they create, calculator programs (SOLVE equations) have different memory requirements according to the state that they are in.

When properly stored, **INCOME PROJECTION** needs only about 10% of total memory. When activated, the program may need 35% of total memory, and still more when in the process of being activated.

To be on the safe side and leave room for various contingencies, I would recommend having 60% of memory available before beginning to key in **PROPERTY APPRAISER** or **INCOME PROJECTION/CASH FLOW ANALYSIS**.

Sufficient memory is especially important on 19B models where you cannot save a program that you cannot activate.

MEMORY MANAGEMENT

Perhaps the most important memory saving procedure is to always CLEAR THE VARIABLES on your programs.

You can delete ALL the variables on ALL your programs or equations by selecting the SOLVE menu (labels are: CALC EDIT DELET), pressing GOLD CLEAR DATA, and following prompts:

From the SOLVE menu:

HP 19 models:

HP 17 models:
(If there are variables
to delete)

GOLD CLEAR DATA
VARS
YES
NO

With HP 19 models always delete variables in this way before you key in a program and before you select EDIT to modify a program.

BEFORE YOU START KEYING IN THE PROGRAM

Keying in a program is a one time occurrence. It needs to be done leisurely because it needs to be done right. Think of 1/2 hour with the HP 19 and possibly 1 hour for the HP 17. Many will do it faster, but it could also be a minimum if you have to hunt for errors.

Before you start:

- 1) Check the basic features of the SOLVE function in the OWNER'S MANUAL. With HP 17 models, make sure you know how to use labels and soft keys to bring up and select letters and characters.
- 2) Check that you have sufficient memory (GOLD MEM) and make more space if needed. We suggested 60% of available memory as a very safe margin of security. (The program itself, properly stored, requires about 10% of available memory. But it needs more when activated). Having memory to spare is particularly important with HP 19 models.
- 3) Set display format to the decimal point, not the comma (DISP, DSP). The program uses decimal points and requires that setting.

As you key in the program, make sure that you do not misinterpret a key: the digits 0, 1, or the multiplication sign cannot be confused with letters O, I or X. The colon (:) is not the divide sign, etc.

With the HP 19, reaching the end of a line in the display at the same time as the written version in this documentation is an important indicator that you have not forgotten any character.

WHY NOT INVITE ME OUT TO LUNCH?

If you have access to the program through a colleague or associate and do not need the documentation, you are granted the right to use the program by sending \$20.00 to **Edric Cane Seminars**. Your name and address on the check, and "Property Appraiser" notation, is all I need to register your ownership.

It's a very small cost if the program becomes your partner in buying, selling, and brokering income properties.

Think of it as inviting me out to lunch.

I thank you for your invitation.



Edric Cane.

KEYING IN THE PROGRAM

- Go to MAIN menu:
- Choose SOLVE option:
- Clear existing VARIABLES:
(If there are any)
HP 19 models:
HP 17 models:
- Skip to new program:
HP 19 models:
HP 17 models:

GOLD MAIN	
SOLVE	
GOLD CLEAR DATA	
VARS	YES NO
GOLD ↓	NEW

INCOME PROJECTION/CASH FLOW ANALYSIS

THE PROGRAM

VERSION 3.0

You now have the alphabet and various characters either on the cover side of HP 19 models, or as soft keys on HP 17 models. Use these and regular signs on calculator keys to type in each letter or character exactly as in the frame below: INC etc. You may need to press more than one key to reach a particular character.

INCOME . PROJECTION/CANE	NAME	
: ?CFAT=(RNT%+EXP%+VAC%+	1	For "(" use
I%1+L(?IN1: IF(N1=0:0:12	2	calculator
xL(?PM1: LN1÷USPV(I%1÷12	3	keys below
: N1x12)))-LN1+L(LN1: ?PM1	4	DISP & PRNT
xUSPV(I%1÷12: L(N1: N1-1)	5	(DSP & PRT)
x12))))+?IN1+?TDS+I%2+L	6	
(?IN2: IF(N2=0:0:12xL(?P	7	
M2: LN2÷USPV(I%2÷12: N2x1	8	
2)))-LN2+L(LN2: ?PM2xUSPV	9	
(I%2÷12: L(N2: N2-1)x12))	10	
))+?IN2+L(NEXT: IF(G(?YR	11	
)>0: 1: NEXT))+L(?NOI: L(R	12	
ENT: RENTxL(A: (1+RNT%x.0	13	
1)^NEXT))+L(OTHR: OTHRxG	14	
(A))-L(?VAC: RENTxVAC%x.	15	
01)-L(EXP: EXPx(1+EXP%x.	16	
01)^NEXT))+?VAC-L(?DEPR	17	
: IF(LIFE=0:0:BLD\$÷ABS(L	18	
IFE)÷IF(G(?YR)>0 OR LIF	19	*NOTE: Press
E<0: 1: 24÷23)))+L(?TAX: T	20	SPACE before
AX%x.01xL(?TXBL: -AJTXB+	21	and after "OR"
G(?NOI)-?IN1-?IN2-?DEPR	22	
))+L(?TDPR: ?TDPR+?DEPR)	23	
+?TXBL)x0-?TAX+L(?CFBT:	24	
?NOI-L(?TDS: 12x(?PM1+?P	25	
M2))))+(?CFBT+L(?YR: ?YR+	26	
1))x0		

Now press CALC to save and activate the program. (HP 17: Press INPUT CALC). See following pages for possible outcome.

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PRINTER VERSION OF THE PROGRAM

This is the same program as on the previous page, as sent by the calculator itself to the printer. It may help you identify a discrepancy:

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EDRIC CANE
1990

```
►INCOME.PROJECTION/CANE:
?CFAT=(RNT%+EXP%+VAC%+I%
1+L(?IN1:IF(N1=0:0:12XL(
?PM1:LN1÷USPV(I%1÷12:N1X
12))-LN1+L(LN1:?PM1XUSPV
(I%1÷12:L(N1:N1-1)X12)))
)+?IN1+?TDS+I%2+L(?IN2:I
F(N2=0:0:12XL(?PM2:LN2÷U
SPV(I%2÷12:N2X12))-LN2+L
(LN2:?PM2XUSPV(I%2÷12:L(
N2:N2-1)X12))))+?IN2+L(N
EXT:IF(G(?YR)>0:1:NEXT))
+L(?NOI:L(RENT:RENTXL(A:
(1+RNT%X.01)^NEXT))+L(OT
HR:OTHRXG(A))-L(?VAC:REN
TXVAC%X.01))-L(EXP:EXPX(1
+EXP%X.01)^NEXT))+?VAC-L
(?DEPR:IF(LIFE=0:0:BLD$÷
ABS(LIFE)÷IF(G(?YR)>0 OR
LIFE<0:1:24÷23)))+L(?TA
X:TAX%X.01XL(?TXBL:-AJTX
B+G(?NOI)-?IN1-?IN2-?DEP
R))+L(?TDPR:TDPR+?DEPR)
+?TXBL)X0-?TAX+L(?CFBT:?
NOI-L(?TDS:12X(?PM1+?PM2
)))+(CFBT+L(?YR:YR+1))
X0
```

FAIR IS FAIR

This program represents months of work and years of experience. If each user gives it to a few colleagues and it spreads out chain letter fashion, it is as if a real estate broker sold a property and did not receive his commission. Surely, using the program, getting information on updates and other programs, acquiring the right to be paid for recommending it to others, all this is worth the \$25.00 purchase price or \$20.00 registration fee.

CASH FLOW BEFORE TAX VERSION. Version 3.0 BT

This is a shortened, "incomplete" version of Income Property Appraiser for individuals and institutions who are not concerned with after-tax considerations.

The answers provided by this version can be obtained with the complete version by recalling ?CFBT or by making sure you have 0 as the tax rate.

For "(" use
calculator
keys below
DISP & PRNT
(DSP & PRT)

INCOME.PROJECTION/CFBT	NAME
: ?CFBT=(RNT%+EXP%+VAC%+	1
I%1+L(?IN1: IF(N1=0: 0: 12	2
xL(?PM1: LN1÷USPV(I%1÷12	3
: N1x12))-LN1+L(LN1: ?PM1	4
xUSPV(I%1÷12: L(N1: N1-1)	5
x12)))+?IN1+?TDS+I%2+L	6
(?IN2: IF(N2=0: 0: 12xL(?P	7
M2: LN2÷USPV(I%2÷12: N2x1	8
2))-LN2+L(LN2: ?PM2xUSPV	9
(I%2÷12: L(N2: N2-1)x12))	10
))+?IN2+L(NEXT: IF(G(?YR	11
)>0: 1: NEXT))+L(?NOI: L(R	12
ENT: RENTxL(A: (1+RNT%x. 0	13
1) ^NEXT))+L(OTHR: OTHRxG	14
(A))-L(?VAC: RENTxVAC%x.	15
01))-L(EXP: EXPx(1+EXP%x.	16
01) ^NEXT))+?VAC)x0+?NOI	17
-L(?TDS: 12x(?PM1+?PM2))	18
+L(?YR: ?YR+1)x0	

Reminder: This program and documentation cannot be duplicated. Each individual user must either purchase the documentation or send the right to use fee of \$20.00 (check, Visa/MC credit card, mail, phone, fax) to Edric Cane Seminars, P.O. Box 1213, La Cañada, CA 91011. (818) 957-3026 FAX: (818) 248-8855.

SAVING AND CHECKING THE PROGRAM

You have keyed the program in. Now press:

17 BII:

INPUT
CALC

19 BII:

CALC

The calculator VERIFIES THE EQUATION, and there are three possibilities:

- 1) The display, as it should, shows the top line of program labels. You still need to **CHECK** that you get correct answers.
- 2) You get INVALID EQUATION.
- 3) You get INSUFFICIENT MEMORY.

CHECKING THE ANSWERS.

You get a valid program, but it may not be a correct program. Check first that you have all the correct labels on the various menu levels (Press: MORE MORE MORE . . . Mistyping one could give you an extra label . . . and incorrect answers.

Then check that the program gives you the correct answers by having it duplicate the different problems illustrated in this documentation.

If you get an incorrect answer, try to solve the same problem a second time making sure that you key in correct data. If the error is with the program, it needs to be edited.

Before you edit, check all subsidiary values associated with the wrong answer. Knowing exactly which values are correct and which incorrect is a precious indication of where in the program you will find the error.

“INVALID EQUATION”

If you get this message, check first that the display (DISP, DSP) is set on the decimal point, and not the comma. If this is not the problem, the error was introduced when you typed in the program.

“INVALID EQUATION” signals a structural discrepancy that the calculator recognizes even before it performs any calculation. Very conveniently, the display bounces back to the program itself, with the cursor resting on the part of the program where the calculator identifies an inconsistency. This gives you an important clue, though the error is not necessarily at that particular point.

For instance, you cannot close more parentheses than have been opened (or vice-versa). If that happens, the cursor rests on the first closing parenthesis not to have an opening partner. The error may be where the cursor is pointing, but you are much more likely to find that you forgot to open a parenthesis, or closed a parenthesis too many, in an earlier part of the program.

With HP 19 models, you cannot save a program that is not valid. You have to find the mistake before you can use other parts of the calculator, or you lose the program that you have keyed in. You can, however, turn the calculator off: the program reappears ready to be corrected when you turn it back on.

With the 17 models, INPUT saves what you have keyed in, whether valid or invalid.

“INSUFFICIENT MEMORY”

On HP 19 models, you are in great danger of losing the program or the changes if you get “INSUFFICIENT MEMORY” when you try to save a program that you are typing in or editing. You cannot EXIT out of editing mode without losing the program, and the INPUT key insists on verifying the equation, which requires memory space and a complete and valid equation.

This is why it is so important to clear all program variables on HP 19 models before going into EDIT mode and before beginning to type in a program.

With 17B models, INSUFFICIENT MEMORY is no major problem. You save the program by pressing INPUT. You may now EXIT back to other parts of the calculator and make more memory space by clearing material you no longer need. In fact, even pressing EXIT prompts you to save the program.

To make more space for a program, you must delete other material in your calculator:

- DELETE the variables on all your programs. Also delete any program that you no longer need.
- Select cash flow lists, text, and other material you no longer need, and press GOLD CLEAR DATA to erase.

EDITING THE PROGRAM

To edit a program.

- 1) From the SOLVE menu, use up and down arrows to select the program.
- 2) Clear the variables as previously shown. For instance, press GOLD CLEAR DATA, and follow prompts.
- 3) Press EDIT. Use the various edit keys as needed to find and correct the error.

HELP FROM EDRIC CANE SEMINARS

For a \$5.00 fee: Send in a clear printout of the data you keyed in, of the list of variables after you solve and get the wrong answer or an error message, and of the program itself (or of the program alone if you cannot identify an INVALID EQUATION problem). Mention calculator model, name, address, phone number. You will get a phone call or letter pointing out what is wrong.

For a \$25.00 fee: EDRIC CANE SEMINARS will key the program in for you, check it, and send you back your calculator. (\$35.00 for two programs). Tape your name, address, phone number, and program name(s) to the back of the calculator. (Check or Visa/MC data OK).

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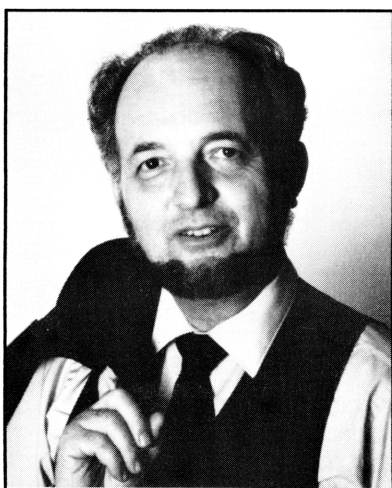
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