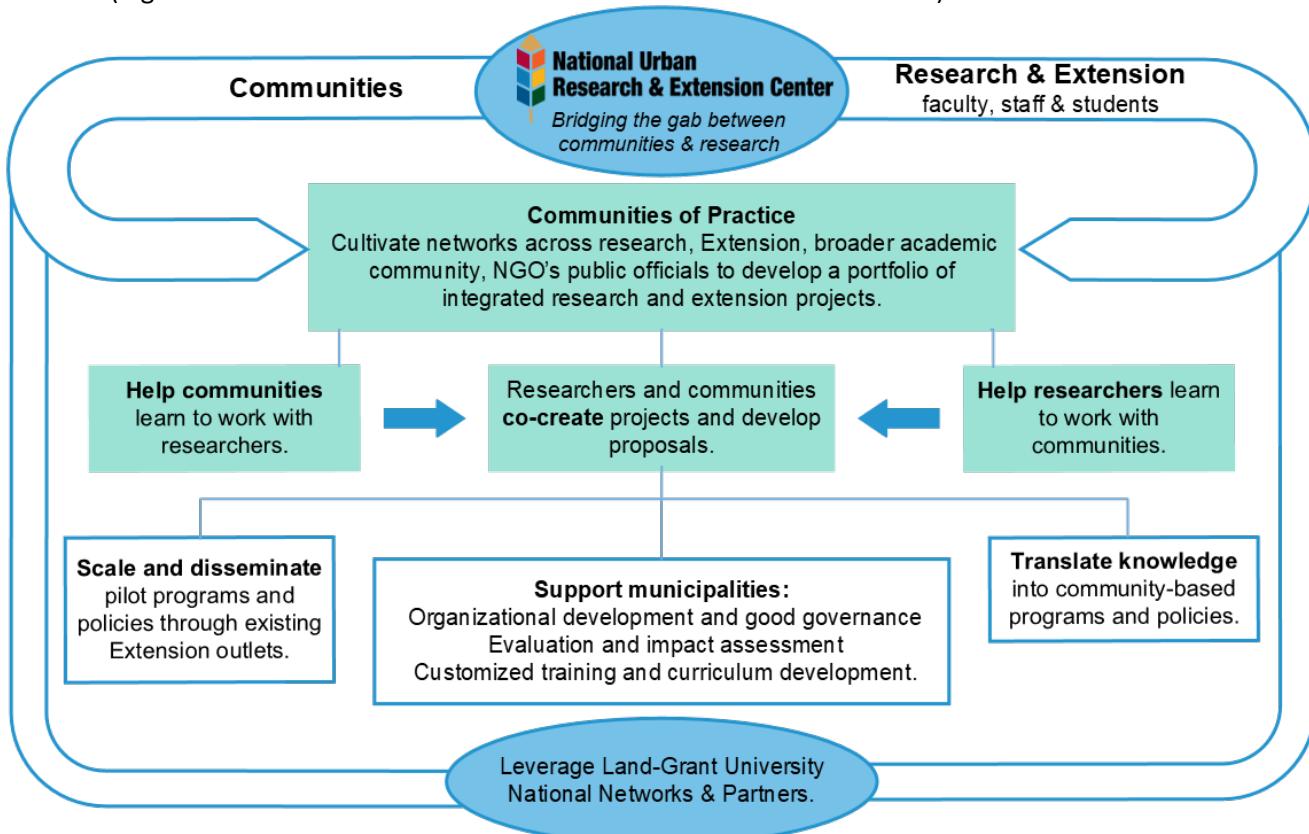


BUILDING COLLABORATIVE RESEARCH AND EXTENSION NETWORKS TO ADVANCE THE APPLICATION OF SCIENCE WITH URBAN COMMUNITIES

The land-grant university (LGU) system was developed at a time when most U.S. residents lived in rural areas. Today, over 100 years since the passage of the 1887 Hatch and 1914 Smith Lever Acts, an overwhelming majority of our population resides in and around metropolitan centers. Despite population shifts post-pandemic and changes in how the U.S. Census Bureau defines urban areas, over 80% of the nation's population now lives in urban areas, an increase of 6.4% from 2010 to 2020 [1]. Our demographics, too, have shifted to an older population [2] with a higher degree of ethnic and racial diversity [3] [4] [5]. While the mission of the LGU has not changed since its founding, the 21st century nation we serve has. LGU's need to adapt and evolve the research questions and organizational approach of our research and Extension units to address the needs of our highly urbanized country.

Communities identify issues and needs and search for solutions; researchers develop hypotheses and test for significance; however, the two are not always connected. The **National Urban Research & Extension Center (NUREC)** bridges the gap between community and research by applying the unparalleled power and reach of the land-grant university system, rooted in Extension's community-centered approach, to address our nation's urban challenges. (see Figure). NUREC is an issue and innovation leader for both the LGU system and external stakeholders – a place where new knowledge is generated; existing knowledge is applied to novel or place-based issues; and policies and programs are developed, piloted, refined, expanded, evaluated, and updated for local to national impact. NUREC will accomplish this in collaboration with external stakeholders and by leveraging strong partnerships with existing Extension organizations (e.g. National Urban Extension Leaders and the Extension Foundation).



[1] U.S. Census Bureau, "Nation's Urban and Rural Populations Shift Following 2020 Census," U.S. Census Bureau, 29 Dec 2022. [2] U.S. Census Bureau Public Information Office, "U.S. Census Bureau projections show a slower growing, older, more diverse nation a half century from now," 2012. [3] C. R. Farrell and B. A. Lee, "Racial diversity and change in metropolitan neighborhoods," *Social Science Research*, vol. 40, no. 4, pp. 1108-1123, 2011. [4] S. Graham, A. Muniksma and J. Juvonen, "Psychosocial benefits of cross ethnic friendships in urban middle schools," *Child Development*, vol. 85, no. 2, pp. 469-483, 2014. [5] F. Meissner and S. Vertovec, "Comparing super-diversity," *Ethnic and Racial Studies*, vol. 38, no. 4, pp. 541-555, 2015.

NUREC Projects 2016-2025

Integrating Urban Agriculture and Architectural Design through Research (BIA) - Building-integrated agriculture (rooftop farming, green facades, and controlled environment agriculture) may increase our ability to grow food in urban spaces. Despite the potential benefits, there are currently no working examples of commercial BIA food production in the US due, in part, to a lack of qualified experts and a research base. This multi-year USDA funded project aims to identify critical challenges, barriers, benefits, and opportunities; and create a network of professionals to further develop BIA through academic training, applied research, Extension programs, and industry engagement. (NUREC members engaged: OSU¹, WSU)

Transforming Rural-Urban Systems: Trajectories for Sustainability in the Intermountain West (TN)

West (TN) - An NSF Sustainable Regional Systems (SRS) Tier 1 Research Network project, TN is a six-year transdisciplinary research effort representing diverse communities, sectors, disciplines, and backgrounds aimed at improving regional sustainability. NUREC's participation resulted from our leadership of the 2019 Next Urban Giants workshop and our ability to bring Extension's community-based applied research and Extension model. (NUREC members engaged: CSU, UAZ, UFL, WSU)

New Technologies for Agricultural Extension (NTAE) - Funded by a grant from the Extension Foundation (via the University of New Hampshire via the USDA), this project supported our transition from WCMER into NUREC. Activities included: developing a business plan; hosting a by-invitation summit co-sponsored by the National League of Cities (NLC) with research faculty, Extension personal, NLC representatives, and officials from major US cities and federal agencies to build core elements of NUREC's focused activities; and developing a National Research Support project application for Hatch, Off-the top funding. (NUREC members engaged: UAZ, UC, tOSU², MSU, WSU)

Knowledge and Practice Networks (KPN's) - The NUREC/NLC co-creation summit and the BIA project's Grow[in] On [In]tegrated Agriculture Summit provided the foundation for the creation of NUREC's 3 Knowledge and Practice Networks (KPNs): Urban Agriculture & Food Systems, Health & Wellness, and the Built Environment. These KPNs will serve as the platform to expand the number of Extension professionals, researchers, representatives from local, state and federal governments, community-based organizations, and industry representatives who actively engage in urban issues and partner with Extension and land-grant universities. The Built Environment KPN is creating a cohort technical assistance model with the National League of Cities and has initiated national 5-part webinar series, Built Environment Rx. (NUREC members participating: UAZ, UC, CSU, CU, UF, UI, UM, OSU, WSU)

Urban, Indoor and Emerging Agriculture - During May 2020, NUREC, in conjunction with the National Urban Extension Leaders (NUEL) and several urban county Farm Bureau organizations, responded to a request for stakeholder input from NIFA about the Urban, Indoor and other Emerging Agricultural Production Research, Education and Extension Initiative. Our goal was to solicit, collect, and organize responses from a broad group of stakeholders to the two questions posed by NIFA. Following this effort, NUREC initiated and successfully established a Western Development Committee (WDC53) which led to an Extension and Research Activity (WERA 1053). NUREC is a member of

¹ Oregon State University

² The Ohio State University

ECOP's Sustainable Urban Food Systems Program Action Team (PAT). (NUREC members engaged: MSU, WSU)

The Next Urban Giants – Building Resilience and Equity into Growing Megapolitan Regions by Greening the Urban Human-Natural System - Funded by a grant from the NSF, this July 2019

workshop convened 40 invited experts from an array of disciplines and sectors. It identified key challenges facing megapolitan regions, their adjacent communities and natural spaces, explored approaches used to address these challenges, and identified priority areas for a research network to improve urban systems sustainability. End products included a white paper to NSF, a "Green Print" for practitioners to implement material from the conference into their daily work, and a scope of work to inform future education and outreach products. (NUREC members engaged: UC, NMSU, OSU, WSU)

Well-Connected Communities - This partnership between Cooperative Extension System (CES) and the Robert Wood Johnson Foundation was established to create a *Culture of Health* across 1,000 communities in the U.S. over 10 years. NUREC Director, Brad Gaolach, helped plan the initiative and NUREC was awarded a grant to support professional development needs of Extension and community-based participants for the first phase of the project. To respond to the RFA for this project we established a mechanism – Request for Expression of Interest (RFEI) – to rapidly identify topic-related expertise and interest amongst member institutions. (NUREC members engaged: UAF, UC, CSU, WSU)

Professional Development Projects

National Urban Extension Conference - NUREC was instrumental in bringing the 2019 National Urban Extension Conference (NUEC) to the West. Co-hosted by WSU and chaired by NUREC Director Brad Gaolach, NUEC convened over 380 attendees from 36 states to highlight innovative urban programming and Extension's opportunity to support the university-level mission of our LGU's. It featured 129 presentations (including 42 posters), 10 mobile learning workshops across Seattle, and initiated an interactive series of "Leading Edge Dialogues", which is now a regular feature of the conference. (NUREC members engaged: All. Many faculty and staff had key roles on the planning team.)

Urban Professional Development Summit - Held in conjunction with the 2019 JCEP Leadership Conference, this by-invitation summit built upon NUEL's National Framework for Urban Extension by bringing together key individuals working in professional development from JCEP membership organizations, ECOP regions, NUEL, Extension Foundation, and Journal of Extension to leverage national Extension network strengths. (NUREC members engaged: CSU, UF, tOSU, MSU, WSU)

Urban Green Infrastructure (UGI) Summit - UGI has a role in addressing flooding, storm-water management, air and water quality, urban heat islands, public health, and many other issues. NUREC hosted the 2018 summit to connect researchers with city and county personnel to present research and best practices, and to build a collaborative network to develop grant proposals and applied research projects. (NUREC members engaged: MSU, NMSU, OSU, WSU. NSF proposals also included tOSU, UNR)

Extension as Urban Policy Advisors - NUREC hosted workshops in Seattle (Jan. 2015) and, by popular demand, in Sacramento (Dec. 2015) drawing university and community experts to learn about appropriate and effective policy work. Ohio State University later used this model for developing the capacity of their own staff and partners. (NUREC members engaged: UAF, UC, CSU, UI, OSU, WSU)

Webinars - NUREC produced 13 webinars on topics from successful metropolitan Extension models to competency development for urban Extension professionals. Over 380 Extension professionals from 43 different states attended the live presentations, and the archived webinars on the NUREC website and have received over 900 views. (NUREC members presenting: CSU, UF, MSU, tOSU, OSU, WSU)

NUREC Fellows 2016-2025

NUREC established Applied Research Deep Dives to spur innovation, address complex issues facing metropolitan areas, and advance urban Extension programs and professionals while providing opportunities for member institution faculty and staff to conduct applied research and lead multi-state or national projects. In 2021, we expanded our Deep Dive program to 3 types of fellowships: traditional Deep Dives, urban graduate student, and urban faculty sabbaticals.

Since 2019, NUREC has awarded over **\$125,000** in fellowships to the following member institution faculty and graduate students. You can read more about their work at: <https://nurec.extension.org/about-nurec/nurec-fellows/>

Joan Wu (WSU, 2025) Joan is expanding previous research to improve the Hydrological Sensitivity Indexing (HSI) approach to optimize GSI placement to reduce urban runoff and protect water quality.

Elyse Blondell (2025) (NATURA Fellow) Elyse is studying nature-based solutions for urban resilience and developing a conceptual diagram linking urban ecosystems, green infrastructure, and ecosystem services to inform planning strategies.

Prabesh Khanal (WSU, 2024) (Graduate Fellow) Prabesh studied the impact of urbanization on peri-urban agricultural soil properties and presented it at the 2024 National Urban Extension Conference.

Steven Worker and Fe Moncloa (UC, 2023-2024) Steven and Fe developed a curriculum that uses identity and cultural heritage to help young people strengthen their computational thinking abilities, computer science attitudes, and aspirations for future study and careers in computer science and STEM.

Doug Collins (WSU, 2023) (Faculty Sabbatical) Doug characterized soil development and nutrient and energy flows in urban agricultural soils in Medellin, Columbia; Chicago, IL; and Seattle, WA.

Lea Wilson (WSU, 2023) (Graduate Fellow) Lea studied the City of Portland, OR's [Treebate Program](#) and explored whether or not it incentivizes a more equitable, climate-ready urban watershed. She presented her work at the 2024 National Urban Extension Conference.

Ramona Madhosingh-Hector and Alyssa Bowers (UF, 2022-2023) Ramona and Alyssa are developing an Urban Extension Toolkit for all Extension professionals in metropolitan areas and across LGUs. The toolkit will provide ready-to-use training and a support system with an equity lens.

Jordan Jobe and Todd Murray (WSU, 2022-2023) Jordan and Todd researched how agricultural experiment stations can adapt to continued urbanization, address the needs of agricultural stakeholders, and understand how the land-grant mission can continue (or adapt) in the peri-urban west.

Sabrina Drill (UC, 2022) Sabrina's project was to develop a framework to increase national capacity to support resilience in cities by leveraging the Cooperative Extension network.

Julie Jesmer (WSU, 2022) (Graduate Fellow) Julie studied the history of farms and gardens at mental health institutions and provided an in-depth exploration of the New Mexico Behavioral Health

Institute Farm Program. She presented her work, which included opportunities for collaboration with Extension, at the 2024 National Urban Extension Conference.

Ramona Madhosingh-Hector (UF, 2020-21) Ramona addressed urban Extension professional development by focusing on individual competencies and needs, with an emphasis on coordinating with other Extension organizations supporting professional development.

Jeantyl Norze (UNR, 2021) Jeantyl conducted research on current, successful, and replicable system approaches for urban Extension professionals to attain career advancement within the academic system.

Tyler Augst, Craig Carpenter, and David Ivan (MSU, 2020-2021) Tyler, Craig, and David developed a position paper on affordable housing, focusing on first and second ring suburban cities and smaller, growing urban centers. Their paper serves as the foundation for determining future opportunities for Extension to help metropolitan leaders establish effective housing policy.

Nigel Pickering (WSU, 2020) Nigel initiated connections with potential urban green infrastructure national partners to develop a research network and created durable products from the 2018 Urban Green Infrastructure Summit.

Patricia Townsend (WSU, 2018-2019) Patricia disseminated results of the Urban Green Infrastructure Summit in 2018 through an award-winning poster at a national summit, helped procure NSF funding to plan and host The Next Urban Giants summit in 2019 which produced three scholarly products, and began development of a National Science Foundation Research Coordination Network proposal.

Julie Fox (tOSU¹, 2017 and 2019) Julie's work focused on professional development targeting the necessary competencies for urban extension professionals. She developed a training program and three scholarly publications related to this work. In 2019 she led an Urban Extension Professional Development Summit to collectively address core competencies and identify a series of next steps toward achieving a collective urban Extension professional development system.

Jody Norman (CSU, 2017) Jody conducted a review and meta-analysis of the NUREC Promising Practices Data Base, created by the first NUREC Applied Research Fellow in 2016, for best or promising practices of how Extension professionals are engaged in policy work.

Dayna Emmons and Rebecca Sero (WSU, 2017) Dayna conducted a comprehensive literature review to determine what, if any, quantitative metrics are being used to evaluate Extension activities in metropolitan communities. Together, Dayna and Rebecca helped establish and conduct elements of NUREC's three-pronged evaluation system.

Marie Ruemenapp (MSU, 2016) As the first NUREC Applied Research Fellow, Marie created the WCMER Promising Practices Data Base through an extensive search of existing published literature relevant to metropolitan extension.

An overview of the NUREC fellowship program is at <https://nurec.extension.org/initiatives/fellowships/>.

Information about individual NUREC fellows and their products is at <https://nurec.extension.org/about-nurec/nurec-fellows/>.

¹ The Ohio State University