Pump Assessment User Manual

Created By: Oak Ridge National Laboratory

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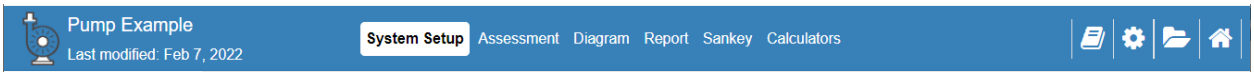
Introduction

MEASUR's Pump module helps users evaluate the potential energy savings opportunities of pumping systems based on field-measured data. It is also intended to help assess different system modifications to determine which would be the most energetically beneficial. Enter data relating to a pumping system, such as motor nameplate data and pump operational data to begin the assessment.

Module Navigation

Use the top banner to navigate around the module. A footer bar with "Next" and "Back" button can also be used to move through the System Setup to the Report.



Main Tabs

System Setup – Establish your baseline by entering the existing data for your pump system.

Assessment – Modify system scenarios to find potential savings opportunities.

Diagram – Graphical visualization of the existing pump system and the savings scenarios explored.

Report – Full printable breakdown of the system and potential saving scenarios.

Sankey – Visual representation of the energy consumption and production of the scenarios.

Calculators – Standalone calculators for pump and motor properties.

*Some of the tabs will be disabled until the System Setup is completed.

Additional Buttons

Book – The book will open a new window with the Pump User Manual you are reading.

Gear – The gear wheel will navigate you to MEASUR's global settings page.

Folder – The folder will navigate you to the assessment dashboard folder this assessment is in.

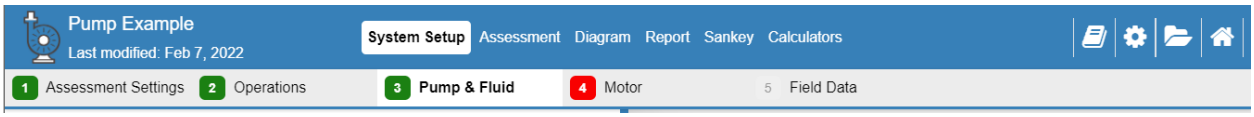
Home – The house will bring you to MEASUR's home page.

System Setup

The system setup is where you enter the baseline data for your pump system. The system setup is broken up into five tabs, each with a related set of input fields to be filled out. Field by field help text is provided for each input field, it will appear in the help panel when an input field is clicked on.

Navigation

Use the second bar to navigate to different sections of the Setup. The tabs will be color coded to indicate the state of the corresponding tab data. Tabs will be disabled in the previous steps have errors in their data.



Assessment Settings – Select the units for the assessment.

Operations – Enter data relating to unit costs, operating hours, and CO_2 emissions.

Pump & Fluid – Enter data relating to pump type and motor drive, as well as the fluid.

Motor – Enter nameplate data for motor connected to the pump.

Field Data - Enter data entry relating to the pumping system's operations (head, flow, etc.).

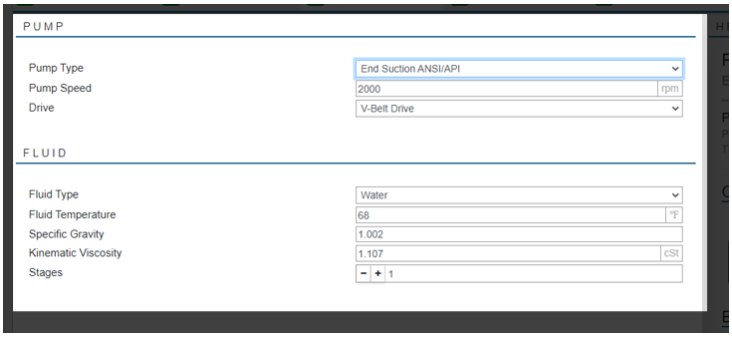
Tab colors:

The colors of the tab's numbers provide a visual cue about how your data entry is progressing

- Green: The tab has valid data - nothing missing or out of range.
- Red: The tab has invalid or missing data.
- Yellow: The tab has data entered outside of expected range (the assessment can continue; it is just a soft warning).
- Gray: The tab is disabled, a previous tab's data are incomplete.

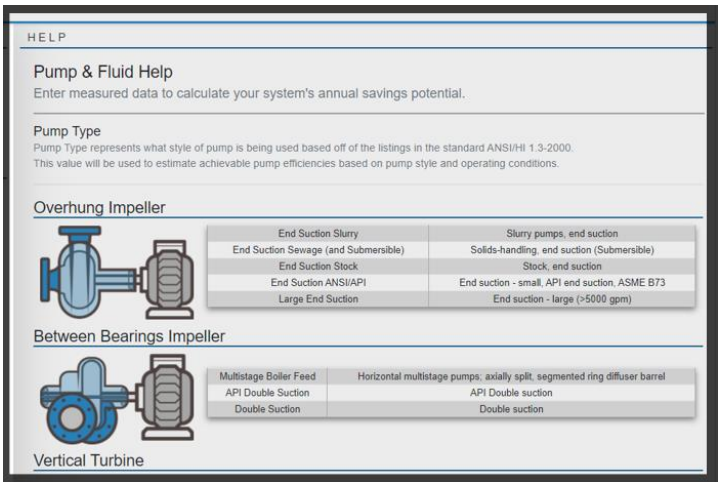
Data Entry

The screenshots below show how to enter data for the System Setup. In addition to the tab color, the border around the input fields is an important indicator for your data. Input fields will highlight red, and an error message will appear if the data that is entered is invalid. Invalid means that calculations will be halted to prevent errors or odd results. Yellow highlights indicate that the data entry is outside the expected range, and an error message provides more details. A yellow error will not stop calculations. Blue links underneath input labels can be used to calculate the values of the corresponding input field. Some of these use data already in the form ("Full load amps") but some bring up a pop-up calculator that require more data entry ("Head"). Each data entry field also has help text on the right-side panel to help provide more context or description of how to find the data.

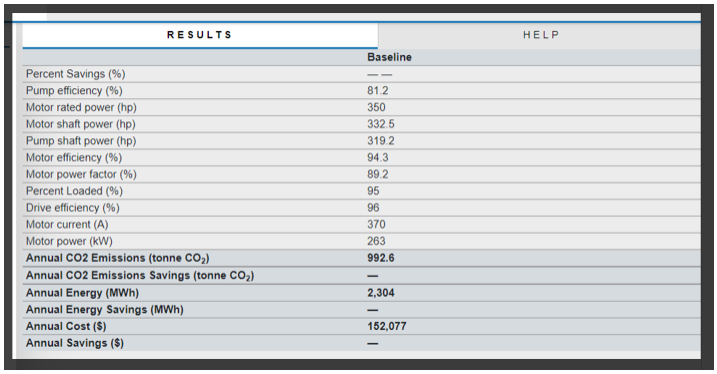


Use the left panels in the System Setup to enter the data for your existing pump system.

The right side of the panel contains help text relating to the field you are currently focused on.



In the "Field Data" tab, once your system setup is completed, the "Results" tab will give you the calculated results for your Baseline.



Assessment

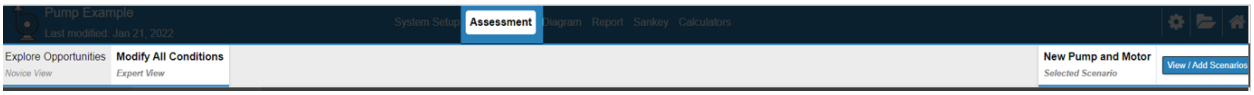
The assessment section of the module allows you to explore how modification scenarios for your system may provide cost, energy, and carbon emissions savings. Your baseline must be setup completely prior to making modifications.

There are two ways to conduct assessments which will be explained in further detail later in this section.

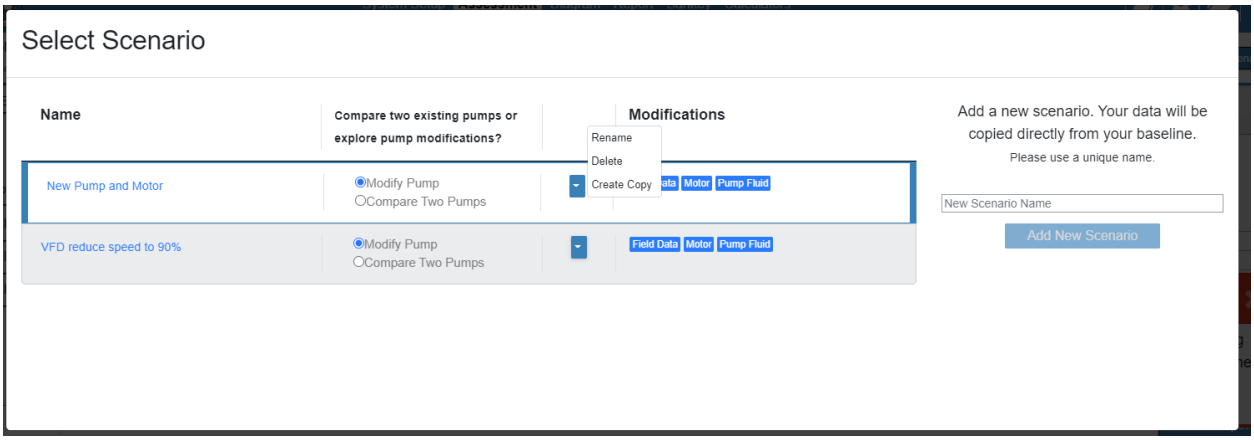
- Explore Opportunities (Novice View)
- Modify All Conditions (Expert View)

Navigation

As with the System Setup, there is a secondary set of tabs to navigate between the two assessment options.



Multiple scenarios can be created, the current “Selected Scenario” will be displayed on the right-hand side of this bar. The “View / Add Scenarios” button opens a modal used to manage your scenarios:



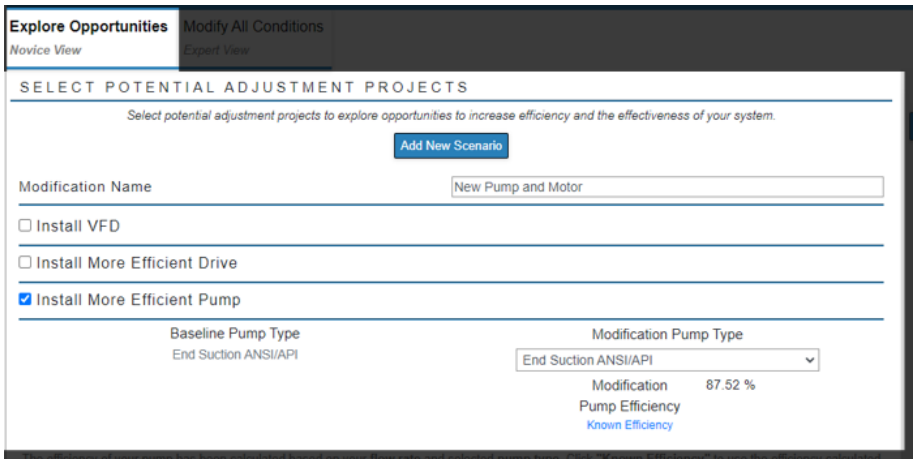
The modal can be used to:

- Create new scenarios
- Create copies of existing scenarios
- Choose if the scenario compares two pumps (parallel pumping) or modify an existing pump
- Delete or rename scenarios
- Selecting scenarios for viewing and modifying
- See a quick overview of what is different between each scenario

Explore Opportunities (Novice View)

In “Explore Opportunities” provides a list of common energy efficiency measures and the related data entry fields, resulting in fewer data entry fields visible at a time. Multiple measures can be selected in each scenario.

The page is split into two sections: the left-hand side has a checklist of likely modifications to improve your system, the right-hand side provides results, a Sankey diagram, or field by field help text.

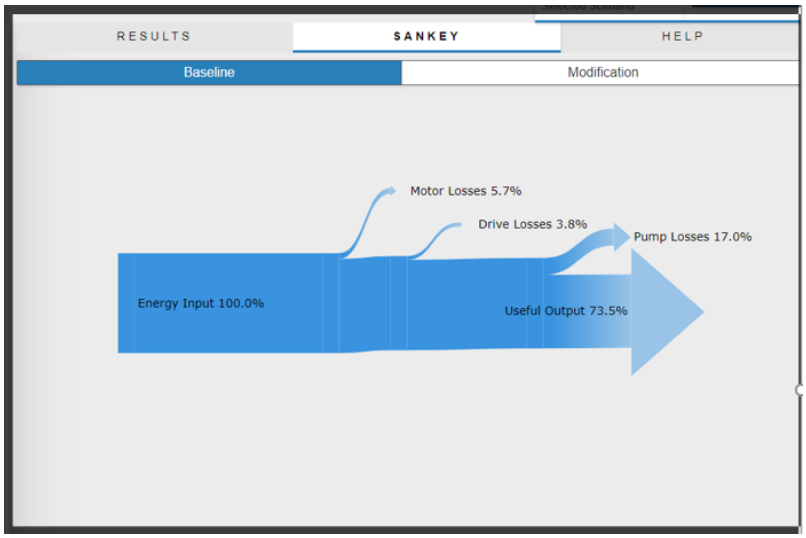


Each checklist item will provide specific input fields to modify for the scenario. The data for your baseline is also displayed on the left.

The “Results” tab will show the calculated results and savings of the modified scenario.

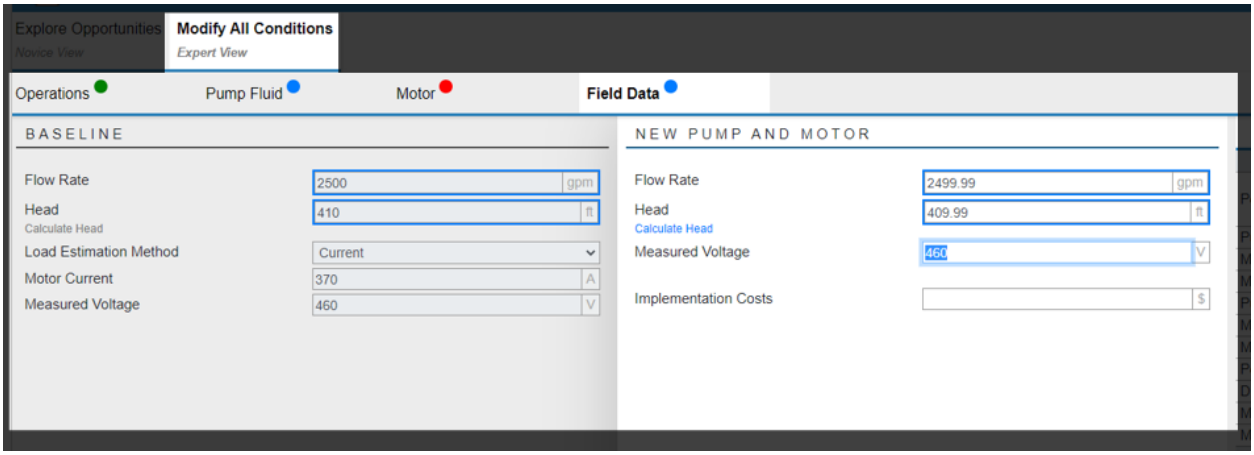
The “Sankey” tab will display a Sankey diagram for either the baseline or selected modification scenario.

Field by field help text will display in the “Help” panel as input fields are clicked on.



Modify All Conditions (Expert View)

The “Modify All Conditions” tab allows you to adjust all aspects of the pump that were entered in the System Setup, allowing more control of the changes you make to your baseline. It also provides an “Implementation Costs” field to calculate the simple payback period.



The left input panel will show the input data for the baseline setup. The right input side will show the input data for the selected scenario you are adjusting.

The tabs correspond to the tabs from the System Setup, with the color coded dots corresponding to the changes that have been made to that category of the pump system.

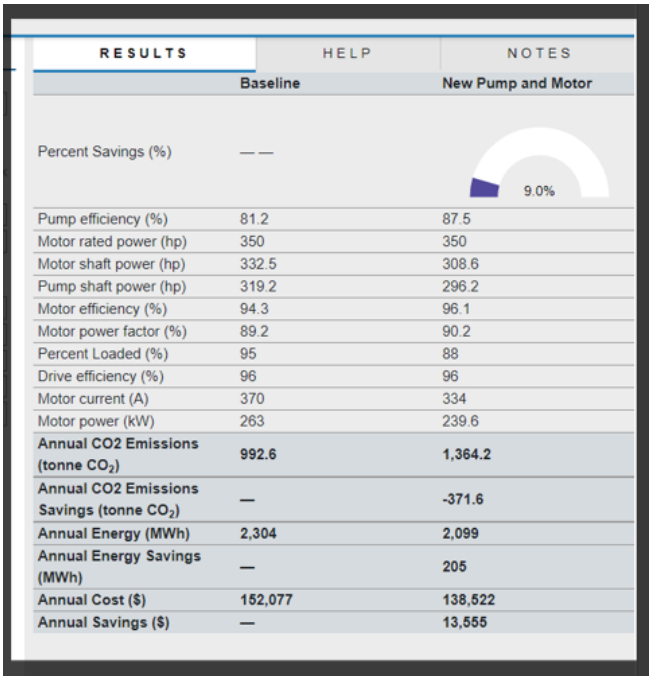
- Green: Everything is the same as the baseline
- Blue: Something has been changed from the baseline
- Red: There is invalid data somewhere in the baseline or modification scenario
- Orange: A data field has a valid value but is outside of an expected calculated range

The furthest right-hand side will have a panel with a set of tabs.

“Results” shows the live results of the baseline and selected scenarios with savings results calculated.

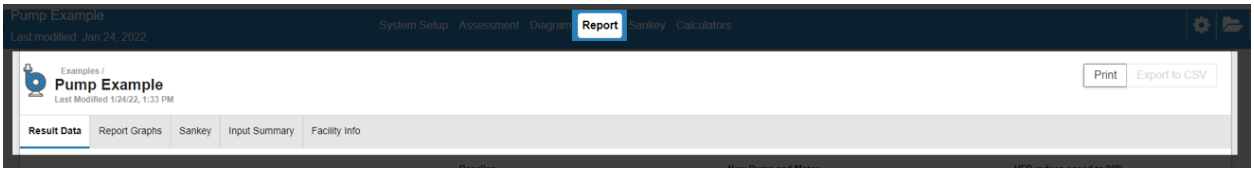
“Help”, again, provides field by field help text for each input field.

“Notes” is an input box that allows for notes on the selected scenario that will be added to the report.



Report

The report is a printable summary of the baseline and scenarios you have created in the assessment. Tables and graphs are provided to analyze the impacts the changes have on each scenario comparatively. There is a secondary set of tabs to navigate to different pieces of the report. The “Print” button in the top right-hand corner will generate a PDF report.



- Result Data: Provides a table of calculated results and summary of the selected energy projects in each scenario. Notes added to the assessment are show here as well.
- Report Graphs: A set of graphical representations of the energy in the system.
- Sankey: Sankey diagrams for the baseline and each scenario.
- Input Summary: A table of the input data for the baseline and each scenario.
- Facility Info: The facility information provided for the folder that this assessment was created in.