



**Energy
Sustainability
Unit**

Energy Smart Tool

**Seminar on EAEF Project 64 & 68
Energy Performance Contracting & benchmarking
13 January 2006
School of Design & Environment, NUS**

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Department of Building
School of Design and Environment
National University of Singapore**



Energy Smart news



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(Straits Times, 17 Dec 05)



(Channel News Asia, 16 Dec 05)



(Lianhe Zaobao, 17 Dec 05)

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The Energy Smart Tool

<http://www.esu.com.sg/smarttool.php>



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ESU Website | FAQ | Contact ESU

ENERGY SMART TOOL

Home | About Energy Smart Tool | How To Use | Registration | Useful Information

SINGAPORE

Login Box

User ID

User Password

Go [Forgot password?](#)
[Register](#)



Energy Smart Tool is an online performance-based building energy benchmarking tool developed by the Energy Sustainability Unit (ESU) of Department of Building, School of Design and Environment, National University of Singapore. The main objective of the Energy Smart Tool is to provide comprehensive, reliable and accurate benchmarks of energy consumption and efficiency in buildings. This tool is intended to be a starting point in assessing building energy use and saving potential. It provides you with a direct comparison of your building energy performance to other similar facilities, which can help to identify the position of your facility, and to set energy use and efficiency targets.



News & Events

- ~ Official Launch of Energy Smart Tool
- ~ Launch of NEA's Energy Smart Office Labelling Programme



Case Studies

- ~ Best Practices of Energy Efficient Building



NEA Energy Smart Building Labelling Programme



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Outline



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- **Background**
- **Objectives**
- **Expected impacts on target groups**
- **How to use**
- **Benchmark mechanism**
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Background



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- EU-ASEAN Energy Facility Project 68
- NEA's building energy smart labelling programme

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Objectives



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- To develop a comprehensive, independent and reliable internet based energy benchmarking system accessible by all users.
- From the benchmarking system, to develop a building energy performance classification system, paving the way for building energy labelling.

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Expected impacts on target groups

Target Groups:

- **Building owner**
- **Energy Services Companies (ESCOs)**
- **Financial Institutions (e.g. Banker)**
- **Public agencies**
- **Professionals (e.g. property managers, energy engineers and building designers)**

Expected impacts on target groups

- Set energy saving targets which are achievable
- Create a transparent and vibrant energy services sector for ESCOs, who can use benchmark as reference in persuading to invest in energy retrofit
- Provide a decision support system for the financing institutions. It also serves to build capacity and save resources.
- Facilitate public agencies in developing incentive schemes and labeling system that would further promote the industry.
- Give guidance and targets for the design and construction of new buildings.

How to use

<http://www.esu.com.sg/howtouse.php>



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Remarks

- For Normal User, registration is free of charge.
- After registration, User can immediately log in to use the Tool.
- My Facilities is the main page after User log in. Click Add New Facility to start data entry. This includes Building Contact, Building Profile and Energy Consumption Data. Click Submit to see the Summary and Results. User can download a report of Summary and Results in a PDF file.
- Under one user account, User can perform benchmarking of multiple buildings (maximum 20). List of the buildings is shown on My Facilities. User can also edit, duplicate or delete buildings from the list.
- User can change password and others information in the User Profile.
- Terminology is provided as guidance for inputting the right data and understanding the results.
- On the printed report, it is stated that the benchmarking result is subject to the data quality input by the User. ESU does not warrant or represent that any outcome produced as a result of the use of the Tool is accurate, or will be the same as, or is indicative of the outcome of any official rating by ESU.
- All the information entered will be saved for the User to review in future logins.
- By filling out the survey (optional), User can give comments and suggestions on the design and functions of the Energy Smart Tool. Your comments/ feedbacks are most welcomed.

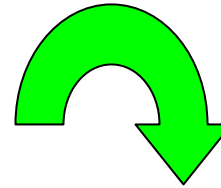
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Benchmark mechanism

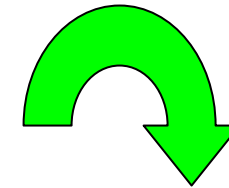
Design sample frame

Ensure the sample is representative of the entire building stock targeted and covers a wide spectrum of each building parameter.



Parameter investigation

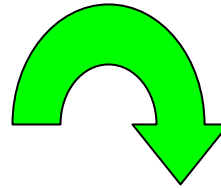
Understand manageable and unmanageable factors



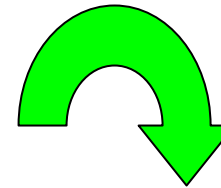
**Design data collection
form & define
terminology**

Benchmark mechanism

Data collection & processing



**Applying primary filters
and exclude unqualified
data set**



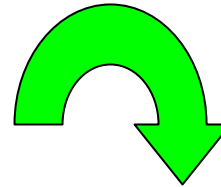
Data validity test

Apply statistical integrity and normality tests to ensure accuracy and validity of data set

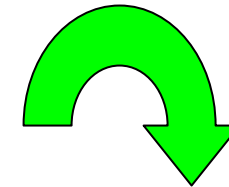
Benchmark mechanism

Parameter analysis & normalization

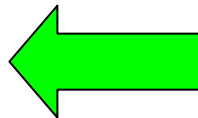
- Weather normalization
- Primary determinant factors
- Correction factors
- Secondary determinant factors



Determination of energy efficiency indicator



Develop web-based benchmarking and application concepts



Establish benchmark

Benchmark look-up table and cumulative percentile curve

Technical description



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- Data sources and building types
- Data primary filters
- Required key input information
- Energy efficiency indicator
- Benchmarking Summary and Results ([example](#))
- Limitations

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What is next



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Version 2.0

- **Upgraded database**
- **Extended building types**
- **Enhanced normalization strategy**
- **Benchmark for the ASEAN region**
- **Promotion of Energy Smart Label/ Tool**
- **Energy Smart Tool's Corporate Account**
- **Real time monitoring and benchmarking**

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Acknowledgement



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ESU would like to express deepest gratitude to the National University of Singapore (NUS), EC-ASEAN Energy Facility (EAEF) Project 68, National Environment Agency (NEA), Jurong Town Corporation (JTC) and building owners for their support towards the development of Energy Smart Tool.



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Thank you

*For further information of the Energy Smart Tool,
visit- www.esu.com.sg*

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