PN ABD 537

Report No. 88-16

PN 57437

A Report of the

Office of Energy
Bureau for Science and Technology
United States Agency for International Development

A FINANCIAL MODEL FOR EVALUATING PROPOSED PRIVATE POWER PROJECTS IN DEVELOPING COUNTRIES

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HBI Reference No. 88-4272-122

Energy Policy Development and
Conservation Project, 936-5728
Energy Conservation Services Program
DHR-5728-Z-00-7014-00

April 1988

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INTRODUCTION

Although the private sector accounts for the bulk of installed generating capacity in the U.S. electric utility industry,[1] private ownership of power generation facilities is the exception rather than the norm in developing countries. Currently, the World Bank and the U.S. Agency for International Development (AID) are considering the development of programs and policies to stimulate private sector investment in power generation in developing countries that have had difficulty meeting peak demand. These programs would serve two objectives: to reduce electric power deficits, and to promote economic development in the private sector.

Pakistan is one of the countries for which both the World Bank and AID have expressed interest in private power development. In 1985 the Government of Pakistan introduced a policy under which electric utilities (including the government-owned Water and Power Development Authority) may negotiate long-term contracts for purchase of electricity generated by privately-owned power stations. Recently, the World Bank and AID decided to design a debt financing mechanism called the Private Sector Window (PSW) to attract capital to such projects.

RCG/Hagler, Bailly, Inc., a management and technical consulting firm headquartered in Washington, D.C., was asked by AID to provide technical assistance in evaluating private power projects in Pakistan. One component of this technical assistance involved the development of a Lotus 123 spreadsheet model to evaluate the effect of the PSW on the economic attractiveness of six specific projects. This report provides documentation of the spreadsheet model, PROJEV, in its current form. This report is intended to serve three purposes:

- To document the assumptions used in the model, so that the results can be interpreted correctly
- To document the structure of the model, so that it can be adapted to other countries and other projects
- To explain the operation of the model, its data input format, and the output formats.

Although the PROJEV model was developed to evaluate six specific projects in Pakistan, with minor modifications it should be possible to evaluate projects in any country that offers the opportunity for private power development. Because the model was developed to evaluate the effectiveness of the PSW, it is particularly suited to the financial analysis of projects in developing countries.

1 In the U.S., privately-owned power plants include facilities owned by investor-owned electric utilities, privately-owned cogeneration plants, privately-owned small power producers, and rural electric cooperatives.

Because the economic attractiveness of a proposed power project depends on the perceptions of lenders and shareholders, and on the contract terms negotiated by buyer and seller, no spreadsheet model can provide the definitive set of calculations to be applied in all situations. The terms of power sales agreements and debt covenants are often project-specific, and the procedures for measuring taxable income may be country-specific. The PROJEV model, therefore, is intended to be modified as necessary to conform to the terms of specific power purchase agreements and the tax regimes of individual countries. This report provides a snapshot of the April 1988 version of the model.

In Chapter 1, we explain what the model was designed to do and what it was not designed to do. In Chapter 2, we describe the structure of the Lotus 123 spreadsheet. A partial printout of the spreadsheet is shown in Appendix A.

CHAPTER 1: TYPES OF ANALYSIS THE MODEL CAN PROVIDE

The type of analysis the PROJEV model can provide is dictated largely by the model's basic design objectives. The PROJEV model has been developed to meet three objectives:

- The model is designed to test the impact of alternative financing arrangements on the economic attractiveness of power projects.
- The model is designed for use on PCs in developing countries. Its memory requirement and processing time are best suited to the "midrange" of PC configurations - neither the most advanced PCs nor the slowest and least expensive.[1]
- The model is intended to be easy to understand, so that experienced Lotus 123 users can add calculations to the spreadsheet if necessary.

In this chapter we explain what the model was designed to do and what it was not designed to do. This chapter is written for the analyst or decision-maker who must execute a particular task and must find out whether PROJEV is likely to be a useful tool to complete that task. The chapter also suggests areas of analysis that could be added to PROJEV.

DIFFERENT TYPES OF MODELS

Management accounting models vs. other types of models

The PROJEV model is a management accounting model used to characterize a single proposed generating unit. Management accounting models may be defined as models used to evaluate the economic attractiveness of one or more proposed investments, from the equity investor's perspective. These models are designed to help a prospective investor decide whether to invest, or help the project sponsor obtain a long-term contract to sell the project output (in this case, electric power). While accounting models show the financial results associated with a given set of input data, they typically do not optimize a system (e.g., seek a minimum unit cost or maximum profit rate subject to specified constraints). The focus of a management accounting model will be the cash flow statement and the calculation of either the Internal Rate of Return (IRR) or the Net Present Value (NPV) associated with after-tax net cash flow. Components of cash flow are shown on a monthly, quarterly, or annual basis.

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1 An early version of PROJEV developed in March 1988 had a much slower runtime than the present version. The performance of the model should not be measured using the March 1988 version.

Several other types of models could be involved in an analysis of a private power project, or a group of private power projects. Five categories may be distinguished:

- Engineering design models are used to select equipment and design a facility on the basis of technical specifications. Dollar costs are not relevant to the calculations.

- Engineering cost estimation models are used to estimate capital and operating costs of a facility, once its design has been specified. Some cost estimation models interpolate estimates from curves showing cost as a function of one or more design parameters. These models typically identify the costs of several items, such as labor categories, that are treated identically for accounting purposes. The purpose of the model is to obtain credible cost estimates.

  Because some engineering cost estimation models compute the IRR or NPV associated with a proposed investment, they represent a hybrid of a pure engineering cost estimate and a management accounting model. Some engineering cost models incorporate multipliers, based on simplifying assumptions, designed to eliminate the need for an annual cash flow statement. Any model that shows components of cash flow on a monthly, quarterly, or annual basis may be considered a management accounting model.

- Project management models are used to schedule the various steps involved in construction of a new power plant or project and track the progress of construction. A project management model helps the user identify the least-cost schedule for constructing a plant, the project schedule that yields the earliest possible completion date for a plant, or the schedule that achieves the best balance between cost and early completion date.

- Financial accounting models may be used to project pro forma financial statements for a project, including income statements and tax statements. These statements help to define the type of financial reporting that may be used to monitor the progress of a project, once operations begin. A single model may include financial accounting information as well as management accounting information.

- Cost/benefit models may be used to estimate the value of all of the benefits to society associated with a proposed project, as well as all of the costs to society associated with the project. A benefit/cost ratio, or net benefit, may be calculated to determine whether the project would serve economic efficiency objectives. A cost/benefit model must incorporate "soft" numbers to represent economic impacts that are not reflected in market transactions (e.g., the impact of air pollution on health and health care costs).

Although the PROJEV model is unsuited to engineering design and project management, it could be expanded to include financial accounting information. Incorporation of engineering cost estimation or cost/benefit computations in PROJEV is possible, but may be unecessarily cumbersome if complex calculations are required.

Economic activities represented

Models may also be distinguished according to the type of facility or process being modeled. The PROJEV model describes a power generating unit or cogeneration unit, exclusive of fuel supply infrastructure Cash flows associated with the construction and operation of a power plant (with or without the sale of steam) are represented. The following activities are not addressed by PROJEV:

- Coal mining and conveyor facilities for a mine-mouth power plant
- Coal transportation, to bring coal to a power plant
- Management of stream flow for irrigation purposes, in connection with a hydroelectric power plant
- Construction of irrigation canals and pumping stations associated with a hydroelectric plant
- Oil and/or gas exploration and production
- Oil tanker transportation, to import crude oil or petroleum products
- Oil refining
- Oil pipeline construction, to bring petroleum products to a power plant
- Natural gas pipeline construction, to bring natural gas to a power plant
- Construction of electric power transmission lines, to link a new power plant to a grid
- Expansion of an electric distribution network, or creation of a new distribution network in the vicinity of the proposed plant.

It should be possible, however, to expand the PROJEV model to reflect the costs associated with some of these activities. For example, the financing of coal mine construction and operation and electric transmission line construction and operation could be represented using the same general algorithms used to characterize power plant financing.

Level of detail

Models may also be distinguished according to the level of detail in the analysis:

- **Project feasibility studies** are developed to decide whether to proceed with a project. Models associated with feasibility studies require varying degrees of detail, depending upon the seriousness of the project sponsor's commitment to proceed. The PROJEV model is suited to preliminary feasibility studies.

- **Support for contract negotiation** requires detailed financial modeling to reflect the proposed terms of loans, purchase contracts, joint venture agreements, and other contracts required to proceed with a power plant. While the PROJEV model may facilitate the opening of contract negotiations, it is not intended to provide the basis for a detailed evaluation of the project sponsor's ability to honor contractual commitments.

- **Monte Carlo simulation** can be used to estimate the probability distribution of IRR or other output variables. In this type of model, probability distributions are assigned to key input variables and values of these variables are obtained by random sampling. IRR is calculated for many scenarios, each of which correponds to a random sample of input values. When the number of iterations is sufficiently large, a probability distribution of IRR can be estimated and shown graphically,

  In its present form, the PROJEV model does not use probability distributions or other quantitative measures to characterize the risk associated with a project. While it is possible to compute cash flows under "worst case" assumptions (e.g., high annual escalation rates for fuel costs, or extension of the construction period to 6 years[2]), there is no algorithm for assigning a probability to the "worst case." Commercial software is available, however, to add Monte Carlo simulation to Lotus spreadsheets.

Model size and runtime

PROJEV is designed to provide a reasonable level of detail within a spreadsheet that does not take long to recalculate. To recalculate the spreadsheet PROJEV requires

2 At present the model uses a 6-year period to represent construction costs. By inserting columns and copying cell formulas, this period can be extended to any number of years.

about 9 seconds runtime on an 8086 based machine with a math coprocessor. PROJEV can be run and saved in two formats:

- Under the short format, results are presented only for a financing arrangement in which dividends are limited to after-tax profit. The model requires 231K of RAM and 168K of disk space.

- Under the detailed format, results are also presented for an option in which dividends are not restricted, and an option in which dividends are levelized (and the electric rate is varied by year). The model requires 270K of RAM and 215K of disk space.

To speed up operation of the program, the use of a math coprocessor and the latest version of Lotus (version 2.01 with Lotus Speedup "optimal" recalculation invoked) is recommended.

ALTERNATIVE MEASURES OF THE ATTRACTIVENESS OF A PROJECT

The PROJEV model is designed to measure the attractiveness of a proposed power plant from the investor's viewpoint. The principal focus of the model is therefore the calculation of IRR based upon the after-tax cash flows that the equity holders can collect during the operating period. If dividend payments to equity investors are restricted by debt covenants or by difficulties associated with payment of dividends in foreign currencies rather than local currency, the project may be profitable on the basis of "book" income, yet unattractive to investors. The PROJEV model therefore focuses on the timing of equity investment in the project and the timing of dividends.

To evaluate the attractiveness of a proposed project several other viewpoints or criteria may be considered, however:

- **Achievement of economic efficiency, i.e., net benefit to society.** Given the availability of "incentives" for private power development, such as loans from development banks, preferential tax treatment, or favorable power purchase terms, it may be possible for investors to find a project attractive even when the project does not provide a net benefit to society, relative to the best alternative use of capital and other resources required for the project. In other words, the absence of a competitive marketplace for bulk power and the presence of economic assistance programs may result in project "subsidies" that make an inherently uneconomic venture attractive to investors. The PROJEV model is not designed to determine whether a project is socially beneficial.

- **Attractiveness of the project to the lender.** Although the PROJEV model captures the fundamental economics of a project, it does not describe the disposition of assets and cash flow under a "worst case" scenario in which

debt covenants are not observed. The model does not, for example, show which categories of debt are paid "first." The market or resale value of the project's assets is not estimated. Loan collateral is not indicated. These considerations would be important in a characterization of the attractiveness of the project from the lender's perspective.

Penalties for breach of contract are not shown by PROJEV, although such penalties could be substantial. It may be possible to construct PSW financing terms, for example, such that a breach of the terms of the power purchase agreement is considered to be as serious as a default on a World Bank loan.

- **Attractiveness of the power purchase agreement to the utility company.** If the proposed project is able to sell power under preferential terms, e.g., a higher unit cost than the utility's avoided cost, the project may be attractive to the equity investor yet unattractive to the utility. The PROJEV model is not designed to compute avoided cost, or long-run marginal cost of system supply, and therefore the model cannot be used to measure the attractiveness of the power purchase agreement to the utility company.

- **Attractiveness of the project to a hardware supplier who is also an equity investor.** If a supplier of hardware or services is also an equity investor, the supplier will attempt to earn profits from the sale of hardware or services. The PROJEV model does not attempt to quantify these profits or adjust the IRR to reflect the profitability of supply contracts. In effect the model assumes that the rate of return on services and hardware may be ignored because it is independent of equity ownership in the project.

In principle the PROJEV model could be expanded to address any or all of these perpectives.

CHAPTER 2: STRUCTURE OF THE MODEL

This chapter describes the overall structure of the model (i.e., the layout of the spreadsheet). The purpose of this chapter is to explain enough of the model structure to make it relatively easy for an analyst to modify and expand the model.

The chapter also describes the steps required to expand the spreadsheet to increase the number of years in the operating period and to increase the number of years in the construction period. Because the model will handle any construction period up to 6 years and any operating period up to 25 years, most users will not need to increase the number of years in the model.

SPREADSHEET LAYOUT

Sections of the spreadsheet are organized from top to bottom. The natural order of recalculation of the cell formulas is basically from the top down. If the model is modified, rows can be inserted below the input data range.

Heading

The top left corner of the spreadsheet shows summary information about the model. For example, the format for presentation of results is identified as either the "Short format" or the "Detailed format:"

- Under the short format, results are presented only for a financing arrangement in which dividends are limited to after-tax profit. The model requires 231K of RAM and 168K of disk space.

- Under the detailed format, results are also presented for an option in which dividends are not restricted, and an option in which dividends are levelized (and the electric rate is varied by year). The model requires 270K of RAM and 215K of disk space.

To change the format, select the "Accelerate" menu item from the main menu. To begin the main menu, type Alt-M.

The date and time are updated on this screen whenever the worksheet is recalculated (i.e., whenever the F9 key is typed), and whenever the input data are saved using the Alt-M menu. At the bottom of the screen is the case study name for the input data set currently loaded. Input data sets are brought into the spreadsheet through a menu selection that incorporates the File Combine command.

Input data

All input data are in a range just below the heading. Input data are formatted so that they can be reviewed on the screen, using the PageDown and PageUp commands. Although percentages must be typed as a fraction (e.g., 0.5) they are displayed as percentages (e.g., 50%).

Cells in the input data range should not be moved.[1] It is best to leave the format of the existing input data alone. If the model is revised and expanded and additional input data are essential, the input data range can be expanded by inserting rows just below the bottom of the input data range.

All financial input data are expressed in nominal dollars, except the exchange rate. The exchange rate is assumed to be constant. The model does not simulate currency risk, although foreign exchange insurance is purchased in connection with foreign debt. The model does not convert results to constant dollars using a price deflator.

Capital costs are not stated directly. Overnight costs financed by debt are identified, and the model computes the equity investment necessary to achieve a target debt/equity ratio in each year of the construction period, given interest during construction and foreign exchange insurance. The costs of foreign exchange insurance and import duties are covered by local term financing plus equity, according to the specified debt/equity ratio.

"Scenarios" in this model are defined by power sales price and steam sales price assumptions. Results are presented for three different assumptions about dividends (restricted dividends, unrestricted dividends, and levelized dividends) that are labeled Alternatives 1, 2, and 3.

To the left of the "scenario" columns is a column containing the data for the latest spreadsheet recalculation. This column is used to store data temporarily. When a scenario is selected, or a complete set of scenarios is run, data in the "current run" column are replaced by data from one of the "scenarios" columns. The input data cell showing the power sales price for the "current run" is used by the price optimization algorithm to find the price that yields a target IRR.

The target IRR is one of the more important input variables. Both the "levelized dividend" calculation and the price optimization algorithm use this target IRR to define the level of dividend payments.

1 An early (March 1988) version of PROJEV used input data files with a structure that differs from the April 26, 1988 version.

Data for the construction period

Calculations in the spreadsheet generally run from the top down and from left to right. The first step in computing cash flows is to compute construction period cash flows. Columns in this range correspond to columns in the year-by-year results that follow the intermediate results.

Interest rates during the construction period are assumed to match long-term interest rates paid during during the operating period.

Intermediate results

To reduce the size of spreadsheet formulas, a short list of intermediate results is included in the spreadsheet. Formulas in this range eliminate unnecessary duplication of calculations. To speed recalculation, formulas in the cash flow analysis should not contain expressions in which one constant (i.e., one parameter that does not vary over time) is multiplied by, divided by, added to, or subtracted from another constant.

Loan cash flows

For each category of debt and for each year, the following are computed:

- Principal at the start of the year
- Interest due at the end of the year
- Total debt service payment (principal and interest) for the year
- Portion of the debt service payment represented by a principal payment.

Each debt stream may have a grace period and may involve either level principal payments or level debt service payments.

Results for Alternative 1: Dividends limited to Profit After Tax

The model shows results for three different financing and pricing alternatives:

- *Restricted dividends:* In this option, dividend payments are restricted to meet the lenders' debt covenants and the requirements of the government. Governments may impose restrictions to ensure that the project is not abandoned by the equity holders before the end of the project life. Electricity prices do not track costs, and are defined by input variables.

- *Unrestricted dividends:* In this option, IRR is maximized by the lifting of all restrictions on dividend payments, save the restriction that the dividend in any year cannot exceed the after-tax cash flow in that year. Electricity prices do not track costs, and are defined by input variables.

- *Levelized dividends:* In this option, electricity prices are computed as output variables. A different price is computed in each year, such that total revenues for the year will exactly match costs plus a dividend sufficient to provide the equity holder with a target IRR.

In principle it would be possible to establish a fourth alternative in which the electric rate is divided into two components, a fixed component that does not track costs and a variable component that provides for automatic flow-through of costs (e.g. fuel prices). Without a detailed description of the proposed power purchase contract, however, it is impossible to model such an alternative accurately.

For each financing alternative, five tables are presented:

- Income statement
- Income tax calculation
- Cash flow statement
- Government receipts statement
- Tariff calculation.

For Alternative 1, the income statement is complete; for Alternatives 2 and 3 the income statement is simplified to avoid unnecessary duplication of results. In the calculation based on restricted dividends, prices are not adjusted automatically to reflect

After revenues and expenses are computed (in the income statement), taxes are computed. Next, the income statement is recalculated; then the cash flow statement, the government receipts statement, and the tariff calculation.

To ensure that the model correctly reflects the tax law of a particular country, it may be necessary to modify the formulas in the tax calculation.

The formulas for restrictions on dividend payments must depend on the debt covenants and financing terms of a particular project.

Results for Alternative 2: Dividends not limited to Profit After Tax

These results show the project in financing terms that are the most favorable for equity investors, subject to standard tax parameters and fixed electricity prices. Alternative 2 shows the effect on IRR of lifting dividend restrictions. The sequence of calculation matches Alternative 1.

Under the "short format," results for Alternative 2 are not shown. Formulas for the first year of operation are retained but formulas for all subsequent years are erased. For Alternative 2, it is important to write formulas that can be copied from year 1 to all subsequent years.

Because some of the graphs require data from Alternatives 2 and 3, use of the Alt-M menu to view graphs will trigger use of the "detailed format" for results.

Results for Alternative 3: Levelized dividends

These results are independent of the power sales prices in the input data. Equity investment is treated as if it were a junior debt with a grace period equal to the longest of all the loan grace periods, an interest rate equal to the target IRR, and a level payment over the repayment period. Because the capacity factor is fixed, a zero percent escalation rate for fuel (or O&M) will "levelize" fuel (or O&M) costs. No calculations are made, however, to "levelize" items other than the after-tax cash flow received by equity investors.

Under the "short format," results for Alternative 3 are not shown. Formulas for the first year of operation are retained but formulas for all subsequent years are erased. For Alternative 3, it is important to write formulas that can be copied from year 1 to all subsequent years.

Intermediate results used to compute IRR

This section can be ignored by most users. Because the IRR function of Lotus 123 can show ERR when the initial estimate of IRR is inaccurate, this section is included to ensure that ERR does not appear in the model results.

Intermediate results used to optimize the initial electric rate

This section shows the initial electric price and IRR associated with each iteration in the search for an optimal electric rate (i.e., the rate that yields a target IRR). The data could be used to show a graph of price vs. IRR.

Results of the sensitivity analysis

This section shows selected results, such as IRR, for each scenario. Scenario 1 is always computed last, so that the detailed results for Scenario 1 will be in the spreadsheet when the sensitivity analysis is completed. Runtime for three scenarios, on an 8086-based machine with a coprocessor, is about 20 seconds.

Menus used in macros

The main menu is called by Alt-M.

The print menus must be modified to include the control code for compressed print for the printer being used. It would be possible to add a menu to select a printer.

Macros

One of the very attractive features of the model is that results can be obtained, for a particular data set, simply by typing F9. It is better not to write a spreadsheet that must be recalculated using a macro.

All of the macros can be invoked using the Alt-M menu and selecting various options.

The graph macro (Alt-G) should be updated to include any selection of graphs that is desired. It is a good idea to use graph names that are 12 to 15 characters long, to clearly distinguish graphs.

Range Name Table

This table is placed at the bottom of the spreadsheet so that it can be updated without disturbing the rest of the spreadsheet. To update the table, type:

{Goto} RNT [return]
/ RNT

In a model of this size, it is a good idea to use range names only for macros, menus, subroutines, and variables used in macros and menus. There are a few additional ranges with range names, however.

PROCEDURE FOR INCREASING THE NUMBER OF YEARS IN THE OPERATING PERIOD

The PROJEV model will compute results through (a) the last year for which spreadsheet formulas exist in the cash flow table or (b) the year identified as the last

year of the "system life," which is specified in the input data. If the "system life" extends beyond the range of cash flow formulas, the IRR will not be computed correctly.

To increase the number of years in the operating period, take the following steps:

1. Move the cursor to the column corresponding to the last year in the operation period (e.g., year 25).

2. Insert as many columns as desired (each column corresponds to one year).

3. Copy formulas from left to right, from the column to the left of the inserted columns, through the last column. Copy everything in the column -- the counters above the column headings as well as the formulas below the column headings.

This procedure is reversible, in the sense that columns other than the last year's column may be deleted. After columns are deleted, copy formulas from left to right, through the last column. The Move command may be used instead of Worksheet Insert Column or Worksheet Delete Column.

PROCEDURE FOR INCREASING THE NUMBER OF YEARS IN THE CONSTRUCTION PERIOD

In its present form the model allows up to 6 years in the construction period. To "shorten" the time horizon, simply enter debt financing data in the rightmost columns of the appropriate input data range and leave zeros in the leftmost column(s) of the same data range.

Although in principle the time frame could be expanded by adjusting the input data for the sixth year prior to operation (i.e., by entering the present value, in the sixth year prior to operation, of the stream of construction investments ending in the sixth year prior to operation), such an approach would be cumbersome.

Expanding the number of years in the construction period is more difficult than expanding the number of operating years. To increase the number of years in the construction period, three steps must be followed:

1. Move a portion of input data table showing debt financing to the right, so that a new column can be inserted following the second year of construction. Copy the formulas from the second year of construction to the subsequent construction years (from left to right), through year 0. Above the column headings, copy the formula for "construction year" (the counter showing -5, -4, and so forth) from year 0 to prior years (from right to left).

2. Move a portion of the table showing calculations for the construction period (e.g., debt drawdown) to the right, so that a new column can be inserted

following the second year of construction. Copy the formulas from the second year of construction to the subsequent construction years (from left to right), through year 0. Above the column headings, copy the formula for "construction year" (the counter showing -5, -4, and so forth) from year 0 to prior years (from right to left).

3. Move a portion of the table showing cash flow calculations to the right, so that a new column can be inserted following the second year of construction. Copy the formulas from the second year of construction to the subsequent construction years (from left to right), through year 0. Above the column headings, copy the formula for "construction year" and calendar year from year 0 to prior years (from right to left).

Note that increasing the number of years in the construction period will change the structure of input data files. Be careful not to File Combine an input data file set up for one construction time limit (e.g. 6 years) with a spreadsheet set up for a different construction time limit (e.g., 8 years).

APPENDIX A: PARTIAL PRINTOUT OF THE MODEL

The following printout shows the model structure, from top to bottom, but shows only columns A through G, which do not include the last year of the construction period, or any of the operating period.

THE PAKISTAN PRIVATE POWER FINANCIAL ANALYSIS MODEL

Developed by RCG/Hagler, Bailly, Inc.

(Press Alt-M for menu)

Format for presentation of results: Short format

26-Apr-88 02:21:57 PM

Case Study Name:
120 MW Medium Speed Diesel Engine System at Hub Chowki

Structure of this spreadsheet:

A1	Heading
A19	Input data
	Results for one data set:
A122	Data for the construction period
A179	Intermediate results
A210	Loan cash flows over 25 years
A299	Results: Dividends limited to PAT
A381	Results: Dividends not limited
A439	Results: Levelized dividends
A499	Intermediate results used to compute IRR
A517	Intermediate results used to optimize rate
A536	Results of the sensitivity analysis
A551	Menus used in macros
A627	Macros
A682	Range Name Table

TECHNICAL/OPERATING SPECIFICATIONS
(Operating costs are shown for the first year of operation.)

Initial year of operation	1992
Nameplate System Output (MW):	120.00
System Configuration:	Diesel Engine (6x20)
Auxiliary Consumption (%):	5.0%
Steam Production, lb/hr	0.00
System Life (yrs)	20
System Capacity Factor (%):	60.0%
Fuel Unit:	Metric Tonne
Heat Rate (Units/kWh):	0.000221
Fuel Cost, $/Unit:	95.39
Variable O&M Costs, (c/kwh):	0.470
Fixed O&M Costs ($/MW/yr):	0
Fuel Cost Escalation Rate (%/yr):	0.0%
O&M Cost Escalation Rate (%/yr):	0.0%
Working Capital Loan ($ million):	1.44
Salvage Value (% of Depreciable Base):	0.0%
Depreciation (SLD=St. Line, DOB=Double):	DOB

DEFINITION OF PRICE SCENARIOS

	Current run	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Include this scenario in sensitivities?	Yes	Yes	Yes	Yes	No
Power sales price, 1st period (c/kWh)	5.50	5.50	6.05	5.00	
Power sales price, 2nd period (c/kWh)	4.50	4.50	4.95	4.10	
Year in which 2nd period begins	11	11	11	11	
Steam Sales Price, $ /000 lb	0.00	0.00	0.00	0.00	

TAX PARAMETERS

Can losses be carried forward (Yes/No)?	Yes
Tax Exemption Period (yrs):	5
Tax depreciation (SLD=St.Line, DOB=Double)	DOB
Import Levies (% of CIF cost of imported equipment):	0.0%
Worker's Participation Profit Fund (% of pretax profit):	5.0%
Tax Rate on Project Profits (%):	40.0%

Scenario selected for one run: 2

WARNING: When you run one scenario only, the table of sensitivity results will be erased.

DEBT FINANCING SPECIFICATIONS

Drawdown, by year in the construction period
(Year 1 = first year of operation)

Debt Sources	Total ($ million)	Year -5	Year -4	Year -3	Year -2	Year -1
Supplier's Credit (US)	41.26	0%	0%	0%	30%	40%
Supplier's Credit (Other Foreign)	0.00	0%	0%	0%	0%	0%
Direct OPIC/ExIm Bank	0.00	0%	0%	0%	0%	0%
Locally Mfd Machinery Fund	1.16	0%	0%	0%	30%	40%
Private Sector Window	0.00	0%	0%	0%	0%	0%
Local Term Financing excl. ins. & duty	2.87	0%	0%	0%	30%	40%
International Term Financing	0.00	0%	0%	0%	0%	0%
Other Debt (1)	0.00	0%	0%	0%	0%	0%
Other Debt (2)	0.00	0%	0%	0%	0%	0%

Interest rate on working capital loan:	15.0%
Debt coverage for unrestricted dividends:	2.5 ratio

EQUITY FINANCING SPECIFICATIONS

Equity Sources	Share of equity	Witholding Tax (%)
Local Sponsor:	25.0%	0.0%
Local Public Offering:	50.0%	0.0%
U.S. Sponsor:	25.0%	10.0%
Other Equity:	0.0%	0.0%

Target IRR:	20.0%
Debt/equity ratio:	3.00
Interest on Limited Dividends	8.0%

Costs subject to import duties	$ million
US Equipment:	13.27
Non-U.S. Equipment imported:	31.77

Exchange Rate (Local Curr/$):	17.50

SCREENING OF INPUT DATA

Are interest rates between 0 and 25%?	Yes
Are foreign exchange insurance rates in this range?	Yes
Are cost escalation factors between 0 and 25%?	Yes
Is the target IRR between 0 and 50%?	Yes
Are tax rates between 0 and 100%?	Yes
Is the capacity factor between 0 and 100%?	Yes
Is auxiliary consumption between 0 and 100%?	Yes
Is salvage value between 0 and 100%?	Yes
Do the data for debt drawdown sum to	Yes
Do the shares of equity sum to 100%?	Yes
Is depreciation either SLD or DDB?	Yes
Are dutiable costs less than overnight costs?	Yes

Supplier's Credit (US)
Supplier's Credit (Other Foreign)
Direct OPIC/Exim Bank
Locally Mfd Machinery Fund
Private Sector Window
Local Term Financing excl. ins. & duty
International Term Financing
Other Debt (1)
Other Debt (2)

120 MW Medium Speed Diesel Engine System at Hub Chowki

DATA FOR THE CONSTRUCTION PERIOD

Project year:	-5	-4	-3	-2	-1
Source of funds / Calendar year:	1986	1987	1988	1989	1990
Annual drawdown of debt:					
Supplier's Credit (US):	0.00	0.00	0.00	12.38	16.50
Supplier's Credit (Other Foreign):	0.00	0.00	0.00	0.00	0.00
Direct OPIC/Exim Bank:	0.00	0.00	0.00	0.00	0.00
Locally Mfd Machinery Fund:	0.00	0.00	0.00	0.35	0.46
Private Sector Window:	0.00	0.00	0.00	0.00	0.00
Local Term Financing, excluding foreign exch. ins. & import duties	0.00	0.00	0.00	0.86	1.15
International Term Financing:	0.00	0.00	0.00	0.00	0.00
Other Debt (1):	0.00	0.00	0.00	0.00	0.00
Other Debt (2):	0.00	0.00	0.00	0.00	0.00
Working Capital Loan					
Total annual drawdown of debt	0.00	0.00	0.00	13.59	18.12
Timing of drawdown of debt	0.0%	0.0%	0.0%	29.1%	38.8%
Foreign exchange insurance:	0.00	0.00	0.00	0.22	0.72
Import duties:	0.00	0.00	0.00	0.00	0.00
Cumulative debt at yearend, including interest on outlays funded by drawdown of debt:					
Supplier's Credit (US):	0.00	0.00	0.00	12.06	31.04
Supplier's Credit (Other Foreign):	0.00	0.00	0.00	0.00	0.00
Direct OPIC/Exim Bank:	0.00	0.00	0.00	0.00	0.00
Locally Mfd Machinery Fund:	0.00	0.00	0.00	0.35	0.83
Private Sector Window:	0.00	0.00	0.00	0.00	0.00
Local Term Financing, excluding foreign exch. ins. & import duties	0.00	0.00	0.00	0.92	2.27
International Term Financing:	0.00	0.00	0.00	0.00	0.00
Other Debt (1):	0.00	0.00	0.00	0.00	0.00
Other Debt (2):	0.00	0.00	0.00	0.00	0.00
Foreign Exchange Insurance:	0.00	0.00	0.00	0.23	1.01
Import Duties:	0.00	0.00	0.00	0.00	0.00
Working Capital Loan					

Cumulative debt plus working capital loan	0.00	0.00	0.00	14.36	35.17
Cumulative equity required	0.00	0.00	0.00	4.79	11.72
Cumulative project cost	0.00	0.00	0.00	19.15	46.89
Cumulative drawdown of debt	0.00	0.00	0.00	13.59	31.70
Cum. construction interest and duties	0.00	0.00	0.00	0.78	3.46
Annual construction interest and duties	0.00	0.00	0.00	0.78	2.69
Annual equity contributions:					
Local Sponsor	0.00	0.00	0.00	1.20	1.73
Local Public Offering	0.00	0.00	0.00	2.39	3.47
U.S. Sponsor	0.00	0.00	0.00	1.20	1.73
Other Equity	0.00	0.00	0.00	0.00	0.00
Total annual equity contribution	0.00	0.00	0.00	4.79	6.93

INTERMEDIATE RESULTS

Salvage value	0.00
Number of book depreciation periods	20
Straight-line book depreciation allowance	3.67
Number of tax depreciation periods	15
Straight-line tax depreciation allowance	4.89
Power Output (GWh)	599.18
Value used to compute power sales revenue	5.99
Value used to compute paisa/kwh	2.92
Steam Output, million lb	0.00
Steam sales revenue, $ million	0.00
Steam sales revenue, paisa/kwh	0.00
Fuel cost escalation factor	1.00
Fuel cost in first year of operation	13.30
Variable O&M cost escalation factor	1.00
Variable O&M cost in first year	2.96
Fixed O&M cost escalation factor	1.00
Fixed O&M cost in first year	0.00
Working capital interest costs	0.22
Fraction of cash flow withheld	2.5%
Fraction of cash flow not withheld	97.5%
Number of years in the construction period	6
Present value of equity at final const. yr	21.84
Grace period for levelized payments	5
Dividends required during grace period	4.37
Number of years for levelized payments	15
Levelized equity payment	4.67

CALCULATION OF LOAN PAYMENTS

Loan Drawdowns	Total debt at the end of construction ($ million)	Interest payment during the grace period ($ million)	Period over which the loan is repaid (years)	Level principal payment ($ million)	Debt service payment with level payments ($ million)
Supplier's Credit (US):	46.39	3.71	10	4.64	6.91
Supplier's Credit (Other Foreign):	0.00	0.00	20	0.00	0.00
Direct OPIC/Exim Bank:	0.00	0.00	20	0.00	0.00
Locally Mfd Machinery Fund:	1.21	0.04	8	0.15	0.17
Private Sector Window:	0.00	0.00	15	0.00	0.00
Local Term Financing (incl. duties):	5.93	0.83	8	0.74	1.28
International Term Financing:	0.00	0.00	10	0.00	0.00
Other Debt (1):	0.00	0.00	20	0.00	0.00
Other Debt (2):	0.00	0.00	20	0.00	0.00

CASH FLOW ANALYSIS

Year:	Construction -5	Construction -4	Construction -3	Construction -2	Construction -1
Year in system life:					
Depreciation year:					
Levelized dividend year:					
Calendar year:	1986	1987	1988	1989	1990
Power sales price, c/kWh					
Scenario 1					
Scenario 2					
Scenario 3					
Scenario 4					

LOAN CASH FLOWS

Supplier's Credit (US):
Principal at Start of Period:
Interest During Period:
Payment at End of Period:
Principal Repaid:

Supplier's Credit (Other Foreign):
Principal at Start of Period:
Interest During Period:
Payment at End of Period:
Principal Repaid:

Direct OPIC/Exim Bank:
Principal at Start of Period:
Interest During Period:
Payment at End of Period:
Principal Repaid:

Locally Mfd Machinery Funds:
Principal at Start of Period:
Interest During Period:
Payment at End of Period:
Principal Repaid:

Private Sector Window:
Principal at Start of Period:
Interest During Period:
Payment at End of Period:
Principal Repaid:

Local Term Financing:
Principal at Start of Period:
Interest During Period:
Payment at End of Period:
Principal Repaid:

International Term Financing:
Principal at Start of Period:
Interest During Period:
Payment at End of Period:
Principal Repaid:

Other Debt (1):
Principal at Start of Period:
Interest During Period:
Payment at End of Period:
Principal Repaid:

Other Debt (2):
Principal at Start of Period:
Interest During Period:
Payment at End of Period:
Principal Repaid:

ALTERNATIVE #1:
Dividends limited to Profit After Tax

INCOME STATEMENT

Electric revenue
Steam sales revenue
Interest on non-distributions
Total revenue

Fuel costs
Variable O&M costs
Fixed O&M costs
Total fuel and O&M cost
Loan interest costs
Working capital interest costs:
Foreign exchange insurance fees
Total interest expense
Total cash expenses before depreciation
Depreciation
Total expenses

Profit before tax
Workers's Participation Profit Fund
Income tax
Profit after tax

INCOME TAX CALCULATION

Depreciation for tax purposes
Taxable income (incl. grace period income)
Workers's Participation Profit Fund
Income tax before carry forward of losses
Carry forward of tax credits
Income tax after carry forward of losses
Taxable income, less income tax

Cumulative tax credits at yearend

CASH FLOW STATEMENT

Principal loan payments
After-tax cash flow from operations
Distributable cash flow
Withholding tax on dividends
Distributable cash flow, after withholding

		0.00	0.00	0.00	-4.79	-6.93
Internal Rate of Return, %	21.7%					
NPV in Year 1 at target IRR	3.04					
Initial power price needed for target IRR	To be recomputed					
Total debt service, with fees						
Debt coverage ratio						
Distributions restricted by lenders?						
Cumulative non-distributions						

GOVERNMENT RECEIPTS STATEMENT

Import duties					
Workers' Participation Profit Fund	0.00	0.00	0.00	0.00	0.00
Income tax					
Withholding of dividends					
Total local government receipts	---	---	---	---	---
Total receipts, in paisa/kwh	0.00	0.00	0.00	0.00	0.00

TARIFF CALCULATION

Fuel and O&M cost, paisa/kwh
Interest expense, paisa/kwh
Depreciation, paisa/kwh
Profit before tax, paisa/kwh
Credit for interest on non-distributions, paisa/kwh
Credit for steam revenue, paisa/kwh

Total revenue requirement, paisa/kwh

ALTERNATIVE #2:
Dividends not limited to Profit After Tax

INCOME STATEMENT (simplified)

Electric and steam sales revenue
Total expenses
Profit before tax
Workers's Participation Profit Fund
Income tax
Profit after tax

INCOME TAX CALCULATION

Taxable income (incl. grace period income)						
Workers's Participation Profit Fund						
Income tax before carry forward of losses						
Carry forward of tax credits						
Income tax after carry forward of losses						
Cumulative tax credits at yearend						

CASH FLOW STATEMENT

After Tax Cash Flow from operations						
Withholding tax on dividends						
After-Tax Cash Flow, after withholding		0.00	0.00	0.00	-4.79	-6.93
Internal Rate of Return, %	NA					
NPV in Year 1 at target IRR	NA					

GOVERNMENT RECEIPTS STATEMENT

Import duties						
Workers' Participation Profit Fund		0.00	0.00	0.00	0.00	0.00
Income tax						
Withholding of dividends						
Total local government receipts		---	---	---	---	---
Total receipts, in paisa/kwh		0.00	0.00	0.00	0.00	0.00

TARIFF CALCULATION

Fuel and O&M cost, paisa/kwh						-
Interest expense, paisa/kwh						-
Depreciation, paisa/kwh						
Profit before tax, paisa/kwh						
Credit for steam revenue, paisa/kwh						
Total revenue requirement, paisa/kwh						

ALTERNATIVE #2
Levelized dividends not limited to PAT

INCOME STATEMENT (simplified)

Electric revenue						
Steam sales revenue						
Total revenue						
Total expenses						
Profit before tax						
Workers's Participation Profit Fund						
Income tax						
Profit after tax						

INCOME TAX CALCULATION

Taxable income (incl. grace period income)						
Workers's Participation Profit Fund						
Taxable income, bef. carry forward of losses						
Income tax before carry forward of losses						
Carry forward of tax credits						
Income tax after carry forward of losses						
Taxable income, less income tax						
Cumulative tax credits at yearend						

CASH FLOW STATEMENT

After Tax Cash Flow from operations						
Withholding tax on dividends						
After-Tax Cash Flow, after withholding		0.00	0.00	0.00	-4.79	-6.93
Internal Rate of Return, %	NA					

GOVERNMENT RECEIPTS STATEMENT

Import duties					
Workers' Participation Profit Fund	0.00	0.00	0.00	0.00	0.00
Income tax					
Withholding of dividends					
Total local government receipts	---	---	---	---	---
Total receipts, in paisa/kwh	0.00	0.00	0.00	0.00	0.00

TARIFF CALCULATION

Fuel and O&M cost, paisa/kwh	
Interest expense, paisa/kwh	
Depreciation, paisa/kwh	
Profit before tax, paisa/kwh	
Credit for steam revenue, paisa/kwh	
Total revenue requirement, paisa/kwh	

INTERMEDIATE RESULTS USED TO COMPUTE IRR

Statement #1: Dividends limited by PAT					
IRR Trial value	5.0%	15.0%	20.0%	40.0%	50.0%
Computed IRR	ERR	ERR	21.7%	21.7%	21.7%
Equation used to graph revenue components ->					
Statement #2: Dividends not limited by PAT					
Trial value	5.0%	15.0%	20.0%	40.0%	50.0%
Computed IRR	ERR	ERR	ERR	ERR	ERR
Equation used to graph revenue components ->					

Data for the graph of IRR results:

Limited to PAT	0.217 IRR = 21.7%	
Not limited to PAT	NA	ERR
Levelized	NA	ERR

INTERMEDIATE RESULTS USED IN OPTIMIZATION OF THE INITIAL ELECTRIC PRICE

Iteration #:	1	2	3	4	5	6
Trial value for base price	5.37	5.91	5.38	5.38	NA	NA
IRR, dividends limited to PAT	19.9%	27.6%	20.0%			
Discrepancy between computed IRR & target	-0.1%	7.6%	-0.0%	-20.0%	-20.0%	-20.0%

Start time: 02:21:42 PM
Stop time: 02:22:02 PM
Elapsed time: 00:00:20

RESULTS OF THE SENSITIVITY ANALYSIS

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Current run
Power sales price, 1st period (c/kWh)	5.50	6.05	5.00		5.50
Power sales price, 2nd period (c/kWh)	4.50	4.95	4.10		4.50
Year in which 2nd period begins	11	11	11		11
Steam Sales Price, $ /000 lb	0.00	0.00	0.00		0.00
Internal Rate of Return, limited	21.7%	30.0%	14.3%		21.7%
Internal Rate of Return, not limited	NA	NA	NA		NA
NPV at target IRR, limited	3.04	18.04	-10.56		3.04
NPV at target IRR, not limited	NA	NA	NA		NA

MENUS USED IN MACROS

MAIN

```
Edit data       Calculate       View            Accelerate      Print           Save
Edit the data sCalculate resulView results onAdjust speed ofPrint inputs anSave input data
{menubranch INP{menubranch CAL{menubranch VIE{menubranch ACC{menubranch PRI{recalccol DATE
                                                                                {menubranch SAV
```

INPUT

```
Technical       Fiscal          Financial
Enter technicalEnter fiscal paEnter financial parameters
{home}{right}/w{home}{right}/w{home}{right}/wtv
{pgdn}          {pgdn}{pgdn}    {pgdn}{pgdn}{pgdn}
{down}{down}{do{down}{down}{do{down}{down}{down}{down}{down}{down}{down}{down}
```

CALCULATE

```
One price scenaPrice optimizatSensitivities
Compute resultsFind the initiaCompute results under alternative price scenarios
{CHOICE}{\C}    {goto}VIEW OPTI{\S}
{menubranch MAI{menubranch MAI{menubranch MAIN}
```

VIEW

```
Graphs          Annual cash floInvestment costExit to the main menu
View a series oView annual casView total inveReturn to the main menu
{\G}            {goto}VIEW ANNU{goto}VIEW INVE{menubranch MAIN}
{menubranch VIE{right}{down}{d{right}{down}{down}{down}{down}{down}/wtb
```

ACCELERATE

```
Speed up recalcInclude detaileExit to the main menu
Omit results foInclude resultsReturn to the main menu
/rePRESENTATION/cPRES FORMULAS{menubranch MAIN}
{let PRES FORMA{let PRES FORMAT,"Detailed format"}
{menubranch MAI{menubranch MAIN}
```

PRINT

```
Inputs          Outputs         Exit to the main menu
Print input datPrint output daReturn to the main menu
{beep}          {menubranch PRI{menubranch MAIN}
{getlabel "Align printer paper to top of sheet. Press RETURN when ready.",d21}
/pprPRINT INPUTS~
cbos{esc}\Ø29~gagpq
{menubranch PRIN}
```

PRINT_OUTPUTS

```
Annual cash floSensitivity      Inv. costs                      Exit
Print annual caPrint results oPrint total investment costs  Return to the print menu
{getlabel "Alig{getlabel  Alig{getlabel "Align printer paper{menubranch PRINT}
/pprPRINT ANNUA/pprPRINT SENSI/pprPRINT INVESTMNT~
cbobcal~brCF 30cbos{esc}\Ø29~gcbos{esc}\Ø29~gagpq
{menubranch PRI{menubranch PRI{menubranch PRINT_OUTPUTS}
```

SAVE

```
Input           Output          Exit to the main menu
Save input dataSave output datReturn to the main menu
{goto}i1~       {goto}i1~       {home}
{menubranch SAV{menubranch SAV{menubranch MAIN}
```

SAVE_INPUT

```
Create a new fiRevise a file  Exit
Save input dateReplace the datReturn to the preceding menu
/fxvINPUT{?}~  /fxv{?}~        {menubranch SAVE}
PRINT INPUTS~  PRINT INPUTS~r
{menubranch SAV{menubranch SAVE}
```

SAVE_SYNOPSIS

```
Create a new fiRevise a file  Exit
Save input dateReplace the datReturn to the preceding menu
/fxvSYN{?}~    /fxv{?}~        {menubranch SAVE}
PRINT SYNOPSIS~PRINT SYNOPSIS~r
{menubranch SAV{menubranch SAVE}
```

MACROS

Macro to call the main menu: \M

```
{home}/wtc{menubranch MAIN}
```

Macro to calculate results: \C

```
{calc}
{if SENS FLAG="No"}/reRESULTS CLEAR~
{edit}~
```

Macro to test price sensitivities: \S

```
{home}{goto}SENSITIVITY~/reRESULTS CLEAR~{let SENS FLAG,"Yes"}
{recalccol CURRENT TIME}{let START TIME,CURRENT TIME}
{if DO SCENARIO 2="Yes"}/cSCENARIO 2~PWR SALES PRICE~{\C}/rvLAST RESULTS~RESULTS 2~
{if DO SCENARIO 3="Yes"}/cSCENARIO 3~PWR SALES PRICE~{\C}/rvLAST RESULTS~RESULTS 3~
{if DO SCENARIO 4="Yes"}/cSCENARIO 4~PWR SALES PRICE~{\C}/rvLAST RESULTS~RESULTS 4~
{if DO SCENARIO 1="Yes"}/cSCENARIO 1~PWR SALES PRICE~{\C}/rvLAST RESULTS~RESULTS 1~
{let SENS FLAG,"No"}{edit}~
```

Subroutine to choose a scenario: CHOICE

```
{home}{goto}VIEW SCENARIOS~
{getnumber "Enter the number of the scenario you want to run: ",SCENARIO CHOICE}{edit}~
{if SCENARIO CHOICE=1}/cSCENARIO 1~PWR SALES PRICE~
{if SCENARIO CHOICE=2}/cSCENARIO 2~PWR SALES PRICE~
{if SCENARIO CHOICE=3}/cSCENARIO 3~PWR SALES PRICE~
{if SCENARIO CHOICE=4}/cSCENARIO 4~PWR SALES PRICE~
{return}
```

Save results in table of sensitivities? No

Macro to view the graphs: \G

```
{paneloff}{windowsoff}
/cPRES FORMULAS~PRESENTATION~
{let PRES FORMAT,"Detailed format"}
/gnuCONST INVESTMNT~
nuIRR RESULTS~
nuATCF LIMITED~
nuATCF NOTLIMITED~
nuATCF LEVELIZED~
nuATCF COMPARISON~
nuREV LIMITED~
nuREV NOT LIMITED~
nuCOMP OF REV REQ~
nuPRICE SCENARIOS~
q{windowson}{panelon}
```

Macro to optimize the initial price: \O

```
{recalccol CURRENT TIME}{let START TIME,CURRENT TIME}
/reTRIAL RESET~
{put TRIAL VALUES,0,2,PWR SALES PRICE}
{for ITERATION,1,8,1,COMPUTE_IRR}
{let ITERATION,0}
```

Iteration number: 0

Subroutine: COMPUTE_IRR

```
{if ITERATION>1}{let PWR SALES PRICE,@index(TRIAL VALUES,ITERATION-1,2)}
{calc}{put TRIAL VALUES,ITERATION-1,3,IRR LIMITED}
{recalccol TRIAL VALUES}{edit}~
{if @abs(@index(TRIAL VALUES,ITERATION-1,4))<.0005}{forbreak}
```

RANGE NAME TABLE

ACCELERATE	B575
BOOK DEPRECIATN	B40
CALCULATE	B565
CASE STUDY NAME	A19
CF BORDER ROWS	B228..B235
CHOICE	B654
COMPUTE_IRR	B676
CURRENT_TIME	B16
DATE AND TIME	A16..B16
DO SCENARIO 1	C41
DO SCENARIO 2	D44
DO SCENARIO 3	E44
DO SCENARIO 4	F44
INPUT	B559
IRR LIMITED	B348
IRR NOT LIMITED	B411
ITERATION	B674
LAST RESULTS	G539..G546
MAIN	B553
PRES FORMAT	B13
PRES FORMULAS	I386..I496
PRESENTATION	J386..AG496
PRINT	B582
PRINT ANNUAL CF	A229..A229
PRINT INPUTS	A16..K100
PRINT INVESTMNT	A122..F225
PRINT SENSITVTY	A536..E547
PRINT OUTPUTS	B594
PWR SALES PRICE	B45
RESULTS 1	B539..B546
RESULTS 2	C539..C546
RESULTS 3	D539..D546
RESULTS 4	E539..E546
RESULTS CLEAR	B539..E546
RNT	A684
SAVE	B603
SAVE_INPUT	B610
SAVE_SYNOPSIS	B618
SCENARIO 1	C45..C48
SCENARIO 2	D45..D48
SCENARIO 3	E45..E48
SCENARIO 4	F45..F48
SCENARIO CHOICE	F50
SENS FLAG	B652
SENSITIVITY	A536
START TIME	C525
SYSTEM LIFE	B29
TAX DEPRECIATN	B54
TAX EXEMPT PERD	B53
TRIAL RESET	B522..I522
TRIAL VALUES	B519..I523
VIEW	B570
VIEW ANNUAL CFS	A229
VIEW INVESTMENT	A122
VIEW OPTIMUM	A516
VIEW SCENARIOS	C41
\C	B633
\G	B654
\M	B630
\O	B660
\S	B637