ACKNOWLEDGMENTS

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City of Pflugerville, Texas
The University of Texas at Austin School of Architecture Center for Sustainable Development

We would also like to thank all faculty and student participants in the Texas CityLab program, as well as the following individuals and organizations for their contributions:

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Located just outside of Austin, Pflugerville has always been known as a family friendly place with a small-town charm and affordable homes. Pflugerville residents enjoy the extensive park system with over 40 miles of hike and bike trails, the exceptional library and school district, and the impressive police and fire service that keeps the community safe. As the Central Texas population continues to rapidly expand, the population of Pflugerville has grown at an exponential rate. As the demand for city services grows, the City continues to look for new ways to provide exceptional services without compromising the affordability and sustainability of the community.

Through partnerships, the City of Pflugerville is looking for fresh, new ways to build a high-quality community that meets residents’ expectations. It is with this commitment that the city partnered with CityLab, to help facilitate ideas for how the community can grow in a more sustainable and innovative manner.

The projects and ideas established through the CityLab initiative will provide the community with long-term tools to further the vision of the community. The City of Pflugerville is grateful for the opportunity to participate in this program and we look forward to future partnerships with the University of Texas at Austin.

EMILY BARRON
Planning Director
City of Pflugerville
The world and Texas are changing. For the first time in history the majority of the world’s population live in cities. In Texas as well, the greater part of its citizens now live in cities and urbanization has been a continuing trend. Once a frontier state, now over 85 out of every 100 Texans live in metropolitan areas. This shift to urban life is placing demands on municipal governments to meet the needs of their growing populations. It is also increasing the competition between different uses for the state’s land and water resources.

The Texas CityLab (TCL) program was created to work with Texas communities to understand and navigate these changes. TCL is an experienced-based, interdisciplinary applied learning program partnering with Texas communities to address their evolving needs and aspirations. Sponsored by the Center for Sustainable Development at The University of Texas at Austin, TCL joins university courses and resources with municipal policies, projects, and ideas to strengthen sustainability in the built environment.

Each year, TCL contracts with one Texas municipality and together CityLab personnel and city officials identify sustainability projects in the host community. In 2016-2017, Texas CityLab partnered with Pflugerville, Texas. During the year, over 150 students from across the university worked with Pflugerville and CityLab staff to develop and undertake research projects that support the city’s growing needs and interests.

At the end of the academic year, CityLab presents the partner city with a report of student-and faculty-led analysis, best practices, and proposed designs. The following annual report is a review of the year’s research and provides Pflugerville with designs, scenarios, models, and policy recommendations focused on the individual needs of the community. As an addendum to this review, comprehensive documentation of all student work has also been delivered to the City of Pflugerville for their more in-depth consideration.
Old Town Pflugerville serves as an important anchor in the city. It captures the city’s historic character while showcasing the potential for Pflugerville’s future development. The city has undergone multiple community engagement processes to understand community needs, desires, and visions for the future of Old Town. The “Old Town Pflugerville Vision Report”, “2030 Comprehensive Plan”, and a 2017 survey identified priority characteristics for Old Town Pflugerville. In general, residents support a growth strategy centered on mixed-use development that emphasizes walkability. They expressed support for increasing the presence of public service buildings, like City Hall, in Old Town and combining that with social event spaces. Additionally, residents have identified a number of future retail options to increase evening entertainment including: restaurants and cafes; locally owned boutiques and stores; entertainment venues; and, drinking establishments.

Keeping these desires in mind, students in the Planning and Development Process course developed four proposals aimed at revitalizing a small sections of Old Town Pflugerville. Their proposed projects combine traditional urban development practices with innovative people-centered urban design.

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Downtown Pflugerville. Credit: Monica DiSchiano
CITY HALL REIMAGINED

VISION FOR A NEW CITY HALL

Redeveloping a city-owned half-block into a revitalized community plaza captures the small-town feel of Pflugerville while increasing civic engagement and accessibility. This half-block would feature a three-story City Hall accompanied by an inviting open plaza that can host year-round programming such as festivals, concerts, farmers’ markets, and other seasonal and themed events. City Hall and the plaza would be surrounded by a two-story mix of offices, commercial space, and retail fronts lining historic Main Street. Prioritizing small local businesses that offer specialized products and services for these commercial spaces would distinguish this area from the new retail developments along Highway 130. Pflugerville can pursue funding for this development through tax increment financing, public-private partnerships, and federal or state grants.
PFLUGERVILLE SQUARE: WHERE THE OLD MEETS NEW

Pflugerville Square reuses existing structures from the old Princess Craft site along Main Street to create innovative urban spaces that honors the history of Old Town. This 34,000 square foot site is a family friendly space where markets, festivals, movie nights, and other community events can occur.

The site hosts three major components: a brewery that is to be housed in the existing warehouse; a public open space; and, a retail square. Additional space along the northern part of the brewery can be set aside to host mobile food trucks during special events and festivals.

To keep investment costs low, the retail square is built out using shipping containers. This style of design is increasingly used in cities looking to deploy limited economic investments in order to spur start-ups and small-scale economic activity. This design adds a unique character to Main Street and has the potential to draw emerging businesses looking for low-cost markets.
PFLUGERVILLE ALAMO DRAFTHOUSE

Residents have expressed concerns that Old Town Pflugerville lacks entertainment options after traditional business hours. A six-screen Alamo Drafthouse dine-in cinema to be located on the current City Hall property offers an initial solution to these concerns. The Alamo Drafthouse is a well-loved Texas-based business that has the potential to provide diverse cinema experiences for day and nighttime audiences while creating service jobs. Additionally, it can serve as a destination anchor to attract patrons to surrounding businesses. The Alamo Drafthouse Pflugerville would connect Pflugerville’s German identity to the high-tech economy of Central Texas and be themed after the acclaimed German sci-fi silent film Metropolis.

Render of view from Main and First Street. Credit: Student group

Render of view from Main Street. Credit: Student group
A co-working space in Old Town offers creative ways to maximize space and serve a variety of Pflugerville residents.

Co-working offices allow individuals or companies to rent a variety of flexible spaces ranging from a shared desk to a private room. These spaces offer rental contracts that span from single day-use to year-long leases, which are ideal for new companies looking to save time and money while still providing a physical office space. Along with the workspace, tenants can pay for various shared amenities such as snacks, coffee, drinks, Wi-Fi, exercise space, and networking events.

The Pflugerville Flex project can be built in stages beginning with office space and an accompanying food hall that targets quick casual meals. Eventually the space can include a more robust event space for evening entertainment and daytime exercise classes.

With the commuter population in Pflugerville, projected population growth, and the increase of companies that allow for flexible working arrangements, Pflugerville has a large enough target market to sustain such a space.
2. WILBARGER CREEKSID DISTRICT

COURSE

INTRODUCTION TO VISUAL COMMUNICATION AND GIS
School of Architecture, Community and Regional Planning Program
Edna Ledesma, Ph.D.
Lecturer
Spring 2017

The City of Pflugerville has identified the Wilbarger Creekside District as a potential site for residential and commercial activities that can absorb anticipated population growth. The District is outside of Pflugerville city limits but still within the city’s extraterritorial jurisdiction. The District is anchored by Wilbarger Creek, a 42-mile creek with a 116,000 acre watershed that encompasses three of the fastest growing communities in Central Texas: Pflugerville, Manor, and Elgin. The watershed is a unique ecosystem that contains upland Post Oak Savannah and the Blackland Prairie, prized for centuries by farmers and ranchers for its prime farmland soil.

Given the ecological importance of the watershed, students in the Visual Communication course were tasked with designing a dense and appealing urban environment to showcase the creek as an environmental amenity. Students proposed developmental scenarios that minimize impacts to Wilbarger Creek while appealing to community tastes centered on smart, green, and sensible development schemes. These include establishing Wilbarger Square as the economic center of the district; building unique housing developments; creating adequate transportation options; and, connecting the district through public transportation and an extensive trail system.

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Aicha Lakhssass
Nick Lamar
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Thomas Medina
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Priya Patel
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Victoria Thai
Juan Tiney
Joey Valenzuela
Keelsey Veazey

Concept sketch of Wilbarger Square. Credit: Student group
Wilbarger Creekside District is centrally located between Wilbarger Creek, Highway 130, and Lake Pflugerville and currently lacks retail and entertainment options. "Wilbarger Square", is a development concept inspired by the historical charm of Texas courthouse squares that will serve as a focal point for community and commercial activity with a dynamic collection of retailers, professional services, art galleries, and cafes.

Three additional economic opportunities can complement the retail and cultural offerings at the square. First, restoring the historic Pfluger House and converting it into a museum and education center that is connected to the square by new bike and pedestrian paths. Second, encouraging the development of a novel bed and breakfast on the western edge of the district. The bed and breakfast could fulfill the area’s need for a hotel, but would be unique enough to draw customers away from traditional hotel options. Finally, a new medical center towards the south of the square could provide services and employment for the rapidly growing population.
Two types of mixed-use housing developments can complement the Wilbarger Square vision. The first housing development is a mixed-use 4,000 unit development located on 200 acres. Single-family residential areas will be separated into floating villages by a network of green space and trails.

The second housing development is an equity-based cooperative housing community centered around a local farm and community gardens. The cooperative community will include multiple housing types with community garden plots for residents and nearby community members. In both of these developments 30% open space will be retained and trails will connect the housing developments to Wilbarger Square and Lake Pflugerville.
WILBARGER TRANSPORTATION

Current and future traffic demands in the Wilbarger Creekside District can be satisfied by a combination of new roads, public transit, and a strengthened multi-use trail system. Pflugerville can extend existing major arterial streets by connecting Pflugerville Parkway from State Highway 130 to Pflugerville Lake; and expand Pecan Street from Old Town Pflugerville to the east edge of the Wilbarger Creekside District. Traditional auto-orientated development can be augmented by new public transit connections.

While Pflugerville opted out of the Capital Metro system in 2000 due to high costs and low ridership, recent population growth and a higher demand for public transit has the city exploring new opportunities with Capital Metro. One promising proposal is a 16-mile rail line that would link Austin, Round Rock, Georgetown, and Pflugerville. The city can consider connecting that line with the Wilbarger Creekside District through strategically placed shuttle buses or a park and ride system.

The development of the Wilbarger District presents an opportunity to create a hike and bike trail that expands Pflugerville’s existing trail network and connects Wilbarger Creek, Lake Pflugerville, and Old Town Pflugerville. Within the Wilbarger District, a centerpiece trail can connect Wilbarger Square, the Pfluger House, Wilbarger Creek, and the new housing developments. Connecting this trail system to the Capital Area Metropolitan Planning Organization 2030 Plan could build upon the area’s strong trail network while expanding recreational opportunities for residents and visitors.
In an effort to maintain the ecological function of the Wilbarger Creek watershed, the development of the Wilbarger Creekside District can include a variety of green infrastructure projects such as open space, community gardens, and the previously noted trail system. Central to this proposal is the protection of open space along Wilbarger Creek’s 100-year floodplain. This space can be used for recreational opportunities while maintaining the riparian ecosystem, providing habitat for wildlife, and protecting the built environment from flood damage.

The Wilbarger Creekside District’s extensive agricultural lands offer prime sites for the development of community gardens that are cooperatively owned and managed. This can support sustainable food production and be woven into educational programs and jobs opportunities. This area could be incorporated into the above mentioned trail system by creating a food forest trail that showcases local farms, gardens, and plots that utilize cutting-edge permaculture practices.
3. PECAN STREET CORRIDOR DESIGN

COURSE

BICYCLE AND PEDESTRIAN TRANSIT PLANNING
School of Architecture, Community and Regional Planning Program
Gian-Claudia Sciara, Ph.D.
Assistant Professor
Spring 2017

The City of Pflugerville is exploring ways to improve pedestrian and bicycle accessibility along the Pecan Street corridor. The Pecan Street corridor links several key pieces of the Pflugerville community: the Old Town district, Pflugerville High School and the school district’s new athletics complex; and, a new mixed-use development on the west end of town.

Students in the Transit Planning course were tasked with identifying key crossings and future land uses that could benefit from pedestrian and bicycle transportation infrastructure. Given future transportation needs, current best practices for pedestrian and bicycle transportation, and budget constraints, students have proposed a unified concept for mixed-use transportation along and across Pecan Street.

STUDENTS
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Rydell Walthall

Pecan Street sidewalk. Credit: Student group
BIKE AND PEDESTRIAN INFRASTRUCTURE

The Pecan Street corridor is primarily auto-focused with a lack of bicycle infrastructure and limited sidewalk coverage and connectivity. Traffic is fast moving, with speed limits ranging from 45 mph to 50 mph except for the high school zone which has a 35 mph speed limit. With narrow shoulders and no sidewalks along most of the corridor there is limited safe space for pedestrian and bicycle improvements unless space comes from the automobile lanes.

To address these issues the city can implement a road diet, also called a lane reduction, to free-up space for pedestrian and bicycle facilities and amenities on either side of the corridor. Using projected 2020 demographics students modeled the impact of reducing automobile capacity by 50% between 10th Street and Spring Hill Lane, which would take that corridor from a four-lane road with one turning lane to a two-lane road with one turning lane. Despite this lane reduction the model shows that this would only reduce volume along Pecan Street by 6%. By reducing the corridor by two travel lanes the city can install shared-use paths for pedestrians and cyclists protected by either a barrier of planters or trees along most of the corridor.

A second opportunity to install bike infrastructure exists on Old Austin Pflugerville Road which would connect Pecan Street and Windermere Drive to Heatherwilde Blvd. Old Austin Pflugerville is a low-traffic, low-speed four-lane road that is largely fronted by older suburban homes. The coming housing development “Commons at Heatherwilde” is slated to be a mixed-use, walkable development that could incorporate a road diet for Old Austin Pflugerville Road. Rather than spending on roadway improvements immediately, the city could work with the developers of the Commons to leverage their spending to create a bike route along Old Austin Pflugerville Road. Related to this, the city could connect Old Austin Pflugerville Road to Pecan Street for bikes and pedestrians by adding a small concrete path on a city-owned plot of land.
CONNECTING PECAN STREET WITH THE TRAIL SYSTEM

Pflugerville has an extensive trail system on either side of Pecan Street but there are few linkages across the corridor. Two sets of improvements could help connect the Pecan Street corridor to Pflugerville’s existing trail system. The first involves improving the existing Kuemple Connector South trail. The second requires adding a small connection trail from Pecan Street near the Pflugerville School District administration building to the Settlers Valley Trail.

The Kuemple Connector South trail is a 0.14-mile city-owned concrete trail that offers access between Pecan Street and a subdivision south of Gilleland Creek. To improve the existing trail the city can: add wayfinding signs at the start and end of the trail; extend the trail to the sidewalk on Pecan Street; pave the unpaved portion of the trail; add a curb cut from the trail’s northern end onto Coopers Hawk Path; and, install a pedestrian hybrid beacon near where the trail meets Pecan Street. These small changes would provide users with a .75 mile walk or bike from the subdivision to Pflugerville High School, the public library, and various businesses along Pecan Street.

The Settlers Valley Trail is one of Pflugerville’s most attractive trails. It currently originates at the southern end of Pflugerville High School and goes over an aging wooden bridge onto a service road on the school’s campus. While it is connected to Pecan Street through the school’s driveway and parking lot, re-routing the trail behind the Pflugerville School District administration building until after the tennis courts would increase biker and pedestrian safety. This would require cooperation from both the church and the school district, but would be an inexpensive improvement that yields better trail connectivity.
Preliminary cost estimations for modifying the corridor are shown below. The three connections can be constructed economically, assuming that the school district will cooperate with the city to provide right-of-way access. The proposed design would cost roughly $4 million for the corridor and the three connections, although that figure is very sensitive to the specific treatment chosen. For example, using the existing asphalt concrete would reduce costs by roughly $600,000. All figures include a 25% contingency.

<table>
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<th>Pecan Street Modifications</th>
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<tr>
<td>Total with asphalt bikeways:</td>
<td>$3,429,000</td>
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</tbody>
</table>

Rendered Trail Expansion. Credit: Student group
The studied stretch of Pecan Street is a Texas Department of Transportation (TxDOT) highway, meaning the right-of-way is owned by the state highway agency who ultimately decides how to change the roadway. This presents challenges for Pflugerville as the city does not have the authority to reconfigure the roadway. For the city to realize proposed changes to Pecan Street, they would either need to take ownership of the road, or TxDOT would need to hear a compelling argument to reconfigure the road.

The first option would be possible under TxDOT’s Turnback program, but may not be desirable for Pflugerville as it presents a major long-term funding commitment. The best option for the city is to propose a reconfiguration of the roadway in support of TxDOT’s current efforts to improve bicycle and pedestrian accommodations in urban settings. An example of city and TxDOT partnerships was used in Fort Worth, TX where the city worked with TxDOT to develop bike lanes along Main Street to increase bicycle and pedestrian safety.
4. HONORING PFLUGERVILLE’S HISTORY

African Americans in Pflugerville have a rich history of creating a cultural fabric from entrepreneurship, civic engagement, education, and strong community bonds. This history is not as prominent in the official recounting of Pflugerville’s story, an omission that many residents in the city are trying to remedy. In 2016, the city encountered controversy around how an area of town historically designated as the “Pflugerville Colored Addition” should be recognized and named. The Addition was established in 1910 as response to Jim Crow polices of segregation that prevented African Americans and other people of color from owning property within Pflugerville. In 2016, a contingent of residents petitioned the Pflugerville City Council to change the official name citing the offensive nature of the current name. Other residents worried that such a move would erase the history of racism in Pflugerville and the strong cultural landscape created by African Americans in the Addition.

While the discussions around the official name continue, the City of Pflugerville tasked students in two courses, Planning History and Visual Design, with researching the history of the Addition and designing a memorial park. Students deployed planning and preservation techniques to provide options for a more formal recognition of the site’s history. They emphasized contributions by current and former residents to the cultural landscape of Pflugerville by designing a space that honors those contributions and provides a gathering space for future community events.

STUDENTS
Carol Fraser
Sydni Ligons
Kayla Rakes
Caleb Roberts

Pflugerville History Sign. Credit: Student group
PFLUGERVILLE

HENRY PFLUGER, who migrated from Germany to Texas in 1849-50, moved his large family here in 1853. Other settlers joined them, and in 1872 a school was begun on Henry Lissó's farm. Immanuel Lutheran Church was founded in 1874. Primarily a farming settlement, Pflugerville had no commercial businesses until 1890, when Louis Bohl built a general store. A post office was opened there in 1893 with Bohl as postmaster. In 1891 two community organizations were formed: the German-American Mutual Assurance Association, to insure townspeople against natural disasters; and "Pflugerville Schuetzen and Regel Verein," a shooting and bowling club.

The village began to grow when the Missouri, Kansas & Texas Railroad arrived in 1904. George Pfluger and his son Albert... platted the townsite, and George donated land for a train depot and a school. Early businesses included drugstores, groceries, a hotel, grist mill, cotton gin, ice factory, and a blacksmith. In 1907 La Rue Noton and Archie Ward started a telephone system. Farmers State Bank, chartered in 1906, became first state bank in 1933. A newspaper, The Pflugerville Press, was published from 1907 until 1942.

In 1958-62, the Pflugerville High School football team gained national fame by winning 55 consecutive games.
THE COLORED ADDITION HISTORY

Following the Civil War and Reconstruction, a number of Jim Crow laws and practices were implemented in Pflugerville in an effort to maintain economic and social oppression of African Americans and other communities of color. In 1910, Pflugerville implemented segregation laws that prevented African Americans from living in town. In response to this, La Rue Norton, a local farmer, set aside 16.7 acres of his land and sold 55 lots for $50 - $300. This area was officially platted as the “Colored Addition” in the 1910 county records. In addition to residential lots, the original 1910 plat also set aside three acres for the Santa Maria and St. Mary’s cemeteries and an elementary school. Twenty-four families including the: Allen, Caldwell, Collins, Duke, Marshall, McDade, Meeks, Russel, Smith, and Tyson families, were amongst the first families to purchase the land, settle, and build a community in the Addition.
THE COLORED ADDITION HISTORY

Over the years residents established strong community bonds with anchors in religion and education. The community established the St. Mary’s Baptist Church in 1910 and the St. Mathew’s Missionary Church in 1920. An elementary school was constructed in 1928 to provide educational opportunities for young students that were excluded from the segregated schools in Pflugerville. The Great Depression and World War II caused a number of families to leave the Addition, and Pflugerville in general, in pursuit of economic opportunities in other parts of the United States. The elementary school moved in 1965 and St. Mathew’s closed in 1973. St. Mary’s Baptist Church is still open and the two cemeteries remain. A number of descendants still live in the Addition and the area serves as a gathering place for family reunions and community gatherings.
COMMEMORATING THE COLORED ADDITION

COURSE

DESIGN AND VISUAL STUDIES IN LANDSCAPE ARCHITECTURE
School of Architecture, Urban Design Program
Hope Hasbrouck
Associate Professor
Spring 2017

An open-air commemorative park located on existing unused lots in the Colored Addition area of Pflugerville offers a creative place making option that honors both the Addition’s heritage and current residents. The site would memorialize the history behind the Addition’s establishment and the stories of the families and organizations that created and sustained the area. The park contains multiple stations with interpretive plaques that detail: the history of the 1910 plat; the founding families, the histories of the elementary school, St. Mathew’s, and St. Mary’s Baptist Church.

Memorial Site Design. Credit: Student group
COMMEMORATING THE COLORED ADDITION

A covered section of the site is designed to host community activities such as holiday events, homecomings, reunions, or church-based activities. Commemorative trails link the site to the two historic cemeteries, which would feature remembrance plaques, restored markers, and benches. A newly developed pedestrian trail between the park, neighborhood, and the Swenson Farms Trail would connect the park to other areas in Pflugerville.
5. SMART HOUSING OPPORTUNITIES FOR PFLUGERVILLE

COURSE

URBAN STUDIES RESEARCH METHODS
College of Liberal Arts, Urban Studies Program
Jonathan Lowell
Lecturer
Spring 2017

Pflugerville is one of the fastest growing cities in the United States, with estimates that high rates of growth will continue into the foreseeable future. As part of the 2030 Comprehensive Plan the City of Pflugerville is working towards increasing the amount and diversity of housing with a special focus on building a dynamic and inclusive community. Students in the Urban Studies Research Methods course set out to understand the current housing situation in Pflugerville through analyzing Census data and surveying 350 current residents. They combined this information with the 2030 Comprehensive Plan and case studies from other cities to propose a number of housing options for Pflugerville to consider for future development.

STUDENTS
Barrett Blaker
Paul Brooks
Erasmo Cantu
Camryn Kessler
Samuel Gonzalez
Kamila Pleitez

Subdivision. Credit: Trong Nguyen
CURRENT HOUSING SITUATION

Pflugerville's housing is predominantly single-family detached homes that are owner-occupied. The 2015 American Community Survey shows that 85% of Pflugerville residents reside in single unit homes with the remaining 15% living in multi-unit homes (duplexes, condos, and apartments), mobile homes, and RVs. Over the past decade, 94% of new housing starts were for owner-occupied units. These development patterns are likely to continue given Pflugerville's 2015 land uses ordinances which prioritize single-family homes by restricting multi-family housing to 2 out of 10 districts. Together the historic development patterns and current land use ordinances create a deficit of mixed-development housing and rental properties. Pflugerville's current housing situation mirrors trends in many suburban communities that exhibit the "missing middle" phenomenon. The missing middle refers to the lack of housing options that fit between large lot single-family detached housing and small-lot high-rise apartments.
Pflugerville can incentivize developing housing that fills the “missing middle” to encourage dense multi-family housing that mixes row houses, duplexes, and smaller-scale apartments that are affordable and walkable. This type of development maintains the look and feel of Pflugerville while providing affordable housing for households looking to either rent or own smaller homes. Smaller homes appeal to younger households looking for starter homes as well as older households looking to downsize. Higher density housing also appeals to residents looking for a mix of small town livability and urban proximity to retail and entertainment amenities. This also allows the City of Pflugerville to centralize transportation options, reduce suburban sprawl, and promote socioeconomic diversity.

Pflugerville can pursue support for this type of development through a variety of agencies and organizations. The US Department of Housing and Urban Development funds multi-family housing through federal income tax credits designed to help low-income families. The Housing Partnership Equity Trust, has a number of incentives to help cities create affordable housing options. Finally, the city could also pursue inclusionary zoning which incentivizes builders to construct affordable housing options.
6. URBAN AGRICULTURE OPPORTUNITIES

During Pflugerville’s comprehensive city planning process citizens expressed interest in preserving Pflugerville’s farming heritage and encouraging local food production. They generated goals that centered the potential for local agriculture to supply communities with local healthy food options; create jobs; and, contribute to overarching sustainable land use practices.

Students in the Urban Agriculture Systems class used these goals to develop opportunities to expand community farming in the city. They explored urban agriculture concepts; identified potential locations; conducted cost analysis; and, captured potential aesthetic impacts. Their proposed projects capitalize on Pflugerville’s rich Blackland Prairie soil and strong agriculture history while envisioning a more livable city that provides residents with a strengthened local food movement and the accompanying physical, environmental, and social benefits.

Overall, the students proposed 15 projects that include both the physical forms of urban agriculture (community gardens, school gardens, rooftop farms, etc.), as well as some of the social infrastructure that can help facilitate food production in urban settings (farm direct sales programs, education programs, etc.). These projects draw upon current best practices established in a variety of cities that are leading the urban agriculture movement. Pflugerville has a number of existing characteristics that position the city to join this growing network.

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Xiaomeng Ma
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Lauren Schunk
Lee Stevens
Neive Tierney
Nurceren Tomruk
Haley Wagoner
Joy Wong

Apple Tree. Credit: Xalanx
URBAN AGRICULTURE

Pflugerville has a number of well-established urban agricultural projects including the Pecan Street Community Garden, the Pfarmers’ Market, and the Connally High School garden. A number of mechanisms can be deployed to build upon the city’s existing programs with the overall goal of increasing demand for local agriculture in Pflugerville.

The programs described here often provide lower costs to consumers, reduced contamination risk, and strengthened local supply chains. They can increase consumer demand for, and consumption of, fresh produce while developing personal relationships between farmers and local residents.
Farm to Table programs connect locally-grown fresh and seasonal produce to restaurants through direct sales or local markets. Often these programs provide an opportunity for local farmers to establish a steady mutually-beneficial supply relationship with a business while offering market distinction for local restaurants.

Community Supported Agriculture (CSA) connects residents with local farmers by offering the opportunity to purchase a future share of crops from a local farmer before planting begins. This provides upfront capital for farmers and allows them to plan their season based on a known demand. Farmers then distribute produce shares throughout the harvest season providing fresh and local produce for consumers.

Farm-to-Work creates mini-farmers markets at work-site locations. Farm-to-Work programs provide weekly or bi-weekly opportunities for farmers to offer fresh produce at local work-sites. These programs focus on increasing access, availability, and supply of locally-grown, healthy fruits and vegetables in a convenient location.
VACANT LOTS AND SCHOOL GARDENS

VACANT LOTS

Vacant lots are a common urban issue around the United States and are connected to reduced property values, increased crime, increased risk to public health, and substantial costs to local governments. A number of cities across the U.S. are experimenting with creative vacant lot programs including using these lots to develop urban agriculture. Municipalities have developed lots into community gardens, pocket parks, community orchards, demonstration gardens, and pop-up farmers markets.

Given the large number of vacant unimproved parcels dispersed throughout Pflugerville, the city has the opportunity to develop a variety of community agriculture options. This would be especially useful in vacant lots that are located within floodplain buffers. Planting in vacant lots can help with storm water management, prevent soil erosion, and encourage economic use of development-restricted lands. Other options include promoting urban agriculture in vacant lots adjacent to Lake Pflugerville, which offers a highly trafficked recreational area connected to hiking and biking trails.

SCHOOL GARDENS

Pflugerville School District can expand their existing school garden programs in an effort to increase agricultural awareness, access to nutritious food, and experiential education opportunities. School gardens typically range from small classroom managed plots to large fully integrated school-to-farmers’ market programs. They have been shown to enhance classroom education through hands-on learning related to food, health, agriculture, and nutrition. Additionally, school gardens increase access to local healthy food options, provide alternative skill development, and encourage socialization and team-building competencies.

Pflugerville has experience with school gardens at the elementary, middle, and high school levels. Currently, these gardens are concentrated near one another but could expand to the Pflugerville Middle and High school area. Financing and partnership opportunities to support this expansion can come from local grants, local non-profits, partnerships between the city and the school district, and in-kind contributions from local agricultural businesses and organizations.
ROOFTOP FARMING

Rooftop farming is a newer type of urban farming that converts otherwise unused space to create small to medium sized urban gardens which produce food and generate a number of environmental benefits. A variety of options exist for rooftop gardens ranging from extensive green roofs to smaller contain garden systems. These gardens are increasingly being used in the public and private sector in cities concerned with local food supply and competing demands for space. Outside of producing food, rooftop gardens provide a number of environmental benefits including reducing: storm water runoff, impervious surfaces, building heating and cooling costs, and the larger urban heat island effect.

Pflugerville could encourage rooftop farming in the city’s commercial and shopping area to take advantage of the existing concentration of dinning locations and a bustling downtown area. Rooftop gardens can cost between $15-$200 per square foot depending on the type and extent of the garden, with some of these costs offset by lower heating and cooling costs and green building rebates. The Ladybird Johnson Wildflower center has an extensive green roof research program that could be of value to the City of Pflugerville should they choose to pursue rooftop greening options.

The Growler Bar in Pflugerville’s commercial district could serve as a pilot rooftop garden project. Located in a rapidly developing location, the bar could showcase Roof-to-Plate vegetables and garnishes both for the bar and in partnership with local food truck businesses.
7. URBAN FORESTRY

COURSE

RESOURCE MANAGEMENT
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Urban forests are systems of trees and vegetation within a city that range from sidewalk trees to parks and green spaces. Cities are increasingly using urban forestry to integrate greenspace into the built environment; increase property value; support biodiversity; improve air quality; reduce the urban heat island effect; prevent flooding; and, further the urban aesthetic.

During Pflugerville’s comprehensive city planning process citizens listed parks, trails and open space as one of the top five livability elements in Pflugerville, and a top three priority for Pflugerville’s development over the next ten years. Pflugerville’s urban tree canopy is an important component of the city’s open space and the city has invested resources in protecting and expanding the canopy. The Pflugerville 2030 Comprehensive Plan sets goals to continue this expansion and to further community involvement in urban forestry efforts. Students in the Resource Management class researched traditional and innovative opportunities to meet these goals. Their work captures best practices; identifies potential locations; conducts a cost and benefit analysis; and, discusses how to approach urban forestry over the next ten years.

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Credit: City of Pflugerville
URBAN FORESTRY BENEFITS

Pflugerville is currently a designated “Tree City USA”, reflecting the city’s current urban forestry program which builds upon a robust natural canopy and significant urban forestry efforts. The Blackland Prairie ecoregion provides rich soil and a natural tree canopy around riparian areas that includes Elms, Oaks, and Pecan trees. Pflugerville has an active street tree program with a focus on planting Sugarberry, Live Oak, Cedar Elm, Arizona Ash, and Crape Myrtle.

A healthy and robust urban tree canopy provides numerous ecological and social benefits. Trees provide oxygen and increase urban air quality. They prevent soil erosion, provide natural flooding control, and reduce storm water runoff. Additionally, a robust tree canopy can reduced residential heating and cooling costs and sequester carbon.

The increasing amount of impervious cover within urban areas impedes the land’s ability to absorb storm water and increases urban runoff. Runoff can pose a threat to communities due to the debris, chemicals, sediment, and other pollutants entering local water bodies and is a significant contributor to urban nonpoint source pollution. An extensive urban tree canopy can reduce storm water runoff by slowing down the flow of storm water, increasing soil absorption, and filtering debris before it enters larger bodies of water. This reduces the pressure on storm water systems and reduces pollution in local water bodies. In addition to ecological benefits, urban tree canopies have economic impacts with the EPA estimating that U.S. cities have saved between $55,000 to $35 million a year in storm water benefits related to healthy urban tree canopies.

Trees have a natural ability to mitigate air pollution and improve local air quality. A number of studies have demonstrated the relationship between an increased urban tree canopy and reduced air particles, volatile organic compounds, ozone, and nitrogen dioxide. Reducing these air pollutants can increase overall air quality indices which can reduce human health impacts especially for sensitive populations.

Urban tree canopies have been deployed by cities to combat urban heat island impacts. A number of studies have estimated that extensive urban tree canopies can reduce local summer temperatures by 2-9°F and shaded materials (benches, slides, etc.) by 20-45°F when compared to unshaded areas. On average, Pflugerville experiences 13 days a year over 100°F, with climate change predictions that this will increase to 15-20 days a year over 100°F by 2040. Given these predications, expanding the tree canopy may provide low cost ways to reduce air-conditioning demands with associated economic savings for residents and the city.
POTENTIAL SITES AND SPECIES

Pflugerville can expand their current urban tree canopy in a way that weds a natural urban environment with human scale development to help the city retain its small-town feel and rural charm despite a rapidly growing population. The following are areas that are utilized by residents and could benefit from additional trees to provide shade and aesthetic development.

Potential Sites

**Pflugerville Independent School District**

Elementary Schools: Timmerman, Murchison, and Highland Park

Middle Schools: Pflugerville and Kelly Lane

High Schools: Pflugerville and Hendrickson

**City Parks And Highly Used Areas**

Cook-Walden Capital Parks Cemetery, Pflugerville Community Library, Pflugerville Lake, Falcon Pointe Splash Park, Downtown Pflugerville (West Pecan Street and North Railroad Ave)

Potential Species

Pflugerville’s tree population is dominated by Sugarberry, Live Oak, Cedar Elm, Crape Myrtle, and Arizona Ash. Efforts to expand the canopy should prioritize increasing tree diversity by planting species that represent 5 percent or less of the current canopy. Due to the projected increase in temperatures, it is recommended that Pflugerville select tree species that can tolerate a warmer and drier climate to ensure their survival twenty years into the future. Within those parameters the city should prioritize Shumard Oak, Chinese Elm, and Afghan Pine.
COMMUNITY ORCHARDS AND EDIBLE LANDSCAPES

Community orchards are newer urban experiments that establish fruit and nut trees in public sites and rely on the community to tend to and harvest the trees. Community orchards are traditionally used for personal consumption, but in some cases are deployed for individual-scale commercial production. Community orchards can contribute to the city’s overall tree canopy, improve tree diversity, and increase free access to fresh fruit. In Pflugerville, Hendrickson High School and Rowe Lane Elementary School are strong potential sites for a community orchard due to their location, educational opportunities, and tree canopy potential. Initial orchards could plant a combination of pear, peach, persimmon, and kumquat trees, expanding to nut trees in the future. These efforts could be linked to previously mentioned school gardens and used to connect existing local park and trail networks.

Edible landscaping is similar to a community orchard in that cities or communities plant food as design features in a landscape and make that food freely available for public consumption. This allows the city to put parks, plazas, trails, and squares into the local food system and promote public health, community engagement, and environmental services. Austin is in the process of developing a community food forest “Festival Beach Food Forest”, which could provide a pilot example and lessons learned for Pflugerville.

Generally speaking, edible landscaping can be developed and maintained in partnership with community members and non-profit organizations, with municipalities often providing grants and in-kind support for initial and on-going costs. Establishing pilot edible landscapes can be done adjacent to established community gardens to build upon current public gardening efforts.
INNOVATIVE URBAN FORESTRY PROJECTS

In addition to traditional urban forestry work, Pflugerville may wish to consider two innovative projects that are increasingly used in a number of cities.

Downtown Pflugerville has historic charm which it can capitalize on through developing new small-scale urban design concepts. In nearby Austin, the city is working to develop pocket patios which repurpose parking spots into patios for nearby restaurants and cafes. The new patio spaces are pedestrian friendly and allow both visitors and residents to enjoy time outside with minimal cost to either the city or business. There are a number of locations on East Main Street in Pflugerville that have the potential to develop pocket patios which can be surrounded by planters and small scale urban green features.

Green walls, or living walls, are vertical gardens located either inside or outside of a building. When used externally, green walls can lower building temperatures up to 9°F in the summer and provide additional insulation in the winter. This can reduce building energy demand and provides a unique design feature in urban spaces.
8. GREEN RETROFITTING

COURSES

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Green retrofitting practices are increasingly common in cities that are pursuing sustainability efforts. Green retrofits are upgrades to exiting buildings that improve environmental performance especially around energy efficiency, water consumption, and material use. Often implemented during remodels or scheduled maintenance events, green retrofitting offers low-cost ways to reduce a building’s environmental impact while providing economic savings for municipalities. The City of Pflugerville owns a number of buildings and facilities that can benefit from green retrofitting practices when future remodeling takes place.

Students in the Energy Modeling & Design and Introduction to Engineering Design & Graphics courses evaluated a number of city buildings to provide the City of Pflugerville with energy efficiency and water use improvement projects. They developed general concepts around energy and water conservation and provided some options for existing city-owned building. In completing this work students focused on low-cost projects that the city can use as test cases before it decides to implement more costly retrofits.

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Pflugerville Library. Credit: City of Pflugerville
Many green retrofit projects focus on improving energy efficiency, both as a tool to meet climate mitigation goals and as a way to reduce heating and cooling costs. Initial recommendations for energy efficiency projects are centered around passive house standards. These standards are designed to maximize energy savings through small but impactful changes while maintaining occupant comfort and in some cases increasing the longevity of buildings and building support-systems.

Should the city decide to pursue these options there are a number of incentive and support programs that may fund such initiatives. These include: property tax abatements, rebate programs, subsidized energy credits, contributions for off-site improvements, and the USGBC LEED program.
Cities in Central Texas are increasingly paying attention to water issues and the role of municipalities in preparing for an uncertain water future. Central Texas has recently emerged from a historic drought and often experiences flash floods in addition to larger issues around water supply, quality, and use. The City of Pflugerville can show leadership in resource conservation and ecological resiliency through exploring water capture and reuse for public buildings.

Work with the City of Pflugerville focused on modeling water capture and reuse for several public buildings with an emphasis on lowering costs and impacts associated with water use and treatment. In keeping with these parameters, the majority of projects emphasize water capture for landscape irrigation, which encourages water conservation without requiring major changes to building plumbing nor expensive localized water treatment processes.
The Pflugerville Justice Center is a 35,000 square foot facility that houses the Pflugerville Police Department, a municipal court room, a gym, a shooting range, a vehicle impound garage, a small jail, and a number of administrative offices. Given the size and layout of the facility, five low-cost changes can yield high conservation rewards.

1. Implement minor temperature setting changes by reducing winter temperatures settings from 68°F to 64°F and increasing summer temperature settings from 73°F to 76°F.

2. Upgrade the current HVAC system to a high-performance model, divide the system into two parts that can operate separately, and remove the two storage rooms from the HVCA system.

3. Add more shading devices to reduce current cooling demands.

4. Implement a modified lighting schedule especially in the court and storage areas.

5. The Center can place two water catchment tanks on the front and left-most sections of the building. These tanks are designed to hold three months worth of rainwater which can then be connected to the irrigation system.

Together these changes may decrease the building’s energy use by an estimated 30% and off-set the ~500,000 gallons of water per year currently used for irrigation.
The Pflugerville Recreation Center is a 22,000 square foot multi-use facility with a cardio room, shower and locker rooms, game room, nursery, multi-purpose studio, and large indoor gym with a walking track and basketball court. Several small-scale changes can be implemented to reduce the overall energy use, operating costs, and water use of the building.

1. Use daylighting control devices which would reduce overall lighting use and costs.

2. Improve the efficiency of the building envelope by increasing air tightness and adding additional wall insulation.

3. Increase the summer temperature settings from 70°F to 77°F.

4. Decrease both the temperature and flow-rate of the showers and sinks in the locker rooms, while still staying within occupant comfort criteria standards.

5. Install 600 square feet of PVC solar panels which would generate enough electricity to run the facility.

6. Implement a new gutter system with a 3-month reserve water tank that is connected to the irrigation system, which would reduce overall water demand by ~40%.
9. ZERO WASTE INNOVATIONS FOR PFLUGERVILLE

COURSE

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The City of Pflugerville, and Central Texas in general, have experienced rapid population growth over the past two decades which has increased not only the number of people but also the number of houses, restaurants, and construction operations. Solid waste has increased along with population growth and has coincided with state-wide closures of landfills. These trends have resulted in increased costs for solid waste disposal and subsequent efforts by cities in Central Texas to deploy traditional and innovative policies to reduce solid waste.

A number of U.S. cities have begun to implement zero waste policies and practices to reduce solid waste volume and costs. Zero waste aims to eliminate the generation of waste and toxicity at a variety of scales ranging from restaurants to cities with an emphasis on reducing unnecessary production and diverting discarded material towards other uses. Students in the Resource Management course examined Pflugerville’s current solid waste practices and developed a Zero Waste plan for the city.

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Compost Piles Kew Gardens. Credit: Phil Shaw
PFLUGERVILLE SOLID WASTE PRACTICES

The City of Pflugerville currently offers solid waste, bulk item, single-stream recycling, and yard waste curbside services through a solid waste contractor. The city does not have a solid waste facility nor a transfer station but does operate its own recycling center which accepts appliances, oil, tires, batteries, brush, cardboard and glass. In addition to facilities and services the city has undertaken a number of outreach initiatives including open houses, annual clean-up days, and education programs.
ZERO WASTE POLICIES

Given the city’s current initiatives a number of policy options exist that could help the city reduce the volume of solid waste and the economic costs associated with disposal.

**Construction And Demolition Ordinances**

Current predictions for continued growth in Pflugerville imply that construction and demolition will continue at a significant rate for the foreseeable future. The solid waste associated with construction and demolition provides a policy opportunity for the City of Pflugerville to implement construction and demolition ordinances (C&D). C&D ordinances require that projects divert a percentage of their waste stream to recycling and reuse. Pflugerville’s C&D ordinance can replicate the City of Austin’s to help streamline regulatory requirements for construction companies in the region. Austin currently requires that any project over 5,000 square feet must divert at least 50% of construction debris, and limits material disposal to 2.5 pounds of material per square foot.

**Compost**

Food and yard waste account for approximately a quarter of residential solid waste and are two waste streams that can be put to higher and greater use. Composting has been called “nature’s recycling” because it takes food and yard waste and transforms it into rich fertilizer. A large number of cities are exploring various public composting mechanisms ranging from New York’s extensive drop-off program to San Francisco’s curbside pickups. Pflugerville could start a compost outreach program that provides households with educational information and composting containers and connect participants with local community and school gardens. If public demands increase the city can explore expanding the current yard-waste curbside collection services to include compost. Additional opportunities exist to set up regional composting programs with Austin and other nearby cities.
Similar to many communities in the Texas Hill Country, over the past several years Pflugerville has experienced unprecedented growth and the changes and challenges that accompany it. But more than meeting such challenges, the City of Pflugerville is also seeking to leverage such changes to envision and create a new quality of life for its residents. The University of Texas at Austin is devoted to enriching the lives of Texans, their cities, and our state. We do so by providing world-class research, innovative education, and service-based partnerships.

Texas CityLab and the University of Texas at Austin were thrilled to work with Pflugerville’s managers, staff, and City Council to help craft ideas for Pflugerville’s future. Students, faculty, and Pflugerville staff assisted each other through sharing information, attending lectures, and participating in reviews. In addition, many students and faculty visited Pflugerville, where they researched topics such as Pflugerville’s transportation needs, Old Town redevelopment options, and urban agricultural possibilities. Both in the classroom and on-the-ground, students gained direct experience in how to approach sustainable development issues. They also learned how community-lead research contributes to a growing and aspiring community. The energy, enthusiasm, innovative ideas, and research of faculty and students from a range of campus colleges and departments combined with the on-the-ground knowledge of city staff yielded approachable designs for Pflugerville’s future.

The work between CityLab and municipal staff resulted in tangible progress for communities, meaningful learning and professional experience for students, and an opportunity for faculty to link classroom work to the challenging transitions going on in society-at-large. We look forward to watching as Pflugerville continues to grow and prosper and hope that Texas CityLab efforts contribute to a stronger and more sustainable city.

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