

Energy Efficiency Calculator

The Regulatory Assistance Project, in partnership with the Energy Foundation and NRDC, commissioned E3, a consulting firm in San Francisco, to develop an energy efficiency assessment calculator tailored for use in China. This calculator is available free of charge, operates in Chinese, and is intended to be useful to Chinese policymakers concerned with energy efficiency, administrators of portfolios of energy efficiency projects, and managers of energy service companies. Because energy efficiency portfolios are typically called “energy efficiency power plants” (EPPs) in China, the calculator is often referred to as the “EPP Calculator”.

The calculator is based on a calculator E3 developed for the California government. It includes data libraries featuring load shapes for a electricity end uses (motors, pumps, lighting, refrigeration, HVAC, air compression, heating, cooling, etc.) and data regarding a wide range of efficiency measures (labor and non-labor cost, annual energy savings, expected project life cycle, etc.) Users can input own data and modify the tool as desired.

The calculator can be used to assess efficiency efforts at three levels:

- **measures** (e.g., replacement of an inefficient air condition by an efficient one);
- **projects** (e.g., the retrofit of a building, including air conditioning and lighting);
- **portfolios** or EPPs (e.g., a collection of projects from a range of buildings and facilities).

At each of these levels, the calculator can be used to assess the costs and benefits of energy efficiency, including:

- avoided emissions;
- avoided supply-side capacity costs;
- avoided energy costs;
- the incremental (or direct) costs of various measures;
- subsidy costs.

The calculator allows these costs and benefits to be evaluated from the perspective of individual participants, energy service companies, portfolio administrators, or society as a whole.

Energy conservation centers, EPP administrators, and grid company officials responsible for energy efficiency investments will find the tool has many uses:

- Evaluation of the cost-effectiveness of existing efficiency projects and portfolios.

- Identification of cost-effective new efficiency projects and portfolios.
- Determination of the optimal level of subsidies for measures and projects.
- Better allocation of limited funds for energy conservation.
- Assessment of impact of efficiency projects and portfolios on the regional load shape.
- Calculation of contribution to emissions and energy-intensity goals from efficiency portfolios/EPPs.

In addition, the calculator will help power sector planners and regulators to:

- Compare and demand-side investments (such as EPPs) with supply side investments.
- Integrate the demand side into power sector planning.
- Establish a uniform “energy saving fee” equal to the average cost per kWh saved by an EPP.

The NRDC energy efficiency technical center in Beijing is a source of expertise regarding the calculator. The tool and a “User’s Guide” may be downloaded from their website: <http://china.nrdc.org/zh-hans/library/EPPC>

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