



MSUS Culminating Experience Final Report

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Peoria Community Forestry Program

City of Peoria, Arizona

Abstract

The City of Peoria, AZ approached Project Cities and the 2021 MSUS cohort for research on the feasibility, and challenges, of adopting a Community Forestry Program (CFP). The team was asked to evaluate Peoria's potential for canopy growth and plan adoption by researching forestry or shade programs in cities with similar climates, as well as by reaching out to Peoria citizens to determine the community desire for a CFP. This process includes identifying the specific barriers and opportunities regarding implementation. Research was conducted through peer reviewed articles and interviews with shade or forestry program officials; citizen outreach was conducted through surveys and focus groups. These results have been compiled and presented to the City of Peoria to provide recommendations moving forward.

These recommendations will be invaluable for the city when it comes time to evaluate whether or not a CFP can be successfully implemented. Peoria will likely benefit from a comprehensive CFP, and this program will help reduce inequalities within the city, enhance urban form, promote walkability, and increase biodiversity within the urban area. This will also highlight that Peoria is dedicated to becoming a forerunner in the arena of urban planning, the intersection of social and environmental sustainability, and human health. Through their efforts in this sphere, Peoria can emerge as an example, and provide motivation, for other cities that are interested in pursuing a similar program. If implemented, the CFP will influence the development of Peoria for years to come.

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Introduction and Background

The partner for this project was the City of Peoria, and the main contact is the Trails Superintendent, Brandon Putman. Peoria brought this project forward to the School of Sustainability with the scope already established. The city has a tree inventory and a sustainability plan, yet is interested in developing a Community Forestry Program (CFP) to provide equal opportunities for shade, increasing transportation options and creating a safer walking environment in the summer. In addition, increased shade improves air quality along walkways and alleviates the urban heat island effect. Implementing the CFP could stimulate Peoria's economy by providing a comfortable, shaded environment for shoppers and by providing a pull force for new business development.

If Peoria does decide to create and adopt a CFP, the urban environment would likely change for the better. Cooler temperatures allow for greater outdoor leisure and exercise, and the urban landscape would be more vibrant and appealing to spend time in. Connectivity between walkable areas would be improved as pedestrians could travel comfortably for longer distances on pathways that are shaded, beautiful, and protected from traffic by the natural infrastructure that trees provide.

This project confronts the sustainability issues of excessive urban heat, low walkability, and social inequalities due to urban economic and social disparities. These problems are common across many cities around the world, and this project can help provide a pathway forward for them. Through helping the city determine if a CFP is a worthwhile investment, we can also demonstrate to adjacent cities the numerous benefits trees bring to urban areas. By investing in CFPs, cities can become more resilient to climate change, become better places to live in terms of equalities and happiness, and benefit from the financial value that urban tree canopies produce.

Urban sprawl is perpetuated in Peoria by the availability of cheap land and automobile-centric infrastructure. Sprawl is nearly synonymous with waste: wasted time, wasted energy, wasted land, wasted resources, and wasted money. If Peoria continues forward with status quo development, it will have significantly negative implications for the three pillars of sustainability. The local environment will suffer from rapid urbanization and destruction of the native desert landscape, and society will suffer from the lost time spent commuting and being disconnected from other residents and family members. The economic implications are more debatable, yet increased population density can spur local economic activity. The CFP is unlikely to solve all of these problems; however, they will contribute to a desirable future state where residents can be less dependent on cars, increasing disposable income.

Peoria's CFP will make the city more beautiful and safe, making Peoria a more desirable place to live and raising property values. This, in turn, can increase the local government's tax revenue, allowing for further development of urban improvement

projects. To make these changes more robust, the city should focus on zoning for increased density and access to commercial areas.

The pathways to determine if a CFP was best for Peoria were already fairly solidified in our projects' scope, but we used Weik's solution framework to ensure our solution is truly sustainable. We are also working directly with stakeholders- the citizens of Peoria- to learn about what aspects of a CFP are most and least desirable, as well as where the most impact can be made, through a survey the team created.

Literature Review

Peoria, Arizona experiences summers characterized by extreme heat, which is projected to worsen with the regional effects of a changing climate (Grossman-Clarke et al, 2014). Researchers utilized ten unique climate models to predict a feasible range of future temperatures, and determined that extreme heat events could increase by 6 to 20 times in the period from 2041-2070 (Grossman-Clarke et al, 2014). Meanwhile, the Phoenix Metropolitan area is rapidly growing, leading to increased conversion of land use to urban forms and exacerbating the urban heat island effect (Grossman-Clarke, 2010). With the growth of the population due to urbanization and sprawl, there is an increased risk of heat vulnerability amongst residents, especially with the absence of adequate urban cooling (Harlan et al, 2013). On the bright side, researchers have determined that green infrastructure, such as parks and trees, has a notable cooling effect (Declat-Barreto et al, 2012). This is due to the direct provision of shade and the evaporative cooling effect of transpiration (Declat-Barreto et al, 2012). A handful of cities in the Phoenix metro area have already taken action to increase shade coverage through tree planting programs.

Human health is often linked to urban heat in terms of comfort levels, heat-related illnesses, and death; the extent to which heat kills is hard to quantify, but in a study of 7 Canadian cities, found that an increase of Urban Heat Island (UHI) intensity of 2–3 °C translates into a 4–7% increase in mortality rate (Wang et al, 2016). Lives can be saved by planting trees, and as temperatures continue to rise as climate change worsens, tree shade will be critical to ensuring safety in outdoor urban environments. However, it is paramount that the trees are locally adapted and able to survive in extreme heat.

The study by Declat-Barreto et al. (2012) provides evidence that an increase in urban canopy through the implementation of Peoria's proposed urban forestry program is an effective means to mitigate urban heat, while also providing co-benefits such as beauty and clean air. Local vegetation density is a major indicator of heat vulnerability among neighborhoods, which is also closely tied to relative poverty (Harlan et al, 2013). The aim of this project is to determine if a CFP can be established in Peoria; if the city decides to go forward with CFP creation, the plan should seek to equitably increase tree cover, providing ecosystem services and related co-benefits for all city residents.

Public outreach techniques determined the concerns and preferences of residents to inform Peoria officials on how to incorporate the residents' vision into the program. One outreach approach that was shown to be successful is a community wide conference to discuss approaches to heat mitigation and to promote dialogue and partnerships among

community leaders (Guyer et al, 2019). While novel outreach techniques must be applied due to the coronavirus pandemic, it is possible that traditional barriers to public participation can be alleviated by the accessibility of an online format.

Researchers in Europe have identified several important considerations for public engagement in sustainability initiatives, including robust information sharing through media platforms, dedicated forums to facilitate engagement, and direct public access to the decision making process connecting local government and civil groups (Richard, 2018). Some barriers to constructive public participation that have been identified include an unwillingness to negotiate for collective solutions beyond special interests, and the lack of time afforded to trust building exercises (Richard, 2018). Despite these challenges, public participation is seen as a critical process in the development of long-term solutions and necessary for exercising democratic government mandates (Richard, 2018). To alleviate these issues, the team will ask participants to indicate potential conflicts of interest in focus groups. If there appears to be inequitable representation among population groups, the team will focus communications on involving additional stakeholders. In the case of severe gridlock, the team will ask participants to select representatives for a series of moderated discussions to build trust and buy-in among residents, while facilitating compromise.

Tempe, Phoenix, and Peoria share similar climates due to proximity. Tempe and Phoenix have demonstrated their commitment to urban sustainability through the development of comprehensive shade plans and urban forestry. Tempe's forestry plan identifies a need for collaboration between public and private landowners so that trees are planted where they are needed to provide shade- not just where it is convenient (City of Tempe, 2017). Tempe identified the following barriers to the forestry plan's implementation: tree maintenance, water availability, viewshed reduction, property disputes, and stakeholder engagement (City of Tempe, 2017). The City of Phoenix provides statistics that are helpful for convincing citizens of the benefits of tree planting; for example, healthy trees can increase nearby home values of up to 10% and can reduce urban temperatures by 9 degrees Fahrenheit while simultaneously improving air quality (City of Phoenix, 2015). Other benefits of urban forestry include improved physical and mental health, increased energy savings, and amplified business to shaded commercial areas. For example, an existing canopy such as the one in Phoenix has been shown to provide over 40 million dollars annually in general benefits (City of Phoenix, 2015). These two documents will be crucial for swaying Peoria public opinion of trees to be more positive, as team members can bring up the financial, physical and mental health benefits of adding trees to existing urban environments, particularly human-scale walkways.

Taslim et al. (2015) compiles a number of general guidelines for mitigating urban heat in arid regions such as Peoria. Some of these planning guidelines include artificial shade provision, orienting new developments to shade walkways during the hottest parts of the day, and using region-appropriate vegetation to offset urban heat (Taslim et al, 2015). This compilation shows that urban green spaces provide more benefits than just shade; they clean the air and can provide a critical barrier between pedestrians and traffic, thus improving urban safety and well-being (Taslim et al, 2015). One guideline that stood out is

the importance of planting trees with small canopies along sidewalks adjacent to streets, as they will not trap heat and pollutants in the human realm like a wide-canopied tree would.

By analyzing literature in the realms of urban planning, urban heat, and urban canopy, teammates will be able to better understand the drivers of Peoria's UHI, communicate more effectively with Peoria residents and partners, and present compelling statistics for forestry program creation.

Project Approach and Intervention Methods

The current project approach is to extend public participation opportunities to Peoria residents so that they can inform the development of the CFP. By gathering citizen's preferences through a survey, we hope to increase public buy-in and to ensure that the project is aligned with a unified vision for the future of the city (Richard et al., 2018). If the CFP is implemented, a multitude of environmental benefits including urban heat mitigation and air quality improvements are expected (Declet-Barreto et al., 2012). The CFP is expected to improve social conditions by increasing walkability in the warmer months and by making the distribution of urban green space more equitable (Taslim et al., 2015). Additionally, the CFP is expected to spur business development and to attract commerce in improved areas. By gathering and responding to the citizens' perspectives, the implementation will be more aligned with their values and will face fewer barriers. Therefore, the benefits of the CFP to the future of Peoria can materialize more expeditiously. By helping the city consult its residents and take their suggestions seriously, the team expects greater community buy-in and improved project efficacy.

By learning directly from Peoria residents about CFP desirability, as well as through conducting research and creating matrices on Peoria's ability to create an adequate CFP, the team recommended what Peoria's CFP should entail if adopted. If Peoria approves the CFP, next years' MSUS cohort could work with the city to run pilot projects that may iron out inefficiencies and add more data catered to the approved CFP. Transition management approaches, as well as Wiek's sustainability problem solving, solution strategy and problem identification frameworks, have all been incorporated into this project. Performance will be evaluated by comparing our final results with the expectations laid out in the project proposal.

The matrices produced for Peoria include information about code and tree shade plans from cities within the Phoenix metro area (such as Chandler, Phoenix, and Tempe) and outside the metro area (such as Tucson, Albuquerque, and San Antonio). By analyzing this information and comparing it to results gathered from the public survey, the team identified forestry plan success tactics and intervention points that were incorporated into Peoria's CFP recommendations.

Outcomes/Findings

The outcomes or findings will not be truly known until all survey results are received; however, using survey information from the City of Peoria Sustainability 3.0 Plan Resident Survey, some initial data on citizen perceptions regarding the urban canopy and trees is available (Nelson et al., 2021). One of the open-ended questions was: "What actions

or goals do you feel are important for successful community engagement and education related to sustainability and conservation in Peoria?”. Several of the responses referenced the need for investment in tree plantings and shade; for example, “We need to invest in ways to wisely use water, cool down the city, plant more native trees and shrubs”, “encourage people to buy a tree and have a plaque installed--have some labels and info about trees around town”, and “Holding classes to teach about options to be more sustainable at home (in person or online web based class) with an opportunity for a free plant, seeds, or tree to grow”. In response to a question asking what sustainable transportation goals are important for Peoria’s future, one person said “Who wants to wait for a bus in the heat? Plant more trees”.

Question 10 in the sustainability survey was: “Which statement best describes your understanding of the phrase "community forestry" as it relates to the Peoria sustainability plan?”(Nelson et al., 2021). The majority of respondents (71.6%) selected that “the community forest consists of trees and vegetation located throughout Peoria that have a special relationship to people contributing to Peoria's ecosystems, sustainability, and community well-being”; the following question, which asked how important financial and temporal commitments to a tree recovery project are to the community, saw an impressive response of “extremely important” (54.68% of respondents).

In addition, question 14- “What do you feel are important actions for the ongoing health and growth of natural ecosystems and community forestry in Peoria?”- has numerous free responses from Peoria citizens that highlight the necessity of trees for shade and that there is a general understanding of the tradeoff between water conservation and tree planting, as well as the importance of proper maintenance for forestry success and aesthetic satisfaction.

This survey suggests that the majority of Peoria residents are not only knowledgeable about the importance of an urban forest, but they are also ready to support one.

As of 4/25/2021 (one week before the survey will close), 750 community responses have been recorded. The respondents represent a diverse group from low to high income, 18 to 70+, and all ethnicities. Gender distribution was nearly 50-50. The following figures show survey respondents’ demographic information (Figures 1, 2, & 3).

Q8.6 - Which of the following best describes your race or origin?

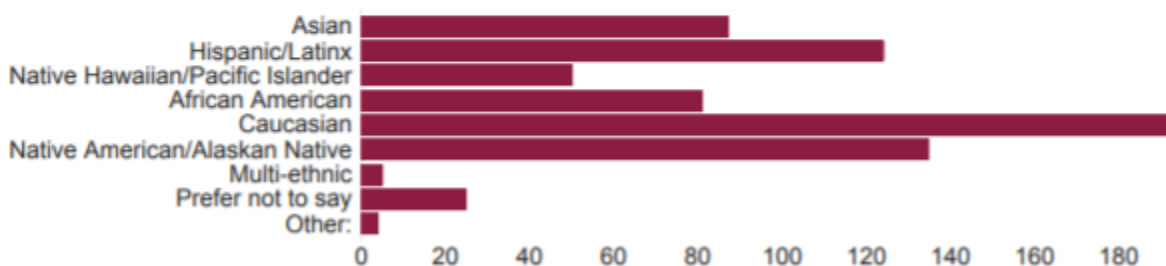


Figure 1 - Race/Origin

Q8.7 - Which statement best describes your 2020 annual household income?

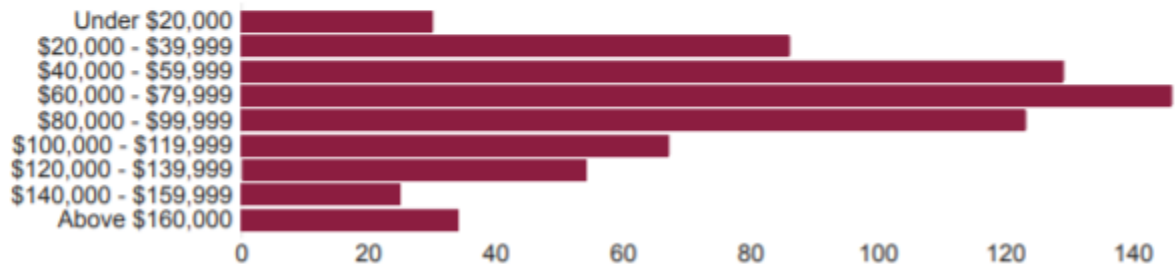


Figure 2 - Household income

Q8.5 - What is the highest level of education you have obtained?

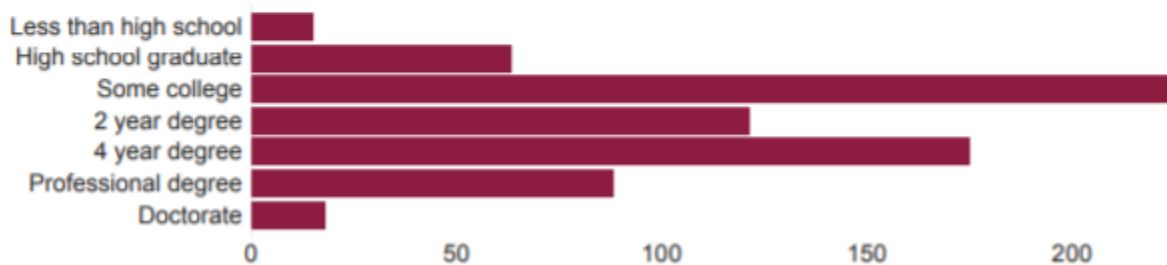


Figure 3 - Education Level

The majority of respondents indicated that they were at least moderately familiar with the terms “community forest” and “ecosystem services” at the time of the survey. Respondents were asked to evaluate which ecosystem services were the most important to them. The top 5 choices were clean water, improved well being, outdoor recreation space, less noise, and wildlife habitat. These choices were only slightly favored over the rest, with all categories being heavily ranked as ‘important’ (Figure 4). These results indicate that respondents would likely support a CFP that provides for more park space and green infrastructure. The addition of more trees can help Peoria increase the provision of these highly valued ecosystem services.

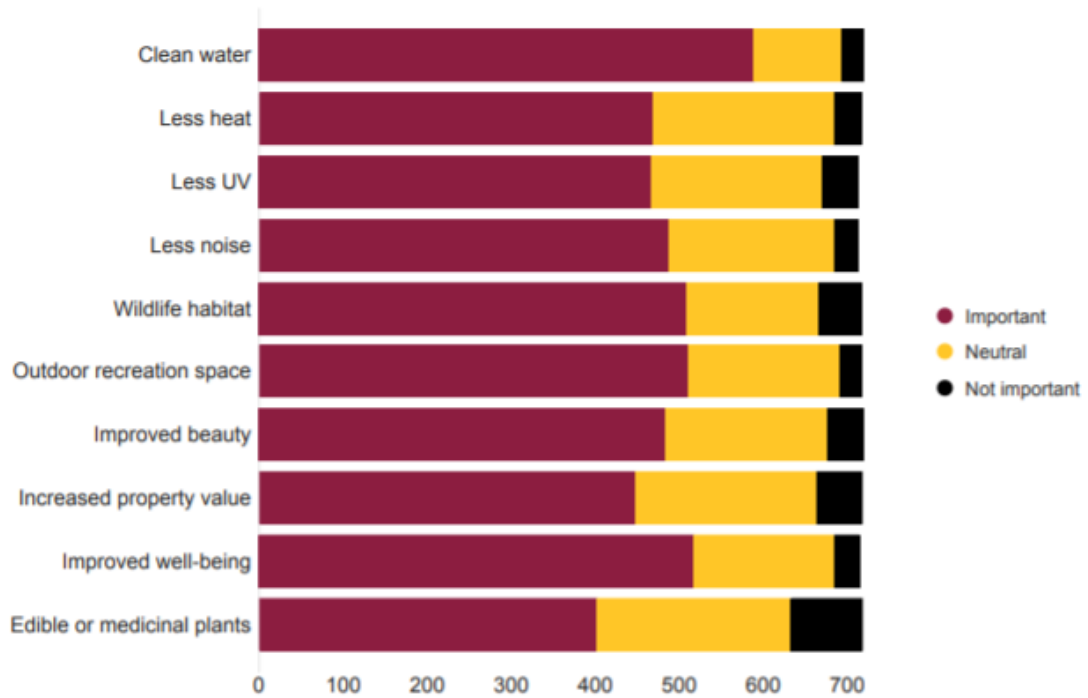


Figure 4 - Ecosystem Services Importance

The following question asked respondents to assess how well Peoria’s community forest currently provides these same services (Figure 5). These responses demonstrate that residents see room for improvement for the community forest. A good sign is that very few people consider these services to not be well provided.

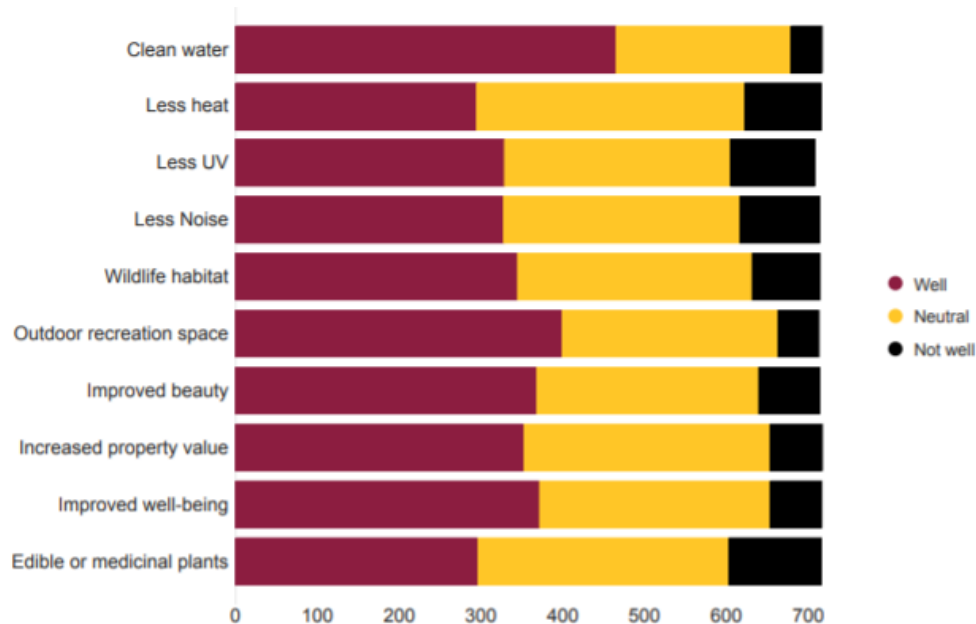


Figure 5 - Rating Current Provision of Ecosystem Services

Residents were then asked to identify how severe certain problems were in their experience with the current community forest. The two most common problems were ‘places for litter to accumulate’ and ‘plants that cause allergies’. Close behind were ‘leaf litter/ fruit drop’ and ‘personal tree care expenses’. Reference figure 6 for the full results.

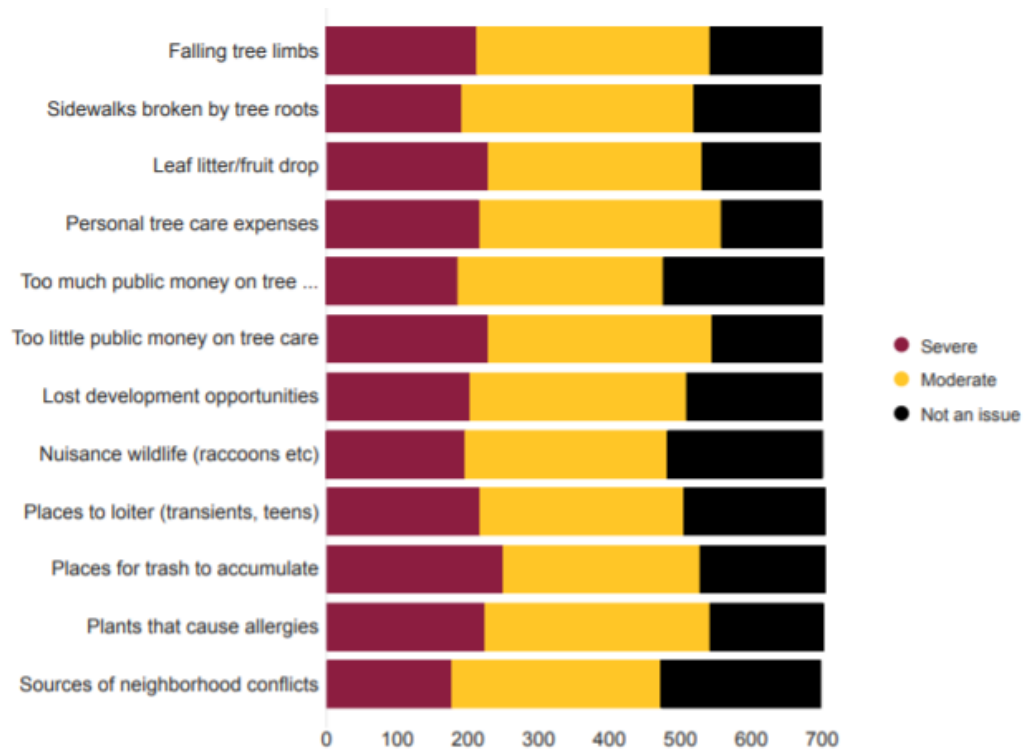


Figure 6 - Severity of Community Forestry Problems

Surprisingly, one of the problems recognized as severe was lack of public funding on tree care. While it cannot be truly determined from the wording of the question, this lack of funding may have been noticed in lack of proper maintenance or lack of trees altogether. Most respondents felt that common tree-related issues like sidewalks broken by tree roots and wildlife accumulation were not issues at all.

Next, residents were asked to identify what they consider to be the most severe threats to the community forest. The threats marked “most severe” by respondents included changes in climate, increasing city population, and habitat loss. It is likely that these were identified because residents consider the growth of the city to reduce community forest coverage. A successful CFP will remedy some of these concerns by incorporating trees into the fabric of urban design. It will be crucial for Peoria to take into consideration changes in temperature and precipitation when selecting trees to plant, as well as how sprawl may impact existing tree coverage and how a budget can be carefully maintained to preserve the integrity of the canopy. These results are viewable in figure 7.

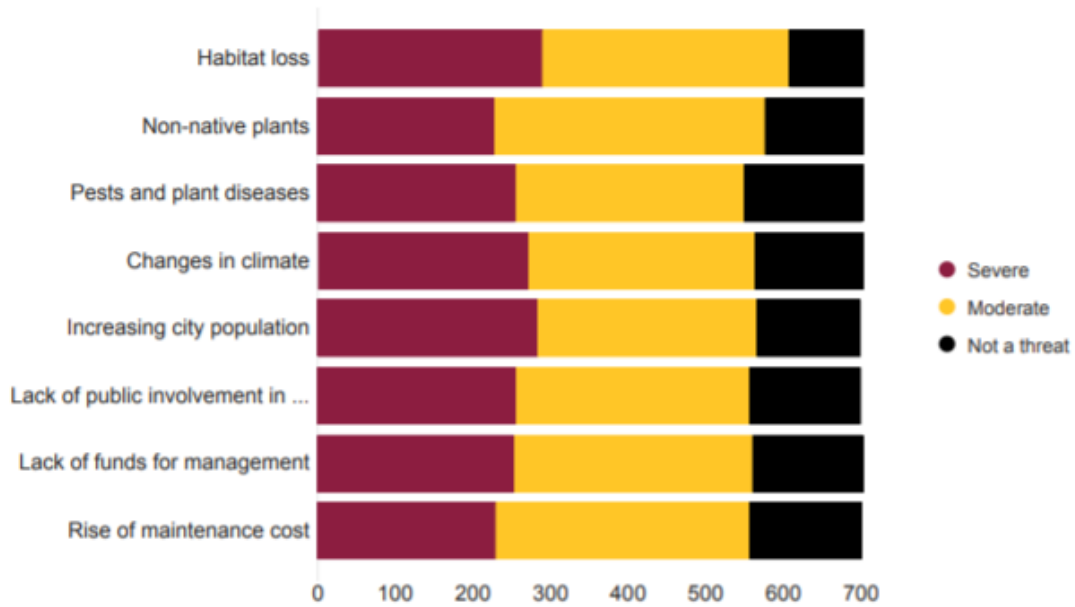


Figure 7 - Severity of Threats to Community Forest

When asked about their preferred goals for community forestry management, citizens considered sustainability, an improved sense of community, climate change mitigation, and heat reduction all important for defining a future CFP (Figure 8). This is promising and could mean that there is great potential for Peoria’s CFP if they were to link it with the existing sustainability plan and frame it as a project for bettering multiple aspects of society.

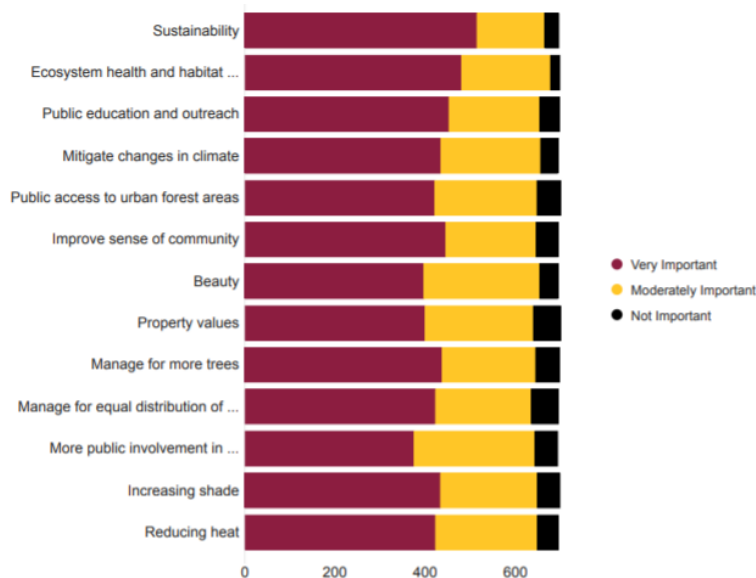


Figure 8 - Important Management Goals

Respondents were asked to indicate how well the following examples demonstrate successful community forestry management by the city (Figure 9). Tree maintenance, more park visitors, more trees, and more green space were shown to be strong metrics that are identifiable by residents. A general feeling of safety in public parks was also chosen as a measure of success.

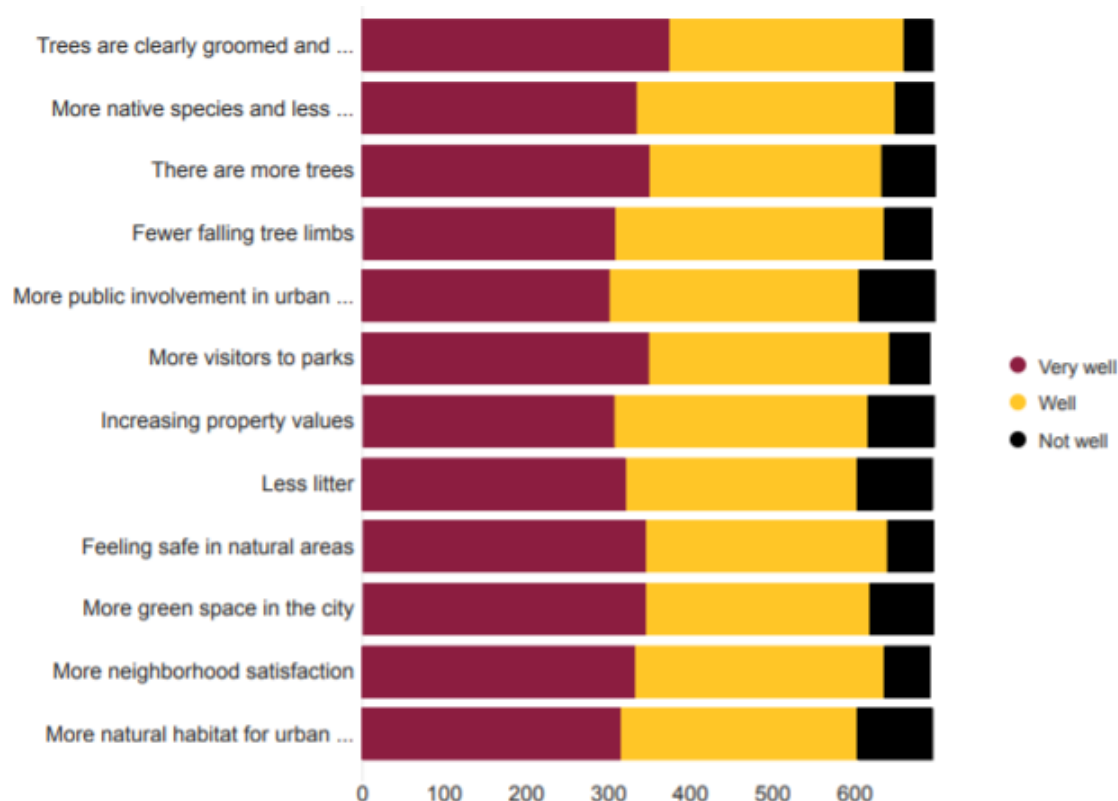


Figure 9 - Indicators of Successful Community Forestry Management

The final question asked if the respondents would support Peoria moving forward with the Community Forestry Program. There was a resounding level of support indicated, with 681 out of 703 people that answered the question saying yes. This is very promising and shows that there is support within the community for expanded community forestry.

The survey proved to be a valuable method of collecting information from the residents of Peoria. While we would have liked to see more responses to paint a more accurate picture of Peoria citizens' perspectives, we are thrilled that there is a general feeling of support and a decent understanding of how community forestry would benefit the city. These responses show that our project accomplished its main goal. The survey will continue to collect responses for the remainder of April, thereby allowing increased data collection for the City.

Recommendations

Because of the positive response from the sustainability plan survey and our survey, we suggest that Peoria begin development of a forestry program that is equitable, is responsible in regards to water usage and management, and outlines appropriate maintenance techniques for trees on municipal, commercial, and private properties. In order to increase citizen support for this undertaking, we advise Peoria to educate citizens on the environmental, social, and economic advantages of increasing urban shade through a CFP. It is crucial to make it clear to citizens that existing trees will be maintained carefully; this maintenance would need to include climate-appropriate watering techniques, a level of trimming that will ensure canopies provide shade but do not interfere with citizen activities, and responsible and timely removal and replacement of trees that have been downed by storms.

By researching other cities' forestry or shade plans, we found that many of the documents were not heavily code-based; rather, they focused more on education, budgeting, and implementation timelines. Forestry-based code is needed to ensure that no harm stemming from citizen malpractice or vandalism befalls the urban canopy, but is not a strong factor in development of CFPs. Most plans suggested that code changes will be crucial to make in the future, but education should be the initial priority.

We recommend that the Peoria 311 app be made available on App stores (Apple, Android and Google) and have options available for citizens to report beyond downed trees. One possible feature could be the ability for app users to place a pin on a satellite map of the city where they would like additional shade; concentrations of pins could help guide maintenance crews on the areas where tree plantings are a priority.

Peoria does not have a citizen tree planting or forestry board; creating a board to advise tree maintenance personnel and policy decision makers on forestry topics would be a fantastic way of ensuring community involvement and input in CFP development. If creation of an entire board is not feasible, then a subcommittee or designated "forestry board members" could be added to the existing Parks and Rec board to advise on urban trails and the intersection of shade and walkability.

Adding public fruit-bearing trees to the urban landscape would provide benefits beyond shade provision to Peoria. Advertising a citrus-lined walkway or corridor as a "food forest" could promote tourism and inspire discussions about sustainable and local food production. Additionally, whatever produce from the trees that is not picked and consumed by passerby could be donated to local low income housing centers or shelters.

As hinted towards in the Sustainability 3.0 survey, there is a lack of public understanding of what tree maintenance staff do. Actions such as removing trees can be confusing to local homeowners or pedestrians if there is no explanation given as to why that tree was removed (for instance, if it was diseased or otherwise compromised). If Peoria tree maintenance staff were to do social media takeovers, run a blog, or have another method of creating transparency, the community would have a resource with which to become familiar with common city forestry practices.

Virtual or in-person classes for a variety of age groups discussing the benefits of trees would be another tool that Peoria could utilize to broaden resident understanding of

urban forestry, biodiversity, water conservation and sustainability. Holding these events for a low cost or free at community centers, or recording them as an educational video mini-series, would increase access to the information.

Although it may not be feasible at this time, Peoria could hire an urban forester to work for or consult for the city, similar to Richard Atkin's role in Tempe. While Peoria does have arborists that are working on the forestry plan, a dedicated individual whose primary focus is the development of the urban canopy would likely shorten creation and implementation time of a CFP as well as serve as a spokesperson for tree related educational campaigns.

The responses in our survey showcase that there is a need for community education on the subject of community forestry, and a demand for an expanded tree canopy due to the ecological services it would provide. In summary, adding additional tree guidelines or restrictions in Peoria's code may not be the best way to spearhead change in a CFP (although code may have to be altered in the future based on the rate of greenfield development). Rather, education, maintenance visibility, and consistent citizen input are key to plan development, implementation, and success. Because many forestry plans in local cities are relatively new, it is nearly impossible to guarantee success with one specific approach without the implementation of tests, such as pilot projects.

In general, the CFP should aim to increase tree canopy and publicly accessible green spaces around the city. Guidelines should be created so that a certain number of parks are accessible per unit of distance. All bus stops should have natural or artificial shade provision, and should be accessible by bike lanes. The city should use the survey results as a guide to determine the priorities of the CFP. Community support for this plan is promising, and it has the potential to change Peoria's urban form for the better, thereby increasing the well-being of residents and the city's overall attractiveness.

Conclusions

Based on the survey results, the City of Peoria has the public mandate to move forward with the development and implementation of the Community Forestry Plan. The next step should be to create a draft of the plan and conduct a focus group or community charette with the survey respondents who indicated they would want to participate in such an event. The city can derive more detailed information about community preferences and concerns.

This project certainly can be expanded upon by future students and MSUS groups; the next course of action should be to conduct a pilot project in a key Peoria corridor where pedestrians are often present to provide more information to the city. Additionally, groups could collaborate with the Peoria planning department to further guide the creation of a CFP document.

The survey was successful with close to 750 responses at time of writing. Peoria now has a relatively accurate and detailed account of what its citizens would like to see in a future CFP. Using the transition management governance framework to write the survey appears to have been beneficial for response collection

Not all aspects of the scope provided by Peoria came to fruition in this project as a result of COVID-19 related complications (such as the inability to speak face-to-face with Peoria citizens), IRB delays, and only having a few short months to create content-rich deliverables for the city. We were unable to work with the city to analyze budget constraints and reduce inefficiencies in current tree maintenance, as well as identify a forestry focus group or local business/nonprofit/municipality partnerships. Despite setbacks, the deliverables that we were able to provide for Peoria will undoubtedly assist them in creating an efficient and sustainable CFP.

Appendices and Acknowledgements

We would like to personally thank Paul Prosser, as well as Scott Cloutier and Charles Redman from the MSUS Committee, for their academic support throughout the project. We appreciate the guidance, attentiveness, and patience from our partners in the City of Peoria, Brandon Putman and Ryan McCartney. We are also grateful for the knowledge and care from our subject matter experts; Richard Atkins, Jason Kelley, Paul Coseo, David Sailor, and Michael Schoon. We appreciate the work that Project Cities has put in to make our project a success.

- Appendix 1: link to AZ forestry plan matrices
 - <https://drive.google.com/file/d/15wsE610-oNaYaGzrpBDd4UTv62z8VT2/view?usp=sharing>

Cities	Designated forestry/shade plan?	Tree education strategies	Known next steps	Tree City USA?	Other relevant info
Peoria	No, but draft available	According to management plan proposal, education is desired but public education is not available	Looking to assess feasibility of a CFP	Yes (12 yrs)	
Chandler	No	Environmental Education Center and occasional events, nothing formal	None publicly available	Yes (8 yrs)	Tree planting ceremonies for Arbor Day
Tempe*	Yes, finalized	(From Urban Forestry Master Plan): · Conduct community workshops for all ages · Provide training in urban forestry · Tree information library and other online resources	Plenty and very well laid out- include highlighting pilot projects, increasing shade at bus stops, make neighborhood shade more uniform, train staff, replace trees w drought tolerant	Yes (24 yrs)	Special; has position of Urban Forester (Richard Atkins)

Peoria Community Forestry

			species, etc		
Scottsdale	No, but discusses retaining of trees in master plan and providing ample shade in public spaces for activities and has a native plant ordinance	Green building program exists, but talks more about design than specifically tree and shade plans	None publicly available	Yes (38 yrs)	
Phoenix	Yes (released 2010)	According to shade plan, educational programs were actually eliminated. Does education through partnerships with ASU, Arbor Day Foundation, AZ Community Tree Council, etc	Has a structure created to facilitate future change-educate, preserve/protect/increase, and sustainable maintainable infrastructure	Yes (34 yrs)	
Flagstaff	No, but Coconino forest has guidelines (can't cut down live trees)	Coconino forest has education, but city does not	NAU has a campus tree advisory committee, and a tree campus plan, but no citywide efforts are publicly available.	Yes (12 yrs)	Urban tree plan is not as needed for walkability due to lower temperatures in city
Glendale	No, but public document available that analyzes 2002 tree status: https://www.fs.fed.us/psw/topics/urban_forestry/products/cufr579_GlendaleBCAFinal.pdf	Website has links to info about appropriate trees to plant and good watering guidelines		Yes (24 yrs)	
Gilbert	No, but RFQ went out in August 2020 for a "Shade and Streetscape Master Plan"	None- from experience, sustainability dept is very small and focuses on recycling	Because of RFQ, master plan will likely be created soon	No	
Avondale	No, but has a street tree master plan	None	None publicly available	Yes (9 yrs)	
Mesa	No	Lots of educational info available on site (https://www.mesaaz.gov/residents/sustainability/arbor-day?locale=en)	None publicly available	Yes (10 yrs)	

Yuma	Yes (https://www.yumaaz.gov/Home/ShowDocument?id=644)	The Yuma chapter of the Arizona Native Plant Society "promotes cultivating and planting native plants for wildlife habitat and has educated the public about the many values native plants bring to the landscape". Parks and rec sometimes offers tree classes, and in 2019 local arborist Frank Saldana taught "right tree, right place". Pecan Grove garden club also is planning to conduct tree classes at local Yuma schools.	Doubling canopy to 7% and doing an update in 10 yrs	Yes (12 yrs)	
Goodyear	No	None	Updating city landscaping standards, pursue grants, strategic tree plantings	No, but wants to be	https://www.yourvalley.net/stories/finding-the-right-shade-goodyear-plans-to-add-trees-to-shade-walkable-areas.123655 The Maricopa Association of Governments recommends 50% shade coverage as a minimum standard, or "safe" designation, for pedestrian routes and gathering spaces, 60% shade coverage for a "comfortable" standard and 75% for a "destination" standard for major gathering spaces or spaces with a lot of elderly pedestrians. The study, completed over the summer, of shade on a sample of corridors and paths throughout Goodyear, found developed areas within the study had only 16% shade coverage. Staff suggested the "comfortable" designation as a reasonable goal for the city. The United States Forest Service

					<u>recommends 30% shade coverage for arid regions within the U.S., such as Goodyear. The current coverage within the areas sampled is 10%</u>
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- Appendix 2: link to external-AZ forestry plan matrix
 - https://drive.google.com/file/d/15wsE610-_oNaYaGzrpBDd4UTv62z8VT2/view?usp=sharing

Cities	Designated forestry/shade plan?	Tree education strategies	Known next steps	Tree City USA?	Other relevant info
Peoria	See last tab				
Tucson	Yes- Tucson Million Trees	Tucson Clean and Beautiful's Trees for Tucson- a nonprofit that works closely with local government and businesses (https://tucsoncleandbeautiful.org/trees-for-tucson/)	Carrying out Million Tree Plan	Yes (28 yrs)	Has a manager for TMT (https://tucson.com/news/local/tucson-hires-manager-to-lead-its-tucson-million-trees-initiative/article_7c9e74a3-a879-5312-ba7b-fab31495c6d6.html). Tucson is third fastest warming city in US
San Antonio	Yes, https://www.sanantonio.gov/Portals/0/Files/Parks/Admin/Appendix%20A%20UrbanForestryAssessment.pdf?ver=2018-12-17-132018-510	Some tree education info/people to contact are listed on website https://www.sanantonio.gov/DSD/Constructing/Tree	Not many, but are combating Oak Wilt and provide trainings to get a Tree Maintenance License	Yes (5 yrs)	Has a tree rebate program for Green Shade plan. https://www.sanantonio.gov/sustainability/Community-Sustainability/Conservation/GreenShadeProgram
Austin*	Yes (est 2014)- https://austintexas.gov/sites/default/files/files/Parks/Forestry/AUFP_Final_DRAFT_01-07-14_No_Appendices.pdf	"The Austin Community Tree (ACT) program delivers free trees to low tree canopy neighborhoods in Austin. The addition of trees can cool daytime temperatures and reduce the "Urban Heat Island effect". TreeFolks is an NGO that does tree education workshops. Austin's tree information	Many- most revolve around updating tree plan to factor in public opinion changes, do benchmarking, and work towards urban forest vision "Austin's urban forest is a healthy and sustainable mix of trees, vegetation,	Yes (28 yrs)	2034 Urban Forest Vision; also have urban heat island reports and mitigation programs. Designated urban forester (Emily King)

Peoria Community Forestry

		center: https://austintexas.gov/departments/tree-information-center	and other components that comprise a contiguous and thriving ecosystem valued, protected, and cared for by the City and all of its citizens as an essential environmental, economic, and community asset."		
San Diego*	Yes (adopted 2017)- https://www.sandiego.gov/sites/default/files/final_adopted_urban_forestry_program_five_year_plan.pdf	https://www.treesandiego.org/	2035- want 35% canopy cover in city.	Yes (10 yrs)	Have conducted great citizen outreach surveys.
Portland	Not formally, but has comprehensive tree maintenance guides https://www.portland.gov/trees/about-urban-forestry	https://www.portlandoregon.gov/parks/60388 and https://www.portlandoregon.gov/trees/59505 and https://www.portland.gov/trees/tree-planting/tree-species-and-planting-lists	None	Yes (48 yrs)	
Albuquerque	in 2019 the mayor announced intent to renew the urban forest; https://www.cabq.gov/parksandrecreation/news/mayor-keller-announces-plans-to-restore-albuquerque-urban-forest	https://treenm.org/partners-and-resources/	Possibly a forestry plan?	yes (21 yrs)	Mainly runs under state forester; very little city-specific tree information

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