

SolRiver Project Finance Platform — Memo

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1. Objective

The objective of this MVP is to demonstrate a structured, scalable approach to SolRiver's underwriting workflow using a centralized SQL database and modular Python-based financial models. The system is designed to address current operational challenges around input consistency, analytical repeatability, early-stage screening, and memo generation.

This memo provides an overview of the system's initial capabilities, outlines the architecture that supports future expansion, and identifies the enhancements required to achieve full production readiness.

2. System Overview

2.1 Centralized Project Database

The platform introduces a normalized SQL database that serves as a single source of truth for project assumptions. Key inputs include:

- Capex and operating assumptions
- PPA terms and degradation
- Capacity factor
- Debt structure and interest rates
- Location and COD year

While the MVP uses SQLite for local development, the architecture is already configured for seamless migration to Postgres (e.g., AWS RDS). Consolidating assumptions into a database eliminates version drift and improves data integrity across underwriting cycles.

2.2 Financial Modeling Engine

A modular, auditable Python model produces the core performance metrics used in SolRiver's investment evaluations:

- Levered IRR
- NPV at customizable discount rates
- DSCR (annual minimum)
- Simple payback
- Annual cash flow projections (25-year horizon)

The separation of financial logic from I/O operations improves transparency and positions the model for the addition of renewable-specific tax and depreciation structures.

2.3 Automated Reporting

The system includes a report generator that assembles key inputs, financial outputs, and interpretive commentary into a standardized Markdown summary. This structure streamlines internal documentation, enhances consistency across projects, and reduces the time required to prepare initial investment memos.

2.4 Sensitivity Framework

A sensitivity engine evaluates variations in:

- PPA pricing
- Leverage ratios
- Capex assumptions

This framework supports rapid early-stage screening and allows the team to quickly identify scenarios that meet or fall short of investment thresholds.

2.5 Command-Line Interface (CLI)

A CLI enables analysts to run the full underwriting pipeline—model execution, summary generation, and sensitivity analysis—without interacting directly with the codebase. This design supports a high-efficiency workflow and reduces operational risk tied to manual model manipulation when not necessary.

3. Strategic Relevance to SolRiver

The system is structured specifically to address several operational challenges that arise in a high-throughput acquisition environment:

3.1 Input Standardization

- By consolidating project assumptions into a single database, the platform eliminates the inconsistencies inherent in spreadsheet-based underwriting.

3.2 Analytical Consistency

- The use of a standardized Python model ensures that IRR, NPV, DSCR, and cash flow calculations are applied uniformly across all projects.

3.3 Efficiency in Memo Production

- The automated reporting module reduces repetitive writing tasks and enables analysts to focus on deal evaluation, risk assessment, and commercial judgment.

3.4 Scalable Infrastructure

- The architecture is designed for progressive enhancement, positioning SolRiver to develop a robust internal underwriting toolset without the need for external systems.

3.5 Accelerated Deal Screening

- The sensitivity engine enables rapid evaluation of economic viability, supporting SolRiver's strategy of identifying qualified assets early in the acquisition process.

4. Required Enhancements for Production-Grade Deployment: (90 Day Plan)

4.1 Financial Model

Future iterations should incorporate:

- MACRS depreciation
- ITC/PTC modeling
- Tax equity partnership structures
- Merchant price curves
- Energy storage hybridization
- Detailed O&M escalation

4.2 Database Expansion

Data tables should be extended to include:

- PPA contract metadata
- Interconnection costs and status
- EPC pricing detail
- Land lease economics
- Scenario management

4.3 Reporting and Analytics

Enhancements include:

- Automated PDF investment summaries
- Portfolio-level dashboards
- Actuals vs modeled performance analytics

4.4 Cloud Deployment

A transition to a cloud environment should incorporate:

- Postgres (AWS RDS)
- Automated nightly underwriting
- Logging, monitoring, and alerting
- S3-based storage for assumptions and results

4.5 User Interface Development

A web-based front end (FastAPI/Flask + React) would provide a streamlined interface for analysts and support role-based access across the organization.

5. Alignment with the Analyst Role

This project reflects the core competencies required for the Clean Energy Financial Analyst role at SolRiver:

1. **Financial Modeling:** The current model captures all primary investment metrics and is structured for rapid expansion into more advanced renewable-specific features.

2. **Clear, Structured Writing:** Both this memo and the automated summary output demonstrate the ability to communicate technical concepts concisely and professionally.
3. **Data and System Development:** The architecture intentionally mirrors the type of internal platform SolRiver described as a need—centralized, scalable, and easy for analysts to operate.
4. **Independent Execution:** The MVP was conceived, designed, and completed solely based on the job description and initial conversation, demonstrating initiative and ownership.

6. Conclusion

This MVP serves as a blueprint for a centralized, scalable underwriting platform tailored to SolRiver's needs. It demonstrates technical capability, modeling proficiency, and writing clarity while establishing a foundation that can be enhanced into a full internal system.

If selected for the Analyst role, I can begin immediately expanding this MVP—integrating renewable-specific tax structures, migrating the database to the cloud, enhancing screening tools, and building a streamlined interface that supports SolRiver's underwriting workflow as the portfolio continues to grow.

Thank you for the opportunity to share this work. I would welcome the chance to develop it further as part of the SolRiver team.