

# Technical Reference Manual

**Application:** Foothills R&R Wealth Planner

**Version:** v35 (Hybrid Cloud Edition)

**1. System Architecture & Security** Version 35 transitions from a strict Local-Execution Architecture to a Hybrid Cloud API model using Google Apps Script (GAS).

- **Authentication & RBAC:** The application is gated by a login interface requiring Name and Email. Credentials are transmitted asynchronously to a secure Google Sheet, which validates the user and assigns a Role (Admin or User).
- **Financial Data Handling:** General planner inputs remain in the browser's volatile memory or localStorage. However, Admins have API endpoints to sync real-time financial data from private Google Sheets and save/load specific dashboard states to the server. Session termination clears the active DOM state.

## 2. The Dual-Stage Pipeline (New)

The application is now divided into a two-step pipeline to streamline scenario building:

- **Stage 1: Actual Financial Dashboard:** An aggregator for current assets and liabilities. Admins can pull dynamic data from external spreadsheets.
- **Stage 2: Projection Planner:** The time-step simulation engine.
- **The Bridge (importDashboardToPlanner):** A translation function that ports Stage 1 data into Stage 2. It automatically calculates Net Property values (Asset minus Mortgage) and assigns targeted return rates and tax classifications (e.g., HSA defaults to 4.0% Roth).

**3. The Time-Step Simulation Engine** The core engine runs a discrete, year-by-year simulation loop from Current Age to Plan Until.

1. **Survivor Check:** Compares the current year against the Spouse Plan Until variable to trigger the Widow Protocol.
2. **Growth Calculation:** Applies the weighted average return to the portfolio balance.
3. **Gap Analysis:** Calculates  $(\text{Total Income} + \text{Event Cash}) - (\text{Expenses} + \text{Inflation})$ .
4. **Tax & Drawdown Optimization:** Surplus is added to the portfolio. A deficit calculates the specific "Gross Withdrawal" needed to cover the gap plus the generated tax liability, sequenced by the chosen withdrawal strategy.

**4. Event & Cash Flow Logic (Updated)** One-time events are treated as "Net Cash Flows". The user enters the amount after costs. Version 35 bypasses the old strict deficit-coverage logic and introduces User-Defined Destinations. Cash is routed to immediate spending, a zero-risk cash bucket, or a standard taxable growth bucket based on the event's configuration.