Brief Guide to swh2000.exe

The software swh2000.exe has been developed by RETScreen International Clean Energy Decision Support Centre (http://www.retscreen.net/) and will provide the ability to analyze several different solar collector systems for the heating of water. Most of the analysis is done with an Excel workbook, SWH2000.xls and various data bases that it accesses. To obtain these files swh2000.exe must be run, which installs all the files needed. This cannot be done on DEC PC’s. The installation must be done on your own PC. Once it is installed, you may move the entire file structure for the program to your m-drive by either ftp or copying to a CD.

The primary analysis tool is the SWH2000.xls spreadsheet. This workbook has six named tabs of which three will play a major role in the design project. Here is a review of the operations and inputs required for each tab.

**Energy Model:** Begin by entering some descriptors in the gray cells at the top of the spreadsheet. Then click on the Complete SR&L sheet, which will allow you to specify the location of interest. This will jump you to the Solar Resource and Heating Load spreadsheet. Click on the See Weather Database link and choose a location. Returning to the Energy Model sheet, the inputs for Base Case Water Heating System and the Balance of System sections may be left on the default vales. For the Solar Collector inputs, choose the Collector Type from the pop-up menu and leave the other inputs to their default values. Finally, make the entry in the Number of Collectors cell equal (with an equation) to the Suggested Number of Collectors cell. An important result will be extracted from the spreadsheet. After the Solar Resource and Heating Load spreadsheet is completed, the Renewable energy delivered in kWh should be recorded.

**Solar Resource and Heating Load:** For the Monthly Inputs section, it is suggested that for the project the cabin will used for the months of May to September and for half of April and October. For the Water Heating Load Calculation section the following inputs may be used.
Application type: Service hot water
System configuration: With storage
   Building or load type: House
   Number of units: 4
   Rate of occupancy: 50%
   Estim. hot water use (at ≈ 60 °C): 120
   Hot water use: 600-3000 (input varied)
   Desired water temperature: 60
   Days per week system is used: 2
   Cold water temperature: User-defined
      Minimum: 25.0
      Maximum: 25.0

Cost Analysis: First zero all quantity inputs for all section except for the Renewable Energy Equipment and Balance of System sections. In the Renewable Energy Equipment section, zero out all of the quantity inputs. Input the unit cost for the solar collector. Use the following unit cost for the remainder of the items in the Renewable Energy Equipment section.

   Solar storage tank: $ 1.00
   Solar loop piping materials: $ 6.00
   Circulating pump(s): $ 0
   Heat exchanger: $ 0

In the Balance of System section, zero out all of the quantity inputs. The following unit costs should be used:

   Collector support structure: $ 100
   Plumbing and control: $ 300
   Collector installation: $ 10
   Solar loop installation: $ 2.00
   Auxiliary equipment installation: $ 0

The key result of the analysis is extracted from the spreadsheet, the Total Initial Costs. This will be the capital cost for the system.