

2022 Equitable SimCity Sandbox Design Competition

Participating Teams

Student Competition

- Cal Poly Pomona
- Florida International University
- Georgia Institute of Technology
- University of Engineering and Technology (UET), Lahore, Pakistan

Professional Competition

- Arup Los Angeles
- “Bridge Builders”
- Detroit Planning and Engineering Consultants
- Infogenic Systems
- Infrastructure Consulting & Engineering, PLLC
- Stantec Consulting Ltd.

The 2022 Equitable SimCity Sandbox Design Competition, sponsored by the ITE Consultants Council, was a culmination of creativity, innovation, and technical applicability from both professional and student teams. Competitors were challenged to envision a community that would serve as an ideal example in terms of balancing transportation and equity. To make the competition parameters consistent, the Town of Matthews in North Carolina, USA was used as a case study. Matthews, a suburb of Charlotte, is in Mecklenburg County and has a population of about 30,000 residents. Information for the town of Matthews such as population, existing facilities, transportation systems, etc., were provided.*

Teams were asked to re-envision the ideal growth for the Town of Matthews with equity in mind. The objective of the competition was to plan a city that struck the right balance between safety, public health and emergency response, mobility, transit, land use, and demographics, all while keeping equity in the forefront.

Teams officially presented their projects at the 2022 ITE Annual Meeting and Exhibition in New Orleans, LA, USA in August. After being evaluated by a distinguished panel of judges, the winning teams were announced, as well as one honorable mention in each category. Congratulations to the winners, honorable mentions, and all the teams that participated, and stay tuned for more on the theme for next year’s Sandbox Design Competition!

*Please note that this was a hypothetical competition, and the intent is not to suggest that the Town of Matthews needs to be re-envisioned. This town was simply being used as a case study due to its size and overall demographics and for consistency in the parameters being assumed.

Professional Competition Winner: **Stantec**

Team Members: Stephen Oliver MA, RPP, MCIP, Ann McGrane, Amber Lewis, Dan Hemme, Rory Weilnau, Becca Wagner, Steven Reid, Greg Rodriguez, Nathan Arthur, Kate Jack, Sam Thompson, Kat Maines

Submission Highlights

Project Goals

- Address disparity in mobility through increasing transportation options
- Address low density development, through a balance of new development and infill
- Support market driven change through setting the conditions for that change to occur without displacing those that live there now

Solutions

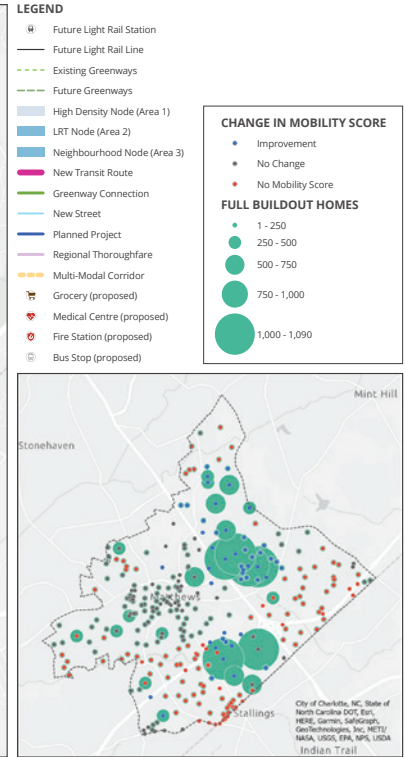
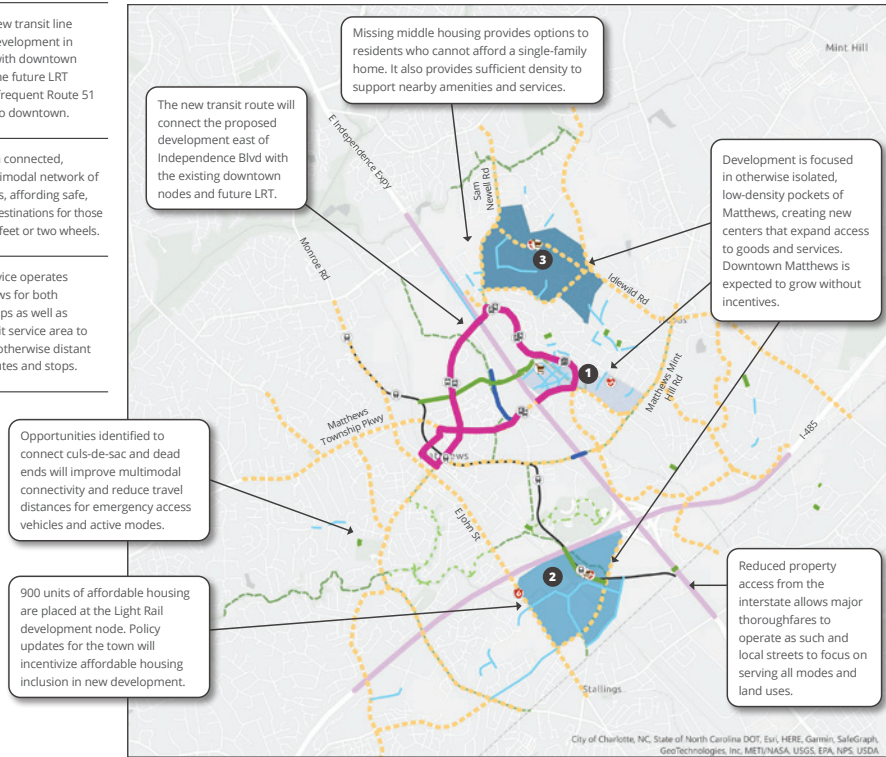
- Microtransit Network – Microtransit service will facilitate public transportation access in low density areas
- Complete Streets Network – Multimodal corridors: using Matthews’ existing roadway network, pavement space should be reallocated for bicyclists, pedestrians, transit, and smart mobility solutions to create a parallel, connected network of multimodal facilities

PLAN

The proposed new transit line connects new development in East Matthews with downtown Matthews and the future LRT station. A more frequent Route 51 connects CPCC to downtown.

Corridors form a connected, continuous multimodal network of Complete Streets, affording safe, direct access to destinations for those traveling on two feet or two wheels.

Microtransit service operates through Matthews for both point-to-point trips as well as expanding transit service area to neighborhoods otherwise distant from current routes and stops.



- Shared Mobility – As the multimodal network expands, shared mobility solutions including cars, bike, and scooter sharing can reduce the reliance on single occupancy vehicles.
- Transferability was a highlight of the project’s outcomes. The team’s entry read as follows:

“Matthews’ equity issues are not unique—not to Matthews, North Carolina, or even the United States. Communities across the country and the world struggle daily to accommodate growth and equitably distribute the burdens and benefits of development. For solutions to be transferable, they should be well-known in their application, they should be simple in their design, and proven in their effectiveness. Our mobility system solutions are rooted in introducing market dynamics to the community’s transportation network. By creating a level playing field with infrastructure, community residents have the option to choose their mode(s) of travel that most closely align with their resources and values.”

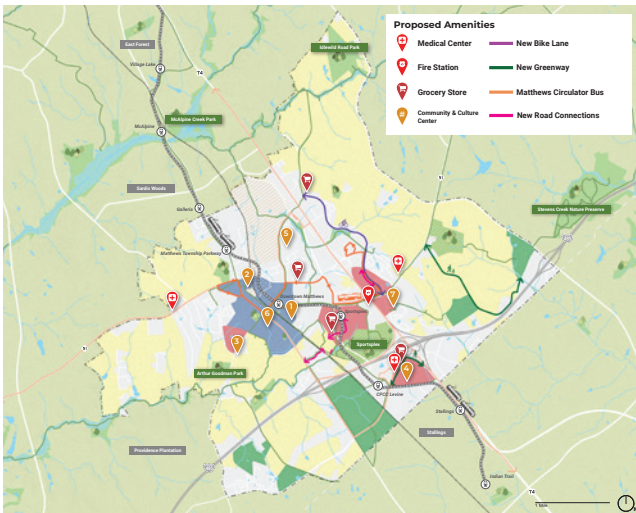


Stantec accepts the first-place award in the Sandbox Design Competition at the Annual Meeting in New Orleans, LA, USA in August, presented by ITE International Vice President Rosana Correa and ITE Consultants Council Chair Amir Rizavi.

Professional Competition Honorable Mention: Arup

Team Members: Steve Gaskill, Stella Yip, Thyda Uy, John Moody, Mike Ernst, Ann Dennis, Katherine Buck

Submission Highlights



Community and Culture Centers

Three types of community and culture centers will be implemented in the Town:

New Connections

To embrace the town's public spaces of local culture and engaged citizenship, these centers will create space for the residents of Matthews to collectively explore the town's history and possibilities for its common future.

1. Downtown History Experience
2. Renfrow Mill Reenactment
3. Civic Imaginarium

Knowledge and Investment

To ensure that the continued growth of Matthews benefits all residents, these centers will focus on promoting education and investing in the future of Matthews' residents through after-school programs and workforce development.

4. CPCC Vocational Training Center
5. After School Outdoor Laboratories

Community Care

To tackle the town's commitment to mutual care and healthy living, these centers will provide child and family-friendly services, such as day cares, teen centers, and senior socials.

6. Matthews Community Center
7. Teen & Senior Social Space

Development Neighborhood Types

- Town Infill
- Neighborhood Infill
- Masterplan Mixed Use
- Eco Village

As part of Silver Line construction, this area will be completely redeveloped but still follow the zoning code of the Town Infill Development Neighborhood Type.

Project Goals

- All roads lead to Matthews
- Equity at the forefront
- Sustainability throughout

Community Input for Informing Key Issues: Connectivity + Development + Culture

Connectivity

- Improved transit service (bus and rail)
- A street network that connects communities
- Pedestrian-friendly streetscapes with safer street crossings
- Expanded and interconnected bikeway and greenway network

Development

- More small businesses and density downtown, with more sidewalks and outdoor seating
- Affordable housing, including mixed-income neighborhoods
- Mixed-use development

Culture

- Preservation of historic homes and buildings
- Highlighting town history, including the neighborhood of Crestdale
- Diversity and inclusion
- More parks and pocket parks

Student Competition Winner Florida International University

Team Members: Flavius Matata, John Kodi, Abdallah Kinero

Submission Highlights

Vision

The town of Matthews will be a place that fosters equitable transportation that provides safe and affordable access to fairly distributed places and opportunities with respect for the environment.

Goal

To have a city where everyone feels fairly treated and has equal responsibility in keeping the city sustainable.

Equity Criteria

- Safety
- Public Health and Emergency Response
- Mobility
- Transit
- Land Use
- Social Welfare

These criteria were given a weight, which was based on the level of importance of one over the other with respect to equity. The existing equity score for the Town of Matthews was found to be 0.5 out of 1. After the addition of different facilities, the planned ideal city has a score of 0.7 out of 1. This shows that the developed ideal city has the right balance between safety, public health and emergency response, mobility, transit, land use, and demographics, keeping equity at the forefront.



The winning Student Competition team from Florida International University.

Student Competition Honorable Mention Georgia Tech

Team Members: Nishant Ravi, Nithin Daniel, Yash A. Patel, Lawrence J. Bradley

Submission Highlights

Community's Vision and Goals

The vision of the community is to achieve sustainable growth by having an equitable distribution of mobility, transportation accessibility, safety, and accessibility to grocery stores, public health, and emergency response throughout the community. To achieve its vision, the governance/decision-makers of the community require systematic development tools that enable the community to progress towards its sustainability objectives while providing opportunities for course correction and modification. To progress towards its vision, the community sets the following specific goals:

- To increase transportation connectivity by introducing additional streets, emerging mobility options (e.g., e-bikes, e-scooters, etc.), introducing additional bus routes, adding share used paths
- To increase access to grocery stores by: a) developing new grocery stores, and b) increasing connectivity to existing ones
- To increase access to medical clinics and fire stations by: a) developing new facilities, and b) increasing connectivity to existing ones
- To develop new households sustainably by leveraging the existing and future transportation infrastructures and other basic needs-related facilities
- To develop a computational system in place that can be used to evaluate numerically how the community is doing in terms of the sustainability objectives from time to time and take necessary steps if needed

Envisioning the Competition

Amir Rizavi, P.E., ENV, SP (F), Past Chair of the Consultants Council and Chair of the judging panel for the Vision Zero Sandbox Design Competition, and Consultants Council Executive Committee members **Michelle Danila, P.E., PTOE (M)**, and **Radha Krishna Swayampakala P.E., PTOE (F)**, share insight on the value of the competition to ITE and the transportation industry.



Amir Rizavi, Michelle Danila, and Radha Krishna Swayampakala.

ITE JOURNAL: What was the inspiration behind the theme for this year's Sandbox Design Competition?

CONSULTANTS COUNCIL: Each year, the Consultants Council (CC), in conjunction with ITE staff, tries to identify timely topics that resonate with transportation professionals. This year, we asked ourselves a couple of fundamental questions—what have we, as an industry, learned from the pandemic? Is there a way for us to use this experience to plan a better future? We acknowledged that we, as professionals, need to take a step back and think holistically about planning for the future. This got the CC's Sandbox Design Competition Planning Committee to imagine a hypothetical scenario that would look to plan and design a community in a post-pandemic world, balancing the elements of "equitable design" and taking into account various planning elements. The objective of the competition was to plan the ideal city that shows the right balance between safety, public health, and emergency response, mobility, transit, land use, and demographics, keeping equity in the forefront. We decided to use information from an actual "town" to try and keep it real and consistent. After what the world has experienced in the last 2 years, it felt like the right topic for this year.

ITEJ: What were some of the elements of the competition entries that struck you as innovative or surprising?

CC: One of the most exciting elements of the competition is the opportunity to review and evaluate new and innovative ideas from both the student and professional teams. The tremendous amount of effort that went into the submittals were evident from the data gathering process and the technical analyses. Teams took time to understand our subject case—the Town of Matthews, NC, USA—review their plans, policies, and additional pertinent information that was either made available to the teams or that they researched on their own.

Several teams had interesting quantitative methods to analyze the data provided as well as their own recommendations. As an example, in an effort to develop an Equity Score, one team developed an analytical hierarchy process tree to rank 12 different factors. They used this to evaluate the effectiveness of their proposed plan. Another team focused heavily on a data-driven approach to review the existing conditions and assign elements of the new plan based on data, GIS analysis, and quantitative results. This approach was deemed transferrable to other communities. Additional ideas provided by the teams for consideration included: microtransit; impact fees; and 15-minute cities.

Our objective of this competition is to foster and share ideas, and elevate the thinking process for participants and for our industry as a whole, and—similar to previous years—this year’s event was equally successful in achieving this.

ITEJ: Why is it important that this competition have the student element, and not just allow for professional teams?

CC: Our students are the next generation of professionals—we need to encourage them to be bold and innovative with their thinking. Competitions like this provide students with an opportunity to review, analyze, and respond to a real-world case study with a fresh perspective.

We never cease to be amazed by the level of effort and quality of the student submissions, despite students often being faced with limited resources. It was interesting to see that the student teams performed extensive literature reviews focused on developing a process that could be transferrable to other communities. One student team went beyond the ask and provided a list of suggestions that included: defining equity vs equality; affordable pricing and its relationship with connectivity; and mobility with transit options and incentives. Another student submission—from an international school—impressed the judges in terms of how these students from another country understood conditions within the United States so well, and were able to gather good local data about the subject case and propose a plan.

ITEJ: What do you see as the value of this competition, encouraging both professionals and students to creatively think about transportation solutions for today’s communities?

CC: The Sandbox Design Competition looks to elevate ITE as a professional organization. Since 2020, when the competition was first launched, it has created a buzz—it enables the flow of innovative thoughts and ideas in addition to bringing individuals and teams together to share their vision. It is truly exciting to see how successful the Sandbox Design Competition has turned out to be, and it is now an anticipated fixture of the Annual Meetings. Encouraging and promoting such events is not only extremely important to our industry, but also aligns with the CC’s guiding principle of sharing ideas and industry trends with our membership.

A highlight of the competition is that there is a professional category and a student category—this ensures that all tiers of the profession are provided with an opportunity to put forth their creativity. The competition encourages individuals to push their boundaries and fosters an uninhibited exchange of ideas. An important aspect of the competition is the importance of transferability, adaptability, and constructability of the proposed idea/innovation. This allows the ideas to be realistic and holistic. **itej**

Judges Panel

Amir Rizavi, P.E., ENV, SP (F), VHB – Chair

Kathi Driggs, ITE

Dan Hennessey (M),
Austin Transportation Department

Donald Samdahl, P.E., PTP (F), Fehr and Peers

Radha Swayampakala, P.E., PTOE (F), RS&H

Michelle Danila, P.E., PTOE (M), Toole Design

Dana Stooogenke, AICP, Town of Matthews

Mohammad Shaheed, P.E., PTOE, RSP2IB (M),
Maricopa Association of Governments