

How to test draft ENERGY STAR Plant Energy Performance Indicators (EPIs)

Your industry has been provided a draft ENERGY STAR Plant Energy Performance Indicator (EPI) to review and test.

What is an EPI? It is an energy management tool that enables companies to compare the energy performance of a particular type of plant to the performance of its industry. Simply, EPIs enable an assessment of how efficiently a plant uses energy, relative to similar plants nationwide.

EPIs enable you to measure, track and benchmark plant energy performance over time and against the industry. Such data is critical to setting energy improvement goals and judging change. EPIs use a 1 to 100 percentile scale to score a plant, enabling a quick understanding of how the plant is performing. A score of 50 indicates average, or *typical*, energy performance, while EPA has defined a score of 75 or higher as top quartile performance, or *efficient*.

EPIs are provided through an underlying Microsoft Excel interface. The tool is a statistical model developed by Dr. Gale Boyd of Duke University. The model is based on data from *actual* plants that operate in the industry.

Why test the EPI? EPIs provide the unique opportunity to compare energy performance for your plant(s) to that of the industry. Testing of the EPI will help refine it and provide a well-reviewed energy management tool that currently does not exist in your industry.

EPA seeks industry review of all EPIs to ensure the tool functions properly and that it is providing useful information to aid energy performance improvement.

How to test the EPI. Testing the EPI involves entering plant specific data for one or more plants. Each EPI is specific to a particular industry but generally, annual production and energy data are needed. Using this and other information defined in the EPI, the tool scores the plant's energy performance.

Instructions tab. To begin, read all material under the "Instructions" tab. If any of the information recorded here is unclear, please make a note of it and include this in your comments.

The "Required Data" section under Instructions lists the information you will need to test the EPI.

EPI tab. Next, go to the tab labeled "EPI". The basic input requirements for testing the EPI are included here along with boxes for entering the data. Are the data requirements clear from the

labels? If not, please record any unclear categories. (If you are confused, then others may be also.)

Enter all required data. The EPI will “rank” your plant on a scale of 1 to 100. It will show how much energy a “typical” plant (50th percentile) and an “efficient” plant (75th percentile) would use. The Current (blue) and Reference (red) plant computations are independent. They are included in the spreadsheet to make comparisons between two plants or one plant over time more convenient.

Compare two or more plants, if possible. Test the data requirements. If possible, use data from multiple plants and years for testing. Actual data is best, but estimates based on typical ranges of performance can also be used. Testing the EPI really asks for some judgment about the nature of the results. Basically we wish to determine if the results are “intuitive” and why or why not? More specifically:

- Do the scores conform to your expectations, e.g. does a plant you view as a “poor” performer score low and vice-versa?
- Do you observe patterns in the results when comparing different plants, e.g. do plants producing similar products tend to be consistently rated as more (or less) efficient?
- Does the ranking of multiple plants conform to your expectations?
- Does the change over time in a specific plant conform to your expectations?

Try different scenarios. Recall that the model is intended to compare your plant to other similar plants. Testing to see what would happen if a plant configuration were to change can be helpful. Conduct “what if” scenarios by changing energy use or production activities (e.g. increase/decrease production, increase/decrease energy figures). Remember that any change to a hypothetical production should be based on reasonable figures since the data for the EPI came from actual plant operations.

Finally, the EPI is not an engineering model, so suggestions for including data on alternate plant characteristics in the model should be accompanied by ideas for how such data would be obtained on a plant-level basis.

How to provide comments. Please direct all comments, observations or questions to Gale Boyd of Duke University. You may call Gale directly or send an email. You do not need to send Dr. Boyd any data you feel is proprietary. If you would like to share proprietary information with Dr. Boyd to help in thoroughly discussing the results, Duke University can provide a legal non-disclosure agreement to protect those data/discussions. Gale’s contact information is:

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What will EPA do with the completed EPI? Upon completion, the tool will be released for your use to help inform energy management decisions. Also, if the model's performance is satisfactory to EPA, it will make ENERGY STAR certification available to eligible plants scoring 75 or higher when the model is used. (See www.energystar.gov/plants)