Background of the ATIP Foundation

The Agricultural Technology Innovation Partnership (ATIP) Foundation was established in June 2011 as a not-for-profit 501(c)(3) LLC facilitator, bringing together USDA's nine federal partnership intermediaries (technology-based economic development organizations geographically distributed across the U.S.) to build coordination among and between USDA's intramural research program, led by the Agricultural Research Service (ARS) and extramural research program, led by the National Institute for Food and Agriculture (NIFA) and the nation's agricultural industry[i]. The Foundation receives "initiative" requests from USDA, but also brings issues and requests from the agriculture sector to ARS and USDA.

The Foundation focuses on enabling collaboration around seven critical activities: (1) Expedite the transition of USDA technologies from USDA labs and research institutes into the commercial sector; (2) Increase the use of agriculture technology discoveries that meet the needs of emerging market; (3) Seek funding for research, training, and product development to support the technology needs of the Agriculture industry and efforts to adopt and commercialize new technologies and research outcomes; (4) Develop industry access to utilize USDA research and research facilities, as well as other USDA funded research; (5) Create sustainable communities by promoting regional innovation clusters, supported by USDA research outcomes; (6) Host regional events co-sponsored with USDA, showcasing research outcomes and facilitating their adoption; and (7) Provide for the development of the skilled workers needed to sustain the growth of the industry.

2013-2023 Activities and Accomplishments of the Foundation[ii]

In 2013-2015, the Foundation developed two public-private partnerships (PPP) at the request of USDA. "Resilient Economic Agricultural Practices" (REAP) was established 2012-2014 with corporate and NGO affiliates (Monsanto, DuPont/ Pioneer, National Corn Growers Association, National Wildlife Foundation, New Holland Agriculture, POET Advanced Biofuels) in support of ARS field research in the Midwest. The second PPP was developed in 2014-2015 in partnership with the International Life Sciences Institute (ILSI) Research Foundation to assist ARS in creating a "Branded Food Products Nutritional Database," involving some ATIP Foundation members (CIFT, CFI, WSRC, TEDCO). The PPP was dissolved in late fall 2015 with the successful beta test with data provided by food giants such as Campbell Soup Company; Cargill, Incorporated; ConAgra Foods, Inc.; General Mills Inc.; and Red Gold.

In 2016, the Biomass Research and Development Board (BR&D Board)[iii], with funding from USDA (Rural Development) and the Department of Energy (DOE), engaged the ATIP Foundation to develop and co-host with a coordinating entity, a series of five invitation-only regional Bioeconomy Forums to garner input from a broad range of stakeholders on the "Challenges & Opportunities in Advancing the Bioeconomy." Two hundred twenty three persons participated in the forums convened in (1)the Southeast with the Georgia Institute of Technology as co-host, September 16, Renewable Bioproducts

Institute, Atlanta, GA; (2) in the Southwest with the Mineral Wells Chamber of Commerce, Mineral Wells, TX, September 29: Holiday Hills Country Club, Mineral Wells,TX; (3) in the Pacific Northwest with Washington State University, October 3, Sea-Tac Conference Center, Sea-Tac airport; (4) in the Northeast with The University of Maine, October 18, Orono, and (5) in the Midwest with The Ohio State University, November 15, Schisler Conference Center, Wooster, OH. A final report was submitted to the BR&D Board in December 2016 and was revised and finalized in February 2017 and distributed to all attendees of the forums. These reports are also available HERE, on the Foundation's website.

The ATIP Foundation was a named collaborator on a USDA National Institute for Food and Agriculture (USDA NIFA) grant issued in 2012. This 5-year research grant involved 22 ARS scientists and their Land Grant university partners. The role of the Foundation was reserved for the final year of the grant. In 2017, the ATIP Foundation orchestrated three regional invitation- only forums to seek stakeholder input on the challenges and opportunities for adoption and commercialization of research results on converting oilseeds to hydrotreated renewable jet fuel. The purpose was to determine a path forward that would support broad scale development of a sustainable alternative fuel industry; the ultimate goal being to promote rural economic development resulting in job opportunities along the supply chain from crop to jet fuel. One hundred twenty-seven persons participated in the forums convened in (1) Richland, WA, June 6; co-host Washington State University; (2) Fargo, ND, June 13; ND Department of Commerce and North Dakota State University, and (3)Wichita, KS, July 11; Wichita State University and Kansas State University. The final report was issued December 18, 2017, to all attendees of the three forums, as well as to project managers at USDA NIFA. The final report, as well as all participants' comments (non-attribute) are available on the Foundation website.

ATIP Foundation Initiative: "Advancing the Bioeconomy" USDA Rural Development Projects Conducted in CA (eight central valley counties), OH (nine northwest counties), and TX (four north central counties)

Beginning in 2018, ATIP was asked by USDA, under a Federal Partnership Agreement, to establish one or more replicable models capable of establishing the bioeconomy in rural regions throughout the United States.

These domostration projects were conducted in three states on a regional basis, utilizing a replicable model developed by the ATIP Foundation, premised on the industry-cluster model developed by Michael Porter at Harvard University in the mid-1980s. The ATIP Model is further premised on input gleaned from the eight forums hosted by the Foundation in 2016–2017 (described above) in partnership with the BR&D Board. These three projects were funded by USDA Rural Business Development Grants awarded and administered in each of the states.

In each, the Foundation engaged local, regional, and state leaders from six sectors identified as primary stakeholders --- all vital to the success of the Initiatives. Sectors include (1) economic & workforce development; (2) academia; (3) municipal, county, regional and state elected & appointed

officials; (4) financial services; (5) business & industry; and (6) the supply chain, from biomass source to end users. The principal goal of each project was to develop, with assistance from these sectors, a geospatial inventory of biomass (wastes) in the region that could be repurposed for bioenergy production and/or creation of valuable co-products. Inventories include animal wastes, food wastes, municipal wastes, sewage sludge, woody biomass, etc. Additionally, geospatial inventories were created of service providers who could support the bioeconomy in each region. All of these are displayed as separate "layers" in the GIS database.

ArcGIS Pro was used for all projects, and these databases include both publicly available data, as well as proprietary information. Animal waste calculations were made with our specific algorithms to identify tons per farm per day. These detailed databases are suitable for working with industry to calculate optimal locations for facilities to capitalize on biomass sources; such activities would be conducted under a nondisclosure agreement executed with the ATIP Foundation.

Additionally, the Foundation also created publicly accessible ArcGIS Webmap versions of the databases (2019-2020) that do not include proprietary or confidential information. These can be accessed, and each layer browsed by clicking on the URLs below:

CA: https://arcgis.com/apps/webappviewer/index.html?id=ca5799270e4b4fe68ef7c57fcd1d861c

OH: https://arcgis.com/apps/webappviewer/index.html?id=8861b925efcc47c2b6bc448d76ec75b0

TX: https://arcgis.com/apps/webappviewer/index.html?id=e4e4ae3e65304d3593a03819f3915ece

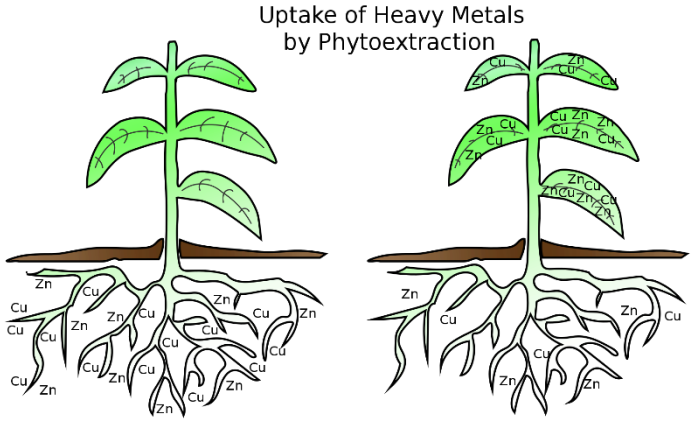
This work began in CA and OH in 2019. Also in 2022, the Foundation initiated its replicable model in the Commonwealth of Virgina, focusing on the southwestern 4 counties (Appalachian Plateau) and the potential to convert forest hardwood residues to biofuels and other valuable co-products. These 'replicable model' projects are still progressing in CA, OH, and VA during Fiscal Year 2024.

Expansion of the Replicable Model: Urban Agriculture

In 2023, the Foundation began orchestrating an additional element of "urban agriculture" in Dallas, Texas to address issues of food deserts in cities and implications to socially vulnerable populations. "Urban agriculture generally refers to the cultivation, processing and distribution of agricultural products in urban and suburban settings, including vertical production, warehouse farms, community gardens, rooftop farms, hydroponic, aeroponic, and aquaponic facilities, and other innovations." (source: USDA National Agriculture Library; Natural Resource Conservation Service (NRCS) photo below)

This effort represents a natural extension of ATIP Foundation's development of replicable models in urban agricultural environments and has resulted in new partnerships with two other USDA agencies: the Farm Service Agency (FSA) and the Natural Resources Conservation Service (NRCS). Both are housed in one of 17 new urban agricultural offices, recently opened by USDA throughout the United States. The office in Dallas is the only one in Texas, and has already partnered with ATIP to establish an Urban Agricultural Model, replicable throughout the United States. USDA's Natural Resource Conservation Service (NRCS) assistance can provide technical and financial assistance for urban growers in areas such as soil health, irrigation and water conservation, weed and pest management, and use of high tunnels. High tunnels can extend the growing season and protect plants from harsh weather, air pollution and pests. By making local produce available for more months in the year, fewer resources are used to transport food to plates.

Foundation efforts in Texas also include phytoremediation of brownfield sites in urban areas. Phytoremediation is defined as "the use of green plants and the associated microorganisms, along with proper soil amendments and agronomic techniques to either contain, remove or render toxic environmental contaminants harmless[iv]." Phytoremediation plants can be used to prepare inner city abandoned lands for subsequent potential agricultural uses. These sites might even be managed by rural small businesses. Harvested plants can also be used for biomass conversion to bioenergy or biorefinery to recycle valuable extracts.



Foundation efforts also include the conversion of all biologically based waste into energy, chemicals, and products; and urban forestry.

With a stated mission of "…promoting agricultural economic development through engagement with Federal, State, and local partners…", the ATIP Foundation is positioned to facilitate projects in both urban and rural America.

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[i] Founding economic development organizations: Maryland Technology Development Corporation (TEDCO); Ben Franklin Technology Development Authority; Innovate Mississippi; Wisconsin Security Research Consortium; Georgia Research Alliance; California Association for Local Economic Development; Kansas Bioscience Authority; Center for Innovation at Arlington, Texas; and Center for Innovative Food Technology (CIFT) in Toledo, Ohio.

[ii] See http://atipfoundation.com/activities-partnerships/ for full descriptions of all Foundation activities, and links to all presentations at forums, regional and final reports.

[iii] Participating Agencies include, Environmental Protection Agency, U.S. Department of Agriculture, U.S. Department of Energy, U.S. Department of the Interior, U.S. Department of Defense, U.S. Department of Transportation, the National Science Foundation, and the Office of the White House.

[iv] Source: Defence Life Science Journal. 3 (2): 190–196. doi:10.14429/dlsj.3.11346