**Pilot Trainer Supply/Demand Planner - Application Requirements**

Version: 1.2

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**1. Introduction**

**1.1 Purpose**

This document outlines the comprehensive requirements for the "Pilot Trainer Supply/Demand Planner" web application. Its purpose is to provide a clear, unambiguous, and complete specification for the application's functionality, business rules, data handling, user interface (UI) expectations, and acceptance criteria. This document is intended for developers, testers, and stakeholders to ensure a shared understanding of the application.

The application aims to provide a visual and interactive tool for planning and forecasting pilot trainer supply versus training demand over a defined period (fortnights within specific years). It allows users to input training cohorts, define training pathways, manage trainer availability (FTE), and view the resulting demand, surplus, or deficit of trainers for different training categories.

**1.2 Scope**

The application will include:

* Input mechanisms for training cohorts and trainer FTE.
* A settings page for managing (Create, Read, Update, Delete - CRUD) training pathway definitions, including their constituent phases.
* Calculation engine for:
  + Projecting training phase timelines based on cohort start dates and pathway definitions.
  + Aggregating trainer demand per fortnight for different training categories (LT-CAD, LT-CP, LT-FO).
  + Calculating trainer surplus or deficit based on available FTE and a cascading allocation logic.
  + Calculating summary metrics like "Total LT Demand," "LT-CP Training Deficit," and "Total Net S/D."
* Display of outputs through:
  + A visual Gantt chart for training pathway timelines.
  + Data tables for FTE summary, trainer demand, and surplus/deficit.
  + Month and Fortnight headers for all data tables.
* Synchronized horizontal scrolling for all main data tables.
* Modal dialogs for detailed FTE input and pathway editing.
* User-friendly navigation between a "Planner" view and a "Settings" view.

**1.3 Definitions, Acronyms, and Abbreviations**

* **FTE:** Full-Time Equivalent (representing one available trainer).
* **FN:** Fortnight.
* **CP:** Cadet Pilot / Captain (context-dependent based on pathway type).
* **FO:** First Officer.
* **CAD:** Cadet.
* **CATA, CATB, STP, RHS, LHS:** Categories/qualifications of trainers. (See Section 2.6 for hierarchy).
* **GS+SIM:** Ground School + Simulator phase (does not consume line training FTE).
* **LT-CAD:** Line Training - Cadet.
* **LT-CP:** Line Training - Captain.
* **LT-FO:** Line Training - First Officer.
* **P1 Demand:** Demand for LT-CAD trainers.
* **P2 Demand:** Demand for LT-CP trainers.
* **P3 Demand:** Demand for LT-FO trainers.
* **S/D:** Surplus/Deficit.

**2. Overall Description**

**2.1 Product Perspective**

The "Pilot Trainer Supply/Demand Planner" is a standalone, client-side web application. It operates based on data input by the user and performs calculations locally within the browser. There is no server-side backend or persistent database in the current version.

[Diagram Suggestion: A high-level data flow diagram showing inputs (Cohorts, FTE, Pathway Definitions) leading to calculations and then to outputs (Gantt, Tables).]

**2.2 Product Functions (Summary)**

* **Cohort Management:** Allow users to add new training cohorts, specifying the number of trainees, the training pathway they will follow, and their start fortnight.
* **FTE Management:** Allow users to input and adjust the available Full-Time Equivalent (FTE) for different trainer categories for each fortnight.
* **Pathway Management (Settings):**
  + Display a list of existing training pathways.
  + Allow users to add new training pathways, defining ID, name, group size, trainee type, and a sequence of phases.
  + Allow users to edit existing training pathways.
  + Allow users to delete training pathways.
  + For each phase within a pathway, users can define the event type (GS+SIM, LT-CAD, LT-CP, LT-FO, Custom/Placeholder) and duration in fortnights.
* **Demand Calculation:** Automatically calculate the demand for different types of line training (LT-CAD, LT-CP, LT-FO) for each fortnight based on active cohorts and their pathway definitions.
* **Surplus/Deficit Calculation:**
  + Allocate available trainer FTE to meet demand based on a predefined priority and trainer qualification cascade.
  + Calculate the surplus or deficit for each line training category.
  + Calculate specific metrics: "LT-CP Training Deficit" and "Total Net S/D (All Types)."
* **Data Visualization:**
  + Display training timelines on a Gantt chart.
  + Present FTE, demand, and surplus/deficit data in scrollable tables with synchronized horizontal scrolling and month/fortnight headers.
* **User Interface:** Provide an intuitive interface with clear input forms, modals for detailed editing, and distinct sections for inputs, outputs, and settings.

**2.3 User Characteristics**

The intended users are training planners, resource managers, or personnel involved in scheduling and allocating pilot training resources. Users are expected to understand basic pilot training concepts and terminology.

**2.4 General Constraints**

* The application is client-side only; data is not persisted between sessions unless explicitly saved/exported by the user (functionality not currently in scope but a potential future enhancement).
* Calculations are based on a fortnightly time interval.
* The number of fortnights and years displayed is configurable within the application's code (START\_YEAR, END\_YEAR, FORTNIGHTS\_PER\_YEAR).
* The application relies on JavaScript being enabled in the user's browser.

**2.5 Assumptions and Dependencies**

* Each line training activity (LT-CAD, LT-CP, LT-FO) requires one trainer per trainee within a pathway's group.
* The mapping of fortnights to months for header display is an approximation (FN01-02 for Jan, FN03-04 for Feb, ..., FN21-22 for Nov, FN23-26 for Dec).
* GS+SIM phases do not consume the line training FTE being tracked for surplus/deficit calculations related to CATA, CATB, STP, RHS, LHS trainers.

**2.6 Trainer Model and Hierarchy**

The application defines the following trainer categories, which have an implicit hierarchy and cascading capability for fulfilling training tasks:

* **CATB (Category B Trainer):** Can perform all line training tasks (LT-CAD, LT-CP, LT-FO).
* **CATA (Category A Trainer):** Can perform all line training tasks (LT-CAD, LT-CP, LT-FO). Assumed to be of similar or higher capability than CATB for the purpose of this model.
* **STP (Simulator Training Pilot/Provider):** Can perform LT-CAD, LT-CP, and LT-FO tasks.
* **RHS (Right Hand Seat qualified for training):** Can perform LT-CP and LT-FO tasks. Cannot perform LT-CAD.
* **LHS (Left Hand Seat qualified for training):** Can perform LT-FO tasks only. Cannot perform LT-CAD or LT-CP.

**Cascading Principle:** Trainers from a more qualified pool can fulfill the demand of a less restrictive training type if they are surplus after meeting their primary (or more restrictive) demand. For example, a CATB trainer, if not needed for LT-CAD, can be used for LT-CP or LT-FO. This is detailed in the allocation logic (Section 3.5.2).

**3. Functional Requirements**

**3.1 Navigation**

* **FR3.1.1:** The application shall provide a clear navigation mechanism (e.g., tabs or buttons) to switch between the "Planner" view and the "Settings" view.
* **FR3.1.2:** The active view shall be visually indicated in the navigation.

**3.2 Planner View - Inputs**

**3.2.1 Add New Training Cohort**

* **FR3.2.1.1:** The user shall be able to input the number of trainees for a new cohort (must be a positive integer).
* **FR3.2.1.2:** The user shall be able to select a training pathway for the cohort from a dropdown list populated with currently defined pathways.
* **FR3.2.1.3:** The user shall be able to select a start year for the cohort from a dropdown list.
* **FR3.2.1.4:** The user shall be able to select a start fortnight (FN01-FN26) for the cohort from a dropdown list.
* **FR3.2.1.5:** An "Add Cohort" button shall trigger the addition of the cohort to the system.
* **FR3.2.1.6:** Input Validation:
  + Number of trainees must be a multiple of the selected pathway's defined group size. An error message shall be shown if not.
  + All cohort input fields must be filled.
* **FR3.2.1.7:** Upon successful addition, all output tables and the Gantt chart shall refresh to reflect the new cohort.

**3.2.2 Trainer FTE Availability**

* **FR3.2.2.1:** A summary table shall display the "Total FTE" (sum of all trainer categories) for each fortnight across the planning period.
* **FR3.2.2.2:** An "Edit Detailed FTE" button shall be provided.
* **FR3.2.2.3:** Clicking the "Edit Detailed FTE" button shall open a modal dialog.
* **FR3.2.2.4:** The modal shall display a table allowing users to input/edit FTE values for each defined trainer category (CATB, CATA, STP, RHS, LHS) for every fortnight in the planning period.
* **FR3.2.2.5:** FTE inputs shall accept non-negative integer values. Default FTE values shall be pre-populated.
* **FR3.2.2.6:** Changes to FTE values in the modal shall immediately update the "Trainer Surplus/Deficit" table and the "Total FTE" summary table on the main planner page.
* **FR3.2.2.7:** The modal shall be closable.

**3.3 Planner View - Outputs**

**3.3.1 General Table Features**

* **FR3.3.1.1:** All main data tables (FTE Summary, Gantt Chart, Demand Table, Surplus/Deficit Table) shall display a two-row header:
  + The top row shows "Month-Year" (e.g., "Jan-2024"), with each month cell spanning the appropriate number of fortnight columns.
  + The second row shows individual Fortnight headers (e.g., "FN01", "FN02").
* **FR3.3.1.2:** The first descriptive column of all main data tables shall have a fixed width to ensure alignment of subsequent fortnight columns.
* **FR3.3.1.3:** All main data tables shall have synchronized horizontal scrolling.
* **FR3.3.1.4:** Table headers (Month, Fortnight, and the first descriptive column) shall remain sticky during scrolling.

**3.3.2 Training Pathway Timeline (Gantt Chart)**

* **FR3.3.2.1:** The Gantt chart shall visually represent active training cohorts.
* **FR3.3.2.2:** Each row in the Gantt chart shall represent an added cohort, displaying "N x Pathway Name" in the first column. Full details (including start fortnight) shall be visible on hover.
* **FR3.3.2.3:** Cohorts shall be sorted by their start fortnight in ascending order.
* **FR3.3.2.4:** For each cohort, the chart shall display bars representing its training phases (GS+SIM, LT-CAD, LT-CP, LT-FO) across the fortnights.
* **FR3.3.2.5:** Different phase types shall be visually distinguishable by color.
* **FR3.3.2.6:** Phases defined as "Custom/Placeholder" (or any phase with trainerDemandType: null and not "GS+SIM") will result in an empty cell (no colored bar, no text) in the Gantt chart for that phase's duration for that cohort, visually indicating a non-active or non-tracked period within the pathway.

**3.3.3 Calculated Trainer Demand Table**

* **FR3.3.3.1:** This table shall display the calculated trainer demand for each fortnight.
* **FR3.3.3.2:** Rows shall include:
  + Demand\_P1\_LTCAD (LT-CAD (P1))
  + Demand\_P2\_LTCP (LT-CP (P2))
  + Demand\_P3\_LTFO (LT-FO (P3))
* **FR3.3.3.3:** A "Total LT Demand" row shall display the sum of P1, P2, and P3 demand for each fortnight.

**3.3.4 Trainer Surplus/Deficit Table**

* **FR3.3.4.1:** This table shall display the calculated trainer surplus or deficit for each fortnight.
* **FR3.3.4.2:** Rows shall include S/D for:
  + LT-CAD (P1) S/D
  + LT-CP (P2) S/D
  + LT-FO (P3) S/D
* **FR3.3.4.3:** Deficit values (negative numbers) shall be visually highlighted (e.g., red color, bold). Surplus values (positive) may also be highlighted (e.g., green).
* **FR3.3.4.4:** A row labeled "LT-CP Training Deficit" shall display the specific deficit (if any, otherwise 0) for LT-CP training. This value is derived from the LT-CP (P2) S/D (min(0, S/D\_P2)).
* **FR3.3.4.5:** A "Total Net S/D (All Types)" row shall display the result of: (Total Initial FTE for the fortnight) - (Total LT Demand for the fortnight).

**3.4 Settings View - Pathway Management**

**3.4.1 Display Pathways**

* **FR3.4.1.1:** The settings page shall display a table listing all currently defined training pathways.
* **FR3.4.1.2:** The table shall show columns for Pathway ID, Name, Group Size, Trainee Type, and Number of Phases.
* **FR3.4.1.3:** Each row shall have "Edit" and "Delete" actions.

**3.4.2 Add/Edit Pathway**

* **FR3.4.2.1:** An "Add New Pathway" button shall open a modal dialog for creating a new pathway definition.
* **FR3.4.2.2:** Clicking "Edit" on an existing pathway shall open the same modal, pre-filled with that pathway's data.
* **FR3.4.2.3:** The modal form shall allow input for:
  + Pathway ID (text, unique, uppercase suggested, disabled when editing).
  + Pathway Name (text).
  + Group Size (positive integer).
  + Trainee Type (dropdown: CP, FO, CAD).
* **FR3.4.2.4:** Dynamic Phase Definition within the modal:
  + Users shall be able to add one or more phases to the pathway.
  + For each phase, users shall select an "Event Type" from a dropdown (GS+SIM, LT-CAD, LT-CP, LT-FO, Custom/Placeholder).
  + For each phase, users shall input a "Duration (Fortnights)" (positive integer).
  + An "Add Phase" button shall add a new set of phase input fields to the form.
  + A "Remove" button shall be available for each phase input group.
* **FR3.4.2.5:** The modal shall have "Save Pathway" and "Cancel" buttons.
* **FR3.4.2.6:** Input Validation:
  + Pathway ID must be unique if adding a new pathway. Specific format constraints (e.g., max length, allowed characters like alphanumeric, must start with 'A') should be defined for Pathway ID.
  + All main pathway fields (ID, Name, Group Size, Type) must be filled.
  + A pathway must have at least one phase.
  + Each phase must have a selected Event Type and a valid duration (>0).
* **FR3.4.2.7:** Upon successful save:
  + The pathways data object in the application shall be updated.
  + The pathways table on the settings page shall refresh.
  + The "Training Pathway" dropdown on the planner page shall refresh.
  + The modal shall close.
* **FR3.4.2.8:** The "Cancel" button or closing the modal via "×" shall discard any unsaved changes.

**3.4.3 Delete Pathway**

* **FR3.4.3.1:** Clicking "Delete" on a pathway shall prompt the user for confirmation via a modal dialog.
* **FR3.4.3.2:** If confirmed, the pathway shall be removed from the pathways data object.
* **FR3.4.3.3:** The pathways table and the planner's pathway dropdown shall refresh.
* **FR3.4.3.4:** If not confirmed, the pathway shall not be deleted.
* [New FR Suggestion for Edge Case under 3.4.3] FR3.4.3.5: If a pathway is deleted that is currently assigned to one or more active cohorts in the planner, the application shall [Define Behavior: e.g., 'display a warning that cohorts using this pathway may become invalid', or 'prevent deletion and prompt user to remove cohorts first', or 'allow deletion and cohorts using it will show an error/warning state in the Gantt chart']. This behavior needs to be explicitly defined.

**3.5 Business Rules & Logic**

*[Diagram Suggestion: A flowchart illustrating the cascading logic of trainer allocation from P1 demand through P3 demand, showing how surplus trainers from one pool flow to the next.]*

* **BR3.5.1 (Demand Calculation):** Demand for each line training type (P1, P2, P3) is the sum of all trainees from active cohorts currently in a phase corresponding to that demand type. Demand = Number of Cohort Instances \* Pathway Group Size for each active phase.
* BR3.5.2 (Trainer Qualifications for Line Training Phases):

| Line Training Phase | Qualified Trainer Categories |

| :------------------ | :--------------------------- |

| LT-CAD | CATB, CATA, STP |

| LT-CP | CATB, CATA, STP, RHS |

| LT-FO | CATB, CATA, STP, RHS, LHS |

* BR3.5.3 (Trainer Allocation - Cascade & Priority):

Trainer FTE is allocated to meet demand in the following priority order. Trainers from a more qualified pool can fulfill demand for less restrictive training if they are surplus after meeting higher priority demand.

| Priority | Demand Category | Primary Trainer Pool (Most Restricted First) | Secondary/Surplus Trainer Pool(s) from Previous Steps |

| :------- | :---------------- | :----------------------------------------- | :---------------------------------------------------- |

| 1 | Demand\_P1\_LTCAD | CATB, CATA, STP | None |

| 2 | Demand\_P2\_LTCP | RHS | Surplus from (CATB + CATA + STP) after P1 |

| 3 | Demand\_P3\_LTFO | LHS | Surplus from (CATB + CATA + STP + RHS) after P1 & P2 |

* **BR3.5.4 (Surplus/Deficit per Phase):** For each P1, P2, P3, S/D = Available Trainers for that phase (after considering higher priorities) - Demand for that phase.
* **BR3.5.5 (LT-CP Training Deficit):** MIN(0, P2 S/D). This represents the number of LT-CP training slots that cannot be fulfilled.
* **BR3.5.6 (Total Net S/D):** Total Initial FTE (all categories for the fortnight) - Total LT Demand (P1+P2+P3 for the fortnight).
* **BR3.5.7 (Pathway Phase Data):** When saving a pathway phase from the settings form:
  + The phase name is taken from the selected "Event Type" dropdown's text (e.g., "GS+SIM", "LT-CAD").
  + The trainerDemandType (e.g., null, "LTCAD") is determined by the demandType property associated with the selected "Event Type".

**4. Non-Functional Requirements**

**4.1 Performance**

* **NFR4.1.1:** UI updates (table rendering, Gantt chart updates) after adding a cohort or changing FTE shall complete within 500 milliseconds when handling up to 100 active cohorts over a 2-year planning period. Calculation of demand and surplus/deficit for all fortnights should complete within 200 milliseconds under the same load.
* **NFR4.1.2:** Synchronized scrolling should be smooth.

**4.2 Usability**

* **NFR4.2.1:** The application shall be intuitive for users familiar with resource planning.
* **NFR4.2.2:** Error messages shall be clear and guide the user to correct inputs.
* **NFR4.2.3:** Visual cues (colors for deficits/surpluses, Gantt bars) shall aid in quick interpretation of data.
* **NFR4.2.4:** Modals should be easy to open, understand, and close.

**4.3 Maintainability**

* **NFR4.3.1:** The JavaScript code shall be well-commented, particularly for complex calculation logic and rendering functions.
* **NFR4.3.2:** Configuration data (like pathway definitions, trainer categories, year ranges) shall be clearly defined at the beginning of the script for easier modification.

**4.4 Browser Compatibility**

* **NFR4.4.1:** The application shall function correctly on the latest two major versions of Chrome, Firefox, Edge, and Safari at the time of release.

**5. User Interface (UI) Expectations**

* **UI5.1:** Clean, professional, and uncluttered interface.
* **UI5.2:** Consistent styling for buttons, forms, tables, and modals.
* **UI5.3:** Responsive design that adapts reasonably to different screen sizes (desktop-focused primarily, but usable on tablets).
* **UI5.4:** Clear visual hierarchy for information.
* **UI5.5:** Fortnight and Month headers in tables should clearly align with the data columns.
* **UI5.6:** First descriptive column in data tables should remain sticky during horizontal scroll.
* **UI5.7:** Table headers (Month/Fortnight) should remain sticky during vertical scroll of table content (if tables become very long).

**6. Data Requirements**

**6.1 Pathway Data Structure (JavaScript Object pathways)**

* Key: Pathway ID (string, e.g., "A202")
* Value: Object with properties:
  + name: User-friendly name (string, e.g., "A202 (2xCP)")
  + groupSize: Number of trainees this pathway definition applies to (integer).
  + type: Trainee type (string: "CP", "FO", "CAD").
  + phases: Array of phase objects. Each phase object has:
    - phase: Name of the phase/event (string, e.g., "GS+SIM", "LT-CAD"). Derived from "Event Type" selection.
    - duration: Duration in fortnights (integer).
    - trainerDemandType: String ("LTCAD", "LTCP", "LTFO") or null. Derived from "Event Type" selection.

**6.2 Trainer FTE Data Structure (JavaScript Object trainerFTE)**

* Key: Fortnight ID (string, e.g., "2024-FN01")
* Value: Object with properties for each trainer category:
  + CATA: Number (FTE)
  + CATB: Number (FTE)
  + STP: Number (FTE)
  + RHS: Number (FTE)
  + LHS: Number (FTE)

**6.3 Active Cohort Data Structure (JavaScript Array activeCohorts)**

* Each element is an object representing a cohort:
  + id: Unique identifier (string).
  + numTrainees: Number of trainees in this cohort instance.
  + pathwayKey: ID of the pathway this cohort follows (string).
  + startFortnight: Fortnight ID when this cohort starts (string).

**7. Acceptance Criteria**

This note is good. To make it more actionable, suggest adding a sub-section for each major functional requirement area (e.g., 7.1 Cohort Management ACs, 7.2 FTE Management ACs, 7.3 Pathway Management ACs, 7.4 Calculation ACs, 7.5 Display ACs) and then listing specific positive and negative test case scenarios under each. This provides a clear structure for expansion.

**7.1 AC - Add New Cohort**

* **Given** a user is on the Planner page,
* **When** the user enters valid data for "Number of Trainees", selects a "Training Pathway", "Start Year", and "Start Fortnight",
* **And** clicks "Add Cohort",
* **Then** a new cohort row shall appear in the Gantt Chart, sorted by start date.
* **And** the Demand Table and Surplus/Deficit Table shall update to reflect the new demand.
* **And** if the "Number of Trainees" is not a multiple of the selected pathway's group size, an error message is shown, and the cohort is not added.

**7.2 AC - Calculate LT-CAD Surplus/Deficit**

* **Given** FTE for CATB=6, CATA=6, STP=10 (Total P1 Pool=22) for FN01,
* **And** Demand for LT-CAD is 5 for FN01,
* **When** the surplus/deficit calculation runs,
* **Then** the "LT-CAD (P1) S/D" row for FN01 shall display +17.
* **And** the remaining FTE for P2 calculation from this pool will consider that 5 FTE were consumed.

**7.3 AC - Synchronized Table Scrolling**

* **Given** the Planner page is displaying all four data tables (FTE Summary, Gantt, Demand, S/D),
* **When** the user scrolls one table horizontally,
* **Then** all other three tables shall scroll horizontally to the same position.

**7.4 AC - Add New Pathway (Settings)**

* **Given** a user is on the Settings page and opens the "Add New Pathway" modal,
* **When** the user enters a unique ID "A999", name "Test Pathway", group size 2, type "FO", defines one phase ("LT-FO", 4 fortnights, "LTFO" demand), and clicks "Save Pathway",
* **Then** the pathway "A999" shall appear in the "Manage Training Pathways" table.
* **And** "Test Pathway" shall be available in the "Training Pathway" dropdown on the Planner page.
* **And** the modal shall close.

**Appendix A: Detailed Calculation Example (Single Fortnight)**

Let's assume for Fortnight "2024-FN05":

**1. Trainer FTE Supply (Initial):**

* CATB: 6
* CATA: 6
* STP: 10
* RHS: 10
* LHS: 10
* **Total Initial FTE:** 6 + 6 + 10 + 10 + 10 = **42**

**2. Calculated Line Training Demand (from active cohorts):**

* Demand\_P1\_LTCAD (LT-CAD demand): 5
* Demand\_P2\_LTCP (LT-CP demand): 8
* Demand\_P3\_LTFO (LT-FO demand): 12
* **Total LT Demand:** 5 + 8 + 12 = **25**

**3. Trainer Allocation and Surplus/Deficit Calculation (Cascading Logic):**

* **Step 3a: Meet Demand\_P1\_LTCAD (5 trainees)**
  + Trainers qualified for LT-CAD: CATB (6), CATA (6), STP (10).
  + Total Pool for P1: 6 + 6 + 10 = **22**
  + S/D for LT-CAD (P1): 22 (available) - 5 (demand) = **+17**
  + FTE consumed from P1 pool: 5.
  + Remaining FTE in P1 pool (CATB+CATA+STP) for further cascade: 22 - 5 = **17**
* **Step 3b: Meet Demand\_P2\_LTCP (8 trainees)**
  + Primary trainers for LT-CP (not used in P1): RHS (10).
  + Surplus from P1 pool (CATB, CATA, STP): 17.
  + Total Pool for P2: 10 (RHS) + 17 (surplus P1 pool) = **27**
  + S/D for LT-CP (P2): 27 (available) - 8 (demand) = **+19**
  + FTE consumed from P2 pool: 8.
  + Remaining FTE in P2 pool (RHS + surplus P1) for further cascade: 27 - 8 = **19**
  + "LT-CP Training Deficit": min(0, +19) = **0**
* **Step 3c: Meet Demand\_P3\_LTFO (12 trainees)**
  + Primary trainers for LT-FO (not used in P1/P2): LHS (10).
  + Surplus from P2 pool (RHS + surplus P1 pool): 19.
  + Total Pool for P3: 10 (LHS) + 19 (surplus P2 pool) = **29**
  + S/D for LT-FO (P3): 29 (available) - 12 (demand) = **+17**

**4. Final Surplus/Deficit Table Values for "2024-FN05":**

* LT-CAD (P1) S/D: **+17**
* LT-CP (P2) S/D: **+19**
* LT-FO (P3) S/D: **+17**
* LT-CP Training Deficit: **0**
* Total Net S/D (All Types): 42 (Total Initial FTE) - 25 (Total LT Demand) = **+17**

*This document is a living document and should be updated as the application evolves.*