MESC GUIDANCE ON DEVELOPING FINANCIAL MODELS

This guidance document summarizes and explains the basic requirements to satisfy the requirements for the NOFO's "Commercial Plan and Financial Plan" submission requirement. This document is meant to provide guidance and general best practices to develop a financial model for the project to allow DOE to conduct appropriate due diligence as part of the merit review process. Applicants are encouraged to develop their own comprehensive financial models that best represent their project's financial status.

A **comprehensive financial model** is suitable for evaluating a business, an investment, or a project. A financial model involves structuring a spreadsheet (preferably in Excel) that represents the financial performance of a business, project, or an investment over time. Hard coding should only be for assumptions and, in such cases, provide detailed back up to the assumption. Functionality must include the ability for DOE to test the assumptions.

This document summarizes a high-level outline of a **standard 3-statement financial model** (Income Statement, Balance Sheet, and Cash Flow Statement), which is the foundation for most models such as discounted cash flow (DCF), leveraged buyout (LBO), or project finance.

The model typically includes the following core sections:

1. Assumptions & Drivers

A dedicated section where key inputs are centralized. These should ideally be listed on one sheet, include some logical build up, data, or at least a rationale as to why they were chosen, and then drive the calculations in rest of the model.

- Revenue assumptions should include:
    - Some explanation as to how the production/sales volumes were chosen. Typically, new businesses require some sort of ramp up period before reaching full production.
    - Price assumptions: What drives sales prices?
    - Both volume and price assumptions may be driven by some sort of market study, by reference to current market conditions, or by other data.
- Cost assumptions: These should also have some kind of logic behind them such as history, an engineering study,
    - Cost of goods sold (COGS) refers to the direct costs attributable to production such as raw materials, direct labor (labor involved in production only), manufacturing supplies, and overhead directly tied to production.

    - Operating expenses refer to all other ongoing costs not directly tied to production such as selling, general, and administrative expenses (SG&A), rent, utilities, office supplies, marketing and advertising, or salaries of non-production staff.
- Depreciation & amortization of goodwill assumptions: Typically, property, plant and equipment (PP&E) are depreciated over their useful life. Goodwill (an intangible asset arising from the acquisition of one company by another) is amortized under US GAAP (Generally Accepted Accounting Principles) but not under IFRS (International Financial Reporting Standards).
- Capital expenditures or "capex": This may be just a few lines on the assumption page or, for major construction projects, might require its own sheet.
- Working capital assumptions (accounts receivable, accounts payable, inventory).
- Applicable tax rates.
- Interest rate, tenor/maturity, repayment terms, and key financial terms (reserve accounts, grace periods, cash sweeps, etc.) on existing or planned debt.
- Forecast period (typically 5–10 years).
- Inflation assumptions.

2. Historical Financials

Collect the last 3–5 years of the company's financial statements. This includes the income statement, the balance sheet, and the cash flow statement. Projections are based on this historical data.

- Past 3–5 years or since capital expenditures are made including:
    - **Income Statement**
    - **Balance Sheet**
    - **Cash Flow Statement**
- Companies use historical averages when creating future projections, but other methods can be used if the logic behind the choice is given.
- The model should match the intended legal structure for the business.
- If the project is being financed on the company's balance sheet, then the model should include the company's existing business in its projections to provide support for the new project as it grows.
- If a separate project company or special purpose vehicle (SPV) is going to be created for the project, then that company should be modeled as a standalone business.
- The historical financials should match the chosen method, i.e. if financed on the company's balance sheet, the historical financials should include the rest of the company's business.
- If a project company or SPV is going to be set up, the historical financials will just include any expenditure or funding to date.

3. Projected Financial Statements

The most common projections are 10+ years into the future unless another time-period is requested:

a. Income Statement

The income statement projects profitability over time and includes the following:

- Revenue
- Cost of Goods Sold (COGS) → Gross Profit
- Operating Expenses include (selling, general and administrative expenses (SG&A), research and development (R&D) → earnings before interest, taxes, depreciation, and amortization (EBITDA)
- Depreciation & Amortization → Earnings before interest and taxes (EBIT)
- Interest Expense → Earning before taxes (EBT) or Pre Tax Income
- Taxes → Net Income

b. Balance Sheet

The balance sheet provides a snapshot of a company's financial position, indicating what the business owns (assets), what it owes (liabilities), and the owners' stake (equity).

- **Assets = Liabilities + Equity**
  - Assets
    - Current Assets are composed of cash, accounts receivables, and inventory
    - Non-Current Assets are composed of property, plant and equipment (PP&E) and intangibles that are non-physical assets that provide economic benefits to a company
  - Liabilities
    - Current Liabilities include Accounts Payable, Accruals, and short-term debt
    - Long-Term Debt
  - Shareholders' Equity
    - Common Stock
    - Retained Earnings
    - Additional Paid-in-capital (APIC)

c. Cash Flow Statement

A cash flow statement reconciles cash inflows and outflows over time and essentially connects the balance sheet with the income statement.

- Operating Cash Flow includes net income + non-cash adjustments + depreciation and amortization (D&A)

    - Changes in Operating Capital
  - Investing Cash Flow composed of Capital Expenditure (Capex) and investments
  - Financing Cash Flow should include debt issuance/repayment, equity issuance and repurchase, dividends
  - Net Change in Cash

TIP: *The annual ending cash balance should be positive, unless the company highlights specific strategic investments or temporary fluctuations in cash, or if the company has access to revolving funds to offset liquidity concerns.*

4. Supporting Schedules

- Depreciation Schedule
- Debt Schedule include interest and repayments
- Working Capital Schedule
- Capex Schedule
- Equity Schedule (if applicable)

5. Checks & Balances

Built-in error checks to validate model integrity.

- Balance Sheet balances (Assets = Liabilities + Equity), without any kind of "plug" calculation (formulas that subtract liabilities and equity from all other assets to get cash, for example).
- Cash flow reconciliation – the ending cash matches balance sheet.
- Circularity checks if using iterative logic. Circular reference can be fine but require iterations or some other method to break. More than 100 iterations can cause problems.
- Debt covenants or financial ratio checks: debt service coverage ratios (DSCR), liquidity ratios, leverage ratios, etc.

6. Scenario & Sensitivity Analysis

Scenario and Sensitivity Analysis are two common methods of quantitative risk analysis.

- Base, Upside, Downside cases at a minimum
- Key variable sensitivity (e.g., growth, margin, WACC (weighted average cost of capital))

7. Dashboards & Summary Outputs

- KPIs (Revenue growth, EBITDA margin, ROIC (return on invested capital), etc.)
- Charts: Revenue, EBITDA, Net Income trends
- Valuation summary
- Executive summary with key takeaways

8. IRR Calculation

Internal Rate of Return (IRR) is the discount rate that makes the Net Present Value (NPV) of cash flows zero.

Required setup:

- A row of annual equity cash flows:
  - Year 0: negative (investment outflow), can be a few years if that is what happened
  - Year 1–N: positive (distributions)
  - Final year: include terminal value or exit proceeds
- Use Excel's =IRR (range) or Extended internal rate of return (XIRR) for irregular timing
- Also calculate Multiple on Invested Capital (MOIC):
  - *MOIC = Total Distributions / Initial Investment*

9. Valuation

- Discounted Cash Flow (DCF)
  - Free Cash Flow to Firm (FCFF) or Equity (FCFE)
  - Terminal value (Gordon growth or exit multiple)
  - Weighted average cost of capital (WACC) or the cost of equity
- Comparable Company Analysis
- Precedent Transactions

INCOME STATEMENT

To build an **Income Statement**, also known as a **Profit and Loss Statement**, follow these structured steps. This financial statement shows a company's **revenues, expenses, and profit** over a period (usually monthly, quarterly, or annually).

STEP-BY-STEP GUIDE TO BUILDING AN INCOME STATEMENT

1. Choose a Time Period

The preference would be to calculate the Income Statement on a monthly basis, while reporting the values on an annual basis.

2. Start with Revenue (Top Line)

- **Sales Revenue / Total Revenue**
- The total income from selling goods or services.

Example: *Revenue = Units Sold × Price per Unit*

3. Subtract Cost of Goods Sold (COGS)

COGS includes **direct costs** like raw materials, labor used to make the product, etc., typically as a percentage of revenue.

Gross Profit = Revenue - COGS

4. Deduct Operating Expenses

These are day-to-day expenses not directly tied to production:

- Salaries
- Rent
- Utilities
- Marketing
- Depreciation & Amortization

Operating Profit (EBIT) = Gross Profit - Operating Expenses

5. Include Other Income or Expenses

- Investment income
- Applicable grant income (e.g. DOE MESC Grants)
- Interest income/expense
- Gain/loss on asset sales

Earnings Before Taxes (EBT) = Operating Profit ± Other Income/Expenses

6. Deduct Taxes

Apply the appropriate tax rate to get Net Income.

Net Income = EBT - Taxes

EXAMPLE OF AN INCOME STATEMENT:

(+)	Revenue from Sales	$500,000
(-)	Cost of Goods Sold	($200,000)
	Gross Profit	**$300,000**
	Selling and Operating Expenses	($50,000)
	General and Administrative Expenses	($100,000)
(-)	**Total Operating Expenses**	**($150,000)**
	Operating Profit (EBIT)	**$150,000**
(-)	Other Income/Expenses	($10,000)
(-)	Interest Expense	($5,000)
	Earnings Before Taxes (EBT)	**$135,000**
(-)	Taxes (25%)	($33,750)
	Net Income	**$101,250**

CASH FLOW STATEMENT

A **Cash Flow Statement** shows how cash moves in and out of a business during a specific period. It helps assess a company's liquidity, solvency, and ability to generate cash. It is divided into three main sections:

THREE MAIN SECTIONS OF A CASH FLOW STATEMENT

1. Operating Activities (CFO)

Cash from core business operations. Typical line items:

- Net income
- Adjustments for non-cash items (Depreciation, Amortization)
- Changes in working capital:
    - Increase in Accounts Receivable (outflow)
    - Decrease in Accounts Payable (outflow)

Formula: *Cash from Operating = Net Income + Non-cash Items ± Working Capital Changes*

2. Investing Activities (CFI)

Cash used for or generated by investments in assets. Includes:

- Purchase of fixed assets (Capex) — outflow
- Sale of fixed assets — inflow
- Purchase/sale of securities

Formula: *Cash from Investing = Proceeds from Sale of Assets - Capital Expenditures*

3. Financing Activities (CFF)

Cash from transactions with shareholders or lenders. Includes:

- Issuing stock or bonds — inflow
- Repaying loans — outflow
- Dividends paid — outflow

Formula: *Cash from Financing = Proceeds from Borrowing - Loan Repayments – Dividends*

4. Net Change in Cash and Cash Balances

Total of all Cash Flow Activities (CFO, CFI, CFF). The net change in cash balance is added to the beginning cash balance to result in the ending cash balance.

The ending cash balance of the prior year will be the beginning balance of the next year.

EXAMPLE OF A CASH FLOW STATEMENT:

Net Income	$105,000
Depreciation & Amortization	$10,000
Change in Accounts Receivable	$(5,000)
Change in Accounts Payable	$3,000
Net Cash from Operating Activities	**$13,000**
Capital Expenditures	($25,000)
Sale of Equipment	$10,000
Net Cash from Investing Activities	**($15,000)**
Proceeds from Loans	$50,000
Loan Repayment	($20,000)
Dividends Paid	($15,000)
Net Cash from Financing Activities	**$15,000**
Net Change in Cash	**$13,000**
Beginning Cash Balance	**$2,000**
Ending Cash Balance	**$15,000**

BALANCE SHEET

A Balance Sheet is one of the three core financial statements. It shows a company's financial position at a specific point in time and follows this basic equation:

Basic Equation: *Assets = Liabilities + Equity*

STRUCTURE OF A BALANCE SHEET

1. Assets - resources the company owns.

Current Assets (convertible to cash in <1 year):

- Cash
- Accounts Receivable
- Inventory
- Prepaid Expenses

Non-Current Assets:

- Property, Plant & Equipment (PP&E)
- Intangible Assets (Patents, Goodwill)
- Long-term Investments

2. Liabilities - obligations the company owes.

Current Liabilities (due within 1 year):

- Accounts Payable
- Short-term Debt
- Accrued Expenses
- Taxes Payable

Non-Current Liabilities:

- Long-term Debt
- Deferred Tax Liabilities

3. Equity - what remains for shareholders after debts are paid.

- Common Stock
- Retained Earnings
- Additional Paid-In Capital
- Treasury Stock (contra equity – an account that has a debt balance instead of credit balance)

EXAMPLE OF A BALANCE SHEET:

Balance Sheet	Amount ($)
Assets	
Cash	$50,000
Accounts Receivable	$15,000
Inventory	$10,000
Property, Plant & Equipment (PP&E)	$75,000
Total Assets	**$150,000**
Liabilities	
Accounts Payable	$12,000
Short-term Debt	$5,000
Long-term Debt	$25,000
Total Liabilities	**$32,000**
Equity	
Common Stock	$60,000
Retained Earnings	$28,000
Total Equity	**$58,000**
Total Liabilities & Equity	**$150,000**