

Highlights from the DOE Race to Zero Competition - April 18-20, 2015

The U.S. Department of Energy's second annual Race to Zero Student Design Competition, which was held April 18-20, 2015, resulted in 27 universities submitting 33 designs that reflect innovative thinking regarding net zero ready design. Due to the impact and long-term affiliation Construction Instruction has with the building industry and Dept. of Energy Building America Programs, Ci's Mark LaLiberte was approached by Sam Raskin, the Chief Architect of the Challenge Home Program for the U.S. Department of Energy (DOE), who invited him to be a judge for the competition. Ultimately, 18 designs were recognized across five categories, representing a wide range of geographies and approaches. (View the competition results [here](#).)



The technical caliber of the designs was impressive and addressed sustainable building practices well beyond those related to on-site energy consumption, but perhaps the most inspiring aspect of the competition was the students' desire to make a difference in their communities and beyond, and to make that happen sooner rather than later. Many of the submissions were designed to address specific challenges in communities near the universities, to be affordable, and to be replicable in other areas. That may spur visions of "pie in the sky" designs. In truth, the winning designs are far from flights of fancy and are well grounded in today's social and economic realities—they are both net zero ready and market ready as required by the competition. In fact, many of the designs are already on-track to be built, including a handful that were designed to support local Habitat for Humanity efforts and other efforts to improve housing affordability. Others are market ready should solid partnerships form with builders.

Of the 27 University entries, here is a closer look at three of the top designs that demonstrated the spirit of the competition and the real world applicability of the design: 1). IMPACT Home 2). Provenance Lane 3). Team Redbird Red design.

The highest award in the competition, the Grand Winner, was awarded to a team from the University of Minnesota. IMPACT Home has just under 1700 SF of finished space, is anticipated to cost \$133/SF, and achieved a HERS score of 32 without PV and 0 with PV. The project will be proposed by their community partner, Urban Homeworks, for the next round of funding under Green Homes North, an initiative to help revitalize neighborhoods in North Minneapolis through sustainable, high-quality, affordable housing. The IMPACT home proposal went well beyond the energy requirements of the competition—the proposal included the use of recycled material, low VOC paints and finishes, water sense fixtures, native vegetation, and onsite rainwater capture as well as job site recycling of construction waste. It was also sited on a vacant lot in a neighborhood that has been hit by both foreclosures and tornadoes in recent years.



Grand Prize Winners - University of Minnesota

Provenance Lane, submitted by a team from Ryerson University, was one of the Design Excellence winners. This infill project is designed to take under utilized historic alleyways in Toronto and create livable space populated by affordable townhomes. The Provenance Lane design scored a 43 on the HERS index without PV and -20 with PV. The house is projected to cost \$410,000 (that is \$20,000 less than the average Toronto condo and \$250,000 less than the average Toronto home).



Provenance Lane - Ryerson University

Team Redbird Red, from the University of Illinois, submitted a design slated for a site in Normal, IL that modifies a standard Habitat for Humanity floor plan. The single story home won an award for Systems Integration Excellence and is designed to go well beyond ADA compliance. It achieves a HERS score of 53 without PV and a -3 with PV. The home (without PV) will almost be cost neutral to own compared to the standard model, including utility savings. With PV, the annual net utility costs savings are around \$1,400.

The students participating this year were highly skilled and their designs included many that were not only highly energy efficient, but also aesthetically pleasing, durable, safe, healthy, and affordable to buy and maintain. All of that is critically important, but LaLiberte also noted that many of the teams were highly skilled in presenting their projects professionally and passionately and that is also imperative if good ideas are going to make it to market. In short, if these students and their designs are indicative of the future of the industry, the future looks good indeed