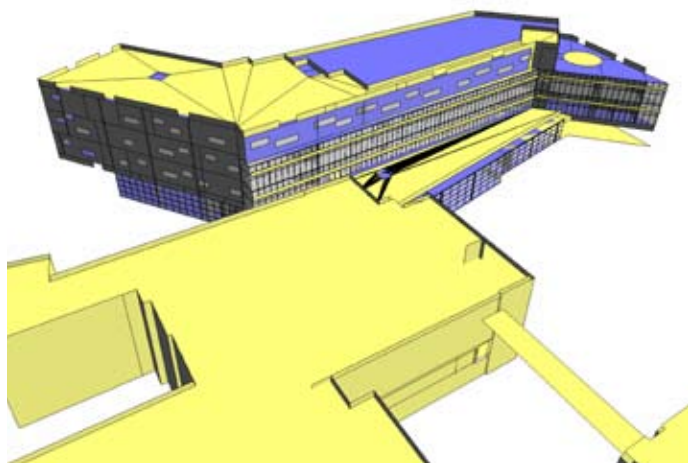




One reason for Burt Hill's drive to adopt BIM technology is the analytic possibilities that present themselves once a project team has an accurate model of the building. An important component of our sustainable and design agenda is to design buildings that reduce energy usage to help our clients, and the globe. In order to achieve that goal we have to be able to predictably simulate building performance so that it can be analyzed. Burt Hill's choice is to use the energy analysis software IES(VE), which also integrates with our primary architectural BIM platform, Revit. Performing energy analysis can be of particular importance when the design team is confronted with site and context decisions that force them to make building design choices that are not always the most "sustainable" choices. Analysis of a design's performance then allows the team to make intelligent decisions about what can be done to improve the building's overall performance, while meeting budgetary, aesthetic, program, and other critical components of the design brief.



For the Delaware County Community College STEM building, design considerations beyond sustainability justified having a large amount of curtain wall on the south side of the building. The south side of the building faces the school's primary entry/courtyard area, and faced the school's other buildings. Therefore the design team needed to develop design solutions that would mitigate the impact of the south facing glass on the building's energy and thermal performance. Initially the Burt Hill energy analysis team ran a simulation on the building with no design techniques to minimize solar impact on the glass façade. Per the design team's expectation building energy usage due to cooling load was enormous (even in the winter time!). The size of the required mechanical unit and duct work to handle the necessary volume of air based on this first round of load calculations was huge; air volume and unit size were already large due to the labs in the building. Therefore, adding the solar gain made doing nothing to the building's design unfeasible. The energy analysis team suggested that sun shading devices be included in the design. The design team's additional idea was to use fritted glass to help reduce solar gain. Both suggestions were put into place in the model, and the energy team was able re-analyze the building's performance. With the reduction on solar gain the required amount of air volume was decreased by half from the original number. The lead mechanical engineer was then able to work with the Energy Analysis team to refine the load calculations to a point where the engineer was comfortable using the energy analysis information in designing the building's mechanical systems.

As part of the design process, the energy analysis team was able to provide specific feedback about what would and would not work. For instance, they were able to determine that

sun shade devices deeper than about 3' would be a waste, or that the fritted glass only required a certain density and was only required in certain locations in conjunction with the sun shading devices. Much of this feedback occurred during early design development and late schematic design, allowing the design team to include these features as part of early cost estimating, therefore there was less risk of any proposal to "value engineer" these necessary features, or compromise their aesthetic quality due to price or complexity. In this case, new technology that allowed easy sharing of important building information, allowed an easier and timelier design process to occur between offices located across the state with the knowledge the building design and goals were understood by all parties, resulting in a high performance building for the client.

