

# University of the District of Columbia Combined Research and Extension Plan of Work 2021-2025

**Status: Final**  
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## **I. Plan Overview**

### **1. Executive Summary**

#### Healthy Cities - Healthy People

The University of the District of Columbia (UDC) is an urban land-grant university that offers associate, baccalaureate, graduate, certificate, and community outreach programs to learners of all ages. The College of Agriculture, Urban Sustainability and Environmental Sciences (CAUSES) embodies the land-grant tradition of UDC. We offer cutting edge academic programs in environmental science, urban sustainability, water resources management, nutrition and dietetics, urban architecture and community planning. In the fall of 2019 inaugurated a new Doctoral Program in Urban Leadership and Entrepreneurship.

In addition, we offer a wide range of non-credit bearing community outreach programs in the tradition of the "cooperative extension" programs, a term that is not well known in the urban setting of Washington, DC. As a result, CAUSES refers to its community extension work as "community outreach" and "community education" programs that serve individuals and organizations in our community and beyond. Given the COVID-19 pandemic, we have transitioned most of our offerings to virtual or online classes.

With the inauguration of its pioneering Urban Food Hubs concept in 2014, the work of CAUSES has become more collaborative and interdisciplinary. We expect this trajectory to continue in 2021 and beyond. To date four Urban Food Hubs are in various stages of implementation and one on our Van Ness Campus fully completed. Our ultimate goal is to have at least one Urban Food Hub in each of the eight Wards of the District of Columbia.

The Urban Food Hubs clearly advance all of the NIFA objectives in an urban environment and provide a concrete focus of the CAUSES mission to "...offer research based academic and community outreach programs that improve the quality of life and economic opportunity for people and communities in the District of Columbia, the nation and the world."

#### Local Commitment - Global Reach

In CAUSES, the Community is our Classroom and our research and community education work is shaped by our commitment to be relevant to the needs of the District of Columbia and its residents and organizations. This commitment to relevance also extends to our academic programs and is expressed in the University's strategic plan, "The Equity Imperative," that sets a clear objective for the University to be a leader in experiential learning. This means that what we teach is steeped not only in sound theory, but also in the knowledge we draw from the community and region around us. We offer a wide range of research programs through our five land-grant centers. The Urban Food Hub is also built at our Agricultural Experiment Station (AES) farm in Beltsville Maryland, the 143-acre UDC Firebird Farm.

Yet urban populations are not likely to seek out our Urban Agriculture work at the UDC Firebird Farm, nor are they interested in urban agriculture in significant numbers. We, therefore, had to develop a conceptual framework that would meet people where they are, namely through their interest in nutrition, diet and health and in green infrastructure and sustainable development. These are our primary touch points for our urban populations and they have shaped our Urban Food Hubs concept, which brings the farm to the city through an integrated and comprehensive food systems model that consists of four components: (1) urban food production; (2) food preparation; (3) food distribution; and (4) closing the loop through food and water waste management.

### Knowledge for a Lifetime

We are deeply committed to being relevant to the residents of the District of Columbia. Given our three-pronged approach of teaching, research and community outreach, we seek to make a measurable, positive difference in the lives of people right where they live and work. As a result, our programs focus on improving economic conditions, social and cultural circumstances, and the health of people and their living environments. Yet our community-based programs are more than local. They also serve as models for relevant learning far beyond our region.

### Preparation for a Global Marketplace

CAUSES programs recognize that, like ecosystems, we are connected to people and places right here in our own neighborhoods and to those halfway around the world. Pollution travels, resources are not always consumed where they are generated, and job markets are increasingly global and knowledge based. Given these realities, we aspire to teach people to think in systems, work in diverse teams, and focus on connectivity and innovation. We apply these principles to all of our programs, including our Master's and Bachelor's degree programs, professional development certificates and community outreach and youth programs.

In March 2012, CAUSES restructured its Land-grant Programs into five integrated land-grant centers that merged AES and CES responsibilities to strengthen research based program offerings and to better serve students as well as community stakeholders, while addressing the priorities established by the National Institute of Food and Agriculture: climate change, food safety, global food security, childhood obesity, sustainable energy, and water safety and management.

The new program model for integrating research and extension is comprised of five Land-grant Centers: Center for Urban Agriculture and Gardening Education; Center for Nutrition, Diet, and Health, which includes the Institute of Gerontology; Center for 4-H and Youth Development; Center for Sustainable Development, which includes the Water Resources Research Institute; and Center for Architecture Innovation and Building Sciences with an Architecture Research Institute.

The Center for Nutrition, Diet and Health (CNDH) includes the following programs: Nutrition Education through the Expanded Food and Nutrition Education Program (EFNEP) and the Supplemental Nutrition Assistance Program and Education (SNAP-ED); Food Safety, Food Handlers Training and Certification; Food Demonstrations for Healthy Choices and Lifestyle; and Diet and Wellness Program. An Institute for Gerontology serving the elderly population of Washington DC is included in CNDH.

The Center for Urban Agriculture and Gardening Education encompasses those Land-grant programs of CAUSES that are focused on research and community education in urban food production (soil-based and soilless), master gardening and urban forestry in close alignment with related District agencies.

The Center for 4-H and Youth Development includes: 4-H clubs in DC Public and Charter Schools as well as community centers throughout the city; Summer Camp; LifeSmarts; and Operation Military Kids. The unit will also work with land-grant staff in the Center for Urban Agriculture Program to establish and maintain school gardens for elementary and middle schools in the District of Columbia.

The Center for Sustainable Development and Resilience focuses on economic, social, and environmental sustainability,

green entrepreneurship, small business development, green energy, water technology and green infrastructure.

The Center for Architecture Innovation and Building Science with its Architecture Research Institute supports the planning and design of the built environment to integrate new technologies in Urban Agriculture and Green Infrastructure.

All five Centers will also continue to pursue the objectives of the Sustainable DC Plan which is to make Washington DC the greenest, healthiest and most livable city in the United States. Planned programs include the following:

1) Climate Change. This program includes relevant research and extension education and will assess and monitor natural resources and changes in the urban environment with respect to climate changes. Over the next five years, we will expand the program to identify and solve soil, air, and water quality problems as a specific result of urban forestry, gardening, and aging infrastructures activities. Initiatives will include providing extension activities that impart knowledge, demonstrating techniques, and fostering stewardship as a means to reduce the city's carbon and water footprints. Efforts will focus on community education programs that highlight green technologies and infrastructures that improve water and energy conservation workshops, youth leadership, STEM and environmental stewardship activities, and food and crops recycling and composting initiatives.

2) Global Food Security and Eliminating Hunger. Food Security and Hunger is a critical issue that affects people around the globe, including the residents of the District of Columbia. Like most large cities, our nation's capital has an inner city population of underrepresented and underserved families and individuals. There are low income families in several wards in the city. Of the city's eight wards, Ward 8 is the most economically depressed area of the city. There are food deserts, neighborhoods within Wards 7 and 8 that do not have a food chain or market within a reasonable walking distance. Thus, families in these wards are less likely to obtain or replenish fresh fruits and vegetables than families living in more prominent areas of the city. The lack of healthy foods accessibility results in inadequate diets and poor nutrition as many individuals and families will purchase unhealthy foods from convenience stores and fast food restaurants located in their neighborhoods. We have embarked on a new urban food solution called the "Food Hub." This food system includes food production through aquaponics and hydroponics and bio-intensive nutrient dense crop production for healthy food choice and high in cellulose for bio-energy production. The food hub also includes a commercial kitchen for teaching food preparation, handling, safety and storage. Food distribution will encompass farmers markets and food trucks for accessibility and affordability in food desert areas. Food waste recycling and reuse for bio-energy production and composting closes the loop of the hub. Two 15 contact hour certificate program in Urban Agriculture "Soilless Systems" and Soil-Based Systems" will be provided quarterly to train the next generation of local entrepreneurial urban food producers. The UDC Firebird Farm in Beltsville MD will also serve as the buffer food hub with all aspects to this food system. We intend to install a food hub in each of the eight wards either directly or in collaboration with our local partners. We continue to build Food production and safety research and testing capacities at the Firebird Farm.

3) Health, Nutrition and Childhood Obesity Prevention. Obesity is one of the cause factors for chronic illnesses and conditions, i.e. hypertension, hypercholesterolemia, diabetes, cancer, and heart disease. The Agricultural Experiment Station is participating in a multi-state research project aimed to change the health trajectory for older adults. Most often children follow the food consumption patterns of their parents. Thus, it is imperative to extend proper diet and nutrition information to assist parents with proper meal planning and food preparation. Community nutrition education in support of the Supplemental Nutrition Assistance Program and Education (SNAP-ED) and Expanded Food and Nutrition Education Program (EFNEP) is delivered in our Center for Nutrition, Diet and Health (CNDH). CNDH also supports the second part of the food hub concept, food preparation, handling, packaging and storage for quality and safety purposes. Training and engaging low income families in nutritionally, sound food purchases and preparation practices along with healthy, urban life styles such as diet and exercise will serve as health preventative measures.

All programs, including those of the Center for 4-H and Youth Development, encompass a training component of the urban food hub concept to accomplish this task. The consumer education program, LifeSmarts, is specifically focused on increased knowledge for the next generation to make informed decisions.

4) Sustainable Energy: It is imperative that safe, reliable energy sources are generated so that the environment will be safe and sound for those of us who reside on earth now as well as for future generations. This program involves using

green technologies and infrastructures such as green roofs to conserve energy in buildings. Closing the loop of the food hub concept includes food waste recycling and reuse in production of sustainable bio-energy. Research to improve food and crop waste to bio-energy with an anaerobic digester for easily available and reliable production of sustainable renewable energy will be implemented at the UDC Firebird Farm. Two 30 KVA backup generators have already been install and capable of using bio-diesel fuel. Our research will be conducted with a focus the use of solar energy as an alternative reliable energy source for food production. The Triple yield research project being completed at the Firebird Farm will demonstrate the harvesting of energy, water and food to increase economic profitability and land valuation for small farm systems. Composting to grow soils, the use of renewable solar and wind energy to pump water for high tunnel farming irrigation is a model that will continue to be developed and tested as in support of a global food production system. we also anticipate partnering with PEPCO to install and assess an Ag Pod at one of our food hubs in the city.

5) Food Safety. The Center for Disease Control reports that there are an estimated 76 million people who contract food borne illness each year in the United States. As business continues to grow in the U.S., including establishments that prepare and serve foods, it is imperative that food handlers are appropriately trained and certified. The Center for Nutrition, Diet and Health provides training for food handlers in the District of Columbia. The program is designed to equip participants with low literacy food handlers training and certification with the following objectives: 1) to provide information and knowledge on the techniques to handle food; and 2) to decrease risk factors associated with food borne illness and to score a minimum of 70% on the post test and national examination to become certified as a food handler in DC. The commercial kitchen in the food hub concept will also be used for research to improve food safety while preparing, handling, packaging, storing and distributing foods.

The Water Resources Research Institute (WRI) in the CAUSES Center for Sustainable Development achieved certification through the National Environmental Laboratory Accreditation Center (NELAC) for testing metals in soil and water. CAUSES test results can be submitted as court evidence. We now seek to receive certification for pesticides and organics. CAUSES Programs are committed to our local community yet by modeling our commitment to local relevance, urban food security, water safety, food safety, nutritional health and alternative energy, our reach will be national and global.

6) Urban Families, Youth and Communities

Like most large cities, our nation's capital is dealing with a myriad of public concerns varying from education to housing to economic development. The Land Grant Programs are providing quality program that addresses issues related to sustainable youth, families, and communities in the District of Columbia. The Center for 4-H and Youth Development supports city's youth through leadership and development activities. 4-H program activities implemented through Community Resourcing and Volunteer Training will assist young people in developing knowledge, skills, and attitudes that will enable them to become self-directing, responsible, productive, and contributing members of society. Programs offered are The Advanced Youth Training for 4-H Volunteer Leaders as well as other community youth development program staff, 4-H Military-Kids, LifeSmarts Consumer Education, 4-H Living Interactive Family Education (4-H LIFE), 4-H STEM, 4-H Summer Camp, and The Health Rocks Program. These programs educate youth in arts and sciences, health and fitness, urban ag, technology, environmental science, math, sewing and fashion design, cooking and healthy eating and a host of other subject areas while encouraging fellowship and service opportunities.

**2. FTE Estimates**

Year	1862 Extension	1862 Research
2021	14.0	14.0
2022	14.0	14.0

2023	15.0	15.0
2024	15.0	15.0
2025	16.0	15.0

**II. Merit / Peer Review Process**

The Merit Review Process that will be employed during the 5-Year POW Cycle will include the following:

Internal University Panel

External University Panel

External Non-University Panel

Expert Peer Review

**Brief Explanation**

The Associate Dean for Land-grant Programs and each Center Director will review the progress of each Center's program to ensure that expected outputs and outcomes are accomplished for maximum impact. Productivity and time and effort reports will be completed by program staff and assessed by a Program Review and Assessment Team. Merit Peer Review of all programs will be implemented before approval and will include representatives from Academic Departments, Local Government Agencies and Public and Private Organizations. Our Merit Peer Review Committee is comprised of at least five (5) members chosen from the internal university, external university, and external non-university to review new research/extension projects and activities. Based on stakeholders input, this committee will review the projects and activities to determine if they address our local urban needs and concerns and overall feasibility of conducting projects and activities. The reviewers will assess program projects and activities per the criteria listed below:

1. Quality of proposed programs and activities
2. Feasibility of accomplishing the goals
3. Scientific and technological understanding of proposed integrated research/extension projects
4. Relevance in addressing local urban needs
5. Familiarity with work of others related to the proposal
6. Student participation
7. Inclusion of underrepresented and/or underserved individuals, groups, or communities
8. Project Inputs
9. Outcomes and Impacts

**III. Stakeholder Input**

**1. Actions to Seek**

Actions taken to seek stakeholder input that encourages their participation

Use of media to announce public meetings and listening sessions

Targeted invitation to traditional stakeholder groups  
Targeted invitation to traditional stakeholder individuals  
Targeted invitation to selected individuals from general public  
Survey of traditional stakeholder groups  
Survey of traditional stakeholder individuals  
Survey of the general public  
Other (distribution lists; website)

#### Brief explanation

Considering those who have a vested interest in the District of Columbia, we have developed a comprehensive list of stakeholders that we will actively seek for participation to include: residents, university students, local businesses and organizations, the public school system, community groups, youth and faith-based organizations, and local government agencies. Several mechanisms are used to generate participation:

- 1) Press Releases: to share information about program highlights and announce special events and activities to the public
- 2) Invitations: to invite specific groups (internal and external) to events, activities, and seminars related to urban issues, research, and outreach
- 3) Surveys: designed to ascertain the interests and concerns of the general public, stakeholder groups, and individuals as it relates to urban issues, research and extension projects and programs
- 4) Website: to share information and announce workshops and seminars
- 5) Distribution Lists: to share information and announce community events, meetings, and special activities

An important outreach vehicle is also the CAUSES TV show hosted by CAUSES Dean and Director of Land-Grant Programs. The show airs in the UDC Cable network as well as on YouTube and is structured around interview type conversations that cover topics relevant to the work of the five land-grant centers as well as the CAUSES academic programs.

## **2. Methods to Identify**

Method to identify individuals and groups

Use Advisory Committees  
Use Internal Focus Groups  
Use External Focus Groups  
Open Listening Sessions

## Use Surveys

Other (workshops, seminars, Quality of Life Day Event)

### Brief explanation

1) Survey of the general public through the University's website: As many DC residents will visit the University System of the District of Columbia's website to seek information about the Flagship University, School of Law, and Community College, an on-line survey will serve as a viable mechanism to attract site visitors and encourage them to participate, thereby providing valuable input. Posting of the survey remains a work in progress. Various marketing efforts are underway and we expect to have a mechanism in place for the survey soon.

2) Workshops and Seminars: We organize and host several research seminars that are open to the public. These present an excellent opportunity for stakeholders to hear about the integrated research/extension projects being conducted to address local and national issues and to share results with an open discussion. Workshops and demonstration trainings are provided in a variety of areas during the year as technical assistance to increase awareness and knowledge. Stakeholder Input Surveys are also distributed and collected at these events.

3) Ward Advisory Council is a new council of residents from each ward that work with programs in each center. The members will support our Community listening sessions and neighborhood meetings that are conducted regularly by CAUSES land-grant staff members as well as the Dean of CAUSES. The sessions are expected to continue to focus largely on the Urban Food Hubs and their implementation in various neighborhoods across the District. These sessions provide the opportunity to share capacity building and educational efforts with stakeholders, find out what neighborhoods needs and concerns are, and to disseminate information.

4) Advisory Committee: The Land-grant Programs Advisory Board meets twice a year and provides advice and recommendations on matters relating to urban issues.

5) CAUSES hosts monthly brownbag lunch meetings and bi-weekly research collaboration meetings to facilitate continuing education and collaboration efforts.

### **3. Methods to Collect**

Methods for collecting Stakeholder Input

Meeting with traditional Stakeholder groups

Survey of traditional Stakeholder groups

Meeting with traditional Stakeholder individuals

Survey of traditional Stakeholder individuals

Meeting with invited selected individuals from the general public

### Brief explanation

The Land-grant Programs continue to disseminate surveys to residents to determine satisfaction with the programs offered and solicit input for future program development and research needs. We have revised our surveys to focus more specifically on critical issues in the District of Columbia. We are not only distributing the survey manually but are working with University technicians to also make it accessible through our University's website. Posting of the survey remains a work in progress. Input from stakeholders is also provided by informal contact through e-mails, telephone, interviews and

neighborhood meetings as well as through community forums and events. The established Advisory Committee, diverse in specialization and experience, will be instrumental in helping us to assess the needs/priorities of DC residents. We will continue to strive to provide activities that are stakeholder customer driven.

#### **4. How Considered**

A statement of how the input will be considered

To Identify Emerging Issues

Redirect Extension Programs

Redirect Research Programs

To Set Priorities

Brief explanation

Stakeholders input through the Ward Advisory Council and Community Listening Sessions will be considered in the following ways:

1. To provide insight into identifying critical research and extension needs of the residents of the District of Columbia;
2. To assist and guide in developing the Plan of Work;
3. To assist and guide in reviewing impacts and outcome reports;
4. To assist and guide in developing new strategies based on continuous assessment of impacts and outcomes

Stakeholder information will help to develop a more comprehensive scope of work, setting priorities and redirecting research and extension programs and activities that will ultimately benefit the residents of the District of Columbia. Stakeholders will also be able to provide comments regarding the effectiveness in delivery of programs and activities.

### **IV. Critical Issues**

#### **1 Climate Change**

##### **Description:**

The natural resources in the District of Columbia are in a totally urban environment with urban forestry and gardening. Soil, air and water quality encompass the three environmental factors that affect the quality of life of the residents with water quality being most significant. Providing the relevant research and extension education that provide a balance among growing local food, maintaining urban forestry, and the impact of gentrification as a result of antiquated storm and waste water infrastructures coupled with emerging concerns of environmental degradation has become a significant challenge. This program will continuously assess and monitor natural resources and changes in the urban environment of the District of Columbia. Research activities and extension education in green infrastructures for youth and adults will be implemented to determine new mechanisms to maintain a healthy and friendly ecosystem while educating the residents to appreciate, adopt and maintain these changes.

**Term:** Long

##### **Science Emphasis Areas**

Agroclimate Science

Bioeconomy, Bioenergy, and Bioproducts

Education and Multicultural Alliances



## 2 Global Food Security and Hunger

### Description:

With 80% of the U.S. population and over 50% of the world's population now living in urban areas, food security cannot be addressed without urban solutions. As one of the fastest growing cities in the US, Washington DC is also the ideal location to address food security as a key solution to economic, social and environmental sustainability. CAUSES is now galvanizing its efforts around the idea of Urban Food Hubs intended to form a network of food security islands to improve food security by creating a resilient network of food production, food preparation, food marketing and food waste management. These food hub sites in food desert communities will provide nutrient dense food readily available, affordable and accessible while creating jobs and spinning off small innovative businesses to improve environmental, social and economic conditions in the District of Columbia. We will continue to build research and outreach capacities in both soilless and soil based production systems for small urban farmers. This will require new technologies and specialty small field equipment for no till conservation.

**Term:** Long

### Science Emphasis Areas

Agroclimate Science  
Bioeconomy, Bioenergy, and Bioproducts  
Education and Multicultural Alliances  
Environmental Systems  
Food Safety  
Human Nutrition  
Sustainable Agricultural Production Systems  
Youth Development

## 3 Health, Nutrition and Childhood Obesity Prevention

### Description:

The Center for Nutrition Diet and Health will provide quality research and extension programs that address childhood and adult obesity and major health issues for District of Columbia residents. Programs such as Grocery Store Tours, Fruit and Vegetable Prescription Program, Farmers' Market Nutrition Education Program and Food Safety Certification assist recipients with making healthy urban lifestyle choices and are designed to improve the food handling safety and choices of residents as an effort to aid in the reduction of overweight and obesity among low income families and individuals.

**Term:** Long

### Science Emphasis Areas

Education and Multicultural Alliances  
Family & Consumer Sciences  
Food Safety  
Human Nutrition  
Youth Development

## 4 Sustainable Energy

### Description:

It is imperative that safe, reliable energy sources are generated so that the environment will be healthy for those of us who reside on earth now as well as for future generations. This program involves using green technologies and infrastructures such as green roofs to conserve energy in buildings. Closing the loop of the food hub concept includes food waste recycling and reuse in production of sustainable bio-energy, Research to improve food and

crop waste to bio-energy with an anaerobic digester for easily available and reliable production of sustainable renewable energy will be implemented at the Firebird Research Farm. Two 30 KVA backup generators have already been installed and capable of using bio-diesel fuel. The Triple yield research project will demonstrate the harvesting of energy, water and food to increase economic profitability and land valuation for small farm systems. Composting to grow soils, the use of renewable solar energy to pump ground water for high tunnel controlled environment farming is a model for future urban agriculture in the global food production system.

**Term:** Long

**Science Emphasis Areas**

Agroclimate Science  
Bioeconomy, Bioenergy, and Bioproducts  
Education and Multicultural Alliances  
Environmental Systems  
Food Safety  
Sustainable Agricultural Production Systems  
Youth Development

**5 Food Safety**

**Description:**

The safety of the foods that we ingest is paramount to our health and quality of life. The Centers for Disease Control and Prevention estimates that every year about 76 million people in the United States become ill from pathogens in food and that about 5,000 of this number die as a result. In particular, young children, expectant mothers and their unborn children and older adults are at the greatest risk. Contamination can occur during the growth, harvesting, processing, storage, and shipping of food. Yet, the poisoning of foods also can occur during food preparation in restaurants or in our home kitchens. Our Food Safety and Handlers Training and Certification Program provides training and outreach for residents, small commercial businesses while promoting personal responsibility for practicing food safety. Food Handler education is also offered to small non-commercial service agencies in the city to increase the food handler's compliance with food safety principles, hazard analysis, and critical control points. Food safety labs are being built to test soil, water and crop safety in the fields and also during processing for value addition and reuse of food waste.

**Term:** Long

**Science Emphasis Areas**

Education and Multicultural Alliances  
Family & Consumer Sciences  
Food Safety  
Human Nutrition  
Sustainable Agricultural Production Systems  
Youth Development

**6 Urban Families, Youth, and Communities**

**Description:**

Like most large cities, our nation's capital is dealing with a myriad of public concerns varying from education to housing to economic development. The Land Grant Programs are providing quality program that addresses issues related to sustainable youth, families, and communities in the District of Columbia. The 4-H Youth Development Programs support city's youth through leadership and development activities. 4-H program activities implemented through Community Resourcing and Volunteer Training will assist young people in developing knowledge, skills, and attitudes that will enable them to become self-directing, responsible, productive, and contributing members of society. Programs offered are The Advanced Youth Training for 4-H Volunteer Leaders as well as other community youth development program staff, 4-H School Garden Program, 4-H Healthy Living Program and 4-H Summer Virtual DATA STEAM Camp. These programs educate youth in arts

and sciences, health and fitness, urban ag, technology, environmental science, math, cooking and healthy eating and a host of other subject areas while encouraging fellowship and service opportunities.

**Term:** Long

**Science Emphasis Areas**

Agroclimate Science  
Bioeconomy, Bioenergy, and Bioproducts  
Education and Multicultural Alliances  
Environmental Systems  
Family & Consumer Sciences  
Food Safety  
Human Nutrition  
Sustainable Agricultural Production Systems  
Youth Development