# ATIP Foundation Regional Bioeconomy Forums:

***"Addressing the Challenges & Opportunities of Advancing the Billion Ton Bioeconomy"***

## Synopsis of Report to Participants in the SW Regional Bioeconomy Forum
## Mineral Wells Chamber of Commerce, (co-hosts)
## Mineral Wells, TX
## September 29, 2016

**Wes Jurey, Foundation CEO and R.J. Brenner, Director, ATIP Foundation**

Note: full report with 4 attachments can be found at www.atipfoundation.com

**Forum Structure and Role of the Foundation and Co-hosts**

The SW U.S. Regional Bioeconomy Forum was moderated by Wes Jurey, CEO of the ATIP Foundation, assisted by Ryan Roach, CEO of the Mineral Wells Chamber of Commerce. Notes were taken (attributed to the commenter) by Ms. Nikki Bossaller, who projected these so all participants could review and correct as needed. The audio was also recorded from a laptop in case it was needed to clarify comments.

Table 1 describes the demographics of invitees by sector, and the actual number able to participate on September 29, 2016.

Table 1. Demographics (by sector) of invitees and participants, convened by co-host Mineral Wells Chamber of Commerce, in SW Regional Bioeconomy Forum, Mineral Wells, TX , September 29, 2016 .

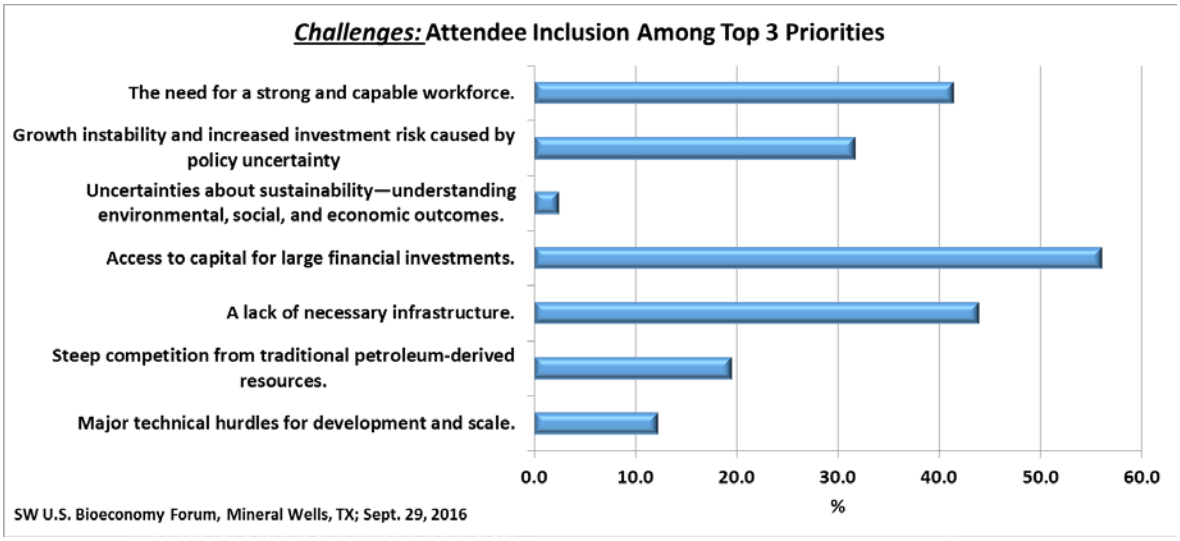
| Sector | Invited | No. Participants | %RSVP to Attend | % of Attendees |
|---|---|---|---|---|
| Industry | 41 | 6 | 15 | 15 |
| State and local government | 27 | 8 | 30 | 20 |
| Economic and workforce development | 23 | 15 | 65 | 37 |
| Investment & finance | 2 | 1 | 50 | 2 |
| Academia | 49 | 9 | 18 | 22 |
| Agricultural and environmental organizations | 11 | 2 | 18 | 5 |
| | 153 | 41 | 27 | 100 |

The agenda (see attachment) included welcoming comments by Ryan Roach, Mineral Wells Chamber of Commerce (state co-host); Mayor Mike Allen, City of Mineral Wells; Wes Jurey, ATIP Foundation; and Todd Campbell, Biomass Research & Development Board representative. A slide set presentation was made by the ATIP Foundation and co-host, followed by Todd Campbell (USDA). In addition, a "discussion document" was provided to the participants (see attachment). The remainder of the day consisted exclusively of stakeholder attendees from the six sectors participating in discussions on these six questions and others posed by the Foundation.

Participants of the forum received a link to a Google Document of the "attributed" notes taken by Ms. Bossaller, and were given a two week window of opportunity to edit their specific comments, or add additional comment. Thereafter, the document was closed by Dr. Brenner, who reviewed comments, clarified with authors as needed, redacted all names of comment contributors, and annotated with his comments and/or Wes Jurey's from the Foundation (noted by "Comment#(RJB))". The complete SW Bioeconomy Report that includes all comments by participants, as well as the slides presented document, is available on the ATIP Foundation website, and serves as a comprehensive record of the event.

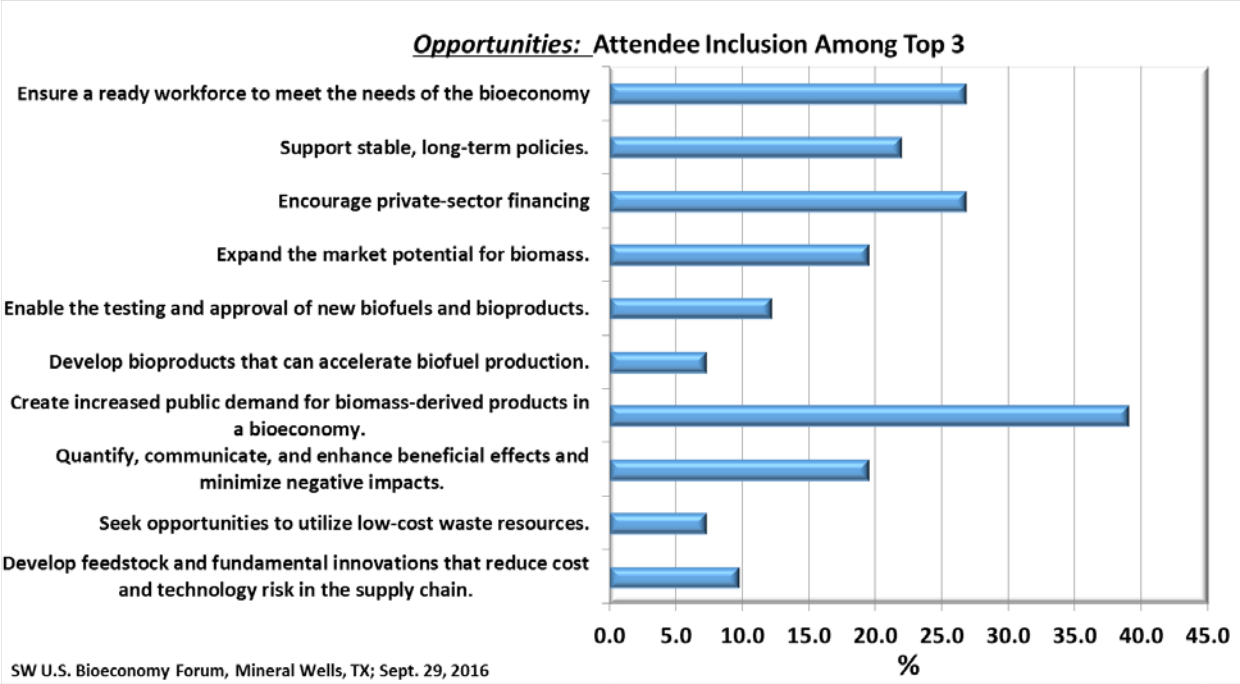
**Reporting on Participant Priorities**

Figure 1a (below) reflects their perspective on these "Challenges".




Participants considered "access to capital for large financial investments" as the dominant challenge faced by the bioeconomy industry in the region (55%), followed by "a lack of necessary infrastructure," (42%), "the need for a strong and capable workforce," (41%), and "growth instability and increased investment risk caused by policy uncertainty." Of interest, only 20% of participants from this oil-rich state deemed "steep competition from traditional petroleum-derived resources" among the top 3 challenge priorities.

Figure 1b (below) reflects their priorities on "Opportunities."




"Create increased public demand for biomass-derived products in a bioeconomy" was seen as the top "opportunity" (39% of respondents) for the SW Region, followed by "ensure a ready workforce to meet the needs of the bioeconomy," and "encourage private-sector financing, both at 27% of respondents. "Stable long-term policies" was a close 4$^{th}$ at 22%.

**Discussion: ATIP Foundation & Co-host Assessment of Themes, Issues, Regional Challenges & Opportunities**

This section illustrates highlights of actual comments, selected by the Foundation, made by forum participants. Items appearing as **[NOTE: …] are additional comments by the ATIP Foundation post-forum. The full non-attribute comments by participants are in Attachment 4.**

On the issue of **"what are state/local/regional challenges for the bioeconomy,"** specific comments suggested:

- Logistics and supply chain: Based on cotton transport not economically feasible beyond a 50 miles radius, same theory applies to biomass. Companies want a transportable product immediately.
- Education and Awareness: There is active backlash concern over bioproducts. Education component needs to be stressed so people understand the advantages [of biobased]. What is petroleum industry going to say? The represent a formidable challenge.
- Until participant got materials for forum, didn't know what biomass was. Education needs to go back to square 1. Woody biomass is a new word to many people. Education.
- Transportation & financial components are missing.
- Workforce [development]: In the future, this needs to start in 8th grade; stress "skills needs" to students & parents to learn skills for new jobs. If not, workforce won't be there.
- Workforce development *overemphasizes a college education. Support is needed for strong vocation programs.* 40% better suited to vocational programs. Education system needs to rethink priorities.

- Univ. of North Texas has no ag program. [However] we *are establishing a certificate program for renewable bioproducts engineering. Lots of wood industry. Looking for engineering students to know something about agriculture so they can feed well into that job market. Bioproduct engineering.*

There were some key points made on **"How the federal agencies can help address these regional challenges"**

- One challenge is hiring practice of agencies (USDA, etc.) for graduates. Time scale is too short for window of opportunity. *Federal agencies advertise internships too late.* **[NOTE: this is an actionable item]**
- Training and education: Oil is in biggest bust since 2008. Lots of highly skilled workers unemployed in Texas. Bio & oil are tied at hip. Demand is down dramatically. Govt. should help more **(subsidies, tariffs, taxes, incentives, cost competitive)**. Companies aren't going to want to make the investments b/c of risks involved in oil dropping. My company has had 3 layoffs and other energy sectors companies continue to make cuts. There are many highly skilled people still looking for jobs. **[NOTE: this dovetails with other comments on training and education for cross-over training from oil refineries to biorefineries. This argues for transition training programs that Dept. of Labor, Department of Education, and State Workforce Development could do jointly. See supporting comments elsewhere in document.]**
- Cross-training for transition from oil ←> biofuel: Half the people used to be with oil industry. Similar skills overlap. Similar industries are in bioeconomy. How do we bridge the gap to easily transition when petroleum sector has a lapse? Companies are trying to figure out that natural pivot. How do we close that gap to transition? **[NOTE: All strong arguments for a pilot program to develop transition training that works in both directions oil ⇔biofuel. Again, with Department of Labor and Department of Education]**
- In Waco, a large number of troops in Ft. Hood were getting ready to be released. The Federal government in conjunction with TWC provided training on how to transition skills from Army to civilian jobs. Many workers possess the needed skills just don't have experience in specific market. HR professionals and potential applicants need training so they are both speaking the same language.
- Invest in research. Funding percentage is only 3%; lots of good ideas are being left on the table.
- Produces polysaccharide. Don't have funding to scale up. Too many orders. Gap in funding. *How do you take an entrepreneur with no funding?*

Comments and suggestions from the ATIP Foundation in response to comments made:

  - Opportunities for cooperative research agreements. Often at issue for industry is the high overhead structure that most universities charge.
  - Perhaps a joint venture for partnerships between industry and federal scientists through CRADAs
  - SBIR – each agency has mandatory funding available to prospective grantees. Check each agency for amounts and application deadlines (e.g., USDA, DOE, DOC, DOD, EPA, …)

**On the topic of "What are state/local/regional opportunities to the bioeconomy?" …**

- Use of marginal lands. Lots of areas that don't have a lot of rain. Need to be able to produce vegetation specific for needs of that land.
    - Curious about marginal land development & development of algae. Any way to use prickly pear cactus? [Note from ATIP Foundation: http://gizmodo.com/this-humble-cactus-could-help-power-our-drought-stricke-1715966241 ]
- Arlington Independent School District has a $663 million bond being used for partnership with Tarrant County College & their certification programs. Career and Technical Higher Education Investigations course to see if they could communicate opportunities available in areas of vocation.
- We have coastline to look at algae production. Microalgae research. Different from other regions of the US. Look further into. Marginal lands & prime lands in eastern Texas. Terraces in forests had cotton at one time. Those forest thinning could be used as biomass & then replanted as other crops for energy. Good opportunities for east Texas.
- Identify skilled workforce-College Credit for Heroes. Vets can look at their skills set & how they translate to civilian jobs. Can complete program or degree faster b/c of skills credits. Program will help cover the training costs. Helping businesses train workforce with new technologies. *Better education is needed why communities are green.* Career networking-anyone looking for bioeconomy job & identifying where those jobs are. Better build that data set. Tends to be clearing house for that type of information. **[Note: http://www.twc.state.tx.us/jobseekers/college-credit-heroes]**
- UNT is establishing labs; https://www.unt.edu/search-results?search=bioeconomy&sa=Search
- Guayule is a natural rubber crop that is fits well for the southern region (southern Texas, new Mexico and Arizona). I am currently working at Arid Land Agricultural Research Center (ALARC), Maricopa, Arizona to improve rubber production, and adaptation to grow in desert area. **[Note: https://search.usa.gov/search?utf8=%E2%9C%93&sc=0&query=Guayule&m=&affiliate=agriculturalresearchservicears&commit=Search ]** As well I am working on improving the industrial oil crops, camelina and brassicas, for non-food, bioenergy purposes including biodiesel and Hydrotreated Renewable Jet Fuels to grow in stress conditions (drought and hot conditions) **[Note: https://search.usa.gov/search?utf8=%E2%9C%93&sc=0&query=hydrotreated+renewable+jet+fuel&m=&affiliate=agriculturalresearchservicears&commit=Search ]** . In general we are looking for crops that can be accommodated in this area (marginal, semi-arid and arid land). We need to think out of the box for these crops. Arid lands will be good for non-food non-traditional crops. Cotton uses lots of water.
- Wild pig problem in Texas. Develop land into farms & use pigs for something other than shooting practice.

Comments on the issue of **"What impact does the Texas oil industry / economy have on advancing the bioeconomy? How might that shape your implementation of expanding the bioeconomy in this region.**

- They are distributing product for any fuel product we produce. Embrace as partner.
- When the booms are happening in Oil & Gas, those companies are a competitor for resources (steel, labor).
- Water transportation for irrigation of bioproducts and removal of process water are large expenses. Why not create a pipeline system to transport water. This system could help reduce long-term droughts and pump water away from flood zones along the Mississippi. Between the government and insurance companies billions of dollars are spent each year on natural disasters. Money that is currently being budgeted for those disasters could be used to repay loans for the construction of the pipeline system.

- Additional note from participant post-forum: "The comments concerning produced water from active oil and gas wells and water returned to the surface after fracturing, are not correct. Pipelines and transport trucks are expensive and time consuming. Our company has developed mobile equipment that treats this water at the location so that it may be used for agricultural or other useful purposes. There are several companies working on similar technologies that will yield useable water at the wellsite. Shortly, it will no longer be necessary to move these large quantities of water. **[Note from Foundation: http://www.buzzfile.com/business/Pump-and-Coil-Tubing-940-327-8189 ]**

**Summary of Challenges and Opportunities for SE Bioeconomy**

- Education customers & stakeholders what biomass is.
- Need a viable bioproduct enterprise available. Economic climate has to be available to move forward.
- Needs incentive, research, financing, policy (dysfunctional energy policy). Hard to get investment if new administration that is going to turn everything upside down.
- Predictability in policy needed. Establish fed task force to establish regional bioproduct project. No red tape. Put structure in.
- Federal government can help the bioeconomy industry by providing tax credits that will create equity needed to finance the projects. To finance any project, the lenders require 30-40% equity. If tax credits were structured similar to the New Market Tax Credit and the Renewable Energy Certificates, then the bioeconomy industry would be able to obtain the needed equity to fund the projects.
- Federal agencies must put biomass info on their websites. Can't be advertised on TV . Very eye catching verbiage to make people aware of bioeconomy.
- DOE & requests for proposals that come out that deal with development to prove scale of what you need. Proposals need 50% match. Companies don't have that much. That is a huge hurdle that smaller companies. Reduce or eliminate match. **Actionable**.
    - **[Note from Foundation: One approach would be to form public-private partnerships where private sector can contribute funds toward matching requirements. If done under a CRADA, then private sector contributor also has first right of refusal to negotiate an EXCLUSIVE license to any technology (intellectual property) developed under the partnership without Federal Register Notice.]**
- Bring Small Business Development Centers (SBDC) in as partnerships. Bioeconomy is a new concept to those offices; however, they have the resources available to connect experts in the industry for them to be consultants in the development and growth of any project.
    - **[Note from Foundation: Mineral Wells participants should consider adding this dimension to a pilot. Bringing in Department of Commerce, along with Department of Labor, and Department of Education would be the most comprehensive partnership among federal agencies, given that BR&D Board includes 7 other agencies plus the Office of the White House.]**
- We need to separate between the use of food & non-food (bioenergy and industrial) crops, and where we can grow each group. Southern region has the high potential to grow new non-traditional, non-food, bioenergy crops in its marginal land.
- The region is a preferential bioenergy crops (east TX to LA) & across the south. SE quad of US is best location for bioenergy crops.

***Participants all agreed it would be good to reconvene in a year***

**Summary Statement from ATIP Foundation**

**SW Regional Bioeconomy Forum Summary**
**Wes Jurey, CEO, ATIP Foundation**

The ATIP Foundation was established in 2011 at the request of the US Department of Agriculture (USDA), Agricultural Research Service (ARS), to serve as a third-party intermediary, engaging a variety of stakeholders with ARS research, programs, and initiatives. The initial goal of the Foundation was to enable a more collective, collaborative approach on behalf of the private sector, with each member representing one of the eight agricultural research regions in the USDA ARS infrastructure.

The fundamental premise behind this approach was the need to create greater awareness of the breadth and scope of USDA intramural research activity (and that of their federal and state partners such as Department of Energy, Department of the Interior, National Science Foundation), and possibly other collaborative agencies of USDA (e.g., Rural Development, Natural Resource Conversation Services, National Institute of Food and Agriculture), conducted in collaboration with 90 + ARS labs throughout the United States, and to foster an understanding that the federal research outcomes are available for use by business and industry, ultimately resulting in economic growth and development, in the agribusiness sector.

The Foundation was incorporated by eight state and regional technology-based economic development organizations, each individually serving as a federal partnership intermediary to USDA's ARS, with many members also having facilitation agreements with other federal agencies, as well as their own network of-instate / regional non-federal stakeholders on many aspects of federal / private sector partnerships.

The Foundation's approach to establishing the five "Advancing the Bioeconomy" forums was premised on identifying regions within the United States whose stakeholders were receptive to the idea that each forum would serve as a springboard to launch one or more demonstration projects within the region. These projects would utilize the scope of research and related outcomes resulting from the massive amount of federal research coordination overseen by the seven federal agencies comprising the Biomass Research & Development Board, formed by statute in 1999.

The ultimate purpose of the regional projects is to demonstrate that the federal research outcomes--- combined with other federal / state / local agencies whose scope is in "implementation" of research outcomes, can result in economic growth and development, particularly in rural areas of the country, creating new businesses and enabling existing businesses to expand, resulting in job creation.

From the Foundation's perspective, based on the response from forum participants, we believe our premise is sound. At the conclusion of the Southwest forum, participants were unanimous in support of reconvening in a year, and working to formulate a specific demonstration project tailored to their region in the interim.

It is noteworthy to the foundation that, while each of the five regional forums offered some unique perspectives, relative to their region, six common themes resonated throughout all five forums, relative to each region's ability to make use of the federal research to enhance the growth of regional economies.

First, the need for public awareness is considered a major challenge. At the beginning of the forum, there was significant discussion on what the bio economy actually was, beyond biofuel.

Second, the lack of knowledge of and about the federal resources within the seven agencies was cited. Throughout the discussion it became apparent that most attendees knew little, if anything, about the scope of research

conducted; the number of federal labs that existed; or the significant number of research scientists employed. Additionally, there was little knowledge in terms of how to access the federal resources available, even if one were aware of them.

Third, the need to develop a talent pipeline for current and future workers was a strong concern. It was noted that although seven federal agencies were members of the BR&D Board, the Departments of Education & Labor were not engaged at the federal level, although the US Department of Labor, the Texas Workforce Commission, and representatives of local workforce boards were active participants in the Southwest forum.

Fourth, development of the type of supply chain necessary to sustain the bio economy was expressed as a critical priority. It was noted that moving agricultural by products and waste more than 100 miles was a significant inhibitor of the growth of this industry.

Fifth, the need to finance the growth of demonstration projects, establish new businesses, and expand existing businesses, by seeking federal, state, and private sector financial assistance is a critical concern. It was further noted that the financial community was the least represented in the forum.

Sixth, it was noted that federal policy is one of the most critical issues, and is an underlying issue to the first five cited. Policy uncertainty means high risk to institutions that provide financial assistance. It determines the allocation of federal resources, the priorities of the public workforce system, discourages the establishment of a supply chain uncertain of the sectors future, and makes articulating a vision for the bio economy more challenging.

In our report to the BR&D Technical Advisory Committee in November 2016, and the BR&D Board in December, our findings, and particularly the six commonalities, were well received.

In conclusion, the Foundation looks forward to working with the Mineral Wells Chamber of Commerce and the participants in the initial forum, to expand the stakeholder base, in order to begin the development of a regional demonstration project.

We look forward to doing so in partnership with the seven member agencies of the BR&D board, optimistic that the vision of a billion ton bio economy can become a reality.

**Summary Statement from Co-Host**

**SW Regional Bioeconomy Forum Summary**
**Ryan Roach, President**
**Mineral Wells Area Chamber of Commerce**
**November 7, 2016**

The Mineral Wells Area Chamber of Commerce hosted the Southwestern Regional Advancing the Bioeconomy Forum in Mineral Wells on September 29, 2016. Forty-one individuals attended the event held at the Holiday Hills Country Club that included representatives from various sectors from across the area and beyond to participate in a discussion about advancing the Bioeconomy. The Chamber along with the City of Mineral Wells is grateful for the opportunity to host the Forum and looks forward to establishing a presence related to developing and enhancing this initiative.

Much of the day focused on allowing participants the opportunity to preview the research and vision behind the Bioeconomy as well as presenting potential challenges and opportunities to be considered as the project moves

forward into further development and implementation. The questions asked to the attendees focused on a variety of topics, however much of the time focused on issues related to the regional issue of relying on a qualified and reliable workforce. While this issue is highly regarded as a major issue locally, the needs for strong labor exists across the state of Texas and even the country. Skilled workers are in high demand in many areas of our region because of the focus on everyone needing a college degree. In developing a new industry, such as the bioeconomy, that the jobs created will be technical and derived from an emphasis in STEM (Science, Technology, Engineering, and Math). Issues must be addressed beyond skills and education that include overcoming soft skills deficiencies.

The highest priority among attendees was that of financing and capital available to businesses who potentially would consider becoming engaged in the bioeconomy. Other considerations related to acquiring capital is identifying, what currently exists in the market, is there a demand, what is the potential for profits to commodity producers and end-product manufacturers? How static or volatile are the markets for these commodities, and will investors and/or lending institutions be willing to take a risk on supporting the development and growth of the Bioeconomy industry? These types of questions are valid concerns and should be addressed in determining the success of advancing the bioeconomy.

Another topic of discussion revolved around educating the masses on what the bioeconomy is. Most citizens are already familiar with bio-fuels and their uses, but other bio-products and the potential uses are highly unknown. Education was a major component of the groups focus and must be very strategic to include overcoming emotions related to the competition with oil and gas, educating investors, businesses, and consumers to the benefits of bio-products. Awareness will be a crucial element in overcoming doubts and skepticism related to the industry and its advancement.

While many different questions were posed to the attendees and a variety of responses were given, the event proved to be worthwhile in acquiring the needed information to continue to develop the initiatives for advancing the bioeconomy. One of the recommendations determined was considering regional pilots as a basis for exploring and developing the markets necessary to support the bio-industry. Mineral Wells is supportive and willing to assist in implementing a pilot program to further the Bioeconomy. The area has many assets to support this industry and looks forward to being a leader in advancing the Billion Ton Bioeconomy.

**--- End of synopsis report ---**

**Attachment: agenda and “discussion document”**

ATIP FOUNDATION

Agricultural Technology Innovation Partnership

# SW Regional Bioeconomy Forum
# Mineral Wells, TX

## *"Garnering stakeholder perspectives and input to help shape the vision, strategic planning, and implementation to promote and expand the bioeconomy"*

**Date: September 29, 2016 Time: 9 AM – 4 PM (local time)**
**Location: Holiday Hills Country Club, 4801 Highway 180 East**

**Meeting Purpose: To introduce the "Federal Activities Report on the Bioeconomy," and the sub sequent "Bioeconomy Challenges and Opportunities for the Billion Ton Vision" report and to hear from stakeholders in (1) industry; (2) state and local government; (3) economic and workforce development; (4) investment & finance; (5) academia; and (6) agricultural and environmental organizations in order to accelerate the development of the bioeconomy.**

8:30 AM – Registration / Check in

9:30 AM Welcome and introductory remarks

- Wes Jurey, Chairman, ATIP Foundation
- Dr. Cathie Woteki, USDA Under Secretary for Research Education and Economics, and Co-chair, Biomass Research and Development (BR&D) Board[1]
- TBD, State Host

10:00 AM – 11:00 AM Overview of "Federal Activities Report on the Bioeconomy", and the "Billion Ton Bioeconomy Initiative: Challenges and Opportunities" Report

- Presentation by Todd Campbell, BR&D Board, Operations Committee (Senior Energy Advisor, U.S. Department of Agriculture)
  - Establishes issues from the federal agencies and frames the topics for discussion

11:00 AM–3:45 PM—Stakeholder Comments and Discussion

- 12:30 PM—Working Lunch

4:00 PM–4:30 PM—Facilitator Report Out and Next Steps

- Key comments, findings, and recommendations of the 6 sectors
- Includes next steps (timeline to review, prepare, and disseminate report) and feedback on session format

4:30 PM–5:00 PM—Closing Remarks / Adjournment

[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.

# The Billion Ton Bioeconomy Initiative: Challenges and Opportunities

***Overview and Outline of Topics***

**Purpose of the Billion Ton Bioeconomy Initiative: Challenges and Opportunities Report:**

In February 2016, the Board released the *Federal Activities Report on the Bioeconomy* (FARB) to highlight the potential for a stronger U.S. bioeconomy, specifically some of the impacts of increasing biomass utilization three-fold by 2030.[1] The goal of the Billion Ton Bioeconomy Initiative (Bioeconomy Initiative) is to develop and coordinate innovative approaches to expanding the sustainable use of America's abundant biomass resources, while maximizing economic, social, and environmental benefits.

Since the release of the FARB, the Board has engaged with the bioenergy stakeholder community to further develop the Bioeconomy Initiative. The new report, *The Billion Ton Bioeconomy Initiative: Challenges and Opportunities*, is the second in a three-part series intended to lay the foundation and serve as the public communication of the Bioeconomy. This report is foundational to the Board's objective to strengthen the commitment and coordination between the U.S. Government and the bioeconomy community. Early feedback from stakeholders has underscored the importance of biofuels, bioproducts, and biopower. This report details several challenges and opportunities that stakeholders have identified as critical to the success of the Bioeconomy Initiative.

**Summary of Challenges and Opportunities:**

This report discusses seven of the high-priority **challenges** recognized by the bioeconomy stakeholder community, identified below:

- Major technical hurdles for development and scale.
- Steep competition from traditional petroleum-derived resources.
- A lack of necessary infrastructure.
- Access to capital for large financial investments.
- Uncertainties about sustainability—understanding environmental, social, and economic outcomes.
- Growth instability and increased investment risk caused by policy uncertainty
- The need for a strong and capable workforce.

Specific **opportunities** within each challenge as potential growth areas for the future of the Initiative are detailed below:

- Develop feedstock and fundamental innovations that reduce cost and technology risk in the supply chain.
- Seek opportunities to utilize low-cost waste resources.
- Quantify, communicate, and enhance beneficial effects and minimize negative impacts.

[1] http://www.biomassboard.gov/pdfs/farb_2_18_16.pdf

- Create increased public demand for biomass-derived products in a bioeconomy.
- Develop bioproducts that can accelerate biofuel production.
- Enable the testing and approval of new biofuels and bioproducts.
- Expand the market potential for biomass.
- Encourage private-sector financing
- Support stable, long-term policies.
- Ensure a ready workforce to meet the needs of the bioeconomy

**Disclaimer:**

*The Billion Ton Bioeconomy Initiative: Challenges and Opportunities* is a product of interagency collaboration under the Biomass Research and Development Board and does not establish any new or explicitly reflect United States Government policy. Some information is based on activities conducted by the Executive Agencies as of May 2016. However, some of the views expressed in this document reflect stakeholder perspectives and do not represent United States Government policy. This report is not a policy or budget document nor an action plan, and it does not commit the federal government to any new activities or funding.

**Critical Discussion Points**

**(from Biomass R&D Board representatives)**

- What are state/local/regional challenges to the bioeconomy?
- How can the federal agencies help address these regional challenges?
- What are state/local/regional opportunities to the bioeconomy?
- How can the federal agencies help leverage these regional opportunties?
- What is the value proposition of a bioeconomy?
- How can you contribute to the Billion Ton Bioeconomy?