

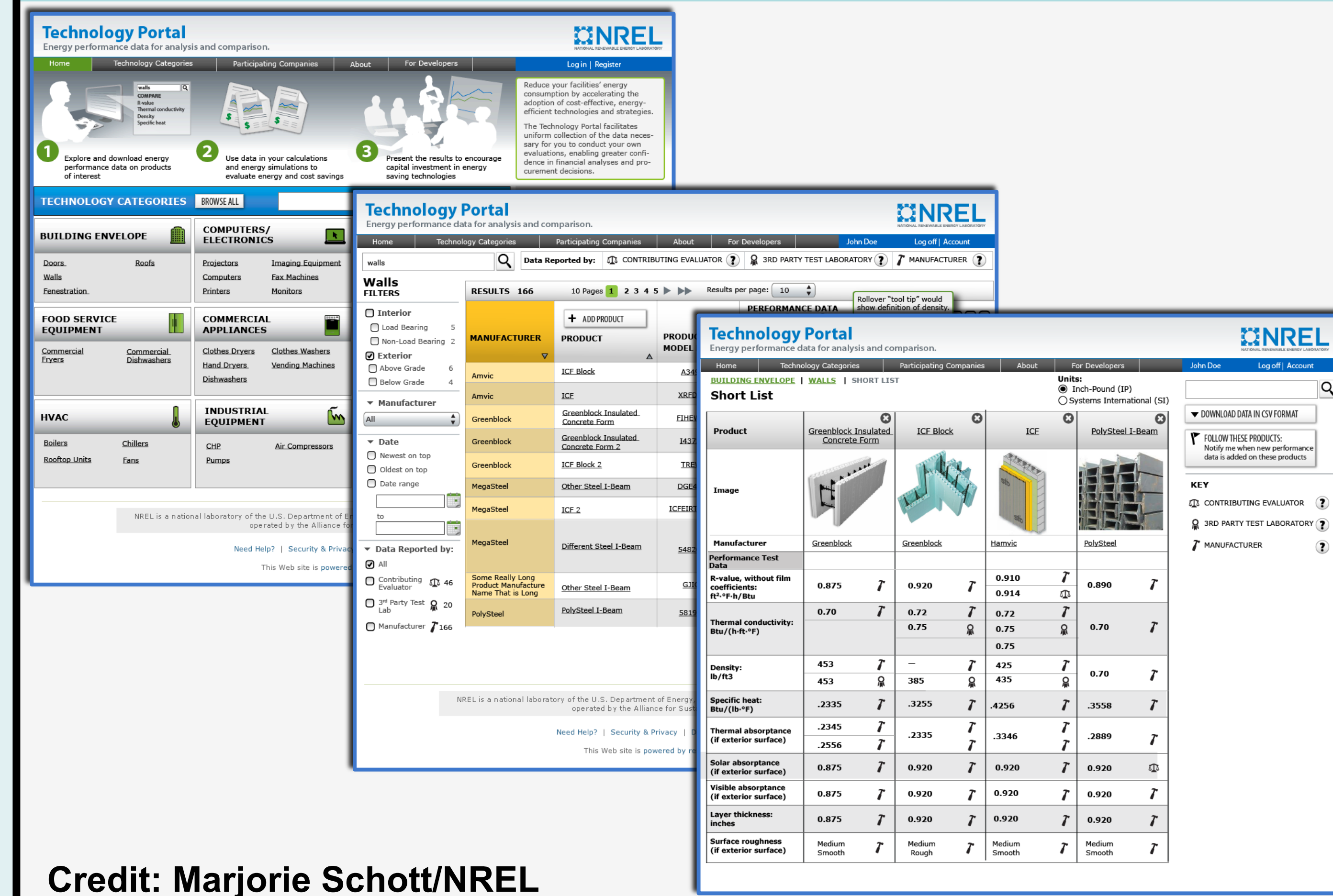
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Buildings account for more than 70% of the total electricity demand and 40% of the primary energy consumption in the United States. NREL research and case studies have shown that K-12 school buildings can achieve 50% energy savings over traditional construction practices. [1] We worked on a new database that energy professionals can use to acquire and share performance data for energy efficient technology.

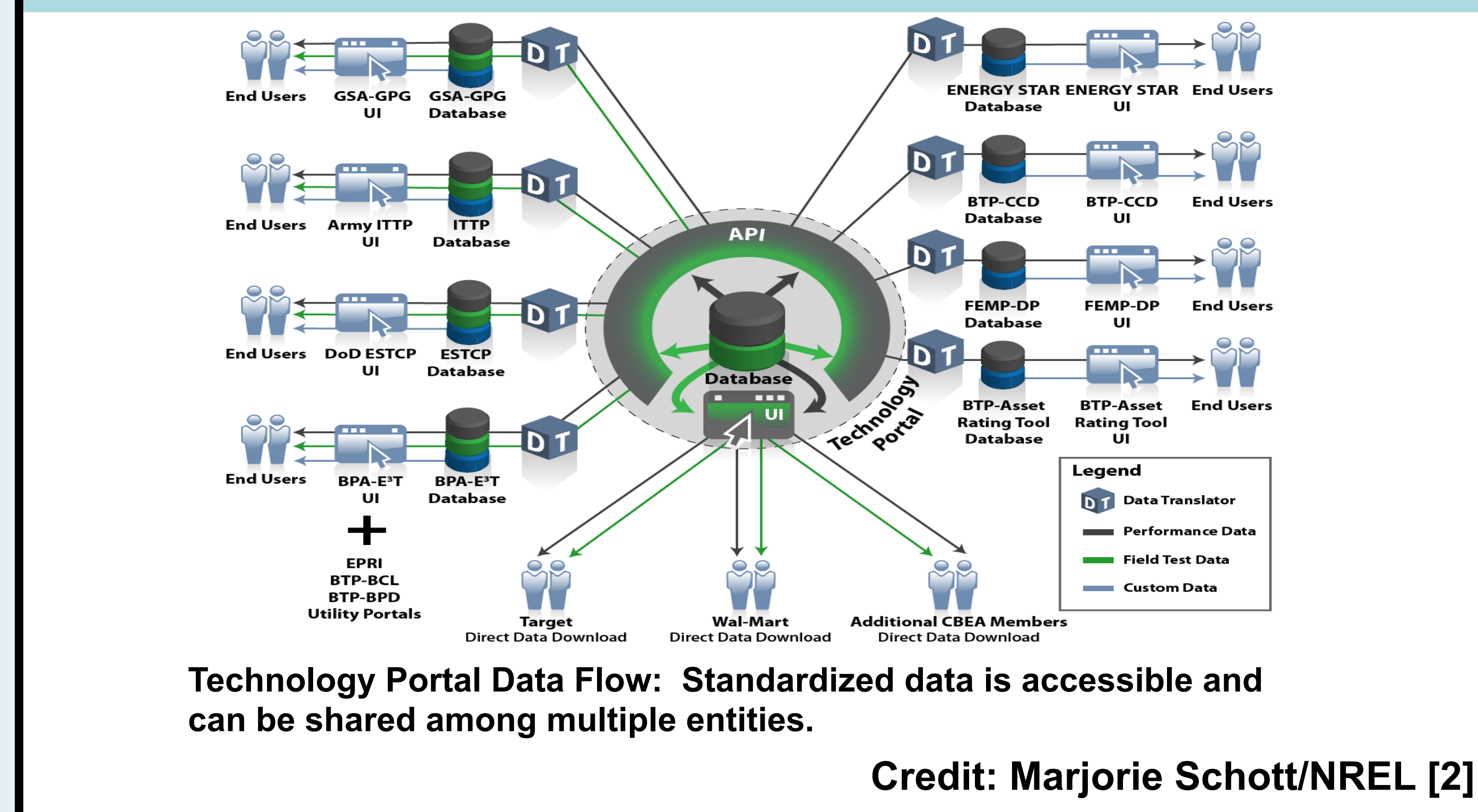


The technology is available to significantly reduce the energy our buildings consume. We need to streamline the process of evaluating and modeling energy performance in order to make informed decisions. The Technology Portal for Energy Efficient Buildings will increase the accessibility of standardized and credible energy performance data for building systems.



Credit: Marjorie Schott/NREL

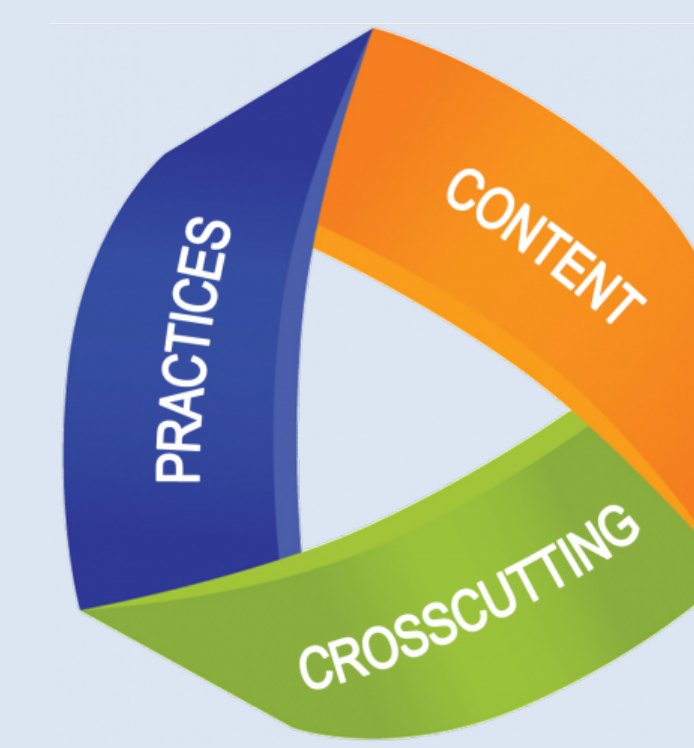
Technology Portal will allow for broad product searches, initial down-selecting comparisons, and detailed performance modeling. Owners and designers will benefit by reducing the cost and risk involved with energy efficient building design. Manufacturers will benefit by having a high traffic venue to showcase their data.



Connection to High School STEM Education

Students can drive the initiative for their school district to take advantage of new technology to significantly reduce energy use while increasing their community's energy literacy.

Develop engineering practices through significant problems.

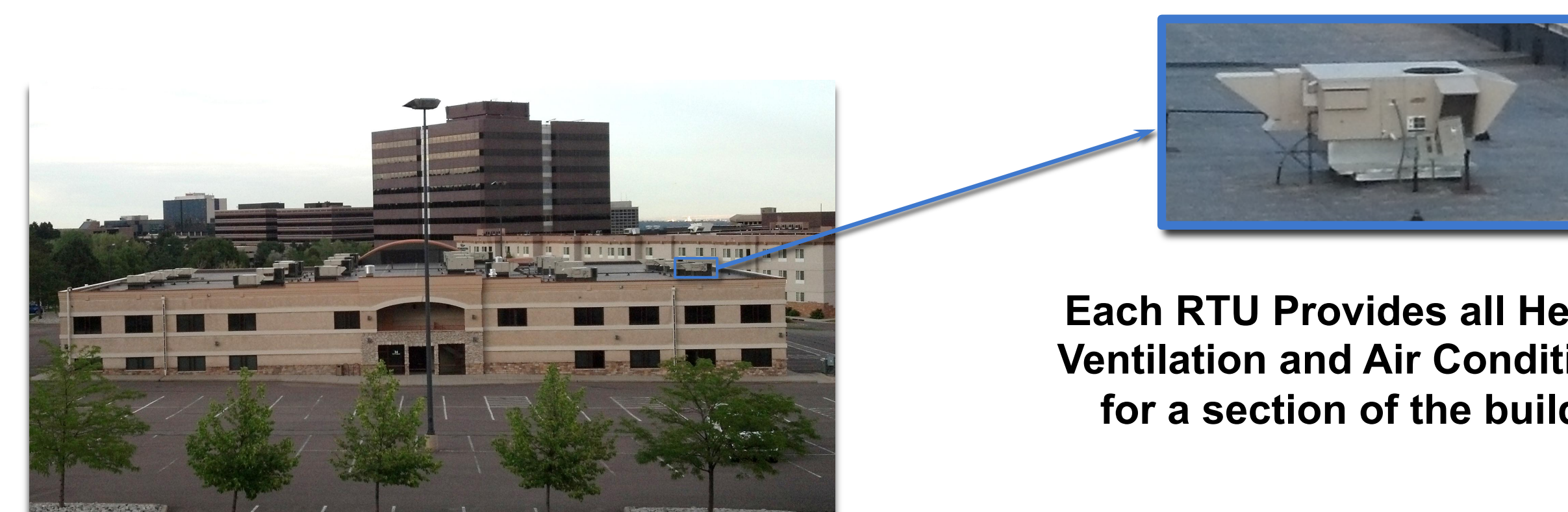


Add relevancy and link core content to the students' world.

Energy efficiency projects crosscut all four domains.

"...students require a sense of contextual understanding with regard to scientific knowledge, how it is acquired and applied, and how science is connected through a series of concepts that help further our understanding of the world around us." [3]

Packaged Roof Top HVAC Units (RTU) were selected as one of the initial technology categories because they are used in half of all commercial floor space in the US. [4] RTUs combine several HVAC components into a single packaged unit and have many design and control options.



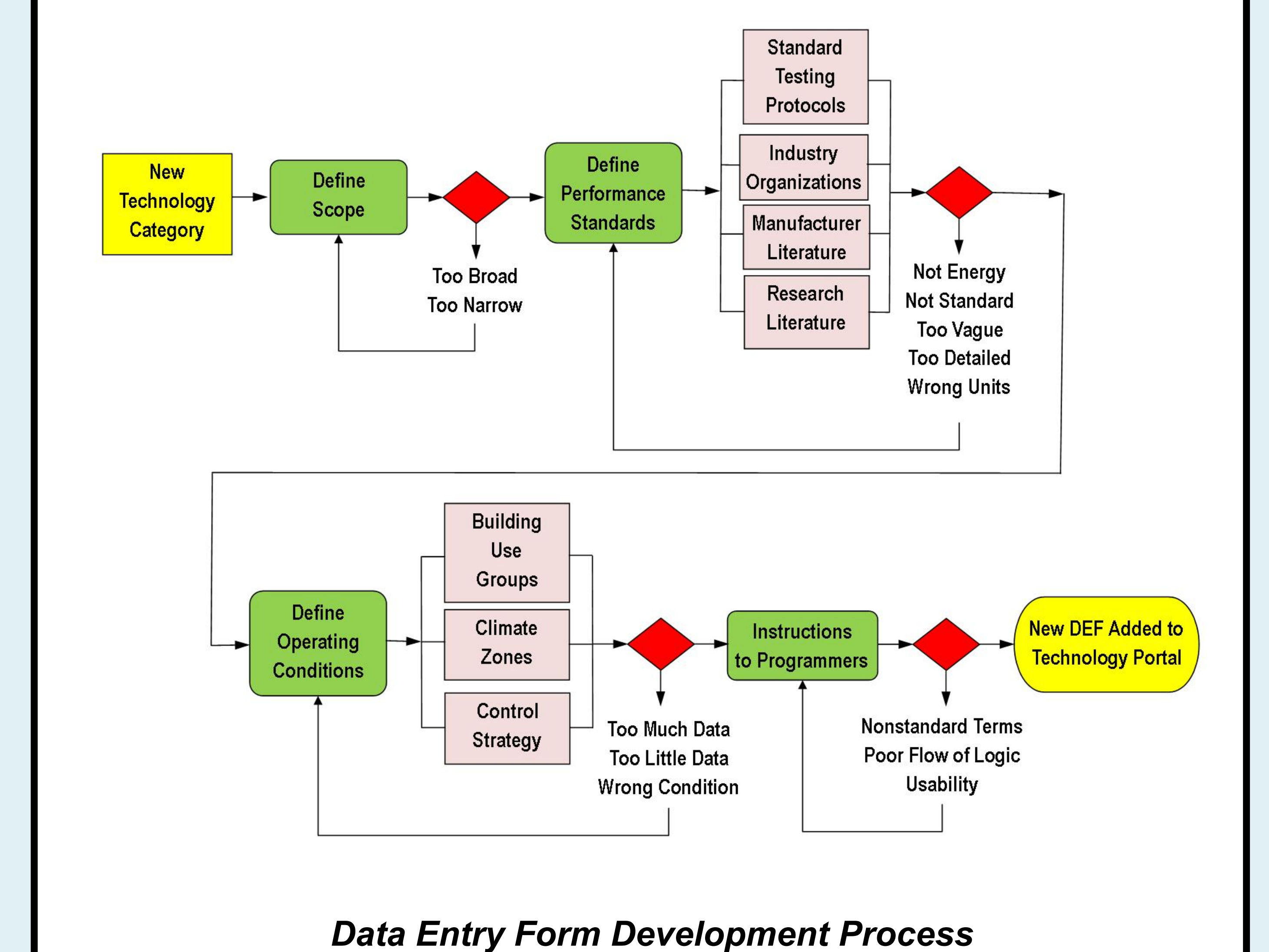
Typical Small Office Building

Each RTU Provides all Heating, Ventilation and Air Conditioning for a section of the building.

References:

1. Lammers, H. (2012). "NREL Helps Cut Building Energy Use in Half". National Renewable Energy Laboratory. www.nrel.gov/news/features/feature_detail.cfm?feature_id=1941
2. Studer, D.; Livingood, W.; Kung, F. (2012). *Technology Portal Task 2.2b Deliverable*. National Renewable Energy Laboratory. (Internal Only)
3. *Next Generation Science Standards*, (May 2012 Draft), National Research Council, Washington DC.
4. High Performance RTU Challenge Fact Sheet. (2012). US Department of Energy

We developed Technology Portal data entry forms (DEFs) for RTUs and Heating Boilers. The DEFs define all of the pertinent data needed to evaluate energy performance. The data must be detailed enough to enable accurate energy models without being too burdensome on data providers. Data must be broad enough to cover multiple applications in any climate zone.



NREL staff and subcontractors are concurrently working on web design, database development and data entry forms for the Technology Portal. Initial release is scheduled for February 2013.

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