



Participants at the 2013 NARA annual meeting in Corvallis Oregon

NARA Holds Annual Meeting in Corvallis Oregon

Researchers, educators, economists and business leaders gathered to attend NARA's second annual meeting held in Corvallis Oregon September 9th -12th. This year's meeting was structured to accomplish multiple objectives:

- To provide a forum for NARA teams to meet, share information and map out strategies to accomplish year three goals;
- To provide regional stakeholders, NARA members, the NARA Advisory Board and USDA representatives an opportunity to hear formal presentations covering accomplishments and future work from every aspect of the project;
- To provide a poster session and social reception for NARA and [Advanced Hardwood Biofuels Northwest](#) (AHB) members. AHB, like NARA, is a Co-ordinated Agricultural Project (CAP) centered in the Pacific Northwest.

View [NARA and AHB comparison](#) here

One of a number of significant advances made by NARA last year was to establish a supply chain coalition, map assets and

deliver strategic recommendations for conversion sites and depots covering western Montana, northern Idaho and northeastern Washington ([draft summary - pdf](#)). Beginning in Summer 2013, and extending through mid 2014, we are repeating the process in western Oregon and Washington to continue building a regional supply chain and engage stakeholders. Selecting Corvallis Oregon for the annual meeting location coincides with NARA's entry into this region.

NARA and Advanced Hardwood Biofuels Northwest

Formal presentations began Tuesday evening with a keynote address provided by a panel of top executives from corporate members of either NARA or AHB. The panel shared their perspectives on the biofuel industry, how the CAP programs complemented their goals and answered questions from the audience. Panel members consisted of:

- Linda Beltz, Director, Technology Partnerships, [Weyerhaeuser Co.](#)
- Robert Wooley, Vice President, Process

Engineering and Development, [Gevo, Inc.](#)

- Jeff Nuss, President and Chief Executive Officer, [GreenWood Resources](#)
- Tim Eggeman, Acting CEO, Founder, [ZeaChem, Inc.](#)

A common element in the panel conversation was how NARA and AHB efforts help lower the risk of investing in the emerging wood to biofuel industry.

NARA presentations and feedback

Wednesday afternoon featured short focused talks relating to technical and economic aspects of wood-to-biojet and co-product conversion technologies. These talks, due to confidentiality, were directed to NARA members, the Advisory Board, and USDA-NIFA representatives only and provided an update of progress to date. Presentations on Thursday focused on all other aspects of the project such as feedstock development and logistics, sustainability analyses, education and outreach efforts and were made available to the public.

View [video recording of each presentation](#) here

View [annual meeting guest agenda](#) here

After all presentations were given, the NARA membership had an opportunity to hear feedback from regional stakeholders, the NARA Advisory Board and from the USDA-NIFA. Bill Goldner, National Program Leader of Sustainable Bioenergy of

the Institute of Bioenergy, Climate and Environment, in USDA's National Institute of Food and Agriculture (NIFA) provided his and board member's first impressions regarding what they learned at the meeting. Broad recommendations provided to the NARA group included developing alternative products from the cellulosic sugars and isobutanol and avoiding redundancy within the project. A final summary of recommendations will be made available to the NARA executive team within the

next few weeks. Remarks were not limited to recommendations. The advisory board voiced enthusiasm for the progress made since the meeting last year and for the enhanced communication and cooperation among NARA members.

View [Bill Goldner's remarks](#) here

NARA will hold their next annual meeting on September 15-17, 2014 in the Seattle area.



2013 NARA Biofuels-SURE participants. Front row, left to right: Calvin Silas, Kane Norton, Chanel Casayuran, Daniel Leong. Back row, left to right: Stephen Cline, Andrea Laguna, Karissa Garcia, Jing Li. Not pictured: Yuanlong Li

Students conduct biofuels research during summer break

Here is a good deal for college undergraduate students interested in biofuels research. Spend ten weeks in summer doing meaningful research, visit a new area, make great contacts and get paid a generous stipend.

Too good to be true?

Well not for the nine undergraduate students involved in the NARA Biofuels-SURE program. This is the second year that NARA sponsored students to participate in the Summer Undergraduate Research Experience in Biofuels

(BF-SURE). Each student was mentored by a NARA researcher and was based at one of four NARA affiliated organizations: [Washington State University](#), [The Pennsylvania State University](#), [the USDA Forest Products Laboratory](#) and [Weyerhaeuser](#). The students were provided housing, travel expenses and a \$5000 stipend to complete research projects relating to biofuels. At the end of 10 weeks, each student prepared a poster describing their results and displayed their work at the [SURE Poster Symposium](#) at Washington State University.

Quality Students

Students were selected based on their applications and skills relative to the proposed projects. The number and quality of applicants this year was great. Take the case of Calvin Silas, who was selected as an Academic All American for the state of New Mexico and attends New Mexico State on a full scholarship to major in Mechanical Engineering. He worked with Karl England at Washington State University to find ways to generate co-products from biofuel production. According to Dr. England, "Calvin was a great worker and his results show quite a bit of promise". Of the 38 applicants from 21 universities and colleges, he was one of nine selected. Applicant demographics were 61% women and 39% men; of which, 11% were Hispanic, 3% Native-American, 8% African-American, 34% Asian/Pacific and 39% Caucasian.

Quality Projects

Most of the NARA Biofuel-SURE student research projects contributed to the goal of converting the lignin-rich residuals into useful co-products, but projects also addressed the chemical variation among Douglas-fir trees and aviation fuel infrastructure for the Seattle and Portland airports.

Yuanlong Li is an undergraduate student at the University of Minnesota. [Paul Smith](#), Li's mentor, says his summer work "provided some interesting background to the biofuels logistics work, particularly in the SEA-TAC region. Our NARA team is currently building on the background information generated by Yuanlong Li".

NARA researcher Ian Dallmeyer works for

Weyerhaeuser and seeks ways to convert lignin-rich residuals to commercial products. He mentored Chanel Casayuran, an undergraduate student majoring in chemical engineering at Cornell University. He describes her work as follows: “She was responsible for following established protocols for producing and characterizing samples, keeping an organized record of her research, and reporting on her findings. Having her here was very helpful to me as it allowed me to spend time focusing on other aspects of the project and gave me a chance to test and develop my own ability to explain and teach.”

Read about [Chanel's experience](#) here

View [all nine of the NARA Biofuel-SURE posters](#) here

The NARA Biofuel-SURE experience is a summer immersion research experience for undergraduates aimed at giving them hands on skills in biofuels and

bioproducts research. “They are building academic networks, learning techniques, gaining confidence,” says [Shelley Pressley](#), WSU Director of Undergraduate Research and SURE director,” and that’s what this is about. When you are on a first-name basis with professors at other institutions and have labs that know of your contributions, that’s a huge deal.”

NARA’s ultimate goal is to provide these talented undergraduates with an experience that will translate into careers with the emerging biofuel industry. Post surveys are provided to the students to help gauge their experience and track their post-undergraduate choices. Results from these surveys should be made available soon.

Until we see the survey results, here is post feedback from Kane Norton, a student from University of South Wales in the United Kingdom who performed research in [Michael Wolcott's](#) laboratory.

“I had a great time working on the NARA program,” said Kane. “It was good to be able to develop and plan an experimental method rather than follow a procedure. Although the actual testing took a while to get going, I feel that I got a good set of worthwhile results. It was good to see how an individual or a small group fits into a large and important project. My experience will be an important addition to my CV. I also loved the experience of living and working in America- everyone I worked with and lived with for the summer were absolutely great. I would highly recommend this project to anyone.”

The NARA Biofuels-SURE program for 2014 will start May 29th and extend through Aug. 1st. [Applications](#) will be accepted beginning October 15, 2013 and can be processed online. Applications will not be accepted after february 28, 2014. For more information regarding the program, visit nararenewables.org/ed or contact Shelley Pressley.

IDX Students present findings and request stakeholder input

The Northwest Advanced Renewables Alliance (NARA) aims to facilitate development of an environmentally, economically, and socially sustainable wood-based biofuels and co-products industry in the Pacific Northwest. During 2013/2014, NARA will examine the biofuels supply chain potential in western Washington and Oregon.

NARA has named this supply chain study area the Mid Cascade to Pacific (MC2P) region. During 2012/2013, NARA examined the supply chain potential in western Montana, Northern Idaho and Eastern Washington and named this region the Western Montana Corridor (WMC). A [draft report](#) summarizing the findings, analyses and recommendations for this region was produced.

Much of the biofuels supply chain analysis conducted for the WMC study and for the upcoming MC2P study is done through the [Integrated Design Experience](#)

(IDX) course, a collaborative studio course between Washington State University and the University of Idaho.

Throughout this fall semester, IDX students will identify supply chain assets in the MC2P region and begin narrowing down specific sites where facilities such as solid depots (produce wood chips or pellets), liquid depots (produce sugar-rich syrups), and integrated biorefineries (produce isobutanol from wood chips or sugar-rich syrups) may be located.

For more information on the NARA project and specifically about the Mid-Cascade to Pacific study region, you can read the [MC2P Profile Document](#).

Stakeholder Input

The IDX students will present their findings throughout the fall semester, 2013. In order to verify and improve their

analyses, stakeholders are welcome to view the presentations and participate. Participation also allows stakeholders in the region to get an advanced preview of the findings. Below is a list of the presentation dates and topics.

OCTOBER 14, 2013, 2-4 PM - SITE LOCATION SELECTION

Students will present their list of potential sites for solid and liquid depots and integrated biorefineries based on GIS analysis and weighted asset criteria. Stakeholders are encouraged to provide students with constructive feedback on their work and help them refine their list of potential sites based on regional knowledge.

NOVEMBER 4, 2013, 2-4 PM - SITE RESOURCE FLOWS

Students will present resource flows, defined as incoming materials or outgoing products, for the sites listed in the October 14th presentation. Stakeholders are encouraged to provide students with feedback on their identified resource flows and help them refined their identified materials/products and potential markets for products.

DECEMBER 4, 2013, 2-5 PM - SITE ANALYSIS

Students will present site opportunities and constraints and development suitability for specific sites in the MC2P region as solid or liquid depots, or integrated biorefineries. Stakeholders are encouraged to review students' site analyses and provide constructive comments and feedback/insights.

Remote Connection Instructions

To join one or all of the presentations via live stream video or via a Google Hangout, click on the below links. No reservation or login is required.

OCTOBER 14, 2013, 2-4 PM - SITE LOCATION SELECTION

NOVEMBER 4, 2013, 2-4 PM - SITE RESOURCE FLOWS

<https://plus.google.com/events/cfqd-mmbgr2l8l2vg4k6t4kntbs>

DECEMBER 4, 2013, 2-5 PM - SITE ANALYSIS

<https://plus.google.com/events/cb-g9u7ovl5209cqr43sproq9rb4>

Cosmo Specialty Fibers and CLH (Compañía Logística de Hidrocarburos) join the NARA Alliance

NARA is an alliance of universities, business and government laboratories. As the project matures, new opportunities and challenges are presented that warrant new expertise which can be provided by outside organizations. Bringing organizations into the NARA alliance requires approval from existing members and compliance with NARA's non-disclosure, conflict of interest and intellectual property policies. In addition, each new member is assigned a specific scope of work within the NARA leadership team.

NARA welcomes the recent addition of two new business members: Cosmo Specialty Fibers and CLH (Compañía Logística de Hidrocarburos).

COSMO[®]
SPECIALTY FIBERS INC.

Cosmo Specialty Fibers

[Cosmo Specialty Fibers, Inc.](#) (CSF) is an affiliate of The Gores Group and was created to restore, restart and operate Weyerhaeuser's former specialty cellulose mill in Cosmopolis, Washington. This facility currently produces a high-quality dissolving wood pulp. The residual process streams generated from this operation could be converted into sugars for fuels and chemical production. In addition, they operate a total of nine digesters that could be dedicated in part or whole to production of pretreated feedstock. "As we have seen with other

dissolving wood pulp mills worldwide, Cosmo Specialty Fibers has the opportunity to add additional value and employment as a chemical bio-refinery," says Robert Buchan, VP Government Relations and Communications.

In the wood residue to biojet fuel conversion process being optimized by NARA researchers, simple sugars derived from wood are fed to specialized microorganisms that convert the sugars into molecules, such as isobutanol, that can be used to make biojet fuel. As a NARA member organization, CSF will explore available markets for the simple sugars that could be derived from their residual streams. Parallel to these efforts, CSF will begin to develop a [pretreatment and hydrolysis process](#) to produce simple sugars which will be compared to the simple sugars produced from the Mild Bisulfite and SPORL pretreatment hydrolysate optimized by NARA members [Catchlight Energy](#) and the [USFS Forest Products Laboratory](#). The reason for singling out CFS's residual process streams is that they are commercially available and represents an inexpensive feedstock that could be used to generate large sugar samples for extensive evaluation in downstream processes.

An initial supply of simple sugars should be available for analysis by mid fall 2013 followed by larger samples as the protocol is optimized.



CLH (Compañía Logística de Hidrocarburos CLH S.A.)

[CLH Group](#) and its subsidiary, CLH Aviation, have operated for over 85 years and are dedicated to hydrocarbon storage and logistics in Spain. CLH is Spain's leader for oil product transportation and storage. They operate one of the largest, most efficient, integrated refined products transportation and storage networks in the world with over 4,000 kilometers of refined products pipeline and a storage capacity of 7.9 million cubic meters. These resources are available to all oil operators in Spain.

CLH Aviation is an active member of the [ITAKA](#) project in the European Union. ITAKA is a collaborative project aimed to produce sustainable renewable aviation fuel and to test its use in existing logistic systems and in normal flight operations in Europe.

CLH Aviation and ITAKA align well with the NARA aviation biofuels vision. We will partner with CLH Aviation to assist with a cross-national comparison of fuel logistics, policy, and corporate social

responsibility (CSR) issues. CLH Aviation and NARA researcher [Ibon Ibarrola Armendariz](#) will work closely with NARA's EPP Biojet Market Opportunity team led by NARA researcher [Paul Smith](#) to provide the following activities:

- Identify key supply chain stakeholders and their role(s) in aviation fuel decision-making;
- Understand the transport, storage,

distribution, and into-plane logistics of petro-based jet fuel and potential opportunities and/or impediments to the introduction of biojet;

- Assess stakeholder knowledge, awareness and perceptions of biojet opportunities and impediments;
- Examine the influence of policy and CSR on the pricing, supply, and demand of aviation biofuels;
- Develop a document defining the

process for implementation of biojet in a jet fuel logistic system, including the commercialization of the biojet.

It is anticipated that a literature review of biofuel policies and of aviation fuel supply chains (U.S. vs. EU) will be completed by the end of this year. Data collection from key stakeholders should be completed in late spring, 2014 with a final report completed by summer 2014.

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