Wind Energy Finance (WEF): An Online Calculator for Economic Analysis of Wind Projects

The National Renewable Energy Laboratory created Wind Energy Finance, a free online cost of energy calculator, to enable quick, detailed economic evaluation of potential utility-scale wind energy projects.

How Does WEF Work?

Inputs

The user enters data about the project, including:

- General assumptions
- Capital costs
- Operating expenses
- Financing assumptions
- Tax assumptions
- Economic assumptions
- Financial constraining assumptions.

Extensive help notes describe each input and provide reasonable default values.

Outputs

- Minimum energy payment to meet financial criteria
- Levelized cost of energy
- Payback period
- Net present value
- Internal rate of return
- Summary and detailed cash flows.

As an alternative option, if the user enters a first-year energy payment, the program will calculate the rate of return, coverage ratios, etc.

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Partial List of WEF Help Topics

- Capacity Factor
- Equipment Cost
- Operation & Maintenance
- Site Owner Royalty
- Property Tax
- Production Tax Credit
- Discount Rate
- Debt Service Coverage Ratio.

Who Should Use WEF?

WEF should be used by anyone interested in evaluating the economics of potential utility-scale wind energy projects. The tool is designed for those who have general experience with project financial analysis but little knowledge of wind projects. Potential users include:

- State and local economic development officials
- Rural landowners interested in owning or benefiting from wind energy projects
- Applicants pursuing 2002 Farm Bill funding for renewable energy projects under Section 9006 and the Value-Added Producer Grant Program
- Rural co-op and municipal utility officials.

Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

Features

- An extensive help section explains each entry and gives reasonable defaults when the user lacks specific information.
- The program calculates Internal Rate of Return (IRR) and Debt Service Coverage Ratios (DSCRs). The program can also calculate minimum energy contract price when the user enters minimum IRR and DSCR.
- WEF easily handles a variety of tax issues such as the Production Tax Credit (PTC) and the Renewable Energy Production Incentive (REPI). The program utilizes appropriate depreciation schedules.
- Exportable summary calculations and cash flows are included.
- Debt repayment includes options for level mortgage, level principal, and custom repayment schedules.
- Users can save multiple projects.

For More Information and to Access Wind Energy Finance

http://www.eere.energy.gov/windpoweringamerica. Click on Wind Energy Finance Calculator or http://analysis.nrel.gov/windfinance/login.asp

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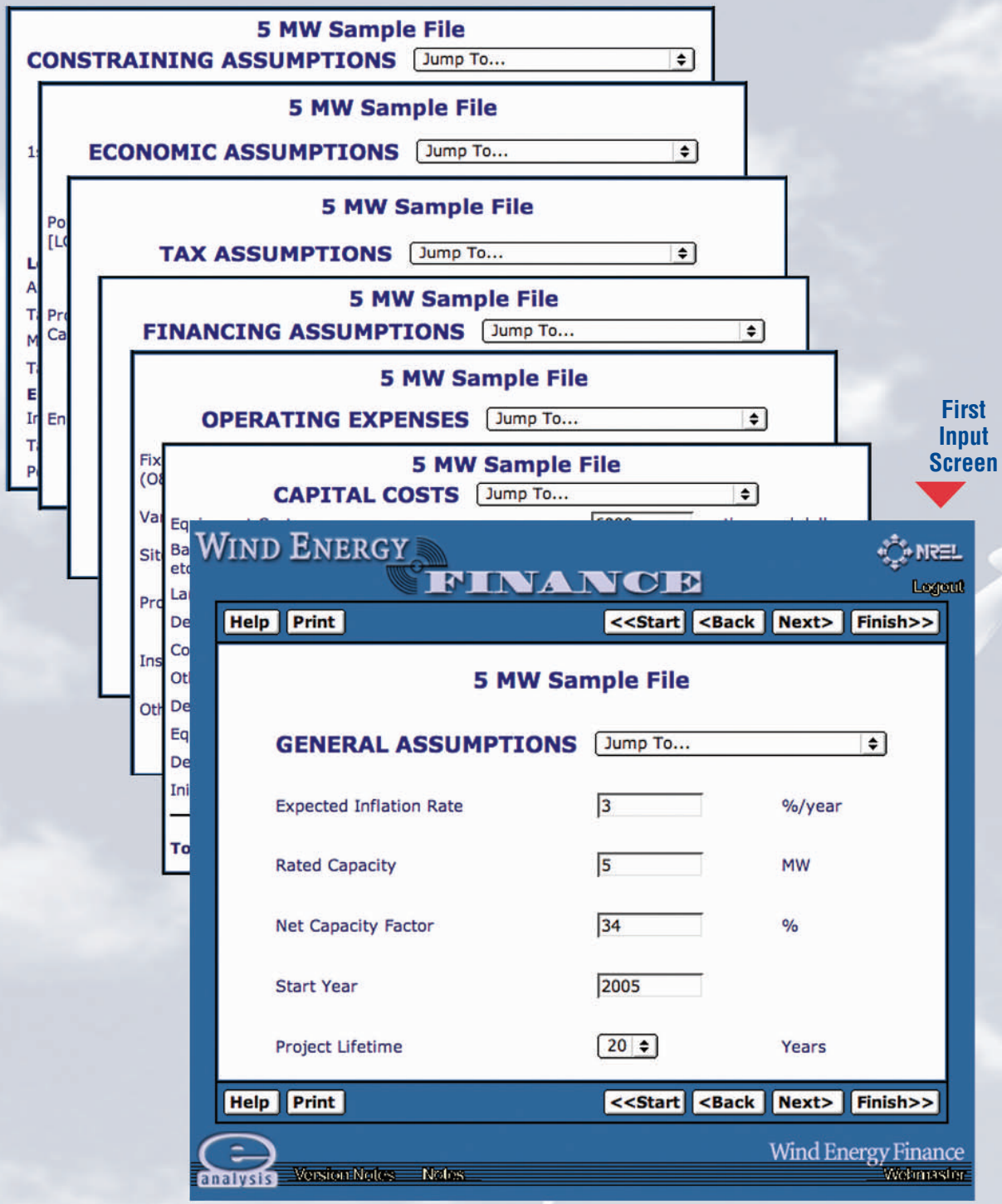
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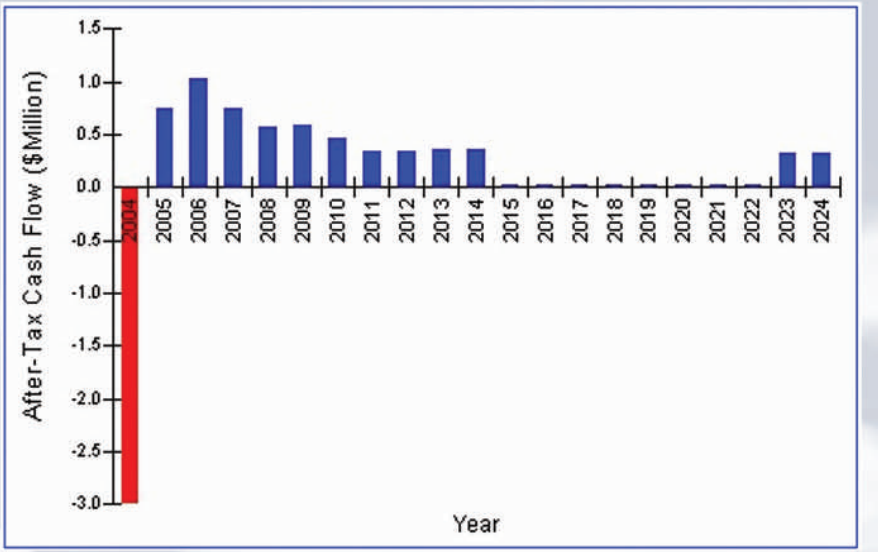
Extract from Help Section

Inflation: Enter the expected inflation rate over the project lifetime in the indicated box. The typical range of default values is 2% – 3%.

Start year: The start year is the first year that the project produces energy. Projects are assumed to enter service on January 1 of the start year. The January 1 date is used to avoid partial year complexities on items such as loans, project lifetime, etc.



Cash Flow Results

Project Year	0	1	5	10	15	20
Calendar Year	2004	2005	2009	2014	2019	2024
Total Revenues		$521	$564	$623	$687	$759
Total Operating Costs		$176	$185	$198	$214	$232
Operating Income		$345	$379	$424	$473	$527
Total Other Expenses		$1,395	$860	$124	$64	$0
After-Tax Profits		($366)	$10	$526	$250	$321
Total Additions		$1,200	$691	$0	$0	$0
Total Subtractions		$93	$119	$163	$224	$0
After-Tax Cash Flow	($3,000)	$742	$582	$363	$26	$321
Cumulative After-Tax Cash Flow		($2,258)	$671	$2,519	$2,638	$3,355
Payback Boolean		1	0	0	0	0
Debt Service Coverage Ratio (DSCR)		1.20	1.32	1.48	1.65	

Cashflow Details | View all Years | View Detail | Print | Cancel

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Wind & Hydropower Technologies Program

Harnessing America's abundant natural resources for clean power generation

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Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.

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Prepared for the U.S. Department of Energy
by the National Renewable Energy Laboratory,
a DOE National Laboratory

DOE/GO-102004-1846
February 2004