AssetWORKS

Replacement Modeling

Quick Guide

Version 24.0
Last Modified 24.0 | March 2024

Technical Support

AssetWorks provides several ways to connect with the Customer Support team. Be prepared to provide detailed information to the representative. If you are reporting an issue by email, include screen shots of your problem. This will provide the Customer Support representative with the information needed to respond quickly and effectively.

Customer Support is available Monday through Friday, 7:00 a.m. to 7:00 p.m., Eastern Time.

Telephone: 1-610-225-8300

Email: M5Support@AssetWorks.com

Website: Community.AssetWorks.com

The support website can be used to open issues, subscribe to user groups and download documentation, as well as to access the latest AssetWorks news. For secure access to the website, contact Customer Support by calling the number above.

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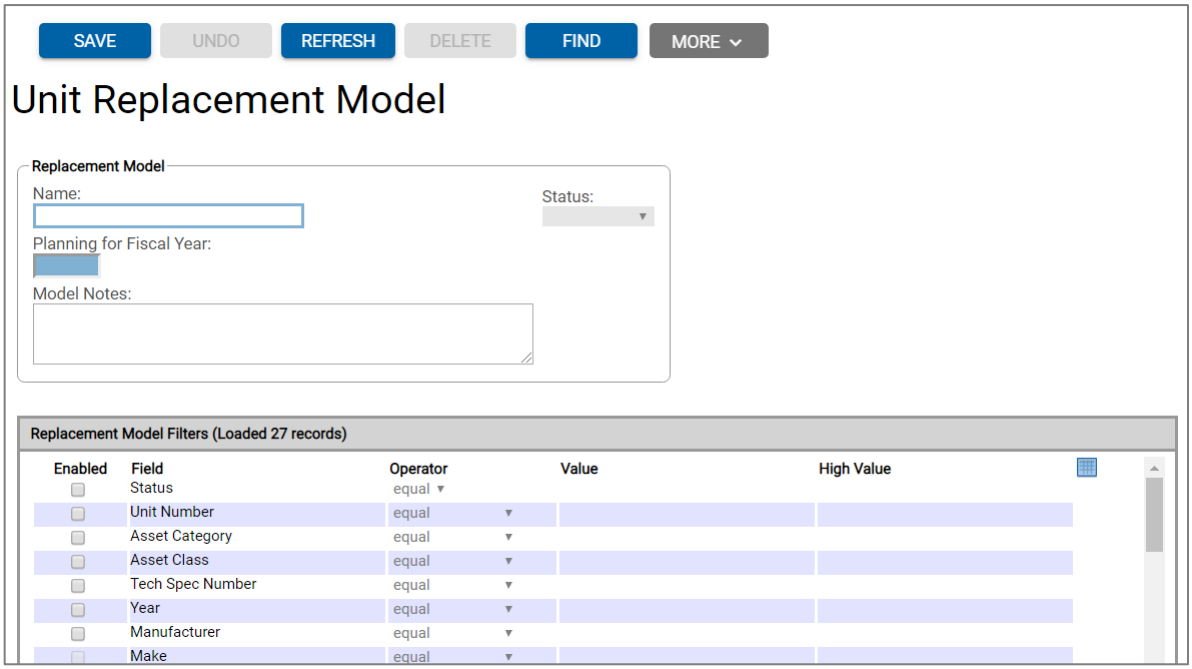
M5 Replacement Modeling Overview

The M5 application contains Replacement Planning functionality that provides an organization with the ability to construct a vehicle replacement policy. Within this functionality, numerous selection parameters exist that allow for the designation of specific fields that will be reviewed in the replacement model. The model is designed to be a tactical replacement model, meaning that it is designed to help fleets determine which existing units should be replaced.

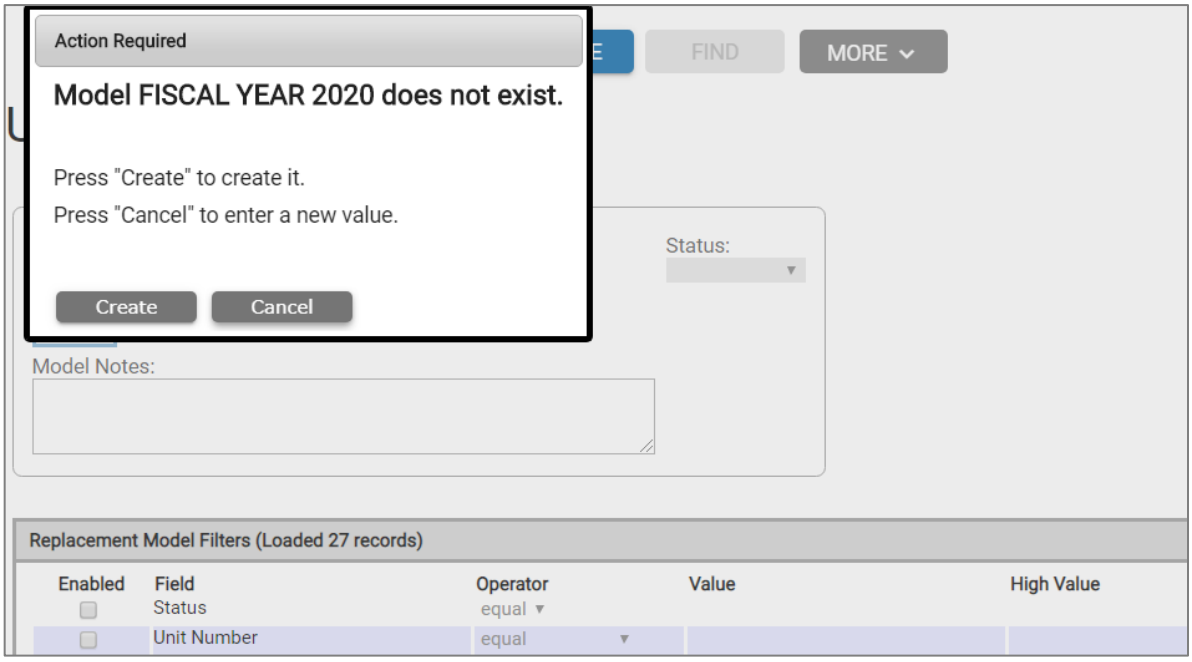
When executed, the model will evaluate each unit as defined by the model selection criteria. It will apply the weighting factors, rank the vehicles and display the Replacement Candidate List. In addition to evaluating the M5 captured data, such as life-to-date maintenance costs, the user can add a condition report factor that provides for a visual inspection or for a vehicle user satisfaction rating. The condition code can also be evaluated in the weighting factors.

Creating the Replacement Model

The first step is to create the Model using the Replacement Model frame. The name can be up to 30 characters, letters and numbers.

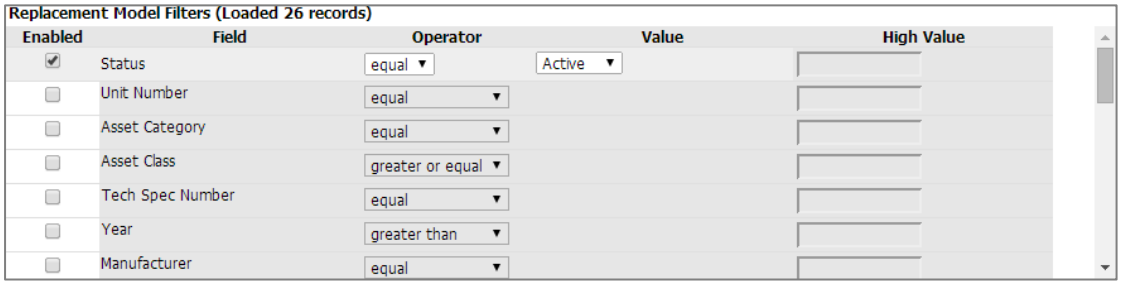


Enter the Name of the model and press the Tab key. The Action Required window opens.



Select the Create button to create the new model. Enter the fiscal year for the plan in the Planning for Fiscal Year field and then press the Tab key. The replacement model will include only units that have forecasted replacement dates in the Fiscal Year entered. Units with forecasted periods outside this Fiscal Year will be excluded. Next enter any notes that you want associated with this replacement model.

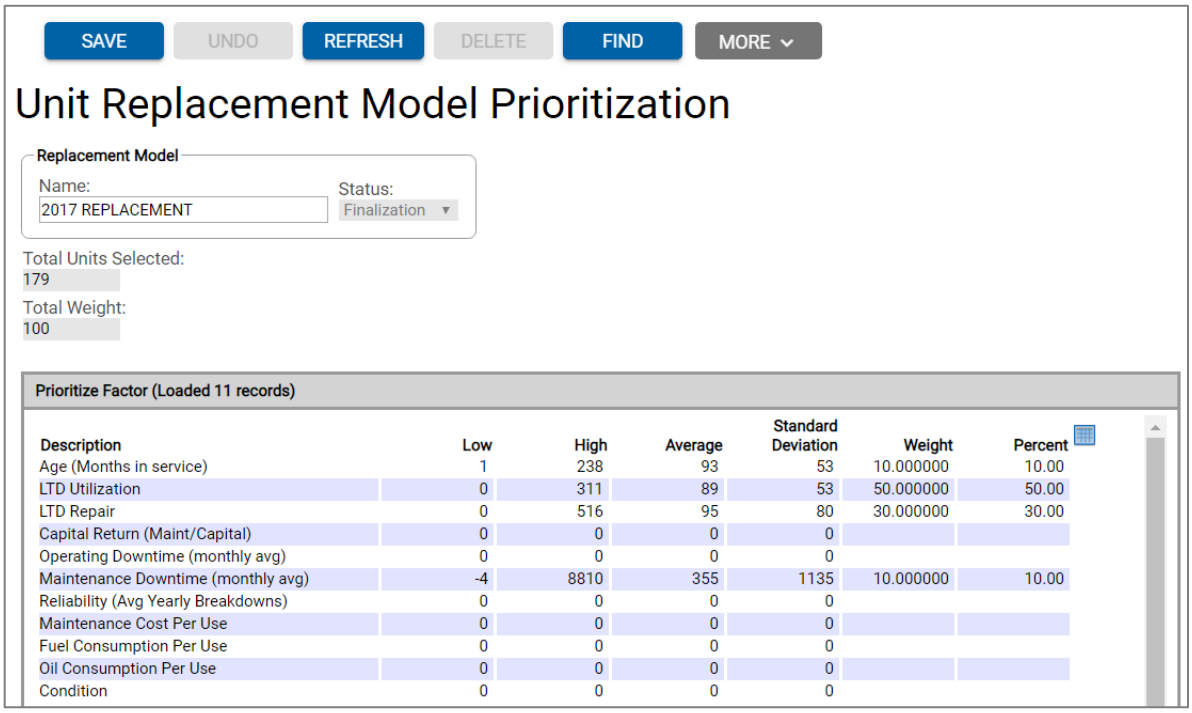
Select filters to establish the selection criteria for which units to analyze. If no specific filters are applied, the schedule forecasts all active units in the fleet that meet their Category Main - Life Cycle and Replacement parameters. Select filters by selecting the Enabled checkbox, choosing the appropriate Operator and entering a range of values in the Value and High Value fields.



After entering all your filters for your replacement model, select the SAVE button to save the model.

After you save your model, use the **MORE** dropdown to proceed to the next step, Replacement Model Prioritization.

Establishing Replacement Model Prioritization



In order to construct the prioritization sequence of the model you select which factors to use in calculating the units priority ranking by entering a weighted value next to each factor. The system has eleven factors built in for this purpose. You may select as many as you want for the model. You may also select none. If you select none the module will spread the weight equally between each one. The weighted values must either add up to 100 or to 0.

Select the SAVE icon when your Total Weight = 100. Use the **MORE** options dropdown to proceed to the next step which is Replacement Model Generation.

Explanation of replacement factors:
To select a factor, enter a weighted value in the Weight field for each replacement factor you want to include in your model. The value entered in this field represents the percentage, out of 100, that the factor will have in the calculation for the unit's Priority Ranking on the Replacement Model Candidates frame.

As an example, you may want to use the units' Age (Months in Service), LTD Repairs, Maintenance Cost Per Use, and Condition as your factors. For your organization, two most important of the four factors can be Age and Condition, so you might want to weight each at 30%. Then you could weight LTD Repairs at 25% and Maintenance Cost Per Use at 15% for a total of 100%.

It is up to you to decide which factors to include and what value (%) to assign them in the replacement model. After you have selected your factors and assigned them values, select the Save button.

Scores
The scores are calculated based on a factor multiplied by 100. If the resulting number is over 100, it is above average (worse) and if it is below 100 it is below average (better).

After each score is calculated it is then weighted by the percentages and factors set on this frame. For a breakdown of how each is calculated, see below:

Age = (unit_replacement.mo_in_serv / category_trend.avg_mo_in_service) * 100

LTD Utilization score = ((unit_replacement.ltd_usage * unit_replacement.loc_usage_factor) / category_trend.avg_ltd_usage) * 100

LTD Repair = (unit_replacement.ltd_maint_cost / category_trend.avg_ltd_maint_do) * 100

Capital Return = ((unit_replacement.ltd_maint_cost / unit_replacement.capital_cost) / (category_trend.avg_ltd_maint_dt / category_trend.avg_capital_do)) * 100

Operating Downtime = (unit_replacement.oper_downtime / unit_replacement.ltd_usage) / (category_trend.avg_oper_downtime / category_trend.avg_ltd_usage)) * 100

Maintenance Downtime = ((unit_replacement.maint_downtime / unit_replacement.ltd_usage) / (category_trend.avg_maint_downtime / category_trend.avg_ltd_usage)) * 100

Reliability = ((unit_replacement.wo_count / unit_replacement.mo_in_serv) / (category_trend.avg_breakdown / category_trend.avg_mo_in_service)) * 100

Maintenance Cost Per Use = ((unit_replacement.ltd_maint_cost / unit_replacement.ltd_usage) / (category_trend.avg_ltd_maint_do / category_trend.avg_ltd_usage)) * 100

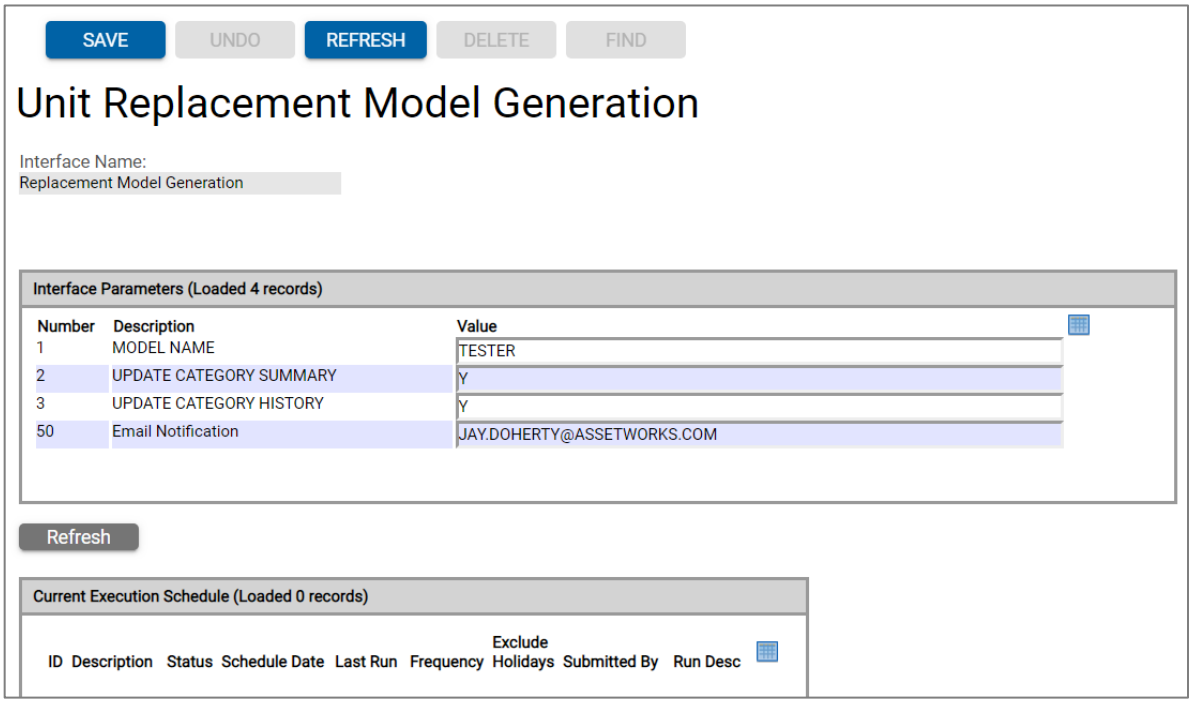
Fuel Consumption Per Use = ((unit_replacement.fuel_consumption / unit_replacement.ltd_usage) / (category_trend.avg_fuel_consumption / category_trend.avg_ltd_usage)) * 100

Oil Consumption Per Use = ((unit_replacement.oil_consumption / unit_replacement.ltd_usage) / (category_trend.avg_oil_consumption / category_trend.avg_ltd_usage)) * 100

Condition = unit_dept_comp_main.condition

Note: The counts and averages on this frame do not display until you have generated the Replacement Model.

Generating the Replacement Model



In the Interface Parameters section of the Replacement Model Generation frame, enter your model name in the Model Name field. The module uses the Category information for the models to do is prioritizing procedures based on the weighted values you assigned in the last step. Interface parameters two and three can be used to make sure you have the most current category based information in your model.

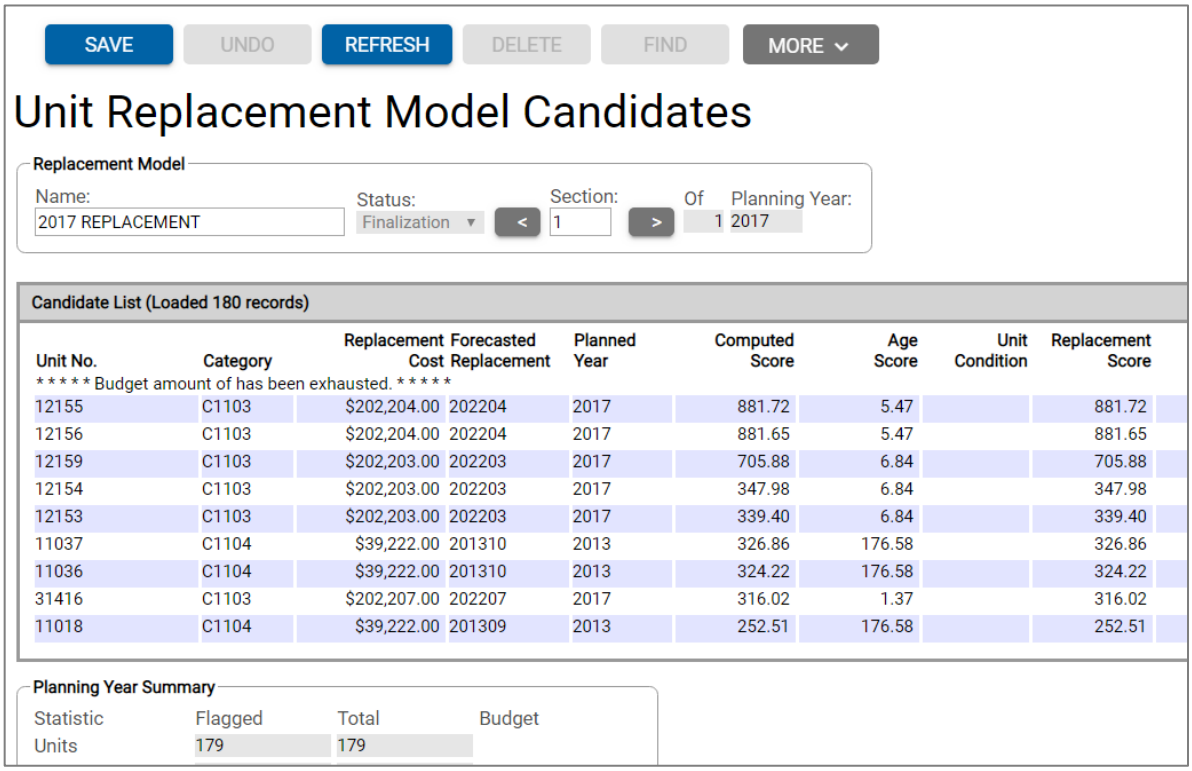
The first time your model is created and generated you can set them to N and it will use the current data. But if you return at a later date and run the model again, you should set them to Y in order to refresh the category data to acquire any changes that may have been made in the interim.

- Select Y for yes or N for no in the Update Category
- Summary field. Select Y for yes or N for no in the Update Category History field.

Type an email address for notification when the model generation is complete in the Email Notification field.
The Current Execution Schedule table shows all iterations of replacement model generations.
Select the Refresh icon to update the table.
Schedule the generation of the model in the schedule Details section.
Select the Schedule/Reschedule icon to schedule the execution of the model.
After your program completes, an email will be sent to the specified email address to notify you the status run.

Viewing Replacement Model Candidates

After generating a model, you can view the list of potential candidates in the Replacement Model Candidates frame.



The Unit No column displays the unit number. When you move your mouse over the unit number, it displays the year, make and model of that unit.

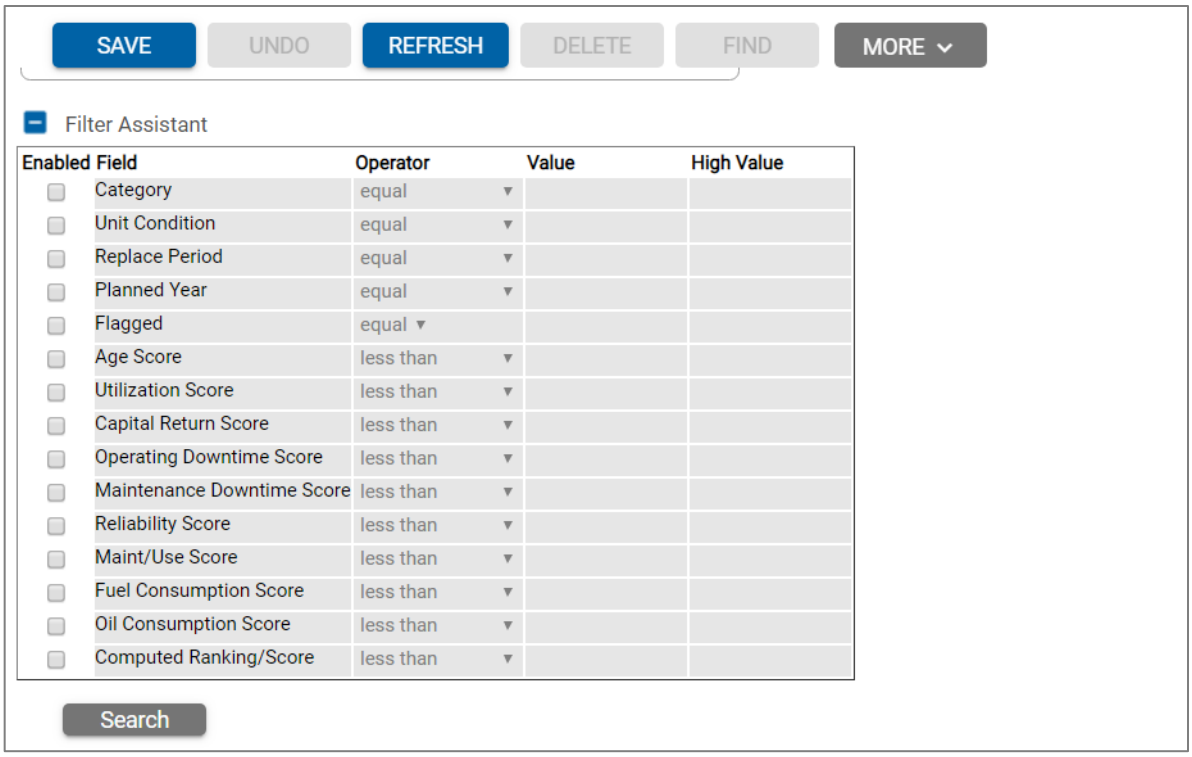
The Category displays for the unit. The Replacement Cost is taken from the Current Base Unit Cost on the Category Main frame for that unit.

The Forecasted Replacement field displays the forecasted fiscal period for replacement. The Planned Year displays the year the replacement period is in. This column can be manually overridden with your own fiscal year.

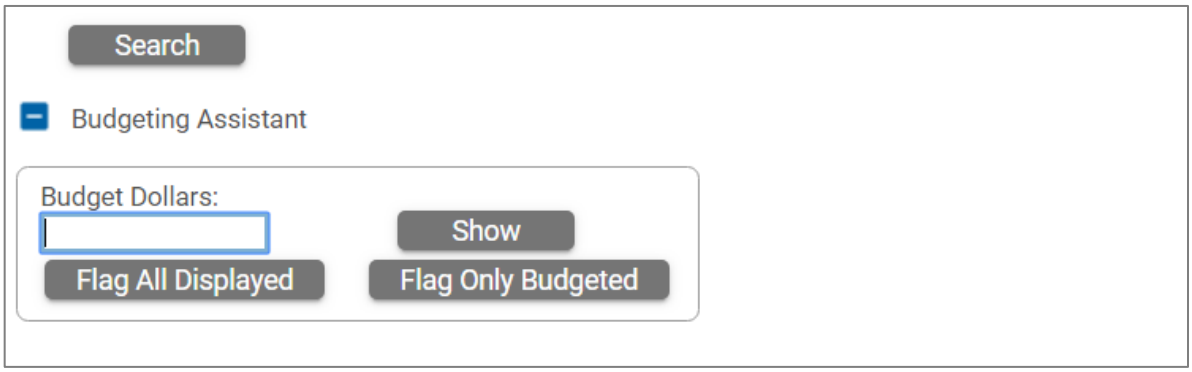
The Computed Score are the values computed by lowest to highest. The Age Score is calculated by the current period – the in service date. The Unit Condition displays and can be found and changed on the Unit Main frame.

The Replacement Score is the average of the priority and age rankings and factor in any conditions. The Rank column shows the high to low based on the Replacement Score. The Flag column is to flag for replacement. The Budget Total shows the total amount budgeted for the unit.

You can also modify your model further by using the Filter Assistant. The filters available in the assistant will be the same ones you selected in the first step of this process when you created the model.



The Budgeting Assistant allows you to incorporate budgeted amounts into the selection process. Add the amount of replacement dollars available and select the Show button. A red bar appears in the unit list table that indicates where the replacement amount is exhausted. Then you can select the Flag All Displayed or Flag Only Budgeted button to put a check in the flag column.



You can also flag the units manually to make your selection based on your choices after viewing all the factors incorporated up to this point.

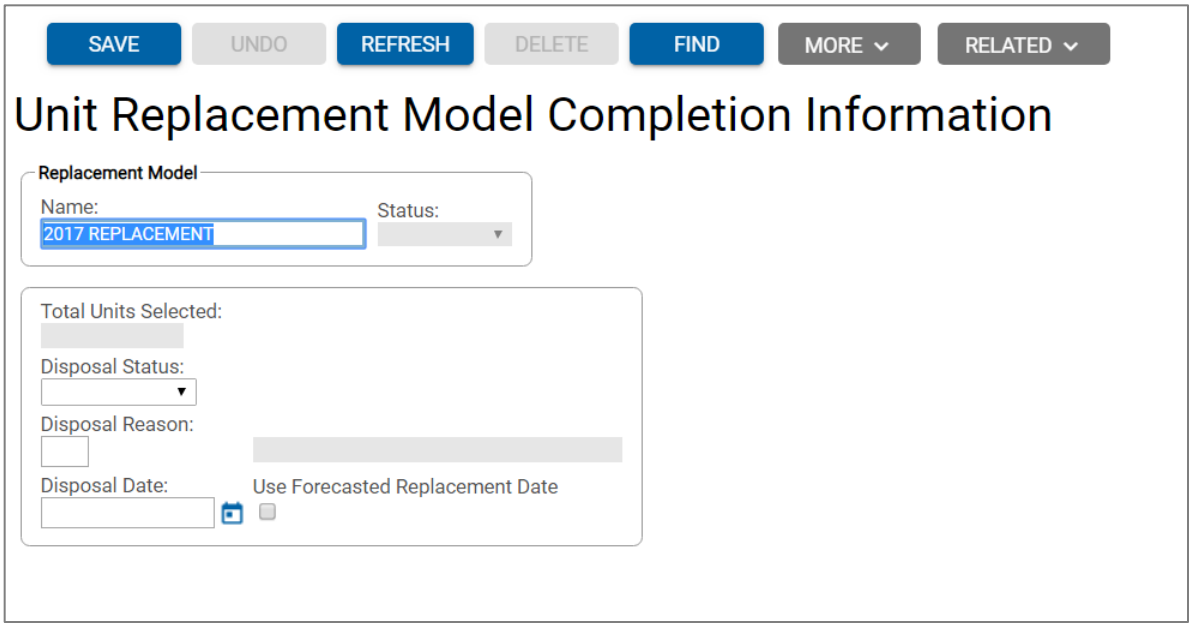
Completing the Replacement Model

After deciding which units to replace from your candidate list, the next step is completing the model. Use the **MORE** options dropdown to proceed to the Replacement Model Finalization.

The completion step does two primary functions:

1. It takes each of the flagged units and changes their unit status code to indicate that the unit is now selected for replacement. The unit status codes were created when your system was first implemented. The instructions for creating the codes include having a code for this disposal purpose. Normally we recommend a code of Flag. This is the code you will use to indicate that the replacement process has started on the unit.

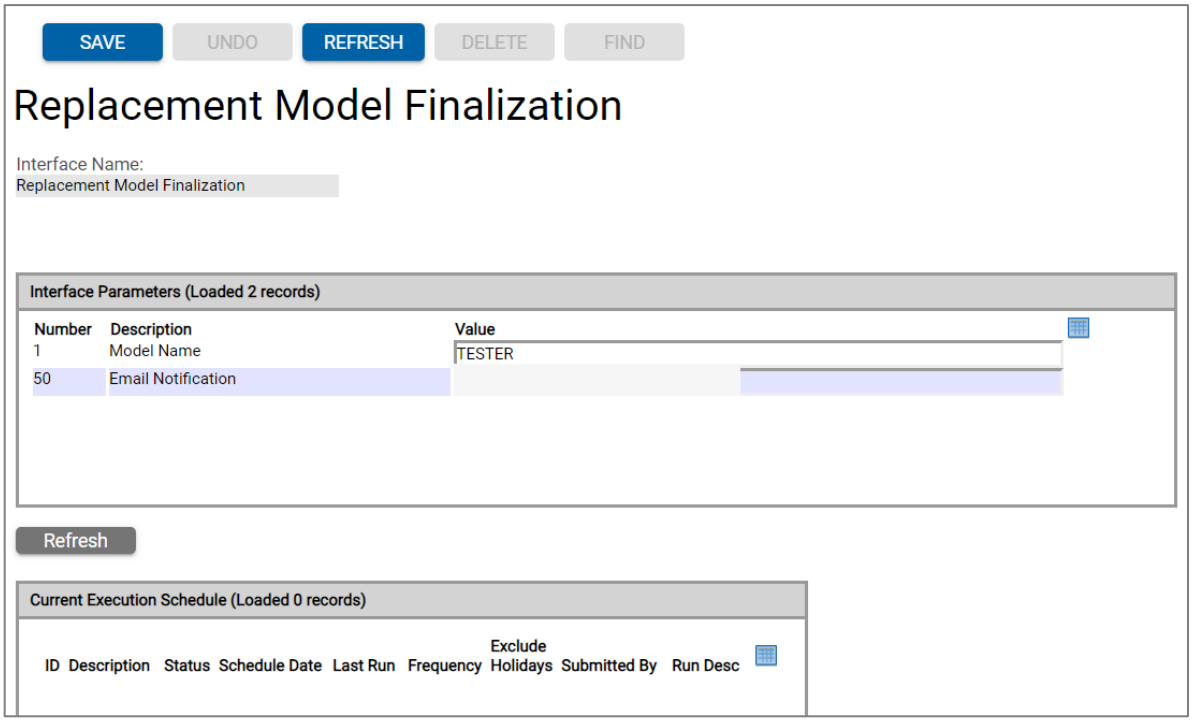
2. Creates rows in the unit disposal table for each flagged unit to start the disposal process on the unit. The frame below is an example of setting the parameters for completing a replacement model. The disposal status list box contains all the System Unit Status Codes that can be used. The disposal reason is chosen from the Disposal Reason Codes that were also defined during system implementation. The Disposal Date can be entered or you can use the checkbox and the system uses the computed replacement date as shown on the Replacement Candidate frame.



After you save the information, use the **MORE** options dropdown to proceed to the next step in the Model Finalization process.

Finalizing the Replacement Model

The last step is to finalize the model using the codes you selected in the previous step. The Unit Status codes are updated and the rows are added to the disposal table in the database. Enter the name of your model and an email address for a notification then the process is complete.



After the Units are selected and flagged for disposal the actual process of disposing them may begin. This process is done using the Unit Disposal frame.

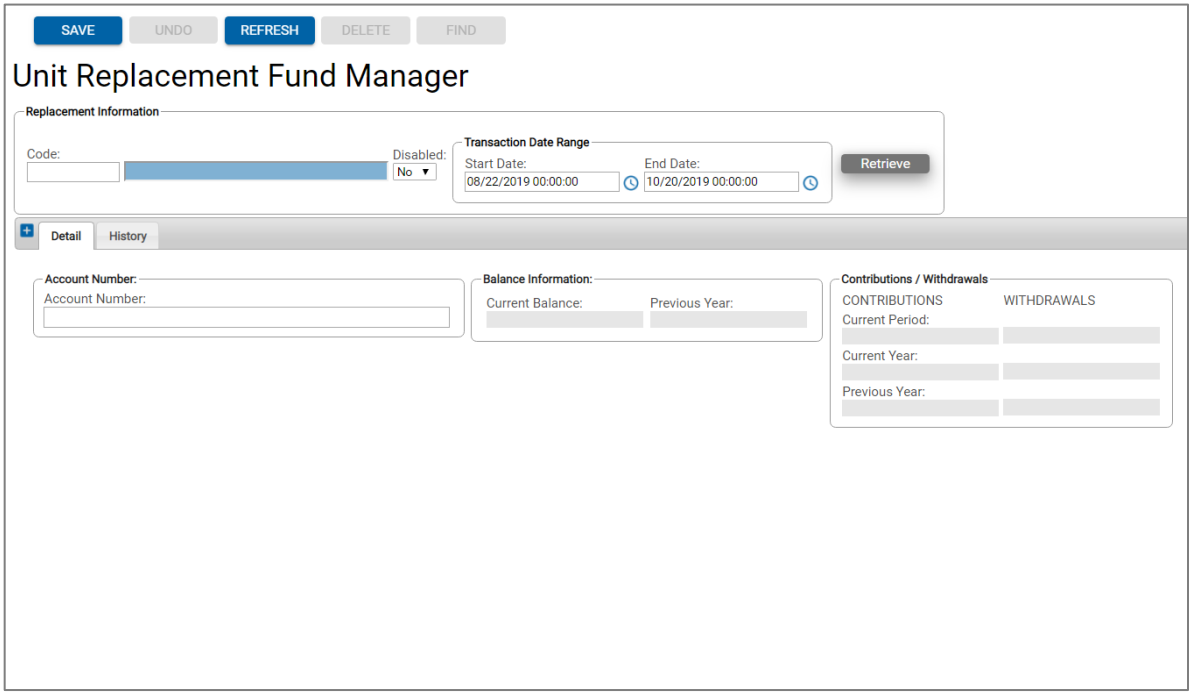
Supporting Screens/Tables for Replacement Modeling

There are a few core tables used for replacement modeling. The UNIT_DEPT_COMP_MAIN table contains all the basic information and codes for each asset in the database. One of the attributes of an asset is the category. It has multiple uses but is central to the replacement modeling process. It can be used as selection criteria to determine which assets are to be analyzed for replacement but more importantly, assets are scored or ranked against other assets in the same category regardless of model selection criteria. In other words, the score an asset gets for LTD maintenance cost is determined by how the asset fairs against other assets in the same category.

Replacement Fund Manager

A Replacement Fund is an account used to hold money for the purchase of new units. You can think of a Replacement Fund as a savings or checking account. Each period, units contribute a predetermined amount of money to a designated replacement fund. Unit acquisitions will count as withdrawals from the account.

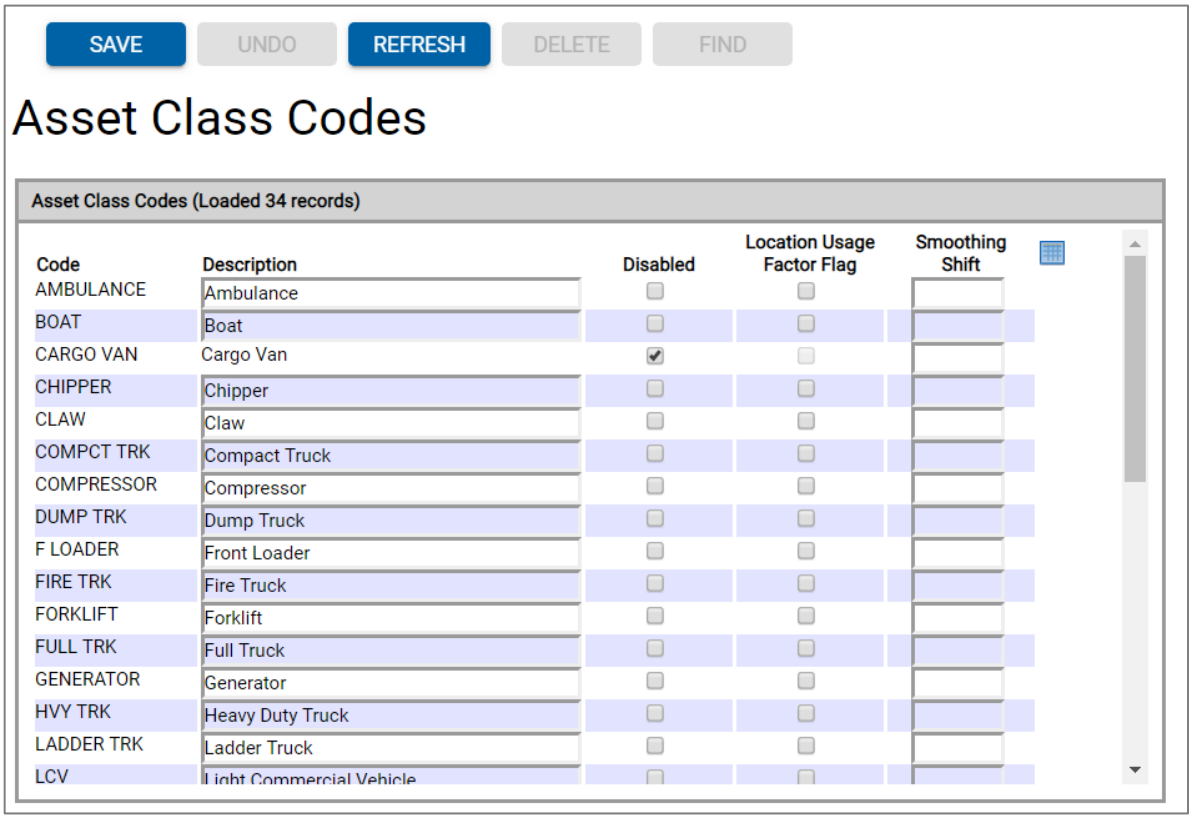
M5 creates billing transactions and maintains the balances of the replacement fund while recording a separate log of any contributions or withdrawals made to or from the fund.



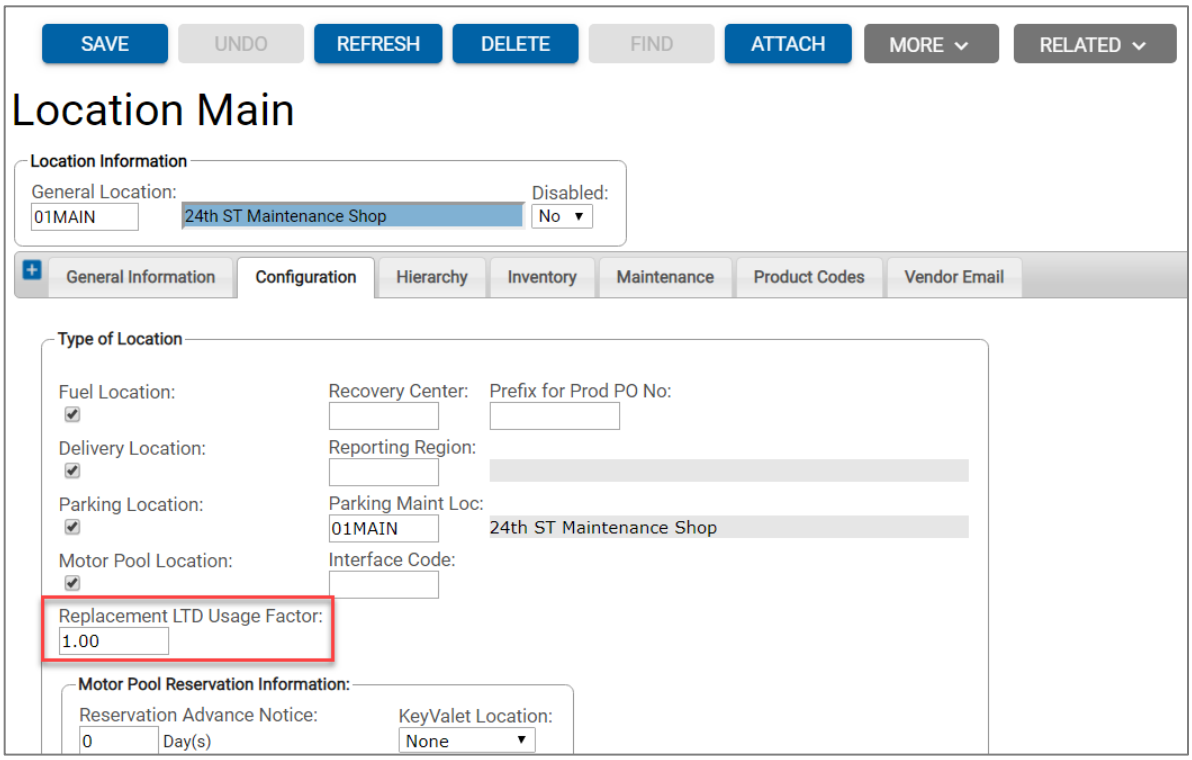
Replacement funds are assigned at the unit level by using the Unit Accounting frame on the Replacement tab.

Asset Class Code

The Asset Class Code is the highest level of grouping units for management and reporting purposes. Sample Asset Classes might be Trucks, Sedans, and Off Road Equipment. It is an optional classification. This information is used on the Category Main frame. After the codes have been decided (they can be alphanumeric), type the codes and their descriptions. If a code is no longer used, it can be disabled but you can only delete a code if it has never been used on a category record.



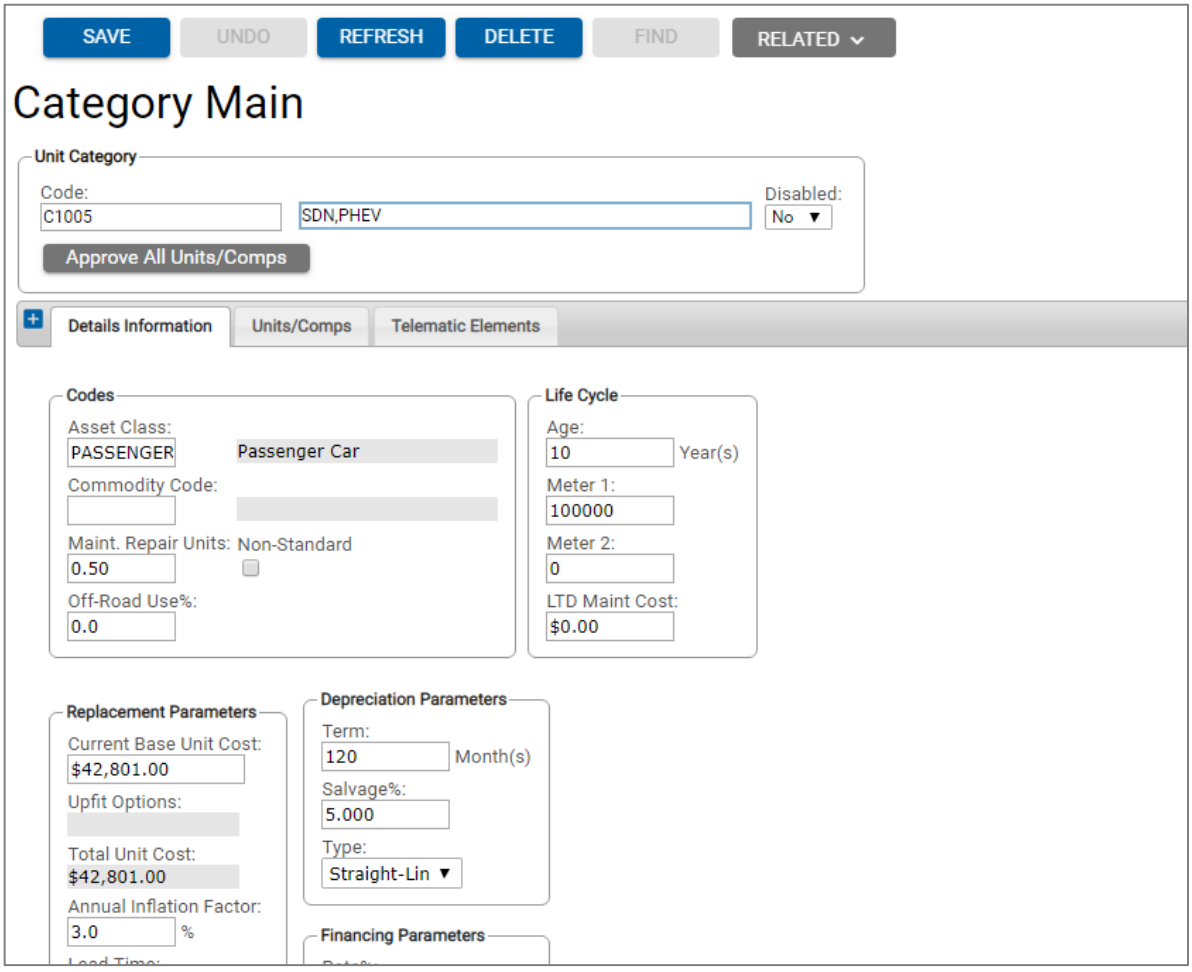
The Location Usage Factor flag is connected to the Replacement LTD Usage Factor field on Location Main within the Configuration tab. Locations that are subject to harsh environmental conditions like mountainous terrain or salty road conditions in winter can include an LTD Usage factor greater than 1.0 to reflect those conditions for determining unit replacement cycles. For example, if the unit location was in a mountainous area, with higher wear and tear, the factor could be made 1.25. That means that when the vehicle reached 100,000 miles, it would be treated as 125,000 for the replacement process.



Category Main

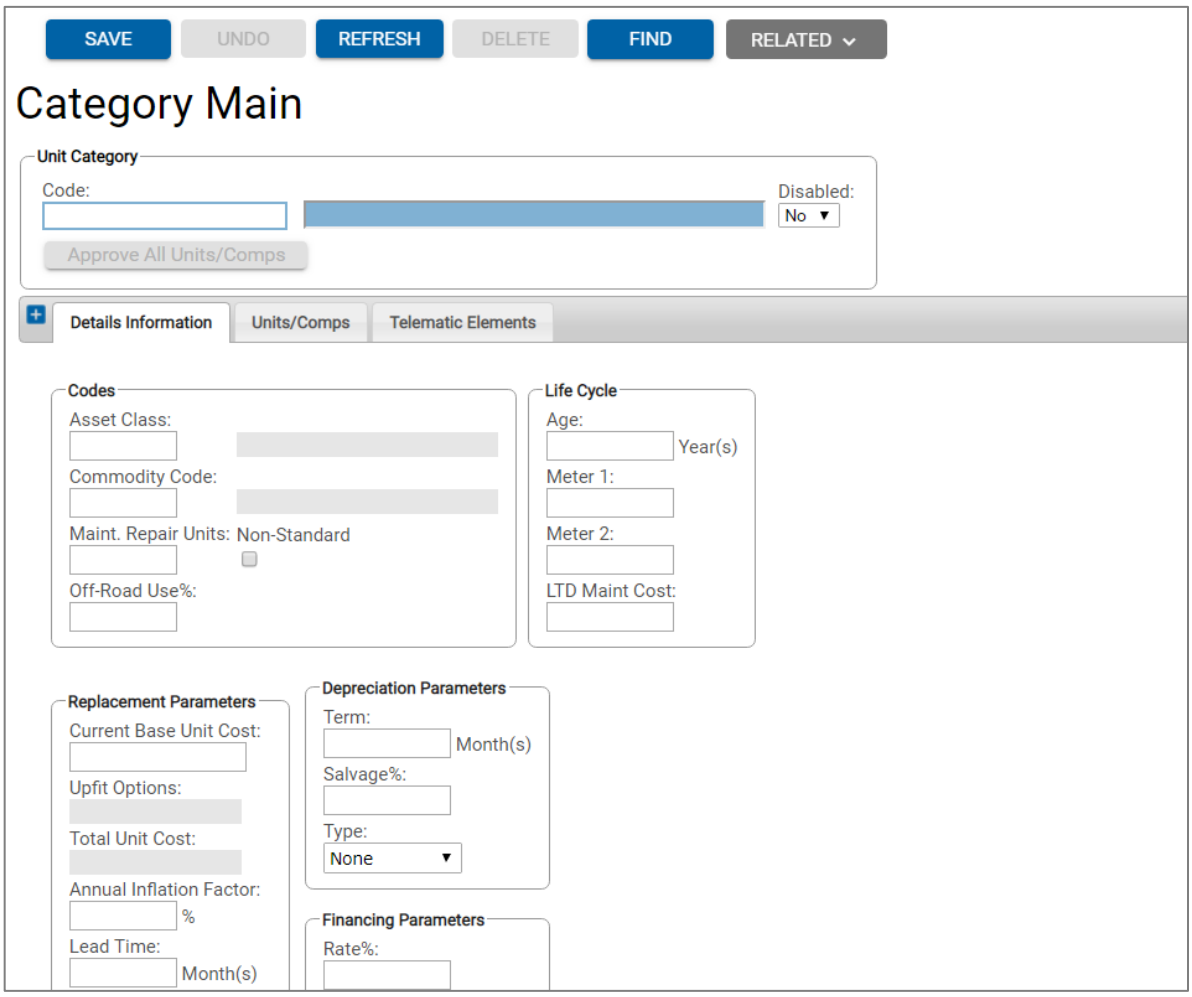
M5 supports a hierarchy for grouping units. The second highest level is Category which is grouped into the higher level Asset Class. The Category Main frame allows the user to set up a code and group functionally similar units, such as passenger cars or light pickup trucks. The category groupings are added to the system to simplify procurement, budgeting, and analyses where details like year, make, and model are very specific.

Functions included in the Category Main frame are Depreciation Parameters, Financing Parameters, Life Cycle and Replacement Parameters. The Category codes can be alphanumeric and entered as a description of the code. If Asset Class is used, the LOV to select one of the Asset Class codes should already be defined. The description of the code automatically display. If Commodity Code is used, one should be selected from the list previously created. Its description automatically displays. Maint Repair Units is an optional field which sizes equipment for cost of repair. With a base of 1 for a plain small sedan, there can be a scale of measurement for all equipment in the fleet. A van may be measured as 1.5 meaning that it takes 1.5 times as much in cost of repair for a van as for a basic sedan. This could be due to additional or higher priced mechanics, more expensive parts and a larger bay or lift for repair of the van.



Replacement Parameters

M5 provides for budgeting of new or replacement units by using the Category Main frame that allows the user to define a base price for units grouped by the Category code. The current known price of a single such unit is entered in the Current Base Unit Cost field. Upfit Options will be added together from options added to the base unit in the frame Category Options and an annual inflation rate allows the category to be used for many years to come for purchasing new or replacement equipment. An inflation rate which reflects the current rate should be set based on the user's financial organization for annual budget inflation. Lead time is the number of months, on average, that it takes from placing a PO (purchase order) on the system to when units for this category are normally delivered to the ready location.

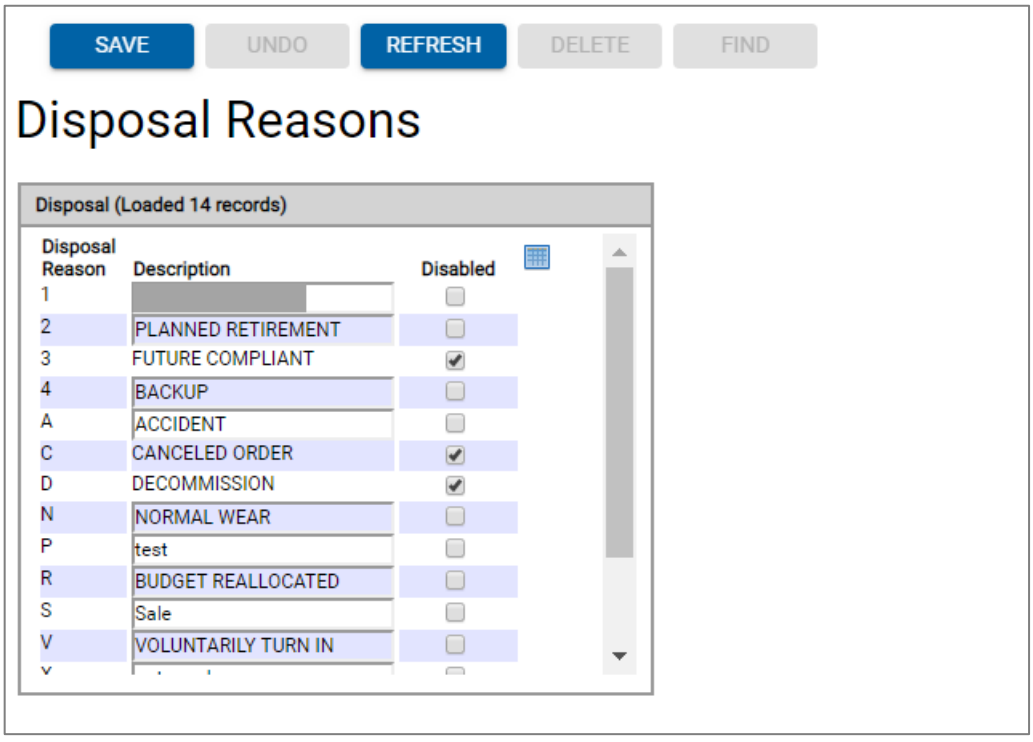


Life Cycle Parameters

Enter the expected number of years that the equipment will be used in the Age field. For the Meter fields, it will be necessary to know what kind of meter or meters the equipment will be purchased. If the primary meter is going to be miles, enter a reasonable number of expected miles that the equipment will be used in the primary meter field. The expected usage life of the unit should be entered into the secondary meter. The secondary meter may be left blank or the total number of hours or miles could be entered into this field. The actual usage will be compared at the end of its life to these fields so the values must match (miles for miles or hours for hours or kilometers for kilometers or none for none) the actual meters expected to be on the equipment. Based on historical data with costs of similar type equipment, the total expected repair cost for a single piece of this type equipment is expected to occur over the life of the unit.

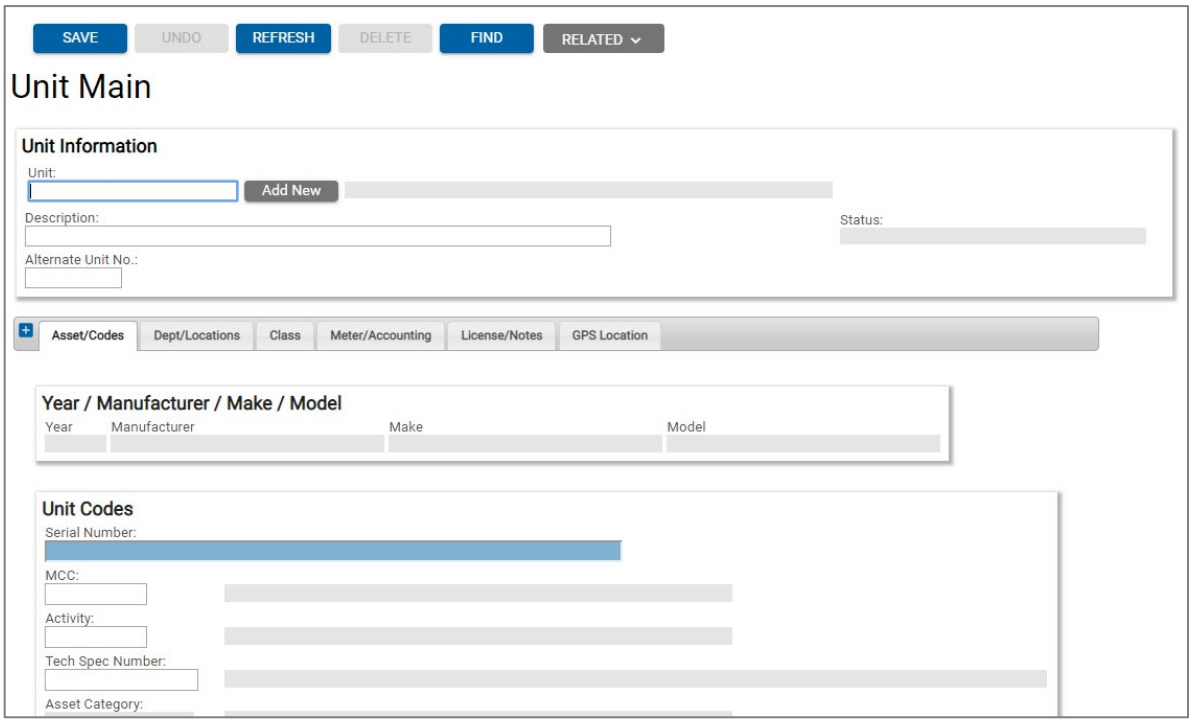
Disposal Reasons

This frame is used to set up the reasons why a unit is being disposed from the fleet. Normally, there are a limited number of these reasons.



Asset Table (Unit_Dept_Comp_Main)

This is where the replacement or physical inventory data is stored for each unit. This includes the condition code that can be used as a weighting factor during candidate processing.



Updates

Release	Section	Description
24.0	All sections	Applied miscellaneous writing style updates throughout the document.