Workforce Optimizer Help

Quick Start Guide

- Start the Workforce Optimizer solution by double-clicking on the desktop icon.
- Use the Browse buttons to select an Employee_Data.csv, Personnel_Required.csv, and Hard_Limits.csv file to be used for input.
- Click on View Input Data to see the data in the UI.
- Click Settings > Folder Locations in the top menu bar and define a folder where Data files (input data) and Output files (schedule and summary files) are saved. By default these folders are defined as:
    - Data folder - /Users/<yourName>/AppData/Local/Workforce Optimizer/data
    - Output folder - /Users/<yourName>/AppData/Local/Workforce Optimizer/output
    - **NOTE: The AppData is hidden by default in the Windows operating system. You can unhide it by navigating to /Users/<yourName> and clicking View > Show > Hidden Items.**
- Click Generate Schedule. The application will prompt you to save input files. If you have defined the folders as recommended in the previous bullet, the input files will be saved in the Data folder you defined. The solution will generate the schedules (one for each Work Area) and place them in the Output folder you defined.

Basic Operation

- The Workforce Optimizer solution takes inputs provided by the user and employs a solver to use those inputs to build a work schedule.
- Options include:
    - Start Date
    - Number of Weeks
    - Employee Data
    - Personnel Required Data
    - Hard Limits Data

Input Data

- Input data is saved in standard CSV format files in the folder defined in Settings > Folder Locations. The Workforce Optimizer comes packaged with standard input files. After the application is installed, the Browse buttons for each input file will route the user to these files. Once a folder location is set via Settings > Folder Locations, the data seen in the UI will be saved to these folders. Input data includes:

- Start Date – The date on which the generated schedule will start. This date can be any day. It is recommended that a Monday be used so that the solver can fully understand weekends (Fri – Sun).
- Number of Weeks – The number of weeks for which the schedule will be generated.
- Employee Data – Per-employee inputs:
    - Work Area – The work area for the employee in question. Work areas are dynamic and are defined in the Hard Limits data (see below).
    - Preferred Shift – The shift preferred for the employee in question. Shifts are dynamic and are defined in the Hard Limits data (see below).
    - Preferred Days – The days the preferred for the employee in question. These are defined as standard 3-letter day names, separated by commas.
    - Must have off – Dates for which the employee in question must have off (vacation, etc.). This is a hard limit resulting in the employee in question not being available to schedule for the date in question. These are defined in standard mm/dd/YYYY format.
    - Min Shifts per Week – This is the minimum number of shifts for the week, for the employee in question.
    - Max Shifts per Week – This is the maximum number of shifts for the week, for the employee in question.
    - Max Number of Weekend Days – The maximum number of days for which the solver will schedule a shift for weekend days (Fri – Sun, contiguous) for the employee in question.
- Required Personnel – Personnel required for each work area and shift.
    - These values are in the format Shift1/Shift2/Shift3 for each Work Area defined. The shifts are in the same order as defined in the Shifts field of Hard Limits.
- Hard Limits – Hard limits for the solver in generating schedules.
    - Max Number of Shifts per Week - This is per employee and prevents double shfits. Recommend to be left at the default of 1.
    - Violate Rules Order – Rules which the solver will violate to fill out the schedule. If this field is blank, ***none*** of the rules will be violated and it is likely the solver will ***not be able to generate a schedule due to capacity*** (more shifts needed than available). Rules entered into this field must be the exact names of the inputs and will be violated in the order shown in the field. It is recommended that at least “Preferred Days” and “Preferred Shifts” be in the Violate Rules Order field.
    - Shifts – Shifts for the solver to consider. This is a dynamic field. Any number and/or name for each shift can be defined, separated by commas.
    - Work Areas – Work Areas for the solver to consider. This is a dynamic field. Any number/or name for each Work Area can be defined, seperated by commas. A schedule for each Works Area is produced by the solver.

Output Data

- The generated schedule is output both the UI and to a files dated by the schedule start date. The file is written to the Data folder defined in Settings > Folder Locations.
- Output data (schedules) are saved by Work Area (one for each work area, covering the period in question). These files include headers which allows the user to easily format and print the schedules.
- The Workforce Optimizer also outputs a Summary. The summary is shown to the user when the solver finishes generating the schedules. It is also written to a file in the Data folder. The summary includes:
    - Capacity report – This section of the summary computes the number of shifts required for each area and the number of shifts available per week for the work area in question. The capacity report does not take "Must have off" days in these calculations. This means that if the capacity report shows enough capacity and the solver is unable to generate a schedule due to capacity, too many "Must have off" days may be the reason. See the Advanced Operation section for more information.
    - Weekend constraint violations: This section of the summary computes information regarding weekend violations. If Max Number of Weekend Days is not in the Violate Rules Order field in Hard Limits, this section will always show zero and no weekend violations. If Max Number of Weekend Days is in Violate Rules Order in Hard Limits, this section will show the details of those violations.
    - Employee summary – This section computes the number of employees for each Work Area and the number required for the Work Area to avoid weekend violations. This can be helpful in determining the number of employees needed in each Work Area.

Editing and Saving Data

- **IMPORTANT** – The Workforce Optimizer works from the files saved. This means that if the user changes the input data in the UI, those changes ***must be saved*** for the solver to take the changes into consideration when generating the schedules. For this reason, the user is prompted to save in the input data when Generate Schedule is clicked.
- The user may edit the data directly in the UI by double-clicking on the field in question.
- Both input and output (schedule) data can be edited directly in the UI.
- Once data is edited in the UI, the ***must save the data***.
- After clicking the Save Input Data or Save Schedule Changes button, the user is prompted to save the files as follows:
    - If the files don't exist in the folder in question, they will be saved and the user given a message box which shows this information.
    - If the files already exist in the folder in question, the user is prompted with an Overwrite question:
        - Yes – Overwrite the existing file
        - No – Do not overwrite the existing file. The user is given a dialog in which a new file

name may be specified.

- Cancel – Do not save this file at all.

Advanced Operation

- The Workforce Optimizer solution employs advanced solver techniques to generate workforce schedules according to the user inputs. The user may manipulate the input data to achieve better/desired outcomes by editing the Violate Rules Order field in Hard Limits.

Violate Rules Order

- The Violate Rules Order field in Hard Limits provides the user a method of controlling how the solver will handle issues. The user can find detailed information regarding solver actions n the logs. The logs are found in /Users/<yourName>/AppData/Workforce Optimizer/logs. Below are some common issues and recommended actions:
  - More shifts needed in one or more Work Areas:
    - Increase Max Number of Shifts for employees assigned to the Work Area in question.
    - Change the Work Area for one or more employees.
    - Add Max Number of Shifts to the Violate Rules Order field in Hard Limits. This will result in the solver violating the Max Number of Shifts values for employees defined in Employee Data in order to fill the schedule.
  - Some employees assigned less shifts than defined in Min Number of Shifts:
    - Ensure Min Number of Shifts is ***not*** in the Violate Rules Order field in Hard Limits and/or that if defined, it is not first. If Min Number of Shifts ***is*** in the Violate Rules Order field in Hard Limits, the solver may assign a number of shifts to the employee question that is less than the defined Min Number of Shifts.
    - Increase the Min Number of Shifts value for the employee in question.
    - Increase the Max Number of Weekend Days for the employee in question.
  - Some employees assigned too many shifts or shift not evenly distributed:
    - Decrease Max Number of Shifts for employees that have a larger value in this field.
    - Decrease Max Number of Weekend Days for employees that have a larger value in this field.