



Cornell University
College of Agriculture and Life Sciences

MEETING REPORT



4/1/2016

CEA Advisory Board



The CEA Advisory Board Committee Leaders convened April 1st, 2016 to share status of committee formation, goals for area of focus and preliminary plans for achieving goals. The participants also heard updates on URI activities. Twelve attendees participated.

Meeting Report

CEA ADVISORY BOARD

At the close of the December 2015 CEA Advisory Board meeting, new Committees on R&D, Education, Policy and Investment accepted the charge of securing four to five members and identifying goals (short-, medium-, long-term) to achieve the vision of their desired “NYS CEA Future State.” They were encouraged to imagine the future state and then to work backwards to achieve that vision. The purpose of the current meeting was to review status and provide assistance in creating committees and outlining goals for committees to work towards. In addition we heard updates on the URI process and discussed creating CEA synergies across the URI regions and statewide. The next Advisory Board meeting will be held in July 2016.

Decisions

- Cornell should continue to serve as a nexus of synergy for CEA
- The CEA Advisory Board should remain engaged in URI process
- An integrated, compelling presentation should be created and presented to representatives from the NYS Governor’s Office to communicate the transformative nature of CEA for the state; creator of the presentation and individual/entity to present is TBD.

Action Items: Mobilize with Milestones

- Determine the more expansive role that Cornell should assume, given the request from multiple Advisory Board leaders for Cornell to help accelerate the growth of CEA in NYS by directing key information not only to NYS, but also URI, ESD and County Economic Development Directors
- Identify NYS CEA Future State three years out for each committee, including interim outcomes towards:
 - A CEA-dedicated network of university, government and industry R&D
 - A system of higher education at multiple levels to prepare and maintain a vigorous workforce
 - An industry association for producers, investors, suppliers, operators and marketers
 - A comprehensive set of profitability models for ongoing investment decisions in CEA production
 - A consumer value system that facilitates retail purchasing decisions
- Finalize committee members – at least four to five
- Meet/teleconf with your Committee at least twice prior to July meeting
- Attend July meeting prepared to present committee members, 3-year goals, roadmap to goals, accomplishments (if any), challenges (anticipated or experienced)
 - Provide 1-2 goals by end of Years 1, 2, 3
- Build CEA Website representing public-private engagement by end of June for roll-out in July
 - Cornell website to assist in transition to industry-driven website
 - Website to include Post-secondary education options and funding opportunities
- Consider creating a graphical element aligned with the professional association; bring design ideas to the July meeting, if possible
- Neil Mattson to invite someone from NYS government, possibly from Ag & Markets, to sit on the CEA Advisory Board
- Committee top priorities at the end of the meeting
 - R&D: Finalize committee membership; complete one-on-one discussions
 - Education: Finalize committee membership; articulate plan beyond OCC, Broome County
 - Policy: Finalize committee membership; articulate process for defining objectives
 - Capital/Financial Investment: Benchmarking study; determine how and with whom
- Output for July – ROADMAP for CEA Commercialization in NYS

ONE | OVERVIEW OF URI: STATUS AND PROCESS

Jan Nyrop, Associate Dean and Director Cornell University Agricultural Experiment Station, and Tom Schryver, Director of the Center for Regional Economic Advancement and the Entrepreneurship and Innovation Institute at Cornell, joined the meeting to share information on Cornell's current understanding of the Upstate Revitalization Initiative (URI). They confirmed that the three awardees include the Southern Tier, Finger Lakes and Central Regions, that food and agriculture are included in each plan and that each will receive over time \$500 million for a total of \$1.5 billion. The goal is for the state to combine with private investors to transform Upstate NY's economic status.

Substantial discussion ensued regarding the decision making around procurement of support and the process for receiving funds. While it became apparent that some process components continue to evolve, there was a recognition that at this time final decisions are being made by the Governor's office. The state is searching for high impact, transformative initiatives with big themes, jobs and private investment. It was also acknowledged that there is a need to seek alternative funding for operating costs, as URI funding will be received at the completion of a project, not at the start.

CEA Committee Leaders agreed that stand-alone projects were insufficient to gain attention and funding. The participants concurred that they need to move quickly and create a large cooperative effort that spans regions. There was a recognition that the regional groups have the authority to endorse or say 'no' to a project, but not to approve. The CEA leadership agreed that we should achieve endorsement of all funded regions to gain attention of the Governor.

The Southern Tier REDC was not able to send a person to join the meeting, as Donna Howell, Regional Director, was out on leave but would return April 18. There also appears to be significant turnover in this office. Not all URI processes and communication are in place yet.

JaMone Turner, Deputy Director of the Finger Lakes REDC, joined the meeting to share the review process being implemented in that economic development region. JaMone explained that nine counties with high potential for economic development were included in his region and that agriculture is a pillar strategy in their plan. He explained that 70 applications have been received thus far. Once applications are received, a four-person committee meets to provide a score for each application. The scoring system from 1-5 is defined as follows:

- 1 - best score, a URI priority, a transformative project that is ready
- 2 - the proposal has everything (above) but is not quite ready yet
- 3 - may not be a URI priority and not ready
- 4 - not a priority but does have an impact and encouraged to go through traditional funding method (CFA)
- 5 - not applicable for any funding

JaMone let us know that the financial process will be the same as the CFA system and some projects are already in place to move forward at a fast rate due to time sensitivity. The group recognized that there is a critical need for investment of capital seed money, however, this is not what the state is providing.

Central REDC also did not send a person but our members from CEA FreshFarms let us know that the approach was similar to the Finger Lakes process and will look very similar to traditional CFA applications. There appears to be minimal staff in the Empire State Development office at this time.

The CEA group discussed whether or not there was knowledge of a marketing plan to guide communicating about the availability of the funding. We learned that there does not appear to be a plan. There was agreement that private interests need to learn about the program to be able to participate. Again, we agreed and emphasized that for CEA our goal should be to achieve a large collaboration to move forward, not just

smaller, individual projects. In lieu of a current marketing plan to communicate funding availability, there was consensus that our group can be tasked with conveying the funding opportunities to potential CEA industry players.

TWO | CEA ACTIVITIES

Neil Mattson provided an update on CEA activities:

- In Feb. 2016, Gotham Greens opened a 4th rooftop greenhouse location in Queens, which received \$1 million in NYSERDA funding
- Neil attended/presented at a National Academy of Science workshop on advances/funding needs for solid state lighting (SSL). There was DOE interest in funding research in energy/SSL/urban agriculture.
- Xprize wants to fund some prospective grand challenge in food and agriculture
 - Early stages, want to do something in this area and have found donor(s) and are in 1-2nd month of a 8-month visioning process
 - Neil to contribute to a visioning workshop in early April
- Neil attended a NSF-sponsored INFEWS (Innovation at the Nexus of Food, Energy & Water Systems) workshop. He and a group of Cornell colleagues also submitted a new NSF grant proposal for three years, \$3 million. It is focused on urban CEA development including energy modeling, engineering plant lighting and control systems, high school STEM education using hydroponics, and workforce training.
- An update from the Ag and Marketing Specialty Crops grant on CEA business tools: consumer willingness to pay (WTP) research is underway this spring; with 6 auctions comparing WTP of NYS vs. out-of-state tomatoes and lettuce (both field and CEA grown) under consideration. The auctions should be complete by late spring.
- Regarding a current Cornell CEA project comparing LED to HPS for greenhouse supplemental lighting, the best LED is a little more efficient than best HPS, but high cost of LED is an issue
- Cornell CEA continues to work with local businesses to develop CEA systems. Recently, Kale Harbick has produced a feasibility study on plant factory vs. greenhouse for a non-profit in the north-country

THREE | COMMITTEE REPORT: RESEARCH & DEVELOPMENT

RESEARCH & DEVELOPMENT led by George Slilaty (see attachment 1)

Assumption:

- R&D will be market-driven, interviews with retailers/produce buyers will be used to determine their needs and wish list for CEA products
- R&D should work closely with Education Committee

Committee Members by functional area:

- Market
 - Amy Cimino, Wegmans
 - Marc Lower, Live Better Foods
- Science
 - Kale Harbick is an option

- Tessa Pocock, RPI is an option
- Building/Energy
 - Kanad Ghose, Computer Science, Binghamton University
 - Kevin Killmeier is an option (Custom Fabrication?)
- Education
 - Neil Mattson, Cornell
 - Mike Roetzke, Cornell is an option

Process for Defining Objectives:

- Hold one-on-one discussions with representatives of the marketplace
 - NOTE: Committee members should present themselves as a representative of the CEA Advisory Board so we build a foundation of information that can aid all members, not just one organization/business
 - Show vision and have market representative provide feedback and 'buy into' vision
 - George's goal is that we can then drive the market growth as a group

George also spoke of the Foodshedexchange.com, which is intended to be a virtual marketplace that links a chef with the product so the farmers know demand 1 year out. This generated useful discussion regarding the Belgian model. Information on this model is attached (see attachment 2), as provided by CEA Fresh Farms.

FOUR | COMMITTEE REPORT: EDUCATION

EDUCATION & TRAINING led by Tim Madden

Assumptions:

- A pipeline of workers representing different training levels/skills is required (e.g. Associates, Bachelor's, and Master's and beyond plant science would like to teach an integrated CEA skill-set e.g. plant science, computer science, engineering, food science).
- Education should work closely with R&D Committee

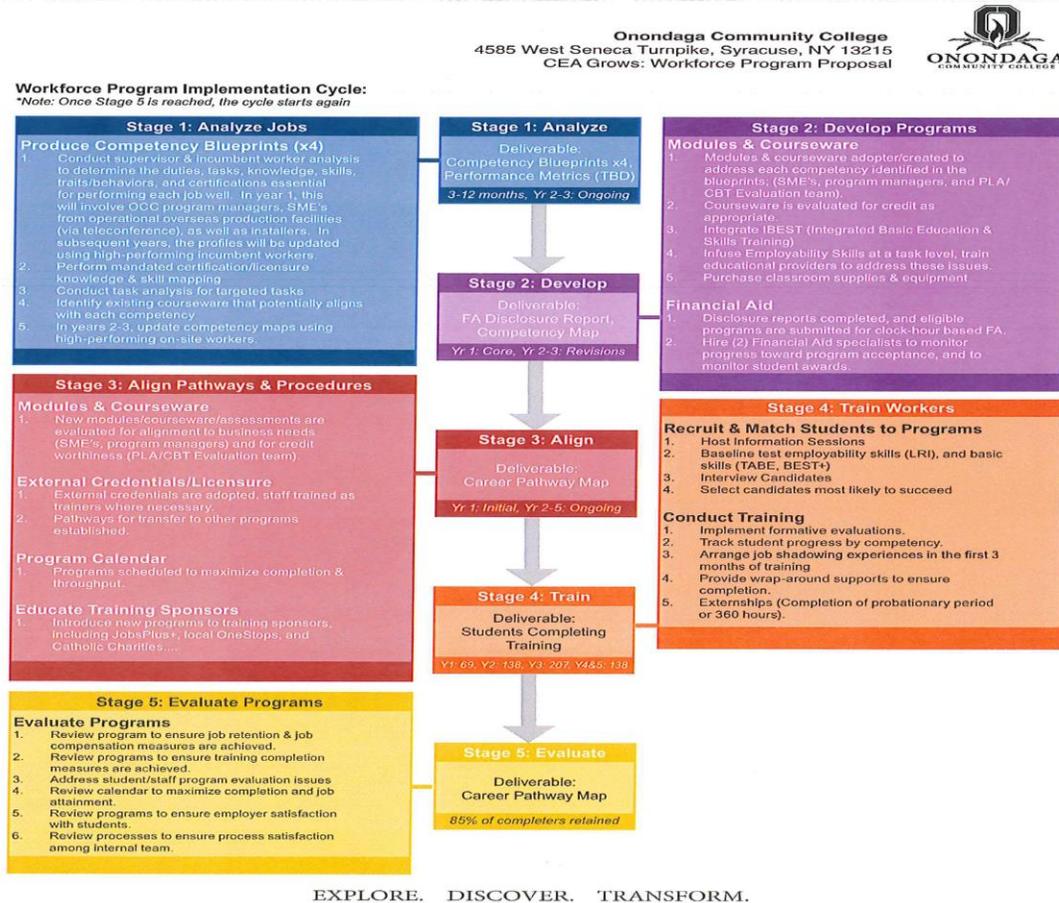
Committee Members:

- Neil Mattson, Cornell University
- Wil Hemker, University of Akron Research Foundation, CEA FreshFarms
- Deborah Walliser, Arizona State University
- Someone from Onondaga Community College (OCC)
- Someone from SUNY Broome?
- Someone from SUNY Cobleskill?

Process for Defining Objectives: (see attachment 3)

- Collaborating with OCC to encourage students that will fulfill work positions
- In Stage 2 of flowchart, create an associates-level CEA education
 - Create opportunity for appropriate students to transfer to Cornell for Bachelor's degree

- Should connect with SUNY Broome, as 2+2 from SUNY Broome to Cornell is going into its first offering in the fall; rebranding and start in fall



FIVE | COMMITTEE REPORT: POLICY & PROFESSIONAL ASSOCIATION

POLICY & PROFESSIONAL ASSOCIATION led by Keith Sernick and Joe Berman

Assumption:

- Capital available from the URI should be utilized to stimulate competition, CEA stakeholders should be made aware of Capital available
- Need to develop a state CEA industry trade association, which includes all segments of the industry and serves as a nexus for collaboration and to advocate for the industry statewide
- Development of a charter, stakeholder engagement



Committee (still in process):

- Julie Suarez, Cornell
- NY state Farm Bureau
- Department of Agriculture
- NYSERDA
- Private sector CEA

SIX | COMMITTEE REPORT: CAPITAL/FINANCIAL INVESTMENT

CAPITAL/FINANCIAL INVESTMENT led by Bill Vogelgesang (see attachment 4)

Assumptions/Purpose:

- To educate and captivate financing sources for indoor agriculture industry
- Will have completed specified actions by Dec. 2017

Committee:

- Tom Cosgrove, Farm Credit East, Enfield, CT
- Felicia Fowlkes, Food & Agribusiness Finance, MetLife Investments, Chantilly, VA
- Josh Johnson, Food & Agribusiness, NBH Bank, Denver, CO
- Chris Laughton, Farm Credit East, Enfield, CT
- Roger Saillant, Fowler Center for Business as an Agent of World Benefit, Cleveland/Saratoga Springs
- Add additional committee members
 - Focused on both small and larger loans and investments
 - Government and NGO (USDA, ESD, Green Bank...)

Process for Defining Objectives:

- Conduct benchmark study
 - Financial analysis of operating and return metrics for indoor agriculture
 - Segmented by type of structure, product category, wholesale/retail, size of operation
 - Farm Credit East has studies that can be used of roughly 90 firms
 - Cornell has done some work building a financial model
- Identify leading technologies
 - These will be of interest to AgTech investors
 - Cornell researchers involved
- Facility Tours
 - Ontario, Canada
 - Netherlands
- Creation of a loan-pool fund or other investment vehicle

APPENDIX | COMPONENTS FOR PRESENTATION TO NYS

The committee leaders agreed that a fully-integrated, compelling story needs to be compiled and presented to NYS officials to make the case for CEA to be recognized as a transformative opportunity for URI funding. Below are examples of points that could be included in such a presentation to bolster the compelling nature of the case for CEA:

- Project NYS potential jobs, revenues and assets in R&D, production facilities & skills, and industry infrastructure, from large scale CEA
- Compare state funding commitments to commercialize CEA with Dept of Ag & Markets budgets to sustain traditional farming
- Quantify the size of the market that can be served by NYS with CEA, but only if NYS moves quickly and aggressively
- Describe how the Netherlands, Japan and Ontario are ahead of the US in commercializing CEA, but NYS can leapfrog
- Consider how CEA is better for farms and agriculture than land leases from farmers by solar developers
- Explain why ROI for CEA would be faster than for nanotech