Thinking Outside the Grid

How Innovative Communities Can Address Growing Pains

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January 15, 2023

Publication 2401

Texas is growing, and the growing pains are evident everywhere: bumper-to-bumper rush-hour traffic even in smaller metros, loss of power for many during severe weather events, and a dwindling water supply.

By 2050, the state's population is expected to nearly double according to projections by the state demographer. In-migration to Texas from other states, responsible for almost half the state's growth in 2022, is also expected to remain strong.

Such extraordinary growth means more serious challenges for the state.

No silver bullet exists to fix all the problems that lie ahead, but innovative ideas being applied to several New Urbanist developments may help address three concerns increasingly impacting many Texas communities: power grid strains and reliability, road congestion, and escalating utility costs.

What is New Urbanism?

New Urbanism is a planning and development approach based on principles of how cities and towns had been built for the last several centuries, according to Congress for the New Urbanism. This includes walkable blocks and streets, housing and shopping near each other, and accessible public spaces, primarily focusing on human-scaled urban design.

Takeaway

Texas' population is projected to almost double in the next 25 years, creating potential infrastructure problems that need to be addressed. The innovative principles of New Urbanism could provide solutions.

New Urbanism principles can be applied to urban infill and revitalization, new development, or preservation projects. They can also be applied to all tiers of development in the full range of places, including rural main streets, booming suburban areas, urban neighborhoods, dense city centers, and even across entire regions.

The framework for New Urbanism has been described by Dr. Dave Amos, assistant professor at Cal Poly University,

as a pyramid that addresses land use, urban design, and aesthetic style. At the bottom of the pyramid is aesthetic style, which often incorporates the feel of a small town where street orientation, the placement of buildings, and the use of shading can contribute to the community's energy efficiency. In this way, costs can be reduced while still maintaining aesthetic appeal.

Urban design occupies the middle of the pyramid. This phase of development requires a larger scope, one that often falls outside the purview of developers or requires more, often costly, effort. Not all developers will approach projects from the broader perspective of establishing schools, parks, and city centers. Such a framework favors density and walkability over dependence on the automobile. By centralizing around a community hub, housing, jobs, daily needs, and other activities should all be within walking distance of each other.

If available, transit stops can provide ease of access to other areas while reducing road traffic and noise. The developments also stress the importance of pedestrian infrastructure such as sidewalks, crosswalks, benches, and ample lighting. Diverse housing types enable residents from a range of economic backgrounds and age groups to live within its boundaries. Businesses prioritize workforce flexibility, helping foster a range of job types for residents.

Land-use considerations reside at the top of the pyramid. Few developers tackle complex land issues involving true mixed-use development and affordable housing, often because of the extensive time and money required to plan and implement effective affordable housing initiatives. Successful mixed-use development requires a great deal of thought and community feedback regarding the application of appropriate zoning as well.

Cities grow in big blocks, and zoning controls how those blocks can develop. State and municipal codes often require streets to be wider than developers would prefer. Minimum lot sizes reduce density and often lead to higher home prices to support investor returns. All parties must share the vision for a cohesive, acceptable design to ensure its success.

Time to Power Up

According to Electric Reliability Council of Texas (ERCOT) assessments, Texas' electrical power is sufficient to accommodate the current population. However, the need for additional expansion is inevitable. If the speed of power grid development is unable to match future growth, the state could become less attractive to prospective individuals and businesses. Unexpected external events such as the February 2021 freeze have accelerated the importance of grid reliability in Texas.

Providing new residential developments with their own dedicated electrical power could help protect residents from grid reliability problems, a strategy one Florida community has already put into place. Babcock Ranch, a new residential project north of Fort Myers, is designed around New Urbanism principles where 50 percent of the development's footprint is set aside for green spaces.

Homes are all built to Florida Green Building standards and include further community-wide standards for energy efficiency, conservation, and low-impact landscaping. Neighborhood parks, community gardens, and expansive trails for alternative transportation provide ways for residents to connect with their neighbors and the environment.

To provide reliable electricity, the community resides next to an 870-acre solar array with 650,000 individual solar panels that power Babcock Ranch during the day. The panels are owned and operated by Florida Power & Light. At night and on cloudy days, a natural gas generator provides community power.

The solar array can supply electricity for up to 30,000 homes. About 5,000 residents currently reside in Babcock Ranch, although total housing units will exceed 20,000 when completed. Any excess electricity generated is fed into the electric grid to power surrounding communities. Power lines from the solar array to Babcock Ranch are all underground, shielding them from high winds.

Florida had 2.5 million power outages in 2022 when Hurricane Ian struck with gusts of more than 100 miles per hour. However, Babcock Ranch residents never suffered a power loss. Jennifer Languell, who helped design Babcock Ranch, believes the storm provided proof of concept for future communities that can learn from the development's innovations.

Prescription for Traffic 'Decongestion'?

Traffic congestion is a growing problem for many areas of the country, not just Texas. Culdesac Tempe, a new 1,000-tenant rental property development in Tempe, Arizona, is trying something different to address it. Culdesac has banned cars in the fully walkable neighborhood in favor of scooters, bikes, and ride-sharing. A bundle of discounted mobility services for ridesharing and access to the adjacent Valley Metro transit system are included in residents' monthly rent.

Lease terms require residents keep any automobiles outside a quarter-mile radius of the site. Specific areas in the community are designated for ridesharing pickup and an on-site car-sharing service for tenants traveling outside the community. The city of Tempe agreed to waive parking requirements for the development.

Culdesac's scale is modest at about 16 acres, with significantly more retail and open spaces than are typical for its size. A June 2023 survey by the National Association of Realtors showed that 78 percent of respondents would pay more for a home in a walkable community. Young adults prioritized walkability the most, with 90 percent of Gen Z and millennial respondents indicating they would pay more for such a residence.

The project was funded by debt and equity from traditional real estate investors. Culdesac has shown that it's possible to get the financing needed to create a development that is not dependent on automobiles. Time will tell, but Culdesac could be a residential development worth watching as an alternative to help address future traffic congestion.

Curbing Utility Costs

Whisper Valley, located east of SH 130 in Austin, is an example of a residential development providing a holistic approach to lowering utility costs for its residents.

When completed, the community will have 7,500 single-family homes along with duplexes and an area for multifamily housing that will all be zero-energy capable, meaning it will be designed to produce as much energy as it consumes if a sufficiently sized renewable energy generation system (solar panels, for example) is voluntarily added to the property at a later date.

All Whisper Valley homes have some solar panels as well as smart-home products usually reserved for more expensive homes. Phase two of the development provides the additional option to add battery backup systems to protect against power outages. One of the community's unique features is a development-wide geothermal system providing heating, cooling, and hot water to every house. The "geogrid" was installed during the infrastructure phase of the development, using geothermal loop piping where builders seamlessly connect to the system, similar to tapping a community water line.

The federal government's Energy Star program reports that an average U.S. household spends more than $2,000 a year on total energy bills, with the largest share going toward heating and cooling expenses. Homebuilders in Whisper Valley install heat pumps in place of traditional HVAC systems, reducing heating and cooling costs by more than 50 percent, according to *Builder* magazine. Integrating geothermal technology into traditional land development reduced the infrastructure cost significantly, making the system more affordable for first-time homebuyers.

According to business publication *Fast Company*, the cost of the geothermal system is folded into a package put together by EcoSmart Solution, a green energy services provider that designed and delivered the geothermal infrastructure for Whisper Valley. The package reportedly costs between $20,000 and $35,000 for homebuyers, depending on home size. Buyers can purchase the technology features upfront or finance the package into their mortgage.

Homeowners do get a tax break for the system. Under the Inflation Reduction Act of 2022, the federal tax credit for residential geothermal system installations and other specified energy efficiency improvements was increased to 30 percent, effective from Jan. 1, 2023, through 2032.

EcoSmart creates a package for each floor plan, purchases the appropriate type and quantity of products from the vendor, and delivers them directly to the builder. The company also provides installation support for builders who want to offer a high-performance product but are wary of trying new technologies.

Not every homeowner will want to pay extra even if it means extensive reductions in utility costs. Some may want to put the additional funds toward added square footage in a more traditional home. However, if Whisper Valley's concept proves widely popular with buyers, more developers may choose to implement such systems to help reduce utility costs.

When Aesthetics Meet Innovation

The success of New Urbanist communities has shown that many residents prefer a natural feel along with built environments. Buildings and communities that possess such qualities should attract more buyers and retain value. Neighborhood designs devoid of natural elements tend to grow outdated sooner, which will eventually impact value. Ultimately, the decision to pursue more functional, cohesive, and pleasing communities will require a collective buy-in by residents, developers, and local governments.

Other less widely known innovations, such as small modular nuclear reactors that power individual communities, and agrivoltaics, where crops are grown underneath elevated solar panels, are being tested and may find acceptance in the future.

Hopefully, a marriage between traditional New Urbanist development and innovative ideas such as the ones discussed here will lead to meaningful lifestyle enhancements for Texas residents as the state continues to grow.

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