USER MANUAL

Section A: Introduction

Sus Pav Design is a data-driven decision-making tool for pavement design. Two versions are developed so far. Based on database, the first concrete version has database for EPD for Louisiana, South, and Nationwide, and economic database which includes material price, initial. Another version for Asphalt only has initial cost database right now.

Section B: Quick guide

1. In the "Layer Information" tab.

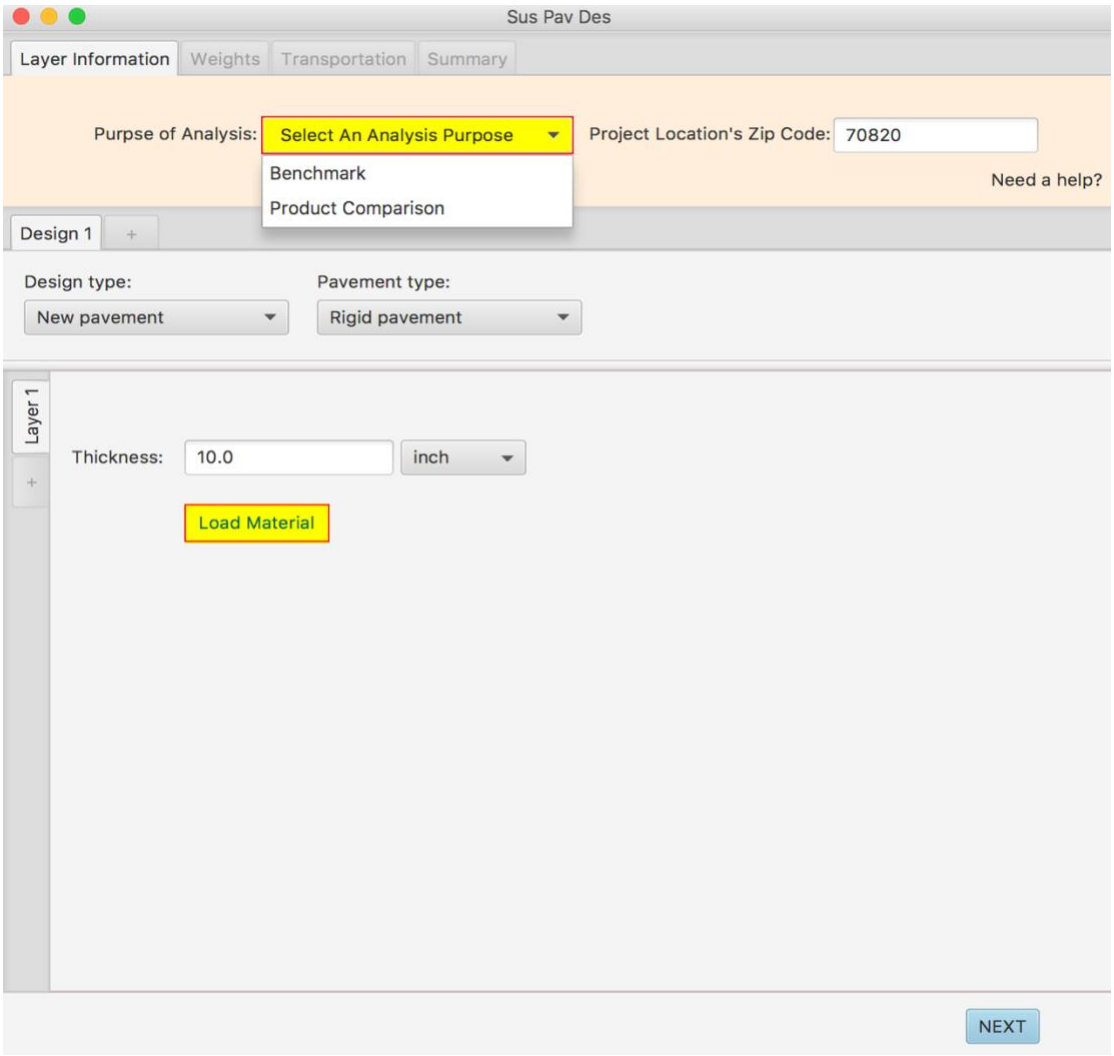


Figure 1: Rigid Pavement (Concrete)

a. Now you are in design 1/layer 1.

b. You must select a purpose for this analysis first, there are two options which are "Benchmark" or "Product comparison".

c. Please type and save the zip code of project.

d. Select “Design type” where only “New Pavement” is available now.

e. Select “Pavement type” from combo-box where has “Rigid Pavement” and “Flexible Pavement”. As Figure 1 and 2 shows, the pavement type is used for connecting relative database, please check out for more details in Database section later. If the “Flexible Pavement” is selected, at least two combo-boxes will appear, which are “Course” and “Nominal Aggregate Max Size (mm)”. A “Mix Type” combo-box will show up only if ‘Wearing Course’ is selected.

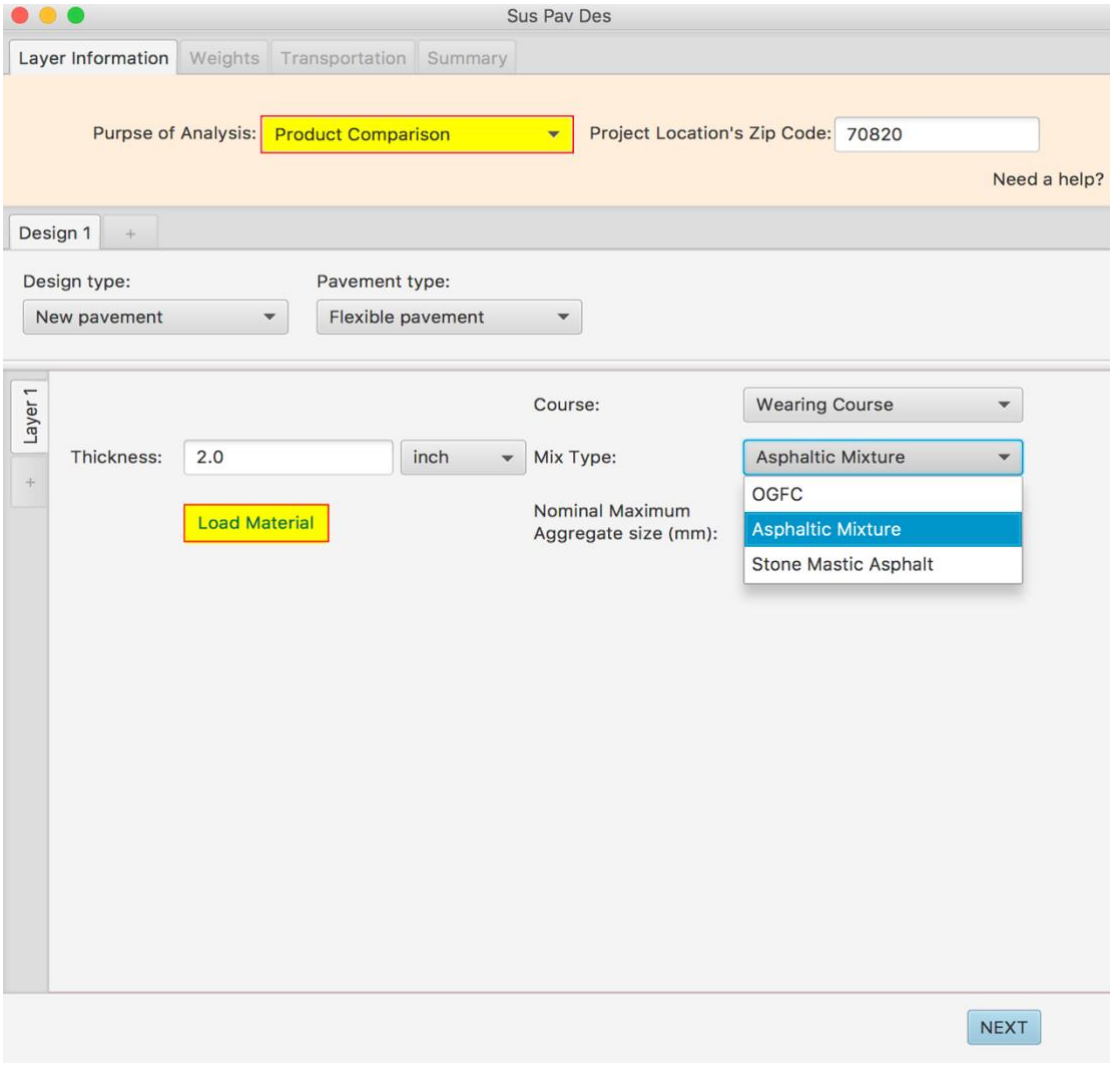


Figure 2: Flexible Pavement (Asphalt)

f. Type into certain thickness value for the current layer.

g. Click “Load Material” button to open a new window for loading mix materials.

h. Click “+” button to add multiple designs or multiple layers if it is the case. Multiple layers only allows to be used for Flexible Pavement.

i. Use the “NEXT” button to go to next page.

2. Now you are in the window of "Select alternatives to be averaged" if the analysis purpose "Benchmark" is selected, otherwise it is "Select Concrete/ Asphalt Mix"

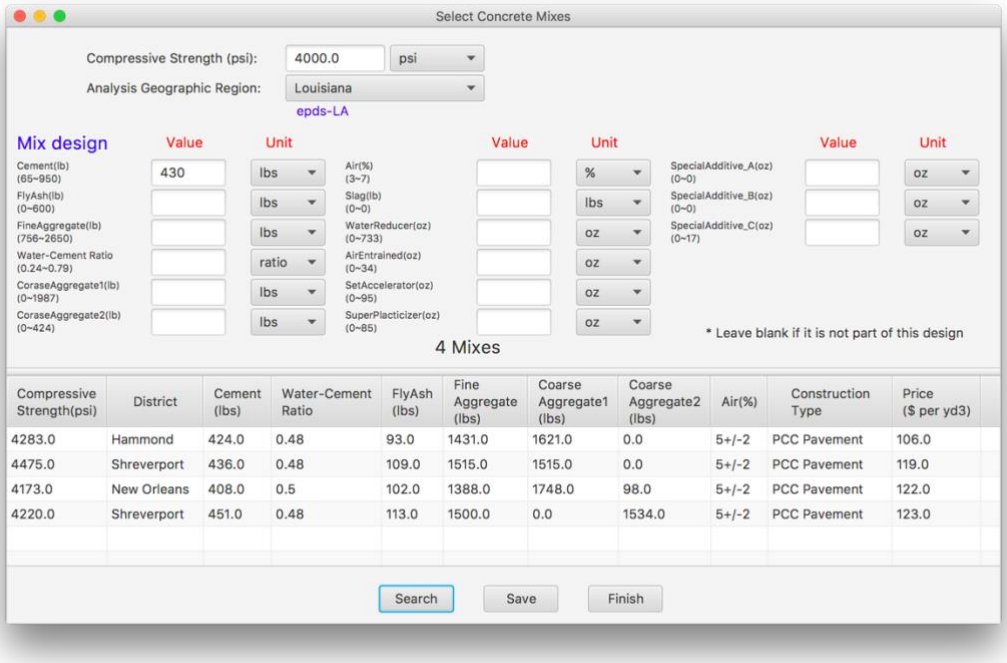


Figure 3: Select Concrete Mix

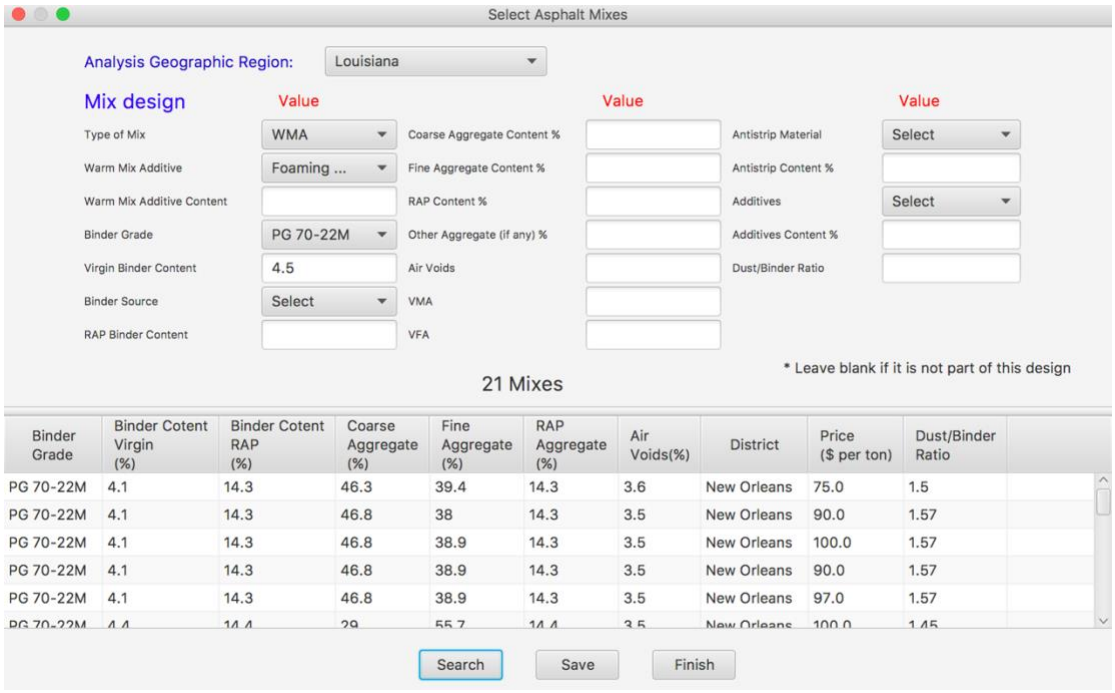


Figure 4: Select an Asphalt Mix

a. Choose the geographic location for materials first.

b. Fill mix description information you know, just leave it blank for text-field or default 'Select' for combo-boxes if you don't know other mix parameters.

c. Click "Search" after you filling all conditions.

d. Choose such mixes you prefer and click "Save" button to save all mixes and do the computation later. (In the 'Product comparison' version, user may need to input transportation distance if the auto distance-calculator doesn't work, which may result from invalid zipcode in the database or invalid internet)

e. Close current window by clicking "Finish" button.

f. You can add another design or go to the "Weights" tab.

3. Now you are in the "Weights" tab.

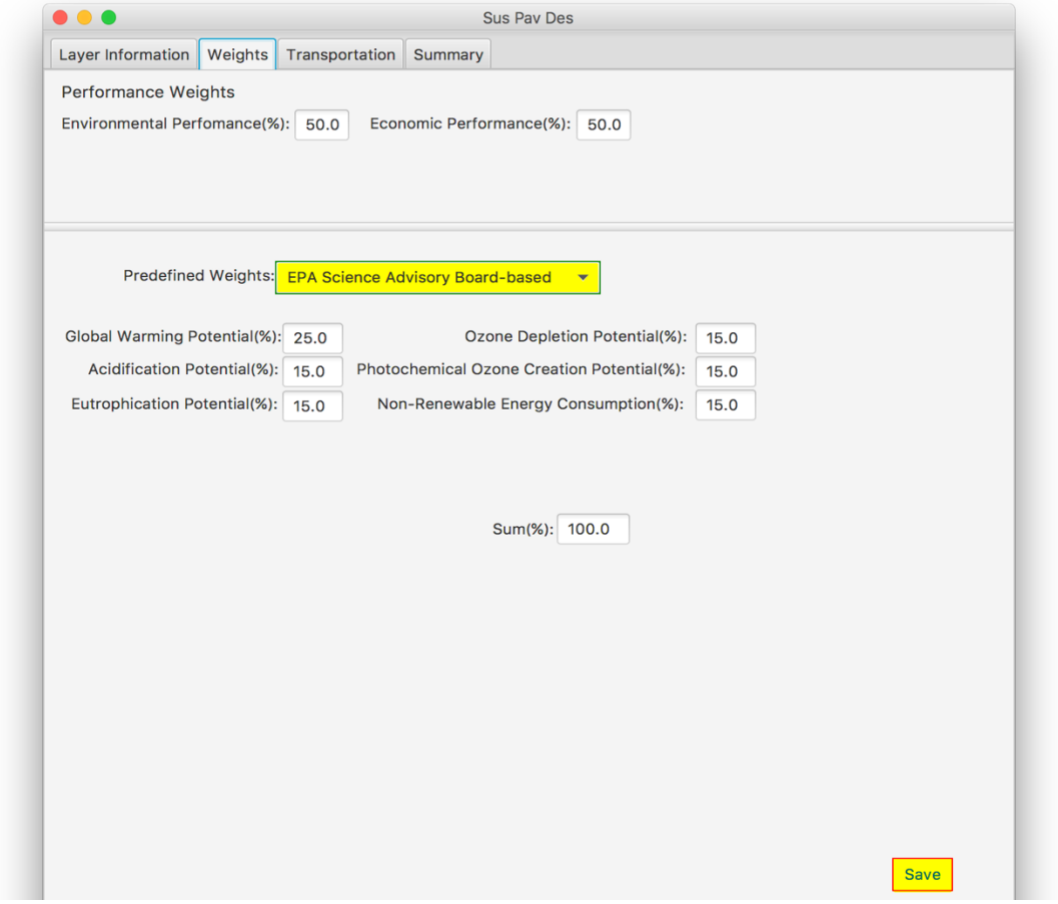


Figure 5: Weights tab

a. Fill value for Environmental Performance(%) and Economical Performance(%).

b. Select "Predefined Weights" for impact categories then click "Save" button.

c. Click "Transportation" tab.

4. Now you are in the "Transportation" tab.

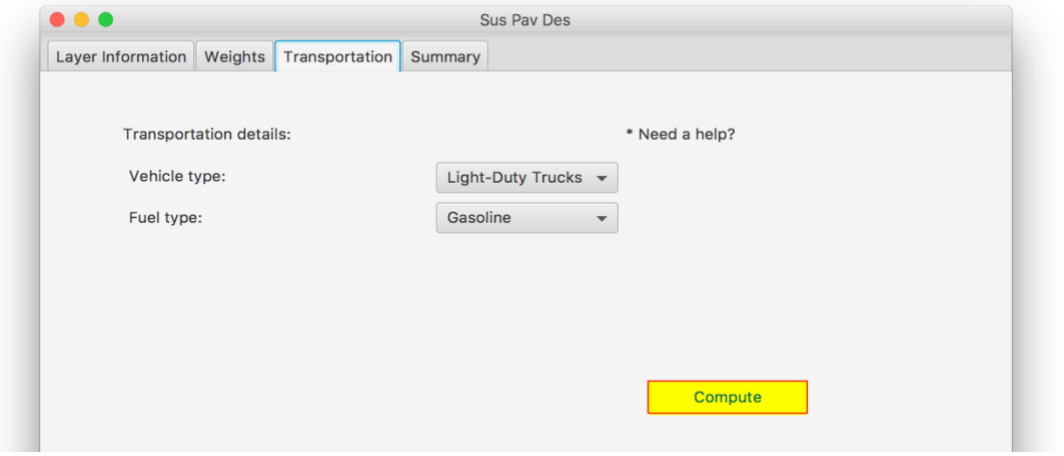


Figure 6: Transportation Tab Under Product Comparison Analysis

a. Select "Vehicle type" and "Fuel type" for identifying the substance content value.

b. You need to input the transportation distance if you are in a 'Benchmark' analysis. You may input an estimated value directly or use the required zipcode to calculate a real routine distance with a valid internet.

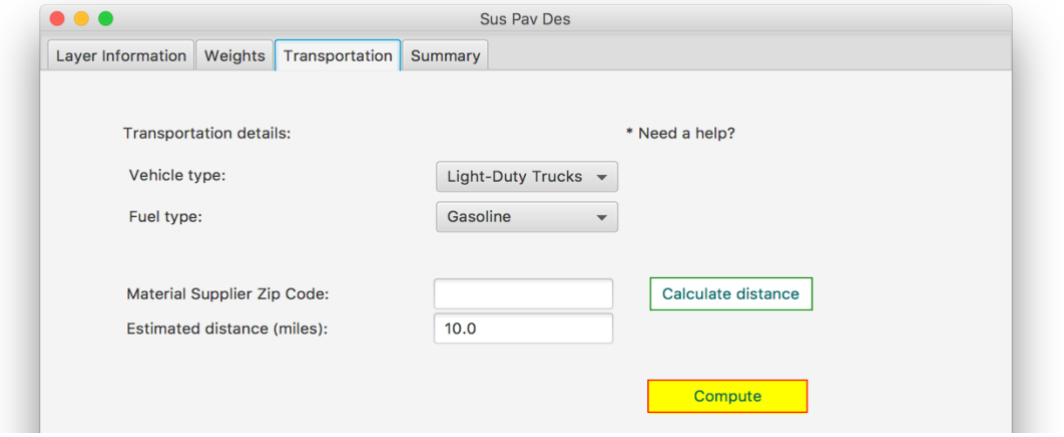
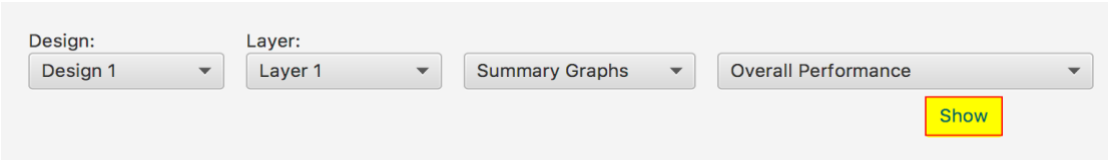


Figure 7: Transportation Tab Under Benchmark Analysis

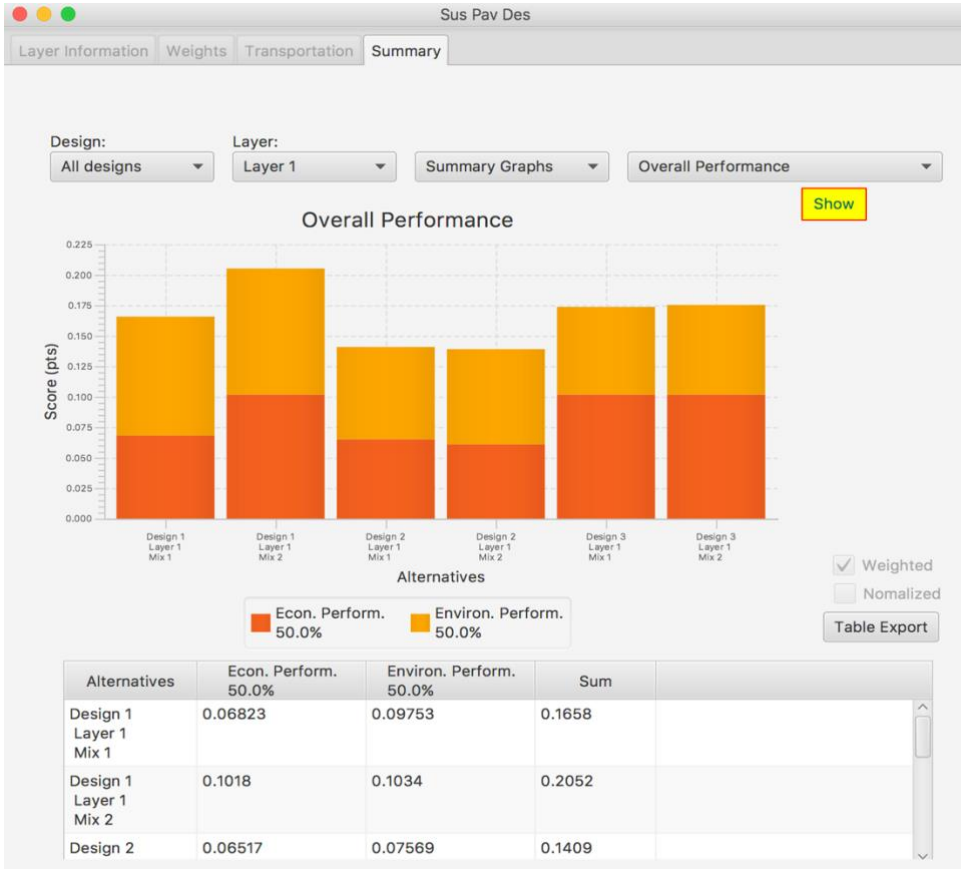
c. Click "Compute" button to calculate environmental analysis.

5. Now you are in the "Summary/Export" window. Choose the design you want to output the analysis results.



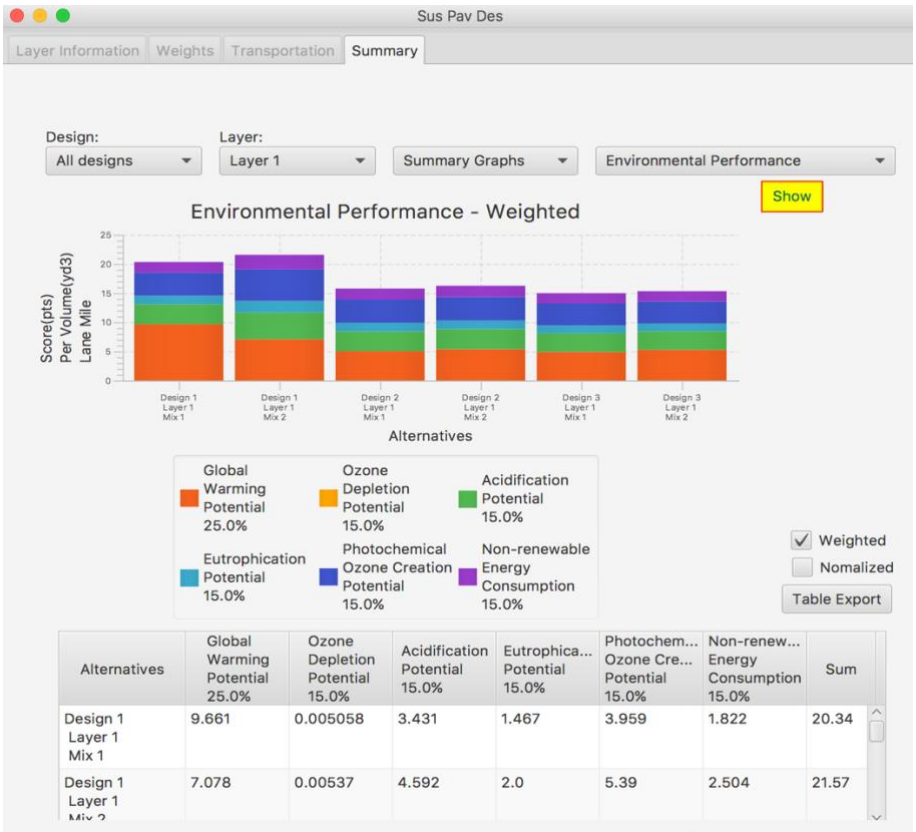
a. Summary Graph (A lower score means a better design)

i. Overall Performance



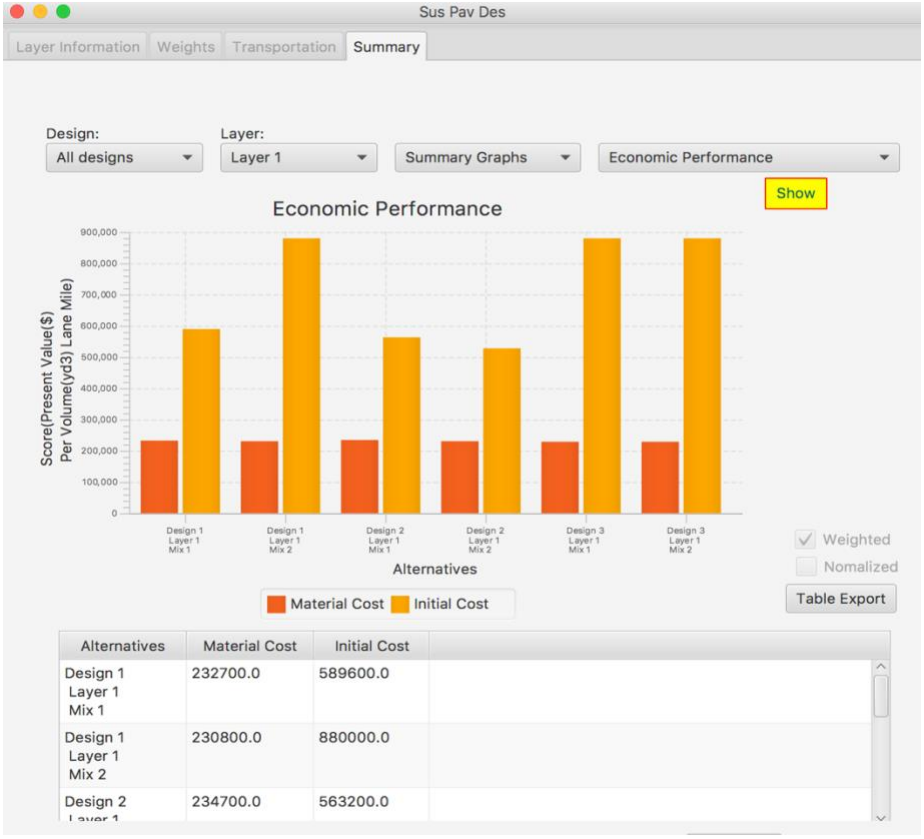
Alternatives	Econ. Perform. 50.0%	Environ. Perform. 50.0%	Sum
Design 1 Layer 1 Mix 1	0.06823	0.09753	0.1658
Design 1 Layer 1 Mix 2	0.1018	0.1034	0.2052
Design 2	0.06517	0.07569	0.1409

ii. Environmental Performance



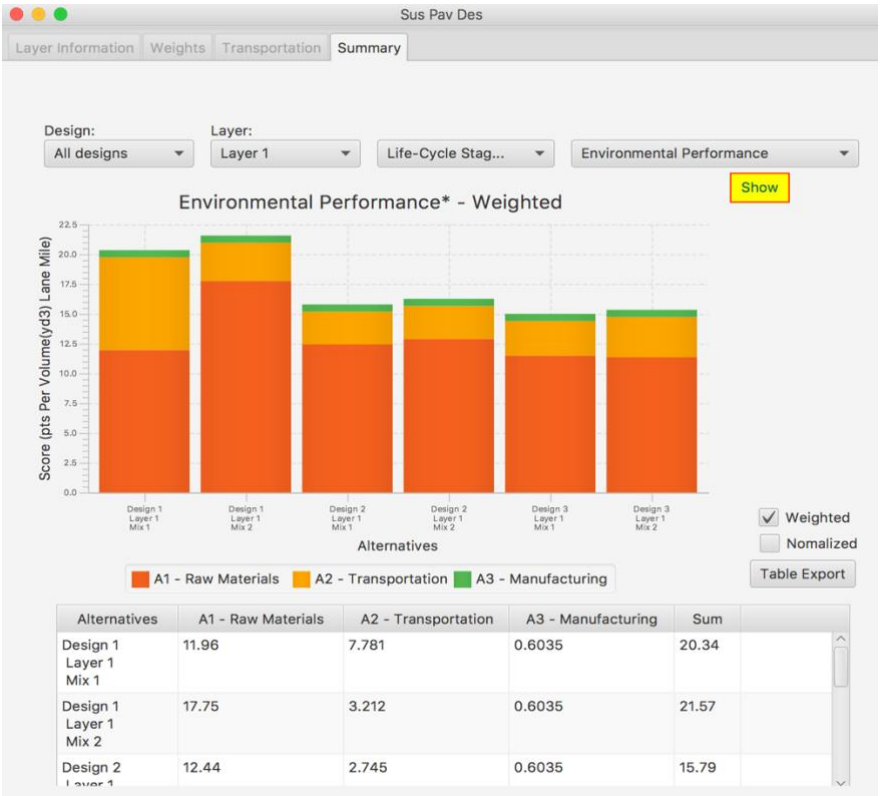
Alternatives	Global Warming Potential 25.0%	Ozone Depletion Potential 15.0%	Acidification Potential 15.0%	Eutrophica... Potential 15.0%	Photochem... Ozone Cre... Potential 15.0%	Non-renew... Energy Consumption 15.0%	Sum
Design 1 Layer 1 Mix 1	9.661	0.005058	3.431	1.467	3.959	1.822	20.34
Design 1 Layer 1 Mix 2	7.078	0.00537	4.592	2.0	5.39	2.504	21.57

iii. Economic Performance



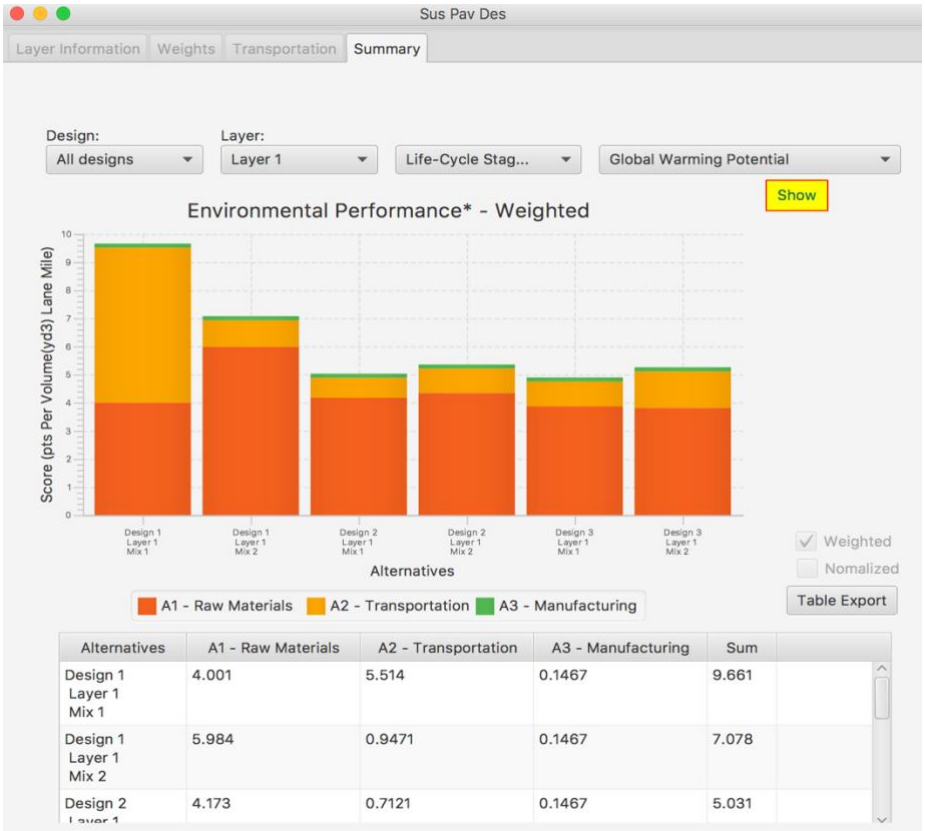
b. Life-Cycle Stage Graphs

i. Environmental Performance



Alternatives	A1 - Raw Materials	A2 - Transportation	A3 - Manufacturing	Sum
Design 1 Layer 1 Mix 1	11.96	7.781	0.6035	20.34
Design 1 Layer 1 Mix 2	17.75	3.212	0.6035	21.57
Design 2	12.44	2.745	0.6035	15.79

ii. GWP impact



Alternatives	A1 - Raw Materials	A2 - Transportation	A3 - Manufacturing	Sum
Design 1 Layer 1 Mix 1	4.001	5.514	0.1467	9.661
Design 1 Layer 1 Mix 2	5.984	0.9471	0.1467	7.078
Design 2	4.173	0.7121	0.1467	5.031

Note: User should operate the tool by following the user guide above, any tab or step skipping may result in no result error in the final Summary table. A "*Need a help?*" popup icon could guide user for each tab.