

BIRDS Frequently Asked Questions (last updated 03/13/2017)

How do I give user feedback on BIRDS?

Suggestions by users will be added to this list for future improvements. Please email Joshua Kneifel at joshua.kneifel@nist.gov, Priya Lavappa at priya.lavappa@nist.gov, or birds@nist.gov with any suggestions you may have to add to this list for future improvements.

What is the purpose of BIRDS?

BIRDS is designed to allow a user, without having any significant background in sustainability, to compare the sustainability performance of a whole building as the energy efficiency of the building is increased. The predefined building prototypes allow a user to quickly select the type of building in which they are interested, and compare the sustainability performance as the energy efficiency measures incorporated into the building changed, either based on building energy standards/codes or incremental energy efficiency features.

What can I do in the BIRDS software?

Currently a user can compare the energy, environmental, and economic performance of a **new commercial building or single-family detached residential building** across different locations, study periods, energy efficiency designs (based on building energy standards/codes), and environmental preferences using the Commercial Building and Residential Building databases. Note that at the moment, the single-family detached residential buildings assume a wood-framed, slab-on-grade house. The third database focused on Low-Energy Residential Buildings allows the user to compare the energy, environmental, and economic performance of 480 000 designs for a single building prototype based on NIST's NZERTF (<http://www.nist.gov/el/nzertf/>) for a single location (Gaithersburg, MD) across different study periods, discount rates, construction quality, financing options, and exterior wall finishes (new). Data visualization capabilities has been expanded to include summary tables for key building design results, scatterplots to compare the energy and economic performance, and radial plots to allow for comparison of changes across a range of metrics in one visual representation. Additionally, the Low-Energy Residential database web interface still includes the bar graph capabilities as well as the "Download" data option, allowing the user to analyze the data outside of BIRDS.

Is BIRDS a finished product?

BIRDS v3.1 is an update to the 3rd version of a tool that will be updated regularly, both in terms of the underlying databases and functionality. See below for a list of updates that may be included in future versions of BIRDS.

When will a new and improved version of BIRDS be available?

BIRDS v4.0 is scheduled to be publically available in 2018, and will include some of the new features discussed below.

What new data will be included in future versions of BIRDS?

BIRDS v4.0 will include a complete update of the *Commercial Buildings Database*:

- (1) Use of PNNL Commercial Reference Building models for the prototype building designs.
- (2) Updated cost and life-cycle environmental assessment data

Additional database enhancements that will be included in new versions of BIRDS as time permits include:

Low-Energy Residential Database

- (1) Add gas space heating and water heating options because natural gas is predominantly used in Maryland
- (2) Add additional locations for which the building design can represent
- (3) Add alternative foundation options (slab, crawlspace, finished basement)
- (4) Add additional prototypes that represent common building designs in the region as well as the rest of the U.S.
- (5) Calculate more complex economic analysis, including more detailed financing analysis, social cost of carbon option, and LCC metrics

Residential Building Database

- (1) Update of the Residential Database to include 2015 IECC
- (2) Add alternative foundation options (crawlspace, unfinished basement, finished basement)

What new functionality is planned on being incorporated into newer versions of BIRDS?

New functionality coming in BIRDS v4.0:

Residential Building Database and *Commercial Building Database* will be combined into a single web interface focused on standard-based and code-based analysis. This will ease maintenance and expansion of the databases and interface functionality.

“Introduction” and “How To” Videos to help users understand what BIRDS is (and isn’t) and how to use the tools.

New functionality coming in version beyond BIRDS v4.0 will be based on user feedback.

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What other tools has NIST developed that are related to BIRDS?

Prior to the development of BIRDS, NIST’s Applied Economics Office (AEO) developed BEES (Building for Environmental and Economic Sustainability), which allows for sustainability performance comparisons of similar building products (e.g. insulation, concrete, flooring). BIRDS uses the BEES sustainability framework and expands it to whole buildings. The BEES framework is summarized on its main page: <http://www.nist.gov/el/economics/BEESSoftware.cfm>. The most recent version of BEES (BEES Online) is accessible here: <http://ws680.nist.gov/Bees/>. A total overhaul of BEES Online BEES v2.0 is currently under development and is scheduled to be publically available for beta testing from the BEES Online main page in 2017. BEES 2.0 will update each of the product categories in BEES Online with up-to-date LCI data, methodologies, and processes as well as add additional user features such as product filtering and alternative LCIA impact methods.

The BIRDS tool is designed for high level decision-making, not individual building design decisions. To assist architects, designers, and homeowners on specific building design decisions, AEO is collaborating with NREL’s OpenStudio team (open source GUI for EnergyPlus) to allow an OpenStudio user to create their own custom building design with OpenStudio and run the BIRDS sustainability calculations without leaving OpenStudio. A beta version for this BIRDS-OS integration tool is planned to be released for testing in 2017.

If you are interested in learning more about these other tools, please follow the associated links or contact Joshua Kneifel at joshua.kneifel@nist.gov or the BIRDS team at birds@nist.gov.