

Evaluator's Report Cover Sheet
 Stephen McGregor June 23, 2017 (Rev. 6/27/17)

Period Covered by this report: September 2016 - June 2017 (Year 10)

Center Name: Center for Advanced Forestry Systems (CAFS) Center Director: Barry Goldfarb

Site	Director	Award Period ¹	Funding Phase (I, II, or III)
North Carolina State University	Barry Goldfarb	10/1/12 - 9/30/17	II
Oregon State University	Glenn Howe	10/1/12 - 9/30/17	II
Purdue University	Doug Jacobs	10/1/12 - 9/30/17	II
Virginia Tech	Thomas Fox	10/1/12 - 9/30/17	II
University of Maine	Aaron Weiskittel	4/15/14 - 3/31/19	II
University of Georgia	Bronson Bullock	4/15/14 - 3/31/19	II
University of Washington	Eric Turnblom	9/1/14 - 8/31/19	II
University of Idaho	Mark Coleman	8/1/15 - 7/31/20	II
Auburn University	Scott Enebak	3/1/14 - 2/28/19	I

¹ Please list the award period as it applies to each site; this information is available on the [NSF website](#).

Significant Personnel Changes: Stephanie Jeffries, Deputy Center Director has departed

IAB Meetings	Meeting 1	Members Participating via Video/Phone Conference?	Meeting 2	Members Participating via Video/Phone Conference?
Date	May 2-4, 2017	<input type="checkbox"/>	(CAFS has a 1 meeting per year exemption)	<input type="checkbox"/>
Location	Portland, OR			
Attendance: IAB/Total ²	13 member org.s 22 member rep.s/ 60 total attendees			

² Please list total dues-paid members (not people) in attendance over total number of attendees.

*Please attach the [Semi-Annual Meeting Best Practices Checklist](#) as an Appendix to your Evaluator Report.

Membership Activity Table (as of June 2017)

Member/Sponsor Name	University Site	Membership Fee Level (Full, Associate, etc.)	Status (New, Left, Continuing, Terminated, etc.)
	NCSU - North Carolina State Univ. OSU - Oregon State University PU - Purdue University UGA - University of Georgia UI - University of Idaho UMaine - University of Maine UW - Univ. of Washington VT - Virginia Tech AU - Auburn University		
Agrium, Crop Prod. Services, Timberland Div.	VT	Associate	Continuing
American Chestnut Foundation	AU	Associate	Terminated
American Forest Management	VT, UW	Full	Continuing
APRIL Asia	NCSU	Full	Continuing
ArborAmerica	PU	Full	Continuing
ArborGen	VT, UGA, AU	Full	Continuing
Arkansas Forestry Commission	AU	Associate	Continuing
Atherton Foundation	PU	Full	Terminated
Baskahegan Corporation	UMaine	Associate	Continuing
Bayer CropScience	VT	Associate	Continuing
BBC	UMaine	Full	Continuing
Beasley Timber Management, LLC	UGA	Associate	Continuing

BTG Pactual	VT	Full	Continuing
Campbell Global	VT, OSU, UGA, UW, AU	Full	Continuing
Canopy	UMaine	Associate	Continuing
Cascade Timber Consulting, Inc.	OSU, UW	Full	Continuing
CatchMark Timber Trust, Inc.	UGA	Associate	New
CHS	VT	Associate	Continuing
Clayton Lake	UMaine	Full	Continuing
CMPC Forestry	VT	Associate	Continuing
Deforsa	NCSU	Associate	Continuing
Delaney Development	AU	Associate	Continuing
Deltic Timber Company	VT	Associate	Continuing
Dougherty & Dougherty Forestry	VT	Associate	Continuing
Du Campo	NCSU	Associate	Terminated
Evans Properties	NCSU	Associate	Continuing
F&W Forestry Services, Inc	UGA, AU	Full	Continuing
Fibria	NCSU	Full	Continuing
Florida Grown	NCSU	Associate	Continuing
Forest Investment Associates	UGA, VT	Full	Continuing
Forest Resource Consultants Inc.	UGA	Associate	Continuing
Forestech International LLC	UGA	Associate	New
Forestry & Land Resource Consultants, Inc.	VT	Associate	Continuing
Four Rivers Land & Timber LLC (purchased by Foley Timber and Land, Inc)	UGA	Associate	Continuing
FuturaGene / Suzano (previously CBD, Suzano)	NCSU, OSU	Full	Continuing
Georgia Forestry Commission	AU	Associate	Continuing
Global Forest Partners	VT	Associate	Continuing
GMO Threshold Timber Corp	VT, UGA, PU	Full	Continuing
University of Pretoria, South Africa	OSU	Full	Continuing
Green Crow	UW	Associate	Continuing
Green Diamond Resource Company	OSU, UW	Full	Continuing
Greenwood Resources / Lewis & Clark Timberlands	VT, OSU, UW	Full	Continuing
Hampton Affiliates	UW	Associate	Continuing
Hancock Forest Management	VT, OSU, UGA, UI, UW, AU	Full	Continuing
Idaho Dept of Lands	UI	Full	Continuing
Inland Empire Paper Co	UI	Associate	Continuing
International Forest Company	NCSU, UGA, AU	Full	Continuing
International Paper	NCSU, UGA	Associate	Continuing
International Plant Nutrition Institute	VT	Associate	Terminated
J.D. Irving (Irving Woodlands)	UMaine	Full	Continuing
James W. Sewell Co.	VT, UMaine	Associate	Continuing
Jordan Lumber Company	NCSU	Associate	Continuing
K & L Forest Nursery Inc.	AU	Associate	New
Katahdin Forest Management, LLC	UMaine	Associate	Continuing
Kingwood Forestry	VT	Associate	Continuing
Klabın	NCSU	Full	Continuing
Koch	NCSU	Associate	Terminated
Larson and McGowin, Inc.	VT	Associate	Continuing
Leading Edge Geomatics	VT	Associate	New
Lone Rock Timber Management Co.	OSU, UW	Full	Continuing
Louisiana Department of Agriculture & Forestry	AU	Associate	New
Maine Bureau of Parks and Public Lands	UMaine	Associate	New
Milliken Forestry Company, Inc.	VT	Associate	Continuing
Molpus Timberlands Management, LLC	VT, UGA, UI	Full	Continuing
Montana Dept of Natural Resources & Conservation	UI	Associate	Continuing
Native Forest Nursery	AU	Associate	Terminated
Nelson Irrigation	PU	Associate	New
North Carolina Forest Service	AU	Associate	Continuing
Oklahoma Forestry Services	AU	Associate	Continuing
Olympic Resource Management	OSU, UW	Full	Continuing
OMYA International	NCSU	Associate	New
Oregon Department of Forestry	OSU, UW	Full	Continuing
Pacific Denkman Co.	UW	Associate	Continuing
Port Blakely Tree Farms	OSU, UW	Full	Continuing
Potlatch Forest Holdings	UGA, UI	Full	Continuing
Prentiss and Carlisle Company, Inc.	UMaine	Full	Continuing

Purdue Research Foundation	PU	Full	Continuing
Purdue Univ. Forestry & Natural Resources	PU	Full	Continuing
PreStage AgEnergy	VT	Associate	Terminated
Quinault Indian Nation	UW	Associate	Continuing
Rayonier, Inc.	VT, OSU, UGA, AU, UW	Full	Continuing
ReEnergy Holdings LLC	UMaine	Associate	New
Resource Management Service, LLC	VT, UGA	Full	Continuing
Roseburg Forest Products	OSU, UW	Full	Continuing
SAPPI (Fine Papers & South Africa)	OSU, UMaine	Full	Continuing
Scotch Lumber Company	AU	Associate	Continuing
Seneca Jones Timber Company	OSU	Associate	Continuing
Seven Islands Land Company	UMaine	Full	Continuing
Snowshoe Timberlands, LLC	UMaine	Associate	Continuing
South Carolina Forestry Commission	AU	Associate	Continuing
Starker Forests, Inc.	OSU	Associate	Continuing
Steelcase	PU	Associate	Continuing
Stimson Lumber Company	OSU, UI, UW	Full	Continuing
Superior Pine Products Company	UGA, VT	Full	Continuing
SweTree Technologies AB	OSU	Full	Continuing
Sylvan Timberlands, LLC	UMaine	Associate	Continuing
Syngenta	NCSU	Associate	Terminated
Tennessee Division of Forestry	AU	Associate	Continuing
The Nature Conservancy	UMaine	Associate	Continuing
The Westervelt Company	VT, AU	Full	Continuing
Thrash Aviation, Inc.	NCSU	Associate	Terminated
Timberland Investment Resources	VT, UGA	Full	Continuing
Timbervest, LLC	UGA	Associate	Continuing
TimberWest-Coast Timberlands	UW	Full	Continuing
University of Hawaii - Manoa	PU	Full	Terminated
USDA Forest Service Research	UI, AU, NCSU	Full	Continuing
USDA Forest Service State and Private	PU, AU	Full	Continuing
USDI Bureau of Land Management	OSU, UI, UW	Full	Continuing
Van Eck Foundation	PU	Full	Continuing
Varn Wood Products, LLC	UGA	Associate	Continuing
Virginia Department of Forestry	VT, AU	Associate	Continuing
Wagner Forest Management	UMaine	Full	Continuing
Washington State Dept. of Natural Resources	OSU, UI, UW	Full	Continuing
WestRock	NCSU	Associate	Terminated
Weyerhaeuser	VT, OSU, UGA, UW, AU, UMaine	Full	Continuing

	Estimated Budget This Year	Estimated Budget Last Year
North Carolina State University	\$137,000	\$410,000
Oregon State University	\$405,820	\$443,885
Purdue University	\$325,000	\$360,000
Virginia Tech	\$581,508	\$416,508
University of Maine	\$471,523	\$446,350
University of Georgia	\$410,175	\$408,950
University of Washington	\$600,025	\$616,516
University of Idaho	\$525,187	\$354,074
Auburn University	\$227,000	\$256,700
Total Center Support (All Sources):	\$3,683,238	\$3,712,983

Research Breakthroughs: None this year.

Concerns & Cautions: The Center is considering applying for a Phase-III award or a no-cost-extension for the four Phase-II sites whose funding ends September 30, 2017.

Supplemental IUCRC Awards None this year.

**NSF Industry/University
Cooperative Research Centers**

Center for Advanced Forestry Systems (CAFS)

<http://cnr.ncsu.edu/fer/cafs/>

North Carolina State University (Lead Site)

**Oregon State University
Purdue University
Virginia Tech
University of Maine**

**University of Georgia
University of Washington
University of Idaho
Auburn University**

**Assessment Coordinator's Annual Report
Year 10
September 2016 to June 2017**

Director: Dr. Barry Goldfarb (NCSU)

**Submitted by: Stephen McGregor
CAFS Assessment Coordinator
June 23, 2017 (Rev. June 27, 2017)**

Center for Advanced Forest Systems (CAFS)

Assessment Coordinator's Annual Report: Year 10 September 2016 to June 2017

1. OVERVIEW

The Center for Advanced Forestry Systems (CAFS) bridges 9 leading universities' forestry research programs with representatives of forest industry sponsors for the purpose of solving complex, industry-wide problems. In 2017 CAFS completes its 10th year of operation as an I/UCRC led by Barry Goldfarb at North Carolina State University, the lead institution.

The Center for Advanced Forestry Systems is vitally important to the US and international forestry industry. It is a productive collaborative enterprise that has become a national resource within academia and industry because of strong center leadership and organization, a geographically representative set of universities and a wide base of industry and governmental sponsors. The Center also has exceptionally strong, experienced and supportive staff. A genuine strength of the Center is the interest in and willingness of the industry participants to focus on a wide variety of research with various species of plants and trees.

CAFS works to solve problems via multi-faceted approaches to basic problems in molecular, cellular, individual-tree, stand, and ecosystems research. This collaborative consortium involves scientists with expertise in biological sciences including biotechnology, genomics, ecology, ecophysiology, and soils science. It encompasses a broad spectrum of research areas related to forestry management and processing including: growth and yield, stand and plantation management, wood quality, soils and nutrition, genetics and biotechnology, modeling, and remote sensing. CAFS research thrusts combine traditional genetics, biotechnology and silviculture into integrated systems with quantitative models to support decision-making and value enhancement.

2. MISSION

The CAFS mission is to optimize genetic and cultural systems to produce high-quality raw forest materials for new and existing products by conducting collaborative research that transcends traditional species and disciplinary boundaries.

Its major goal remains to increase the economic value and utility of plantation forests, thereby enabling foresters to more efficiently produce greater volumes of high-quality wood materials and wood products.

3. CENTER PERSONNEL

CAFS has a significant leadership, administrative, research and student team. It consists of the Center Director who is also the NCSU Site Director, 8 additional Site Directors, 7 administrative staff, over 25 faculty and 32 research staff, 6 post-docs, 22 doctoral students, 22 masters students and 28 undergraduate students. And the Center has a strong Industrial Advisory Board (IAB) membership and IAB Chairperson.

CAFS directors and key administrative personnel:

Barry Goldfarb - Center Director, North Carolina State University (NCSU)
Lead University

Glenn Howe - Site Director, Oregon State University (OSU)
Doug Jacobs - Site Director, Purdue University (PU)
Tom Fox - Site Director, Virginia Tech (VT)
Bronson Bullock - Site Director, University of Georgia (UGA)
Aaron Weiskittel - Site Director, University of Maine (UMaine)
Eric Turnblom - Site Director, University of Washington (UW)
Mark Coleman - Site Director, University of Idaho (UI)
Scott Enebak - Site Director, Auburn University (AU)

Lisa Schabenberger - Operations Coordinator, North Carolina State University
Liz Jackson - Outreach Coordinator, Purdue University

CAFS IAB chairperson:

Julio Rojas - IAB and Executive Committee Chairperson, Weyerhaeuser Corporation

Executive Committee:

An Executive Committee made up of the IAB Chairperson, the Center Director and the Site Directors manages and directs the Center's research and administration issues. The Executive Committee provides timely input outside of regularly scheduled annual meetings on CAFS issues including final review of project selections, budget adjustments and location and organization of annual meetings.

Center Assessment Coordinator:

Stephen McGregor (as of September 1, 2015)
Craig Scott (former AC through August 31, 2015)

4. MEMBERSHIP

CAFS has two levels of membership. There are 49 "Full Members" that pay an annual fee of \$25,000. And there are 58 "Associate Members" whose fees range from \$5,000 to \$25,000 dictated by each site and generally based on the size of the organization. These fees have remained stable since the Center was established. As reported by the Director Barry Goldfarb at the May 2017 Annual Meeting, in the 2015-2016 fiscal year CAFS was supported by over

\$750,000 of NSF funding leveraged by \$3.6 million in Member/Coop support. CAFS continues to have substantial membership as follows:

107 Total Members:

- 14 large industry companies (>500 employees)
- 70 small industry companies
- 15 government agencies (state/local/federal)
- 8 non-profit or foundation organizations

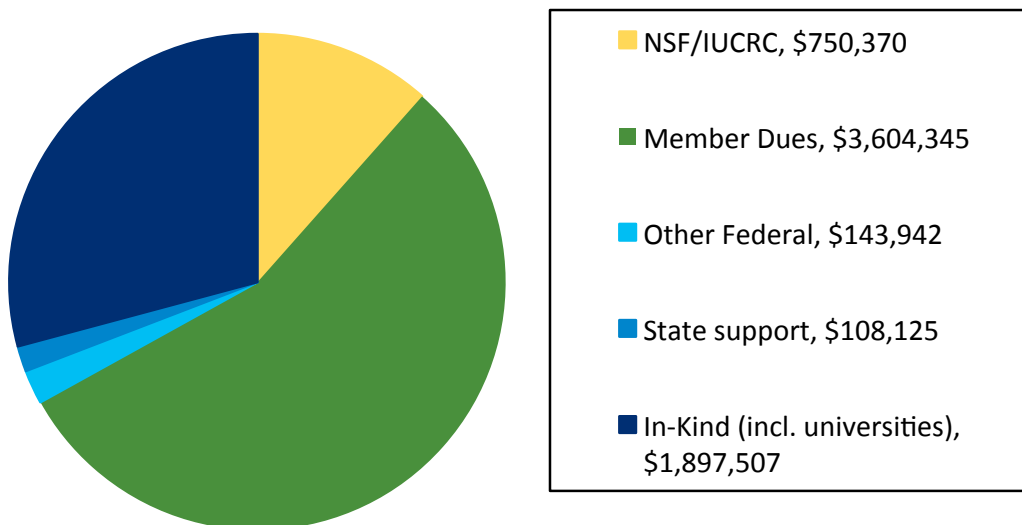
Membership Level:

- 49 full members (\$25,000 annual dues)
- 58 associate members (between \$5,000 and \$25,000)

Total fiscal year funding is summarized in the graphic below:

Sources of Funds for CAFS (2015-2016)

Total of \$6.5 million, including underlying Coop programs



5. COMPLIANCE WITH I/UCRC MODEL

In all but one respect CAFS is compliant with the I/UCRC requirements dictated under the solicitations at the time of award. The one exception is that when the Center was founded it was granted a meeting frequency waiver that permits CAFS to convene just one meeting annually and remain in good standing. The argument was based on the nature and pace of the technical field of forestry research, wherein research proceeds at a somewhat slower and more deliberate pace than research in the typical I/UCRC. Also, the various Center Sites' coop members typically meet separately one or two times per year.

Regarding the format of this report, since this is year-10, the final year of Phase-II funding, the Assessment Coordinator has chosen to use the traditional Evaluator's Annual Report format that has been used the past 9 years. If the Center progresses to Phase-III he will convert to the new format for that award period.

6. ANNUAL CENTER MEETING

On May 2-4, 2017 Glenn Howe, site director at Oregon State University, hosted the 10th annual meeting of the Center for Advanced Forestry Systems in Portland, OR. This was another in a series of successful annual 2-day meetings followed by the traditional 1-day field trip. The Center Director Barry Goldfarb, and administrative staff Lisa Schabenberger and Liz Jackson should all be commended for an extremely effective meeting. Assessment Coordinator Stephen McGregor represented the NSF and was accompanied by Don Davis who was observing the meeting for the I/UCRC Program. Attendance was good and the 9 sites were represented with a total of 60 attendees.

	Member Firms Attending	Member Representatives Attending	Students Attending	Faculty and Postdocs Attending	Total Attendance (Including admin. staff and AC)
TOTAL:	13	22	7	25	60

Some of the Assessment Coordinator's impressions of the annual meeting:

Meeting logistics and execution

- Excellent pre-meeting preparation; registration with nametags, handouts and web-site information and links. Handout materials included a binder with LIFE instructions, student/post-doc profiles, project and proposal summaries, meeting agenda, IAB meeting topics and attendee list.
- "Online Notebook" provided with executive summary and complete presentation slide set for each project and proposal presentation. An excellent resource available to attendees during meeting and for members not attending.

- Wide-ranging 2-day agenda (attached) including a guest speaker opening each day's sessions, 8 ongoing project updates, 8 final project presentations and 1 proposal presentations. An open IAB Business Meeting and networking reception followed day-1 and a Closed IAB Business Meeting followed day-2.
- Very good venue, the DoubleTree by Hilton Hotel Portland; comfortable and spacious classroom setting for meeting with good audio/visual and Wi-Fi.
- The student researchers and PI's made presentations. They were well prepared and delivered good presentations.
- Overall organization, preparation and execution of meeting were excellent.

Stakeholder relationships

- Strong relationship between members, site directors and Center Director Barry Goldfarb.
- Good discussions and interactions after presentations, during the LIFE reviews and during the breaks.
- Opportunities for networking and socializing built into the agenda.
- It is apparent that trust and respect between the stake holders has developed over the years.
- Before the Closed IAB meeting, Director Barry Goldfarb had an in-depth discussion of the options that might be available to the sites and members as the four charter sites approach the end of NSF Phase-II funding in a few months. Pursuing a Phase-III proposal was one option. A "no-cost-extension" was of high interest in continuing the Center for at least another year before considering the Phase-III proposal.
- Good Closed IAB Meeting. Discussed the future of CAFS given the approach to the end of Phase-II. Decided to have the IAB Chair form a focus group to continue future planning for CAFS.

Overall Spring 2017 meeting impression by the Assessment Coordinator:

- Excellent meeting preparation and execution. Very well directed and coordinated.
- Very good technical presentations with members' interactions and LIFE discussions.
- Active participation by the members in the Closed IAB Meeting. A very strong desire to continue CAFS beyond Phase-II, that expires September 30, 2017, because of the benefits to Center members and sites, and because it is the only national forum where all these forestry systems industry and university stakeholders meet and work together.

An optional Field Tour hosted by Oregon State University on May 4 followed the regular meeting. The tour focused on intensive forest management in the Mt. St. Helens region and the Pacific Northwest in general with a visit to the Mt. St. Helens Forest Learning Center. The photo below is of the participants at the Learning Center.



7. CENTER ACCOMPLISHMENTS

In 2016-2017 CAFS supported 16 projects across the 9 sites with \$3.6 million of IAB support from its 107 members. Based on center-supported research, center faculty and students accrued a total of 83 publications and made scores of scholarly and industry-related presentations. Much of this activity was reported at the 2017 Annual Meeting where 16 project presentations were made, 8 continuing projects and 8 final reports, and 1 new proposal:

The 8 Continuing Projects:

- 13.46 Linking Growth Modeling to Product Quality for Loblolly Pine: Dahlen et al., Lead Site: UGA
- 14.54 Root Development and Morphological Comparisons of Container-Grown Loblolly Pine and Subsequent Productivity After Establishment: Enebak and Starkey, Lead Site: AU
- 15.60 Assessing Stand Characteristics of Enhanced Genetics in Loblolly Pine Plantations in the Southeast: Bullock et al., Lead Site: UGA
- 15.61 Appraising Rotation-age Tree and Stand Characteristics in a 1970's Decadal Cohort of Douglas-fir Plantations in the PNW: Turnblom et al., Lead Site: UW
- 15.62 Quantifying the Impact of Pine Decline in the Southeastern United States: Eckhardt et al., Lead Site: AU
- 16.67 Improving White Pine Seedling Survival by Combining Blister Rust Resistance with Defense-enhancing Endophytes: Newcombe et al., Lead Site: UI
- 16.68 Response of Superior Western Larch Families to Site Quality and Competition Control: Nelson et al., Lead Site: UI

- 16.69 Stand and Tree Responses to Late Rotation Fertilization: Turnblom et al., Lead Site: UW

The 8 Final Reports:

- 12.36 Development of Genetic Markers for Western White Pine and Douglas-fir: Rust et al., Lead Sites: UI, OSU
- 14.49a Do Below Ground Processes Such as Soil Nutrient Dynamics, Root Nutrient Uptake and Carbon Allocation Patterns Explain Differences in Growth, Productivity, and Carrying Capacity of Loblolly Pine Plantation in the Southern United States and Brazil and Black Walnut Plantations in Indiana? Fox et al., Lead Sites: VT, NCSU
- 14.49b Exploring Internal and External Controls of Plantation Black Walnut Growth and Allocation Patterns: Szuter et al., Lead Site: PU
- 14.51 Production and Analysis of Flowering-Modified Eucalypts: Strauss, Lead Site: OSU
- 14.58 Developing a Region-wide Modeling System for Estimating Future Productivity of Loblolly Pine Plantations: Burkhart et al., Lead Site: VT
- 15.59 Classification, Projection, and Financial Impact of Beech-Dominated Understories in Mid-Rotation: Wagner et al., Lead Site: UMaine
- 15.64 Does Commercial Thinning Improve The Growth Response And Upper Diameter Distribution Potential Of Forest Stands?: Weiskittel et al., Lead Site: UMaine
- 16.65 Understanding and Modeling Competition Effects on Tree Growth and Stand Development Across Varying Forest Types and Management Intensities: Burkhart, Weiskittel, Turnblom, Lead Site: VT, UMaine, UW
- 16.66 Genomic Selection for Douglas-fir Tree Improvement: Howe and Jayawickrama, Lead Site: OSU

New Project Proposal:

- 17.70 The Rise of Commercially Less Desirable Species in Maine: Identification, Characterization, and Associated Driving Factors: Arun Bose et al. Lead Site: UMaine

8. ANALYSIS

The Center for Advanced Forestry Systems is close to completing its 10th successful year as an I/UCRC and this Assessment Coordinator is relatively new to the Center having only experienced the most recent 2 years of activity. His appraisal of CAFS is very favorable overall. The Center currently has 107 member/coop organizations from industry and government that generate \$3.6 million in membership revenue. These funds support numerous “regional” projects at the 9 university sites in CAFS as well as a portfolio of “national” projects that bridge all the sites.

The Center currently has 8 projects ongoing and has completed 8 projects this year with final reports presented at the Annual IAB Meeting in May 2017. Members are benefiting from the results and outcomes of the many mature and completed projects over the past years and reporting economic benefits in new wood products and forest systems resulting in tangible returns to the organizations. These are just the current 8 completed and 8 ongoing projects in a long series of projects that the Center has consistently sponsored over the years. This stream of projects is reflected in a “water fall” diagram “CAFS Projects Timeline 2008-2016” that is shown in Appendix A

As the end of year-10 approaches, the CAFS sites are seriously discussing how to continue as a viable and self-sustaining center after the NSF Phase-II award concludes on September 30, 2017 for the four founding sites (see table below). One option is to submit a proposal for I/UCRC Phase-III funding. A meeting was held last year at the NSF offices in Arlington Virginia on August 16, 2016 with the I/UCRC Director Raffaella Montelli and some of the CAFS Executive Committee including CAFS Director Barry Goldfarb (NCSU) and Site Directors Tom Fox (VT), Robert Wagner (formerly UMaine), and Mike Saunders (formerly Purdue), along with the IAB Chairperson Julio Rojas and Assessment Coordinator Stephen McGregor. The purpose of the meeting was to discuss with NSF the option of applying for Phase-III funding and reviewing CAFS’ questions, obligations and impacts as a Phase-III Center under the most recent I/UCRC solicitation.

CAFS Site	Start Date	End Date	Phase
North Carolina State University	Oct. 1, 2012	Sept. 30, 2017	II
Oregon State University	Oct. 1, 2012	Sept. 30, 2017	II
Purdue University	Oct. 1, 2012	Sept. 30, 2017	II
Virginia Tech	Oct. 1, 2012	Sept. 30, 2017	II
University of Idaho	Aug. 1, 2015	July 31, 2020	II
University of Washington	Sept. 1, 2014	Aug. 31, 2019	II
University of Georgia	Apr. 15, 2014	Mar. 31, 2019	II
University of Maine	Apr. 15, 2014	Mar. 31, 2019	II
Auburn University	Mar. 1, 2014	Feb. 28, 2019	I

The Directors and IAB Members discussed the future of CAFS at length at the 2017 IAB Meeting in May. Director Barry Goldfarb presented two key options for the Center, 1) submitting a Center Phase-III proposal or 2) requesting a 1-year no-cost-extension (NCE) to NSF for the four original sites whose Phase-II funding ends in September. There was much discussion and several opinions were raised. The four original sites were not favorable to

submitting a Phase-III proposal primarily because it would require all 9 sites to move to Phase-III. They do like the NCE that would permit the other sites to receive NSF funding under their ongoing Phase-I or Phase-II status for another year. All sites value the NSF funding and benefits, especially the reduced overhead levied on membership fees, but members were concerned about paying a higher membership fees at the four founding sites if NSF funding drops out under a NCE. The open discussion then carried over to the Closed IAB Meeting. Some key comments by the IAB Members during the meeting included:

- Several members said they like the Center for it's networking opportunity.
- We like CAFS because we are seeing projects that we would never have seen without the Center.
- It is the only time all these people, from these organizations, get together.
- Our organization needs ROI justification. If NSF funding were out, members would take a more careful review of how the membership money is spent.
- Need to value ROI at coop level as well as CAFS level.
- We do not want to pay higher membership fees.

In conclusion, the members recommended a focus group to further evaluate how to proceed and they asked IAB and Executive Committee Chairperson Julio Rojas to pull a group together to study the Center's options and recommend actions going forward.

The Assessment Coordinator came away from the 2017 IAB Meeting convinced that there was generally broad approval by the members of the Center's research agenda, it's administration, the structure of local coop groups and national level Center activities, and the value of keeping this group of universities, directors, faculty, students, small and large industry members and government and non-profit organizations together and meeting once a year. This is not to say there were no criticisms voiced. Some members brought up specific issues they were unhappy with at CAFS. These were discussed and no issue seemed beyond the ability of the directors and members to work out. Nothing was of grave concern.

One comment regarding member value in CAFS was reported in the annual Process/Outcome Questionnaire under the question asking how members benefited commercially from participation in the center. The response was:

- "One project in particular is directly directed toward knowledge gained at the CAFS meeting on plastic tree trays for container seedlings. We are now working with the manufacturer to see if these trays are viable in the west and plan to work with other companies to expand the program if it does work. In theory this could affect several million seedlings each year. This project is just starting to take off."

On the Process/Outcome survey question that asked what area(s) of excellence should the center continue, one member responded

- "Overall the center is a great organization and the only one of it's kind. They should keep up the great work."

CAFS is working hard to fulfill its concept, vision and mission. The members are engaged and committed to the Center. They see value in the Center for their organizations. The

member value is a consequence of the ongoing and consistent research output of Center projects, networking with other members and faculty from across the country, and access to quality students. This assessment is based on the Assessment Coordinator's observations at the recent meeting and discussions with some of the members.

In addition to the strong academic foundation provided by the 9 university sites, CAFS has 107 members and a robust IAB represented by 49 full members that include 14 large corporations, each with over 500 employees, and 15 government agencies including several state forestry services.

In summary, CAFS has made significant accomplishments over its 10 years of operation and has great potential going forward to contribute nationally to the field of forestry products and systems. The Center is a significant asset and contributor to the industrial and government members, the faculty and students of the universities involved, and to society at large through the advanced commercial products that potentially will be developed by the joint initiatives of these industry and university partners. And this is what the I/UCRC Program wishes to accomplish. This Assessment Coordinator considers CAFS a significant success that NSF should be proud to have enabled through its I/UCRC Program. Hopefully this relationship will continue.

9. TIMELINE

CAFS Annual IAB Meetings since inception:

February 20-21, 2008 - Portland, Oregon (Kick-off meeting)
February 10-12, 2009 - Charleston, South Carolina
April 27-29, 2010 - Indianapolis, Indiana
June 14-16, 2011 - Seattle, Washington
June 26-28, 2012 - Bangor, Maine
April 9-11, 2013 - St. Simons Island, Georgia
May 20-22, 2014 - Coeur d'Alene, Idaho
May 19-21, 2015 - Asheville, North Carolina
April 26-28, 2016 - Pensacola Beach, Florida
May 2-4, 2017 - Portland, Oregon

Appendix A – CAFS Projects Timeline 2008-2016

Appendix B – NSF Evaluator CAFS IAB Meeting Report - Spring 2017 Including the Meeting Agenda

Stephen McGregor
CAFS Assessment Coordinator
June 23, 2017 (Rev. June 27, 2017)

Note: This revision corrected the Site Director at Purdue from Mike Saunders to Doug Jacobs.

NSF Evaluator IAB Meeting Report

Instructions: The evaluator is required to complete and submit the information requested on this form to NSF program manager within a week of the meeting. Please also attach a copy for each meeting to your Evaluator Report for that year.

Evaluator Name Stephen McGregor

Center Name: Center for Advanced Forest Systems (CAFS) NSF Award # 1238324

IAB Meeting Location: Host - Oregon State Univ. (Portland, OR) Date: May 2-3, 2017

A. Meeting Status

Please provide meeting attendance information and funding numbers for the current project year in the table below:

	N of Member Firms Attending	N of Member Representatives Attending	N of Students Attending	N of Faculty and Postdocs Attending	Estimated Membership Fees Generated (Total \$)
TOTAL:	13	22	7	25	\$3,604,345 ¹

¹ For FY 2015-2016 as reported by the Center Director in Center Update Report to members.

Meeting logistics and execution

- Excellent pre-meeting preparation; registration with name tags, handouts and web-site information with links to all presentations. Handout materials included a binder with LIFE instructions, student/post-doc profiles, project and proposal summaries, meeting agenda, IAB meeting topics and attendee list.
- “Online Notebook” provided with executive summary and complete presentation slide set for each project and proposal presentation. An excellent resource available to attendees during meeting and for members not attending.
- Well attended meeting with 60 attendees; Center Director Barry Goldfarb, 22 representatives from 13 member organizations, 24 faculty (including site directors), a post-doc, 7 students, 2 administrative assistants, a guest from the Canadian Wood Fibre Centre [did not attend the technical sessions], Don Davis from the NSF and this Assessment Coordinator.
- Several student posters on display during the two day meeting.
- Wide-ranging 2-day agenda (attached) including a guest speaker opening each days’ sessions, 8 ongoing project updates, 8 final project presentations and 1 proposal presentations. Day-1 followed by a networking reception and day-2 followed by an open IAB Business Meeting and a Closed IAB Business Meeting.
- Very good venue; comfortable and spacious classroom setting for the meeting with good Wi-Fi after some initial adjustments.
- Presentations were made by the student researchers and PI’s. Well prepared and delivered presentations.
- Under the guidance of Center Director Barry Goldfarb, the overall organization, preparation and execution of the meetings was excellent.

Stake-holder relationships

- Strong relationship between members, site directors and Barry Goldfarb, Center Director.
- Good discussions and interactions after presentations, during the LIFE reviews and during the breaks.
- Opportunities for networking and socializing built into the agenda.
- It is apparent that trust and respect between the stake holders has developed over the years.
- Before the Closed IAB meeting, Director Barry Goldfarb had an in-depth discussion of the options that might be available to the sites and members as the four charter sites approach the end NSF Phase-II funding in a few months. Pursuing a Phase-III proposal was one option. A “no-cost-extension” was of high interest in continuing the Center for at least another year before considering the Phase-III proposal.
- Good Closed IAB Meeting. Discussed the future of CAFS given the approach to the end of Phase-II. Decided to have the IAB Chair form a member focus group to continue future planning for CAFS.

Overall meeting impression

- Excellent meeting preparation and execution. Very well directed and coordinated.
- Very good technical presentations with members' interactions and LIFE discussions.
- Active participation by the members in the Closed IAB Meeting. A very strong desire to continue CAFS beyond Phase-II, that expires September 30, 2017, because of the benefits to Center members and sites, and because it is the only forum where all these forestry systems industry and university stakeholders meet and work together.

Recommendation for actions to be taken by NSF:

- As needed, work with Center Director, Barry Goldfarb and the Center Planning Subcommittee on the future of CAFS as an ongoing Phase III I/UCRC.

Stephen McGregor
CAFS Assessment Coordinator
May 20, 2017

B. Semi-annual Meeting Best Practice Checklist - CAFS April 26-28, 2016

What type of face-to-face meetings of IAB, Center scientists & students was held:

- One primarily dedicated to proposal presentations w/ LIFE feedback (+ closed IAB Meeting).
 - One primarily dedicated to a technical review of progress w/ LIFE feedback (+ closed IAB Meeting).
- Comments: NOTE: Per understanding with NSF, CAFS holds one comprehensive meeting per year with technical reviews and proposal presentations w/ LIFE feedback, and open and closed IAB Meetings.
-

At Point of Registration, "Non-Disclosure Form" is signed by each non-member industrial attendee.

Comments: No non-member attendees participated in this meeting. No need for NDAs.

A "List of Attendees" (industry, university) is contained in each attendee's registration packet.

A Center Update Report that includes:

- A review of the center's vision and research roadmap and/or priorities
- A membership status report (including MIPRs and/or government agency commitment involvement)
- An annual financial statement x site (w/ member fees collected & amount available for projects)
- Some discussion of center-related technology advances & economic impact
- An up-to-date listing of publications list plus PI awards & research highlights (OK if online)

Comments: Website provides publications, research highlights and other Center information.

A common presentation template is used and adhered to by most presenters (w/deliverables, milestones, timetable, budget & time limits).

Comments: Not all project management info available for all projects. Some uncertainty in deliverables.

1-page executive summaries are available to all attendees at each bi-annual IAB meeting.

Comments:

LIFE forms are completed following each presentation.

Comments: Agenda time for LIFE and Center Director facilitated time for LIFE during meeting.

LIFE feedback is discussed by industrial attendees in session(s) scheduled for that purpose.

Comments: LIFE review following each meeting session with good member participation.

There is a closed IAB session (members can make it open) that includes an opportunity for IAB representatives to raise and discuss issues about center policies, procedures and research direction.

Comments:

A "state-of-the center" discussion by IAB members.

Comments: Barry Goldfarb, Director, held a discussion session with members after the technical presentations to discuss and plan the future of CAFS as a Phase-III I/UCRC.

Clear procedures (voting/ranking) are used for project continuation/selection.

Comments: CAFS sends a "voting packet" to all the IAB members whether they attended or not about a month after the meeting to vote on all proposals and ongoing projects.

Meeting activities are included that support industry/ university networking; such poster sessions, evening hors d'oeuvres or dinner, and industry-driven mentoring sessions.

Comments: Many opportunities for networking and socializing built into the agenda.

A discussion of and preferably a decision on the date and location of the next meeting.

Center facilitates opportunities for project related communication (e.g., newsletters, regularly scheduled project conference calls) with the IAB between meetings.

Comments: The IAB may schedule future phone meetings to discuss Phase-III plans.

Stephen McGregor
CAFS Assessment Coordinator
May 6, 2017



Center for Advanced Forestry Systems Annual Meeting

May 2-4, 2017

DoubleTree by Hilton, Portland, Oregon

TENTATIVE AGENDA (as of 4/27/17)

Day 1 - Tuesday, May 2			
Pacific Time 7:00-8:00 AM	Continental Breakfast & Check-in Prefunction Area - DoubleTree Executive Meeting Center, 1st Floor		
Tuesday Morning - Plenary General Session Room: Adams/Jefferson			
8:00-8:40	Welcome, CAFS Updates, Participant Introductions - Barry Goldfarb , CAFS Director LIFE Introduction - Stephen McGregor , CAFS Evaluator		
8:40-9:25	Guest Speaker - Louise de Montigny , Research Leader Silviculture, B.C. Ministry of Forests, Lands and Natural Resource Operations		
9:25-10:00	17.70 - New Lead Site: UMaine	The Rise of Commercially Less Desirable Species in Maine: Identification, Characterization, and Associated Driving Factors: Bose et al. Arun Bose* (UMaine)	
10:00-10:30	Morning Break and Volunteer Posters - Prefunction Area		
Tuesday Morning - Breakout for e-Poster Session - Roosevelt, Jackson, and Washington Rooms Each presentation will be 15 min., followed by 5 min. Q & A; audience then has 5 minutes to rotate to next e-Poster in next room, until you have participated in all three presentations.			
	Roosevelt Rm.	Jackson Rm.	Washington Rm.
10:35-11:45	13.46 - Cont. Lead Site: UGA Linking Growth Modeling to Product Quality for Loblolly Pine: Dahlen et al. Stephen Wright* and Joseph Dahlen (UGA)	14.54 - Cont. Lead Site: AU Root development and Morphological Comparisons of Container-grown Pine and Subsequent Productivity after Establishment: Enebak and Starkey Ryan Nadel (AU)	15.59 - Final Lead Site: UMaine Classification, Projection, and Financial Impact of Beech-dominated Understories in Mid-rotation Stands in Maine: Wagner et al. Arun Bose* (UMaine)
11:45-12:10 PM	Return to General Session room to Fill in and Discuss LIFE for 13.46 & 14.54, Discuss 15.59		
12:10-1:10	Lunch - Multnomah Grille		

Key: * Meeting Scholarship Recipient LIFE = IUCRC.com	CAFS University Partners	
	AU - Auburn University NCSU - North Carolina State University OSU - Oregon State University PU - Purdue University	UGA - University of Georgia UI - University of Idaho UMaine - University of Maine UW - University of Washington VT - Virginia Tech

Tuesday Afternoon - Breakout for e-Poster Session - Roosevelt, Jackson and Washington Rooms			
Each presentation will be 15 min., followed by 5 min. Q & A; audience then has 5 minutes to rotate to next e-Poster in next room, until you have participated in all three presentations.			
	Roosevelt Rm.	Jackson Rm.	Washington Rm.
1:10-2:25	15.60 - Cont. Lead Site: UGA Assessing Stand Characteristics of Enhanced Genetics in Loblolly Pine Plantations in the Southeast: Bullock et al. Bronson Bullock (UGA)	15.61 - Cont. Lead Site: UW Appraising Rotation-age Tree and Stand Characteristics in a 1970's Decadal Cohort of Douglas-fir Plantations in the PNW: Turnblom et al. Eric Turnblom (UW)	16.67 - Cont. Lead Site: UI Improving White Pine Seedling Survival by Combining Blister Rust Resistance with Defense-enhancing Endophytes: Newcombe et al. Marc Rust (UI)
2:25-2:50	Return to General Session room to Fill in and Discuss LIFE for 15.60, 15.61, 16.67		
2:50-3:20	Afternoon Break and Volunteer Posters - Prefunction Area		
Tuesday Afternoon - Plenary - General Session Room: Adams/Jefferson			
3:20-3:45	14.58 - Final Lead Site: VT Ralph Amateis (VT)	Developing a Region-wide Modeling System for Estimating Future Productivity of Loblolly Pine Plantations: Burkhart et al.	
3:45-4:10	12.36 - Final Lead Sites: UI, OSU *Oguz Urhan (OSU)	Development of Genetic Markers for Western White Pine and Douglas-fir: Rust et al.	
4:10-4:35	16.66 - Final Lead Site: OSU Glenn Howe (OSU)	Genomic Selection for Douglas-fir Tree Improvement: Howe and Jayawickrama	
4:50-6:50	Tuesday Evening Networking Reception - Mt. Hood Room		
Day 2 - Wednesday, May 3			
7:00-8:00 AM	Continental Breakfast - Prefunction Area		
Wednesday Morning - Plenary General Session Room: Adams/Jefferson			
8:00-8:05	Review of Day 1, Overview of Day 2: Barry Goldfarb		
8:05-8:50	Guest Speaker - Michael Clutter , Vice President, Director of U.S. Investments and Operations, Forest Investment Associates		
8:50-9:15	14.49.PU - Final Lead Site: PU Mercedes Uscola* (PU)	Exploring Internal and External Controls of Plantation Black Walnut Growth and Allocation Patterns: Uscola et al.	
9:15-10:00	14.49.VT.NCSU - Final Lead Sites: VT & NCSU Tom Fox (VT), Rachel Cook (NCSU)	Do Below Ground Processes Such as Soil Nutrient Dynamics, Root Nutrient Uptake and Carbon Allocation Patterns Explain Differences in Growth, Productivity, and Carrying Capacity? Fox et al.	
10:00-10:30	Morning Break and Volunteer Posters - Prefunction Area		

Wednesday Morning - Breakout for e-Poster Session - Roosevelt, Jackson, and Washington Rooms			
Each presentation will be 15 min., followed by 5 min. Q & A; audience then has 5 minutes to rotate to next e-Poster in next room, until you have participated in all three presentations.			
	Roosevelt Rm.	Jackson Rm.	Washington Rm.
10:45-11:45	15.62 - Cont. Lead Site: AU Quantifying the Impact of Pine Decline in the Southeastern United States: Eckhardt et al. *John Mensah (AU)	16.68 - Cont. Lead Site: UI Response of Superior Western Larch Families to Site Quality and Competition Control: Nelson et al. *Kelsie Grover (UI)	16.69 - Cont. Lead Site: UW Stand and Tree Responses to Late Rotation Fertilization: Turnblom et al. Kim Littke (UW)
11:45-12:10 PM	Return to General Session room to Fill in and Discuss LIFE for 15.62, 16.68, 16.69		
12:10- 1:10	Working Lunch - Multnomah Grille		
Wednesday Afternoon - Plenary - General Session Room: Adams/Jefferson			
1:10-1:35	15.64 - Final Lead Site: UMaine * Arun Bose (UMaine)	Does Commercial Thinning Improve the Growth Response and Upper Diameter Distribution Potential of Forest Stands? Weiskittel et al.	
1:35-2:00	14.51 - Final Lead Site: OSU Steven Strauss (OSU)	Production and Analysis of Flowering-modified Eucalypts: Strauss	
2:00-2:25	16.65 - Final Lead Sites: VT, UMaine, UW Eric Turnblom (UW)	Understanding and Modeling Competition Effects on Tree Growth and Stand Development Across Varying Forest Types and Management Intensities: Burkhardt, Weiskittel and Turnblom	
2:25-2:55	Afternoon Break and Volunteer Posters - Prefunction Area		
Wednesday Afternoon - Plenary - General Session Room: Adams/Jefferson			
2:55-4:25	Open IAB Business Meeting - Old and new business; discussion of Phase III; opportunities for CAFS and national collaborative research		
4:25-5:10	Closed IAB Business Meeting		
	<i>Dinner on your own</i>		
Thursday, May 4 – Optional Field Tour:			
6:00-7:15 AM	Use the breakfast voucher you are given at check in for a full breakfast in the hotel's Multnomah Grille. If you are not going on the field tour, you may use your breakfast voucher between 6-11am. The voucher covers gratuity.		
7:15 AM	Load vans at hotel. If you will be driving a separate vehicle, let Lisa or Liz know in advance.		
7:15 AM – 6:00 PM	CAFS 2017 Field Tour - Hosted by Oregon State University MOUNT ST. HELENS AND INTENSIVE FOREST MANAGEMENT IN THE PACIFIC NORTHWEST Please join us for a truly unique opportunity to explore forest ecology and management in the area around Mount St. Helens. Breakfast, lunch, and transportation are covered in the meeting registration fees, but we need accurate numbers, so if your plans for participating in the field tour have changed since registering, please tell Lisa or Liz.		
		 <p>Photo taken from the Forest Learning Center parking lot. www.mountsthelens.com</p>	