

Advancing the Bioeconomy in California: A Strategic Approach for Regional Rural Economic Development (Draft April 15, 2020)

INTRODUCTION

The ATIP Foundation, affiliated with the US Department of Agriculture, is engaged in advancing the bioeconomy in California. We are doing so on a regional basis, utilizing a replicable model developed by the Foundation, premised on the industry-cluster model developed by Michael Porter at Harvard University in the mid-1980s. Our Model is further premised on input gleaned from eight national forums hosted by the Foundation in 2016–2017, in partnership with the federal Biomass Research & Development (BR&D)¹ Board, co-chaired by the US Departments of Agriculture & Energy.

We have engaged local, regional and state leaders from six sectors we identified as primary stakeholders; all vital to the success of our Initiatives. They 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.

In essence, this document describes what we are doing to ensure that the essential infrastructure; the knowledge, awareness, and understanding; and the relationships have been developed throughout an economic region with the primary stakeholder sectors that can support companies as primary producers of products and services derived from biomass.

The Foundation, in a manner of speaking, is “preparing the soil for the successful planting and eventual harvest of a crop.”

GOAL: ESTABLISH / ENHANCE THE ECONOMIC FOUNDATIONS THAT SUPPORT INDUSTRY CLUSTERS

Although we often talk about economic development and growing the economy, there is little discussion and/or understanding of "who does what by when" in order to achieve the goal of economic development. Cities and states frequently cite their creation of jobs through "industry recruitment," which does not represent the development of a "sustainable economy" or a "sustainable industry cluster."

The fundamental premise for the growth of a sustainable economy is the creation, development and growth of the industry sectors that are or could become wealth generators within an economic region. This requires the understanding that only three fundamental things happen in an economic region; (1) wealth is generated; (2) wealth is recirculated within the same region; or (3) wealth generated within the region migrates to other economic regions.

As an example, an anaerobic digester converts organic waste streams to generate energy and high-carbon solids that can be processed and sold as additives for everything from paints and plastics to fertilizer. It essentially generates wealth, as the energy & solids produced sell for more than the cost of production. But where does that wealth go? A portion recirculates in the region through the salaries, wages, and taxes paid. But the company also purchases parts, components, supplies and services from literally hundreds of companies we will call "suppliers & service providers." To the extent they are in the region, that wealth also recirculates. To the extent they are not, the wealth is migrating immediately. Therefore, development of the "supplier/service

¹ The Biomass R&D Board consists of representatives from the U.S. Department of Energy, U.S. Department of Agriculture, U.S. Department of the Interior, U.S. Department of Defense, U.S. Department of Transportation, the National Science Foundation, the Environmental Protection Agency, and the Executive Office of the President of the United States.

provider network" tailored to that particular industry sector is critical to the development of a sustainable economy.

Next, all sectors are dependent upon five key "economic foundations" if the sector is to become sustainable. They are:

1. Regulatory Structure: municipal, county, state and federal regulations all play a role, based on whether they support or inhibit the growth of a sector. In an economic region, municipal, county and state regulations must be assessed in terms of their impact on a targeted industry sector. This requires the support of local and state governments. Incentives may also be created by the municipality, county, state, and/or federal entities to counter perceived regulatory burdens.

2. Infrastructure: all economic activities are based on the ability to move people, product, and information into and out of a specific region in a rapid, efficient, and cost-effective manner. Therefore, assessing the region's infrastructure is a critical component. This requires the support of local and state governments.

3. Access to Capital: all sectors require ready access to capital sources, germane to their sector. Therefore, an assessment of a region's access to capital that is supportive of the targeted industry sector is important. This requires the participation of the financial services sector.

4. Access to Technology: every sector has a need for technology and the research supporting the technology. This is a critical role for both the federal lab system and academia, relative to (1) creating market awareness of the research outcomes and patented discoveries; (2) translating the research outcomes and patents in ways that enable the financial sectors' ability to assess risk and therefore provide the necessary capital for development; and (3) assisting industry's ability to understand the research outcomes and patented technologies in order to utilize them for commercial use in the market.

5. Access to a Trained Workforce: every sector has a need for a workforce with the specific competencies, skills, training and knowledge critical to the industry sector. This requires the alignment of public education, higher education, and the publicly funded workforce system to both understand and then support the demand arising from occupational sectors of business and industry.

PRIMARY ELEMENTS

The model is guided by six significant, relevant, overarching elements that were universally expressed and supported by participants in all eight national forums ATIP, in partnership with the BR&D Board, conducted in 2016 – 2017, relative to specific issues and recommendations to be addressed by the broad stakeholder community.

The six elements are as follows:

1. Finance: stated as the ability to successfully finance the growth of the bioeconomy, focused on (1) public funding and (2) general access to capital. Regarding public funding, availability of government loan guarantees was cited, based on the lack of public knowledge, awareness, or understanding of the process required. Also, forum participants suggested that federal agencies should consider funding more small-scale demonstration projects, rather than fewer largescale ones; incentivizing public private partnerships; and providing a level playing field for bioenergy investments and allocations, comparable to those of fossil fuel and nuclear energy.

Regarding general access to capital, the high risks perceived by private sector investors was based on inconsistency in federal incentives, the general lack of off-take agreements, and broadly stated, a lack of understanding of the bioeconomy.

2. Public Education & Awareness: stated as the need for clear, understandable definitions for the "bioeconomy" and "sustainability"; and a robust, orchestrated public educational awareness campaign, inclusive of thoughtful articulation of the value proposition of the bioeconomy, and "Case for Support", relative to why it makes both business and economic sense.

3. Public Policy: stated as the need to create a level playing field for the bioeconomy, with long term, stable government incentives and tax credits that are competitive and comparative with other energy programs. Also, regulatory requirements and controls, in general, and in particular by EPA, are viewed as overly burdensome, especially to small & medium sized businesses.

4. Supply Chain: stated as the need to ensure the supply chain logistics/capacity/capabilities are in place, to support the movement of biomass material from the source of harvest to final production/processing facilities, and then to market. As a specific example, one recommendation was that more biomass accumulators (biomass depots) are needed to reduce distance from farm/forest to processing facilities. This also reduces cost and aligns with the recommendation to fund more small models/projects rather than fewer large models/projects.

5. Workforce: stated as the need to engage the US Departments of Education & Labor, to ensure the publicly funded workforce system is aware of and focused on the development of the workforce needed to support the growth of the bioeconomy. Recommendations include building the talent pipeline; addressing the lack of technical training; the need to create early awareness (by the 8th grade) of opportunities; and addressing the lack of training opportunities and options in rural areas.

6. Federal Resources: stated as a general lack of public awareness, and a request for federal support of regional collaboration. In terms of awareness, there was a general lack of knowledge of the research and resources available through and from the federal agencies. Outside of academia, most participants were unaware of patent license agreements (PLAs), cooperative research and development agreements (CRADAs), the scope of federal research, and technical assistance and support, such as loan guarantees.

In terms of collaboration, participants stressed the need for economic growth to be seen, perceived and approached on a regional basis, since, generally speaking, regional economies do not follow geographic or political boundaries. They viewed federal agency collaboration at a regional level, in partnership with academia, the private sector, and the broader stakeholder community, as a critical component necessary to grow the bioeconomy.

ENGAGING THE PRIMARY STAKEHOLDERS

The eight forums conducted in 2016–2017 provided evidence that six critical stakeholder groups must be engaged to ensure success in utilizing federal research outcomes to stimulate economic growth and development. Leadership for each of those six sectors was identified and briefed by the ATIP Foundation prior to the launch of Advancing the Bioeconomy in California.

Those stakeholders continue to provide the leadership to ensure the model actively engages thought and opinion leaders in each of the six sectors.

This section describes the Sector Stakeholders we have engaged in California, who have assisted us in documenting the roles each sector must play, for this to become a replicable model for regional economic development.

1. Workforce & Economic Development

State leadership is provided by the California Labor Agency, and the US Department of Agriculture, California Office of Rural Development.

2. Academia

State leadership is provided by the University of California System, led by Glenda Humiston, Vice President, Agriculture, who is a former USDA official, and regionally by the University of California Merced.

3. Government

Leadership for Municipal, County, Regional and State Elected & Appointed Officials is primarily led by the County officials in the 8 counties of our targeted region.

4. Financial Services

Leadership for the Investment Community is primarily led by the California Alternative Energy & Advanced Transportation Financing Authority and the California Infrastructure and Economic Development Bank.

5. Business & Industry

Leadership for Business & Industry is primarily led by the California Association for Local Economic Development (CALED).

6. Supply Chain

We have engaged the California Energy Commission & Air Resources Board and Cal Recycle to assist in identifying sources of Biomass, and our 8 Economic Development Corporations to engage local supply chain components.

UTILIZING FEDERAL RESOURCES

A primary component of our plan is to engage federal agencies in the process, and to create the awareness, knowledge, and capabilities of local communities and organizations to take advantage of their federal resources. Those resources include, but are certainly not limited to, research outcomes, market assessment, and federal patented technology discoveries, as well as funding.

This section describes the federal agencies, with whom we have relationships, that have resources available to support our work. Please note that the US Department of Agriculture has an International Division, with offices and staff located around the globe. Their primary purpose is to assist other countries in developing their food supplies. This includes the growth of the bioeconomy.

DEPARTMENT OF AGRICULTURE (USDA)

USDA is and has been our primary partner since ATIP was incorporated in 2011, at the request of Catherine Woteki, then Undersecretary and Chief Scientist at USDA. USDA is second only to Department of Defense in size and programs. USDA's 29 agencies and offices are grouped within eight Mission Areas (<https://www.usda.gov/our-agency/about-usda/mission-areas>) as follows. We provide a brief description of some of those agencies, especially those with whom we regularly engage or are highly relevant to our current initiative, and we encourage you to look at the specific agency websites accessible at <https://www.usda.gov/our-agency/agencies>.

1. Farm Production and Conservation

a. Farm Service Agency (FSA; <https://www.fsa.usda.gov/>)

The Farm Service Agency implements agricultural policy, administers credit and loan programs, and manages conservation, commodity, disaster and farm marketing programs through a national network of offices.

b. Natural Resources Conservation Service (NRCS; <https://www.nrcs.usda.gov/>)

NRCS provides leadership in a partnership effort to help people conserve, maintain and improve our natural resources and environment.

c. **Risk Management Agency** (RMA; <http://www.rma.usda.gov/>)

RMA helps to ensure that farmers have the financial tools necessary to manage their agricultural risks. RMA provides coverage through the Federal Crop Insurance Corporation, which promotes national welfare by improving the economic stability of agriculture.

2. Food, Nutrition and Consumer Services

a. **Food and Nutrition Service** (FNS; <https://www.fns.usda.gov/>)

Our mission is to increase food security and reduce hunger by providing children and low-income people access to food, a healthful diet and nutrition education in a way that supports American agriculture and inspires public confidence.

3. Food Safety

Food Safety ensures that the Nation's commercial supply of meat, poultry, and egg products is safe, wholesome, and properly labeled, and packaged. This mission area also plays a key role in the President's Council on Food Safety and has been instrumental in coordinating a national food safety strategic plan among various partner agencies including the Department of Health and Human Services and the Environmental Protection Agency.

a. **Food Safety and Inspection Service** (FSIS; <https://www.fsis.usda.gov/wps/portal/fsis/home>)

FSIS Mission Statement: Protecting the public's health by ensuring the safety of meat, poultry, and processed egg products. FSIS Vision Statement: Everyone's food is safe.

4. Marketing and Regulatory Programs

Marketing and Regulatory Programs facilitate domestic and international marketing of U.S. agricultural products and ensures the health and care of animals and plants. MRP agencies are active participants in setting national and international standards.

a. **Agricultural Marketing Service** (AMS; (<https://www.ams.usda.gov/>)

AMS facilitates the strategic marketing of agricultural products in domestic and international markets while ensuring fair trading practices and promoting a competitive and efficient marketplace. AMS constantly works to develop new marketing services to increase customer satisfaction.

b. **Animal and Plant Health Inspection Service** (APHIS; <https://www.aphis.usda.gov/aphis/home>)

The Animal and Plant Health Inspection Service is a multi-faceted Agency with a broad mission area that includes protecting and promoting U.S. agricultural health, regulating genetically engineered organisms, administering the Animal Welfare Act and carrying out wildlife damage management activities. These efforts support the overall mission of USDA, which is to protect and promote food, agriculture, natural resources and related issues.

5. Natural Resources and Environment

a. **Forest Service** (FS; <https://www.fs.fed.us/>)

FS sustains the health, diversity and productivity of the Nation's forests and grasslands to meet the needs of present and future generations.

6. Research, Education and Economics

Dedicated to the creation of a safe, sustainable, competitive U.S. food and fiber system, as well as strong communities, families, and youth through integrated research, analysis, and education.

a. **Agricultural Research Service** (ARS; <https://www.ars.usda.gov/>)

ARS is USDA's principal in-house (intramural) research agency. Their job is finding solutions to agricultural problems that affect Americans every day from field to table. Here are a few numbers to illustrate the scope of ARS:

- 660 research projects within 15 National Programs
- 2,000 scientists and post docs
- 6,000 other employees
- 90+ research locations, including overseas laboratories
- \$1.4 billion fiscal year budget

Note on relevant Foundation expertise. Dr. Rick Brenner, Director of the ATIP Foundation (2013- present), served as a scientist and Research Leader in ARS (1982-2001), and as the Assistant Administrator for Technology Transfer (2004 – 2012), representing the Secretary of Agriculture on issues pertaining to management of intellectual property arising from USDA research, and with delegated authority for licensing inventions developed through intramural research from any of the USDA agencies. He was the Agency Representative to the Federal Laboratory Consortium for Technology Transfer for USDA, the Interagency Working Group for Technology Transfer convened by the Department of Commerce, and also represented USDA on the White House (WH) Innovation and Entrepreneurship working group, the WH Startup America task force, and the WH Task Force for Advancing Regional Innovation Clusters.

b. **Economic Research Service** (ERS; www.ers.usda.gov/about-ers)

The mission of USDA's Economic Research Service is to anticipate trends and emerging issues in agriculture, food, the environment, and rural America and to conduct high-quality, objective economic research to inform and enhance public and private decision making. ERS shapes its research program and products to serve those who routinely make or influence public policy and program decisions. Key clientele includes White House and USDA policy officials; the U.S. Congress; program administrators/managers; other Federal agencies; State and local government officials; and organizations, including farm and industry groups. ERS research provides context for and informs the decisions that affect the agricultural sector, which in turn benefits everyone with efficient stewardship of our agricultural resources and the economic prosperity of the sector.

c. **National Agricultural Statistics Service** (NASS; <https://www.nass.usda.gov/index.php>)

The USDA's National Agricultural Statistics Service (NASS) conducts hundreds of surveys every year and prepares reports covering virtually every aspect of U.S. agriculture. Production and supplies of food and fiber, prices paid and received by farmers, farm labor and wages, farm finances, chemical use, and changes in the demographics of U.S. producers are only a few examples.

NASS is committed to providing timely, accurate, and useful statistics in service to U.S. agriculture. To uphold our continuing commitment, NASS will:

- Report the facts on American agriculture, facts needed by people working in and depending upon U.S. agriculture.
- Provide objective and unbiased statistics on a preannounced schedule that is fair and impartial to all market participants.

- Conduct the Census of Agriculture every five years, providing the only source of consistent, comparable, and detailed agricultural data for every county in America.
- Serve the needs of our data users and customers at a local level through our network of State field offices and our cooperative relationship with universities and State Departments of Agriculture.
- Safeguard the privacy of farmers, ranchers, and other data providers, with a guarantee that confidentiality and data security continue to be our top priorities.

d. **National Institute of Food and Agriculture** (NIFA; <https://nifa.usda.gov/>)

NIFA’s mission is to invest in and advance agricultural research, education, and extension to solve societal challenges. NIFA’s investments in transformative science directly support the long-term prosperity and global preeminence of U.S. agriculture. NIFA is the principal extramural research agency working principally through competitive grants to Land Grant institutions (1862 Land-grant institutions), Historically Black Colleges and Universities (HBCU; 1890 Land-grant institutions), Native American tribally-controlled colleges and universities (1994 Land-grant institutions) and other federal agencies conducting activities in the agriculture sector. NIFA collaborates with leading scientists, policymakers, experts, and educators in organizations throughout the world to find innovative solutions to the most pressing local and global problems. Some of their website-stated activities:

- Scientific progress made through discovery and application;
- Advances the competitiveness of American agriculture;
- Bolsters the U.S. economy;
- Enhances the safety of the nation’s food supply;
- Improves the nutrition and well-being of American citizens;
- Sustains natural resources and the environment;
- Builds energy independence

7. **Rural Development** (RD; <https://www.rd.usda.gov/>)

RD helps rural areas to develop and grow by offering Federal assistance that improves quality of life. RD targets communities in need and then empowers them with financial and technical resources.

a. **Rural Business-Cooperative Service** (RBS; <https://www.rd.usda.gov/about-rd/agencies/rural-business-cooperative-service>)

RBS offers programs to help businesses grow as well as job training for people living in rural areas. These programs help provide the capital, training, education and entrepreneurial skills that can help people living in rural areas start and grow businesses or find jobs in agricultural markets and in the bio-based economy. According to their website, “[their] programs help provide the capital, training, education and entrepreneurial skills that can help those living in rural areas start and grow businesses or find jobs in agricultural markets and in the bio-based economy. USDA and our public and private partners are connecting rural residents to the global economy by:

- Supporting business growth and development.
- Assisting with creating wealth and supporting rural America.
- Improving the effectiveness of programs serving cooperatives
- Creating and keeping jobs through recreation as well as restoring, conserving and managing rural America’s natural resources.

- Bringing fast internet to more homes and businesses.

b. Rural Utilities Service (RUS; <https://www.rd.usda.gov/about-rd/agencies/rural-utilities-service>)

USDA's Rural Utilities Service (RUS) provides much-needed infrastructure or infrastructure improvements to rural communities. These include water and waste treatment, electric power and telecommunications services. All of these services help to expand economic opportunities and improve the quality of life for rural residents.

c. Rural Housing Service (RHS; <https://www.rd.usda.gov/about-rd/agencies/rural-housing-service>)

USDA's Rural Housing Service offers a variety of programs to build or improve housing and essential community facilities in rural areas. We offer loans, grants and loan guarantees for single- and multi-family housing, childcare centers, fire and police stations, hospitals, libraries, nursing homes, schools, first responder vehicles and equipment, housing for farm laborers and much more. We also provide technical assistance loans and grants in partnership with non-profit organizations, Indian tribes, state and federal government agencies, and local communities.

Note on relevant Foundation expertise. Todd Campbell of Clean Economy Works LLC, who serves Of Counsel to the ATIP Foundation, formerly served as Chief of Staff for the mission area and Senior Advisor to the Secretary of Agriculture Office for energy and bioeconomy issues at the U.S. Department of Agriculture and has deep knowledge of surrounding regulatory issues and the financial and technical assistance programs available to assist in industry development.

8. Trade and Foreign Agricultural Affairs

a. Foreign Agricultural Service (FAS; <https://www.fas.usda.gov/>)

FAS works to improve foreign market access for U.S. products. This USDA agency operates programs designed to build new markets and improve the competitive position of U.S. agriculture in the global marketplace. In addition to its Washington, D.C. staff, FAS has a global network of 93 offices covering 171 countries. These offices are staffed by agricultural attachés and locally hired agricultural experts who are the eyes, ears, and voice for U.S. agriculture around the world. FAS staff identify problems, provide practical solutions, and work to advance opportunities for U.S. agriculture and support U.S. foreign policy around the globe.

b. Codex Alimentarius Commission (<https://www.usda.gov/codex>)

The U.S. Codex Office (USCO), housed in USDA's Trade and Foreign Agricultural Affairs, acts as the national focal point for the U.S. Codex Program. Its mission is to engage stakeholders in the development and advancement of science-based food standards for the benefit of the United States and the worldwide community. USCO manages the planning, policy development, support, and coordination for U.S. involvement in Codex, and develops strategies to accomplish U.S. objectives. Established by the United Nations Food and Agriculture Organization (FAO) and the World Health Organization (WHO) in 1963, the Codex Alimentarius, or "Food Code," is the preeminent international food standards-setting body that protects the health of consumers and ensure fair practices in the food trade through the establishment of voluntary international standards, guidelines, and codes of practices. U.S. Codex Program.

The U.S. Codex Program is an interagency partnership that engages stakeholders in advancing science-based food standards to protect the health of consumers and ensure fair practices in the food trade.

Several federal agencies participate in the U.S. Codex Program through providing senior staff and executive delegates to represent the United States on many Codex committees, and the United States also chairs some committees. These Delegates to Codex committees (PDF, 352 KB) are primarily employed by regulatory agencies

that set U.S. domestic food standards. Other U.S. agency officials participate in vital policy, coordination, and information dissemination activities relevant to their agency missions and interests.

DEPARTMENT OF ENERGY (DOE)

DOE is Co-Chair of the Biomass Research & Development Board (RB&D). They were also involved in the five national forums ATIP convened in 2016, and the three national forums ATIP convened in 2017.

Conner Prochaska is the Chief Commercialization Officer for DOE and is our primary contact. He is fully briefed on ATIP, our development of a model for rural economic development, and has expressed strong interest in remaining involved with our work.

DOE also represents a potential source of funds, particularly relevant to your energy production.

ENVIRONMENTAL PROTECTION AGENCY (EPA)

The Texas Commission on Environmental Quality interfaces directly with EPA on our behalf, and in turn, can act on behalf of EPA with our business prospects in support of environmental issues and permits.

DEPARTMENT OF LABOR (DOL)

Note on relevant Foundation expertise. Wes Jurey, CEO and President of the ATIP Foundation, has worked closely with DOL since 1990, having served on a number of DOL Boards, Councils, and Commissions, inclusive of serving as Chairman of the Texas Workforce System from 2008-2017. As our business prospects expand, DOL has significant resources at the federal, state and local levels to assist local workforce needs, inclusive of new hires and incumbent workers.

DEPARTMENT OF HOUSING & URBAN DEVELOPMENT (HUD)

Wes has also worked closely with HUD since 1990, at the federal level and with their multi-state Regional Offices. HUD is the source of the Innovation Zones and is also the Agency that funds Economic Development Initiative (EDI) Grants.

ENGAGING STATE AGENCIES & ORGANIZATIONS

CALIFORNIA ASSOCIATION FOR LOCAL ECONOMIC DEVELOPMENT (CALED)

Gurbax Sahota, Executive Director, is a member of ATIP's Board and is a committed partner with ATIP to develop the "Advancing the Bioeconomy" model in California. We have presented our initiative twice at CALED's Annual Rural Development Forum.

USDA CALIFORNIA OFFICE OF RURAL DEVELOPMENT

Kim Dolbow Vann is the appointed Director of the USDA office, and attended the CALED Forum in 2018, when ATIP made its initial presentation. Her response was, "how soon can you bring this model to California?"

Our development of our Model in California is partially funded by a USDA Rural Development Grant through the California State Office.

GO BIZ (Governor's Office of Business and Economic Development)

This organization is a part of the Governor's Office. They were present at the January 15, 2019 Forum, heard our presentation, and indicated their support.

CALIFORNIA ENERGY COMMISSION & AIR RESOURCES BOARD

At the 2018 Advanced Bio Leadership (ABLC) Global Conference, there was a presentation on significant renewable market support from Ryan McCarthy from the California Air Resources Board and Rezaldo Aldas from the CA Energy Commission Research and Development. Burney-Hat Breek Bioenergy is a CA Biochar project funded under the CA Electric Program Investment Charge (EPIC) Bioenergy Project targeting tree mortality. Gov. Brown implemented the Project with an executive order, and it will continue under the new administration. There will be others, perhaps from North Fork Community Bioenergy Project or Mariposa.

There is \$162 million annually for the project (80% through the Energy Commission, 20% from investor owned utilities). Also, a Natural Gas R&D for \$24 million annually which may overlap. There is an ongoing solicitation under that program to demonstrate innovative solutions to convert CA residual forest biomass resources into renewable natural gas to improve efficiency, reduce cost, and reduce the environmental impact for the forest waste to renewable gas pathway.

Both are supported directly from rate payers. There are also a number of demonstration thermochemical support tools and decision support systems that are impressive and can support business development and optimization in the region we are working in.

CALIFORNIA LABOR AGENCY (CLA)

Stewart Knox is our primary contact. He attended the Rural Development Forum January 15, 2019, heard our presentation, and supports both the model and our focus on business development in California.

CAL RECYCLE

Frank Severson, Sr Environmental Scientist, who attended the Rural Development Forum in 2019, heard our presentation, and is our primary contact. He has and will continue providing information on the various funds, and supporting functions Cal Recycle can provide.

UNIVERSITY OF CALIFORNIA SYSTEM, AGRICULTURE, AND NATURAL RESOURCES

Glenda Humiston, current Vice President, Agriculture, at the University of California System, was a top USDA official who knows and worked with ATIP while at USDA. She presented with us in Anaheim at CALED's meeting March 2019. She provides support from the System and Campus levels. The University of California Merced and California State University Fresno/Fresno State are also engaged.

CALIFORNIA ALTERNATIVE ENERGY & ADVANCED TRANSPORTATION FINANCING AUTHORITY

The California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA) works collaboratively with public and private partners to provide innovative and effective financing solutions for California's industries, assisting in reducing the state's greenhouse gas emissions by increasing the development and deployment of renewable energy sources, energy efficiency, and advanced transportation and manufacturing technologies to reduce air pollution, conserve energy, and promote economic development and jobs.

IBANK

The California Infrastructure and Economic Development Bank (IBank) was created in 1994 to finance public infrastructure and private development that promote a healthy climate for jobs, contribute to a strong economy and improve the quality of life in California communities. IBank has broad authority to issue tax-exempt and taxable revenue bonds, provide financing to public agencies, provide credit enhancements, acquire or lease facilities, and leverage State and Federal funds.

CREATING REGIONAL CAPACITY

This section describes the specific work we are doing to establish regional capacity for the growth and sustainability of the Bioeconomy Sector, and to ensure the Region's Stakeholders are knowledgeable and supportive. Primary regional Stakeholders are led by the County Economic Development Corporations (EDCs) who in turn engage municipalities, county governments, and employer led organizations.

Regional Steering Committee

The 8 EDC's comprise a "Regional Steering Committee" in the San Joaquin Valley. The Steering Committee's role/purpose includes providing (1) thought leadership; (2) the support needed to create the educational awareness necessary to the stakeholders understanding; (3) the assessment of the status of the region's supplier/service provider network; (4) the assessment of the five "economic foundations;" (5) a catalyst for research translation; and (6) assistance in developing a shared data base of the applicable resources within the Region, to include biomass.

The Steering committee provides the thought leadership to encourage the establishment of a sustainable industry cluster, focused on the Bioeconomy, within the region; a holistic view of "regional sustainable economic development," and an interest in the economic measure and well-being of the region, ensuring that any project becomes economically viable.

Administrative Leadership:

The ATIP Foundation provides the administrative leadership for the Model, working closely with the Economic Development Corporations (EDCs) as well as City & County Governments; education and workforce development; and producers and commodity groups, within the region.

The Regional Strategic Work Plan for the region, led by ATIP in partnership with the EDCs, consists of 5 primary tasks:

1. Identify, analyze, and compile information and data regarding biomass business opportunities (i.e. biomass feedstocks, suppliers & service providers, supply chain networks, providers, access to capital, workforce training, etc.)
2. Identify, train, and provide technical assistance to local economic development organizations
3. Assist in the creation of new rural businesses related to advancing the bioeconomy;
4. Conduct local community and multi-county economic development planning; and
5. Enhance the capabilities within economic regions of centers for training, technology and trade, regarding the bioeconomy.

CALIFORNIA REGIONAL PARTNERS

EDCs

- Fresno, Kern, Kings, Madera, Merced, Tulare, San Joaquin Partnership, Opportunity Stanislaus

ESTABLISHING & MAINTAINING RESOURCE SUPPORT

This section describes, in general terms, the resources that have been compiled by ATIP in each region. Those resources, including extensive data, are available to assist our regional partners and business prospects, in the establishment of business facilities within the states/regions we serve.

The Content includes:

Biomass Inventory:

We have compiled an extensive and comprehensive geospatial database (ArcGIS Pro) of various biomass feedstocks in CA. Some specific examples follow:

- For CA, Manure production for all concentrated animal feeding operations (CAFOs) and Animal Feeding Operations (AFOs) is calculated. These data are expressed in animals per farm (by type; beef, dairy, swine, laying hens, sheep, horses), dry tons of manure per year per farm, and most importantly Daily Tons per farm at 90% moisture. The CA database has 1375 locations in the 8 Central Valley counties.
- EPA Foodwaste estimates for 11 county area includes 9 correctional facilities, 230 educational institutions, 71 food manufacturers and processors, 308 food wholesale and retailers, 11 healthcare industry, 143 hospitality industry, 924 restaurants and food services.
- Municipal solid wastes data include landfills, biomass processing facilities (composters), and municipal wastewater sewage sludge. In some cases, we have the fate of the sludge (i.e., transfer to another processing facility, or direct to landfill). The CA dataset is extensive (225 entries), providing type of facility (composting, disposal, EMSW conversion, in-vessel digestion, and transfer/processing), and an extensive list of wastes accepted for each of the facilities.

Infrastructure – Supply Chain:

Also georeferenced in each CAFO map is the infrastructure, including roads and streets, electric transmission lines, railways, and natural gas pipelines.

Suppliers, Service Providers:

This list (georeferenced) is critically important for identifying and contacting those businesses that either participate or can participate in advancing the bioeconomy. The lists include all local utility providers (gas, electric, wastewater, fiber, internet, phone); financial institutions and whether they participate in either SBA or USDA loan guarantee programs; waste haulers (ag residues, general wastes, sanitation), trucking and transport companies, workforce training institutions, elected city / county officials, and especially important --- all Economic Development organizations in each region. This database usually lists specific persons and phone numbers to contact for more information.

Workforce Development Resources

- Local Workforce Boards
Can allocate funding specifically in support of employment needs, as well as those of suppliers and service providers. Significant funding is available to support new worker training as well as incumbent worker training.
- Independent School Districts
We are engaging Independent School Districts to utilize Nationally Recognized Industry Certifications as the basis of the training they are providing in the areas of logistics, manufacturing, and production, in their Career & Technical Education Programs.
- Community Colleges
We are encouraging Community Colleges to align their course offerings to support agribusiness workforce needs.

- Universities

We are working with UC Merced, who is doing extensive research in the use of biomass, and the California State University WEI Center.

Public Policy

[In process of characterization.]

Capital

The ATIP Foundation has extensive contacts with the investment community (private sector) as well as a number of federal, state, and local resources of capital. Federal resources include close interactions with USDA Rural Development Business and Industry Loan Program (loan guarantee); Intermediary Relending Program; Biorefinery, Renewable Chemical, and Biobased Product Manufacturing Assistance Program (9003); Rural Energy for America Program / Renewable Energy & Energy Efficiency; Rural Business Development Enterprise and Opportunity Grants, and others. The Foundation also can provide specific information on the SBA Loan Guarantee programs across all states, including those that specialize in small, micro, and macro lending.,

Technology

The ATIP Foundation has specialized experience in accessing technologies as well as in facilitating opportunities to jointly research and develop technologies through the federal laboratory system. Dr. Brenner served for over 10 years as the USDA Representative to the Federal Laboratory Consortium for Technology Transfer (<https://federallabs.org/>), and in that capacity, had one counterpart from each of the cabinet-level agencies in the Federal government. For example, Dr. Brenner had sole delegated authority from the Secretary of Agriculture to license any technology (patent) from any research agency of USDA. His counterparts had similar authority in their respective agencies (e.g., Department of Defense (DoD), Environmental Protection Agency (EPA), Department of Energy (DOE), Department of Transportation (DOT), Health and Human Services, (HHS), NASA, Department of Commerce (DOC), Department of the Interior (DOI). Currently, Dr. Brenner personally knows eight of these representatives. Thus, the ATIP Foundation can engage specific representatives in each federal department and agency to identify technologies (patents, plant varieties) available for licensing through Patent License Agreements (PLA) by private sector companies and nonprofit entities; these licenses may be non-exclusive (licensed by several companies), or exclusive (licensed to 1 company only for the term of the patent).

Similarly, the Foundation can serve as intermediary to companies in assisting them to enter into specific Cooperative Research and Development Agreements (CRADAs) in all federal agencies. CRADAs are a unique way for corporations to access the 900+ federal laboratories across the U.S. CRADAs offer companies a way to jointly execute exclusive research projects aimed at creating new technologies (patentable inventions). In exchange for sharing part of the research costs, the corporation is guaranteed an exclusive license to any and all inventions arising from the joint research. CRADA policies to vary slightly among federal agencies, and the Foundation is positioned to navigate that, and to locate specific federal scientists to partner with corporations on addressable research problems.