Notice of Funding Opportunity – Commercial Fabrication Facilities

Guiding Principles for Full Application Financial Model

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1. Overview

This document is intended to provide guidance on creating dynamic and integrated project-level financial statements and scenario analyses as required in the CHIPS Notice of Funding Opportunity (NOFO) section IV.I.7. This document is divided into the following sections: Overview, Model Structure, Granularity, Metrics, and Scenario Analysis.

As described in the NOFO, the project-level financial statements should include detailed cash flow, income and balance sheet statements for each facility, through the end of the facility's useful life.

These financial statements should be delivered in an Excel spreadsheet and contain dynamic formulas that can be traced (i.e., not hard-coded). They should be linked to each other within the model and update automatically as variable inputs are adjusted. Scenario analysis should also be embedded in the linked model.

The financial statements will be a critical part of the CHIPS program evaluation and will be used to assess project viability, financial structure, economic returns, and risks, as well as to evaluate and size the amount, type, and terms of potential CHIPS awards.

To the extent management models align with the guidelines for Financial Statements in the NOFO, we would encourage applicants to submit those models.

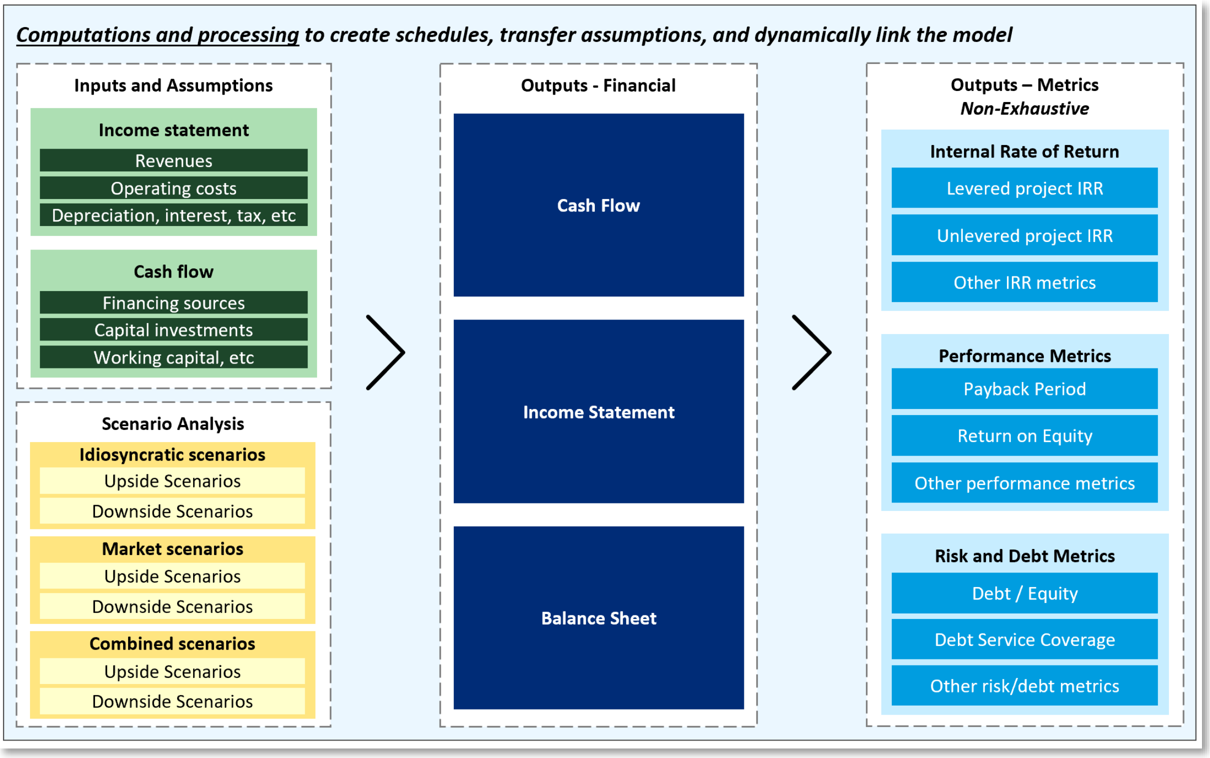
Disclaimer: While this document is intended to provide guidance on financial model construction, Applicants are not bound to follow the specific suggestions outlined below. Projects will vary considerably in nature and scope.

2. Model Structure

Financial models submitted in the applications may have a wide range of designs depending on unique project-specific information and company profiles. In all cases, the model worksheets should be fully dynamic and linked through formulas and calculations, rather than hardcoded values, to allow traceability across the various inputs, processing, and output spreadsheets. This section illustrates the building blocks of a representative financial model.

The following figure illustrates the typical components of a financial model.

Figure 1: Example Model Structure



Inputs and assumptions

The figure above illustrates a model structure with a separate worksheet laying out in detail all core inputs and assumptions used to drive the forecasted income, balance sheet, and cash flow statements. For example, within income assumptions, the project revenue could be driven by assumptions around capacity, utilization rates, assumed yield, and price for each production segment, as well as customer, end market, or wafer type. For cash flows, financing assumptions would include inputs around amount and terms of sponsor equity, non-CHIPS debt, CHIPS debt, third party equity, state and local government incentives, investment tax credit, and CHIPS incentive.

Financial Outputs

The applicant should clearly present the outputs summarizing the key financial statements for the project including cash flow statements, income statements, and balance sheets. These outputs should each be in their own worksheet and should be a direct byproduct of the inputs provided in the assumptions tab and any processing or computations of those inputs shown in a separate tab or otherwise via transparent formulas. Forecasts should be quarterly through the first year of cash flow breakeven and annually thereafter through the end of the facility's useful life[1].

Metric Outputs

The applicant should highlight the key financial, performance, and risk metrics associated with the project. Metrics could be organized as a table of clear numerical outputs alongside visuals (e.g., a

[1] "Useful life" is an estimate of the number of years a facility will remain operational and cost-effectively generating revenue. In the NOFO, the CPO estimates that to be at least 20 years. Any assumptions made around useful life should be explained in the accompanying narrative.

chart showing gross margin over facility useful life or debt service coverage ratio over time) to provide an effective summary of the projected returns and key takeaways. Examples of key metrics are included in Section 4.

Scenario analysis

The model should be structured to allow alternative inputs to override and replace the baseline inputs and assumptions to illustrate the effects of different scenarios. These analyses should be fully integrated within the dynamic financial model to demonstrate the impact of each scenario across the full set of outputs (financial statements, risk and return metrics, etc.).

3. Granularity

Detailed financial inputs are critical for a comprehensive review of the project's financial strength. Inputs should include granular line-item assumptions for underlying components of both the income statement and cash flow statement, and explicit details on how drivers vary over the useful life of the project. Submissions that lack sufficient granularity may require requests for additional information, which could cause delays in the review process.

We have outlined key principles around the granularity of inputs and assumptions that applicants can use as guidance as they construct their models. The purpose of input granularity is to drive illustrative, transparent, and functional outputs that can be easily reviewed and sensitized.

Table 1: Guiding Principles for Granularity

Principle	Description
Consistency	Assumptions should generally have a consistent level of detail across the model. This level should be informed by the size and complexity of the project as well as the level of detail the applicant uses to evaluate its business.
Reasonableness	Assumptions should be sensible and derived from reputable data sources. Any proprietary research, analysis, benchmarks or expert opinions used to inform underlying assumptions should be documented in the accompanying narrative.
Functionality	Assumptions should be broken down into a comprehensive set of underlying drivers. For each line item in the outputs, there should be traceability to all underlying components, such that they can be validated and sensitized.

The remainder of this section includes examples of potential financial inputs to illustrate how the principles described above can be applied.[2]

Revenue assumptions example: The following example demonstrates the desired granularity for revenue inputs and assumptions for an illustrative semiconductor wafer manufacturing project as well as how the inputs translate into outputs in the income statement. In this example, the facility produces 5nm, 7nm, and 9nm wafers.

[2] The examples provided are for illustrative purposes only and should not be considered as professional tax or accounting advice. The contents may not be comprehensive, and the tax and accounting treatment of specific transactions or situations may vary depending on various factors. It is the responsibility of the applicants to ensure that the tax and accounting treatment of any transaction or situation is correct and compliant with the applicable laws and regulations. Applicants are advised to seek professional tax and accounting advice before making any decisions based on the information provided in this paper.

In the below figure the key revenue source, wafers, has been broken out into its underlying components. Given the facility is producing multiple types of wafers, the assumptions have been broken out accordingly (e.g., separate capacity, price, utilization, and yield assumptions based on wafer type).

Figure 2: Assumptions Revenue Example

Assumption	
Calculation	
Output	

Production segment A: Producing 5nm Wafers								
(A) Segment Capacity (Wafers Per Month) at full operation	1,000							
(B) Segment Capacity (Wafers Per Quarter) at full operation [A*3]	3,000							
	Year 1				*Year 2*			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
(C) Expected Utilization	0%	10%	50%	100%	100%	100%	100%	100%
(D) Wafers produced [B*C]	0	300	1,500	3,000	3,000	3,000	3,000	3,000
(E) Wafer Yield %	95%	95%	95%	95%	95%	95%	95%	95%
(F) Effective # Wafers Produced [D*E]	0	285	1,425	2,850	2,850	2,850	2,850	2,850
(G) Wafer Sale Price (for 5nm wafers)	1,000	1,000	1,000	1,000	950	950	950	950
(H) Revenue from Segment A Sales [F*G]	0	285,000	1,425,000	2,850,000	2,707,500	2,707,500	2,707,500	2,707,500
Production segment B: Producing 7nm Wafers								
(A) Segment Capacity (Wafers Per Month) at full operation	1,000							
(B) Segment Capacity (Wafers Per Quarter) at full operation [A*3]	3,000							
	Year 1				*Year 2*			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
(C) Expected Utilization	0%	20%	60%	100%	100%	100%	100%	100%
(D) Wafers produced [B*C]	0	600	1,800	3,000	3,000	3,000	3,000	3,000

When translating the assumptions into outputs on the income statement, this example model maintains a consistent segmentation. Individual production segments (5nm, 7nm, 9nm) used to calculate the project revenue are broken out under the operating income section of the income statement. The segmentation used by the applicant should be based on what they believe are the key assumption differentiators but could include segmentation by product, production line, end market, and/or customer.

Figure 3: Income Statement Revenue Example

Income Statement *Model output summarizing income statement for the project* Quarter	Q1	Q2
Operating Income		
5nm Wafer Sales	0	285,000
7nm Wafer Sales	0	228,000
9nm Wafer Sales	0	114,000
[Other products]	0	0
Net Sales	-	**627,000**
CHIPS Direct Funding Contributions	1,000,000	1,000,000
[Other income sources]	-	-
Other Operating Income	**1,000,000**	**1,000,000**
Total Revenue	1,000,000	1,627,000

Operating costs assumptions example: The following example demonstrates the expected granularity for direct labor and corporate overhead operating cost inputs and assumptions for an illustrative semiconductor wafer manufacturing project, as well as how the inputs translate into outputs in the income statement.

This example shows direct labor costs being estimated by multiplying the expected "Full-Time Equivalents" (FTEs) required to operate the facility over time by the salary and benefits expectations of each employee type (e.g., operator, production supervisor, production manager, general manager, engineer, and technicians). Input assumptions drive the number of employees and wages varying over time based on expected trends and facility production volume.

Figure 4: Assumptions Direct Labor Example

Assumption	
Calculation	
Output	

Operating Cost: (1) Direct Labor

(A) # of FTEs by Direct Labor Type	*Year 1* Q1	Q2	Q3	Q4	*Year 2* Q1	Q2	Q3	Q4
Operator FTEs	0	100	200	300	300	300	300	300
Production supervisor FTEs	0	50	100	150	150	150	150	150
Production manager FTEs	0	25	50	75	75	75	75	75
General manager FTEs	5	10	10	10	10	10	10	10
Engineer FTEs	50	150	250	350	350	350	350	350
Technician FTEs	50	100	150	200	200	200	200	200
Total	105	435	760	1,085	1,085	1,085	1,085	1,085

(B) Salary & Benefits per FTE by Direct Labor Type	*Year 1* Q1	Q2	Q3	Q4	*Year 2* Q1	Q2	Q3	Q4
Operator FTEs	100,000	100,000	100,000	100,000	105,000	105,000	105,000	105,000
Production supervisor FTEs	100,000	100,000	100,000	100,000	105,000	105,000	105,000	105,000
Production manager FTEs	150,000	150,000	150,000	150,000	165,000	165,000	165,000	165,000
General manager FTEs	200,000	200,000	200,000	200,000	210,000	210,000	210,000	210,000
Engineer FTEs	100,000	100,000	100,000	100,000	105,000	105,000	105,000	105,000
Technician FTEs	100,000	100,000	100,000	100,000	105,000	105,000	105,000	105,000

(C) Salary & Benefits Costs Direct Labor Type [A*B]	*Year 1* Q1	Q2	Q3	Q4	*Year 2* Q1	Q2	Q3	Q4
Operator FTEs	0	10,000,000	20,000,000	30,000,000	31,500,000	31,500,000	31,500,000	31,500,000
Production supervisor FTEs	0	5,000,000	10,000,000	15,000,000	15,750,000	15,750,000	15,750,000	15,750,000
Production manager FTEs	0	3,750,000	7,500,000	11,250,000	12,375,000	12,375,000	12,375,000	12,375,000
General manager FTEs	1,000,000	2,000,000	2,000,000	2,000,000	2,100,000	2,100,000	2,100,000	2,100,000
Engineer FTEs	5,000,000	15,000,000	25,000,000	35,000,000	36,750,000	36,750,000	36,750,000	36,750,000
Technician FTEs	5,000,000	10,000,000	15,000,000	20,000,000	21,000,000	21,000,000	21,000,000	21,000,000
(D) Total	**11,000,000**	**45,750,000**	**79,500,000**	**113,250,000**	**119,475,000**	**119,475,000**	**119,475,000**	**119,475,000**

The below example shows a potential corporate SG&A allocation approach at the project level. This potential corporate SG&A application is intended to demonstrate the expected level of granularity. This does not include direct SG&A which should also be granular and included. The allocation approach used, if any, should be consistent with the allocation methodology used for other corporate projects or subsidiaries with support provided in the accompanying narrative. In this example, allocated SG&A expenses are allocated based on an FTE allocation factor.

Figure 5: Assumptions Corporate Allocations Example

Assumption
Calculation
Output

Operating Cost: (2) Allocated Corporate Overhead

(A) Corporate Overhead Expenses	Year 1				Year 2			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Admin and management salaries & benefits	10,000,000	10,000,000	10,000,000	10,000,000	10,500,000	10,500,000	10,500,000	10,500,000
Legal	10,000,000	10,000,000	10,000,000	10,000,000	10,500,000	10,500,000	10,500,000	10,500,000
Accounting	10,000,000	10,000,000	10,000,000	10,000,000	10,500,000	10,500,000	10,500,000	10,500,000
IT expenses	10,000,000	10,000,000	10,000,000	10,000,000	10,500,000	10,500,000	10,500,000	10,500,000
Marketing	10,000,000	10,000,000	10,000,000	10,000,000	10,500,000	10,500,000	10,500,000	10,500,000
Distribution	10,000,000	10,000,000	10,000,000	10,000,000	10,500,000	10,500,000	10,500,000	10,500,000
[Other SG&A]	0	0	0	0	0	0	0	0
SG&A	**60,000,000**	**60,000,000**	**60,000,000**	**60,000,000**	**63,000,000**	**63,000,000**	**63,000,000**	**63,000,000**
Process improvements	10,000,000	10,000,000	10,000,000	10,000,000	10,500,000	10,500,000	10,500,000	10,500,000
Product development	10,000,000	10,000,000	10,000,000	10,000,000	10,500,000	10,500,000	10,500,000	10,500,000
[Other R&D]	0	0	0	0	0	0	0	0
Research and Development	**20,000,000**	**20,000,000**	**20,000,000**	**20,000,000**	**21,000,000**	**21,000,000**	**21,000,000**	**21,000,000**
(A) Total Corporate Overhead	**80,000,000**	**80,000,000**	**80,000,000**	**80,000,000**	**84,000,000**	**84,000,000**	**84,000,000**	**84,000,000**

(B) Allocation from Parent to Project	Year 1				Year 2			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
(B.1) Project # of FTEs	105	435	760	1,085	1,085	1,085	1,085	1,085
(B.2) Parent # of FTEs	50,000	50,000	50,000	50,000	52,500	52,500	52,500	52,500
(C) FTE allocation factor [B.1*B.2]	**0.2%**	**0.9%**	**1.5%**	**2.2%**	**2.1%**	**2.1%**	**2.1%**	**2.1%**

(D) Allocated Corporate Overhead Expenses [A*C]	Year 1				Year 2			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Admin and management salaries & benefits	21,000	87,000	152,000	217,000	217,000	217,000	217,000	217,000
Legal	21,000	87,000	152,000	217,000	217,000	217,000	217,000	217,000
Accounting	21,000	87,000	152,000	217,000	217,000	217,000	217,000	217,000
IT expenses	21,000	87,000	152,000	217,000	217,000	217,000	217,000	217,000
Marketing	21,000	87,000	152,000	217,000	217,000	217,000	217,000	217,000
Distribution	21,000	87,000	152,000	217,000	217,000	217,000	217,000	217,000
[Other SG&A]	0	0	0	0	0	0	0	0
SG&A	**126,000**	**522,000**	**912,000**	**1,302,000**	**1,302,000**	**1,302,000**	**1,302,000**	**1,302,000**
Process improvements	21,000	87,000	152,000	217,000	217,000	217,000	217,000	217,000
Product development	21,000	87,000	152,000	217,000	217,000	217,000	217,000	217,000
[Other R&D]	0	0	0	0	0	0	0	0
Research and Development	**42,000**	**174,000**	**304,000**	**434,000**	**434,000**	**434,000**	**434,000**	**434,000**
(D) Total Corporate Overhead	**168,000**	**696,000**	**1,216,000**	**1,736,000**	**1,736,000**	**1,736,000**	**1,736,000**	**1,736,000**

When translating the above assumptions into outputs on the income statement, the figure below maintains a consistent segmentation with the underlying inputs and assumptions. All direct materials, labor, and production costs should be appropriately segmented to facilitate the calculations of gross margins and other key income-related metrics. Further, other operating costs below gross margin (e.g., SG&A and R&D costs) should be broken down by key categories; including direct costs vs corporate allocations.

Figure 6: Income Statement Operating Costs Example

Income Statement *Model output summarizing income statement for the project* **Quarter**	Q1	Q2
Operating Expenses		
Materials / Consumables / Chemicals		
Blank Silicon Wafers	1,000,000	1,000,000
High purity nitrogen	1,000,000	1,000,000
Oxygen	1,000,000	1,000,000
Hydrogen	1,000,000	1,000,000
Sulfuric acid	1,000,000	1,000,000
[Other materials / consumables / chemicals]	1,000,000	1,000,000
Sub-total	**6,000,000**	**6,000,000**
Utilities		
Electrical	1,000,000	1,000,000
Water	1,000,000	1,000,000
Natural gas	1,000,000	1,000,000
[Other utility costs]	1,000,000	1,000,000
Sub-total	**4,000,000**	**4,000,000**
Direct labor		
Operator salary & benefits	0	10,000,000
Production supervisor salary & benefits	0	5,000,000
Production manager salary & benefits	0	3,750,000
General manager salary & benefits	1,000,000	2,000,000
Engineer salary & benefits	5,000,000	15,000,000
Technician salary & benefits	5,000,000	10,000,000
[Other direct labor costs]	11,000,000	45,750,000
Sub-total	**22,000,000**	**91,500,000**
SG&A		
Direct cost	1,000,000	1,000,000
Corporate allocation	21,000	87,000
Admin and management salaries & benefits	1,021,000	1,087,000
Direct cost	1,000,000	1,000,000
Corporate allocation	21,000	87,000
Legal	1,021,000	1,087,000
Direct cost	1,000,000	1,000,000
Corporate allocation	21,000	87,000
Accounting	1,021,000	1,087,000
Direct cost	1,000,000	1,000,000
Corporate allocation	21,000	87,000
IT expenses	1,021,000	1,087,000
Direct cost	1,000,000	1,000,000
Corporate allocation	21,000	87,000
Marketing	1,021,000	1,087,000
Direct cost	1,000,000	1,000,000
Corporate allocation	21,000	87,000
Distribution	1,021,000	1,087,000
[Other SG&A expenses]	0	0
Sub-total	**6,126,000**	**6,522,000**
R&D		
Process improvements	21,000	87,000
Product development	21,000	87,000
[Other R&D expenses]	0	0
Sub-total	**42,000**	**174,000**
Total Operating Expenses	**38,168,000**	**108,196,000**

4. Metrics

As required in the NOFO, Applicants should capture key outputs in the form of internal rate of return (IRR), financial performance metrics, and risk and debt service metrics. We have outlined some guiding principles around metrics in the table below:

Table 2: Guiding Principles for Metrics

Principle	Description
Relevance	Metrics should reflect Applicant's view of the most appropriate measures of performance and risk based upon the project type and underlying business. Any decisions around inclusion/exclusion of specific metrics should be clearly explained in the corresponding narrative submitted in the application
Comprehensive	Applicants should include all metrics needed to assess project risks and performance
Standardized	Metrics should be consistent with industry standards and best practices, and should include commonly used indicators of risk, return, and performance measurement along with any requirements stated in the NOFO

Some key metrics for consideration (a subset of those mentioned in the NOFO) are outlined in the table below. IRR metrics should be clearly highlighted in the financial model and the accompanying narrative should provide a justification for why the projected IRR in the cash flow model is appropriate for a project of this type, scale, and risk profile. Similarly, if the applicant focuses on other specific return or performance metrics, the accompanying narrative should highlight those metrics, the applicant's view of their usefulness, and why the calculated values for those metrics are appropriate for the project based on market or other benchmarks.

Table 3: Example Key Metrics for Consideration

Type	Metric	Description
Internal Rate of Return (IRR) Metrics	Unlevered IRR	Also known as the "Project IRR", unlevered IRR reflects the discount rate that makes the net present value of a project's unlevered free cash flows equal to zero. Unlevered free cash flows assume no debt financing
	Levered IRR	Also known as the "Equity IRR", levered IRR reflects the discount rate that makes the net present value of a project's levered free cash flows equal to zero. Levered free cash flows include impacts from the project's / company's financing structure
Financial Performance Metrics	Payback Period	The amount of time required for cash inflows generated by a project to offset its initial cash outflow
	Return on Equity (ROE)	Measures financial performance calculated by dividing net income by equity and provides a gauge of a corporation's profitability and how efficiently it generates those profits
Risk and Debt Service Metrics	Debt / Equity Ratio	Shows the proportion of debt to equity and helps measure debt capacity and evaluate financial leverage. It is calculated by dividing total debt by total equity

	Debt Service Coverage Ratio (DSCR)	Measures the project's ability to produce enough earnings to cover its debt. DSCR is calculated by dividing the project's net operating income by its total debt service which includes interest and any required principal repayments

5. Scenario Analysis

Scenario analysis involves stressing model parameters under a range of scenarios or assumptions. Scenario analyses for the financial model should flow through the end-to-end model to demonstrate the impact on the output financials (income statement, cash flow, balance sheet) as well as the risk, performance, and return metrics.

We have outlined some guiding principles around scenario design in the table below.

Table 4: Guiding Principles for Scenario Design

Principle	Description
Appropriateness	Scenarios used in the analysis should reflect historical events or hypothetical situations to test how a project would perform under a range of possible outcomes with varying degrees of likeliness of occurring.
Variety	The Applicant should define and test a diverse range of scenarios and magnitudes to comprehensively assess key project risks and upsides. These scenarios should cover themes such as: - **Idiosyncratic scenarios**: scenarios based on direct project or company impacts (e.g., project construction delays). - **Market scenarios**: scenarios based on market or industry-wide impacts (e.g., reduction in leading edge wafer demand) - **Combined scenarios**: scenarios assuming combinations of project specific and market impacts
Impact	Scenarios that are highest impact on the forecast should be prioritized over those that are less impactful. The goal is to understand what the most material risks to the project are and how they impact the risk and return distributions (as well as project viability)
Directionality	Scenario analysis should show how the project performs under a variety of positive and negative scenarios to show the upside and downside ranges that may occur
Timing	While scenarios that alter early cashflows often have the highest impact on project return and profitability, scenarios should also assess impacts across the useful life of the facility to understand the stress at other points that may cause the project to become at risk (e.g., impact of reduced production in periods with the lowest coverage ratios)

In the accompanying narrative, the applicant should clearly describe and provide the rational for the scenarios selected (including underlying parameters altered and magnitude of changes and why the specific parameters and ranges were selected).

The following table provides examples of revenue assumptions that may be altered in scenario analyses.

Table 5: Example revenue assumptions and scenarios

Assumption	Example scenario
Wafer starting price	Increased competition during project construction leads to a global oversupply relative to demand, leading to a lower wafer price by the time the project starts operating
Wafer price changes over time	Technology has increased adoption in downstream products, leading to increased demand for output and stable prices during first few years of project operation
Capacity utilization rates	Higher downtime is required to repair and maintain equipment, leading to reduced operating time and therefore utilization
Wafer yields	Operational challenges with project lead to lower quality outputs and result in lower yields

6. Conclusion

This document is intended to provide guidance on the construction of the financial model that is required in the CHIPS NOFO as part of the full application. Applicants should use this document in conjunction with the NOFO. If Applicants have questions about this guidance, please consult the NOFO, other postings on the CHIPS website (including FAQs and Fact Sheets), or contact the CHIPS Program Office at apply@chips.gov.