

Pay for Performance Technical Tip

Energy Modeling, Calibration, and Weather Files

The Pay for Performance Existing Buildings program uses two types of weather files to complete model calibration:


- (A) Weather files with the actual daily average temperatures during billing periods
- (B) “Typical Meteorological Year” (TMY2 or TMY3) files used in the simulation

Weather files (A) and (B) are two distinct sets of weather data that differ not just in format (daily average temperatures versus 10+ parameters for each hour in a year) and type of data (actual versus ‘typical’), but also in the locations for which information is available. A weather station found in set (A) may not be available in set (B).

For any given project:

- Weather file (A) should be the closest location for which actual weather conditions are available based on the choices in the drop-down list on the ‘Input’ page of P4P Model Calibration Tool:

General Information	
Project Name:	
Location:	
Project Fuels:	



- Weather file (B) is the weather file used in the simulation, based on the closest location for which TMY2/TMY3 file is available.

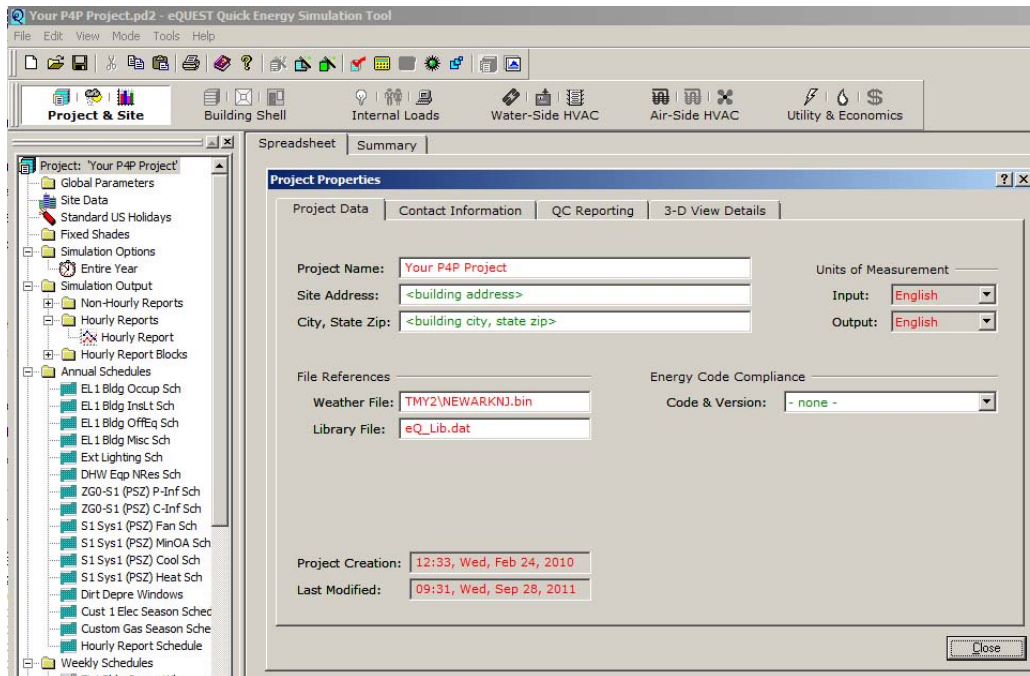
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Note: eQUEST automatically selects the most appropriate TMY2 file based on the project location entered in eQUEST Wizard, as shown on the screenshot below.

The screenshot shows the 'eQUEST DD Wizard: Project and Site Data' window. The 'General Information' section is active. The 'Building Location and Jurisdiction' section is highlighted with a red circle. The 'State' dropdown is set to 'New Jersey' and the 'City' dropdown is set to 'Jersey City'. The 'Jurisdiction' dropdown is set to '- other -'. The 'Electric' and 'Gas' dropdowns are both set to '- custom -'. The 'Analysis Year' is set to '2011' and the 'Usage Details' dropdown is set to 'Hourly Enduse Profile'. The 'Prevent duplicate model components' checkbox is checked. The bottom of the window shows navigation buttons: 'Wizard Screen 1 of 7', 'Help', 'Previous Screen', 'Next Screen', and 'Return to Navigator'.

The TMY2 weather station used in the simulation may be found by reviewing the project inputs in eQUEST *Detailed Interface*. To find out which weather file was used, select Project & Site object group, and double-click on Project node in the component tree to open Project Properties window. For example, as seen in the screenshot below, TMY2 file for Newark was used for a project located in Jersey City.

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Typical Meteorological Year (TMY) files are available in two formats – TMY2 and TMY3. Unless user installed and explicitly referenced a TMY3 file, eQUEST will use TMY2 file.

- The format of TMY file used in the simulation must be selected in the P4P Calibration Tool, as shown below.

Simulation Results		TMY2
BTU/ unit	3412	100000
Month	Electric (kWh)	Fuel #2 (units of fuel)
Jan	0	0

- When running ETracker, select the (*.wea) weather file that matches the weather site and format (i.e. TMY2 vs. TMY3) of the file that was used for the simulation. This is covered in **Step 6, Item 3** of the P4P Model Calibration Tool Instructions:

3) Click File -> Open Weather..., navigate to the *.wea file used in the energy simulation (included in the package) and select it. For example, if TMY2 weather file for Atlantic City was used in the simulation, select AtlanticCity TMY2.wea file. Location and file type (TMY2 vs TMY3) of the selected weather file must match the file used in simulation, and inputs made in cells C5 and K7 of the 'Input' worksheet.

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ETracker performs regression analysis of the monthly usage projected by the model using the weather conditions for site (B) and develops a regression equation. P4P Model Calibration Tool then uses this regression equation with weather data for site (A) to project energy usage of the model at the actual weather conditions. The consumption projected by the regression equation during each billing period is then compared to the actual utility bills to determine calibration accuracy.

- Proximity of weather site (B) to the actual project location is important for accuracy of projected savings. Proximity of weather site (A) to the actual location is important for achieving meaningful calibration.