Hometown Colorado Initiative
ANNUAL REPORT
2016–2017
The Mission of the Hometown Colorado Initiative (HCI) is to connect communities in Colorado with the wide-ranging knowledge and academic discipline of the University of Colorado Denver faculty and students to address local issues that advance community livability and quality of life.

HCI is one of over twenty-five university-based programs that are part of the Educational Partnerships for Innovation in Communities Network (EPIC-N).

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Dear Friends and Colleagues,

We have completed our second year of the Hometown Colorado Initiative (HCI) at CU Denver and I want to start by thanking our community partner, the City of Arvada. We have a two-year agreement with the city, in which a total of twenty projects will be completed. During the first year, faculty and city staff completed five projects that focused on priority issues for the city - water conservation and housing. I want to especially thank Rita McConnell, Director of Community Development for the City of Arvada, who serves not only as the coordinator for Hometown Colorado at the city, but has been a champion for this campus-community initiative. Rita has done an amazing job working with other department directors to develop and coordinate projects that will make a real difference in reaching the city’s livability goals.

This report summarizes the five projects completed this year, as well as comments from faculty, city staff and students who participated in the projects. To read the final project reports, I invite you to visit our website at https://hometowncolorado.org

Hometown Colorado is an initiative based on a model developed by faculty members, Nico Larco and Marc Schlossberg, from the University of Oregon. They recognized that cities are in need of support and technical assistance in completing projects, but often are hard-pressed for time, staff, or budget. The model they developed provides an effective way for cities to tap into the talents and energy of university students and faculty in order to accomplish critical projects. This working relationship between cities and higher education institutions puts student talent to work on projects that move livability goals forward. There are currently twenty-five universities in the U.S. (and one in Israel!) that are using this model to expand community engagement and value to their communities. CU Denver is the only university in Colorado to have adopted the model.

But a model is only as good as the partners involved. The commitment and enthusiasm from the staff of the City of Arvada has been essential to the success this past year. Our thanks to Jim Sullivan, Director of Utilities, Harry Johnson, Senior Landscape Architect, and Ed Talbot, Manager of Housing and Neighborhood Revitalization. All three attended student presentations at CU Denver and provided invaluable feedback to students.

At CU Denver, our faculty provided expertise and guidance to students who applied what they were learning in the classroom, to the city’s projects. From the College of Architecture and Planning, we thank Lori Catalano in the Department of Landscape Architecture, and Austin Troy and Jenny Steffel Johnson in the Department of Planning for their participation. This upcoming year, we are looking forward to working with faculty from the College of Arts and Media, the College of Liberal Arts and Science and the School of Public Affairs. Our goal is that this initiative engage faculty from across campus and from many disciplines and we are making progress.

HCI also benefited from our faculty leadership team, representing three colleges and schools. The team members are:

Michael Jenson, Associate Dean  
College of Architecture & Planning

Brian DeLevie, Department Chair, Visual Arts Department  
College of Arts & Media

Kelly Hupfeld, Associate Dean  
School of Public Affairs

Lori Catalano, Assistant Professor, Department of Landscape Architecture  
College of Architecture & Planning

Our partnership with the Colorado Municipal League (CML) has continued to help us get the word out about Hometown Colorado among local government leaders. I am very grateful to CML’s executive director, Sam Mamet, and Lisa White, Membership Services Manager, for their support and commitment to this campus-community partnership.

I’m excited to be expanding the number of projects, faculty and students that will be part of HCI this upcoming academic year. CU Denver is an incredibly valuable asset to Colorado, and HCI will continue to play a significant role in preparing our students for their careers with real world experience, while answering the need of our communities with ideas and solutions. I encourage you to visit our website at https://hometowncolorado.org/ and follow us on Facebook, media and CML publications. You can also email me at vickie.berkley@ucdenver.edu for more information.

Vickie Berkley  
Program Manager  
Hometown Colorado Initiative
The City of Arvada is a western suburb of Denver with an estimated population of 117,453 (as of the 2010 United States Census) and is the 7th most populated city in Colorado. Founded in 1870 and incorporated in 1904, Arvada maintains its cherished hometown feel and celebrates a diverse business community. Arvada’s early settlers came to mine for gold, but soon started farms when irrigation was made available. Crops that thrived were wheat, corn, oats, plums, celery, cherries, berries, melons, strawberries, and various vegetables. At one time, Arvada was known as the “celery capital of the world.”

The City of Arvada and elected leadership are committed to conservation, sustainability and resiliency. Their goals and objectives are found in two documents: The Municipal Action Plan and the Community Plan. While both plans strive to achieve a more sustainable community, the Municipal Action Plan, developed in 2010, defined and created a sustainable corporate identity for the City of Arvada. The Community Plan, adopted in 2012, focused on aspects of sustainability that relate to the entire Arvada population.

After Hometown Colorado’s inaugural year with the City of Lakewood had been completed at the end of 2016, a celebration event was held in which CU Denver faculty and Lakewood city staff presented what had been accomplished to an audience of around sixty people. Among those in the audience was Rita McConnell, Director of Community Development from the City of Arvada. While the city had not budgeted for Hometown Colorado for 2016-17, Rita was interested in a two-year partnership, where a smaller number of projects could be taken on the first year, and then a larger number the second year, when a budget had been approved.

Heads of Arvada’s city departments were asked to submit projects that were priorities, particularly as they met goals for sustainability and livability. The areas selected for the first year focused on water conservation and housing. Projects were matched with faculty from the College of Architecture and Planning, who incorporated the projects into existing courses over the AY 2016-17 academic year. It’s estimated that eighty students provided over 16,000 hours of work to provide research, ideas, designs and demonstration projects for the five projects selected for the first year.

“The City of Arvada appreciates the opportunity to collaborate with innovate students through the Hometown Colorado Initiative. Our first year in the program has been very successful. We have been presented with useful ideas and excellent data to support projects we have underway. We have even implemented one of the projects already. We look forward to our second year I the program with many more projects that involve multiple city departments.”

-Rita McConnell, Director of Community Development

Quotes from Students

“The opportunity to actually practice what we are learning, is, I believe, integral to graduate school.”

“Working with a real client on a real project was awesome! Helping the city made the class so much more meaningful.”
Water conservation was one of the priorities identified for sustainability, and an issue that Jim Sullivan, director of utilities has been working on for many years. To decrease the amount of turf that residents of single-family homes maintain by frequent watering, a partnership had been created with the Center for Resource Conservation (CRC) to offer residents “Garden In A Box” kits. Each kit comes with plants that require little water and thrive in Colorado’s arid climate. Jim wanted to explore what other designs could be created to replace a larger amount of turf, thus invigorate the Garden In A Box program and enhance outdoor water conservation.

Lori Catalano’s landscape architecture studio, “Plants in Design,” was an excellent fit for this project, and provided students with an opportunity to install, evaluate and propose new Garden In A Box designs for the City of Arvada. The semester began with the installation of a Garden In A Box for a local Arvada resident.

Students gathered on September 25 in the front yard of the residence to tackle two separate areas of the resident’s front lawn. A long narrow strip along the driveway needed attention, as well as a raised garden bed where the yard met the sidewalk. The first step was to clear out all the dead and unwanted turf, which was brown from lack of water. The next step was to rebuild the edge of the raised garden bed and make it more aesthetically pleasing.

Once the new edge was set, it was time to till the existing garden bed and to plant the Garden In A Box. The class followed the layout instructions for The Sunset Garden. After the plants were in the ground and watered, a layer of mulch was added to help hold in moisture and create a healthier environment for their growth. The new garden is full of color and texture and once the plants are established, will need watering only every 5-8 days.

After students reviewed and evaluated the Garden In A Box website, they formed groups and were given the task of creating their own design. Each group brainstormed design themes and arrived at one final concept. Students then researched plant types that fit their theme and were water-friendly, and assembled the plants into a visually appealing arrangement. The resulting designs include the following:

- Autonomy In A Box
- Desert Garden
- Heavenly Herbs
- Pollinator Garden
- Shady Hollow
- Texture Garden
- Winds of Winter

Jim Sullivan from the City of Arvada and Natalie Antonucci from CRC came to Lori’s classroom, where students presented their final designs. Both were impressed with the students’ creativity and range of plants that they used for their designs. Plans are in place for this year’s Plants in Design class to again participate in a demonstration project and further develop designs that CRC and the City of Arvada can use to expand the Garden In A Box program.
Focus Arvada, the City’s 2014-2019 strategic plan, recognizes the essential connection between housing diversity and economic vitality. It states, “Good paying jobs, thoughtful transit-oriented development and new housing, together with long-term investments in the Wadsworth corridor, will define managed growth in Arvada.” Additionally, the plan includes the goal that “By 2019, 25% of new housing will be located in neighborhoods or developments that incorporate a mix of lot sizes, development densities, and housing types and styles.” Developing a diverse range of housing types is challenging for many reasons, such as financing, land availability, and density concerns.

The overarching goal of this project between the Department of Planning’s Urban Housing course, taught by Jenny Steffel Johnson and Ed Talbot with the City of Arvada was to provide insight into the need for attainable housing in Arvada in order to attract and retain working households and employers, as well as senior households. This project helped document and illustrate a wide range of Arvada residents’ housing challenges, desires, and realities through two separate projects conducted by two teams of students.

Project 1: Aging-In-Community
A significant and increasing percentage of Arvada’s residents are seniors. Many of them are homeowners, and many are long-time residents of the community whose time, knowledge, and residential stability are assets to the city. However, as these households age, their housing needs may change. Students developed and distributed surveys to Arvada seniors to assess their general housing needs, concerns and preferences. The results of this work is an identification of housing-related gaps in Arvada that will need to be addressed to keep the city’s senior citizens part of the community.

Project 2: Housing Arvada’s Workforce
Partners at the City of Arvada identified a few major employers in the city that have a range of employees at several income levels, and who were willing to work with the class. Students developed and distributed surveys to the employees, asking them to document where they live, their housing costs, their commuting distance/time, their preferred housing type and location, and their perceptions of living in Arvada. The responses to these surveys were analyzed and mapped using GIS. The results of this work provides an illustration of the (in)ability for employees at different income levels already working in Arvada to find attainable and suitable housing in Arvada.

The participating employers were selected because they are large Arvada employers that have a wide range of employees. The two companies, Sundyne and Prescient, were selected and invited to participate by the City of Arvada’s Economic Development Department.

A conclusion of the survey analysis is encouraging the development of a variety of housing, including inter-generational units, small units and family units, at a wide range of price points and with good access to transportation options and everyday amenities and services.
Alice Sweet Thomas Park is located at West 80th Avenue and Simms Street around and on top of a water tank in a growing neighborhood within Arvada. During the next five years, the City anticipates the need to repair the water tank. Therefore, the City was interested in determining the needs of future residents and how parks can be designed to accommodate their needs while incorporating functional requirements of the water tank and the City’s desire to conserve water.

Lori Catalano’s landscape architecture students in her senior design studio completed a site analysis, focusing on relationships to the neighborhood and the requirements of the water tank. Students then created seven design concepts, with the intent that ideas developed in this studio may be used by the City of Arvada to guide future improvements in the park. The larger question that the class explored was: How do parks contribute to the health and well-being of the residents in this neighborhood?

Lori’s students visited the Simm’s Water Tank and Alice Sweet Thomas Park on Monday, January 23rd, 2017. This was a group gathering to gain first hand knowledge of existing site conditions. They took note of both physical and nonphysical elements that comprise the site. It was universally agreed that the park has four underused acres of open space.

After the completion of the site analysis and investigation of precedent case studies, students worked on the development of their own designs for Alice Sweet Thomas Park. Each project was required to improve circulation to meet standards for universal design and to re-envision a future for this park that serves the needs of both current and future residents. On March 9, 2017 students presented their designs to Jim Sullivan and Harry Johnson with City of Arvada, Sarah Maas with Civitas, Inc, and Vickie Berkley with the Hometown Colorado Initiative. The seven design alternatives presented were:

- Concept A: Activation through Terracing
- Concept B: Bringing the Community Together
- Concept C: Seasonal Colorado Garden Park
- Concept D: Flow, Pool, Ripple
- Concept E: Neighborhood Playground
- Concept F: Layered Outside Activation
- Concept G: Meet At The Top

Students received valuable feedback on their designs by those who attended the presentation. The City of Arvada now has seven water-wise design ideas to consider when moving forward with future plans for this park.
ARVADA SITES FOR ATTAINABLE HOUSING

There is growing pressure for the City of Arvada to provide more housing options for residents, particularly higher density and affordable multi-family housing. Ed Talbot, the City of Arvada’s Housing Preservation and Resources Manager, asked that students in Austin Troy’s Senior GIS course determine locations for new multi-family housing developments. The students provided an analysis using GIS (Geographic Information Systems) techniques to identify and classify vacant lots in the City of Arvada based on their fitness for multi-family housing.

The major research question posed by this project was: Which vacant parcels in the City of Arvada are most suitable for multi-family housing development? Beyond simply identifying vacant parcels within the City that have the potential to be developed, students used a GIS-based site selection and modeling process that described optimal site criteria and identified the vacant parcels most fit for multifamily housing.

Students also explored visualization and modeling techniques using Esri’s CityEngine, an urban modeling program, to identify the different kinds of multi-family housing projects possible on several of the parcels identified as suitable for development. The project used a variety of GIS tools and analysis techniques to produce a final map, using survey information on the characteristics of suitable parcels as well as 3-D models of suitable development sites.

The site analysis incorporated criteria such as proximity to hazards, as well as crime rate, community acceptance, and acquisition or lease costs. In addition, attributes required of multi-family housing parcels were considered. These attributes were:

- Sized one-half of an acre or larger
- Designated as vacant land and not park space
- Located within zoning districts that allow multi-family development
- Aligned with the City’s Comprehensive Plan Future Land Use designation

As a part of this analysis, 32 parcels were identified with the potential for future housing developments. Of these 32 parcels, 17 are part of a current development project already identified by the City of Arvada.

The CityEngine component of this project took the 2-dimensional sites that were selected utilizing the site-selection process, and then render conceptual building layouts to provide a visualization of the buildings. The intent was to allow the renderings to provide insight into the localized land use impacts and potentially serve as an indicator that multi-family housing developments could be constructed in typical suburban neighborhoods with relatively low-negative impact.

The presentation of the CityEngine component to this project demonstrates both the technical aspects and the potential uses of CityEngine software to supplement ArcGIS land use analysis for the City of Arvada. As a result of this project, the City of Arvada can narrow its focus to available sites that meet criteria when planning for multi-family housing.
Water waste is an issue that cities throughout the world are trying to mitigate as water scarcity becomes more complex. Water budgets are the tools by which cities such as Arvada can use to regulate and educate their residents about their household water use. Although baseline measures exist that can demonstrate water usage by household, more progressive measures should be developed, particularly related to outdoor water use, so that the City of Arvada can help educate residents about their landscape irrigation habits.

Jim Sullivan, Director of Utilities for the City of Arvada was interested in how water budget models can estimate water usage in order to better plan for and manage their consumption and use. While indoor usage can be problematic to estimate, outdoor use has been looked at more closely to better estimate both uses. The City of Arvada should be able to estimate total outdoor water consumption by using lawn coverage and the overall tree canopy coverage to better predict water usage, regulate during droughts, educate property owners, and reduce waste.

Austin Troy’s students in the Department of Planning’s Advanced GIS course took on the task of estimating the total area of vegetation by each residential parcel using geo-spatial methods. This method can be helpful in predicting the amount of water used for domestic irrigation, and in assisting the City in advancing its water conservation goals.

The first objective of this project was to calculate the area of lawn for each residential parcel. This information is needed to determine how much water is needed to sustain each lawn area. The second objective is to calculate the tree canopy cover for each residential yard. This information will help the analysis identify which parcels contain trees, the amount of water needed to sustain those trees, and the relation to parcels that contain tree cover to those without trees based on water use comparisons. The third objective was to compare an estimation of yard irrigation with household use and determine which residences are above/below a given threshold. This ultimately is the water budget model that can help Arvada set a water budget for each property and compare it to their actual use. The final objective was to develop a GIS methodology that can be repeated in the future for all areas in the City of Arvada and even for other municipalities.

To begin this analysis, high-resolution orthoimagery and light detection and ranging (LiDAR) datasets for the City of Arvada were downloaded from the EarthExplorer webpage provided by the US Geological Survey (USGS). Due to the large size of these files, the methodology that will be discussed in this section is applied only to one neighborhood in Arvada. For this study, the neighborhood of Ralston Estates West was selected because it is primarily composed of single-family homes and the entire neighborhood is covered by two orthoimagery and two LiDAR tiles. In this way, data processing is more efficient, and it is easier to notice details in the outputs of each tool which can speak to the accuracy of the analysis. In the future, these steps can be repeated for other areas that are of interest.

Using the calculation of the difference between the actual and recommended amounts of water used for irrigation, it can be concluded that most residents in Ralston Estates West use much more than they should. Surprisingly, almost 72% of residents within the neighborhood of Ralston Estates West overwater their lawns and trees. It is possible that most residents simply do not know how much water their yards really need. By engaging with these residents, the City of Arvada may be able to greatly reduce water waste by informing the public on best lawn watering practices.

By raising awareness of water conservation and informing residents about their personal water use, neighbors will most likely educate each other about yard irrigation in summer months and possibly hold each other accountable to appropriate lawn watering behavior. To encourage water conservation, the City of Arvada can use geo-spatial methods to give residents an idea of how much water should be used for irrigation in the summer. The methodology introduced in this project can be refined and make residents more aware of their own water use. By being proactive and engaging with the public, the City of Arvada has a great opportunity to protect the environment, preserve the community’s quality of life, and plan for changes ahead.