IGEM Council Meeting
November 7, 2017
Idaho Department of Commerce

IGEM Council Members Present:
Dr. Mark Rudin
Bill Gilbert
Dr. Neels Van Der Schyf
Senator Kelly Anthon
Dr. Noel Bakhtian

Idaho Commerce Employees Present:
Megan Ronk, *Director*
Matt Borud, *Business Development and Marketing Administrator*
Carmen Achabal, *IGEM Program Manager*
Cindy Lee, *Grants & Contracts Manager*
Laura Conilogue, *Administrative Assistant*

Members Present Via Phone:
Dr. David Hill, *Chairman*
Dr. Janet Nelson
Von Hansen
Mike Wilson
Rick Stott

Call to Order
Chairman Dr. David Hill called the meeting to order at 9:03am.

Welcome Dr. Noel Bakhtian to the Council, Director of CAES.

Approval of Previous Minutes
Dr. Mark Rudin motioned to approve the meeting minutes from June 21, 2017.
Bill Gilbert seconded. All in favor. **Motion approved.**

Announced change in the Agenda – Carmen Achabal
Carmen explained that there will be several changes to the meeting agenda to ensure that the required number of IGEM Council members are in attendance to approve going into executive session for the BSU MSM Micro-Pump project. Due to the confidential nature of this project, the Council will utilize executive session. The IGEM Legislative Review will proceed next, followed a report by the IGEM Investment Subcommittee, and then project presentations. The MSM Micro-Pump project will present first. The IGEM Membership and Confidentiality Discussion will follow the project presentations.

IGEM Legislative Update - Carmen Achabal
During the last legislative session Commerce proposed a legislation change to give the Council the ability to create subcommittees to help with vetting and research for the Council. The IGEM Investment Subcommittee is now an official Subcommittee. As such, they are required to hold public meetings with minutes taken, and have the ability to go into executive session if necessary. However, all decisions must be made in the public domain.

Dr. Noel Bakhtian explained that there are CAES affiliates she works with that are working on the University of Idaho - #2714 Borated Aluminum Cask for Used Fuel Cooling project, however she discussed this with CAES legal counsel to ensure there was no conflict of interest. None of the IGEM Council has any issues with Noel voting on the project.

Investment Subcommittee Report - Bill Gilbert

During the last Subcommittee meeting, the members decided it would be advantageous for the Vice Presidents of Research (VPRs) to attend all the Investment Subcommittee meetings to answer questions the members have regarding any applications. Commerce should invite them to all the meetings.

Project Team Presentations & Funding Consideration

Motion to Move into Executive Session
Chairman David Hill announced the IGEM Committee would review the details of one application that has been received by the IGEM Program Manager and submitted to this subcommittee for review. The application contains records and information exempt from public disclosure under Idaho Code §§ 9-340D(6) and 67-4708. Chairman David Hill entertained a motion under Idaho Code § 67-2345(1)(d) to go into executive session to review the application.

Dr. Noel Bakhtian moved to enter into executive session.
Dr. Mark Rudin seconded.

Roll call vote to move into executive session:

Dr. Mark Rudin - Approve
Bill Gilbert - Approve
Dr. Neels Van Der Schyf - Approve
Megan Ronk - Approve
Kelly Anthon - Approve
Dr. Janet Nelson - Approve
Dr. David Hill - Approve
Dr. Noel Bakhtian - Approve
Von Hansen - Approve
Mike Wilson - Approve
Rick Stott - Approve

With all in favor of moving into executive session, the Council moved into executive session at 09:25 a.m.

Return to Public Session
Chairman Dr. David Hill noted that the Council returned to the public session at 9:51 a.m.

Chairman Dr. David Hill indicated the Council

1. Reviewed and discussed the application submitted for IGEM Council consideration, #2728 MSM Micro-Pump; and
2. Closed the Executive Session after discussions were concluded. The motion to close the Executive Session was made by Megan Ronk, seconded by Bill Gilbert.

University of Idaho – #2714 Borated Aluminum Cask for Used Fuel Cooling

The project team introduced themselves. They gave a presentation about their project including the technology, challenges, proposed solutions, budget, timeline, and path to market.

Questions:

How long would the certification process take? There will be work after the end of the project before it can be certified. It cannot be done in a one year time frame.

Can companies make the cooling pools bigger instead of installing this technology? And why are they running out of space? Why can't they continue to use the proven technology? It is expensive to expand the pools. Some solutions companies have tried re-racking the pools, increasing the shielding, and adding boron to the pools. All this has helped, but more room is needed and it would extremely expensive to make those changes. Another problem is that in order to change any design to the pool, there are many regulations to comply with. Adding this technology would not need to be approved through a regulation.

The timeline shows that the main objective in 2018 is research. What questions do you want answered in 2018? The questions that need answers are: What is the boron concentration of loading that needs to be there to protect the criticality? How much cooling is needed, and what is the range of age of fuel we can handle? Those are the two main questions. The answers will tell them how much the project will cost.

Will the answers from the research tell you the process and timeline for getting certified by the NRC? Yes. Once we get to that point, we will have a good idea of the timeline for becoming certified.

If the testing proves the product is cost effective and efficient, what happens from there? The product will be manufactured in Idaho.

IGEM is being asked to fund something in the early testing phase. IGEM needs to know if you are highly confident that this will be an effective solution. It is highly likely that it will be successful.

IGEM needs to know that this is good science that will make its way to commercialization. The project team is very confident in their product. They are confident it will work. The geometry and the material composition are both very straightforward; easy to understand and easy to project what will happen. The project teams feels it will be easy to reach their goal.

Can you explain the role of Premier Technology in this project? What is their expected roll? If you are successful, and if Sakae builds a plant in Idaho, would they take over final manufacturing and assembly or would final assembly still be someone like Premier Technology? Assembly and machining can be done in different places. Premier would still be in the picture for a while. Final assembly would be done in Idaho.

Comment on the timeline to market, and what the revenue projections would be? When will this lead to revenue generation in Idaho? They plan on establishing a factory in 2023 and hiring 21 employees.

When will you know if this product works or not? They will know at the end of 2018, because at that point the design will be finished to satisfaction. They are confident that their models will perform as expected.

Does Sakae have a presence in Idaho? Yes, a local office in Idaho Falls.

How much funding is required to get to the end of Phase One in 2018? The Year One budget is $237,000. This funds the students to do the research to get the answers they need from Phase One.

When does this become a product? How long until you can sell one? The NRC needs proof of principal, and the team will start working towards that as soon as they start the project. So the product could potentially be to market in 2019.

Who is your target customer? A U.S. customer. Most pools in U.S. are at over half capacity now. They are running out of space. There is a need for the product.

Is Sakae out trying to get customers now? Is there any ground work being laid in getting customers? Sakae will start immediately doing that upon start of the project.

You need a utility partner now. Someone whose interest is peaked so they can plan to get this when it's available. The project team does not think a utility company would consider buying their product without an NRC certification. NRC is the gold standard for safety around the world. By having this product certified, that will get everyone interested.

There is a line item under capital costs for assembly of two prototypes, $42,000 that says it is paid to Premier Technology. Is that cost of just equipment or equipment and labor? Equipment and labor. Building one prototype would only cost $21,000.

The team said no one will be interested in their product without a NRC certification, so why should IGEM be interested and fund them? The team is confident that it will work, and as they are progressing with the research and prototypes, they can peak a utility company's interest beforehand, but eventually the companies will want the NRC results.

This is an issue that all the nuclear companies have. All the startups in the nuclear industry are stuck in this conundrum where they need the NRC certification to sell a product, but they have a hard time raising capital when they are just in the research stage, and no clear customers to buy their products, because they don't have NRC Certification.

Is there a group of utility companies that could be approached so that one company would not have to cover all the financial risks? Yes, there are some potential groups, however they will still need the design that they can prove does work.

Discussion

BSU project – #2728 MSM Micro-Pump

Bill Gilbert entertains a motion to accept and fund the project.

Megan Ronk motioned to accept and fund the project. Kelly Anthon seconded.

Dr. David Hill left the meeting.

Carmen Achabal had questions on the project budget. Under university costs, there is a $7,000 line item for Materials Characterization, but there is no description of what that means. Dr. Mark Rudin will present this question with the project team and provide an explanation on what Materials Characterization means to Carmen.

Carmen Achabal also questioned the line item for travel. Will the IGEM Council allow $6,000 for travel? IGEM has allowed money for travel on past grants however additional information is needed before approval can be granted. Katy Ritter from BSU said she would get the information to Carmen. Commerce to determine the allowance.

Megan Ronk motioned to approve and fund the project, with a contingency of finding out more information about the $13,000 line items in the budget.

Kelly Anthon seconded. All in favor. Dr. Mark Rudin abstained. **Motion approved.**

UI project #2714 – Borated Aluminum Cask Design

The project team was asked if they applied to HERC for funding. It was not brought to HERC because HERC does not have any money for funding this year.

The Council discussed that this project is not the type of project that IGEM normally funds. IGEM typically funds projects that are ready to head to commercialization. The Council is not

comfortable funding the whole project in total. Bill Gilbert suggested funding the project in phases. Carmen Achabal reminded the Council that they have funded past projects in phases. The Council could fund the first year of the project and then the project team would need to come back after the first phase and apply again if the initial project is where it anticipated. The Council could potentially fund this project in a second round.

The Principal Investigators (PIs) are comfortable with being funded the $237,000 they budgeted for the first year. This will also give them time to go talk to companies in the industry to try to get some potential customers.

Megan Ronk motioned to approve the project for one year with a $237,000 budget with a revised budget being sent to Carmen to reflect the referenced changes.

Kelly Anthon seconded. All in favor. Dr. Janet Nelson and Dr. Mark Rudin abstained. **Motion approved.**

Council took a 5 minute break.

IGEM Membership & Confidentiality Discussion - Cindy Lee

There is a confidentially form in the Council members' packets for the IGEM Council to sign and return to Commerce.

Conflict of Interest is defined as when you have a personal financial benefit that may be the result of a decision that you are considering or making. An ethical conflict of interest is different for everybody, and one where you may not stand to gain financially, however there is a real or perceived presence of a conflict. Commerce would like both types of conflict of interests to be disclosed. Commerce Director Megan Ronk has created a policy that is titled "Policy Regarding Potential Conflict of Interest and Biased Decision Making for Councils". In the case there is a real or perceived conflict of interest, or perceived bias, you need to notify the Chair of the Council and Director of Idaho Commerce in writing, or email, and express the reasons you think there may be a conflict. The situation will be discussed and then a decision will be made on how to proceed. It is important to Commerce that this is taken seriously. The policies and rules helps to reduce risks for Idaho Commerce and its Councils. All the Councils follow the same rules, and have the same expectations.

Bill Gilbert noted that sometimes he gets applicants coming to him and his company looking for extra cash for their projects. Bill has always said no to these requests. Bill wanted to know if he, or his company, would be able to invest in any project after the IGEM Council has decided whether or not to fund the project, or if that would be a conflict of interest. The Director would want to know if he, or his company, was going to fund any IGEM projects, then they could make the decision from there.

Is the Perceived Conflict of Interest in the statutes for all state agencies? Or is that a policy that Commerce set up? It is not technically in statute, however in the Attorney General's manual, he states that the Conflict of Interest Code is the minimum expectation all state departments must adhere to, but he advises that departments go above the minimum. It is always better to err on the side of disclosure.

Who judges if there is a perceived conflict of interests? While you are reading through the applications, if you think there might be a conflict of interest, you should bring it up to the Chair and Director.

Cindy also explained to the Council about proprietary and confidential information that comes in on some of the applications. Applicants will indicate on the application at the beginning of a questions whether or not they think the answer contains confidential information. The applicants will also sign a form that says they have read through the exemptions that Commerce has and they want that information to maintain confidential based on their understanding of the law. Commerce has a specific exemption in code that allows us to withhold information when the information is about bringing business to Idaho. That means Commerce can keep business records confidential.

The Trade Secrets Exemption is applicable to IGEM. Trade secrets are defined in the code as "a formula, a pattern, a compilation of programs, a computer program, a device, method, technique, process, or unpublished or in progress research that derives independent economic value, either actual or potential, and from not being generally known or readily ascertainable in proper channels, and is subject to the efforts that are reasonable under circumstances to maintain its's secrecy".

If an applicant claims confidential information on their application, Commerce will do research to determine if any of the information they have claimed is confidential, is actually in the public domain. If so. the Trade Secrets Exemption does not apply to them.

Please shred any confidential information that you print out. Please also be very careful in emailing confidential information.

IGEM Project Updates

Bill Gilbert thinks there should be a whole meeting devoted to relaying this information in greater detail. Many of the IGEM projects have passed important milestones. It would be especially helpful to have the PIs at the meeting to answer the in depth questions that the Council may have. The VPRs from each school don't know the project in the same detail that the PIs do. There should be a meeting where there can be robust discussions about the projects that have been previously funded.

Boise State University – Dr. Mark Rudin

Remote Sensing of Alfalfa Crop Bloom – Kairosys is the industry partner. This project focuses on predictive modeling for blooms and pollinations for the alfalfa crop. The project has received other sources of external funding on this project to hire another worker and new equipment. The project is on track to achieve all milestones. The team did request a No Cost Extension for the project. The new end date is now October 31, 2018.

Time of Flight Spectroscopic Reflectometer – Fiberguide Industries is the industry partner. This project is focused on a new technology to reduce and/or eliminate reflections on the end of microfibers. The reflectometer has been assembled and tested at the BSU lab. The next step is to perform a test at the Fiberguide facility.

Flexible Sensors Assisting Miniaturized Air Scrubber – This is a joint project with Idaho State University (ISU). Isaacs Hydropermutation Technologies (IHT) is the industry partner working with ISU. The air scrubber and sensor array work together to eliminate toxins in potato storage. The teams have already developed the sensors that measure temperature and are working on developing a sensor to measure humidity. The ISU team has done testing on different molds and toxins in the ISU lab. The project has won additional funding awards to enhance the printed sensors.

Ankle Roll Guard Project – The industry partner is Ankle Roll Guard. It is a device on the end of the shoe that prevents the rolling of the ankle. This device has been tested against traditional tape and braces that are normally used to prevent rolled ankles. The results showed little difference in prevention between their product and traditional products, however, the traditional devices restrict movement, unlike their product. Their device has been tested on 14 people so far, but the team wants to test it on 20 to 30 people. Bill wants the industry partner to come to a meeting to talk about distribution and industry plan.

Data Analytics Project – Simplot is the industry partner. The final report is pending on that project. BSU's Computer Science department uses data analytic techniques to help develop tools that Simplot gives to their producers to help make decisions about fertilizing and watering the crops. This is another project where the Council would like the PI to come and give their update on the project. The Council would also like to ask Simplot if they got what they needed.

ISU Idaho State University – Dr. Neels Van der Schyf

Hoplite Skate Armor – Fi-Ber Sports is the industry partner. This project gathers performance and comparative test data about the Skate Armor. The product provides protection to hockey players' feet when impacted by a hockey puck. The project is proceeding on schedule.

Potato Storage Humigation Device – IHT is the industry partner. Project completed a successful deployment of the IHT Humigator in the test lab at ISU. A number of experiments have been run. E. coli cells were aerosolized in the test lab in replicate experiments to obtain background counts of bacterial dispersal. Molds have been added and studied with the humigator.

Expanding Precision Agriculture Market Opportunities with Unmanned Aircraft System Sensors – The industry partner is Simplot. This project used hyper-spectral imaging via Unmanned Aircraft Systems (UAS) to advance precision agriculture. The goal was to develop algorithms and processes to improve agronomic management decisions and applications. The project successfully developed a system that can resolve plant spectral signatures to a 1-5 cm resolution – dramatically improving the farmer's ability to manage crop health and yield. Many companies have an interest in licensing the technology to detect Potato Virus Y in the field. The project team has secured additional funding for the project. The patent attorney has identified five potential patent opportunities.

RISE Analytics - ON Semiconductor is the industry partner. The XL-30 Scanning Electron Microscope (SEM) purchased with IGEM funds is installed in the Eames Complex(formerly the RISE Complex) and currently undergoing changes to enhance instrument reliability. The N-35T Nitrogen Generator, also purchased with IGEM funds is used in virtually all microscopy related projects within the Materials Analysis Microscopy Lab (MAML).

Nanofabrication Infrastructure Support - This project allowed for the acquisition of a Dualbeam-Nanomachining center. The Dualbeam system provides support to virtually all projects at the Eames Complex and will be a key component in many MAML research projects going forward. The Dualbeam system has provided crucial infrastructure support to virtually all projects. The instrument has been utilized on federal grants and well as projects in the private industry.

RISE/Eames Complex – This building was originally a pharmaceutical manufacturing building that was purchased in 2011 by ISU. The former RISE director resigned, and the RISE Complex was renamed the Eames Complex.

University of Idaho – Jeremy Tamsen, Director – Office of Technology Transfer
Integrated Smart Raised Pavement Marking with Traffic Signal Systems – Evolutionary Markings, Inc. is the industry partner. The goal of the project is to test the feasibility of, review and finalize design requirement for, and develop communications protocols to enable an integrated system of traffic signals and solar powered smart raised pavement markers. All the objectives have been achieved and the products are being deployed in testbeds across the Pacific Northwest.

6000 Watt Split Phase Gallium Inverter for Home-Scale Photovoltaic Systems – The industry partner is Inergy Solar. The goal of the project is to create a 6000 Watt Gallium-based electrical power inverter to funnel power from solar panels, wind turbines, and /or small generators, into a typical home. The Gallium-based inverter has been successfully engineered and manufactured, however they are refining the design for increased loads. The Council would like the PI to come speak to the Council about this project.

Acquisition, Processing, Distribution of Unmanned Aerial Systems (UAS) Products – The industry partner is Empire Unmanned Inc. and ZData Inc. (now Atos). The goal of Phase 1 of the project was to focus on developing dataflow efficiencies for precision agriculture, wildland fires, and other natural resource monitoring and management. Phase one objectives were completed, and all milestones have been met.

Water Filtration Innovation at the Nutrient, Energy, Water Nexus - N-E-W TECH – The industry partner is Blue Water Technologies (now Nexom). The goal of the project is to test a functioning testbed which combines ozone, metal salts, and biochar water filtration methods on the reactive filtration water treatment platform that is licensed to Nexom in Hayden, Idaho. N-E-W TECH has received the Phase One award in the $10 million Everglades Foundation George Barley Clean Water Science Prize in Miami in December 2016. The IGEM Council wants the PI to come to a meeting and discuss their project.

Live Attenuated Fish Vaccine for Aquaculture Production – This project received 2 grant awards from IGEM.

- Round 1 – Industry partner is Aquatic Life Sciences, Inc. (now Syndel USA). The goal was to address critical regulatory and testing requirements for a commercialization of a fish vaccine for Coldwater Disease (CWD) and a probiotic feed additive. The team achieved a stable product formulation, but their industry partner lacked the ability to bring their products to market.
- Round 2 – The team found a new industry partner who will remain confidential until the product goes to market. The goal for phase two is to work with the industry partner to scale production of the fish vaccine that was developed in the first round. Another goal is to conduct clinical trials to ensure the commercial formula is safe, easy to administer, and effective. Field tests show the vaccine to be successful, and the industry partner is working hard to commercialize it. Final FDA approval processes are currently underway.

2E-Hexenal for the Control of Potato Postharvest Pathogens in Storage – The industry partners are SunRain Varieties, LLC, Agri-Stor Company, and AMVAV Chemical Corporation. The goal was to examine the use of an anti-fungal plant volatile, 2E-hexenal, to reduce crop losses due to postharvest pathogens. To achieve this goal, the team will conduct large-scale trials to check the viability of the product and quantify reduction in soil bacteria after use in commercial storage facilities. The process is on track. The project successfully demonstrated a dramatic reduction in crop losses due to postharvest pathogens.

All older UI - IGEM projects do not have any significant updates.

IGEM Program Updates - Carmen Achabal
Carmen Achabal showed a powerpoint that gave numbers and information regarding the statistics of all the IGEM projects through the years, including award amounts, number of awards per year, number of awards per university, award amount given to each university, and industry clusters of projects.

Public Comments
None heard.

Review of Action Items
The Council scheduled the next IGEM meeting date for Thursday February 1, 2018 from 9 a.m. - 12:30 p.m. The Council wants the industry partners to attend the meeting so IGEM can hear from them how the projects are progressing.

Bill Gilbert adjourned the meeting at 12:41pm.